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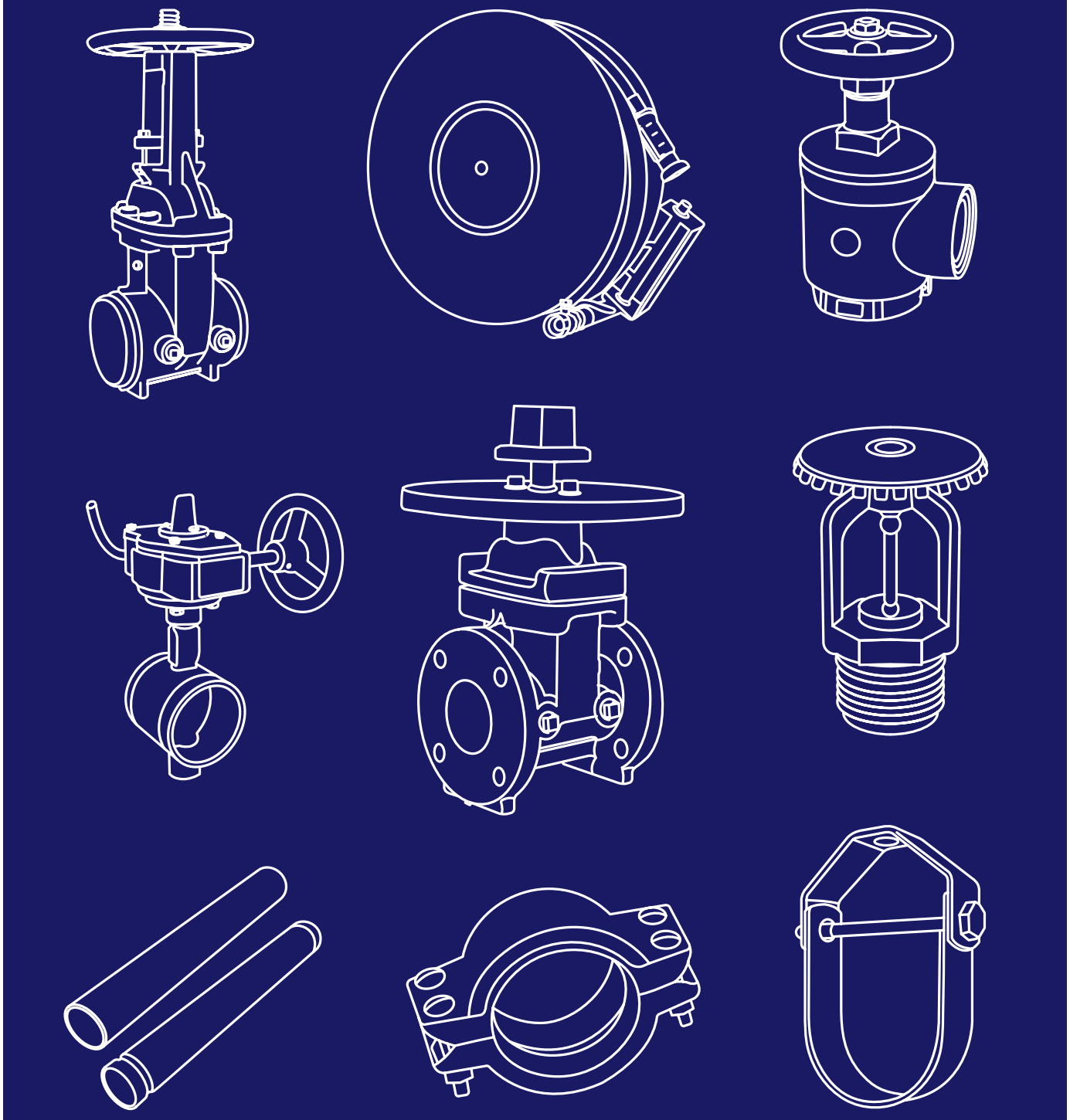
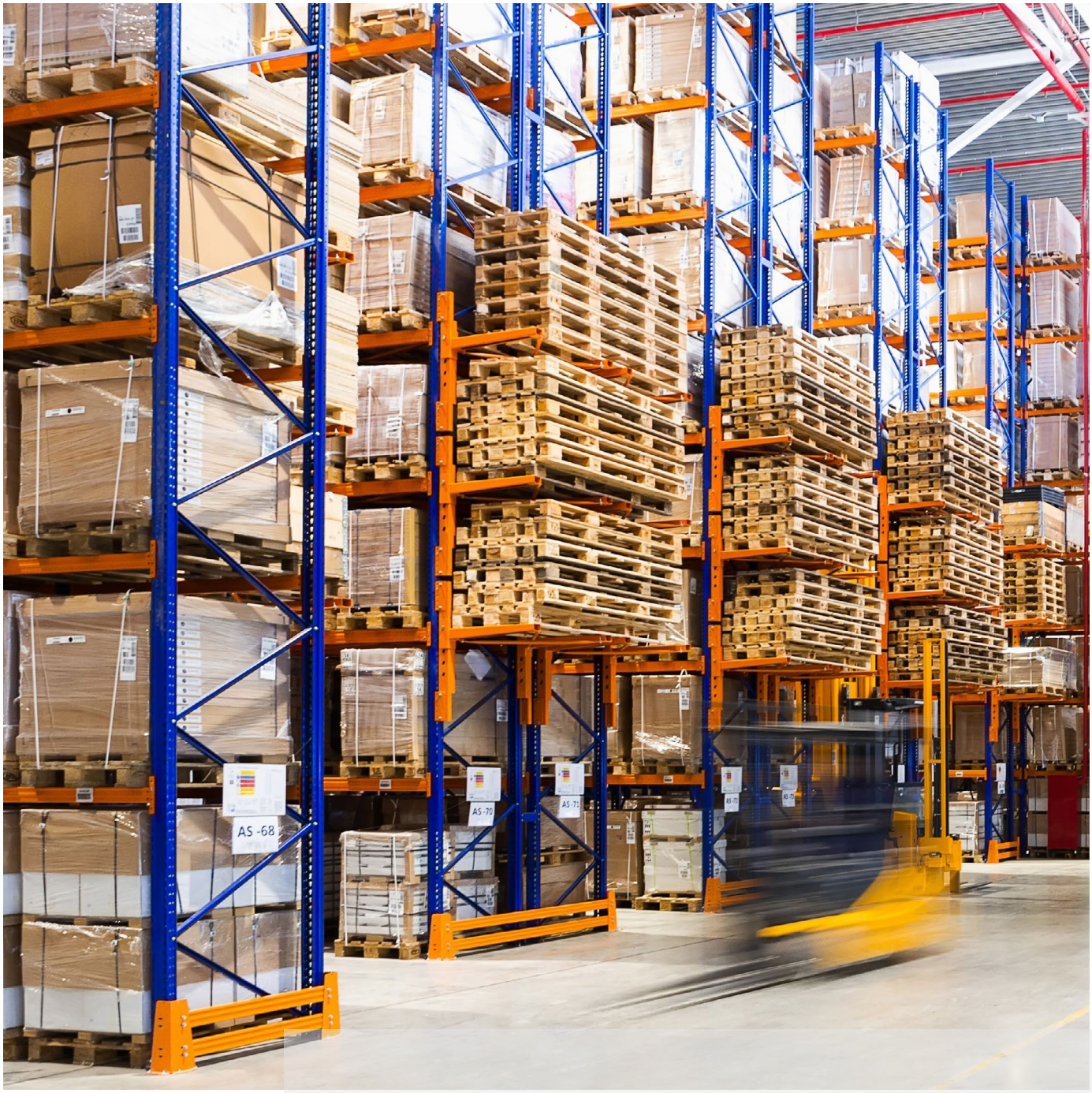


Rhinotek Fire Services
Catalogue

Version 1.05
November 2025 release

rhinotek.ae



Mission Statement

At Rhinotek, our mission is to protect lives and property by providing exceptional building services materials to our clients, while elevating the level of service across the UAE.

We are committed to delivering innovative and reliable solutions that meet the unique needs of the GCC, while adhering to the highest standards of safety, quality, and professionalism. With a team of highly trained experts and state-of-the-art equipment, we strive to be the leading provider of fire protection services in our industry.

Our goal is to build long-term relationships with our clients and revolutionise how the GCC views fire safety by making a positive impact on the communities we serve.

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DESIGNED, INNOVATED & ENGINEERED IN **AUSTRALIA**

Catalogue
Materials List

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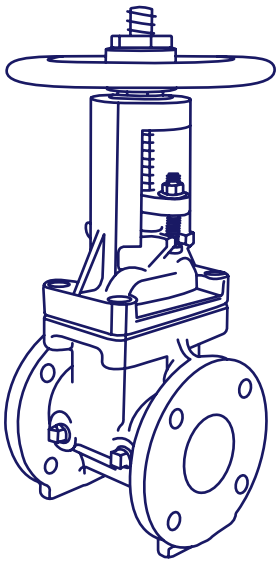
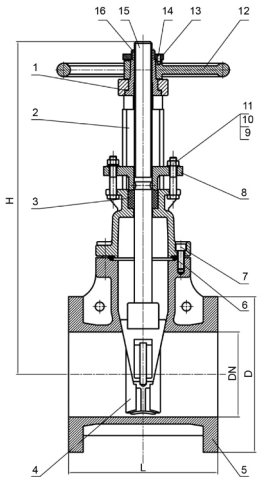
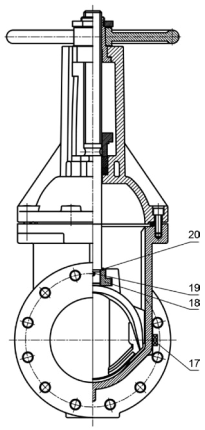
300PSI OS & Y Flanged End Gate Valve Model: OSY-FRD







Technical Features	
Nominal Pressure	300PSI
Flange Standard	ASME / ANSI B 16.1 Class 125 or ASME / ANSI B 16.42 Class 150 or BS EN 1092-2 PN 16
Sizes	2½", 3", 4", 5", 6", 8", 10", 12"
Face to Face Standard	ASME B 16.10
Approvals	UL & FM
Maximum Working Pressure	300PSI (Maximum Testing Pressure: 600 PSI) conforms to UL262 & FM 1120 / 1130
Maximum Working Temperature	80°C / 176°F
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
NPT plug on body with 2 operating nuts	

Valve Material List

No	Description	Material
1	Gasket	C95400
2	Bonnet	Ductile Iron
3	Packing	Graphite
4	Disc	Ductile Iron + EPDM
5	Body	Ductile Iron
6	Sealing Ring	EPDM
7	Bolt	Steel 1045
8	Gland	Ductile Iron
9	Nut	Steel 1045
10	Flat Washer	Steel 1045
11	Bolt	Steel 1045
12	Handwheel	Ductile Iron
13	Lock Nut	C95400
14	Locating Screw	Stainless Steel 304
15	Stem	Stainless Steel 304
16	Stem Nut	C95400
17	Plug	C95400
18	Lifting Nut	CF8
19	Pin	Stainless Steel 304
20	Sealing Ring	EPDM

Dimensions

Part No.	Size	DN	L	D	H
OSY-FRD-065	2 ½"	65	190	178	370
OSY-FRD-080	3"	80	203	191	420
OSY-FRD-100	4"	100	229	229	447
OSY-FRD-125	5"	125	254	254	547
OSY-FRD-150	6"	150	267	279	607
OSY-FRD-200	8"	200	292	343	754
OSY-FRD-250	10"	250	330	406	890
OSY-FRD-300	12"	300	356	483	1031

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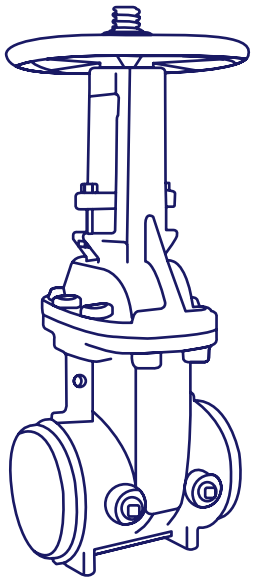
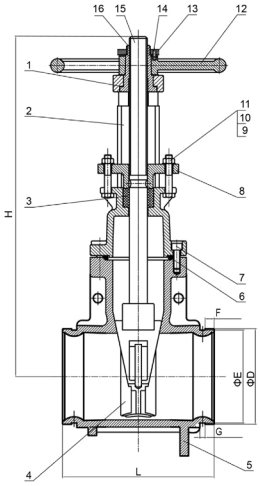
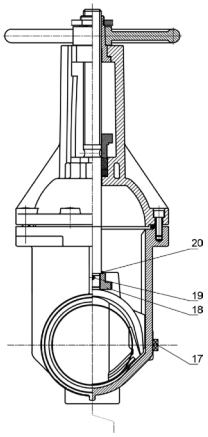
300PSI OS & Y
Grooved End Gate Valve
Model: OSY-RED







Technical Features	
Nominal Pressure	300PSI
Groove Standard	Metric or ANSI / AWWA C606
Face to Face Standard	ASME B16.10
Sizes	2½", 3", 4", 5", 6", 8", 10", 12"
Approvals	UL & FM
Maximum Working Pressure	300PSI (Maximum Testing Pressure: 600 PSI) conforms to UL 262 & FM 1120 / 1130
Maximum Working Temperature	80°C / 176°F
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
NPT plug on body with 2 operating nuts	

Valve Material List

No	Description	Material
1	Gasket	Stainless Steel 304 or C95400
2	Bonnet	Ductile Iron
3	Packing	Graphite
4	Disc	Ductile Iron + EPDM
5	Body	Ductile Iron
6	Sealing Ring	EPDM
7	Bolt	Stainless Steel 304 or Steel 1045
8	Gland	Ductile Iron
9	Nut	Stainless Steel 304 or Steel 1045
10	Flat Washer	Stainless Steel 304 or Steel 1045
11	Bolt	Stainless Steel 304 or Steel 1045
12	Handwheel	Ductile Iron
13	Lock Nut	C95400
14	Locating Screw	Stainless Steel 304 or Steel 1045
15	Stem	Stainless Steel 304 or C95400
16	Stem Nut	C95400
17	Plug	C95400
18	Lifting Nut	CF8/CF8M or C95400
19	Pin	Stainless Steel 304
20	Sealing Ring	EPDM

Dimensions

Part No.	Size	DN	L	F	D	E	G	H
OSY-RED-065	2 ½"	65	190	15.9	73	69.1	7.9	370
					76.1	72.3		
OSY-RED-080	3"	80	203	15.9	88.9	84.9	7.9	420
OSY-RED-100	4"	100	229	15.9	114.3	110.1	9.5	447
OSY-RED-125	5"	125	254	15.9	139.7	135.5	9.5	547
					141.3	137		
OSY-RED-150	6"	150	267	15.9	165.1	160.8	9.5	607
					168.3	163.9		
OSY-RED-200	8"	200	292	19	216.3	211.6	11.1	754
					219.1	214.3		
OSY-RED-250	10"	250	330	19	273	268.3	12.7	890
OSY-RED-300	12"	300	356	19	323.9	318.3	12.7	1031

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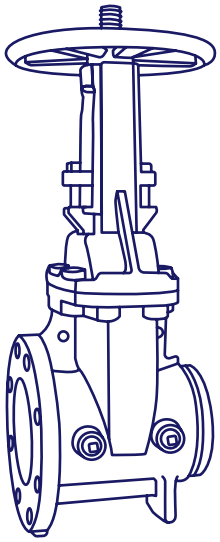
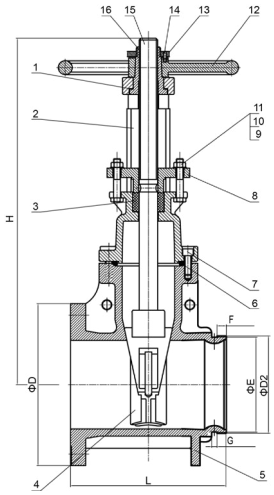
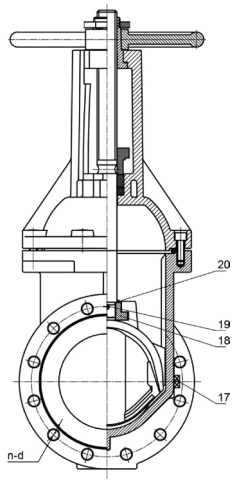
DESIGNED, INNOVATED & ENGINEERED IN **AUSTRALIA**

300PSI OS & Y Flanged X Grooved End Gate Valve Model: OSY-FRA







Technical Features	
Nominal Pressure	300PSI
Face to Face Standard	ASME B16.10
Sizes	2½", 3", 4", 5", 6", 8", 10", 12"
Flange Standard	ASME / ANSI B16.1 Class 125 or ASME / ANSI B16.42 Class 150 or BS EN1092-2 PN16
Groove Standard	Metric or ANSI / AWWA C606
Approvals	UL & FM
Maximum Working Pressure	300PSI (Maximum Testing Pressure: 600 PSI) conforms to UL262 & FM 1120 / 1130
Maximum Working Temperature	80°C / 176°F
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
NPT plug on body with 2 operating nuts	

Valve Material List

No	Description	Material
1	Gasket	Stainless Steel 304 or C95400
2	Bonnet	Ductile Iron
3	Packing	Graphite
4	Disc	Ductile Iron + EPDM
5	Body	Ductile Iron
6	Sealing Ring	EPDM
7	Bolt	Stainless Steel 304 or Steel 1045
8	Gland	Ductile Iron
9	Nut	Stainless Steel 304 or Steel 1045
10	Flat Washer	Stainless Steel 304 or Steel 1045
11	Bolt	Stainless Steel 304 or Steel 1045
12	Handwheel	Ductile Iron
13	Lock Nut	C95400
14	Locating Screw	Stainless Steel 304 or Steel 1045
15	Stem	Stainless Steel 304 or C95400
16	Stem Nut	C95400
17	Plug	C95400
18	Lifting Nut	CF8 or C95400
19	Pin	Stainless Steel 304
20	Sealing Ring	EPDM

Dimensions

Part No.	Size	DN	L	D	F	D2	E	G	H
OSY-FRA-065	2 ½"	65	190	178	15.9	73	69.1	7.9	370
						76.1	72.3		
OSY-FRA-080	3"	80	203	191	15.9	88.9	84.9	7.9	420
OSY-FRA-100	4"	100	229	229	15.9	114.3	110.1	9.5	447
OSY-FRA-125	5"	125	254	254	15.9	139.7	135.5	9.5	547
						141.3	137		
OSY-FRA-150	6"	150	267	279	15.9	165.1	160.8	9.5	607
						168.3	163.9		
OSY-FRA-200	8"	200	292	343	19	216.3	211.6	11.1	754
						219.1	214.3		
OSY-FRA-250	10"	250	330	406	19	273	268.3	12.7	890
OSY-FRA-300	12"	300	356	483	19	323.9	318.3	12.7	1031

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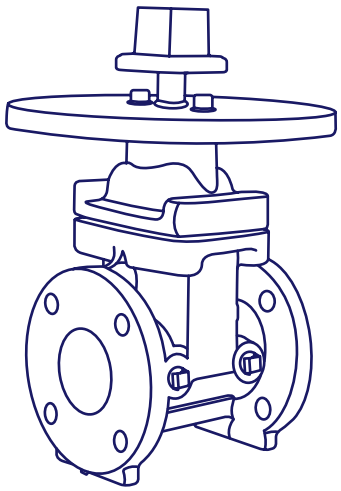
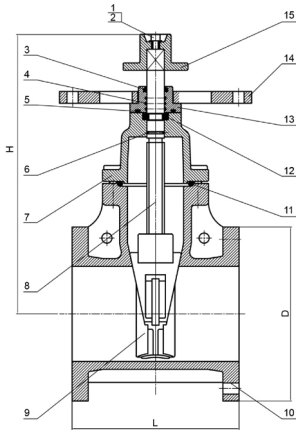
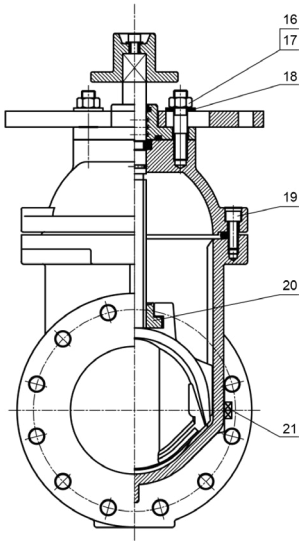
300PSI NRS
Flanged End Gate Valve
Model: NRS-FRD







Technical Features	
Nominal Pressure	300PSI
Flange Standard	ASME / ANSI B16.1 Class 125 or ASME / ANSI B16.42 Class 150 or BS EN 1092-2 PN16
Sizes	2½", 3", 4", 5", 6", 8", 10", 12"
Face to Face Standard	ASME B16.10
Approvals	UL & FM
Maximum Working Pressure	300PSI (Maximum Testing Pressure: 600PSI) conforms to UL262 & FM 1120 / 1130
Maximum Working Temperature	80°C / 176°F
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
NPT plug on body with 2 operating nuts	

Valve Material List

No	Description	Material
1	Flat Washer	Steel 1045 or Stainless Steel 304
2	Inner Hexagon Screw	Steel 1045 or Stainless Steel 304
3	Sealing Gland	EPDM
4	O-Ring	EPDM
5	Sealing Ring	EPDM
6	O-Ring	EPDM
7	Bonnet	Ductile Iron
8	Stem	Stainless Steel 304
9	Disc	Ductile Iron + EPDM
10	Body	Ductile Iron
11	Sealing Ring	EPDM
12	Retaining Ring	C95400
13	Gland	Ductile Iron
14	Terminal Pad	Ductile Iron
15	Link Block	Ductile Iron
16	Nut	Stainless Steel 304 or Steel 1045
17	Studs	Stainless Steel 304 or Steel 1045
18	Washer	Steel 1045
19	Inner Hexagon Screw	Steel 1045
20	Master Screw	C95400
21	Plug	C95400

Dimensions

Part No.	Size	DN	L	D	H
NRS-FRD-065	2 ½"	65	190	178	292
NRS-FRD-080	3"	80	203	191	322
NRS-FRD-100	4"	100	229	229	342
NRS-FRD-125	5"	125	254	254	412
NRS-FRD-150	6"	150	267	279	448
NRS-FRD-200	8"	200	292	343	534
NRS-FRD-250	10"	250	330	406	635
NRS-FRD-300	12"	300	356	483	720

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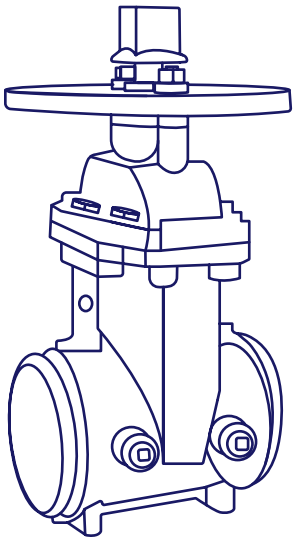
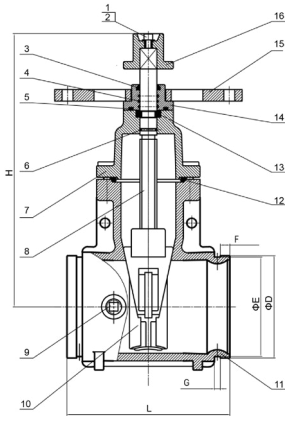
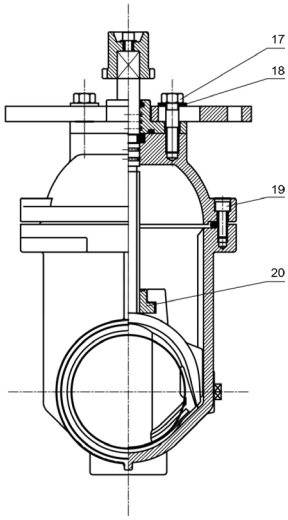
300PSI NRS
Grooved End Gate Valve
Model: NRS-RED







Technical Features	
Nominal Pressure	300PSI
Groove Standard	Metric or ANSI / AWWA C606
Face to Face Standard	ASME B16.10
Sizes	2½", 3", 4", 5", 6", 8", 10", 12"
Approvals	UL & FM
Maximum Working Pressure	300PSI (Maximum Testing Pressure: 600 PSI) conforms to UL262 & FM 1120 / 1130
Maximum Working Temperature	80°C / 176°F
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
NPT plug on body with 2 operating nuts	

Valve Material List

No	Description	Material
1	Flat Washer	Steel 1045 or Stainless Steel 304
2	Hexagon Socket Screw	Steel 1045 or Stainless Steel 304
3	Sealing Ring	EPDM
4	O-Ring	EPDM
5	Sealing Ring	EPDM
6	O-Ring	EPDM
7	Bonnet	Ductile Iron
8	Stem	Stainless Steel 304 or C95400
9	Plug	Stainless Steel 304 or C95400
10	Disc	Ductile Iron + EPDM
11	Body	Ductile Iron
12	Sealing Ring	EPDM
13	Retaining Ring	C95400
14	Gland	Ductile Iron
15	Post Flange	Ductile Iron
16	Wrench Nut	Ductile Iron
17	Bolt	Stainless Steel 304 or Steel 1045
18	Washer	Stainless Steel 304 or Steel 1045
19	Hexagon Socket Screw	Steel 1045 or Stainless Steel 304
20	Stem Nut	CF8 or C95400

Dimensions

Part No.	Size	DN	L	F	D	E	G	H
NRS-RED-065	2 ½"	65	190	15.9	73 76.1	69.1 72.3	7.9	292
NRS-RED-080	3"	80	203	15.9	88.9	84.9	7.9	322
NRS-RED-100	4"	100	229	15.9	114.3	110.1	9.5	342
NRS-RED-125	5"	125	254	15.9	139.7 141.3	135.5 137	9.5	412
NRS-RED-150	6"	150	267	15.9	165.1 168.3	160.8 163.9	9.5	448
NRS-RED-200	8"	200	292	19	216.3 219.1	211.6 214.3	11.1	534
NRS-RED-250	10"	250	330	19	273	268.3	12.7	635
NRS-RED-300	12"	300	356	19	323.9	318.3	12.7	720

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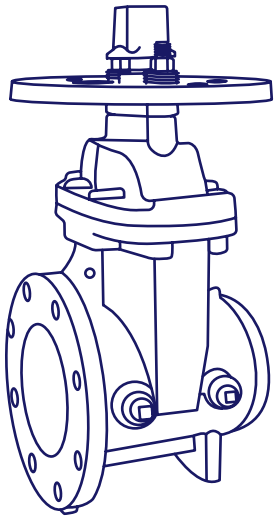
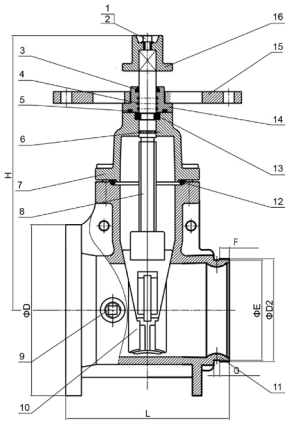
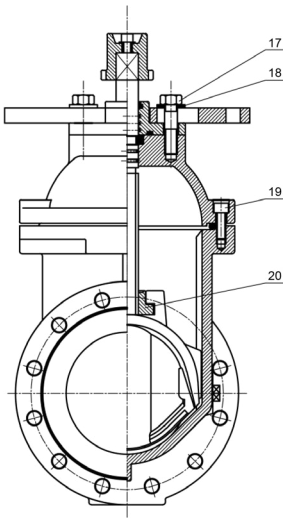
300PSI NRS Flanged X Grooved End Gate Valve Model: NRS-FRA







Technical Features	
Nominal Pressure	300PSI
Face to Face Standard	ASME B16.10
Sizes	2½", 3", 4", 5", 6", 8", 10", 12"
Flange Standard	ASME / ANSI B16.1 Class 125 or ASME / ANSI B16.42 Class 150 or BS EN1092-2 PN16
Groove Standard	Metric or ANSI / AWWA C606
Approvals	UL & FM
Maximum Working Pressure	300PSI (Maximum Testing Pressure: 600 PSI) conforms to UL262 & FM 1120 / 1130
Maximum Working Temperature	80°C / 176°F
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
NPT plug on body with 2 operating nuts	

Valve Material List

No	Description	Material
1	Flat Washer	Steel 1045 or Stainless Steel 304
2	Hexagon Socket Screw	Steel 1045 or Stainless Steel 304
3	Sealing Ring	EPDM
4	O-Ring	EPDM
5	Sealing Ring	EPDM
6	O-Ring	EPDM
7	Bonnet	Ductile Iron
8	Stem	Stainless Steel 304 or C95400
9	Plug	Stainless Steel 304 or C95400
10	Disc	Ductile Iron + EPDM
11	Body	Ductile Iron
12	Sealing Ring	EPDM
13	Retaining Ring	C95400
14	Gland	Ductile Iron
15	Post Flange	Ductile Iron
16	Wrench Nut	Ductile Iron
17	Bolt	Stainless Steel 304 or Steel 1045
18	Washer	Stainless Steel 304 or Steel 1045
19	Hexagon Socket Screw	Steel 1045 or Stainless Steel 304
20	Stem Nut	CF8 or C95400

Dimensions

Part No.	Size	DN	L	D	F	D2	E	G	H
NRS-FRA-065	2 ½"	65	190	178	15.9	73	69.1	7.9	292
						76.1	72.3		
NRS-FRA-080	3"	80	203	191	15.9	88.9	84.9	7.9	322
NRS-FRA-100	4"	100	229	229	15.9	114.3	110.1	9.5	342
NRS-FRA-125	5"	125	254	254	15.9	139.7	135.5	9.5	412
						141.3	137		
NRS-FRA-150	6"	150	267	279	15.9	165.1	160.8	9.5	448
						168.3	163.9		
NRS-FRA-200	8"	200	292	343	19	216.3	211.6	11.1	534
						219.1	214.3		
NRS-FRA-250	10"	250	330	406	19	273	268.3	12.7	635
NRS-FRA-300	12"	300	356	483	19	323.9	318.3	12.7	720

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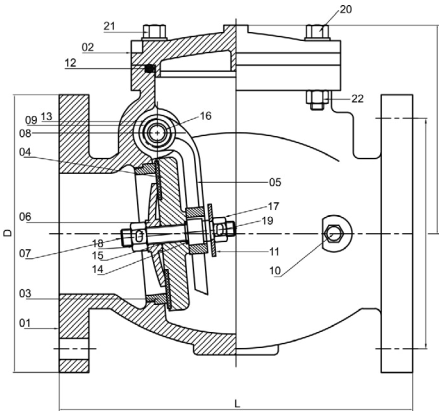
300PSI Flanged Swing Check Valve Model: FIS-FCV



Technical Features

- Design Standard: AWWA C508
- Flange Standard:
  ASME / ANSI B 16.1 Class 125
  ASME / ANSI B 16.42 Class 150
  BS EN 1092-2 PN 16
  GB / T9113.1
- Sizes: 2", 2½", 3", 4", 5", 6", 8", 10", 12"
- Face to Face Standard: ASME B16.10
- Approvals: UL, FM
- Maximum Working Pressure: 300PSI
- Maximum Testing Pressure: 600PSI
- Pressure conforms to UL 312 / FM class 1210
- Working Temperature Range: 0-80°C / 32-176°F
- Coating Details: Epoxy coated or coating upon request
- Applications:
  Used both vertically and horizontally;
  Used in one-way flow pipeline to prevent the water from back flow

Valve Material List

No	Name	Material
1	Body	Ductile Iron
2	Bonnet	Ductile Iron
3	Seat Ring	C95400
4	Disc	Ductile Iron+EPDM
5	Rocker Arm	Ductile Iron
6	Baffle Plate	C95400
7	Middle Stem	Stainless Steel 304
8	Stem	Stainless Steel 304
9	Bracket Screw	Stainless Steel 304
10	Plug	C95400
11	Gasket	Stainless Steel 304
12	O-ring	EPDM
13	O-ring	EPDM
14	O-ring	EPDM
15	O-ring	EPDM
16	Bronze Bushing	Powder Metallurgy
17	Nut	Stainless Steel 304
18	Nut	Stainless Steel 304
19	Cotter Pin	Stainless Steel 304
20	Bolt	Steel 1045
21	Bolt	Steel 1045
22	Nut	Steel 1045

Dimensions

Size	DN	L	D	H
2"	DN50	203	152	142
2½"	DN65	216	178	148
3"	DN80	241	191	163.5
4"	DN 100	292	229	172
5"	DN125	330	254	237
6"	DN150	356	279	233
8"	DN200	495	343	301
10"	DN250	622	406	348
12"	DN300	698	483	419

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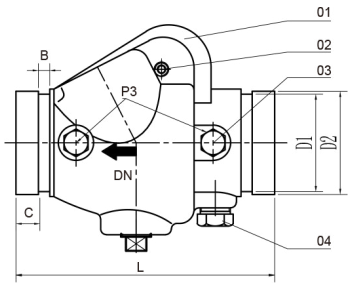
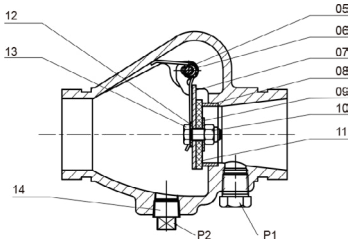
350PSI Grooved Swing Check Valve Model: FIS-GCV

Technical Features

- Groove Standard : ANSI / AWWA C606 or Metric
- Sizes: 2", 2½", 3", 4", 5", 6", 8", 10", 12"
- Approvals: UL, FM
- Maximum Working Pressure: 350PSI
- Maximum Testing Pressure: 700PSI
- Pressure conforms to UL 312 / FM class 1210
- Working Temperature Range: 0-80°C / 32-176°F
- Coating Details: Epoxy coated or coating upon request
- Other Connections: Flange*Flange; Groove*Flange; Flange*Groove
- Applications: Used in one-way flow pipeline to prevent the water from back flow





Valve Material List

No	Name	Material
1	Valve Body	Ductile Iron
2	Bolt	Steel 1045
3	Plug	Steel 1045
4	Plug	Steel 1045
5	Spring	Stainless Steel 304
6	Hinge Pin	Stainless Steel 304/Ductile Iron
7	Clapper	Stainless Steel 304
8	Seat	C95400
9	Clamping Ring	Stainless Steel 304
10	Locknut	Stainless Steel 304
11	Facing Seal	EPDM
12	Gasket	EPDM
13	Bolt	Stainless Steel 304
14	Plug	Steel 1045

Dimensions

Size	L	D1	D2	B	C	P1	P2						P3		
2"	169	57.15	60.3	7.95	15.88	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
						½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
2½"	181	69.09	73	7.95	15.88	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
		72.26	76.1			½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
3"	198	84.94	88.9	7.95	15.88	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
						½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
4"	214	110.80	114.3	9.53	15.88	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
						½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
5"	248	135.48	139.7	9.53	15.88	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
		137.03	141.3			½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
6"	270	160.78	165.1	9.53	15.88	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
		163.96	168.3			½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
8"	325	211.6	216.3	11.13	19.05	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
		214.4	219.1			½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
10"	457	268.3	273	12.7	19.05	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
						½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT
12"	535	318.3	323.9	12.7	19.05	Rc½-14	Rc½-14	Rc¾-14	Rc1-11	Rc1 ¼-11	Rc1 ½-11	Rc2-11	Rc¼-19	Rc⅜-19	Rc½-14
						½-14NPT	½-14NPT	¾-14NPT	1-11.5NPT	1¼-11.5NPT	1½-11.5NPT	2-11.5NPT	¼-18NPT	⅜-18NPT	½-14NPT

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Wet Alarm Check Valve Model: FIS-ACV1/FIS-ACV2/ FIS-ACV3/FIS-ACV4

Product Features

- Designed expressly for wet pipe fire sprinkler systems
- Working pressure rated to 300 PSI (20.7 bar)
- Flange and Groove end can be choosen
- Size from 2"-12"
- FM & UL approved

Technical Features

- Working pressure: 300PSI
- Flange Standard:
  ASME/ANSI B16.1 Class 125
  ASME/ANSI B16.42 Class 150
  BS EN 1092-2PN16
  GB/T9113.1
- Groove Standard:
  AWWA C606
  ISO6182-12
- Working Temperature Range:
  4-70°C/ 39.2-158°F
- Coating Details: Epoxy coated or coating upon request

Applications in Fire Protection

This system is applicable to the places with the ambient temperature from 4°C to 70°C. This system is generally installed in the places with fire hazards, like the hotel, shopping mall, hospital, theater, office building, conference center, warehouse, high-rise building and underground garage.

Product Description

Wet alarm check valve consists of wet alarm valve, retard chamber, pressure gauges, water motor alarm, pressure switch, drain valve and filter etc.

Alarm Check Valves act as a water flowalarm initiating device in wet pipe sprinkler systems. When water flows in the sprinkler system due to the operation of one or more automatic fire sprinklers, the alarm valve opens allowing continuous flow of water into the system, which will activate water motor bell and pressure switches.

The design of the Alarm Check Valve allows for installation under both variable and constant supply pressure conditions. The valve trim incorporates a bypass between the water supply and the wet pipe system. When pressure surges in the waters supply occur, the trim allows a small amount of water to bypass the clapper limiting the potential of false alarms.

Installation

This instrument shall be installed in places where is easy to observe and access. Install the wet alarm valve vertically on the pipes which have been properly tested for its pressure and cleaned. Please note that the arrow for water flow direction is pointing upwards. Reserve enough operation space for repair and maintenance before installation.

Step 1: Clean the system pipe network completely before installation. Ensure that the inner wall of the pipes is coated with rust-proof layer and there is no dreg or dirt in the pipes.

Step 2: In order to facilitate the observation of the pipe in which an alarm occurs, it is recommended to discharge the water from an open port or have the water discharge state easy to be observed before installation.

Step 3: Check whether there is any damage at the joint between the wet alarm valve and the flange, check whether the seal is in good condition and whether the valve disc moves flexibly, carry out the leakage test with a pressure of two times of the rated working pressure. After the test, the valve disc shall be free of leakage; If there is any problem, replace the spare parts or clear the trouble before assembling the parts together.

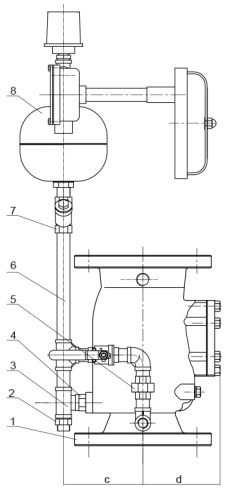
Step 4: Turn the pressure gauge to the position where the reading is clearly visible.

Step 5: The pressure switch shall be installed on the top of the delayer. This pressure switch must be installed vertically and could only be used indoors. After installation, check if it acts reliably.

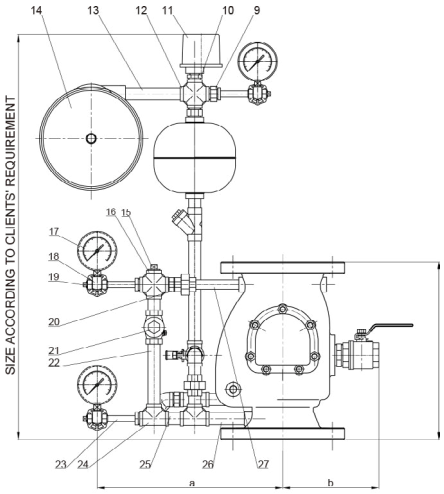
Step 6: The water motor alarm shall be installed on the top of the delayer, after installation, check if it acts reliably.

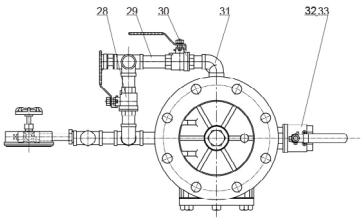
Step 7: With the exception of support from the trim piping, the retard chamber will also be binded by a clamp with the piping to avoid any movement or looseness.

Wet Alarm Check Valve Model: FIS-ACV1/ FIS-ACV2/FIS-ACV3/ FIS-ACV4



ASSEMBLY DRAWING WITHOUT COMPENSATOR SYSTEM





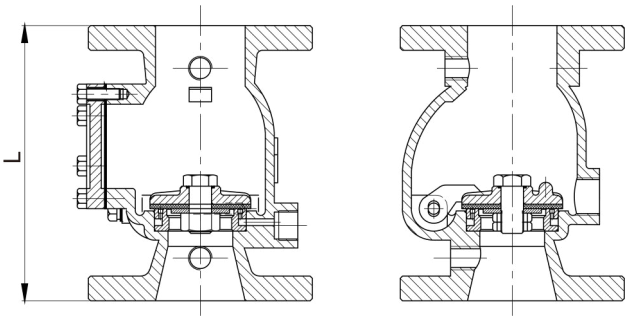
ASSEMBLY DRAWING WITHOUT COMPENSATOR SYSTEM

Dimensions				
Size	a	b	c	d
2"	340	205	145	110
2.5"	340	205	145	110
3"	340	205	145	110
4"	342	250	160	136
5"	349	274	180	162
6"	349	274	180	162
8"	415	290	205	195
10"	475	340	240	235
12"	495	368	270	270

Material List				
No	**Name**	**QTY**	**Material**	**Standard**
1	Alarm Valve Body	1	Ductile Iron	ASTM A-536 Grade 65-45-12
2	Office, Retard	1	C954	ASTM B148
3	Tee	2	SS304	ASTM A276
4	Nipple	6	SS304	ASTM A276
5	Union	1	SS304	ASTM A276
6	Nipple	1	SS304/Steel	ASTM A276/1045
7	Y Strainer	1	SS304	ASTM A276
8	Retard Chamber	1	Steel	1045, ASTM 1045
9	Reducer Bushing	1	SS304	ASTM A276
10	Reducer Bushing	1	SS304	ASTM A276
11	Pressure Switch	1	ZSJY1.6BP	Assembly
12	Cross	1	SS304	ASTM A276
13	Nipple	1	SS304/Steel	ASTM A276/1045, ASTM A29
14	Gong Assembly	1	MH-SLJL-00	Assembly
15	Plug	1	SS304 / C954	ASTM A276/1045,ASTM B148
16	Cross	2	SS304	ASTM A276
17	Pressure Gauge	3	PFE-00A 600PSI	Assembly
18	3-way Valve Gauge	3	C954	ASTM B148
19	Plug	3	Steel/C954	ASTM 1045 A276/B148
20	Orifice, Retard	1	C954	ASTM B148
21	Check Valve	1	SS304	ASTM A276
22	Nipple	1	SS304/Steel	ASTM A276/1045, ASTM A29
23	Nipple	3	SS304/Steel	ASTM A276/1045, ASTM A29
24	Tee	2	SS304	ASTM A276
25	Nipple	4	SS304/Steel	ASTM A276/1045, ASTM A29
26	Nipple	1	SS304/Steel	ASTM A276/1045, ASTM A29
27	Nipple	1	SS304/Steel	ASTM A276/1045, ASTM A29
28	Ball Valve	1	SS304	ASTM A276
29	Nipple	1	SS304/Steel	ASTM A276/1045, ASTM A29
30	Ball Valve	1	SS304	ASTM A276
31	Elbow	2	SS304	ASTM A276
32	Nipple	1	SS304	ASTM A276
33	Ball Valve	1	SS304	ASTM A276

Wet Alarm Check Valve
Model: FIS-ACV1/FIS-ACV2/ FIS-ACV3/FIS-ACV4

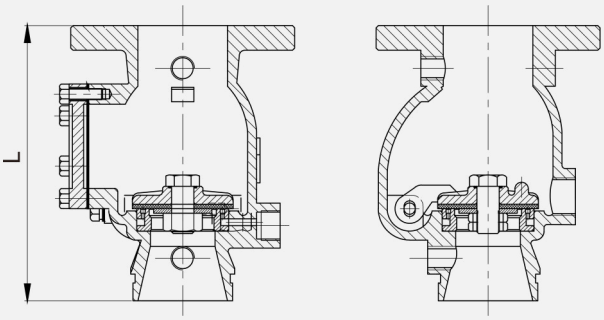
General Technical Information



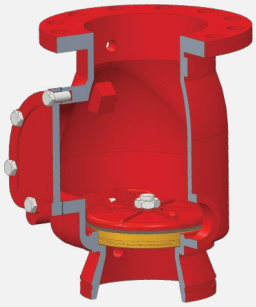
Flange*Flange

Model No FIS-ACV1

Dimension Chart		
Size	L (mm)	L (inch)
DN50(2in)	233	9.17
DN65(2.5in)	236	9.29
DN80(3in)	245	9.65
DN100(4in)	316	12.44
DN125(5in)	386	15.20
DN150(6in)	390	15.35
DN200(8in)	438	17.24
DN250(10in)	535	21.06
DN300(12in)	622	24.49

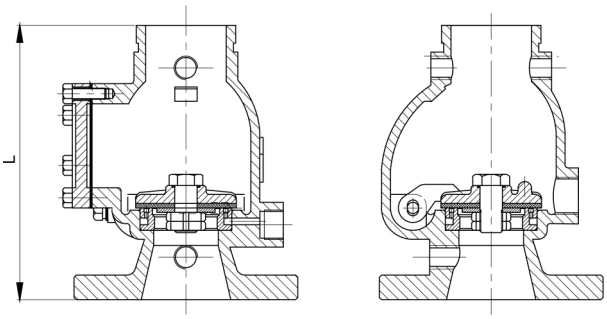


Flange*Groove



Model No FIS-ACV3

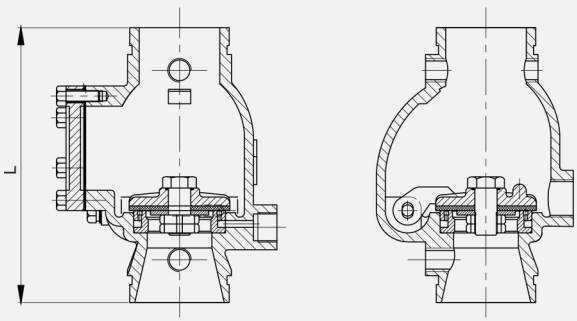
Dimension Chart		
Size	L (mm)	L (inch)
DN50(2in)	239	9.41
DN65(2.5in)	240	9.45
DN80(3in)	245	9.65
DN100(4in)	316	12.44
DN125(5in)	386	15.20
DN150(6in)	390	15.35
DN200(8in)	438	17.24
DN250(10in)	535	21.06
DN300(12in)	622	24.49



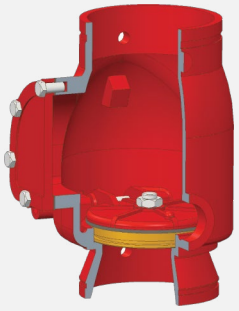
Groove*Flange

Model No FIS-ACV4

Dimension Chart		
Size	L (mm)	L (inch)
DN50(2in)	239	9.41
DN65(2.5in)	240	9.45
DN80(3in)	245	9.65
DN100(4in)	316	12.44
DN125(5in)	386	15.20
DN150(6in)	390	15.35
DN200(8in)	438	17.24
DN250(10in)	535	21.06
DN300(12in)	622	24.49



Groove* Groove



Model No FIS-ACV2

Dimension Chart		
Size	L (mm)	L (inch)
DN50(2in)	245	9.65
DN65(2.5in)	245	9.65
DN80(3in)	245	9.65
DN100(4in)	316	12.44
DN125(5in)	386	15.20
DN150(6in)	390	15.35
DN200(8in)	438	17.24
DN250(10in)	535	21.06
DN300(12in)	622	24.49

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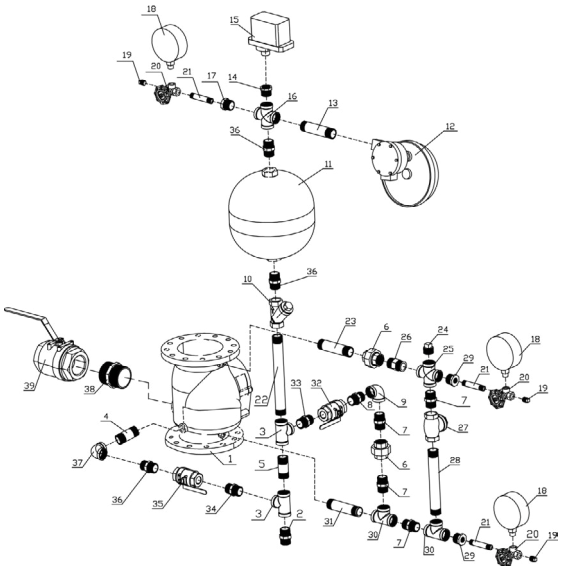
Wet Alarm Check Valve Model: FIS-ACV1/FIS-ACV2/ FIS-ACV3/FIS-ACV4

Structural Characteristics



Care and Maintenance

- Clean the dirt and foreign matters attached on the rubber seal surface of the valve disc. Generally, the service life of the rubber seals is no more than eighteen months. Replace the seals in time if they are worn out or aging.
- Clean the dirt and foreign matters from the small holes and seal surface in the groove of the valve disc seals. Be careful not to scratch the surface and keep the small holes unobstructed. If the seal surface can't be repaired, replace it with a new one.
- Clean the blockage in the filter of the alarm valve instrument timely and keep the pipeline unblocked.
- Check and clean the dirt in the delayer, and be sure that the small throttle holes will not be blocked by foreign matters.
- Check the water motor alarm every three months:

  Step 1: Turn on the alarm bell to check whether its sound is loud, immediately remove any trouble if found.

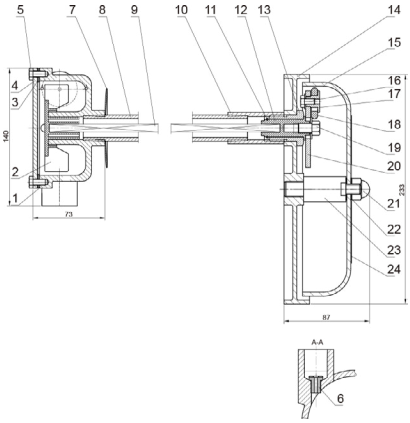
  Step 2: Remove the alarm shell and clear up the dirt and the sediment in the alarm, then reassemble the alarm shell and gaskets in turn.

  Step 3: Remove the leaking joints from the water-wheel and clear up the dirt in it.
- Check the pressure switch periodically (it is recommended to test every three months or more frequently).

Material List

No	Name	QTY	Material
1	Alarm Valve	1	Assembly
2	Orifice Restriction	1	C954
3	Tee	2	SS304/KTH350-10
4	Pipe	1	Galvanized pipe
5	Pipe	2	Galvanized pipe
6	Union	2	SS304/KTH350-10
7	Nipple	4	SS304/KTH350-10
8	Nipple	1	SS304/KTH350-10
9	Elbow	1	SS304/KTH350-10
10	Y Strainer	1	SS304
11	Retard Chamber	1	Assembly
12	Alarm Bell	1	Assembly
13	Pipe	1	Galvanized pipe
14	Nipple	1	SS304/KTH350-10
15	Pressure Switch	1	Assembly
16	Cross	1	SS304/KTH350-10
17	Nipple	1	SS304/KTH350-10
18	Pressure Switch	3	Assembly
19	Plug	3	Galvanized pipe
20	3-Way Valve	3	Assembly
21	Pipe	3	Galvanized pipe
22	Pipe	1	Galvanized pipe
23	Pipe	1	Galvanized pipe
24	Plug	1	C954
25	Cross	1	SS304/KTH350-10
26	Orifice Restriction	1	C954
27	Check Valve	1	Assembly
28	Pipe	1	Galvanized pipe
29	Nipple	2	SS304/KTH350-10
30	Tee	2	SS304/KTH350-10
31	Pipe	1	Galvanized pipe
32	Ball Valve	1	Assembly
33	Nipple	1	SS304/Galvanized pipe
34	Nipple	1	SS304/Galvanized pipe
35	Ball Valve	1	Assembly
36	Nipple	3	SS304/KTH350-10
37	Elbow	1	SS304/KTH350-10
38	Nipple	1	SS304/KTH350-10
39	Ball Valve	1	Assembly

Water Motor Gong
Model: FIS-WMG



UL FM APPROVED FIS FIS MENA

Technical Features

- Designed and manufactured in accordance with UL 193 / FM 1055
- Test Standard: UL 193 / FM 1055
- Working Temperature Range: 0-100°C / 32-212°F
- Maximum working pressure: 300PSI
- Inlet Connection: ¾" NPT
- Outlet Connection: 1" NPT

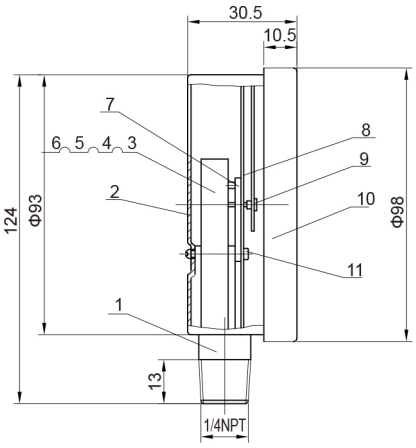
Material List

No	Name	Material
1	Driver Shell	Aluminium Alloy
2	Impeller	Delrin
3	Sealing Gasket	Epdm
4	Cover	1045 or SS304
5	Bolt	1045 or SS304
6	Nozzle	C954
7	Gasket	1566
8	Support Pipe	1045 or SS304
9	Drive Shaft	Aluminium Alloy
10	Sleeve	1045 or SS304
11	Internal Circlips	SS304
12	Drive Shaft Adaptor	Delrin
13	Supporting Screw	Aluminium Alloy or SS304
14	Bell Seat	Aluminium Alloy
15	Gong	Aluminium Alloy
16	Bolt	Aluminium Alloy or 1045
17	Support Nut	Aluminium Alloy
18	Striker	Phenolic Resin
19	Bolt	Aluminium Alloy or SS304
20	Joint	Aluminium Alloy
21	Screw Nut	Aluminium Alloy or SS304
22	Gasket	Delrin
23	Supporting Post	Aluminium Alloy or SS304
24	Tag	Paper

Pressure Gauge
Model: FIS-PG

FM APPROVED

FIS MENA



Technical Features

- Pressure Gauge for Fire Protection system
- Designed and manufactured in accordance with FM2311
- Test Standard: FM2311
- Working Temperature Range: 0-80°C / 32-176°F
- Wiring Inlet Size: ¼" NPT
- Nominal Pressure:
  0-300PSI
  0-600PSI
- Approvals: FM approved

Material List

No	Name	Material
1	Base	HPb59-1
2	Watchcase	1008
3	Spring Pipe	Qsn0.8-2
4	Rivet	HPb59-1
5	Connecting Rod	H62
6	Free End	H62
7	Inner Core Combination	HPb59-1
8	Dial Plate	HPb59-1
9	Pointer Component	Al
10	Watchcase	PC
11	Rivet Column	HPb59-1

Deluge Valve
Model: FIS-DVL-FF/ FIS-DV-FF/FIS-DVL-FG/ FIS-DV-FG/FIS-DVL-GG/ FIS-DV-GG

Product Features

- Valve can be activated remotely
- Remote action control mode: electric or pneumatic
- Connection: Groove*Groove, Flange*Groove, Flange*Flange
- Suitable for horizontal or vertical installation
- FM UL with 300PSI

Technical Features

- Design Standard: ASME B16.42-2016
- Flange Standard: Class 150/300 or DIN2501 PN16/PN25
- Groove Standard: AWWA C606 / IS0 6182
- Working Temperature Range: 4-52°C / 39.2-125.6°F
- Reserved alarm valve system interface: 3/4"NPT
- Available Sizes: 2"-8"
- Maximum Working Pressure: 250PSI or 300PSI (can be chosen)
- Maximum Testing Pressure: 500PSI/600PSI conforms to UL260, FM1011/1012/1013, FM1020

Applications in Fire Protection

It is suitable for automatic sprinkler systems installed in places such as residential houses, hospitals, hotels, shopping malls, factories, airports, casinos, libraries, stadiums, convention and exhibition centers. The operating ambient temperature shall not be lower than 4°C and not higher than 52°C.

Product Description

FIS deluge valve adopts the Straight-through cone diaphragm seal, using the good self-sealing of the cone to open and close the valve. The pressure in the diaphragm chamber is released by electric, pneumatic or manual methods, the valve disc opens automatically so that the water can flow into the sprinkler system in one direction automatically and alarm at the same time. It can also form a variety of deluge alarm and firefighting systems with other components.

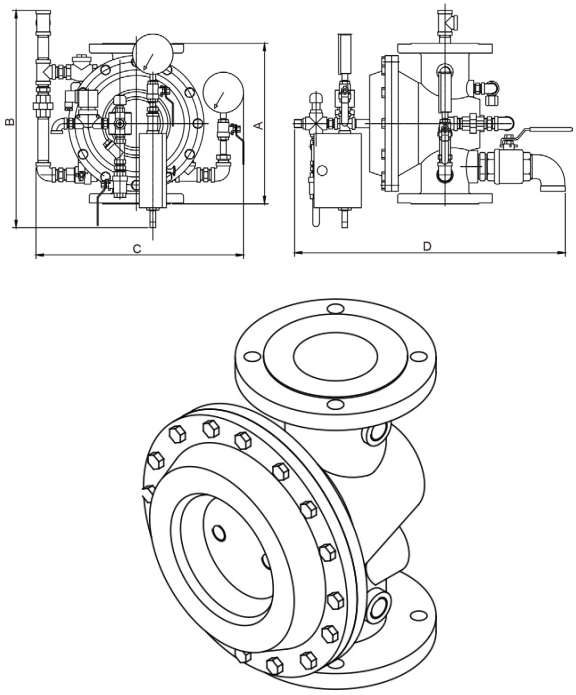
Note

The deluge valve with groove end connections may be ordered with or without control valves (water supply valve and upper service valve).

Deluge Valve
Model: FIS-DVL-FF/ FIS-DV-FF/ FIS-DVL-FG/FIS-DV-FG/ FIS-DVL-GG/FIS-DV-GG

Dimension

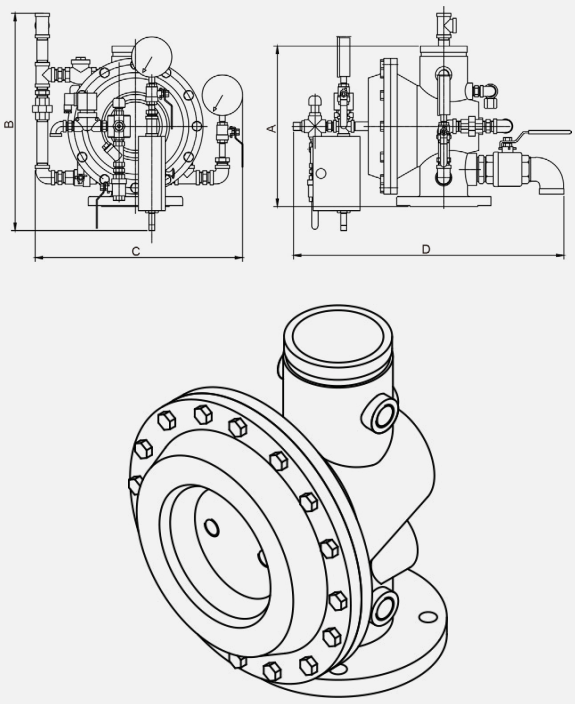
Figure 1 Outline dimensional drawing of deluge valve (Flange connection)



Type Description	
FIS-DVL-FF	FXF 250PSI
FIS-DV-FF	FXF 300PSI

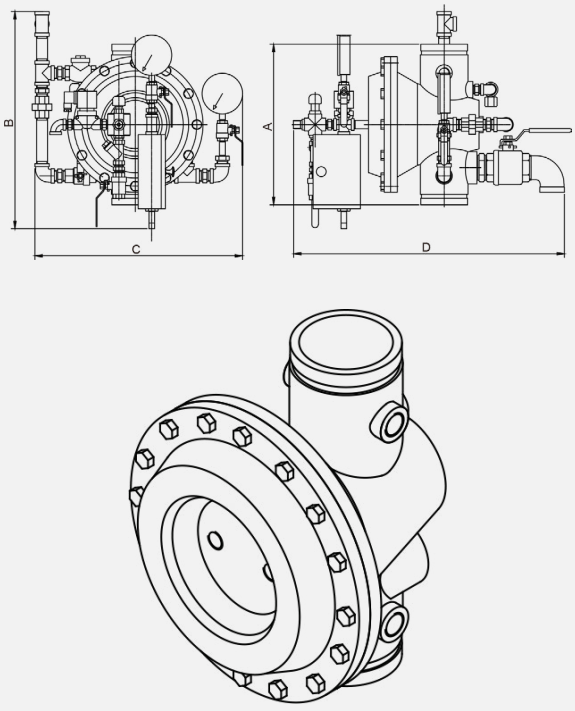
Diameter (in/mm)	A (mm)	B (mm)	C (mm)	D (mm)
2/50	287±2	440±10	460±10	500±10
2.5/65	287±2	440±10	460±10	540±10
3/80	340(324)±2	450±10	490±10	570±10
4/100	390(350)±2	520±10	490±10	680±10
6/150 8/200	508(460)±2 584(570)±2	570±10 900±10	570±10 650±10	800±10 900±10

Figure 2 Outline dimensional drawing of deluge valve (Grooved * Flange connection)



Type Description	
FIS-DVL-FG	FXG 250PSI
FIS-DV-FG	FXG 300PSI

Figure 3 Outline dimensional drawing of deluge valve (Grooved connection)



Type Description	
FIS-DVL-GG	GXG 250PSI
FIS-DV-GG	GXG 300PSI

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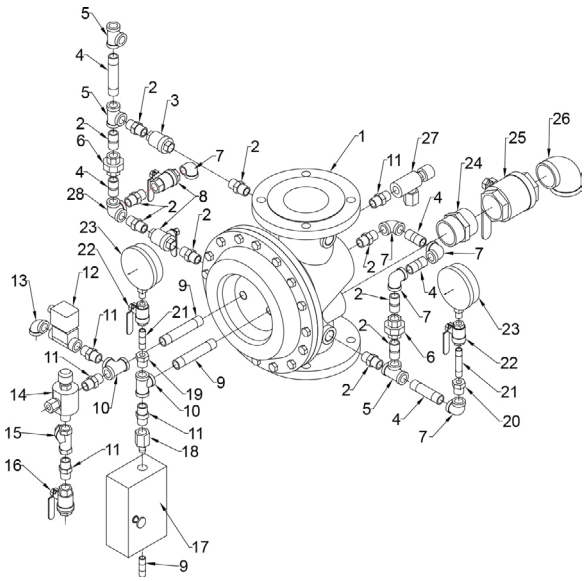
Deluge Valve
Model: FIS-DVL-FF/ FIS-DV-FF/ FIS-DVL-FG/FIS-DV-FG/ FIS-DVL-GG/FIS-DV-GG



Structural characteristics

No	Name	QTY	Size	Material	Standard
1	Deluge valve	1			
2	Butt joint	n	3/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
3	Check valve	1	3/4"	CF8/CF8M/ C95400/C95800	ASTM A351/ B148
4	Pipe fittings	n	3/4"	Gr.A/TP304/ C60800	ASTM A53/ A312/B111M
5	Tee joint	n	3/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
6	Union	2	3/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
7	90° Joint	n	3/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
8	Ball valve	2	3/4"	CF8/CF8M/ C95400/C95800	ASTM A351/ B148
9	Pipe fittings	n	1/2"	Gr.A/TP304/ C60800	ASTM A53/ A312/B111M
10	Tee joint	2	1/2"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
11	Butt joint	n	1/2"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
12	Solenoid valve	1	1/2"		
13	90° Joint	n	1/2"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
14	Manual reset valve	1	1/2"		
15	Y type filter	1	1/2"	CF8/CF8M/ C95400/C95800	ASTM A351/ B148
16	Ball valve	2	1/2"	CF8/CF8M/ C95400/C95800	ASTM A351/ B148
17	Emergency release valve bank	1			
18	Release valve joint	1	1/2"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
19	Joint	1	1/2"-1/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
20	Joint	1	3/4"-1/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
21	Pipe fittings	n	1/4"	Gr.A/TP304/ C60800	ASTM A53/ A312/B111M
22	Ball valve	2	1/4"	CF8/CF8M/ C95400/C95800	ASTM A351/ B148
23	Pressure gauge	2			
24	Butt joint	1	3/4"-2"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
25	Ball valve	1	3/4"-2"	CF8/CF8M/ C95400/C95800	ASTM A351/ B148
26	90° Joint	1	3/4"-2"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148
27	Drip valve	1	1/2"		
28	Stereoscopic tee joint	1	3/4"	DI/CF8/CF8M/ C95400/C95800	ASTM A536/ A351/B148

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Deluge Valve
Model: FIS-DVL-FF/ FIS-DV-FF/ FIS-DVL-FG/FIS-DV-FG/ FIS-DVL-GG/FIS-DV-GG

Installation

The deluge valve shall be installed in a room with a temperature greater than 4°C and less than 52°C with drainage facilities. It shall be installed close to the protection target for easy operation to reduce the length of the water distribution pipeline and improve the system response time.

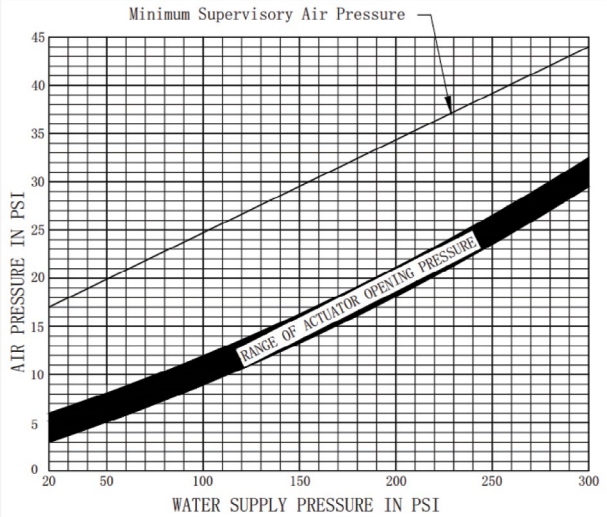
The deluge valve can be installed horizontally or vertically. But the installation of the solenoid valve shall always keep the solenoid core in a vertical position. The set air pressure of the pneumatic actuator shall not be lower than the recommended minimum system air pressure (Table 1). Service clearance shall be reserved in four directions, with the distance to the ground of 1.2m, the distance from both sides to the wall not less than 0.5m, and the distance from the front to the wall not less than 1.2m.

The water supply control valve in front of the alarm valve and control valve behind the alarm valve shall be installed for convenience of repair and commissioning.

The valve body shall be installed as per the water flow direction indicated by arrows. Before installation, pipes shall be rinsed till the water becomes clear, in order to avoid the sealing performance of the valve from being affected by the deposited sediment or sewage.

Water motor alarm bell shall be installed on the outer walls of common aisle or near the duty room, and the steel pipe connecting the alarm bell to the deluge valve shall not be greater than 20m in length.

Table 1. Recommended minimum system air pressure



Reset Procedure

a. Switch off the water supply control valve in front of the alarm valve and the ball valve on the water injection loop.

b. Switch on the drain valve (switch off the auxiliary drain valve on the system, if any) to drain all the residual water in the system.

c. Push the reset button of the drip valve at least twice; the water has been drained when the water flow is small or stops.

d. Switch off all drain valves and the emergency manual release valve, and make sure the solenoid valve or pneumatic actuator is off and the ball valve on the alarm test loop is off.

e. Switch on the ball valve on the water injection loop, and slowly press the reset valve reset button. In this process, it is normal for the reset valve to have water flowing out of the drain hole, and the water flow will stop when the pressure in the diaphragm chamber increases. Release the reset button when the indication values on the water supply pressure gauge and the diaphragm chamber pressure gauge are the same. Then completely switch on the water supply control valve in front of the alarm valve. The system enters the ready condition.

f. Make sure the alarm system is open when the deluge valve group in a ready condition.

Deluge Valve
Model: FIS-DVL-FF/ FIS-DV-FF/ FIS-DVL-FG/FIS-DV-FG/ FIS-DVL-GG/FIS-DV-GG

Care and Maintenance

Alarm test, switch function test and other tests should be carried out regularly after the system is installed. After the test, open the drain valve of the alarm system, and close the valve after the water draining out from the valve group.

Alarm Test

The test is recommended to be conducted once a month (the frequency can be set based on factors such as fire rating and use environment). The test shall be conducted according to the following procedures:

a: Switch on the ball valve on the alarm test loop when the valve bank is in the ready condition to make the water motor alarm bell or pressure switch actuate and alarm.

b: Confirm that the alarm system is normal, switch off the ball valve on the alarm test loop to stop the alarm.

Manual Switch Function Test

The test is recommended to be conducted once every quarter (the frequency can be set based on factors such as fire resistance and use environment) in the warm climate. Before the test, drainage measures should be taken near the valve bank, and the alarm valve bank is in a ready condition. The test should be conducted according to the following procedures:

a: Notify relevant personnel and departments.

b: Switch off the control valve behind the alarm valve.

c: Manually switch on the ball valve of the emergency release valve bank, and the readings on the pressure gauge in the diaphragm chamber decrease.

d: Press the reset button of the drip valve, sufficient water flows out of the drain loop or the alarm system alarms, proving the successful actuation of the deluge alarm valve.

e: Complete the reset following steps a through f, and switch on the control valve behind the alarm valve. The manual switch function test is completed.

Remote Switch Function Test

The test is recommended to be conducted once every quarter (the frequency can be set based on factors such as fire resistance and use environment) in the warm climate. Before the test, drainage measures should be taken near the valve bank, and the alarm valve bank is in a ready condition. The test should be conducted according to the following procedures:

a: Notify relevant personnel and departments.

b: Switch off the control valve behind the alarm valve.

c: Simulate a fire, and actuate a detector, so that the solenoid valve pneumatic actuator is switched on, and the readings on the pressure gauge in the diaphragm chamber drop.

d. Press the reset button of the drip valve, sufficient water flows out of the drain loop or the alarm system alarms, proving the successful actuation of the deluge alarm valve.

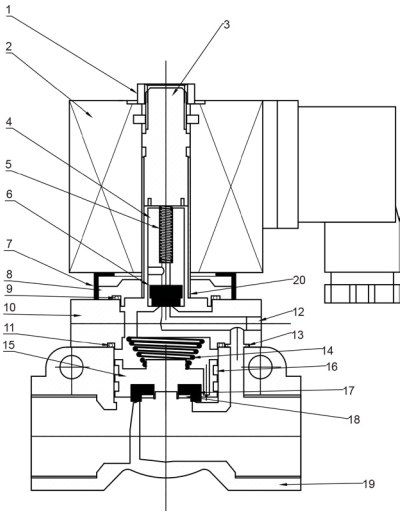
e: Complete the reset following steps a through f, and switch on the control valve behind the alarm valve. The remote switch function test is completed.

The deluge valve should be maintained and repaired regularly, and the maintenance and repair shall be conducted when the valve is disabled. The operating steps are shown as below:

a: Switch off the water supply control valve in front of the alarm valve and the control valve behind the alarm valve, and switch off the ball valve on the water injection loop.

b: Switch on the drain valve and emergency release valve of the deluge alarm valve. Maintenance and repair can be conducted at this time.

Solenoid Valve
Model: FIS-SV

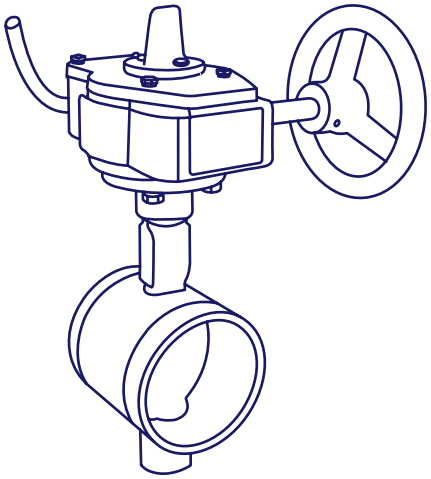


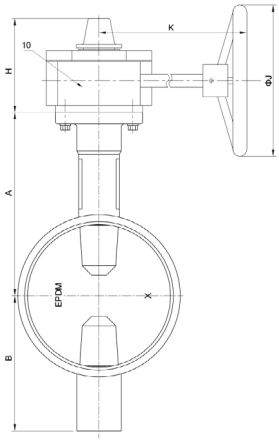
Technical Features

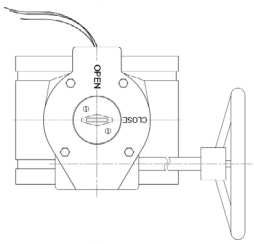
- Working Temperature Range: 0-85°C / 32-185°F
- Connection Sizes: 1/2" NPT
- Maximum Working Pressure: 350PSI
- Electrical Ratings: DC24V, 16W IP68
- Medium: Water and Air

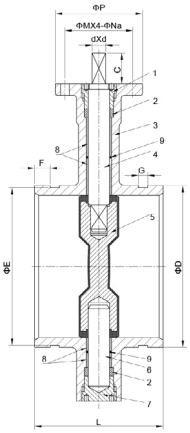
Structure Character		
No	**Name**	**Material**
1	Nut	A3
2	Coil	
3	Static Iron Core	1J117
4	Dynamic Iron Core	1J117
5	Spring	304H
6	Chock Plug	EPDM
7	Plastic Housing	
8	Flange	ZCuAl8Mn13Fe3
9	O-ring (Ø25xØ1.5)	EPDM
10	Valve Body I	ZCuAl8Mn13Fe3
11	O-ring (Ø28xØ1.5)	EPDM
12	Casting Insert	ZCuAl8Mn13Fe3
13	O-ring (Ø6xØ1.2)	EPDM
14	Pagoda Spring	304H
15	Piston	ZCuAl8Mn13Fe3
16	Wearing Ring	
17	Hard Seang	PTFE
18	Flat Washer	SOS304
19	Valve Body Ii	ZCuAl8Mn13Fe3
20	Casing Pipe	S304

Butterfly Valve / Grooved End Model: BVG-001









Technical Features	
Conforms	ANSI / AWWA C606 or Metric Standard Clear Waterway design
Connection	Grooved End
Sizes	2", 2½", 3", 4", 5", 6", 8", 10", 12"
Approvals	UL & FM
Maximum Working Pressure	300 PSI (Maximum Testing Pressure: 600 PSI) conforms to UL1091 & FM 1112
Maximum Working Temperature	80°C / 176°F
Application	Indoor & Outdoor Use, Fire inflow water, drain pipe, high-rising building fire fighting system, industrial factory building fire protection system
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
Disc	Ductile Iron EPDM Rubber Encapsulated
Top Flange Standard	ISO 5211

Valve Material List

No	Description	Material
1	Upper Shaft Sealing Nut	WCB
2	Shaft Seal	EPDM
3	Body	Ductile Iron
4	Upper Shaft	416 Stainless Steel
5	Disc + Rubber Seat	Ductile Iron + EPDM
6	Lower Shaft	416 Stainless Steel
7	Lower Shaft Sealing Nut	WCB
8	Stem Bushing	PTFE / C95400
9	O-Ring	EPDM
10	Gearbox	

Dimensions

Part No.	Size	A	B	C	D	E	F	G	H	K		J	P	M	N	d	L
BVG-001-050	2"	110	85	32	60.3	57.15	15.9	7.9	111	153	218	152	90	70	9	10	81
																	88
BVG-001-065	2 ½"	125	95	32	73	69.1	15.9	7.9	111	153	218	152	90	70	9	10	96.4
					76.1	72.3											
BVG-001-080	3"	140	100	32	88.9	84.9	15.9	7.9	111	153	218	152	90	70	9	11	97
BVG-001-100	4"	160	100	32	114.3	110.1	15.9	9.5	111	153	218	152	90	70	9	14	115.1
BVG-001-125	5"	170	125	32	139.7	135.5	15.9	9.5	111	153	218	152	90	70	9	14	132.4
					141.3	137											148
BVG-001-150	6"	190	140	32	165.1	160.9	15.9	9.5	111	153	218	200	90	70	9	16	132.4
					168.3	164											148
BVG-001-200	8"	230	175	32	219.1	214.4	19	11.1	126	210	232	300	125	102	12	19	133
					216.3	211.6											147.4
BVG-001-250	10"	260	200	45	267.4	262.6	19	12.7	126	210	232	300	125	102	12	24	159
					273	268.3											
BVG-001-300	12"	300	240	45	318.5	312.9	19	12.7	161	249		350	150	125	14	26	165
					323.8	318.3											

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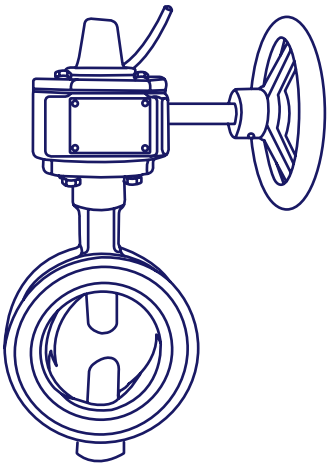
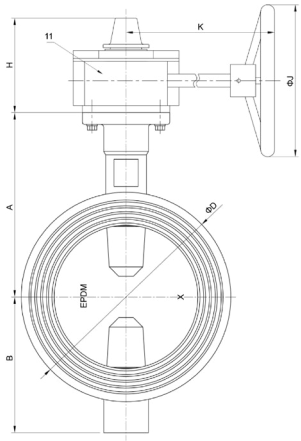
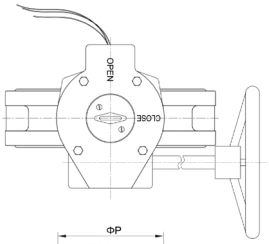
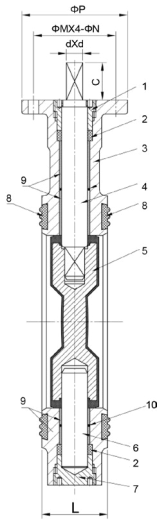
Butterfly Valve / Wafer End Model: BVW-001









Technical Features	
Flange Standard	ANSI 125 / 150, DIN2501 PN10/16
Connection	Wafer End
Sizes	2", 2½", 3", 4", 5", 6", 8", 10", 12"
Approvals	UL & FM
Maximum Working Pressure	300 PSI (Maximum Testing Pressure: 600 PSI) conforms to UL1091 & FM 1112
Maximum Working Temperature	80°C / 176°F
Application	Indoor & Outdoor Use, Fire inflow water, drain pipe, high-rising building fire fighting system, industrial factory building fire protection system
Coating Details	Epoxy coated interior and exterior by Electrostatic Spray or coating upon request
Disc	Ductile Iron EPDM Rubber Encapsulated
Top Flange Standard	ISO 5211

Valve Material List

No	Description	Material
1	Upper Shaft Sealing Nut	WCB
2	Shaft Seal	EPDM
3	Body	Ductile Iron
4	Upper Shaft	416 Stainless Steel
5	Disc + Rubber Seat	Ductile Iron + EPDM
6	Lower Shaft	416 Stainless Steel
7	Lower Shaft Sealing Nut	WCB
8	End Face Seal	EPDM
9	Stem Bushing	PTFE / C95400
10	O-Ring	EPDM
11	Gearbox	

Dimensions

Part No.	Size	A	B	C	D	H	K		J	P	M	N	d	L
BVW-001-050	2"	110	85	32	100	111	153	218	152	90	70	9	10	42
BVW-001-065	2 ½"	125	95	32	112	111	153	218	152	90	70	9	10	44.2
BVW-001-080	3"	140	100	32	120	111	153	218	152	90	70	9	11	45.3
BVW-001-100	4"	160	100	32	161	111	153	218	152	90	70	9	14	52
BVW-001-125	5"	170	125	32	182	111	153	218	152	90	70	9	14	54.4
BVW-001-150	6"	190	140	32	216	111	153	218	200	90	70	9	16	55.8
BVW-001-200	8"	230	175	32	260	126	210	232	300	125	102	12	19	60.5
BVW-001-250	10"	260	200	45	320	126	210	232	300	125	102	12	24	66.5
BVW-001-300	12"	300	240	45	375	161	249		350	150	125	14	26	76.9

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Vane-Type Waterflow Indicator Model: FIS-WFS

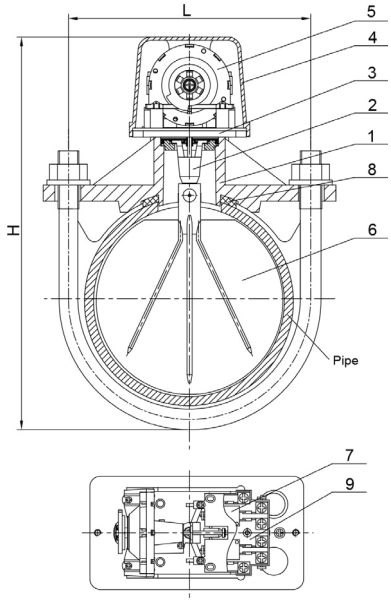


Figure 1 Outline Drawing

Technical Features

- Size: DN50-DN250 / 2"-10"
- Working Pressure: 450PSI & 300PSI
- Sensitivity:
  FM: 1. No-alarm flow ≤15L / min
  2. Alarm flow >15L / min, ≤75L / min

  UL: 1. No-alarm flow ≤15L/min
  2. Alarm flow >15L/min, ≤37.5L/min
- Capacity of Switch Contacts:
  AC 125 / 250V 8A
  DC 24V 3A
  DC 30V 2.5A
- Working Temperature Range: 0-49°C / 32-120.2°F
- Steel Pipe: SCH10-40
- 0-90 Seconds Field Replaceable Retard

Technical Information

- I. Overview
  The vane type water flow switch use in wet pipe systems only. Water flow in the pipe deflects a vane, which produces a switched output usually after a specified delay
- II. Main Components
  FIS-WFS series water flow indicator is mainly composed of the saddle, blade rack, bottom plate, outer cover, Air delay device, micro-switch, junction box, etc.

  1. The main outline drawing is shown in Figure 1 Outline Drawing

  2. Main dimensions of water flow indicator are shown in Table 1

  3. Materials of the main components are shown in Table 2

Table 1 - Dimensions

Size	Nominal Pipe Size OD. (mm)	L (mm)	H (mm)
2"	60.3	85	188
2.5"	73/76.1	92	200
3"	88.9	106	220
4"	114.3	134	245
5"	141.3/139.7	162	272
6"	168.3/165.1	189.5	298
8"	219.1/216.3	240	350
10"	273	293	405

Vane-Type Waterflow Indicator Model: FIS-WFS

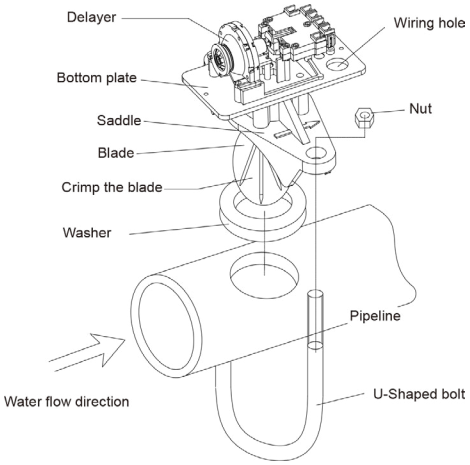


Figure 2 Installation Drawing

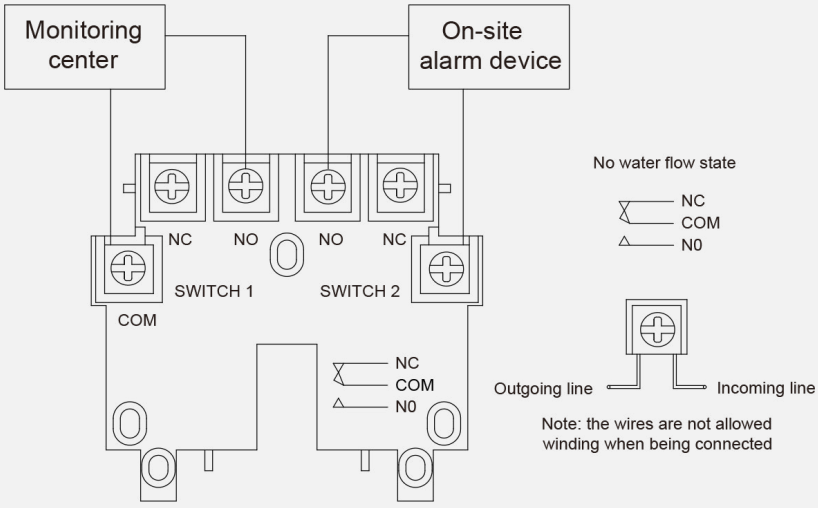
Installation, Debugging and Precautions

Installation of water flow indicator:

- At the pre-set installation position, use a tapper to drill on the main pipeline and remove burrs according to the product specification;
- Roll up the blade into a small size and put it into the pipeline, install the U-shaped bolt and fasten it up with two fastening nuts, and the specific installation drawing is shown in Figure 2

Materials List

No	Name	QTY	Material	Standard
1	U-type bolt	1	ASTM A36	ASTM A36 / A36M
2	Vane	1	LLDPE	
3	Sealing Gastket	1	EPDM	ASTM D2000
4	Framework	1	ASTM A536 65-45-12	ASTM A536
5	Connector	1	S.S. 304	ASTM A276
6	Shaft	1	S.S. 304	ASTM A276
7	Plastic Bracket	1	POM	
8	Base Plate	1	S.S. 304	ASTM A351
9	Dust Proof Gasket	1	EVA	
10	Outer Shell	1	A03600	ASTM B85
11	Decelerator	1		
12	Microswitch	2		
13	Thread Connecting Spring	1	S.S. 304	ASTM A276
14	Sealing	1	S.S. 304 + EPDM	ASTM A276 / ASTM D2000
15	SS Bracket	1	S.S. 304	ASTM A276
16	Hollow Pin	1	S.S. 304	ASTM A276



Wiring diagram / Figure 3

Table 3

Specification	Hole size
DN50, DN65	32+2mm
DN80-DN250	51+2mm

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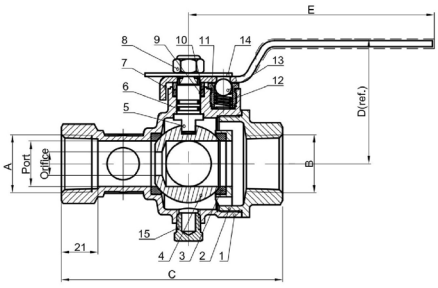
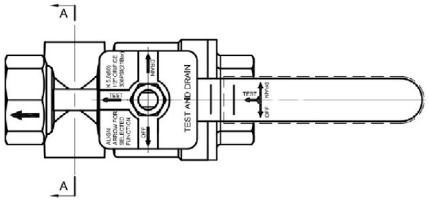
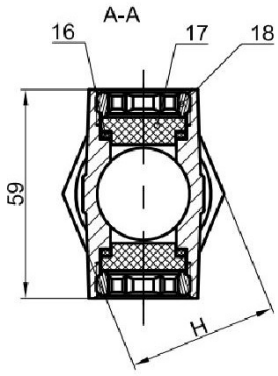
Test and Drain Valve
Model: FIS-TD

FIS FIS MENA







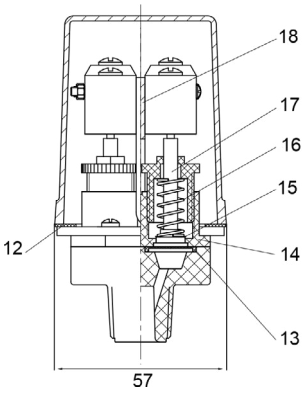
Key Features

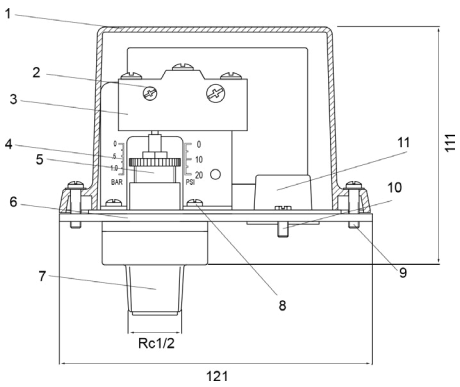
- Working Pressure: 300 PSI
- Size: 1", 1-1/4", 1-1/2", 2"
- K-Factor: 5.6
- Certificated Size: Positive positioning of handle for OFF, TEST, or DRAIN.
- Large, integral sight glass on both sides.

Dimensions						
A/B	**Orifice**	**Port**	**C**	**D (ref.)**	**E**	**H**
NPT 1"	1/2 (0.512)	1.024	5	2.76	5.16	1.65
NPT 1-1/4"	1/2 (0.528)	1.024	5	2.76	5.16	1.65
NPT 1-1/2"	1/2 (0.524)	1.575	6.57	3.5	6.34	2.28
NPT 2"	1/2 (0.524)	1.575	6.57	3.5	6.34	2.28

Materials				
Item	**Drawing No**	**Name**	**QTY**	**Material**
1	Q2968-141-01 (FIS)	Body	1	C35330/C87800
2	Q2968-141-02	Cap	1	C35330/C87800
3	Q2938-100-03	PTFE	2	PTFE
4	413-44.5 x 26 x 8-K5.6	Ball	1	C35330/C87800
5	Q2968-100-05	Stem	1	C35330/C87800
6	0-10 x 1.8-NBR	O-Ring	2	NBR (A70±5)
7	Q2968-100-07 (FIS)	Handle	1	Q235A/304
8	LM-M10 x 10-Q235A	Nut	1	Q235A
	LM-M 10 x 10-304	Nut	1	304
9	Q2938-100-09	Gland Packing	1	PTFE
10	Q2938-100-10	Gland Ring	1	C37700
11	Q2968-100-11	Gland Nut	1	C37700
12	Q2958-100-18	Spring	1	302/304
13	GZ-Ø9.53	Steel Ball	1	304
14	Q2968-100-14 (FIS)	Indicator Plate	1	Q235A/304
15	Q2938-100-15	Plug	1	C35330/C87800
16	Q2928-100-11	Washer	2	NBR (A70±5)
17	Q2928-100-12	Sight Glass	2	LEXAN
18	Q2928-100-13	Retaining Ring	2	C37700

Pressure Switch
Model: FIS-PS





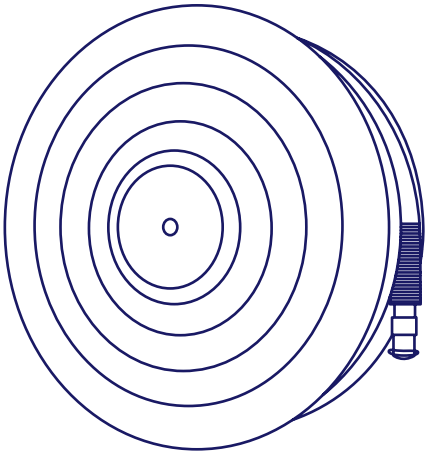
Technical Features

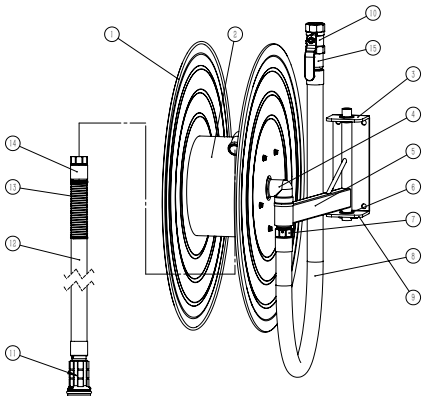
- Dimension: 121mm (4 ¾") *57mm (2 ¼") *111mm (4 ⅜")
- Wiring Inlet Size: ½" NPT
- Differential Pressure Setting: 1 PSI (cannot be adjusted after consignment)
- Maximum Working Pressure: 300PSI
- Switch Contact: double SPDT
- Contact Capacity: 15Amps under 125 / 250 VAC, 2.5Amps under 30 VDC
- Dust Proof and Waterproof Lever: IP66
- Working Temperature Range: -40-60°C / -40-140°F
- Tamper proof fasteners on outer cover

Technical Specifications

No	Name	QTY	Material
1	Outer Cover	1	YZAlSi11Cu3
2	Bolt	2	Q235
3	2-Micro Switch	2	Assembly
4	Calibration Sticker	1	PET
5	Regulating Screw	1	Reinforced Nylon
6	Base	1	Q235
7	Joint	1	Reinforced Nylon
8	Galvanized Inner Plum Tapping Screw	2	20Mn
9	Green Slotted Screw with Hexagon Head	1	Q235
10	Tamper-proofing Screw	2	D667
11	Incoming Line Coil	1	PE-LD
12	Gasket Seal	1	EPDM
13	Diaphragm	2	EPDM
14	Connecting Base	1	Reinforced Nylon
15	Flat Washer	2	06Cr18Ni11Ti
16	Regulating Spring	2	60Si2MnA
17	Pushrod	2	Reinforced Nylon
18	Bracket	1	Q235

Manual Hose Reel
Model: FIS-07-B (25mm)
Model: FIS-08-A (19mm)





EN 671-1:2012 LPCB Ref. 1038BKa

FIS MENA

Parts Name	
No	**Description**
1	Hose Reel Disc
2	Roller
3	Bracket
4	Manual Waterway
5	Swinging Arm
6	Locking Screw
7	Inlet Joint
8	Connection Hose
9	Holder
10	Valve
11	Nozzle
12	Fire Hose
13	Spring Jacket
14	Outlet Joint
15	Connector

Product Characteristics	
No	**Description**
1	Full brass waterway which will never rot. We use nipples not hose clamps to fill in the interface between hose and waterway. Once screwed tightly, no leakage.
2	Hose reel with powder coated and anti-ultraviolet side discs. There can be pressure gauge at the reel axis.
3	High pressure resistance; working at 30kg pressure but not affected.
4	Endurance test on reel rotation; after over 3000 rotations, hose reels show no visible leakage. Our swinging hose reels are able to swing 1000 times to minimum 170° and show no visible leakage or damage.
5	High pressure spray. The nozzle can be adjusted to jet/spray.
6	Our hose reels can be also used for cleaning when used for fire fighting.
7	Fire hose with anti-aging and anti-ultraviolet function. Maximum WP is 12Bar. Average BP can be up to 45Bar.

Product Specification & Installation Measurement

Model	Hose Specification (mm)	Diameter (mm)	Bracket Length (mm)	Reel Width (mm)	Remarks
FIS-07-A	25mm x 25m / 30m	600 / 555	320	150 / 180	/
FIS-08-B	19mm x 25m / 30m	555	300	150	/

Usage	
1	Open the valve ⑩, pull hose towards fire, open nozzle ⑪ to spray/jet and aim at base of fire.
2	After use, close the valve ⑩, drain water from hose, rewind the hose and close nozzle ⑪.

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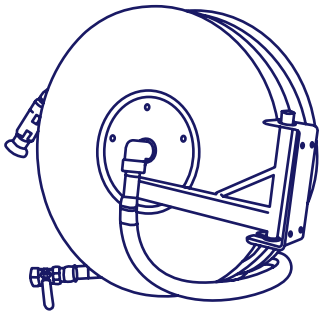
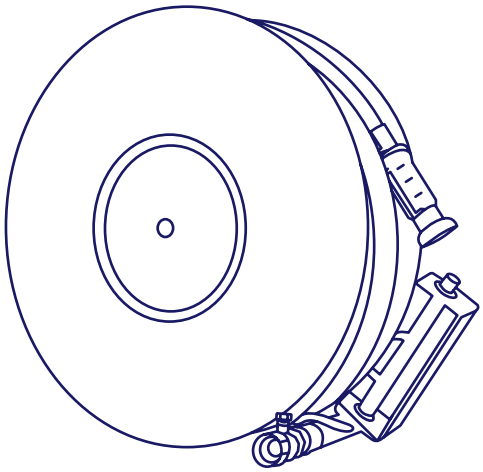
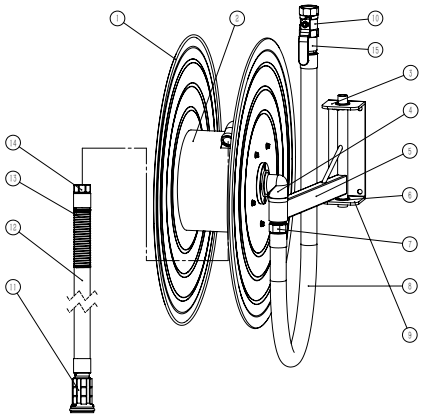
Automatic Hose Reel
Model: FIS-06-B (25mm)
Model: FIS-10-B (19mm)







EN 671-1:2012 LPCB Ref. 1038BKa

FIS MENA

Parts Name

No	Description
1	Hose Reel Disc
2	Roller
3	Bracket
4	Automatic Waterway
5	Swinging Arm
6	Locking Screw
7	Inlet Joint
8	Connection Hose
9	Holder
10	Valve
11	Nozzle
12	Fire Hose
13	Spring Jacket
14	Outlet Joint
15	Connector

Product Characteristics

No	Description
1	Full brass waterway which will never rot. We use nipples not hose clamps to fill in the interface between hose and waterway. Once screwed tightly, no leakage.
2	Waterway automatic mechanism will be fully opened by no more than 3 complete revolutions of the reel. Hose reel with powder coated and anti-ultraviolet side discs. There can be pressure gauge at the reel axis.
3	High pressure resistance; working at 30kg pressure but not affected.
4	Endurance test on reel rotation; after over 3000 rotations, hose reels show no visible leakage. Our swinging hose reels are able to swing 1000 times to minimum 170° and show no visible leakage or damage.
5	High pressure spray. The nozzle can be adjusted to jet/spray.
6	Our hose reels can be also used for cleaning when used for fire fighting.
7	Fire hose with anti-aging and anti-ultraviolet function. Maximum WP is 12Bar. Average BP can be up to 45Bar.

Product Specification & Installation Measurement

Model	Hose Specification (mm)	Diameter (mm)	Bracket Length (mm)	Reel Width (mm)	Remarks
FIS-06-B	25mm x 20m / 30m	600 / 555	300	150 / 180	Pressure Gauge Optional
FIS-10-B	19mm x 20m / 30m	555	280	150	Pressure Gauge Optional

Usage

1	According to the indication on hose reel, spin the reel ① 2-3 rotations to "ON" direction. The automatic waterway ④ will be open. Then pull hose towards fire, open nozzle to spray/jet and aim hose at fire.
2	After use, rewind the hose in "OFF" direction on hose reel.

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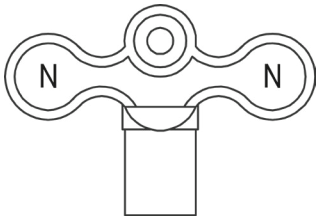
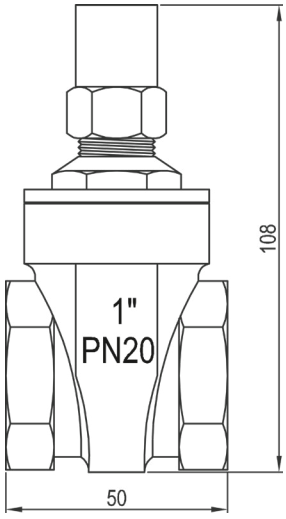
Lock Shield Valve
Model: FIS-LS/FIS-HW





FIS MENA Lock Shield Valve is usually installed where unauthorized operation has to be avoided. A typical application of this valve is installing these at inlet pipe to the hose reel where it can be opened only by key and key kept by maintenance or fire safety department.

Features

- Solid Wedge, non-rising stem, screwed in bonnet.
- Valves are manufactured in accordance to BS 5154.
- Service temperature -10 to +66°C.
- Pressure rating is PN 20.
- End connection is BSPT threaded.
- Material: Brass

SPECIFICATION			
Model No	**Size**	**Pressure Rate**	**Description**
FIS-LS	1"	PN20	Copper alloy gate valve with lockshield
FIS-HW	1"	PN20	Copper alloy gate valve with handwheel

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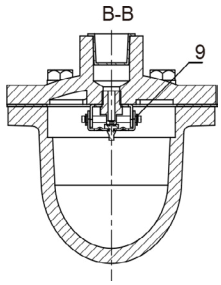
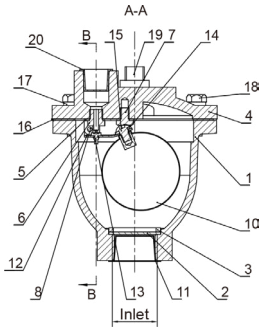
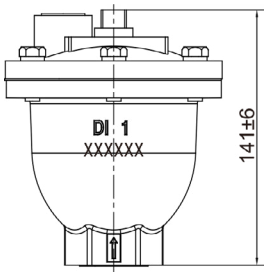
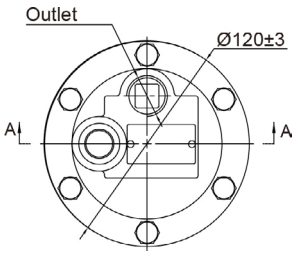
Air Release Valve
Model: FIS-ARV









Technical Features

- Inlet Size: 1”
- The inlets of the valves are 1-11 1/2NPT or Rc 1, the outlets of the valves are 1/2-14NPTor Rc 1/2
- Design Standard: in accordance with UL 2573 / FM1344
- Test Standard: Pressure conforms to UL 2573 / FM1344
- Working Temperature Range: 0-100°C /32-212°F
- Working Pressure: 175PSI
- Test Pressure: Leakage Test 7PSI / 263PSI, Strength Test 350PSI
- Advantages: This valve can ensure the excellent leak tightness and good venting capabilities under the rated working pressure.
- Application: Use in wet pipe sprinkler systems, or with horizontal split case pumps.

Connections for Installation

- The inlet connections shall be made using the external threads of tapered pipe thread 1-11 1/2NPT conforming to the standard ASME B 1.20.1-2013, and the outlet connections shall be made using the external threads of tapered pipe thread 1/2-14NPT conforming to the standard ASME B 1.20.1-2013.
- The inlet connections shall be made using the external threads of tapered pipe thread Rc 1 conform to the standard ISO 7-1-1994,and the outlet connections shall be made using the external threads of tapered pipe thread Rc 1/2 conforming to the standard ISO 7-1-1994.

Valve Material List

S./N.	Description of Parts	Materials
1	Valve Body	Ductile Iron
2	Filter Screen	SS316
3	Gasket Ring	Carbon Steel
4	Bonnet	Ductile Iron
5	Yoke	SS316
6	Valve Seat	SS316
7	Bolt	SS316
8	Valve Shaft	SS316
9	E Type Retainer Ring	SS304
10	Ball	SS316
11	Big Protective Cover	Plastic
12	Lever	SS316
13	Poppet	EPDM
14	Spring Washer	SS316
15	Hex Socket Head Bolt	SS304
16	Asbestos-free Gasket	CN-705
17	Spring Washer	Carbon Steel
18	Bolt	Carbon Steel
19	Plug	Ductile Iron
20	Small Protective Cover	Plastic

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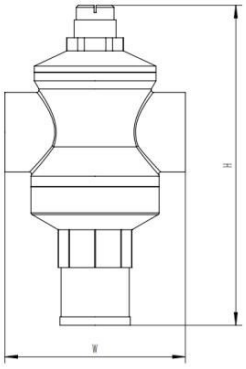
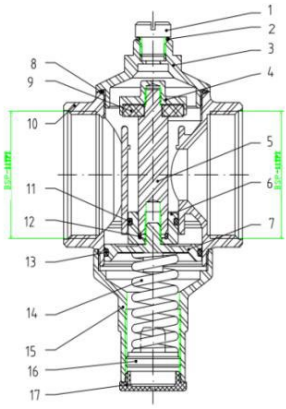
Pressure Reducing Valve
Model: FIS-PRV

FIS MENA





Charateristics

- Female / Female thread
- Body: Brass nickel-plated brass
- Working temperatures: 0°C-80°C
- Factory preadjustment: 3-4 bar
- Pressure gauge connection thread: G1/4"

Components List

No.	Description	Material	Qty	No.	Description	Material	Qty
1	Upper Cap	ABS	1	10	Body	Brass	1
2	Valve Seat	Brass	1	11	Gasket	NBR	1
3	Stem	Brass	1	12	Gasket	NBR	1
4	Gasket	NBR	1	13	Gasket	NBR	1
5	Spindle	Brass	1	14	Spring	Carbon Spring Steel	1
6	Seat	Brass	1	15	Seat	Brass	1
7	Piston	Brass	1	16	Spring Seat	Brass	1
8	Gasket	NBR	1	17	Lower Cap	ABS	1
9	Sealing	NBR	1	-	-	-	-

Sizes and Pressure

Size	Dimension		Inlet	Outlet	Max. Inlet Pressure	Outlet Pressure
	W (mm)	H (mm)				
1" (25mm)	86	152	BSP1"	BSP1"	20Bar (290PSI)	1-4Bar (14.5-58PSI)

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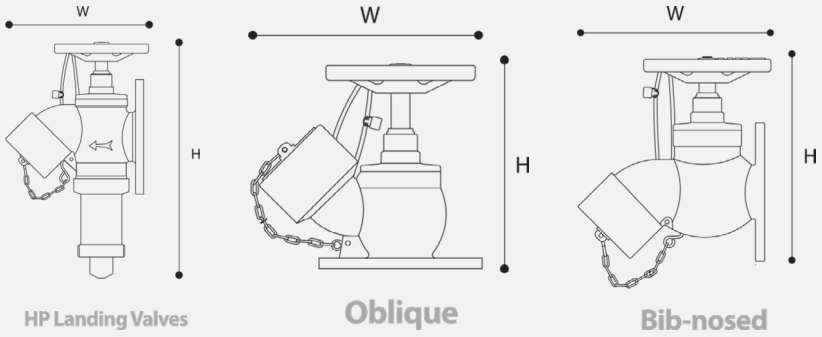
Landing Valves Model: FIS-OLVT/ FIS-OLVF/FIS-BLVT/ FIS-BLVF

BS 5041-1 LPCB ref. 1153AAe

FIS MENA

Model	Valve Types	Size	H (mm)	W (mm)	Inlet	Outlet
FIS-OLVF	Oblique	DN65	182	223	DN65 (Flanged)	BS336
FIS-OLVT		DN65	190	205	2 ½" BSPT (male)	
FIS-BLVF	Bib-nosed	DN65	380	205	DN65 (Flanged)	BS336
FIS-BLVT		DN65	380	205	2 ½" BSPT (male)	



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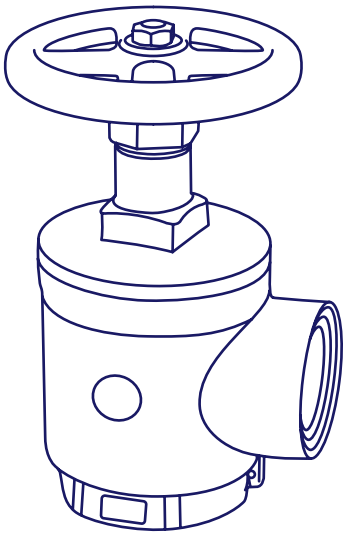
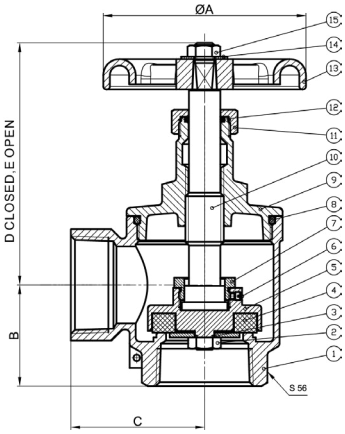
Landing Valve
Model: FIS281
(Female X Female)





Technical Features	
Used with a Fire Hose Rack Assembly or as a Fire Department outlet connection	
DOUBLE FEMALE	
Standard Equipment	Female NPT inlet and outlet Forged brass valve Red hand wheel
Optional Finishes	PB - Polished Brass RC - Rough Chrome Plated PC - Polished Chrome Plated
NYFD	2 ½" FNPT x FNPT 1 ½" FNPT x FNPT
Maximum Working Pressure	300 PSI
Options	Male adaptor available

Valve Material List

No	Description	Material
1	Body	ASTM B283 C37700
2	Nut	ASTM B283 C37700
3	Washer	304
4	Seat Seal	EPDM (A70)
5	Holder	C37700
6	Set Screw	304
7	Lock Nut	ASTM B283 C37700
8	O-Ring	EPDM (A70)
9	Bonnet	ASTM B283 C37700
10	Stem	ASTM B283 C37700
11	Lock Nut	ASTM B283 C37700
12	O-Ring	EPDM (A70)
13	Handle Wheel	ZL 102
14	Wheel Washer	304
15	Wheel Nut	ASTM B283 C37700

Dimensions

Part No.	Size	A	B	C	D	E
FIS281-040FF	1 ½" x 1 ½"	100	50	66	119	145
FIS281-065FF	2 ½" x 2 ½"	127	68	84	157	200

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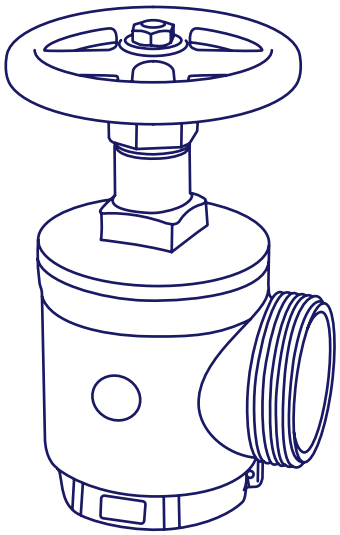
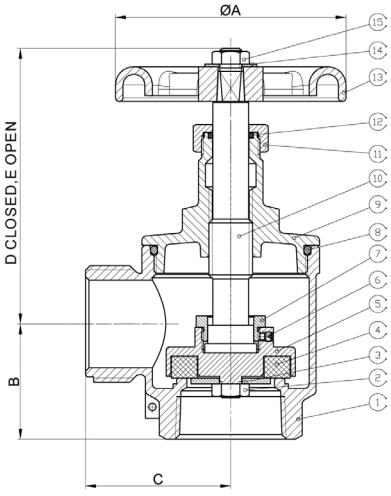
Landing Valve
Model: FIS281
(Female X Male)





Technical Features	
Used with a Fire Hose Rack Assembly or as a Fire Department outlet connection	
FEMALE X MALE	
Standard Equipment	Female NPT inlet x male hose thread outlet Forged brass valve Red hand wheel
Optional Finishes	PB - Polished Brass RC - Rough Chrome Plated PC - Polished Chrome Plated
Thread	2 ½" FNPT x MNST MBCT, MONT, MPHX, MQST, MCLV, MTEM
NYFD	1 ½" FNPT x MNST MNPSH
Maximum Working Pressure	300 PSI
Options	Female adaptor available

Valve Material List

No	Description	Material
1	Body	ASTM B283 C37700
2	Nut	ASTM B283 C37700
3	Washer	304
4	Seat Seal	EPDM (A70)
5	Holder	ASTM B283 C37700
6	Set Screw	304
7	Lock Nut	ASTM B283 C37700
8	O-Ring	EPDM (A70)
9	Bonnet	ASTM B283 C37700
10	Stem	ASTM B283 C37700
11	Lock Nut	ASTM B283 C37700
12	O-Ring	EPDM (A70)
13	Handle Wheel	ZL 102
14	Wheel Washer	304
15	Wheel Nut	ASTM B283 C37700

Dimensions

Part No.	Size	A	B	C	D	E
FIS281-040FM	1 ½" x 1 ½"	100	50	63	119	145
FIS281-065FM	2 ½" x 2 ½"	127	68	79	157	200

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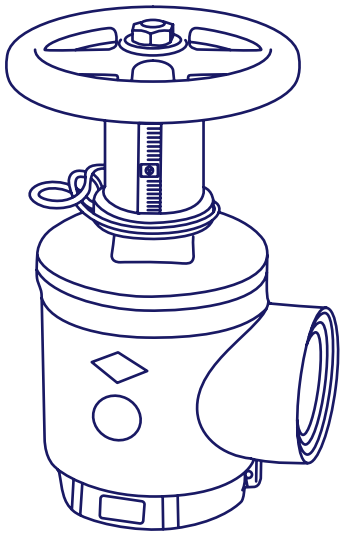
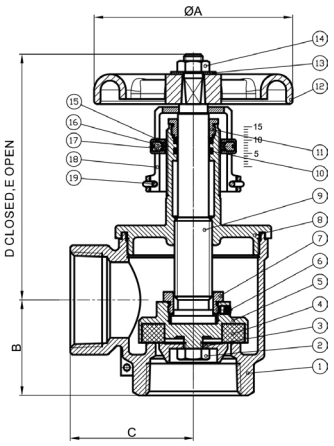
Pressure Reducing and Restricting Device Model: FIS282 (Female X Female)





Technical Features	
Pressure Reducing Device Angle Valve 175 lb Rated. Adjustable restriction of residual pressure up to 175 lb. Locking pin device restricts full opening of valve by untrained personnel. Pin may be removed by firefighters to allow full opening of valve.	
DOUBLE FEMALE	
Standard Equipment	Female NPT inlet and outlet Forged brass valve Red hand wheel
Optional Finishes	PB - Polished Brass RC - Rough Chrome Plated PC - Polished Chrome Plated
Maximum Working Pressure	UL Certificate 175 PSI FM Certificate 175 PSI / 300 PSI
Options	Male adaptor available

Valve Material List

No	Description	Material
1	Body	ASTM B283 C37700
2	Nut	ASTM B283 C37700
3	Washer	304
4	Seat Seal	EPDM (A70)
5	Holder	ASTM B283 C37700
6	Set Screw	304
7	Lock Nut	ASTM B283 C37700
8	Bonnet	ASTM B283 C37700
9	Stem	ASTM B283 C37700
10	O-Ring	EPDM (A70)
11	Lock Nut	ASTM B283 C37700
12	Handle Wheel	ZL 102
13	Wheel Washer	304
14	Wheel Nut	ASTM B283 C37700
15	Collar	ASTM B283 C37700
16	Washer	PA6
17	Set Screw	304
18	Set Numbers	ASTM B283 C37700
19	Wire	304

Dimensions

Part No.	Model	Size	A	B	C	D	E
FIS282-040FF	FIS282	1 ½" x 1 ½"	100	48	62	123	145
FIS282-065FF	FIS282	2 ½" x 2 ½"	127	67	83	165	206

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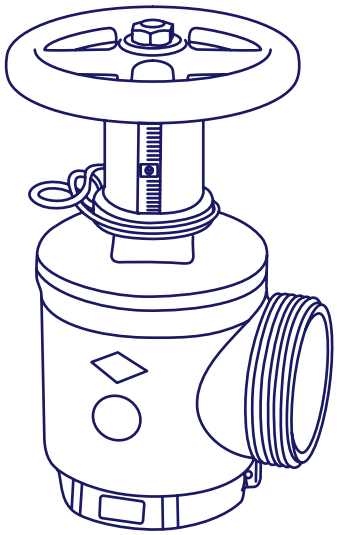
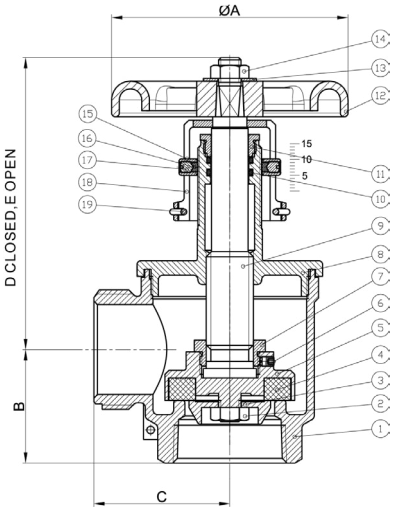
Pressure Reducing and Restricting Device Model: FIS282 / FISJ282 (Female X Male)





Technical Features

Pressure Reducing Device Angle Valve 175 lb. Rated Adjustable restriction of residual pressure up to 175 lb. Locking pin device restricts full opening of valve by untrained personnel. Pin may be removed by firefighters to allow full opening of valve.	
FEMALE X MALE	
Standard Equipment	Female NPT inlet x male hose thread outlet Forged brass valve Red hand wheel
Optional Finishes	PB - Polished Brass RC - Rough Chrome Plated PC - Polished Chrome Plated
Maximum Working Pressure	UL Certificate 175 PSI FM Certificate 175 PSI / 300 PSI
Options	Female adaptor available

Valve Material List

No	Description	Material
1	Body	ASTM B283 C37700
2	Nut	ASTM B283 C37700
3	Washer	304
4	Seat Seal	EPDM (A70)
5	Holder	ASTM B283 C37700
6	Set Screw	304
7	Lock Nut	ASTM B283 C37700
8	Bonnet	ASTM B283 C37700
9	Stem	ASTM B283 C37700
10	O-Ring	EPDM (A70)
11	Lock Nut	ASTM B283 C37700
12	Handle Wheel	ZL 102
13	Wheel Washer	304
14	Wheel Nut	ASTM B283 C37700
15	Collar	ASTM B283 C37700
16	Washer	PA6
17	Set Screw	304
18	Set Numbers	ASTM B283 C37700
19	Wire	304

Dimensions

Part No.	Model	Size	A	B	C	D	E
FIS282-040FM	FIS282	1 ½" x 1 ½"	100	48	58	123	145
FISJ282-065FM	FISJ282	2 ½" x 2 ½"	127	67	77	165	206

FM APPROVED FIS FIS MENA

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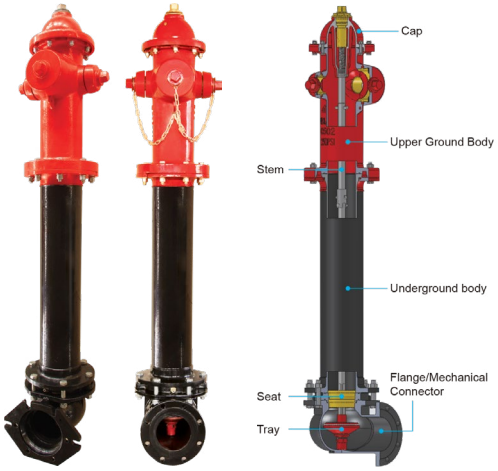
Dry Barrel Fire Hydrant
Model: FIS-DM/FIS-DF



Technical Features

- Nominal Pressure: 250PSI
- Design Standard: AWWA C502
- Inlet flange size: 6" (DN150), Main Valve size: 133.4 mm / 5-¼"
- One pumper nozzle: 4.5-4NH thread. Two hose nozzles, 2.5-7.5NH threads. Other kinds of threads are available
- Mechnical connector: AWWA/ ANSI C153 / A21.536 (Model: FIS-DM)
- Flange connector: ASME B16.5 CLASS 150 / DIN 2501 PN16 (Model: FIS-DF)
- Painting Details: Red Polyurethane paint & Bitumen Black or painting upon request
- Note: Each hydrant is supplied with a hydrant wrench
- Approvals: UL 246 Listed, FM 1510 Approved

Installation

· Hydrants should be handled with care to avoid damage. It is recommended to keep hydrants closed until use

· If the hydrant is not to be used straight away then it is recommended to coat threads and other machined parts with anti-rust oil and the hydrant should be stored in a dry and ventilated area. For long-term storage, the hydrant should be checked regularly

· Before installation of hydrants, the connection should be free from dirt or other matter

· The positioning of the hydrant should be in accordance with local requirements. Ideally the pumper should face the street and all connections should be away from any obstruction to connecting hoses

· The inlet elbow should be placed on a solid surface and if possible brace the side opposite the incoming flow to reduce reaction stresses

· The underground parts of the hydrant should be surrounded with coarse gravel for support and drainage

· After the hydrant has been installed and tested, it is recommended to fully flush the hydrant before closing for service. Before replacing the nozzle caps, it is recommended to check for correct drainage of the hydrant on closing of the valve. This can be achieved by placing a hand over the nozzle opening, a suction should be felt

Operation

- Unscrew the nozzle caps and connect hoses
- Open the hydrant using the hydrant key (included) to the fully open position by turning the operation nut in an anti-clockwise direction. Do not force the hydrant to open further past the fully open position. Note that the hydrant valve is not intended to control the flow, it should be used in either the fully open or fully closed position To control flow, a pressure / flow control valve should be fitted to the nozzle outlets on the hydrant
- To close, turn the operation nut into a clockwise direction again, do not over tighten

Maintenance

- Carry out a visual inspection for signs of significant corrosion which may impair performance
- Where possible, carry out leakage tests by opening one of the nozzle caps slightly and then open the hydrant valve
- Once the air has escaped, tighten the hose cap and check for leaks
- Close hydrant and remove one nozzle cap so that the drainage can be checked
- Flush the hydrant
- Clean and lubricate all nozzle threads
- Clean the exterior of the hydrant and repaint if required

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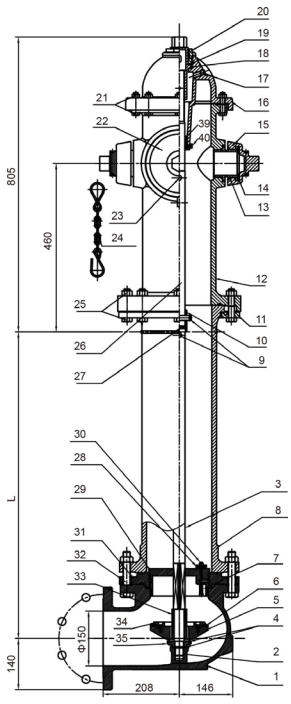
Dry Barrel Fire Hydrant
Model: FIS-DM/FIS-DF



Material List		
No	**Name**	**Material**
1	Flange Connector Or Mechnical Connector	Ductile Iron
2	Locking Nut	Ductile Iron
3	Connecting Rod	Steel 1045
4	Locking Nut Gasket	EPDM
5	Tray	Ductile Iron
6	Sealed Rubber Sheet	EPDM
7	Drain Hole Spring	316 Stainless Steel
8	Connecting Cylinder	Ductile Iron
9	Perforated Cylindrical Pin	Steel 1045
10	Connecting Rod Sleeve	Steel 1045
11	Clamp For Connection Tube	Ductile Iron
12	Main Body On Ground	Ductile Iron
13	65 Connector	C95400
14	65 Cover Gasket	EPDM
15	65 Cover	Ductile Iron
16	Upper End Cover	Ductile Iron
17	Thread Plug	C95400
18	Screw Stem Nut	C95400
19	Screw Nut Gasket	C95400
20	Screw Nut Seat	C95400
21	Bolt, Nut	Steel 1035
22	100 Cover	Ductile Iron
23	Cylindrical Pin	Steel 1045
24	Cover Chain	Gr.B, ASTM A283-B
25	Bolt, Nut	Steel 1035
26	Screw Stem	Steel 1045
27	Cushion Rubber	EPDM
28	Drain Hole Cover	C95400+EPDM
29	Seat	C95400
30	Bolt, Nut	316 Stainless Steel
31	Seat Fixing Plate	Ductile Iron
32	Bolt Nut	Steel 1035
33	Annular Tubes	Steel 1045
34	Platen	Ductile Iron
35	Locking Nut Seat	Ductile Iron
37	100 Connector	C95400
38	100 Cover Gasket	EPDM
39	Screw Stem Bushing	316 Stainless Steel
40	Bolt	316 Stainless Steel

Buried Dimensions								
L	3'6"	4'	4'6"	5'	5'6"	6'	6'6"	7'
(mm)	1063	1215	1368	1520	1673	1825	1978	2130

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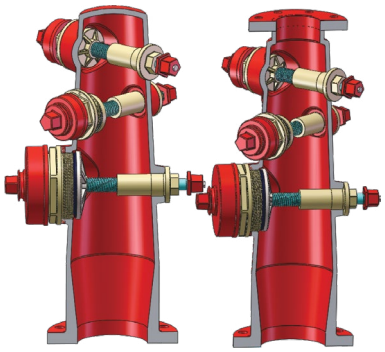
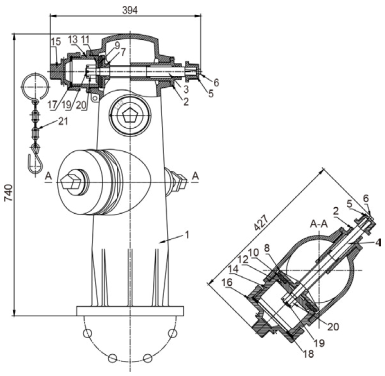
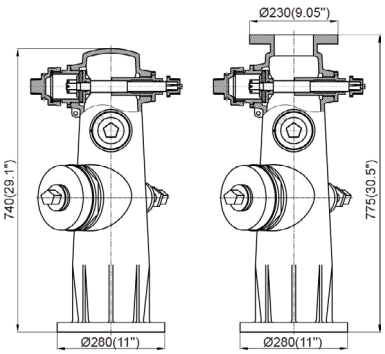
Wet Hydrant
Model: FIS-W45/W45A/ W4/W4A







Technical Features

- Design Standard: AWWA C503
- External Thread Standard: NFPA 1963 2.5"-7.5NH / 4"-4NH / 4.5"-4NH
- Water Inlet Flange Standard: ASTM B16.5 Class150 6" / DIN2501 PN16 DN150
- Maximum Working Pressure: 250PSI
- Monitor Flange Standard: ASTM B16.5 Class150 4" / DIN2501 PN16 DN100
- Working Temperature Range: 0-80°C / 32-176°F

Valve Material List

No	Name	QTY	Material
1	Main Body	1	Ductile Iron
2	Nut	3	C954
3	2.5"Bolt	2	SS304/C954
4	4.5"Bolt	1	SS304/C954
5	Stem cap	3	Ductile Iron
6	Bolt	3	SS304
7	2.5" Tray	2	Ductile Iron/SS304/C954
8	4.5" Tray	1	Ductile Iron/SS304/C954
9	2.5" Sealing rubber sheet	2	EPDM
10	4.5" Sealing rubber sheet	1	EPDM
11	2.5" Platen	2	Ductile Iron/SS304/C954
12	4.5" Platen	1	Ductile Iron/SS304/C954
13	2.5" Outlet	2	C954
14	4.5" Outlet	1	C954
15	2.5" Outlet cover	2	Ductile Iron
16	4.5" Outlet cover	1	Ductile Iron
17	2.5" Cover gasket	2	EPDM
18	4.5" Cover gasket	1	EPDM
19	Cotter pin	3	SS304
20	Slotted nut	3	SS304
21	Cover chain		Gr.B

General Technical Information

Model No	House Outlet Size	Pumper Hozzle Size	Monitor	Approval
FIS-W45	2 X 2.5"	1 X 4.5"	N/A	FM/UL
FIS-W45A	2 X 2.5"	1 X 4.5"	YES	UL
FIS-W4	2 X 2.5"	1 X 4"	N/A	UL
FIS-W4A	2 X 2.5"	1 X 4"	YES	UL

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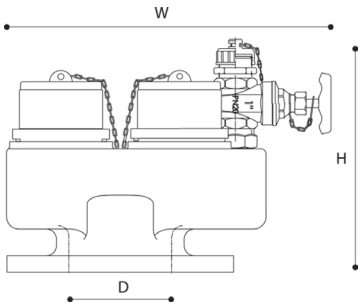
Breeching Inlet
Model: FIS-BR2/FIS-BR4/ FIS-BR2A/FIS-BR4A

BS 5041-3 LPCB ref. 1153AAd

FIS MENA



Specification

- Standard: BS 5041-3
- Outlet flange complying with BS 4504-2 16/21
- The flange to blank cap ≤260mm
- DN25 drain valve complying with BS 5154
- Plastic blank cap with chain
- Vertical or horizontal mounting
- Non-return valves Test 1.7 bar
- Working pressure 10 bar
- Test pressure 20 bar
- Brass and bronze couplings upon requests

Model	Size	H (mm)	W (mm)	D (mm)	Connections	Coupling
FIS-BR2A	DN100	225	300	100	2 x BS336	Bronze
FIS-BR4A	DN150	255	340	150	4 x BS336	
FIS-BR2	DN100	225	300	100	2 x BS336	Brass
FIS-BR4	DN150	255	340	150	4 x BS336	

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EPDM Lined Hose
Model: FIS-SJ1

Specifications	
Jacket	100% Virgin Polyester Jacket. Single Jacket. Twill or Plain Weave
Lining	EPDM Rubber Tube
Application	Industrial Fire Fighting. Fire hose for brigade. Premium Solution
Standard Length	15m (50ft), 20m (66ft), 25m (82ft), 30m (100ft)
Colour	White, Yellow, Orange, Red, Blue, Green, Brown

ID		Service Pressure	Minimum Burst Pressure
inch	mm	psi/bar	psi/bar
1 ½"	40	150/10, 200/14, 220/15, 250/17, 300/21	450/30, 600/42, 660/45, 750/51, 900/63
2 ½"	65	150/10, 200/14, 220/15, 250/17, 300/21	450/30, 600/42, 660/45, 750/51, 900/63

TPU Lined Hose
Model: FIS-SJ2

Specifications	
Jacket	100% Virgin Polyester Jacket. Single Jacket, Twill or Plain Weave
Lining	Polyurethanes (TPU) Tube
Application	Rock Hose. Cabinet Hose. Premium Solution
Standard Length	15m (50ft), 20m (66ft), 25m (82ft), 30m (100ft)
Colour	White, Red, Yellow

ID		Service Pressure	Minimum Burst Pressure
inch	mm	psi/bar	psi/bar
1 ½"	40	150/10, 200/14, 220/15, 250/17	450/30, 600/42, 660/45, 750/51
2 ½"	65	150/10, 200/14, 220/15, 250/17	450/30, 600/42, 660/45, 750/51

Nitrile Rubber Covered Hose Model: FIS-SJ3

Specifications	
Reinforcement	Polyester Filament
Cover and Tube	Nitrile/TPR Blend Tube, Thin Rib on Cover Provides Better Performance in Abrasion Resistance
Application	Large Diameter Hose for Water Supply, Municipal, Industrial Fire Fighting
Standard Length	15m (50ft), 30m (100ft), 50m (165ft), 100m (330ft)
Colour	Yellow, Orange, Red, Black, Green

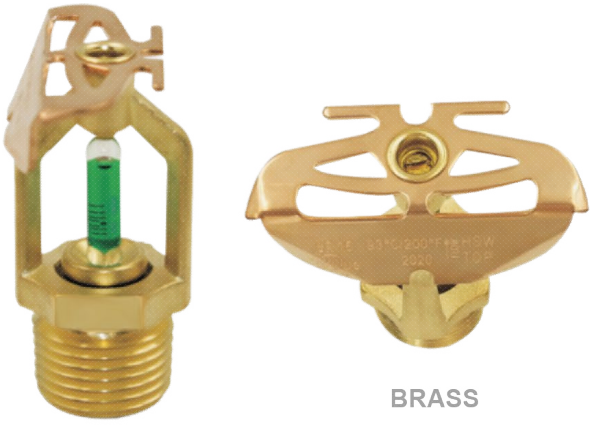
ID		Service Pressure	Minimum Burst Pressure
inch	mm	psi/bar	psi/bar
1 ½"	38	200/14, 220/15, 250/17, 300/21, 400/28	600/42, 660/45, 750/51, 900/63, 1200/84
2 ½"	65	200/14, 220/15, 250/17, 300/21	600/42, 660/45, 750/51, 900/63

EPDM Lined Hose Model: FIS-MJ1

Specifications	
Jacket	100% Virgin Polyester Jacket. Double Jacket, Twill or Plain Weave. High Performance in abrasion resistance
Lining	EPDM Rubber Tube
Application	Industrial Fire Fighting. Fire hose for brigade
Standard Length	15m (50ft), 20m (66ft), 25m (82ft), 30m (100ft)
Colour	White, Yellow, Orange, Red, Blue, Green, Brown

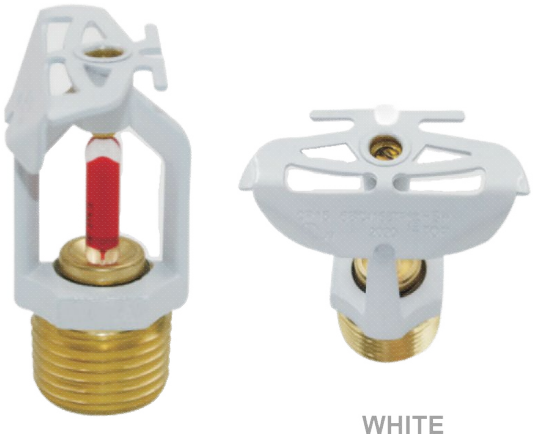
ID		Service Pressure	Minimum Burst Pressure
inch	mm	psi/bar	psi/bar
1 ½"	38	250/17, 300/21, 400/28	750/51, 900/63, 1200/84
1 ¾"	45	250/17, 300/21, 400/28	750/51, 900/63, 1200/84
2 ½"	65	250/17, 300/21, 400/28	750/51, 900/63, 1200/84

Horizontal Sidewall Sprinklers
Model: HA01-HA02



BRASS

CHROME



WHITE

Automatic Sprinkler

- Standard & Quick Response
- Standard Coverage
- K-FACTOR: 5.6

Description

The FIS MENA Series HA01, with the K-factor 5.6, is Standard Response sprinklers which utilize a 5mm frangible glass bulb, while the HA02 is Quick Response sprinkler with a 3mm glass bulb serving as the thermosensitive operating element. They are Listed and Approved as Standard Coverage sprinklers and are to be installed in accordance with the guidelines of the appropriate Installation Standard being mandated by the AHJ (i.e. NFPA 13; FM 2000). These sprinklers are available in various response sensitivity, temperatures and finishes as shown.

Listings and Approvals

- UL LISTED
- FM APPROVED

Operation

When a fire occurs and heat is absorbed, the thermalsensitive liquid within the bulb expands and the internal pressure increases. When the internal pressure exceeds the strength of the glass, the glass would shatter. This results in the water discharge, which strikes the deflector and form a spray pattern to control or extinguish the fire.

Note* The FIS MENA Series Sprinkler must be installed and maintained in compliance with standards of NFPA.

FM APPROVED FIS FIS MENA

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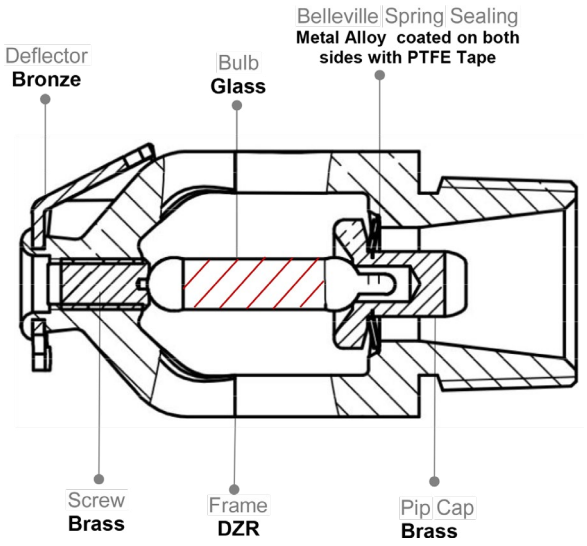
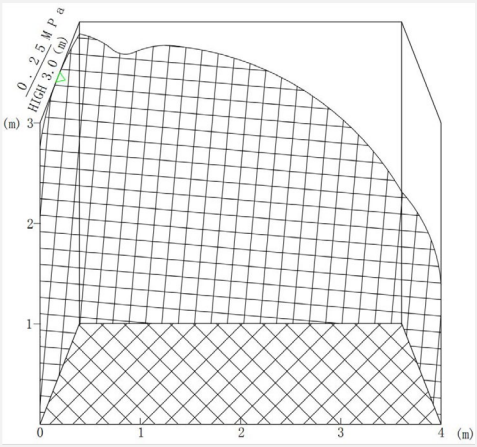
Horizontal Sidewall Sprinklers
Model: HA01-HA02

Technical Specification	
Sprinkler Identification Number (SIN)	HA01 & HA02
Response	Standard & Quick
Temperature Rating/ Color/ Classification	135°F (57°C) / Orange / Ordinary 155°F (68°C) / Red / Ordinary 175°F (79°C) / Yellow / Intermediate 200°F (93°C) / Green / Intermediate 286°F (141°C) / Blue / High
Discharge Coefficient GPM / psi ½ (LPM/bar ½)	K=5.6 (80)
Nominal Thread Size	1/2" NPT / 1/2" BSPT
Max. Working Pressure	175 PSI (12BAR)
Factory Testing Pressure	500 PSI (35BAR)
Min. Operating Pressure	7 PSI (0.5 BAR)
Finishes	Brass, White Coating and Chrome (vaild in all temperature ratings)

Sprinkler Materials



Sidewall Sprinkler Distribution



Maximum distance along the wall (m) : 4.3
Maximum room width (m) : 4.3

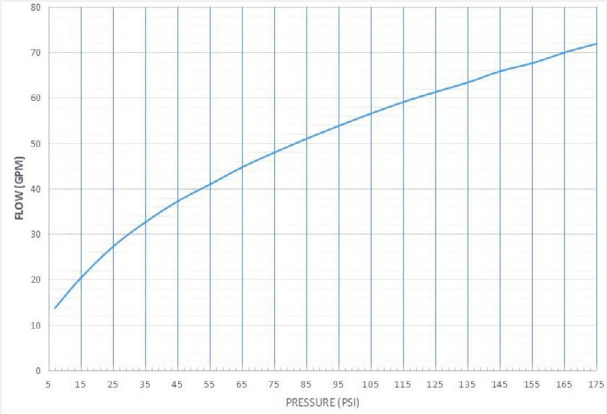
Discharge Coefficient

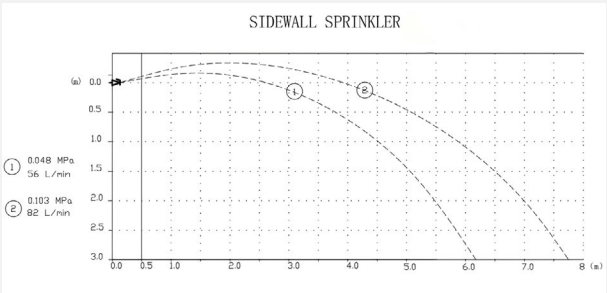
$$K = \frac{Q}{\sqrt{p}}$$

K-Factor

The coefficient of discharge, K, as expressed in the equation: Where Q is the flow in gallons per minute (gal/min), and P is the pressure in pounds per square inch (psi). Expressed in SI units: Q is the flow in liters per minute (L/min) and P is the pressure in bar. The discharge coefficient, therefore, has units of gal/min/(psi)1/2 or L/min/(bar)1/2.

Flow Discharge Chart





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Horizontal Sidewall Sprinklers
Model: HA01-HA02

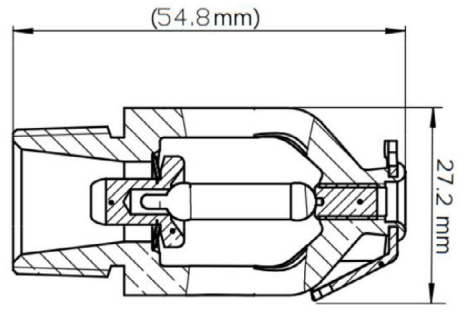
Installation Methods

Instruction

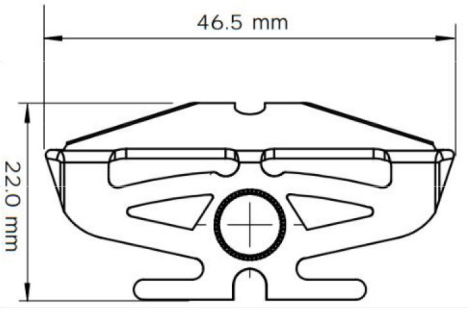
The HA01, HA02 sprinklers, which are manufactured and tested in accordance with the rigid requirements of the Standard UL 199 and FM 2000, should also be installed in accordance with the latest edition of the Standard NFPA 13. The system piping must be properly sized to ensure the minimum required flow rate at the sprinkler. Check for the proper model, style, orifice size and temperature rating prior to installation, and install the sprinklers after the piping is in place. Pay attention to avoiding mechanical damage, and replace any damaged units. The wet pipe sprinkler systems must be protected from freezing. Upon completion of the installation, the system must be tested per recognized standard. In case of thread leakage, remove the unit, and apply new pipe jointing compounds or use the tape, and then re-install.

CAUTION

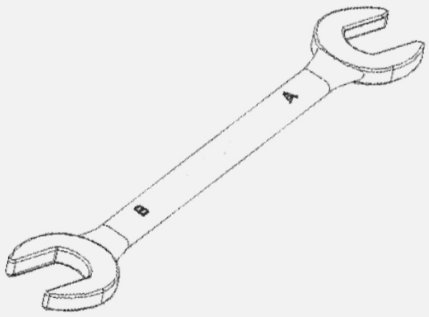
DO NOT INSTALL ANY SPRINKLER IF THE BULB IS CRACKED OR THERE IS A LOSS OF LIQUID FROM THE BULB!



Sidewall Sprinkler Dimension



Sidewall Deflector Dimension



Method

Step 1:
The HA01 and HA02 sprinklers are installed at horizontal sidewall position to suit field condition.

Step 2:
Only use the non-hardening pipe joint compound or Teflon tape for the male thread.

Step 3:
Hand-tighten the sprinkler into the fitting.

Step 4:
Tighten the sprinkler into the fitting using a wrench on flat. It is recommended that a torque of 7~14 ft-lbs be used to obtain a 1/2 inch NPT thread Sprinkler joint. Do not use wrench on the frame arms. It will cause the breakage of the arms and the burst of the glass bulb.

CAUTION

1. BE SURE TO REMOVE THE PLASTIC PROTECTION COVER AFTER INSTALLATION. DO NOT CLAMP IT ON THE FRAME ARMS, OTHERWISE WILL TO PREVENT THE HEAT RESPONSE FUNCTION WITH FAIL!

2. IT IS RECOMMENDED NOT TO EXCEED 14 FT-LB TORQUE FOR THE SPRINKLERS WITH 1/2 IN. NPT THREADS.

3. PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM!

Upright Sprinklers
Model: HA03-HA04

Automatic Sprinkler

- Standard & Quick Response
- Standard Coverage
- K-FACTOR: 5.6

Description

The FIS MENA Series HA03, with the K-factor 5.6, is Standard Response sprinklers which utilize a 5mm frangible glass bulb, while the HA04 is Quick Response sprinkler with a 3mm glass bulb serving as the thermosensitive operating element. They are Listed and Approved as Standard Coverage sprinklers and are to be installed in accordance with the guidelines of the appropriate Installation Standard being mandated by the AHJ (i.e. NFPA 13; FM 2000). These sprinklers are available in various response sensitivity, temperatures and finishes as shown.

Listings and Approvals

- UL LISTED
- FM APPROVED

Operation

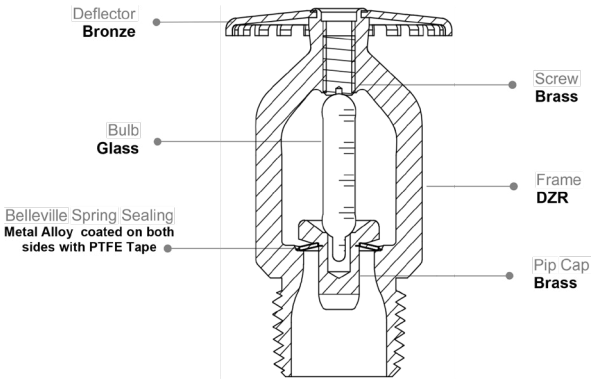
When a fire occurs and heat is absorbed, the thermalsensitive liquid within the bulb expands and the internal pressure increases. When the internal pressure exceeds the strength of the glass, the glass would shatter. This results in the water discharge, which strikes the deflector and form a spray pattern to control or extinguish the fire.

Note* The FIS MENA Series Sprinkler must be installed and maintained in compliance with standards of NFPA.

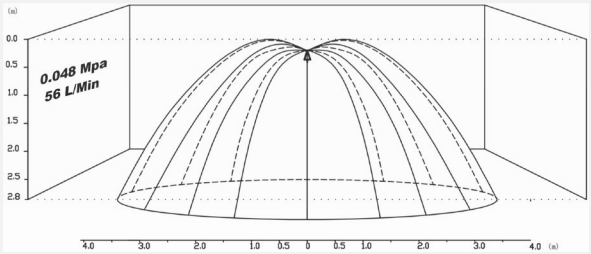
Upright Sprinklers
Model: HA03-HA04

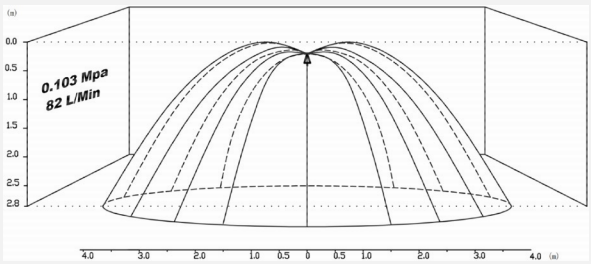
Technical Specification	
Sprinkler Identification Number (SIN)	HA03 & HA04
Response	Standard & Quick
Temperature Rating/ Color/ Classification	135°F (57°C) / Orange / Ordinary 155°F (68°C) / Red / Ordinary 175°F (79°C) / Yellow / Intermediate 200°F (93°C) / Green / Intermediate 286°F (141°C) / Blue / High
Discharge Coefficient GPM / psi ½ (LPM/bar ½)	K=5.6 (80)
Nominal Thread Size	1/2" NPT / 1/2" BSPT
Max. Working Pressure	175 PSI (12BAR)
Factory Testing Pressure	500 PSI (35BAR)
Min. Operating Pressure	7 PSI (0.5 BAR)
Finishes	Brass, White Coating and Chrome

Sprinkler Materials



Upright Sprinkler Distribution



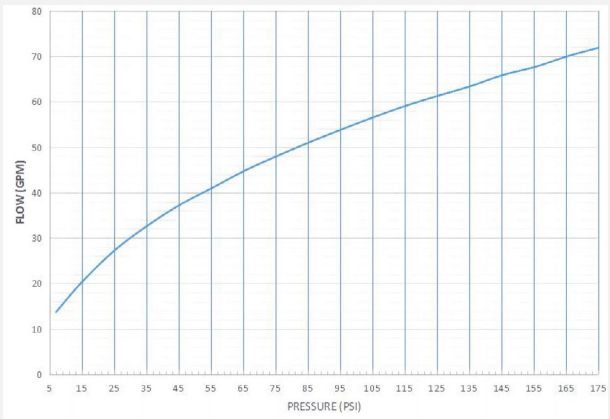


Discharge Coefficient (K-Factor)

$$K = \frac{Q}{\sqrt{p}}$$

The coefficient of discharge, K, as expressed in the equation: Where Q is the flow in gallons per minute (gal/min), and P is the pressure in pounds per square inch (psi). Expressed in SI units: Q is the flow in liters per minute (L/min) and P is the pressure in bar. The discharge coefficient, therefore, has units of gal/min/(psi)1/2 or L/min/(bar)1/2.

Flow Discharge Chart



Upright Sprinklers
Model: HA03-HA04

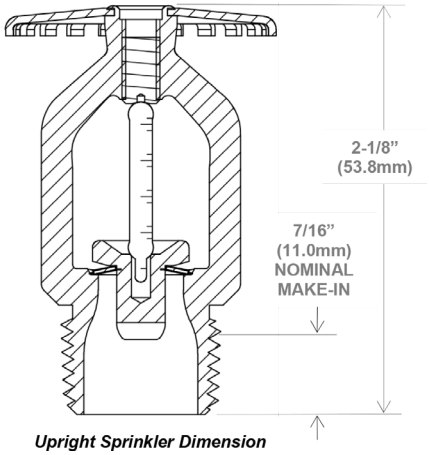
Installation Methods

Instruction

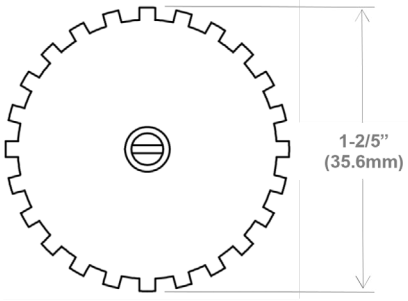
The HA03, HA04 sprinklers, which are manufactured and tested in accordance with the rigid requirements of the Standard UL 199, should also be installed in accordance with the latest edition of the Standard NFPA 13. The system piping must be properly sized to ensure the minimum required flow rate at the sprinkler. Check for the proper model, style, orifice size and temperature rating prior to installation, and install the sprinklers after the piping is in place. Pay attention to avoiding mechanical damage, and replace any damaged units. The wet pipe sprinkler systems must be protected from freezing. Upon completion of the installation, the system must be tested per recognized standard. In case of thread leakage, remove the unit, and apply new pipe jointing compounds or use the tape, and then re-install.

CAUTION

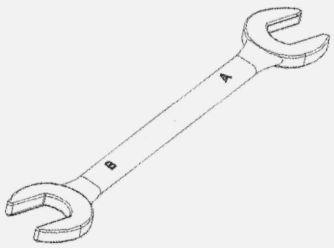
DO NOT INSTALL ANY SPRINKLER IF THE BULB IS CRACKED OR THERE IS A LOSS OF LIQUID FROM THE BULB!



Upright Sprinkler Dimension



Upright Deflector Dimension



Method

Step 1:
The upright sprinkler is installed at upright position to suit field condition.

Step 2:
Only use the non-hardening pipe joint compound or Teflon tape for the male thread.

Step 3:
Hand-tighten the sprinkler into the fitting.

Step 4:
Tighten the sprinkler into the fitting using a wrench on flat. It is recommended that a torque of 7~14 ft-lbs be used to obtain a 1/2 inch NPT thread Sprinkler joint. Do not use wrenth on the frame arms. It will cause the breakage of the arms and the burst of the glass bulb.

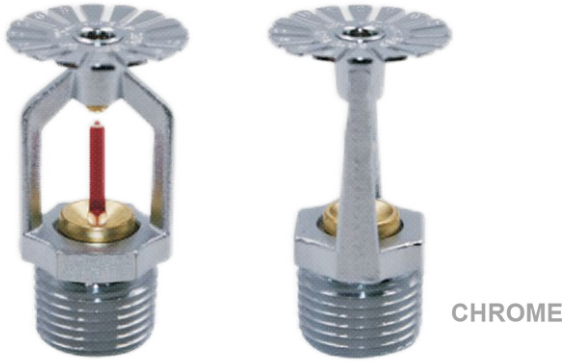
CAUTION

1. BE SURE TO REMOVE THE PLASTIC PROTECTION COVER AFTER INSTALLATION. DO NOT CLAMP IT ON THE FRAME ARMS, OTHERWISE WILL TO PREVENT THE HEAT RESPONSE FUNCTION WITH FAIL!

2. IT IS RECOMMENDED NOT TO EXCEED 14 FT-LB TORQUE FOR THE SPRINKLERS WITH 1/2 IN. NPT THREADS.

3. PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM!

Pendent Sprinklers
Model: HA05-HA06



Automatic Sprinkler

- Standard & Quick Response
- Standard Coverage
- K-FACTOR: 5.6

Description

The FIS MENA Series HA05, with the K-factor 5.6, is Standard Response sprinklers which utilize a 5mm frangible glass bulb, while the HA06 is Quick Response sprinkler with a 3mm glass bulb serving as the thermosensitive operating element. They are Listed and Approved as Standard Coverage sprinklers and are to be installed in accordance with the guidelines of the appropriate Installation Standard being mandated by the AHJ (i.e. NFPA 13; FM 2000). These sprinklers are available in various response sensitivity, temperatures and finishes as shown.

Listings and Approvals

- UL LISTED
- FM APPROVED

Operation

When a fire occurs and heat is absorbed, the thermalsensitive liquid within the bulb expands and the internal pressure increases. When the internal pressure exceeds the strength of the glass, the glass would shatter. This results in the water discharge, which strikes the deflector and form a spray pattern to control or extinguish the fire.

Note* The FIS MENA Series Sprinkler must be installed and maintained in compliance with standards of NFPA.

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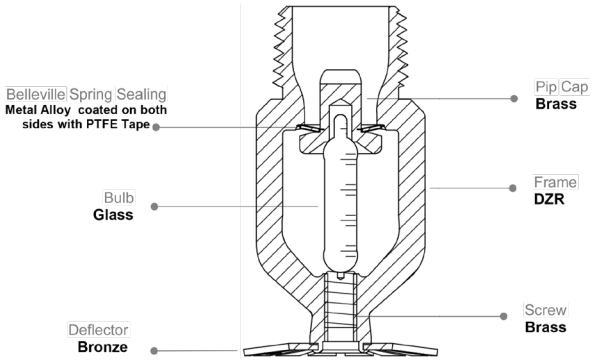
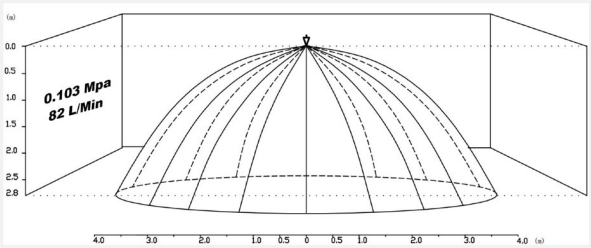
Pendent Sprinklers
Model: HA05-HA06

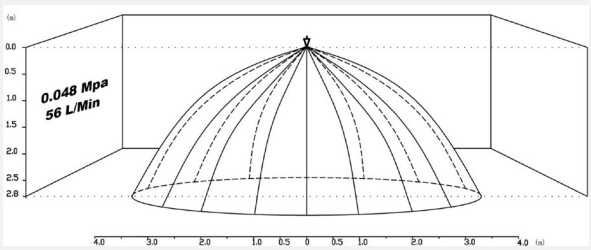
Technical Specification	
Sprinkler Identification Number (SIN)	HA05 & HA06
Response	Standard & Quick
Temperature Rating/ Color/ Classification	135°F (57°C) / Orange / Ordinary 155°F (68°C) / Red / Ordinary 175°F (79°C) / Yellow / Intermediate 200°F (93°C) / Green / Intermediate 286°F (141°C) / Blue / High
Discharge Coefficient GPM / psi ½ (LPM/bar ½)	K=5.6 (80)
Nominal Thread Size	1/2" NPT / 1/2" BSPT
Max. Working Pressure	175 PSI (12BAR)
Factory Testing Pressure	500 PSI (35BAR)
Min. Operating Pressure	7 PSI (0.5 BAR)
Finishes	Brass, White Coating and Chrome

Sprinkler Materials



Pendent Sprinkler Distribution



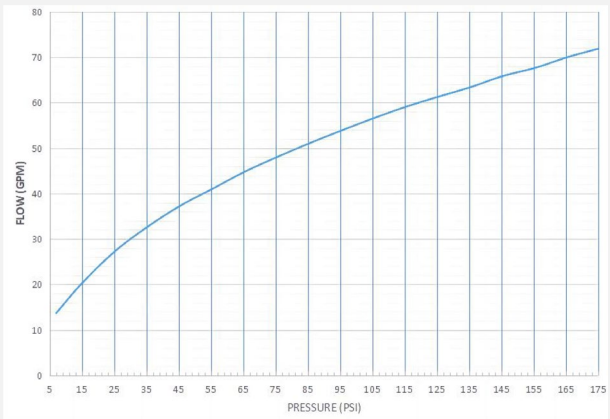


Discharge Coefficient (K-Factor)

$$K = \frac{Q}{\sqrt{p}}$$

The coefficient of discharge, K, as expressed in the equation: Where Q is the flow in gallons per minute (gal/min), and P is the pressure in pounds per square inch (psi). Expressed in SI units: Q is the flow in liters per minute (L/min) and P is the pressure in bar. The discharge coefficient, therefore, has units of gal/min/(psi)1/2 or L/min/(bar)1/2.

Flow Discharge Chart



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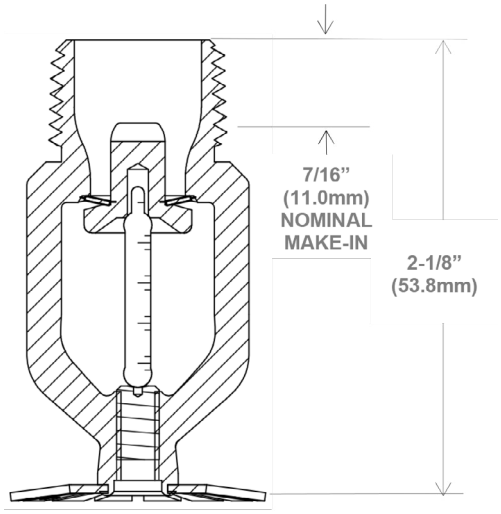
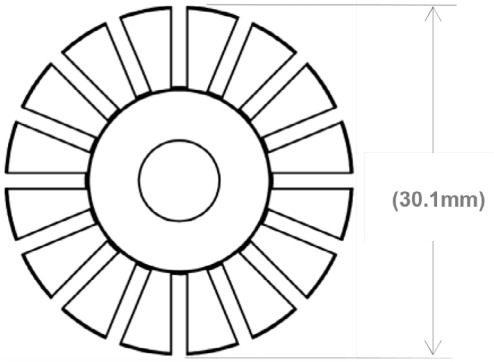
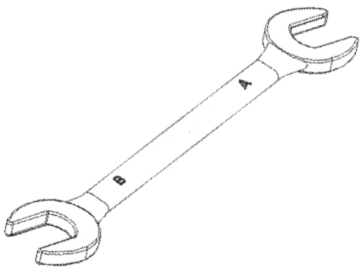
Pendent Sprinklers
Model: HA05-HA06



Pendent Sprinkler Dimension



Pendent Deflector Dimension



Installation Methods

Instruction:

The HA05, HA06 sprinklers, which are manufactured and tested in accordance with the rigid requirements of the Standard UL 199, should also be installed in accordance with the latest edition of the Standard NFPA 13. The system piping must be properly sized to ensure the minimum required flow rate at the sprinkler. Check for the proper model, style, orifice size and temperature rating prior to installation, and install the sprinklers after the piping is in place. Pay attention to avoiding mechanical damage, and replace any damaged units. The wet pipe sprinkler systems must be protected from freezing. Upon completion of the installation, the system must be tested per recognized standard. In case of thread leakage, remove the unit, and apply new pipe jointing compounds or use the tape, and then re-install.

CAUTION

DO NOT INSTALL ANY SPRINKLER IF THE BULB IS CRACKED OR THERE IS A LOSS OF LIQUID FROM THE BULB!

Method

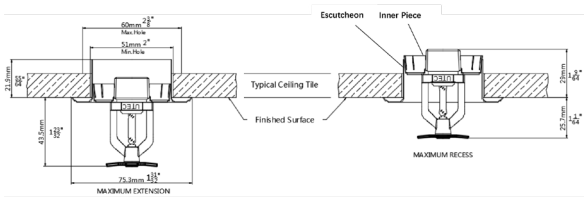
Step 1:
The pendent sprinkler is installed at pendent position to suit field condition.

Step 2:
Only use the non-hardening pipe joint compound or Teflon tape for the male thread.

Step 3:
Hand-tighten the sprinkler into the fitting.

Step 4:
Tighten the sprinkler into the fitting using a wrench on flat. It is recommended that a torque of 7~14 ft-lbs be used to obtain a 1/2 inch NPT thread Sprinkler joint. Do not use wrenth on the frame arms. It will cause the breakage of the arms and the burst of the glass bulb.

Pendent Sprinklers
Model: HA05-HA06



In case of install a decoration of escutcheon for clean attractive purpose, the step as below:

Step 1:
Spin the inner piece of escutcheon into sprinkler threads.

Step 2:
Only use the non-hardening pipe joint compound or Teflon tape for the male thread.

Step 3:
Keep the plastic protective cover clamped on sprinkler arms while inner decoration work.

Step 4:
Hand-tighten the sprinkler into the fitting.

Step 5:
Tighten the sprinkler into fitting using a wrench on flat. It is recommended that a torque of 7~14 ft-lbs be used to obtain a sprinkler joint with 1/2 inch NPT threads. Do not use wrentch on the frame arms. It will cause the breakage of the arms and the burst of the glass bulb.

CAUTION

1. BE SURE TO REMOVE THE PLASTIC PROTECTION COVER AFTER INSTALLATION. DO NOT CLAMP IT ON THE FRAME ARMS, OTHERWISE WILL TO PREVENT THE HEAT RESPONSE FUNCTION WITH FAIL!

2. IT IS RECOMMENDED NOT TO EXCEED 14 FT-LB TORQUE FOR THE SPRINKLERS WITH 1/2 IN. NPT THREADS.

3. PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM!

Conventional Sprinklers
Model: HA07-HA08

Automatic Sprinkler

- Standard & Quick Response
- Standard Coverage
- K-FACTOR: 5.6

Description

The FIS MENA Series HA07, with the K-factor 5.6, is Standard Response sprinklers which utilize a 5mm frangible glass bulb, while the HA08 is Quick Response sprinkler with a 3mm glass bulb serving as the thermosensitive operating element.These sprinklers are intended to be installed in the upright or pendent orientations. In either position, they produce a spherical water discharge pattern with approximately 50% of the discharge directed upwards and approximately 50% of the discharge directed downwards. They are listed and approved as standard coverage sprinklers and are to be installed in accordance with the guidelines of the appropriate Installation Standard being mandated by the AHJ (i.e. NFPA 13; FM 2000). These sprinklers are available in various response sensitivity, temperatures and finishes as shown.

Operation

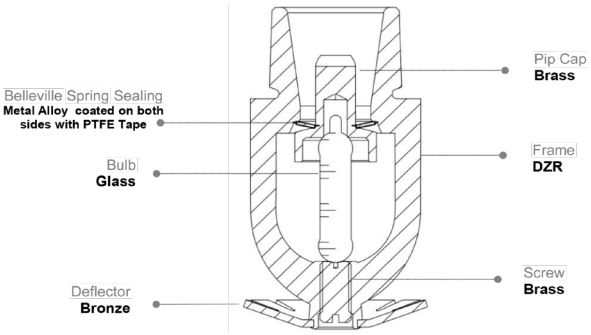
When a fire occurs and heat is absorbed, the thermal-sensitive liquid within the bulb expands and the internal pressure increases. When the internal pressure exceeds the strength of the glass, the glass would shatter. This results in the water discharge, which is distributed in an approved pattern depending upon the deflector style used.

Note* The FIS MENA Series Sprinkler must be installed and maintained in compliance with standards of NFPA.

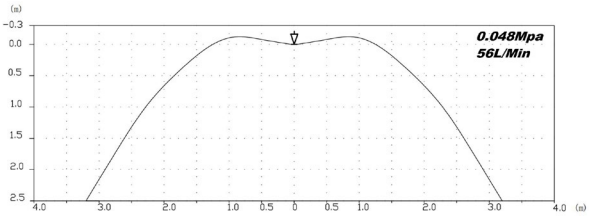
Conventional Sprinklers
Model: HA07-HA08

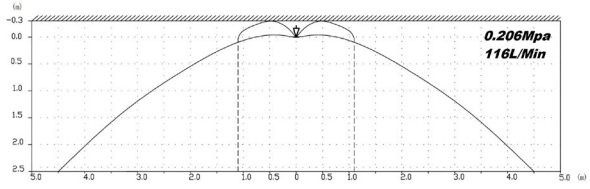
Technical Specification	
Sprinkler Identification Number (SIN)	HA07 & HA08
Response	Standard & Quick
Temperature Rating/ Color/ Classification	135°F (57°C) / Orange / Ordinary 155°F (68°C) / Red / Ordinary 175°F (79°C) / Yellow / Intermediate 200°F (93°C) / Green / Intermediate 286°F (141°C) / Blue / High
Discharge Coefficient GPM / psi ½ (LPM/bar ½)	K=5.6 (80)
Nominal Thread Size	1/2" NPT / 1/2" BSPT
Max. Working Pressure	175 PSI (12BAR)
Factory Testing Pressure	500 PSI (35BAR)
Min. Operating Pressure	7 PSI (0.5 BAR)
Finishes	Brass, White Coating and Chrome

Sprinkler Materials

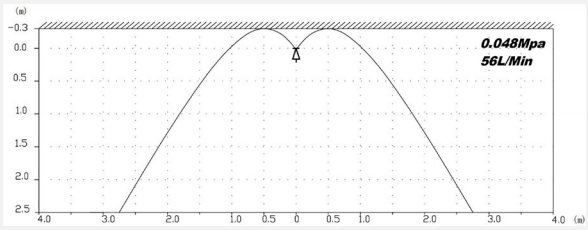


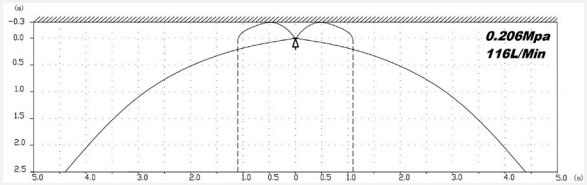
Conventional Sprinkler Distribution
Pendent Installation Position





Upright Installation Position



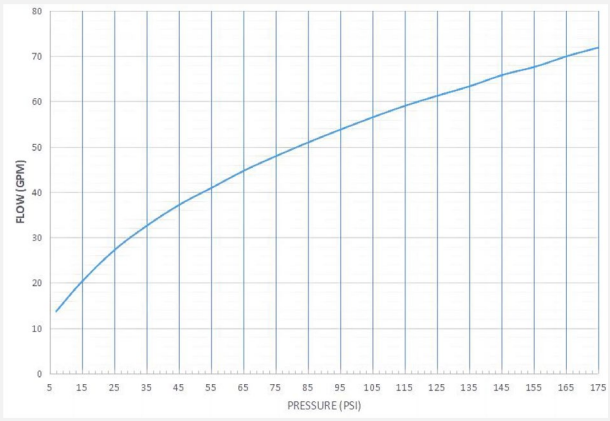


Discharge Coefficient (K-Factor)

$$K = \frac{Q}{\sqrt{p}}$$

The coefficient of discharge, K, as expressed in the equation: Where Q is the flow in gallons per minute (gal/min), and P is the pressure in pounds per square inch (psi). Expressed in SI units: Q is the flow in liters per minute (L/min) and P is the pressure in bar. The discharge coefficient, therefore, has units of gal/min/(psi) 1/2 or L/min/(bar) 1/2.

Flow Discharge Chart



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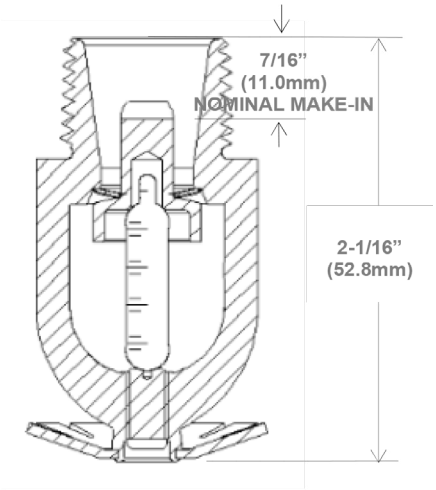
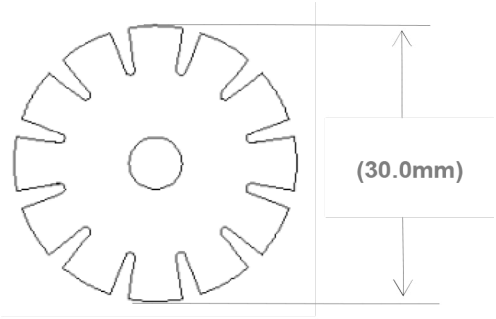
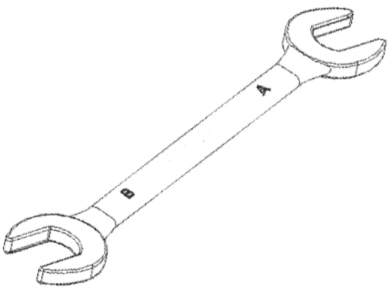
Conventional Sprinklers
Model: HA07-HA08



Conventional Sprinkler Dimension



Conventional Deflector Dimension



Installation Methods

Instruction:

The HA07, HA08 sprinklers, which are manufactured and tested in accordance with the rigid requirements of the Standard UL 199, should also be installed in accordance with the latest edition of the Standard NFPA 13. The system piping must be properly sized to ensure the minimum required flow rate at the sprinkler. Check for the proper model, style, orifice size and temperature rating prior to installation, and install the sprinklers after the piping is in place. Pay attention to avoiding mechanical damage, and replace any damaged units. The wet pipe sprinkler systems must be protected from freezing. Upon completion of the installation, the system must be tested per recognized standard. In case of thread leakage, remove the unit, and apply new pipe jointing compounds or use the tape, and then re-install.

CAUTION

DO NOT INSTALL ANY SPRINKLER IF THE BULB IS CRACKED OR THERE IS A LOSS OF LIQUID FROM THE BULB!

Method

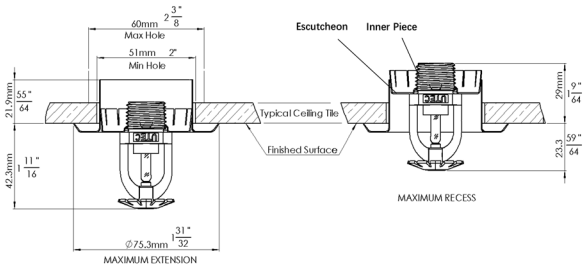
Step 1:
The conventional type sprinkler can be installed at upward or downward direction to suit field condition.

Step 2:
Only use the non-hardening pipe joint compound or Teflon tape for the male thread.

Step 3:
Hand-tighten the sprinkler into the fitting.

Step 4:
Tighten the sprinkler into the fitting using a wrench on flat. It is recommended that a torque of 7~14 ft-lbs be used to obtain a 1/2 inch NPT thread Sprinkler joint. Do not use wrench on the frame arms. It will cause the breakage of the arms and the burst of the glass bulb.

Conventional Sprinklers
Model: HA07-HA08



In case of install a decoration of escutcheon for clean attractive purpose, the step as below:

Step 1:
Spin the inner piece of escutcheon into sprinkler threads.

Step 2:
Only use the non-hardening pipe joint compound or Teflon tape for the male thread.

Step 3:
Keep the plastic protective cover clamped on sprinkler arms while inner decoration work.

Step 4:
Hand-tighten the sprinkler into the fitting.

Step 5:
Tighten the sprinkler into fitting using a wrench on flat. It is recommended that a torque of 7~14 ft-lbs be used to obtain a sprinkler joint with 1/2 inch NPT threads. Do not use wrench on the frame arms. It will cause the breakage of the arms and the burst of the glass bulb.

CAUTION

1. BE SURE TO REMOVE THE PLASTIC PROTECTION COVER AFTER INSTALLATION. DO NOT CLAMP IT ON THE FRAME ARMS, OTHERWISE WILL TO PREVENT THE HEAT RESPONSE FUNCTION WITH FAIL!

2. IT IS RECOMMENDED NOT TO EXCEED 14 FT-LB TORQUE FOR THE SPRINKLERS WITH 1/2 IN. NPT THREADS.

3. PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM!

Concealed Pendent Sprinklers
Model: HA09-HA10

Automatic Sprinkler

- Standard & Quick Response
- Standard Coverage
- K-FACTOR: 5.6

Description

The FIS MENA Series HA09, HA10, with the K-factor 5.6, is Flat-plate Concealed Pendent Sprinkler, having standard coverage. The Series HA09 described in this data sheet is standard response sprinklers with 5mm glass bulb, while the series HA10 is Quick Response sprinklers with a 3mm glass bulb.

Operation

The soldered cover plate drops off the retainer assembly when exposed to heat, e.g. a fire, that has reached the plate's Listed temperature rating. As heat encompasses the glass bulb's operating element of the sprinkler, the fluid in the bulb expands, compressing the air bubble within the bulb. When the air bubble can no longer be compressed, the fluid expansion causes the breakage of the glass bulb, resulting in the release of the water seat assembly, and the discharge of the water from the sprinkler.

Note* The FIS MENA Series Flat Plate Concealed Pendent Sprinkler must be installed and maintained in compliance with standards of NFPA.

Technical Specification	
Sprinkler Identification Number (SIN)	HA09 & HA10
Response	Standard & Quick
Temperature Rating	135°F (57°C) Cover Plate · 135°F (57°C) Sprinkler · 155°F (68°C) Sprinkler 165°F (74°C) Cover Plate · 175°F (79°C) Sprinkler · 200°F (93°C) Sprinkler
Discharge Coefficient GPM / psi ½ (LPM/bar ½)	K=5.6 (80)
Nominal Thread Size	1/2" NPT / 1/2" BSPT
Max. Working Pressure	175 PSI (12BAR)
Factory Testing Pressure	500 PSI (35BAR)
Min. Operating Pressure	7 PSI (0.5 BAR)
Cover Plate Finishes	White Coating, Chrome, Bright Brass, Brass & Customized

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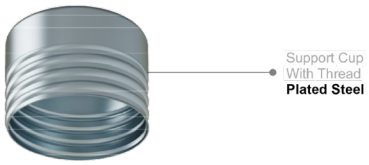
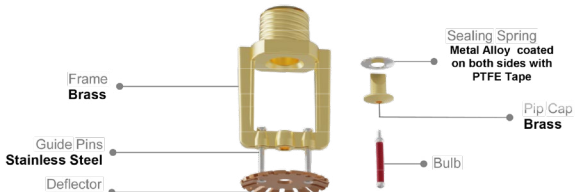
Concealed Pendent Sprinklers
Model: HA09-HA10

Sprinkler Materials



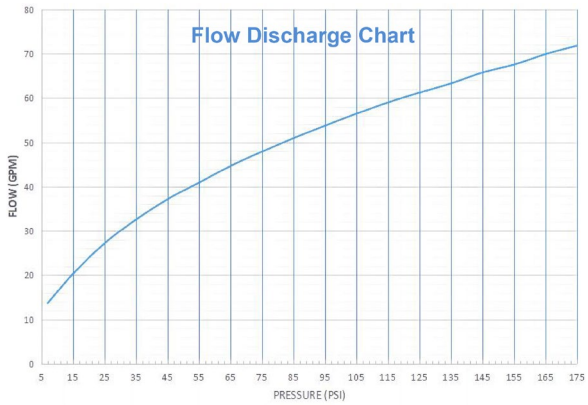


Discharge Coefficient (K-Factor)

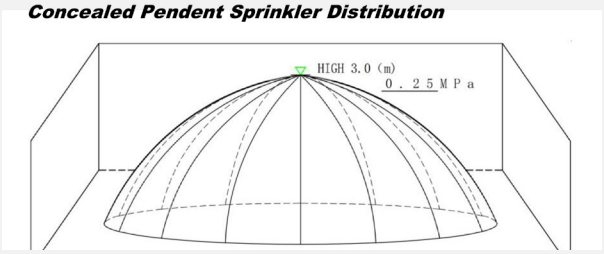
$$K_m = \frac{Q}{\sqrt{p}}$$

The coefficient of discharge, K, as expressed in the equation: Where Q is the flow in gallons per minute (gal/min), and P is the pressure in pounds per square inch (psi). Expressed in SI units: Q is the flow in liters per minute (L/min) and P is the pressure in bar. The discharge coefficient, therefore, has units of gal/min/(psi)½ or L/min/(bar)½ .

Flow Discharge Chart



Concealed Pendent Sprinkler Distribution



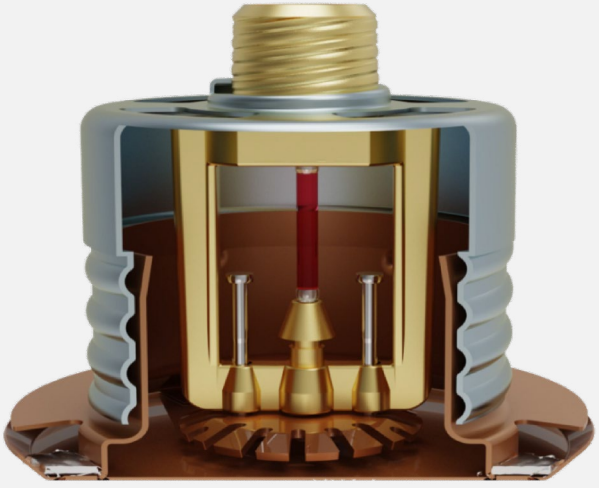
Installation

Note

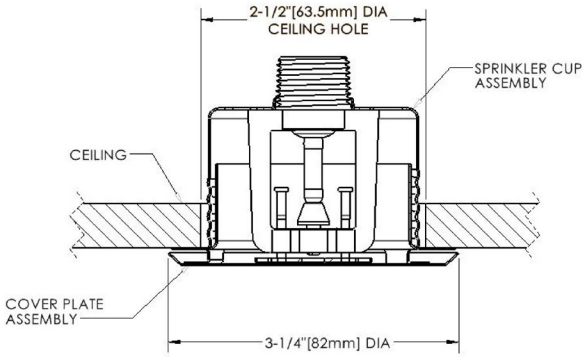
The sprinklers, which are manufactured and tested in accordance with the rigid requirements of the Standard UL 199, should also be installed in accordance with the latest edition of the Standard NFPA 13. The system piping must be properly sized to ensure the minimum required flow rate at the sprinkler.

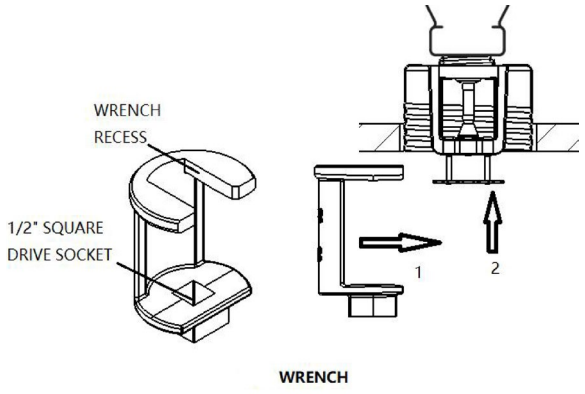
Check for the proper model, style, orifice size and temperature rating prior to installation, and install the sprinklers after the piping is in place. Pay attention to avoiding mechanical damage, and replace any damaged units. The wet pipe sprinkler systems must be protected from freezing.

Upon completion of the installation, the system must be tested per recognized standard. In case of thread leakage, remove the unit, and apply new pipe jointing compounds or use the tape, and then re-install.



Concealed Pendent Sprinklers
Model: HA09-HA10





WRENCH

Installation

Method

Step 1:
This type of sprinklers must not be installed in the ceiling with positive pressure above them. Ensure that the 4 slots in the cup are open and unobstructed after the installation. There is an adjustable protective cap shipped with the sprinkler that should remain on the sprinkler until the sprinkler system is placed in service following the installation.

Step 2:
Twist-off the blue Protective Cap.

Step 3:
Only using the non-hardening pipe joint compound or Teflon tape apply for the male thread.

Step 4:
Tighten the sprinkler into fitting with wrench, fully insert the wrench over the sprinkler until the wrench engages the body. Do not wrench any other part of the sprinkler/cup assembly. And the wrench is designed to be turned with a standard 1/2" square drive. Tighten the sprinkler into the fitting with
proper torque.

NOTICE

Check carefully to make sure the sprinkler to be fully tighten with the cup assembly without any loose or gap before install the cover plate into the cup. Or else it may result the damage to the cover plate!!!

Step 5:
To install the cover plate, align it with support ring assembly and press it over the support ring assembly, then push upward and twist to the right.

CAUTION

1. IT IS RECOMMENDED NOT TO EXCEED 14 FT-LB TORQUE FOR THE SPRINKLERS WITH 1/2 IN. NPT THREADS.

2. PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM!

Commercial Sprinklers

Mode	Sidewall Sprinkler
Type	HA01
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	5mm glass bulb
Style	Standard Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	FM / UL

Mode	Sidewall Sprinkler
Type	HA02
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	3mm glass bulb
Style	Quick Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	FM / UL

Mode	Upright Sprinkler
Type	HA03
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	5mm glass bulb
Style	Standard Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	FM / UL

Mode	Upright Sprinkler
Type	HA04
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	3mm glass bulb
Style	Quick Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	FM / UL

Mode	Pendent Sprinkler
Type	HA05
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	5mm glass bulb
Style	Standard Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	FM / UL

Mode	Pendent Sprinkler
Type	HA06
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	3mm glass bulb
Style	Quick Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	FM / UL

Mode	Conventional Sprinkler
Type	HA07
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	5mm glass bulb
Style	Standard Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	UL

Mode	Conventional Sprinkler
Type	HA08
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	3mm glass bulb
Style	Quick Response
Temp.	57°C, 68°C, 79°C, 93°C, 141°C
Thread Size	½" NPT or ½" BSPT
Cert.	UL

Mode	Concealed Pendent Sprinkler
Type	HA09
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	5mm glass bulb
Style	Standard Response
Temp.	57°C / 74°C (Cover Plate), 57°C, 68°C, 79°C, 93°C (Sprinkler)
Thread Size	½" NPT or ½" BSPT
Cert.	UL

Mode	Concealed Pendent Sprinkler
Type	HA10
K Factor gpm / (psi) ½ (L3 / min (bar) ½)	5.6 (80)
Thermos sensitive element	3mm glass bulb
Style	Quick Response
Temp.	57°C / 74°C (Cover Plate), 57°C, 68°C, 79°C, 93°C (Sprinkler)
Thread Size	½" NPT or ½" BSPT
Cert.	UL

Sprinkler Accessories

Mode	Adjustable Two-Piece Escutcheon
Type	HA210
Material	SPCC
Surface treatment	Chrome Plated / White Plated
Outer dia.	73mm
Inner dia.	43.8mm
Apply	½", ¾" sprinklers

Mode	One-Piece Escutcheon
Type	HA211
Material	SS304 / SPCC
Outer dia.	73.6mm
Height	5mm
Apply	½" sprinklers

Mode	Concealed Cover Plate
Type	HA212
Material	Brass
Surface treatment	Chrome Plated / White Plated
Outer dia.	82mm
Apply	½" Concealed type sprinklers

Mode	Sprinkler Wrench
Type	HA-W1
Material	Carbon steel
Surface treatment	Black coated
Length	250mm
Apply	½" sprinklers

Mode	Concealed Sprinkler Wrench
Type	HA-2
Material	Carbon steel
Surface treatment	Galvanize
Apply	½" Concealed type sprinklers

Mode	Sprinkler Head Guard
Type	HA155
Material	Steel
Surface treatment	Polyester Coating
Apply	½" sprinklers

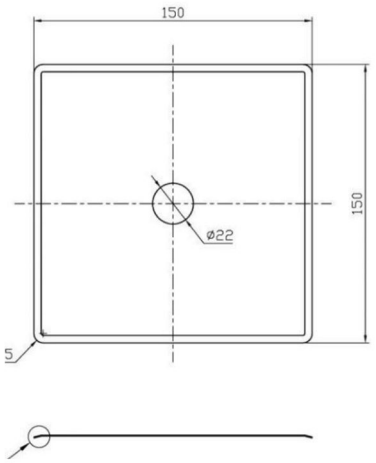
Mode	Sprinkler Head Guard
Type	HA156
Material	Steel
Surface treatment	Polyester Coating
Apply	½" sprinklers

Mode	Sprinkler Spare Cabinet
Type	HA351
Material	SPCC
Surface treatment	Red / Customized
Apply	½" or ¾" sprinklers
Optional	3 / 6 / 12 / 24 / 36 pieces

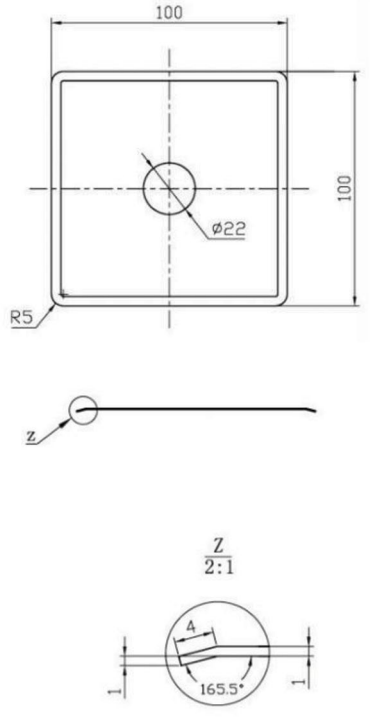
Heat Collector Plates/ Watershields
Model: GHC 150 - GHC 100

2 Models	
Model	Length - Width - Thickness
GHC 150	150mm x 150mm x 1mm
GHC 100	100mm x 100mm x 1mm

GHC 150



GHC 100



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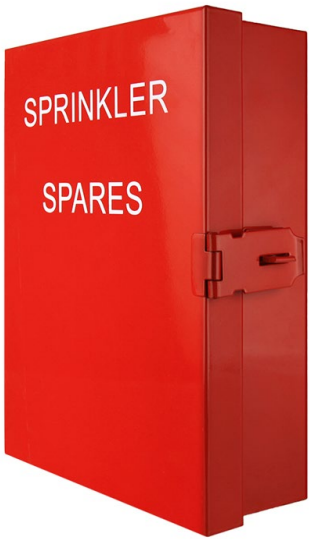
Sprinkler Spare Boxes Model: SBH-035/ SBH-036/SBH-037/ SBH-038/SBH-039



FIS FIS MENA

Description

Spares cabinet with fixed shelves that can accommodate sprinkler heads. The cabinets are pre drilled for wall mounting. Available in five sizes.

Specifications				
Model	**Colour**	**Capacity**	**Length - Width - Depth**	**Weight**
SBH-035	Red	6 Head	260 x 200 x 90mm	1.50kg
SBH-036	Red	12 Head	260 x 200 x 90mm	1.50kg
SBH-037	Red	24 Head	340 x 260 x 100mm	2.70kg
SBH-038	Red	36 Head	460 x 260 x 80mm	3.60kg
SBH-039	Red	ESFR	450 x 260 x 90mm	2.90kg

FIS Fire Blankets
Model: FIS1212-1/ FIS1212-2/FIS1218-1/ FIS1218-2/FIS1518

EN 1869:2019 LPCB ref. 1434.la

FIS MENA

Woven Fibreglass - Fire Blanket

FIS MENA fire blankets consist of a woven fibreglass fire resistant fabric. FIS MENA Fire Blankets are a fast and efficient way to control one of the most dangerous types of domestic fire > the ignition of cooking oil on the kitchen stove.

Also suitable to fight these fire types: stove top fires - fat fires, cooking oils & clothing fires. Ideal for use in kitchen, caravan & boat.

FIS Fire Blanket Comes With:

- Storage pouch
- Easily mounted - Can hang inside of cupboard door
- Quick release tabs
- Easy and fast installation
- Certified to BS EN 1869:2019
- 1 Year Warranty

Fire Blankets		
Model No	**Package**	**Size**
FIS1212-1	Red Rectangular woven fabric	1.2m x 1.2m
FIS1212-2	Red Rectangular hard PVC	1.2m x 1.2m
FIS1218-1	Red Rectangular woven fabric	1.2m x 1.8m
FIS1218-2	Red Rectangular hard PVC	1.2m x 1.8m
FIS1518	Red Rectangular woven fabric	1.5m x 1.8m

Fire Extinguishers Model: FIS01 01A 00 - FIS03 062D 00

Description

The FIS MENA fire extinguisher is a fire safety product certified by the British Standards Institution (BSI), indicating compliance with rigorous UK and international safety standards, ensuring that the extinguisher has undergone strict testing for performance, durability, and reliability.

Portable Type

ABC Powder

ABC powder fire extinguishers are among the most versatile and widely used fire suppression tools, working through a combination of chemical and physical mechanisms to effectively suppress fires.

Model Numbers	
FIS01-01A-00	FIS01-04A(MOD3)-00
FIS01-01V-00	FIS01-04V(MOD3)-00
FIS01-01A(MOD3)-00	FIS01-06A-00
FIS01-01V(MOD3)-00	FIS01-06V-00
FIS01-02A-00	FIS01-06A(MOD3)-00
FIS01-02V-00	FIS01-06V(MOD3)-00
FIS01-02A(MOD3)-00	FIS01-09A-00
FIS01-02V(MOD3)-00	FIS01-09V-00
FIS01-03A-00	FIS01-09A(MOD3)-00
FIS01-03V-00	FIS01-09V(MOD3)-00
FIS01-03A(MOD3)-00	FIS01-12A-00
FIS01-03V(MOD3)-00	FIS01-12V-00
FIS01-04A-00	FIS01-12A(MOD3)-00
FIS01-04V-00	FIS01-12V(MOD3)-00

Wet Chemical

Wet Chemical fire extinguishers specifically designed for Class F and Class A fires. Working through a combination of cooling, smothering, and chemical reaction to suppress fires.

Model Numbers	
FIS01-03A(REV.4)-00	FIS01-09A(REV.4)-00
FIS01-06A(REV.4)-00	

AFFF Foam

AFFF Foam fire extinguisher works by forming a thin aqueous film that floats on the fuel, cutting off oxygen supply and preventing vapor release.

Model Numbers	
FIS01-02A-00/CE1	FIS01-06A-00/CE1
FIS01-03A-00/CE1	FIS01-09A-00/CE1

Water

Water fire extinguishers are primarily designed for Class A fires (ordinary combustibles like wood, paper, cloth, and some plastics). They work mainly through cooling and secondarily by smothering fires.

Model Numbers	
FIS01-06S-00/CE1	FIS01-09S-00/CE1

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Fire Extinguishers
Model: FIS01 01A 00 - FIS03 062D 00

Carbon Dioxide

Carbon Dioxide fire extinguishers work by removing oxygen and cooling the fire, without leaving any residue.

Model Numbers	
FIS02-02F-00	FIS02-03D-00

Trolley Type

Powder Trolley

Powder trolley fire extinguishers are large, wheel-mounted fire suppression systems designed for high-capacity firefighting, particularly in industrial settings.

They operate similarly to handheld dry powder extinguishers but with greater range, volume, and mobility.

Model Numbers	
FIS03-042B-00	FIS03-042D-00
FIS03-047C-00	FIS03-047F-00

CO2 Trolley

Carbon dioxide trolley fire extinguishers work primarily by oxygen displacement and cooling, leaving no residue — making them ideal for sensitive environments like server rooms, labs, and industrial sites.

Model Numbers	
FIS03-051C-00	FIS03-062D-00

Foam Trolley

Foam trolley fire extinguishers are large, wheeled units designed to combat Class A (solid combustibles) and Class B (flammable liquids) fires.

They operate through a combination of smothering, cooling, and vapor suppression to extinguish flames effectively.

Model Numbers	
FIS03-047D-00	FIS03-047G-00

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Welded Sprinkler Steel Pipe Model: FIS-Schedule40 / FIS-Schedule10

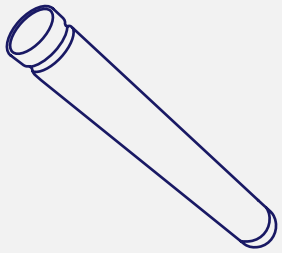
Technical Features

Standard ASTM A53, GR.A, GR.B

Pipe Ends Plain / bevelled ends
Grooved, threaded
and coupled

Coating Hot dipped galvanized /
Red painting / Epoxy powder coating

Certificate UL Listed



Technical Data

Part No.	Nominal Pipe Size (NPS)		O.D.	SCH 10			SCH 40		
				Wall Thickness	Nominal Weight	Test Pressure	Wall Thickness	Nominal Weight	Test Pressure
	DN	NPS	MM	MM	KG/M	MPA	MM	KG/M	MPA
A53-15	15	½	21.3	2.11	1	4.8	2.77	1.27	4.8
A53-20	20	¾	26.7	2.11	1.28	4.8	2.87	1.69	4.8
A53-25	25	1	33.4	2.77	2.09	4.8	3.38	2.5	4.8
A53-32	32	1 ¼	42.2	2.77	2.69	9	3.56	3.39	9
A53-40	40	1 ½	48.3	2.77	3.11	9	3.68	4.05	9
A53-50	50	2	60.3	2.77	3.93	13.5	3.91	5.44	17.2
A53-65	65	2 ½	73.0	3.05	5.26	12.28	5.16	8.63	17.2
A53-80	80	3	88.9	3.05	6.46	10.09	5.49	11.29	17.2
A53-90	90	3 ½	101.6	3.05	7.41	8.83	5.74	13.57	16.61
A53-100	100	4	114.3	3.05	8.37	7.85	6.02	16.08	15.48
A53-125	125	5	141.3	3.4	11.56	7.07	6.55	21.77	13.63
A53-150	150	6	168.3	3.4	13.83	5.94	7.11	28.26	12.42
A53-200	200	8	219.1	3.76	19.97	5.05	8.18	42.55	10.98
A53-250	250	10	273.0	4.19	27.78	4.51	9.27	60.29	9.98
A53-300	300	12	323.9	4.57	35.98	4.15	10.31	79.71	9.36

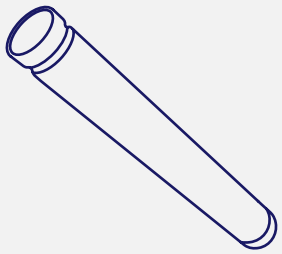
Technical Features

Standard ASTM A135, GR.A, GR.B

Pipe Ends Plain / bevelled ends
Grooved, threaded
and coupled

Coating Hot dipped galvanized /
Red painting / Epoxy powder coating

Certificate UL Listed



Technical Data

Part No.	Nominal Pipe Size (NPS)		O.D.	SCH 10			SCH 40		
				Wall Thickness	Nominal Weight	Test Pressure	Wall Thickness	Nominal Weight	Test Pressure
	DN	NPS	MM	MM	KG/M	MPA	MM	KG/M	MPA
A135-15	15	½	21.3	-	-	-	2.77	1.27	17.24
A135-20	20	¾	26.7	2.11	1.28	17.24	2.87	1.69	17.24
A135-25	25	1	33.4	2.77	2.09	17.24	3.38	2.5	17.24
A135-32	32	1 ¼	42.2	2.77	2.7	17.24	3.56	3.39	17.24
A135-40	40	1 ½	48.3	2.77	3.1	16.55	3.68	4.05	17.24
A135-50	50	2	60.3	2.77	3.93	13.10	3.91	5.44	17.24
A135-65	65	2 ½	73	3.05	5.26	11.72	5.16	8.63	17.24
A135-80	80	3	88.9	3.05	6.45	9.65	5.49	11.29	17.24
A135-90	90	3 ½	101.6	3.05	7.41	8.27	5.74	13.57	16.27
A135-100	100	4	114.3	3.05	8.36	7.58	6.02	16.08	15.17
A135-125	125	5	141.3	3.4	11.58	6.89	6.55	21.77	13.35
A135-150	150	6	168.3	-	-	-	7.11	28.26	12.17
A135-200	200	8	219.1	-	-	-	8.18	42.55	10.75

Welded Sprinkler Steel Pipe Model: FIS-Schedule40 / FIS-Schedule10

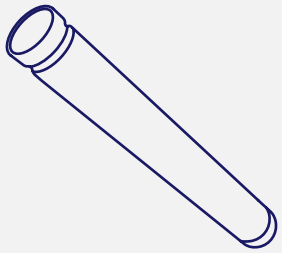
Technical Features

Standard ASTM A795, GR.A, GR.B

Pipe Ends Plain / bevelled ends
Grooved, threaded
and coupled

Coating Hot dipped galvanized /
Red painting / Epoxy powder coating

Certificate UL Listed



Technical Data

Part No.	Nominal Pipe Size (NPS)		O.D.	SCH 10			SCH 30/40		
				Wall Thickness	Nominal Weight	Test Pressure	Wall Thickness	Nominal Weight	Test Pressure
	DN	NPS	MM	MM	KG/M	MPA	MM	KG/M	MPA
A795-15	15	½	21.3	-	-	-	2.77	1.27	4.83
A795-20	20	¾	26.7	2.11	1.28	4.83	2.87	1.69	4.83
A795-25	25	1	33.4	2.77	2.09	4.83	3.38	2.5	4.83
A795-32	32	1 ¼	42.2	2.77	2.69	6.89	3.56	3.39	6.89
A795-40	40	1 ½	48.3	2.77	3.11	6.89	3.68	4.05	6.89
A795-50	50	2	60.3	2.77	3.93	6.89	3.91	5.45	6.89
A795-65	65	2 ½	73	3.05	5.26	6.89	5.16	8.64	6.89
A795-80	80	3	88.9	3.05	6.46	6.89	5.49	11.29	6.89
A795-90	90	3 ½	101.6	3.05	7.41	8.27	5.74	13.58	8.27
A795-100	100	4	114.3	3.05	8.37	8.27	6.02	16.09	8.27
A795-125	125	5	141.3	3.4	11.58	8.27	6.55	21.79	8.27
A795-150	150	6	168.3	3.4	13.85	6.89	7.11	28.29	8.27
A795-200	200	8	219.1	4.78	25.26	5.51	7.04	36.82	8.27
A795-250	250	10	273.1	4.78	31.62	4.83	7.08	51.05	6.89

Fire Cable
Model: FIS-FC1/FIS-FC15 /FIS-FC25

Construction

- Conductors:
  Plain Annealed Copper Wire
  Class 1
  Solid Type
- Insulation:
  Silicon Rubber
- Screen 1st:
  Fiber Glass Tape, >110% Coverage
- Drain Wire:
  Tinned Copper; OD: 0.80mm
- Screen 2nd:
  Aluminum Polyester Tape, >120%
- Outer Sheath:
  Thermoplastic Low Smoke, Halogen Free
- Sheath Color:
  Red/White

Electrical Data

- Insulation Resistance @ 20°C: > 200 M Ohm*Km
- Test Voltage Core-Core/ Core-Screen: 2000V / 2000V
- Mutual Capacitance: < 150 nF/km
- Operating Voltage: 300/500 V

Popular Packing

- 100M/Wooden Reel, 2 Reels/Carton
- 500M/Wooden Reel/Carton

Cable Printing

- FIS Fire Cable EN50200 : 2015 Class PH120 × C × SQMM
- 300 / 500V + BATCH NO. + METER MARKING

Reference Standards

- Flame Propagation: EN 50200:2015 Class PH120
- Acidity: EN / IEC 60754-1:2014
- Smoke Density: EN / IEC 61034-2:2005+A1:2013

Temperature Range

- During Operation: -30°C up to +180°C
- During Installation: -5°C up to +50°C

Identification of Cores

- 2 Cores

Characteristics

- Min. Bending Radius: 8 x cable diameter

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Hole Saw
Model: HOL014 - HOL205

Key Features

M42 cobalt bi-metal construction 4/6 variable tooth configuration wide slot design on side walls for increased visibility while cutting fleem ground tooth for faster cutting and longer life cuts 30% faster than conventional saws 3//16"(5mm) thick heavy-duty backing pallet eliminates need for drive plate.

M42 cobalt bi-metal construction wide slot design on side walls for increased visibility while cutting fleem ground tooth for faster cutting and longer life cuts 30% faster than conventional saws.

Product Details

Item	Model No	Size	Size Inch	Material	Color	Unit	MOQ	Carton
Bi-metal Hole saw -Fleem ground tooth	HOL014	14mm	9/16"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL016	16mm	5/8"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL017	17mm	11/16"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL019	19mm	3/4"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL020	20mm	-	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL021	21mm	13/16"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL022	22mm	7/8"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL024	24mm	15/16"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL025	25mm	1"	M42	white	pc	200	80
Bi-metal Hole saw -Fleem ground tooth	HOL027	27mm	1-1/16"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL029	29mm	1-1/8"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL030	30mm	1-3/16"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL032	32mm	1-1/4"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL033	33mm	1-5/16"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL035	35mm	1-3/8"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL037	37mm	1-7/16"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL038	38mm	1-1/2"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL040	40mm	1-9/16"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL041	41mm	1-5/8"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL043	43mm	1-11/16"	M42	white	pc	200	42
Bi-metal Hole saw -Fleem ground tooth	HOL044	44mm	1-3/4"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL045	45mm	-	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL046	46mm	1-13/16"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL048	48mm	1-7/8"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL050	50mm	-	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL051	51mm	2"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL052	52mm	2-1/16"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL054	54mm	2-1/8"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL055	55mm	-	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL056	56mm	2-3/16"	M42	blue	pc	200	30

Hole Saw
Model: HOL014 - HOL205

Product Details

Item	Model No	Size	Size Inch	Material	Color	Unit	MOQ	Carton
Bi-metal Hole saw -Fleem ground tooth	HOL057	57mm	2-1/4"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL059	59mm	2-5/16"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL060	60mm	2-3/8"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL062	62mm	2-7/16"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL064	64mm	2-1/2"	M42	white	pc	200	24
Bi-metal Hole saw -Fleem ground tooth	HOL065	65mm	2-9/16"	M42	white	pc	200	18
Bi-metal Hole saw -Fleem ground tooth	HOL067	67mm	2-5/8"	M42	white	pc	200	18
Bi-metal Hole saw -Fleem ground tooth	HOL068	68mm	-	M42	white	pc	200	18
Bi-metal Hole saw -Fleem ground tooth	HOL070	70mm	2-3/4"	M42	white	pc	200	18
Bi-metal Hole saw -Fleem ground tooth	HOL073	73mm	2-7/8"	M42	white	pc	200	18
Bi-metal Hole saw -Fleem ground tooth	HOL075	75mm	-	M42	white	pc	200	18
Bi-metal Hole saw -Fleem ground tooth	HOL076	76mm	3"	M42	white	pc	100	18
Bi-metal Hole saw -Fleem ground tooth	HOL079	79mm	3-1/8"	M42	white	pc	100	18
Bi-metal Hole saw -Fleem ground tooth	HOL083	83mm	3-1/4"	M42	white	pc	100	18
Bi-metal Hole saw -Fleem ground tooth	HOL086	86mm	3-3/8"	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL089	89mm	3-1/2"	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL092	92mm	3-5/8"	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL095	95mm	3-3/4"	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL098	98mm	3-7/8"	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL100	100mm	-	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL102	102mm	4"	M42	white	pc	100	12
Bi-metal Hole saw -Fleem ground tooth	HOL105	105mm	4-1/8"	M42	white	pc	100	7
Bi-metal Hole saw -Fleem ground tooth	HOL108	108mm	4-1/4"	M42	white	pc	100	7
Bi-metal Hole saw -Fleem ground tooth	HOL111	111mm	4-3/8"	M42	white	pc	100	7
Bi-metal Hole saw -Fleem ground tooth	HOL114	114mm	4-1/2"	M42	white	pc	100	7
Bi-metal Hole saw -Fleem ground tooth	HOL121	121mm	4-3/4"	M42	white	pc	100	7
Bi-metal Hole saw -Fleem ground tooth	HOL127	127mm	5"	M42	white	pc	100	6
Bi-metal Hole saw -Fleem ground tooth	HOL133	133mm	5-1/4"	M42	white	pc	100	6
Bi-metal Hole saw -Fleem ground tooth	HOL140	140mm	5-1/2"	M42	white	pc	100	6
Bi-metal Hole saw -Fleem ground tooth	HOL146	146mm	5-3/4"	M42	white	pc	100	6
Bi-metal Hole saw -Fleem ground tooth	HOL150	150mm	-	M42	white	pc	100	6
Bi-metal Hole saw -Fleem ground tooth	HOL152	152mm	6"	M42	white	pc	100	6
Bi-metal Hole saw -Fleem ground tooth	HOL160	160mm	6-5/16"	M42	white	pc	100	10
Bi-metal Hole saw -Fleem ground tooth	HOL165	165mm	6-1/2"	M42	white	pc	100	10
Bi-metal Hole saw -Fleem ground tooth	HOL168	168mm	6-5/8"	M42	white	pc	100	10

Hole Saw
Model: HOL014 - HOL205

Product Details

Item	Model No	Size	Size Inch	Material	Color	Unit	MOQ	Carton
Bi-metal Hole saw -Fleem ground tooth	HOL177	177mm	6-31/32"	M42	white	pc	100	10
Bi-metal Hole saw -Fleem ground tooth	HOL185	185mm	7-9/32"	M42	white	pc	100	10
Bi-metal Hole saw -Fleem ground tooth	HOL200	200mm	7-7/8"	M42	white	pc	100	10
Bi-metal Hole saw -Fleem ground tooth	HOL210	210mm	8-9/32"	M42	white	pc	100	10
"Hole Saw Arbor Hex Shank 9.5mm (3/8""), fit for holesaw size from Dia.14-30mm"	HOL202	hex shank 9.5mm	3/8"	c45+M2	black	pc	300	150
"Hole Saw Arbor Hex Shank 11mm (7/16""), fit for holesaw size Dia.32-210m"	HOL203	hex shank 11mm	7/16"	c45+M2	black	pc	300	150
1PC-Pilot Drill bit - Diameter: 1/4"x Length:80mm	HOL204	6.35* 82mm	1/4"x3-1/4"	M2	black	pc	360	180
2PC-Pilot Drill bit - Diameter: 1/4"x Length: 80mm	HOL205	6.35* 82mm	1/4"x3-1/4"	M2	black	pc	300	60

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FIS Hemp Rolls
Model: FIS-HEM

FIS FIS MENA

Technical Features

- Quality 6 Ply Jute Hemp
- 26 Meters per Roll

Specifications	
Code	FIS-HEM
Description	Jute Plumbers Hemp
Length	1 Ply 6 x 26 Meters

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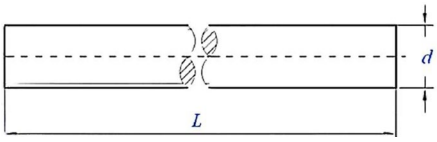
Threaded Rod
Model: FIS-TR



Product Details

- Standard length is 1000-3000mm
- Other length can be customized
- Standard DIN975/972

Dimensions													
FIS No	FIS-TR2	FIS-TR25	FIS-TR3	FIS-TR35	FIS-TR4	FIS-TR5	FIS-TR6	FIS-TR8	FIS-TR10	FIS-TR12	FIS-TR14	FIS-TR16	FIS-TR18
d	M2	M2.5	M3	M3.5	M4	M5	M6	M8	M10	M12	M14	M16	M18
P	0.40 - -	0.45 - -	0.50 - -	0.60 - -	0.70 - -	0.80 - -	1.00 - -	1.25 1.00 -	1.50 1.25 1.00	1.75 1.25 1.50	2.00 1.50 -	2.00 1.50 -	2.50 1.50 -
L±10	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

Dimensions												
FIS No	FIS-TR20	FIS-TR22	FIS-TR24	FIS-TR27	FIS-TR30	FIS-TR33	FIS-TR36	FIS-TR39	FIS-TR42	FIS-TR45	FIS-TR48	FIS-TR52
d	M20	M22	M24	M27	M30	M33	M36	M39	M42	M45	M48	M52
P	2.50 1.50 -	2.50 1.50 -	3.00 2.00 -	3.00 2.00 -	3.50 2.00 -	3.50 2.00 -	4.00 3.00 -	4.00 3.00 -	4.50 3.00 -	4.50 3.00 -	5.00 3.00 -	5.00 3.00 -
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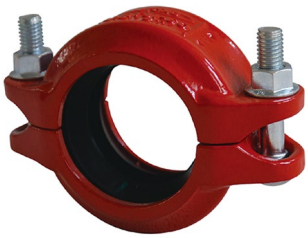
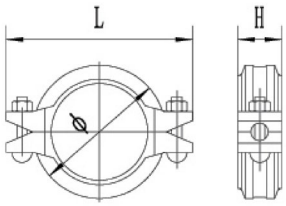
Rigid Coupling
Model: XGQT01





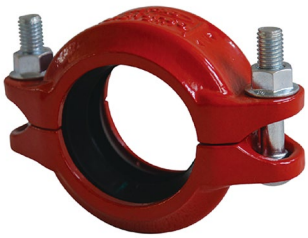
Product Description

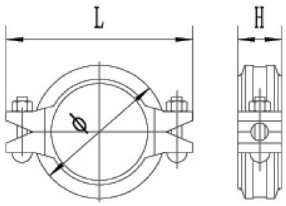
FIS MENA Model XGQT01 is Ductile Iron Grooved Rigid Couplings. XGQT01 is designed for use on schedule 10, schedule 30, schedule 40, GB/T3091 and WGalweld 7 pipe. Sizes of XGQT01 from 25mm - 300mm / 1" - 12". Pressure of XGQT01 conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT01-25	25 1	33.7 1.327	500 3.45	2 - M10 x 45	57.5 2.264	99 3.898	43.5 1.713	UL	FM
XGQT01-32	32 1 ¼	42.4 1.669	500 3.45	2 - M10 x 45	70 2.756	106 4.173	44 1.732	UL	FM
XGQT01-40	40 1 ½	48.3 1.900	500 3.45	2 - M10 x 45	73 2.874	108 4.252	44 1.732	UL	FM
XGQT01-50	50 2	60.3 2.375	500 3.45	2 - M10 x 55	87 3.425	123 4.843	44 1.732	UL	FM
XGQT01-65-1	65 2 ½	73.0 2.875	500 3.45	2 - M10 x 55	100 3.937	138 5.433	44 1.732	UL	FM
XGQT01-65-2	65 2 ½	76.1 3.000	500 3.45	2 - M10 x 55	103 4.055	142 5.591	45 1.772	UL	FM
XGQT01-80	80 3	88.9 3.500	500 3.45	2 - M12 x 60	117 4.606	166 6.535	45 1.772	UL	FM
XGQT01-100-1	100 4	108.0 4.250	500 3.45	2 - M12 x 65	137 5.393	188 7.401	48 1.889	UL	FM
XGQT01-100-2	100 4	114.3 4.500	500 3.45	2 - M12 x 65	139 5.472	190 7.480	49 1.929	UL	FM
XGQT01-125-1	125 5	133.0 5.250	300 2.07	2 - M12 x 75	162.6 6.401	216 8.504	48 1.889	UL	FM
XGQT01-125-2	125 5	139.7 5.500	400 2.75	2 - M12 x 75	168 6.614	218 8.583	49 1.929	UL	FM
XGQT01-125-3	125 5	141.3 5.563	400 2.75	2 - M12 x 75	167 6.575	219 8.622	49 1.929	UL	FM
XGQT01-150-1	150 6	159.0 6.250	300 2.07	2 - M12 x 75	189.4 7.456	240 9.448	48 1.889	UL	FM
XGQT01-150-2	150 6	165.1 6.500	400 2.75	2 - M12 x 75	193 7.598	241 9.488	49 1.929	UL	FM
XGQT01-150-3	150 6	168.3 6.625	400 2.75	2 - M12 x 75	198.5 7.815	249 9.803	50 1.969	UL	FM
XGQT01-200	200 8	219.1 8.625	300 2.07	2 - M16 x 85	253 9.961	320 12.598	59 2.323	UL	FM
XGQT01-250	250 10	273 10.748	300 2.07	2 - M22 x 130	335 13.189	426 16.772	68 2.677	UL	FM
XGQT01-300	300 12	323.9 12.752	300 2.07	2 - M22 x 130	380 14.96	470 18.504	65 2.559	UL	FM

Rigid Coupling
Model: XGQT01P





Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT01P-125-1	125 5	139.7 5.500	500 3.45	2 - M16 x 85	169.5 6.673	229 9.016	52 2.047	UL	FM
XGQT01P-125-2	125 5	141.3 5.563	500 3.45	2 - M16 x 85	170.5 6.713	232 9.134	52 2.047	UL	FM
XGQT01P-150-1	150 6	165.1 6.50	500 3.45	2 - M16 x 85	195 7.677	256 10.079	52 2.047	UL	FM
XGQT01P-150-2	150 6	168.3 6.625	500 3.45	2 - M16 x 85	202.5 7.972	263.5 10.374	52 2.047	UL	FM
XGQT01P-200	200 8	219.1 8.625	500 3.45	2 - M20 x 120	256.5 10.098	336 13.228	62 2.441	UL	FM
XGQT01P-250	250 10	273.0 10.750	500 3.45	2 - M24 x 130	326 12.835	410 16.142	65 2.441	UL	FM
XGQT01P-300	300 12	323.9 12.750	500 3.45	2 - M24 x 130	384 15.118	472 18.583	66 2.598	UL	FM

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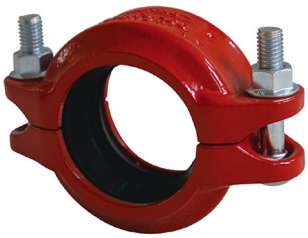
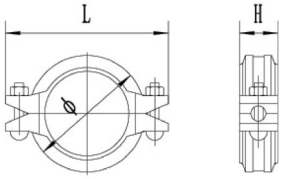
Flexible Coupling Model: XGQT02





Product Description

FIS MENA Model XGQT02 is Ductile Iron Grooved Flexible Couplings. XGQT02 is designed for use on schedule 10, schedule 30, schedule 40, GB/T3091 and WGalweld 7 pipe. Sizes of XGQT02 from 25mm - 300mm / 1"-12". Pressure of XGQT02 conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT02-25	25 1	33.7 1.327	500 3.45	2 - M10 x 45	60 2.362	98 3.858	43.5 1.713	UL	FM
XGQT02-32	32 1 ¼	42.4 1.669	500 3.45	2 - M10 x 45	67 2.638	106 4.173	44 1.732	UL	FM
XGQT02-40	40 1 ½	48.3 1.900	500 3.45	2 - M10 x 45	73 2.874	108 4.252	44 1.732	UL	FM
XGQT02-50	50 2	60.3 2.375	500 3.45	2 - M10 x 55	87 3.425	123 4.843	44 1.732	UL	FM
XGQT02-65-1	65 2 ½	73.0 2.875	500 3.45	2 - M10 x 55	100 3.937	138 5.433	44 1.732	UL	FM
XGQT02-65-2	65 2 ½	76.1 3.000	500 3.45	2 - M10 x 55	103 4.055	142 5.591	45 1.772	UL	FM
XGQT02-80	80 3	88.9 3.500	500 3.45	2 - M12 x 60	117 4.606	166 6.535	45 1.772	UL	FM
XGQT02-100-1	100 4	108.0 4.250	500 3.45	2 - M12 x 65	137 5.393	188 7.401	48 1.889	UL	FM
XGQT02-100-2	100 4	114.3 4.500	500 3.45	2 - M12 x 65	139 5.472	190 7.480	49 1.929	UL	FM
XGQT02-125-1	125 5	133.0 5.250	300 2.07	2 - M12 x 75	162.6 6.401	216 8.504	48 1.889	UL	FM
XGQT02-125-2	125 5	139.7 5.500	400 2.75	2 - M12 x 75	168 6.614	218 8.583	49 1.929	UL	FM
XGQT02-125-3	125 5	141.3 5.563	400 2.75	2 - M12 x 75	167 6.575	219 8.622	49 1.929	UL	FM
XGQT02-150-1	150 6	159.0 6.250	300 2.75	2 - M12 x 75	189.4 7.456	240 9.448	48 1.889	UL	FM
XGQT02-150-2	150 6	165.1 6.500	400 2.07	2 - M12 x 75	193 7.598	241 9.488	49 1.929	UL	FM
XGQT02-150-3	150 6	168.3 6.625	400 2.75	2 - M12 x 75	198.5 7.815	249 9.803	50 1.969	UL	FM
XGQT02-200	200 8	219.1 8.625	300 2.07	2 - M16 x 85	253 9.961	320 12.598	59 2.323	UL	FM
XGQT02-250	250 10	273 10.748	300 2.07	2 - M22 x 130	317 12.480	401 10.787	63 2.480	UL	FM
XGQT02-300	300 12	323.9 12.752	300 2.07	2 - M22 x 130	375 14.764	455 17.913	64 2.520	UL	FM

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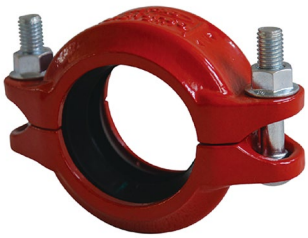
Flexible Coupling
Model: XGQT02P



Technical Data									
Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT02P-125-1	125 5	139.7 5.500	500 3.45	2 - M16 x 85	169.5 6.673	229 9.016	52 2.047	UL	FM
XGQT02P-125-2	125 5	141.3 5.563	500 3.45	2 - M16 x 85	170.5 6.713	232 9.134	52 2.047	UL	FM
XGQT02P-150-1	150 6	165.1 6.500	500 3.45	2 - M16 x 85	195 7.677	256 10.079	52 2.047	UL	FM
XGQT02P-150-2	150 6	168.3 6.625	500 3.45	2 - M16 x 85	202.5 7.972	263.5 10.374	52 2.047	UL	FM
XGQT02P-200	200 8	219.1 8.625	500 3.45	2 - M20 x 120	256.5 10.098	336 13.228	62 2.441	UL	FM
XGQT02P-250	250 10	273.0 10.750	500 3.45	2 - M24 x 130	326 12.835	410 16.142	65 2.441	UL	FM
XGQT02P-300	300 12	323.9 12.750	500 3.45	2 - M24 x 130	384 15.118	472 18.583	66 2.598	UL	FM

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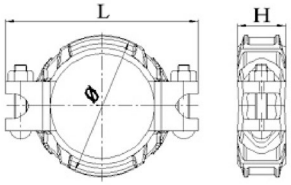
Flexible Coupling
Model: XGQT02K



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Dimensions L mm/in			UL	FM
				Ø	L	H		
XGQT02K-50	50 2	60.3 2.375	500 3.45	44 1.732	136 5.354	46 1.811	UL	FM
XGQT02K-80	80 3	88.9 3.500	500 3.45	59 2.323	161 6.339	46 1.811	UL	FM
XGQT02K-100	100 4	114.3 4.500	500 3.45	74 2.913	204 8.031	51 2.008	UL	FM
XGQT02K-150	150 6	168.3 6.625	500 3.45	103 4.055	270 10.630	54 2.126	UL	FM
XGQT02K-200	200 8	219.1 8.625	400 2.76	135 5.331	355 13.976	64 2.520	UL	FM
XGQT02K-250	250 10	273 10.75	400 2.76	163 6.417	418 16.457	67 2.638	UL	FM
XGQT02K-300	300 12	323.9 12.75	400 2.76	189 7.441	464 18.268	68 2.677	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

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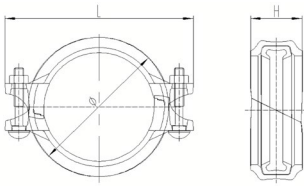
Angle Pad Coupling
Model: 31A



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
31A-25	25 1	33.7 1.327	300 2.07	2 - M10 x 45	57.4 2.260	98 3.858	47 1.850	UL	
31A-32	32 1 ¼	42.4 1.669	300 2.07	2 - M10 x 55	65 2.559	106 4.173	47 1.850	UL	FM
31A-40	40 1 ½	48.3 1.900	300 2.07	2 - M10 x 55	70.5 2.776	111 4.370	47 1.850	UL	FM
31A-50	50 2	60.3 2.375	300 2.07	2 - M10 x 60	85 3.346	123.5 4.862	47 1.850	UL	FM
31A-65-1	65 2 ½	73.0 2.875	300 2.07	2 - M10 x 60	99 3.900	137.5 5.413	47 1.850	UL	FM
31A-65-2	65 2 ½	76.1 3.000	300 2.07	2 - M10 x 60	102 4.016	141.5 5.571	47 1.850	UL	FM
31A-80	80 3	88.9 3.500	300 2.07	2 - M12 x 65	117 4.606	164.5 6.476	47.5 1.870	UL	FM
31A-100-1	100 4	108 4.250	300 2.07	2 - M12 x 70	138.5 5.453	186 7.323	52 2.047	UL	FM
31A-100-2	100 4	114.3 4.500	300 2.07	2 - M12 x 70	140.5 5.531	188 7.402	52 2.047	UL	FM
31A-125-1	125 5	139.7 5.500	300 2.07	2 - M12 x 75	167.5 6.595	219 8.622	52 2.047	UL	FM
31A-125-2	125 5	141.3 5.563	300 2.07	2 - M12 x 75	167.5 6.595	219 8.622	52 2.047	UL	FM
31A-150-1	150 6	159.0 6.250	300 2.07	2 - M12 x 75	190 7.480	240 9.449	52.5 2.067	UL	FM
31A-150-2	150 6	165.1 6.500	300 2.07	2 - M12 x 75	193 7.598	243 9.567	52.5 2.067	UL	FM
31A-150-3	150 6	168.3 6.625	300 2.07	2 - M12 x 75	200 7.874	249 9.803	52.5 2.067	UL	FM
31A-200-1	200 8	216.3 8.516	300 2.07	2 - M16 x 110	251 9.882	312 12.283	64 2.520	UL	FM
31A-200-2	200 8	219.1 8.625	300 2.07	2 - M16 x 110	251 9.882	320 12.598	64 2.520	UL	FM
31A-250-1	250 10	267.0 10.512	300 2.07	2 - M22 x 155	307 12.087	392 15.433	66 2.600	UL	FM
31A-250-2	250 10	273.0 10.748	300 2.07	2 - M22 x 155	316 12.441	400 15.748	66 2.600	UL	FM
31A-300	300 12	323.9 12.752	301 2.07	2 - M24 x 165	376.5 14.823	464 18.268	66 2.600	UL	FM

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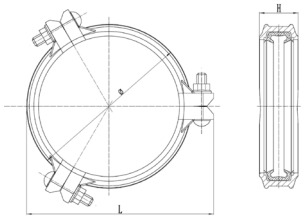
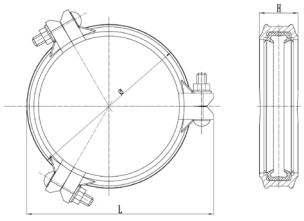
Heavy Duty Rigid Coupling Model: XGQT01H



Technical Data									
Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT01H-50	50 2	60.3 2.375	500 3.45	2 - M10 x 55	88.6 3.488	129.5 5.098	46 1.811	UL	
XGQT01H-65	65 2 ½	76.1 3.000	500 3.45	2 - M10 x 55	107.8 4.244	149 5.866	46 1.811	UL	
XGQT01H-80	80 3	88.9 3.500	500 3.45	2 - M12 x 75	120.8 4.756	171 6.732	46 1.811	UL	
XGQT01H-100	100 4	114.3 4.500	500 3.45	2 - M12 x 75	146 5.748	197 7.756	51 2.008	UL	
XGQT01H-125	125 5	139.7 5.500	450 3.1	2 - M16 x 100	174.8 6.882	234 9.213	51 2.008	UL	
XGQT01H-150	150 6	165.1 6.500	450 3.1	2 - M16 x 100	200.2 7.882	260.5 10.256	53 2.087	UL	
XGQT01H-200	200 8	216.3 8.516	300 2.07	2 - M20 x 120	261.4 10.291	333 13.110	63 2.480	UL	
XGQT01H-250	250 10	267.4 10.528	300 2.07	2 - M22 x 130	318.6 12.543	395 15.551	64 2.520	UL	
XGQT01H-300	300 12	318.5 12.539	300 2.07	2 - M22 x 165	371 14.606	451 17.756	64 2.520	UL	
XGQT01H-350	350 14	355.6 14	300 2.07	3 - M22 x 100	406 15.984	461 18.150	75 2.953	UL	
XGQT01H-400	400 16	406.4 16	300 2.07	3 - M22 x 100	458.6 18.055	513.8 20.228	75 2.953	UL	
XGQT01H-450	450 18	457.2 18	250 1.72	3 - M22 x 100	515 20.276	571 22.480	82 3.228	UL	
XGQT01H-500	500 20	508 20	250 1.72	4 - M24 x 130	565 22.244	690 27.165	79 3.110	UL	
XGQT01H-600	600 24	609.6 24	250 1.72	4 - M24 x 130	676 26.614	786.6 30.969	79 3.110	UL	

Heavy Duty Flexible Coupling Model: XGQT02H



Technical Data									
Part No.	Nominal Size mm/in	Pipe O.D mm/ in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT02H-350	350 14	355.6 14	300 2.07	3 - M22 x 100	406 15.984	454 17.874	75 2.953	UL	
XGQT02H-400	400 16	406.4 16	250 1.72	3 - M22 x 100	458 18.031	507 19.961	75 2.953	UL	
XGQT02H-450	450 18	457.2 18	250 1.72	3 - M22 x 100	507 19.961	535 21.063	82 3.228	UL	
XGQT02H-500	500 20	508 20	250 1.72	4 - M24 x 130	564 22.205	663 26.102	79 3.11	UL	
XGQT02H-600	600 24	609.6 24	250 1.72	4 - M24 x 130	672 26.457	774 30.472	79 3.11	UL	

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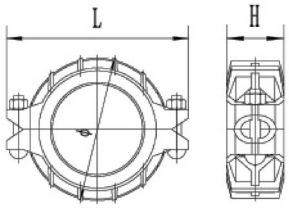
Reducing Flexible Coupling Model: XGQT02B



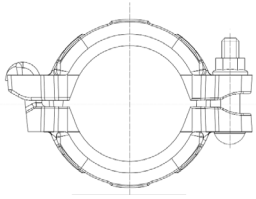
Product Description

FIS MENA Model XGQT02B is Ductile Iron Grooved Reducing Flexible Couplings. XGQT02B is designed for use on schedule 10, schedule 40 and GB/T3091 pipe. Sizes of XGQT02B from 50mm - 200mm / 2" - 8". Pressure of XGQT02B conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in			UL	FM
					Ø	L	H		
XGQT02B-40X32	40 x 32 1 ½ x 1 ¼	48.3 x 42.4 1.900 x 1.669	300 2.07	2 - M10 x 45	73.6 2.899	111 4.370	44 1.732	UL	FM
XGQT02B-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	300 2.07	2 - M10 x 55	90 3.543	129 5.079	47 1.850	UL	FM
XGQT02B-65X40-1	65 x 40 2 ½ x 1 ½	73.0 x 48.3 2.874 x 1.900	300 2.07	2 - M10 x 55	101 3.976	137 5.394	48 1.890	UL	FM
XGQT02B-65X50-1	65 x 50 2 ½ x 2	73.0 x 60.3 2.874 x 2.375	300 2.07	2 - M10 x 55	101 3.976	137 5.394	48 1.890	UL	FM
XGQT02B-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 48.3 2.996 x 1.900	300 2.07	2 - M10 x 55	105 4.134	140 5.512	48 1.890	UL	FM
XGQT02B-65X50-2	65 x 50 2 ½ x 2	76.1 x 60.3 2.996 x 2.375	300 2.07	2 - M10 x 55	105 4.134	140 5.512	48 1.890	UL	FM
XGQT02B-65X65	65 x 65 2 ½ x 2 ½	76.1 x 73.0 2.996 x 2.874	300 2.07	2 - M10 x 55	100.4 3.953	141 5.551	47 1.850	UL	FM
XGQT02B-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	300 2.07	2 - M12 x 65	120 4.724	164 6.457	48 1.890	UL	FM
XGQT02B-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	300 2.07	2 - M12 x 65	120 4.724	164 6.457	48 1.890	UL	FM
XGQT02B-80X65-1	80 x 65 3 x 2 ½	88.9 x 73.0 3.500 x 2.874	300 2.07	2 - M12 x 65	120 4.724	164 6.457	48 1.890	UL	FM
XGQT02B-80X65-2	80 x 65 3 x 2 ½	88.9 x 76.1 3.500 x 2.996	300 2.07	2 - M12 x 65	120 4.724	164 6.457	48 1.890	UL	FM
XGQT02B-100X40	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.900	300 2.07	2 - M12 x 65	150 5.906	195 7.677	49 1.929	UL	FM
XGQT02B-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	300 2.07	2 - M12 x 65	150 5.906	195 7.677	49 1.929	UL	FM
XGQT02B-100X65-1	100 x 65 4 x 2 ½	114.3 x 73.0 4.500 x 2.874	300 2.07	2 - M12 x 65	150 5.906	195 7.677	49 1.929	UL	FM
XGQT02B-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 2.996	300 2.07	2 - M12 x 65	150 5.906	195 7.677	49 1.929	UL	FM
XGQT02B-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	300 2.07	2 - M12 x 65	150 5.906	195 7.677	49 1.929	UL	FM
XGQT02B-150X100-1	150 x 100 6 x 4	165.1 x 114.3 6.500 x 4.500	300 2.07	2 - M12 x 75	203 7.992	235 9.252	50 1.969		
XGQT02B-150X80	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	300 2.07	2 - M12 x 75	203 7.992	235 9.252	50 1.969	UL	FM
XGQT02B-150X100-2	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	300 2.07	2 - M12 x 75	203 7.992	235 9.252	50 1.969	UL	FM
XGQT02B-200X150	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	300 2.07	2 - M16 x 110	264 10.394	313 12.323	60 2.362	UL	FM

Push Lock Coupling
Model: 101T



Technical Data										
Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Torque Value (N · M)	Dimensions L mm/ in			UL	FM
						A	L	H		
101T-25	25 1	33.7 1.32	450 3.1	M10 x 55	90 ± 10	57.3	98.6	47.6	UL	FM
101T-32	32 1 ¼	42.4 1.67	450 3.1	M10 x 60	90 ± 10	64	107.5	47.5	UL	FM
101T-40	40 1 ½	48.3 1.90	450 3.1	M10 x 60	90 ± 10	70	114	47.5	UL	FM
101T-50	50 2	60.3 2.37	365 2.5	M10 x 65	90 ± 10	84	128	48	UL	FM
101T-65-1	65 2 ½	73 2.87	365 2.5	M10 x 70	100 ± 10	96.4	140.3	48	UL	FM
101T-65-2	65 2 ½	76.1 3.00	365 2.5	M10 x 70	100 ± 10	99.5	143.5	48	UL	FM
101T-80	80 3	88.9 3.50	365 2.5	M12 x 80	100 ± 10	113.5	168	48	UL	FM
101T-100-1	100 4	108 4.25	365 2.5	M12 x 80	120 ± 10	133	187.5	50	UL	FM
101T-100-2	100 4	114.3 4.50	365 2.5	M12 x 80	120 ± 10	143	194	50	UL	FM
101T-125-1	125 5	133 5.24	365 2.5	M12 x 85	150 ± 10	165.5	221	50	UL	FM
101T-125-2	125 5	139.7 5.50	365 2.5	M12 x 85	150 ± 10	172	228	50	UL	FM
101T-125-3	125 5	141.3 5.56	365 2.5	M12 x 85	150 ± 10	173.7	229.5	50	UL	FM
101T-150-1	150 6	159 6.26	365 2.5	M12 x 90	150 ± 10	190	251	51	UL	FM
101T-150-2	150 6	165.1 6.5	365 2.5	M12 x 90	150 ± 10	198	256	51	UL	FM
101T-150-3	150 6	168.3 6.63	365 2.5	M12 x 90	150 ± 10	201	259	51	UL	FM

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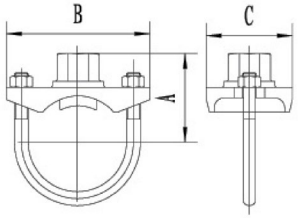
U-Bolted Mechanical Tee Threaded Model: XGQT03U



Product Description

FIS MENA Model XGQT03U is Ductile Iron U-Bolted Threaded Mechanical Tee. XGQT03U is designed for use on GB/T3091, SC40, SC10, EN4200F and EN4200E pipe. Sizes of XGQT03U from 25mm - 65mm / 1" - 2 ½". Pressure of XGQT03U conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	U Bolt Size No. - Size mm	Dimensions L mm/in			Hole Cutting Dimensions	UL	FM
					A	B	C			
XGQT03U-25X15	25 x 15 1 x ½	33.7 x 21.3 1.327 x 0.839	300 2.07	M10 x 25	39 1.535	76 2.992	43 1.654	24 0.945	UL	FM
XGQT03U-25X20	25 x 20 1 x ¾	33.7 x 26.9 1.327 x 1.059	300 2.07	M10 x 25	46 1.811	84 3.307	43 1.693	24 0.945	UL	FM
XGQT03U-25X25	25 x 25 1 x 1	33.7 x 33.7 1.327 x 1.327	300 2.07	M10 x 28.5	50 1.969	92 3.622	57 2.244	24 0.945		
XGQT03U-32X15	32 x 15 1 ¼ x ½	42.4 x 21.3 1.669 x 0.839	300 2.07	M10 x 28.5	43 1.693	90 3.543	56 2.205	30 1.181	UL	FM
XGQT03U-32X20	32 x 20 1 ¼ x ¾	42.4 x 26.9 1.669 x 1.059	300 2.07	M10 x 28.5	45 1.772	90 3.543	56 2.205	30 1.181	UL	FM
XGQT03U-32X25-1	32 x 25 1 ¼ x 1	42.4 x 33.7 1.669 x 1.327	300 2.07	M10 x 28.5	50 1.969	90 3.543	56 2.205	30 1.181		FM
XGQT03U-32X25-2	32 x 25 1 ¼ x 1	42.4 x 33.7 1.669 x 1.327	300 2.07	M10 x 28.5	50 1.969	90 3.543	56 2.205	32 1.260	UL	FM
XGQT03U-40X15	40 x 15 1 ½ x ½	48.3 x 21.3 1.900 x 0.839	300 2.07	M10 x 28.5	43 1.693	93 3.661	59 2.323	30 1.181	UL	FM
XGQT03U-40X20	40 x 20 1 ½ x ¾	48.3 x 26.9 1.900 x 1.059	300 2.07	M10 x 28.5	54 2.126	93 3.661	59 2.323	30 1.181	UL	FM
XGQT03U-40X25-1	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	300 2.07	M10 x 28.5	58 2.283	93 3.661	59 2.323	30 1.181		FM
XGQT03U-40X25-2	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	300 2.07	M10 x 28.5	58 2.283	93 3.661	59 2.323	32 1.260	UL	FM
XGQT03U-50X15	50 x 15 2 x ½	60.3 x 21.3 2.375 x 0.839	300 2.07	M10 x 30	54 2.126	96 3.780	59 2.323	30 1.181	UL	FM
XGQT03U-50X20	50 x 20 2 x ¾	60.3 x 26.9 2.375 x 1.059	300 2.07	M10 x 30	56 2.205	96 3.780	59 2.323	30 1.181	UL	FM
XGQT03U-50X25-1	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	300 2.07	M10 x 30	66 2.598	96 3.780	59 2.323	30 1.181		FM
XGQT03U-50X25-2	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	300 2.07	M10 x 30	66 2.598	96 3.780	59 2.323	32 1.260	UL	FM
XGQT03U-65X15-1	65 x 15 2 ½ x ½	73 x 21.3 2.874 x 0.839	300 2.07	M10 x 30	60 2.362	110 4.331	59 2.323	30 1.181	UL	FM
XGQT03U-65X20	65 x 20 2 ½ x ¾	73 x 26.9 2.874 x 1.059	300 2.07	M10 x 30	63 2.480	110 4.331	59 2.323	30 1.181	UL	FM
XGQT03U-65X25-1	65 x 25 2 ½ x 1	73 x 33.7 2.874 x 1.327	300 2.07	M10 x 30	70 2.756	110 4.331	59 2.323	30 1.181		FM
XGQT03U-65X25-2	65 x 25 2 ½ x 1	73 x 33.7 2.874 x 1.327	300 2.07	M10 x 30	70 2.756	110 4.331	59 2.323	32 1.260	UL	FM
XGQT03U-65X32-1	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.874 x 1.669	300 2.07	M10 x 30	64 2.520	113.5 4.469	74.2 2.921	51 2.007	UL	
XGQT03U-65X15-2	65 x 15 2 ½ x ½	76.1 x 21.3 2.996 x 0.839	300 2.07	M10 x 30	61 2.402	110 4.331	59 2.323	30 1.181	UL	FM
XGQT03U-65X20-2	65 x 20 2 ½ x ¾	76.1 x 26.9 2.996 x 1.059	300 2.07	M10 x 30	67 2.638	110 4.331	59 2.323	30 1.181	UL	FM
XGQT03U-65X25-3	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	300 2.07	M10 x 30	74 2.913	110 4.331	59 2.323	30 1.181		FM
XGQT03U-65X25-4	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	300 2.07	M10 x 30	74 2.913	110 4.331	59 2.323	32 1.260	UL	FM
XGQT03U-65X32-2	65 x 32 2 ½ x 1 ¼	76 x 42.4 2.996 x 1.669	300 2.07	M10 x 30	65 2.559	113.5 4.469	74.2 2.921	51 2.007	UL	
XGQT03U-80X15	80 x 15 3 x ½	88.9 x 21.3 3.5 x 0.839	300 2.07	M12 x 30	68 2.677	131.5 5.177	67.5 2.657	38 1.496	UL	
XGQT03U-80X20	80 x 20 3 x ¾	88.9 x 26.9 3.5 x 1.059	300 2.07	M12 x 30	69 2.717	131.5 5.177	67.5 2.657	38 1.496	UL	
XGQT03U-80X25	80 x 25 3 x 1	88.9 x 33.7 3.5 x 1.327	300 2.07	M12 x 30	73.5 2.894	131.5 5.177	67.5 2.657	38 1.496	UL	
XGQT03U-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 2.878 x 1.669	300 2.07	M12 x 30	70 2.756	132 5.197	78 3.071	51 2.007	UL	
XGQT03U-100X15	100 x 15 4 x ½	114.3 x 21.3 4.5 x 0.839	300 2.07	M12 x 40	79.5 3.130	154 6.063	70 2.756	38 1.496	UL	
XGQT03U-100X20	100 x 20 4 x ¾	114.3 x 26.9 4.5 x 1.059	300 2.07	M12 x 40	80.5 3.169	154 6.063	70 2.756	38 1.496	UL	
XGQT03U-100X25	100 x 25 4 x 1	114.3 x 33.7 4.5 x 1.327	300 2.07	M12 x 40	86.5 3.406	154 6.063	70 2.756	38 1.496	UL	
XGQT03U-100X32	100 x 32 4 x 1 ¼	114.3 x 42.4 4.5 x 1.669	300 2.07	M12 x 40	82.5 3.248	154 6.063	78 3.071	51 2.007	UL	

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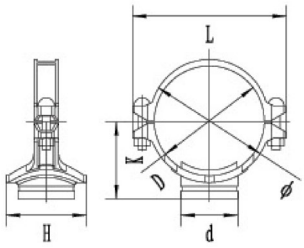
Mechanical Tee Grooved Model: XGQT03



Product Description

FIS MENA Model XGQT03 is Ductile Iron Grooved Mechanical Tee. XGQT03 is designed for use on schedule 10, schedule 40 and GB/T3091 pipe. Sizes of XGQT03 from 50mm - 250mm / 2" - 10". Pressure of XGQT03 conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	U Bolt Size No. - Size mm	Dimensions L mm/in				Hole Cutting Dimensions mm/in	UL	FM
					Ø	L	K	H			
XGQT03-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	300 2.07	2 - M10 x 55	75 2.953	116 4.567	64 2.520	72 2.835	38 1.496	UL	FM
XGQT03-50X32	50 x 32 2 x 1 ¼	60.3 x 42.4 2.375 x 1.669	300 2.07	2 - M10 x 55	75 2.953	116 4.566	65 2.559	72 2.835	46 1.811	UL	FM
XGQT03-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	300 2.07	2 - M10 x 55	75 2.953	116 4.566	65 2.559	72 2.835	46 1.811	UL	FM
XGQT03-65X25-1	65 x 25 2 ½ x 1	73 x 33.7 2.874 x 1.327	300 2.07	2 - M12 x 60	93 3.661	136 5.354	80 3.150	77 3.031	38 1.496	UL	FM
XGQT03-65X32-1	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.874 x 1.669	300 2.07	2 - M12 x 60	93 3.661	136 5.354	80 3.150	83 3.268	46 1.811		
XGQT03-65X40-1	65 x 40 2 ½ x 1 ½	73 x 48.3 2.874 x 1.900	300 2.07	2 - M12 x 60	93 3.661	136 5.354	80 3.150	83 3.268	51 2.007		
XGQT03-65X25-2	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	300 2.07	2 - M12 x 60	102 4.016	144 5.669	78 3.071	77 3.031	38 1.496	UL	FM
XGQT03-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 42.4 2.996 x 1.669	300 2.07	2 - M12 x 60	102 4.016	144 5.669	78 3.071	83 3.267	46 1.811	UL	FM
XGQT03-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 48.3 2.996 x 1.900	300 2.07	2 - M12 x 60	102 4.016	144 5.669	78 3.071	83 3.267	51 2.007	UL	FM
XGQT03-80X25	80 x 25 3 x 1	88.9 x 33.7 3.500 x 1.327	300 2.07	2 - M12 x 65	114 4.488	152 5.984	83 3.268	77 3.031	38 1.496	UL	FM
XGQT03-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 3.500 x 1.669	300 2.07	2 - M12 x 65	114 4.488	152 5.984	85 3.346	83 3.268	46 1.811	UL	FM
XGQT03-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	300 2.07	2 - M12 x 65	114 4.488	152 5.984	85 3.346	93 3.661	51 2.007	UL	FM
XGQT03-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	300 2.07	2 - M12 x 65	114 4.488	152 5.984	85 3.346	99 3.898	61 2.402	UL	FM
XGQT03-80X65-1	80 x 65 3 x 2 ½	88.9 x 73 3.500 x 2.874	300 2.07	2 - M12 x 65	114 4.488	152 5.984	85 3.346	99 3.898	81 3.189		
XGQT03-80X65-2	80 x 65 3 x 2 ½	88.9 x 76 3.500 x 2.996	300 2.07	2 - M12 x 65	114 4.488	152 5.984	85 3.346	99 3.898	81 3.189		
XGQT03-100X25	100 x 25 4 x 1	114.3 x 33.7 4.500 x 1.327	300 2.07	2 - M12 x 65	140 5.512	180 7.087	97 3.819	77 3.031	38 1.496	UL	FM
XGQT03-100X32	100 x 32 4 x 1 ¼	114.3 x 42.4 4.500 x 1.669	300 2.07	2 - M12 x 65	140 5.512	180 7.087	97 3.819	83 3.268	46 1.811	UL	FM
XGQT03-100X40	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.900	300 2.07	2 - M12 x 65	140 5.512	180 7.087	98 3.858	92 3.622	51 2.007	UL	FM
XGQT03-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	300 2.07	2 - M12 x 65	140 5.512	180 7.087	99 3.898	98 3.858	61 2.402	UL	FM
XGQT03-100X65-1	100 x 65 4 x 2 ½	114.3 x 73 4.500 x 2.874	300 2.07	2 - M12 x 65	140 5.512	180 7.087	99 3.898	122 4.803	81 3.189	UL	FM
XGQT03-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 2.996	300 2.07	2 - M12 x 65	140 5.512	180 7.087	99 3.898	122 4.803	81 3.189	UL	FM
XGQT03-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	300 2.07	2 - M12 x 65	140 5.512	180 7.087	98 3.858	123 4.843	86 3.386	UL	FM
XGQT03-125X50	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.375	300 2.07	2 - M16 x 75	168 6.614	220 8.661	112 4.409	99 3.819	61 2.402	UL	FM
XGQT03-125X65	125 x 65 5 x 2 ½	139.7 x 76.1 5.500 x 2.996	300 2.07	2 - M16 x 75	168 6.614	220 8.661	112 4.409	122 4.409	81 3.189	UL	FM

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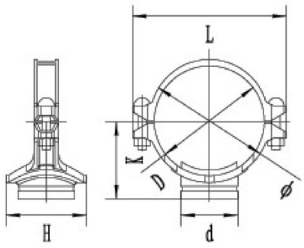
Mechanical Tee Grooved Model: XGQT03



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	U Bolt Size No. - Size mm	Dimensions L mm/in				Hole Cutting Dimensions mm/in	UL	FM
					Ø	L	K	H			
XGQT03-125X80	125 x 80 5 x 3	139.7 x 88.9 5.500 x 3.500	300 2.07	2 - M16 x 75	168 6.614	220 8.661	113 4.449	136 5.354	86 3.386	UL	FM
XGQT03-150X65-1	150 x 65 6 x 2 ½	159.0 x 76.1 6.260 x 2.996	300 2.07	2 - M16 x 85	187 7.362	237 9.331	121 4.764	122 4.409	81 3.189		
XGQT03-150X80-1	150 x 80 6 x 3	159.0 x 88.9 6.260 x 3.500	300 2.07	2 - M16 x 85	187 7.362	237 9.331	121 4.764	136 5.354	86 3.386		
XGQT03-150X100-1	150 x 100 6 x 4	159.0 x 108.0 6.260 x 4.252	300 2.07	2 - M16 x 85	187 7.362	237 9.331	125 4.921	158 6.220	114 4.488		
XGQT03-150X100-2	150 x 100 6 x 4	159.0 x 114.3 6.260 x 4.500	300 2.07	2 - M16 x 85	187 7.362	237 9.331	125 4.921	158 6.220	114 4.488		
XGQT03-150X50-1	150 x 50 6 x 2	165.1 x 60.3 6.500 x 2.375	300 2.07	2 - M16 x 85	194 7.638	247 9.724	123 4.842	99 3.898	61 2.402	UL	FM
XGQT03-150X65-2	150 x 65 6 x 2 ½	165.1 x 76.1 6.500 x 2.996	300 2.07	2 - M16 x 85	194 7.638	247 9.724	123 4.842	123 4.843	81 3.189	UL	FM
XGQT03-150X80-2	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	300 2.07	2 - M16 x 85	194 7.638	247 9.724	125 4.921	136 5.354	86 3.386	UL	FM
XGQT03-150X100-3	150 x 100 6 x 4	165.1 x 114.3 6.500 x 4.500	300 2.07	2 - M16 x 85	194 7.638	247 9.724	125 4.921	158 6.220	114 4.488	UL	FM
XGQT03-150X25	150 x 25 6 x 1	168.3 x 33.7 6.625 x 1.327	300 2.07	2 - M16 x 85	198 7.795	248 9.764	125 4.921	79 3.110	38 1.496	UL	FM
XGQT03-150X32	150 x 32 6 x 1 ¼	168.3 x 42.4 6.625 x 1.669	300 2.07	2 - M16 x 85	198 7.795	248 9.764	125 4.921	84 3.307	46 1.811	UL	FM
XGQT03-150X40	150 x 40 6 x 1 ½	168.3 x 48.3 6.625 x 1.900	300 2.07	2 - M16 x 85	198 7.795	248 9.764	125 4.921	94 3.701	51 2.007	UL	FM
XGQT03-150X50-2	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	300 2.07	2 - M16 x 85	198 7.795	248 9.764	125 4.921	99 3.898	61 2.401	UL	FM
XGQT03-150X65-3	150 x 65 6 x 2 ½	168.3 x 73 6.625 x 2.874	300 2.07	2 - M16 x 85	198 7.795	248 9.764	128 5.039	122 4.409	81 3.189		
XGQT03-150X65-4	150 x 65 6 x 2 ½	168.3 x 76.1 6.625 x 2.996	300 2.07	2 - M16 x 85	198 7.795	248 9.764	128 5.039	122 4.409	81 3.189	UL	FM
XGQT03-150X80-3	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	300 2.07	2 - M16 x 85	198 7.795	248 9.764	130 5.118	136 5.354	86 3.385	UL	FM
XGQT03-150X100-4	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	300 2.07	2 - M16 x 85	198 7.795	248 9.764	128 5.039	157 6.181	114 4.488		
XGQT03-200X65-1	200 x 65 8 x 2 ½	216 x 76.1 8.504 x 2.996	300 2.07	2 - M16 x 100	247 9.724	302 11.890	150 5.906	127 5.000	81 3.189		
XGQT03-200X50-1	200 x 50 8 x 2	219.1 x 60.3 8.625 x 2.375	300 2.07	2 - M16 x 100	250 9.843	302 11.890	152 5.984	99 3.898	61 2.402	UL	FM
XGQT03-200X65-2	200 x 65 8 x 2 ½	219.1 x 73 8.625 x 2.874	300 2.07	2 - M16 x 100	250 9.843	302 11.890	152 5.984	130 5.118	81 3.189		
XGQT03-200X65-3	200 x 65 8 x 2 ½	219.1 x 76.1 8.625 x 2.996	300 2.07	2 - M16 x 100	250 9.843	302 11.890	152 5.984	130 5.118	81 3.189	UL	FM
XGQT03-200X80	200 x 80 8 x 3	219.1 x 88.9 8.625 x 3.500	300 2.07	2 - M16 x 100	250 9.843	302 11.890	152 5.984	137 5.394	86 3.386	UL	FM
XGQT03-200X100	200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	300 2.07	2 - M16 x 100	250 9.843	304 11.969	153 6.024	162 6.378	114 4.488	UL	FM
XGQT03-200X150	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	300 2.07	2 - M16 x 100	250 9.843	304 11.969	158 6.850	210 8.425	160 6.299		
XGQT03-200X65-4	250 x 65 10 x 2 ½	273.0 x 73 10.748 x 2.874	300 2.07	2 - M22 x 130	307 12.087	376 14.803	186 7.323	131 5.157	81 3.189		
XGQT03-250X100	250 x 100 10 x 4	273.0 x 114.3 10.748 x 4.500	300 2.07	2 - M22 x 130	307 12.087	376 14.803	186 7.323	161 6.339	114 4.488		

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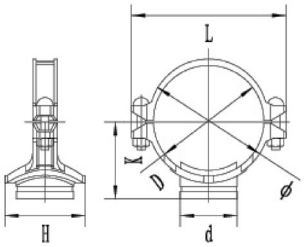
V-Mechanical Tee Grooved Model: XGQT33



Product Description

FIS MENA Model XGQT33 is Ductile Iron Grooved Mechanical Tee. XGQT33 is designed for use on schedule 10 and schedule 40 pipe. Sizes of XGQT33 from 50mm - 200mm / 2" - 8". Pressure of XGQT33 conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in				Hole Cutting Dimensions mm/in	UL	FM
					Ø	L	K	H			
XGQT33-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	300 2.07	2 - M10 x 55	75 2.953	116 4.567	64 2.520	72 2.835	38 1.496		
XGQT33-50X32	50 x 32 2 x 1 ¼	60.3 x 42.4 2.375 x 1.669	300 2.07	2 - M10 x 55	75 2.953	116 4.567	65 2.559	72 2.835	45 1.772	UL	FM
XGQT33-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	300 2.07	2 - M10 x 55	75 2.953	116 4.567	65 2.559	72 2.835	45 1.772	UL	FM
XGQT33-65X32	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.87 x 1.669	300 2.07	2 - M12 x 60	93 3.661	136 5.354	75 2.295	84 3.307	46 1.811	UL	FM
XGQT33-65X40-1	65 x 40 2 ½ x 1 ½	73 x 48.3 2.87 x 1.900	300 2.07	2 - M12 x 60	93 3.661	136 5.354	75 2.292	84 3.307	51 2.007	UL	FM
XGQT33-65X25	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	300 2.07	2 - M12 x 65	102 4.016	144 5.669	78 3.071	77 3.031	38 1.496		
XGQT33-65X40X2	65 x 40 2 ½ x 1 ¼	76.1 x 48.3 2.996 x 1.900	300 2.07	2 - M12 x 65	102 4.016	144 5.669	78 3.071	83 3.268	51 2.008		
XGQT33-80X25	80 x 25 3 x 1	88.9 x 33.7 3.500 x 1.327	300 2.07	2 - M12 x 65	114 4.488	152 5.984	83 3.268	77 3.031	38 1.496		
XGQT33-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 3.500 x 1.669	300 2.07	2 - M12 x 65	114 4.488	152 5.984	83 3.267	84 3.307	51 2.007	UL	FM
XGQT33-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	300 2.07	2 - M12 x 65	114 4.488	152 5.984	83 3.267	84 3.307	51 2.007	UL	FM
XGQT33-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	300 2.07	2 - M12 x 65	114 4.488	152 5.984	83 3.267	102 4.015	51 2.007	UL	FM
XGQT33-100X32	100 x 32 4 x 1 ¼	114.3 x 42.4 4.500 x 1.669	300 2.07	2 - M12 x 65	140 5.512	180 7.086	98 3.858	84 3.307	51 2.007	UL	FM
XGQT33-100X40	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.900	300 2.07	2 - M12 x 65	140 5.512	180 7.086	98 3.858	84 3.307	51 2.007	UL	FM
XGQT33-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	300 2.07	2 - M12 x 65	140 5.512	180 7.086	98 3.858	103 4.055	64 2.519	UL	FM
XGQT33-100X65-1	100 x 65 4 x 2 ½	114.3 x 73 4.500 x 2.875	300 2.07	2 - M12 x 65	140 5.512	180 7.086	98 3.858	103 4.055	70 2.756	UL	FM
XGQT33-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 2.996	300 2.07	2 - M12 x 65	140 5.512	180 7.087	99 3.898	122 4.803	81 3.189		
XGQT33-125X40	125 x 40 5 x 1 ½	141.3 x 48.3 5.563 x 1.900	300 2.07	2 - M16 x 75	168 6.614	220 8.661	104 4.094	95 3.740	51 2.007	UL	FM
XGQT33-125X50	125 x 50 5 x 2	141.3 x 60.3 5.563 x 2.375	300 2.07	2 - M16 x 75	168 6.614	220 8.661	112 4.409	100 3.937	64 2.519	UL	FM
XGQT33-150X50-1	150 x 50 6 x 2	165.1 x 60.3 6.500 x 2.375	300 2.07	2 - M16 x 85	190 7.480	247 9.724	123 4.843	109 4.291	64 2.520		
XGQT33-150X65-1	150 x 65 6 x 2 ½	165.1 x 76.1 6.500 x 2.996	300 2.07	2 - M16 x 85	190 7.480	247 9.724	125 4.921	109 4.291	70 2.756		
XGQT33-150X80	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	300 2.07	2 - M16 x 85	190 7.480	247 9.724	125 4.921	135 5.315	89 3.504		
XGQT33-150X40	150 x 40 6 x 1 ½	168.3 x 48.3 6.625 x 1.900	300 2.07	2 - M16 x 85	198 7.795	247 9.724	120 4.724	92 6.622	51 2.007	UL	FM
XGQT33-150X50-2	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	300 2.07	2 - M16 x 85	198 7.795	250 9.842	125 4.921	108 4.251	64 2.519	UL	FM
XGQT33-150X65-2	150 x 65 6 x 2 ½	168.3 x 73 6.625 x 2.875	300 2.07	2 - M16 x 85	198 7.795	250 9.842	125 4.921	108 4.251	70 2.756	UL	FM
XGQT33-250X65	250 x 65 8 x 2 ½	219.1 x 73 8.625 x 2.875	300 2.07	2 - M16 x 100	250 9.843	310 12.204	152 5.984	116 4.566	70 2.756	UL	FM
XGQT33-250X100	250 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	300 2.07	2 - M16 x 100	250 9.843	304 11.969	153 6.024	162 6.378	114 4.488		

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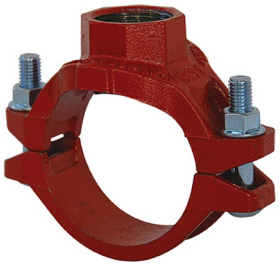
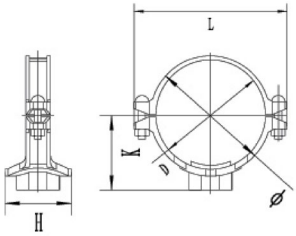
Mechanical Tee Threaded Model: XGQT03S





Product Description

FIS MENA Model XGQTO3S is Ductile Iron Threaded Mechanical Tee. XGQTO3S is designed for use on schedule 10, schedule 40 and GB/T3091 pipe. Sizes of XGQTO3S from 40mm - 250mm / 1-1 / 2"-10". Pressure of XGQTO3S conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	U Bolt Size No. - Size mm	Dimensions L mm/in				Hole Cutting Dimensions mm/in	UL	FM
					Ø	L	K	H			
XGQT03S-40X25	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	300 2.07	2 - M10 x 45	67 2.637	112 4.409	56 2.204	61 2.401	32 1.259	UL	
XGQT03S-50X15	50 x 15 2 x ½	60.3 x 21.3 2.375 x 0.839	300 2.07	2 - M10 x 55	75 2.953	116 4.567	56 2.205	72 2.835	38 1.496		
XGQT03S-50X20	50 x 20 2 x ¾	60.3 x 26.9 2.375 x 1.059	300 2.07	2 - M10 x 55	75 2.953	116 4.567	56 2.205	72 2.835	38 1.496		
XGQT03S-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	300 2.07	2 - M10 x 55	75 2.953	116 4.567	57 2.244	72 2.835	38 1.496	UL	FM
XGQT03S-50X32	50 x 32 2 x 1 ¼	60.3 x 42.4 2.375 x 1.669	300 2.07	2 - M10 x 55	75 2.953	116 4.567	57 2.244	72 2.835	46 1.811	UL	FM
XGQT03S-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	300 2.07	2 - M10 x 55	75 2.953	116 4.567	61 2.402	72 2.835	46 1.811	UL	FM
XGQT03S-65X25-1	65 x 25 2 ½ x 1	73 x 33.7 2.874 x 1.327	300 2.07	2 - M12 x 60	93 3.661	136 5.354	61 2.402	77 3.031	38 1.496		
XGQT03S-65X32-1	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.874 x 1.669	300 2.07	2 - M12 x 60	93 3.661	136 5.354	61 2.402	83 3.268	46 1.811	UL	FM
XGQT03S-65X40-1	65 x 40 2 ½ x 1 ½	73 x 48.3 2.874 x 1.900	300 2.07	2 - M12 x 60	93 3.661	136 5.354	61 2.402	83 3.268	51 2.008		
XGQT03S-65X50	65 x 50 2 ½ x 2	73 x 60.3 2.874 x 2.375	300 2.07	2 - M12 x 60	93 3.661	136 5.354	78 3.071	85 3.346	51 2.008		
XGQT03S-65X15	65 x 15 2 ½ x ½	76.1 x 21.3 2.996 x 0.839	300 2.07	2 - M12 x 60	93 3.661	136 5.354	65 2.559	78 3.071	38 1.496		
XGQT03S-65X20	65 x 20 2 ½ x ¾	76.1 x 26.9 2.996 x 1.059	300 2.07	2 - M12 x 60	93 3.661	136 5.354	65 2.559	78 3.071	38 1.496		
XGQT03S-65X25-2	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	300 2.07	2 - M12 x 60	102 4.016	144 5.669	67 2.756	77 3.031	38 1.496	UL	FM
XGQT03S-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 42.4 2.996 x 1.669	300 2.07	2 - M12 x 60	102 4.016	144 5.669	67 2.756	83 3.268	46 1.811	UL	FM
XGQT03S-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 48.3 2.996 x 1.900	300 2.07	2 - M12 x 60	102 4.016	144 5.669	67 2.756	83 3.268	51 2.008	UL	FM
XGQT03S-65X40-3	65 x 40 2 ½ x 2	76.1 x 60.3 2.996 x 2.375	300 2.07	2 - M12 x 60	102 4.016	144 5.669	72 2.913	83 3.268	51 2.008	UL	
XGQT03S-80X15	80 x 15 3 x ½	88.9 x 21.3 3.500 x 0.839	300 2.07	2 - M12 x 65	114 4.488	152 5.984	73 2.874	77 3.031	38 1.496		
XGQT03S-80X20	80 x 20 3 x ¾	88.9 x 26.9 3.500 x 1.059	300 2.07	2 - M12 x 65	114 4.488	152 5.984	73 2.874	77 3.031	38 1.496		
XGQT03S-80X25	80 x 25 3 x 1	88.9 x 33.7 3.500 x 1.327	300 2.07	2 - M12 x 65	114 4.488	152 5.984	74 3.228	77 3.031	38 1.496	UL	FM
XGQT03S-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 3.500 x 1.669	300 2.07	2 - M12 x 65	114 4.488	152 5.984	73 2.874	83 3.268	46 1.811	UL	FM
XGQT03S-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	300 2.07	2 - M12 x 65	114 4.488	152 5.984	73 2.874	92 3.622	51 2.008	UL	FM
XGQT03S-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	300 2.07	2 - M12 x 65	114 4.488	152 5.984	78 3.071	99 3.898	61 2.402	UL	FM
XGQT03S-100X25-1	100 x 25 4 x 1	108.0 x 33.7 4.252 x 1.327	300 2.07	2 - M12 x 65	135 5.315	172 6.772	87 3.425	77 3.031	38 1.496		
XGQT03S-100X32-1	100 x 32 4 x 1 ¼	108.0 x 42.4 4.252 x 1.669	300 2.07	2 - M12 x 65	135 5.315	172 6.772	87 3.425	83 3.268	46 1.811		
XGQT03S-100X40-1	100 x 40 4 x 1 ½	108.0 x 48.3 4.252 x 1.900	300 2.07	2 - M12 x 65	135 5.315	172 6.772	87 3.425	92 3.622	51 2.008		
XGQT03S-100X50-1	100 x 50 4 x 2	108.0 x 60.3 4.252 x 2.375	300 2.07	2 - M12 x 65	135 5.315	172 6.772	87 3.425	97 3.819	61 2.402		
XGQT03S-100X65-1	100 x 65 4 x 2 ½	108.0 x 76.1 4.252 x 2.996	300 2.07	2 - M12 x 65	135 5.315	172 6.772	98 3.858	112 4.409	70 2.756		
XGQT03S-100X25-2	100 x 25 4 x ½	114.3 x 21.3 4.500 x 0.839	300 2.07	2 - M12 x 65	140 5.512	180 7.087	88 3.465	77 3.031	38 1.496		
XGQT03S-100X25-3	100 x 25 4 x ¾	114.3 x 26.9 4.500 x 1.059	300 2.07	2 - M12 x 65	140 5.512	180 7.087	88 3.465	77 3.031	38 1.496		
XGQT03S-100X25-4	100 x 25 4 x 1	114.3 x 33.7 4.500 x 1.327	300 2.07	2 - M12 x 65	140 5.512	180 7.087	93 3.661	77 3.031	38 1.496	UL	FM
XGQT03S-100X32-2	100 x 32 4 x 1 ¼	114.3 x 42.4 4.500 x 1.669	300 2.07	2 - M12 x 65	140 5.512	180 7.087	93 3.661	83 3.268	46 1.811	UL	FM
XGQT03S-100X40-2	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.900	300 2.07	2 - M12 x 65	140 5.512	180 7.087	93 3.661	92 3.622	51 2.008	UL	FM
XGQT03S-100X50-2	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	300 2.07	2 - M12 x 65	140 5.512	180 7.087	93 3.661	97 3.819	61 2.402	UL	FM
XGQT03S-100X65-2	100 x 65 4 x 2 ½	114.3 x 73 4.500 x 2.874	300 2.07	2 - M12 x 65	140 5.512	180 7.087	95 3.740	122 4.803	81 3.189	UL	FM
XGQT03S-100X65-3	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 2.996	300 2.07	2 - M12 x 65	140 5.512	180 7.087	97 3.819	122 4.803	81 3.189	UL	FM
XGQT03S-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	300 2.07	2 - M12 x 65	140 5.512	180 7.087	97 3.819	125 4921	86 3.386	UL	FM
XGQT03S-125X25	125 x 25 5 x 1	133.0 x 33.7 5.236 x 1.327	300 2.07	2 - M16 x 75	160 6.299	204 8.031	100 3.937	77 3.031	38 1.496		
XGQT03S-125X32	125 x 32 5 x 1 ¼	133.0 x 42.4 5.236 x 1.669	300 2.07	2 - M16 x 75	160 6.299	204 8.031	100 3.937	83 3.268	46 1.811		
XGQT03S-125X40	125 x 40 5 x 1 ½	133.0 x 48.3 5.236 x 1.900	300 2.07	2 - M16 x 75	160 6.299	204 8.031	100 3.937	92 3.622	51 2.008		

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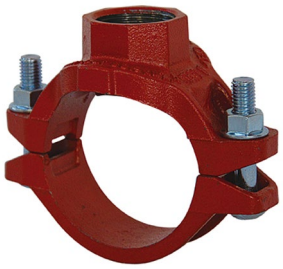
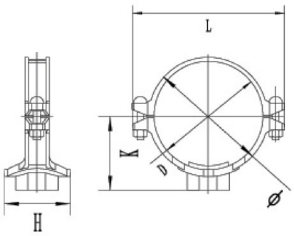
V-Mechanical Tee Threaded Model: XGQT33S





Product Description

FIS MENA Model XGQT33S is Ductile Iron Threaded Mechanical Tee. XGQT33S is designed for use on schedule 10 and schedule 40 pipe. Sizes of XGQT33S from 25mm - 150mm / 1" - 6". Pressure of XGOT33S conform to the list from UL and FM.

Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Bolt Size No. - Size mm	Dimensions L mm/in				Hole Cutting Dimensions mm/in	UL	FM
					Ø	L	K	H			
XGQT33S-25X15	25 x 15 1 x ½	60.3 x 21.3 2.375 x 0.839	300 2.07	2 - M10 x 55	75 2.953	116 4.567	57 2.244	69 2.717	38 1.496	UL	FM
XGQT33S-25X20	25 x 20 1 x ¾	60.3 x 26.9 2.375 x 1.059	300 2.07	2 - M10 x 55	75 2.953	116 4.567	57 2.244	69 2.717	38 1.496	UL	FM
XGQT33S-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	300 2.07	2 - M10 x 55	75 2.953	116 4.567	57 2.244	69 2.717	38 1.496	UL	FM
XGQT33S-50X32	50 x 32 2 x 1 ¼	60.3 x 42.4 2.375 x 1.669	300 2.07	2 - M10 x 55	75 2.953	116 4.567	57 2.244	72 2.835	45 1.772	UL	FM
XGQT33S-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	300 2.07	2 - M10 x 55	75 2.953	116 4.567	62 2.441	72 2.835	45 1.772	UL	FM
XGQT33S-65X15-1	65 x 15 2 ½ x ½	73 x 21.3 2.87 x 0.839	300 2.07	2 - M12 x 60	93 3.661	136 5.354	65 2.559	78 3.071	38 1.496	UL	FM
XGQT33S-65X20	65 x 20 2 ½ x ¾	73 x 26.9 2.87 x 1.059	300 2.07	2 - M12 x 60	93 3.661	136 5.354	65 2.559	78 3.071	38 1.496	UL	FM
XGQT33S-65X25-1	65 x 25 2 ½ x 1	73 x 33.7 2.87 x 1.327	300 2.07	2 - M12 x 60	93 3.661	136 5.354	65 2.559	78 3.071	38 1.496	UL	FM
XGQT33S-65X32-1	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.87 x 1.669	300 2.07	2 - M12 x 60	93 3.661	136 5.354	65 2.559	84 3.307	51 2.007	UL	FM
XGQT33S-65X40	65 x 40 2 ½ x 1 ½	73 x 48.3 2.87 x 1.900	300 2.07	2 - M12 x 60	93 3.661	136 5.354	60 2.362	83 3.267	51 2.007	UL	FM
XGQT33S-65X25-2	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	300 2.07	2 - M12 x 65	102 4.016	144 5.669	67 2.638	77 3.031	38 1.496		
XGQT33S-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 42.4 2.996 x 1.669	300 2.07	2 - M12 x 65	102 4.016	138 5.433	67 2.638	83 3.266	51 2.008		
XGQT33S-65X15-2	60 x 15 3 x ½	88.9 x 21.3 3.500 x 0.839	300 2.07	2 - M12 x 65	114 4.488	152 5.984	74 2.913	77 3.031	38 1.496	UL	FM
XGQT33S-80X20	80 x 20 3 x ¾	88.9 x 26.9 3.500 x 1.059	300 2.07	2 - M12 x 65	114 4.488	152 5.984	74 2.913	77 3.031	38 1.496	UL	FM
XGQT33S-60X25	60 x 25 3 x 1	88.9 x 33.7 3.500 x 1.327	300 2.07	2 - M12 x 65	114 4.488	152 5.984	74 2.913	77 3.031	38 1.496	UL	FM
XGQT33S-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 3.500 x 1.669	300 2.07	2 - M12 x 65	114 4.488	152 5.984	76 2.992	84 3.307	51 2.007	UL	FM
XGQT33S-60X40	60 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	300 2.07	2 - M12 x 65	114 4.488	152 5.984	73 2.874	92 3.622	51 2.007	UL	FM
XGQT33S-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	300 2.07	2 - M12 x 65	114 4.488	152 5.984	78 3.070	99 3.897	64 2.519	UL	FM
XGQT33S-100X25-1	100 x 25 4 x ½	114.3 x 21.3 4.500 x 0.839	300 2.07	2 - M12 x 65	140 5.512	180 7.086	88 3.465	77 3.031	38 1.496	UL	FM
XGQT33S-100X25-2	100 x 25 4 x ¾	114.3 x 26.9 4.500 x 1.059	300 2.07	2 - M12 x 65	140 5.512	160 7.086	88 3.465	77 3.031	38 1.496	UL	FM
XGQT33S-100X25-3	100 x 25 4 x 1	114.3 x 33.7 4.500 x 1.327	300 2.07	2 - M12 x 65	140 5.512	160 7.086	88 3.465	77 3.031	38 1.496	UL	FM
XGQT33S-100X32	100 x 32 4 x 1 ¼	114.3 x 42.4 4.500 x 1.669	300 2.07	2 - M12 x 65	140 5.512	160 7.086	93 3.661	84 3.307	51 2.007	UL	FM
XGQT33S-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	300 2.07	2 - M12 x 65	140 5.512	180 7.086	93 3.661	103 4.055	64 2.519	UL	FM
XGQT33S-100X65-1	100 x 65 4 x 2 ½	114.3 x 73 4.500 x 2.875	300 2.07	2 - M12 x 65	140 5.512	160 7.087	98 3.858	103 4.055	70 2.756		
XGQT33S-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 2.996	300 2.07	2 - M12 x 65	140 5.512	180 7.087	98 3.858	109 4.291	70 2.756		
XGQT33S-125X32-1	125 x 32 5 x 1 ¼	139.7 x 42.4 5.500 x 1.669	300 2.07	2 - M12 x 65	168 6.614	220 8.661	100 3.937	83 3.266	51 2.008		
XGQT33S-125X40-1	125 x 40 5 x 1 ½	139.7 x 48.3 5.500 x 1.900	300 2.07	2 - M16 x 75	168 6.614	220 8.661	100 3.937	92 3.622	51 2.008		
XGQT33S-125X50-1	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.375	300 2.07	2 - M16 x 75	168 6.614	220 8.661	103 4.055	108 4.252	64 2.520		
XGQT33S-125X25	125 x 25 5 x 1	141.3 x 33.7 5.563 x 1.327	300 2.07	2 - M16 x 75	168 6.614	220 8.661	104 4.094	77 3.031	38 1.496	UL	FM
XGQT33S-125X32-2	125 x 32 5 x 1 ¼	141.3 x 42.4 5.563 x 1.669	300 2.07	2 - M16 x 75	168 6.614	220 8.661	104 4.094	95 3.740	51 2.007	UL	FM
XGQT33S-125X40-2	125 x 40 5 x 1 ½	141.3 x 48.3 5.563 x 1.900	300 2.07	2 - M16 x 75	168 6.614	220 8.661	104 4.094	95 3.740	51 2.007	UL	FM
XGQT33S-125X50-2	125 x 50 5 x 2	141.3 x 60.3 5.563 x 2.375	300 2.07	2 - M16 x 75	168 6.614	220 8.661	104 4.094	100 3.937	64 2.519	UL	FM
XGQT33S-125X65	125 x 65 5 x 2	141.3 x 73 5.563 x 2.875	300 2.07	2 - M16 x 75	168 6.614	220 8.661	112 4.409	123 4.843	70 2.756	UL	FM
XGQT33S-150X32-1	150 x 32 6 x 1 ¼	165.1 x 42.4 6.500 x 1.669	300 2.07	2 - M16 x 85	194 7.638	247 9.724	112 4.409	83 3.266	51 2.008		
XGQT33S-150X50-1	150 x 50 6 x 2	165.1 x 60.3 6.500 x 2.375	300 2.07	2 - M16 x 85	194 7.638	247 9.724	116 4.567	109 4.291	64 2.520		
XGQT33S-150X65-1	150 x 65 6 x 2 ½	165.1 x 76.1 6.500 x 2.996	300 2.07	2 - M16 x 85	194 7.638	247 9.724	125 4.921	109 4.291	70 2.756		
XGQT33S-150X80	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	300 2.07	2 - M16 x 85	194 7.638	247 9.724	125 4.921	135 5.315	89 3.504		
XGQT33S-150X25	150 x 25 6 x 1	168.3 x 33.7 6.625 x 1.327	300 2.07	2 - M16 x 85	198 7.795	247 9.724	120 4.724	77 3.031	38 1.496		
XGQT33S-150X32-2	150 x 32 6 x 1 ¼	168.3 x 42.4 6.625 x 1.669	300 2.07	2 - M16 x 85	198 7.795	247 9.724	120 4.724	82 3.228	51 2.007	UL	FM
XGQT33S-150X40	150 x 40 6 x 1 ½	168.3 x 48.3 6.625 x 1.900	300 2.07	2 - M16 x 85	198 7.795	247 9.724	120 4.724	92 6.622	51 2.007	UL	FM
XGQT33S-150X50-2	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	300 2.07	2 - M16 x 85	198 7.795	250 9.842	120 4.724	108 4.251	64 2.519	UL	FM
XGQT33S-150X65-2	150 x 65 6 x 2 ½	168.3 x 73 6.625 x 2.875	300 2.07	2 - M16 x 85	198 7.795	250 9.842	122 4.803	108 4.251	70 2.756	UL	FM

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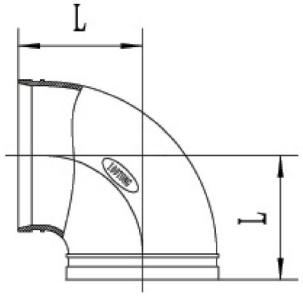
90° Elbow
Model: XGQT06



Technical Data

Part No.	Size DN/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	90° Elbow (Short) L mm/in	UL	FM
XGQT06-25	25 1	33.7 1.315	300 2.07	57 2.244	UL	FM
XGQT06-32	32 1 ¼	42.2 1.660	300 2.07	60 2.362	UL	FM
XGQT06-40	40 1 ½	48.3 1.900	300 2.07	60 2.362	UL	FM
XGQT06-50-1	50 2	57.0 2.244	300 2.07	70 2.755		
XGQT06-50-2	50 2	60.3 2.375	300 2.07	70 2.755	UL	FM
XGQT06-65-1	65 2 ½	73.0 2.875	300 2.07	76 2.992	UL	FM
XGQT06-65-2	65 2 ½	76.1 3.000	300 2.07	76 2.992	UL	FM
XGQT06-80	80 3	88.9 3.500	300 2.07	86 3.386	UL	FM
XGQT06-100-1	100 4	108.0 4.252	300 2.07	102 4.016	UL	FM
XGQT06-100-2	100 4	114.3 4.500	300 2.07	102 4.016	UL	FM
XGQT06-125-1	125 5	133.0 5.250	300 2.07	123 4.843	UL	FM
XGQT06-125-2	125 5	139.7 5.500	300 2.07	123 4.843	UL	FM
XGQT06-125-3	125 5	141.3 5.563	300 2.07	123 4.843	UL	FM
XGQT06-150-1	150 6	159.0 6.260	300 2.07	140 5.511	UL	FM
XGQT06-150-2	150 6	165.1 6.500	300 2.07	140 5.511	UL	FM
XGQT06-150-3	150 6	168.3 6.625	300 2.07	140 5.511	UL	FM
XGQT06-200-1	200 8	216.3 8.516	300 2.07	175 6.889	UL	FM
XGQT06-200-2	200 8	219.1 8.625	300 2.07	175 6.889	UL	FM
XGQT06-250-1	250 10	267.4 10.528	300 2.07	215 8.464		
XGQT06-250-2	250 10	273.0 10.750	300 2.07	215 8.464	UL	FM
XGQT06-300-1	300 12	318.5 12.539	300 2.07	245 9.645		
XGQT06-300-2	300 12	323.9 12.750	300 2.07	245 9.645	UL	FM
XGQT06-350	350 14	377.0 14.843	300 2.07	280 11.024		

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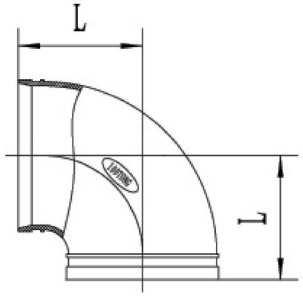
90° Elbow
Model: XGQT06L



Technical Data						
Part No.	Size DN/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	90° Elbow (Long) L mm/in	UL	FM
XGQT06L-25	25 1	33.7 1.315	300 2.07	57 2.24		
XGQT06L-32	32 1 ½	42.4 1.660	300 2.07	70 2.755	UL	FM
XGQT06L-40	40 1 ¼	48.3 1.900	300 2.07	70 2.755	UL	FM
XGQT06L-50	50 2	60.3 2.375	300 2.07	83 3.267	UL	FM
XGQT06L-65-1	65 2 ½	73.0 2.875	300 2.07	95 3.74	UL	FM
XGQT06L-65-2	65 2 ½	76.1 3.000	300 2.07	95 3.74	UL	FM
XGQT06L-80	80 3	88.9 3.500	300 2.07	108 4.251	UL	FM
XGQT06L-100	100 4	114.3 4.500	300 2.07	127 5	UL	FM
XGQT06L-125-1	125 5	139.7 5.500	300 2.07	140 5.511		
XGQT06L-125-2	125 5	141.3 5.563	300 2.07	140 5.511		
XGQT06L-150-1	150 6	165.1 6.500	300 2.07	165 6.496	UL	FM
XGQT06L-150-2	150 6	168.3 6.625	300 2.07	165 6.496	UL	FM
XGQT06L-200	200 8	219.1 8.625	300 2.07	197 7.755	UL	FM

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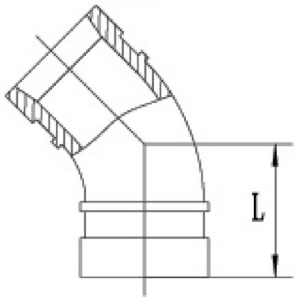
45° Elbow
Model: XGQT07



Technical Data					
Part No.	Size DN/in	Pipe O.D. mm/in	45° Elbow L mm/in	UL	FM
XGQT07-25	25 1	33.7 1.315	38 1.496	UL	FM
XGQT07-32	32 1 ¼	42.4 1.660	44 1.732	UL	FM
XGQT07-40	40 1 ½	48.3 1.900	44 1.732	UL	FM
XGQT07-50	50 2	60.3 2.375	51 2.007	UL	FM
XGQT07-65-1	65 2 ½	73.0 2.875	57 2.244	UL	FM
XGQT07-65-2	65 2 ½	76.1 3.000	57 2.244	UL	FM
XGQT07-80	80 3	88.9 3.500	64 2.519	UL	FM
XGQT07-100-1	100 4	108.0 4.252	76 2.992	UL	FM
XGQT07-100-2	100 4	114.3 4.500	76 2.992	UL	FM
XGQT07-125-1	125 5	133.0 5.250	83 3.267	UL	FM
XGQT07-125-2	125 5	139.7 5.500	83 3.267	UL	FM
XGQT07-125-3	125 5	141.3 5.563	83 3.267	UL	FM
XGQT07-150-1	150 6	159.0 6.260	89 3.503	UL	FM
XGQT07-150-2	150 6	165.1 6.500	89 3.503	UL	FM
XGQT07-150-3	150 6	168.3 6.625	89 3.503	UL	FM
XGQT07-200-1	200 8	216.3 8.516	108 4.251	UL	FM
XGQT07-200-2	200 8	219.1 8.625	108 4.251	UL	FM
XGQT07-250-1	250 10	267 10.51	121 4.763		
XGQT07-250-2	250 10	273.0 10.750	121 4.763	UL	FM
XGQT07-300	300 12	323.9 12.750	133 5.236	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

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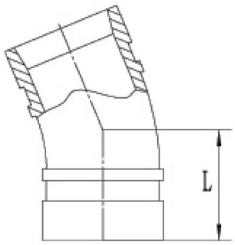
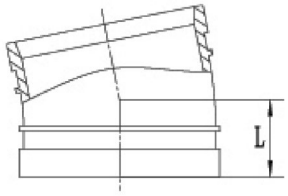
22.5° Elbow
Model: XGQT09



Technical Data						
Part No.	Size DN/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	22.5° Elbow Standard L mm/in	UL	FM
XGQT09-25	25 1	33.7 1.315	300 2.07	38.5 1.516	UL	FM
XGQT09-32	32 1 ¼	42.4 1.660	300 2.07	44 1.732	UL	FM
XGQT09-40	40 1 ½	48.3 1.900	300 2.07	44 1.732	UL	FM
XGQT09-50	50 2	60.3 2.375	300 2.07	48 1.89	UL	FM
XGQT09-65-1	65 2 ½	73.0 2.875	300 2.07	51 2	UL	FM
XGQT09-65-2	65 2 ½	76.1 3.000	300 2.07	51 2	UL	FM
XGQT09-80	80 3	88.9 3.500	300 2.07	57 2.244	UL	FM
XGQT09-100-1	100 4	108.0 4.252	300 2.07	73 2.874	UL	FM
XGQT09-100-2	100 4	114.3 4.500	300 2.07	73 2.874	UL	FM
XGQT09-125-1	125 5	139.7 5.500	300 2.07	73 2.874	UL	FM
XGQT09-125-2	125 5	141.3 5.563	300 2.07	73 2.874	UL	FM
XGQT09-150-1	150 6	159.0 6.260	300 2.07	79 3.11	UL	FM
XGQT09-150-2	150 6	165.1 6.500	300 2.07	79 3.11	UL	FM
XGQT09-150-3	150 6	168.3 6.625	300 2.07	79 3.11	UL	FM
XGQT09-200	200 8	219.1 8.625	300 2.07	83 3.27	UL	FM
XGQT09-250	250 10	273.0 10.750	300 2.07	111 4.37	UL	FM
XGQT09-300	300 12	323.9 12.750	300 2.07	124 4.88	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

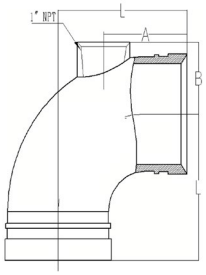
11.25° Elbow
Model: XGQT10



Technical Data

Part No.	Size DN/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	11.25° Elbow Standard L mm/in	UL	FM
XGQT10-25	25 1	33.7 1.315	300 2.07	35 1.377	UL	FM
XGQT10-32	32 1 ¼	42.4 1.660	300 2.07	35 1.377	UL	FM
XGQT10-40	40 1 ½	48.3 1.900	300 2.07	35 1.377	UL	FM
XGQT10-50	50 2	60.3 2.375	300 2.07	35 1.377	UL	FM
XGQT10-65-1	65 2 ½	73.0 2.875	300 2.07	38 1.496	UL	FM
XGQT10-65-2	65 2 ½	76.1 3.000	300 2.07	38 1.496	UL	FM
XGQT10-80	80 3	88.9 3.500	300 2.07	38 1.496	UL	FM
XGQT10-100-1	100 4	108.0 4.252	300 2.07	44 1.732	UL	FM
XGQT10-100-2	100 4	114.3 4.500	300 2.07	48 1.889	UL	FM
XGQT10-125-1	125 5	139.7 5.500	300 2.07	51 2.007	UL	FM
XGQT10-125-2	125 5	141.3 5.563	300 2.07	51 2.007	UL	FM
XGQT10-150-1	150 6	159.0 6.260	300 2.07	51 2.007	UL	FM
XGQT10-150-2	150 6	165.1 6.500	300 2.07	51 2.007	UL	FM
XGQT10-150-3	150 6	168.3 6.625	300 2.07	51 2.007	UL	FM
XGQT10-200	200 8	219.1 8.625	300 2.07	51 2.007	UL	FM
XGQT10-250	250 10	273.0 10.750	300 2.07	54 2.125	UL	FM
XGQT10-300	300 12	323.9 12.750	300 2.07	57 2.244	UL	FM

Drainage Elbow
Model: XGQT06D



Technical Data

Part No.	Size DN/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions mm/in			UL	FM
				L	A	B		
XGQT06D-50	50 2	60.3 2.375	300 2.07	83 3.268	65 2.559	37.5 1.476	UL	FM
XGQT06D-65	65 2 ½	73.0 2.875	300 2.07	95 3.740	70 2.756	43.5 1.713	UL	FM
XGQT06D-80	80 3	88.9 3.500	300 2.07	108 4.252	70 2.756	53 2.087	UL	FM
XGQT06D-100	100 4	114.3 4.500	300 2.07	127 5	70 2.756	66 2.598	UL	FM
XGQT06D-150	150 6	168.3 6.625	300 2.07	165 6.496	70 2.756	92.5 3.642	UL	FM
XGQT06D-200	200 8	219.1 8.625	300 2.07	197 7.756	70 2.756	116 4.567	UL	FM

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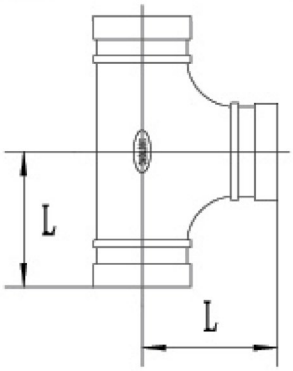
Tee
Model: XGQT12 & XGQT12L



Technical Data

Size DN/in	Pipe O.D. mm/in	Tee				UL	FM
		Part No.	Long L mm/in	Part No.	Short L mm/in		
25 1	33.7 1.315	XGQT12L-25	57 2.244	XGQT12-25	57 2.244	UL	FM
32 1 ¼	42.4 1.660	XGQT12L-32	70 2.755	XGQT12-32	60 2.362	UL	FM
40 1 ½	48.3 1.900	XGQT12L-40	70 2.755	XGQT12-40	60 2.362	UL	FM
50 2	60.3 2.375	XGQT12L-50	83 3.267	XGQT12-50	70 2.755	UL	FM
65 2 ½	73.0 2.875	XGQT12L-65-1	95 3.74	XGQT12-65-1	76 2.992	UL	FM
65 2 ½	76.1 3.000	XGQT12L-65-2	95 3.74	XGQT12-65-2	76 2.992	UL	FM
80 3	88.9 3.500	XGQT12L-80	108 4.251	XGQT12-80	86 3.386	UL	FM
100 4	108.0 4.252	XGQT12L-100-1	127 5	XGQT12-100-1	102 4.016	UL	FM
100 4	114.3 4.500	XGQT12L-100-2	127 5	XGQT12-100-2	102 4.016	UL	FM
125 5	133.0 5.250	XGQT12L-125-1	140 5.511	XGQT12-125-1	122 4.803	UL	FM
125 5	139.7 5.500	XGQT12L-125-2	140 5.511	XGQT12-125-2	123 4.843	UL	FM
125 5	141.3 5.563	XGQT12L-125-3	140 5.511	XGQT12-125-3	123 4.843	UL	FM
150 6	159.0 6.260	XGQT12L-150-1	165 6.496	XGQT12-150-1	140 5.511	UL	FM
150 6	165.1 6.500	XGQT12L-150-2	165 6.496	XGQT12-150-2	140 5.511	UL	FM
150 6	168.3 6.625	XGQT12L-150-3	165 6.496	XGQT12-150-3	140 5.511	UL	FM
200 8	216.3 8.516	XGQT12L-200-1	197 7.755	XGQT12-200-1	175 6.889	UL	FM
200 8	219.1 8.625	XGQT12L-200-2	197 7.755	XGQT12-200-2	175 6.889	UL	FM
250 10	273.0 10.750	XGQT12L-250	229 9.015	XGQT12-250	215 8.464	UL	FM
300 12	323.9 12.750	XGQT12L-300	254 10	XGQT12-300	245 9.645	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

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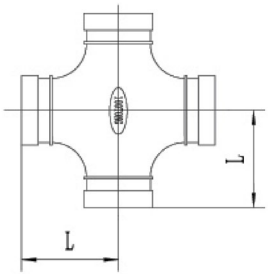
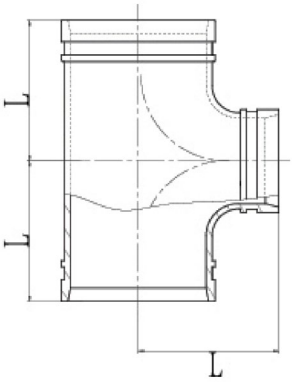
Cross
Model: XGQT14



Technical Data					
Part No.	Size DN/in	Pipe O.D. mm/in	Cross Standard L mm/in	UL	FM
XGQT14-25	25 1	33.7 1.315	57 2.244	UL	FM
XGQT14-32	32 1 ¼	42.4 1.66	60 2.362	UL	FM
XGQT14-40	40 1 ½	48.3 1.9	60 2.362	UL	FM
XGQT14-50	50 2	60.3 2.375	70 2.755	UL	FM
XGQT14-65-1	65 2 ½	73.0 2.875	76 2.992	UL	FM
XGQT14-65-2	65 2 ½	76.1 3.000	76 2.992	UL	FM
XGQT14-80	80 3	88.9 3.500	86 3.386	UL	FM
XGQT14-100-1	100 4	108.0 4.252	102 4.016	UL	FM
XGQT14-100-2	100 4	114.3 4.500	102 4.016	UL	FM
XGQT14-125-1	125 5	133 5.236	123 4.843	UL	FM
XGQT14-125-2	125 5	139.7 5.500	123 4.843	UL	FM
XGQT14-125-3	125 5	141.3 5.563	123 4.843	UL	FM
XGQT14-150-1	150 6	159.0 6.260	140 5.511	UL	FM
XGQT14-150-2	150 6	165.1 6.500	140 5.511	UL	FM
XGQT14-150-3	150 6	168.3 6.625	140 5.511	UL	FM
XGQT14-200	200 8	219.1 8.625	175 6.889	UL	FM
XGQT14-250	250 10	273.0 10.750	215 8.464	UL	FM
XGQT14-300	300 12	323.9 12.75	245 9.646	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

Reducing Tee Grooved Model: XGQT13



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT13-40X32	40 x 32 1 ½ x 1 ¼	48.3 x 48.3 x 42.4 1.900 x 1.900 x 1.660	400 2.75	60 2.362		
XGQT13-50X32	50 x 32 2 x 1 ¼	60.3 x 60.3 x 42.4 2.375 x 2.375 x 1.660	400 2.75	70 2.755	UL	FM
XGQT13-50X40	50 x 40 2 x 1 ½	60.3 x 60.3 x 48.3 2.375 x 2.375 x 1.900	400 2.75	70 2.755	UL	FM
XGQT13-65X25-1	65 x 25 2 ½ x 1	73.0 x 73.0 x 33.7 2.875 x 2.875 x 1.315	400 2.75	76 2.992	UL	FM
XGQT13-65X32-1	65 x 32 2 ½ x 1 ¼	73.0 x 73.0 x 42.4 2.875 x 2.875 x 1.660	400 2.75	76 2.992	UL	FM
XGQT13-65X40-1	65 x 40 2 ½ x 1 ½	73.0 x 73.0 x 48.3 2.875 x 2.875 x 1.900	400 2.75	76 2.992	UL	FM
XGQT13-65X50-1	65 x 50 2 ½ x 2	73.0 x 73.0 x 60.3 2.875 x 2.875 x 2.375	400 2.75	76 2.992	UL	FM
XGQT13-65X25-2	65 x 25 2 ½ x 1	76.1 x 76.1 x 33.7 3.000 x 3.000 x 1.315	400 2.75	76 2.992	UL	FM
XGQT13-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 76.1 x 42.4 3.000 x 3.000 x 1.660	400 2.75	76 2.992	UL	FM
XGQT13-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 76.1 x 48.3 3.000 x 3.000 x 1.900	400 2.75	76 2.992	UL	FM
XGQT13-65X50-2	65 x 50 2 ½ x 2	76.1 x 76.1 x 60.3 3.000 x 3.000 x 2.375	232 1.6	76 2.992	UL	
XGQT13-80X25	80 x 25 3 x 1	88.9 x 88.9 x 33.7 3.500 x 3.500 x 1.315	400 2.75	86 3.386	UL	FM
XGQT13-80X32	80 x 32 3 x 1 ¼	88.9 x 88.9 x 42.4 3.500 x 3.500 x 1.660	400 2.75	86 3.386	UL	FM
XGQT13-80X40	80 x 40 3 x 1 ½	88.9 x 88.9 x 48.3 3.500 x 3.500 x 1.900	400 2.75	86 3.386	UL	FM
XGQT13-80X50	80 x 50 3 x 2	88.9 x 88.9 x 60.3 3.500 x 3.500 x 2.375	400 2.75	86 3.386	UL	FM
XGQT13-80X65-1	80 x 65 3 x 2 ½	88.9 x 88.9 x 73.0 3.500 x 3.500 x 2.875	400 2.75	86 3.386	UL	FM
XGQT13-80X65-2	80 x 65 3 x 2 ½	88.9 x 88.9 x 76.1 3.500 x 3.500 x 3.000	232 1.6	86 3.386	UL	FM
XGQT13-100X25	100 x 25 4 x 1	114.3 x 114.3 x 33.7 4.500 x 4.500 x 1.315	400 2.75	102 4.016	UL	FM
XGQT13-100X40	100 x 40 4 x 1 ½	114.3 x 114.3 x 48.3 4.500 x 4.500 x 1.900	400 2.75	102 4.016	UL	FM
XGQT13-100X50	100 x 50 4 x 2	114.3 x 114.3 x 60.3 4.500 x 4.500 x 2.375	400 2.75	102 4.016	UL	FM
XGQT13-100X65-1	100 x 65 4 x 2 ½	114.3 x 114.3 x 73.0 4.500 x 4.500 x 2.875	400 2.75	102 4.016	UL	FM
XGQT13-100X65-2	100 x 65 4 x 2 ½	114.3 x 114.3 x 76.1 4.500 x 4.500 x 3.000	400 2.75	102 4.016	UL	FM
XGQT13-100X80	100 x 80 4 x 3	114.3 x 114.3 x 88.9 4.500 x 4.500 x 3.500	400 2.75	102 4.016	UL	FM
XGQT13-125X50-1	125 x 50 5 x 2	139.7 x 139.7 x 60.3 5.500 x 5.500 x 2.375	300 2.07	122 4.803	UL	FM
XGQT13-125X65-1	125 x 65 5 x 2 ½	139.7 x 139.7 x 76.1 5.500 x 5.500 x 3.000	300 2.07	122 4.843	UL	FM
XGQT13-125X80-1	125 x 80 5 x 3	139.7 x 139.7 x 88.9 5.500 x 5.500 x 3.500	300 2.07	122 4.843	UL	FM
XGQT13-125X100	125 x 100 5 x 4	139.7 x 139.7 x 114.3 5.500 x 5.500 x 4.500	300 2.07	122 4.843		FM
XGQT13-125X50-2	125 x 50 5 x 2	141.3 x 141.3 x 60.3 5.563 x 5.563 x 2.375	300 2.07	123 4.843	UL	
XGQT13-125X65-2	125 x 65 5 x 2 ½	141.3 x 141.3 x 76.1 5.563 x 5.563 x 3.000	300 2.07	123 4.843	UL	
XGQT13-125X80-2	125 x 80 5 x 3	141.3 x 141.3 x 88.9 5.563 x 5.563 x 2.375	300 2.07	123 4.843	UL	
XGQT13-150X40-1	150 x 40 6 x 1 ½	165.1x 165.1 x 48.3 6.500 x 6.500 x 1.900	400 2.75	140 5.511	UL	FM
XGQT13-150X50-1	150 x 50 6 x 2	165.1 x 165.1 x 60.3 6.500 x 6.500 x 2.375	400 2.75	140 5.511	UL	FM
XGQT13-150X65-1	150 x 65 6 x 2 ½	165.1 x 165.1 x 76.1 0.500 x 0.500 x 3.000	400 2.75	140 5.511	UL	FM
XGQT13-150X80-1	150 x 80 6 x 3	165.1 x 165.1 x 88.9 6.500 x 6.500 x 3.500	400 2.75	140 5.511	UL	FM
XGQT13-150X100-1	150 x 100 6 x 4	165.1 x 165.1 x 114.3 6.500 x 6.500 x 4.500	400 2.75	140 5.511	UL	FM
XGQT13-150X125	150 x 125 6 x 5	165.1 x 165.1 x 139.7 6.500 x 6.500 x 5.500	400 2.75	140 5.511		FM
XGQT13-150X40-2	150 x 40 6 x 1 ½	168.3 x 168.3 x 48.3 6.625 x 6.625 x 1.900	400 2.75	140 5.511	UL	FM
XGQT13-150X50-2	150 x 50 6 x 2	168.3 x 168.3 x 60.3 6.625 x 6.625 x 2.375	400 2.75	140 5.511	UL	FM
XGQT13-150X65-2	150 x 65 6 x 2 ½	168.3 x 168.3 x 73.0 6.625 x 6.625 x 2.875	400 2.75	140 5.511	UL	
XGQT13-150X65-3	150 x 65 6 x 2 ½	168.3 x 168.3 x 76.1 6.625 x 6.625 x 3.000	400 2.75	140 5.511	UL	FM
XGQT13-150X80-2	150 x 80 6 x 3	168.3 x 168.3 x 88.9 6.625 x 6.625 x 3.500	400 2.75	140 5.511	UL	FM
XGQT13-150x100-2	150 x 100 6 x 4	168.3 x 168.3 x 114.3 6.625 x 6.625 x 4.500	400 2.75	140 5.511	UL	FM

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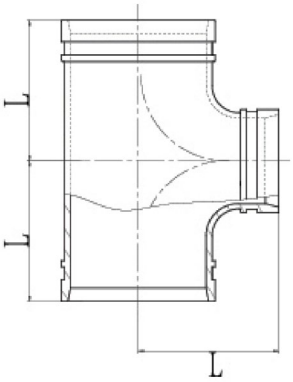
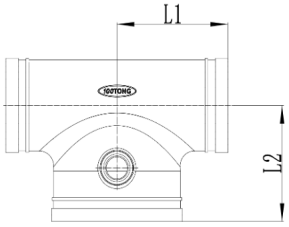
Reducing Tee Grooved Model: XGQT13



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT13-150X125	150 x 125 6 x 5	168.3 x 168.3 x 139.7 6.625 x 6.625 x 5.500	400 2.75	140 5.511		
XGQT13-200X50	200 x 50 8 x 2	219.1 x 219.1 x 60.3 8.625 x 8.625 x 2.375	300 2.07	175 6.889		
XGQT13-200X65-1	200 x 65 8 x 2 ½	219.1 x 219.1 x 73.0 8.625 x 8.625 x 2.875	300 2.07	175 6.889	UL	
XGQT13-200X65-2	200 x 65 8 x 2 ½	219.3 x 219.3 x 76.3 8.625 x 8.625 x 3.000	232 1.6	175 6.889	UL	
XGQT13-200X80-1	200 x 80 8 x 3	219.1 x 219.1 x 88.9 8.625 x 8.625 x 3.500	232 1.6	175 6.889	UL	
XGQT13-200X100-1	200 x 100 8 x 4	219.1 x 219.1 x 114.3 8.625 x 8.625 x 4.500	300 2.07	175 6.889	UL	FM
XGQT13-200X125-1	200 x 125 8 x 5	219.1 x 219.1 x 139.7 8.625 x 8.625 x 5.500	232 1.6	175 6.889		
XGQT13-200X125-2	200 x 125 8 x 5	219.1 x 219.1 x 141.3 8.625 x 8.625 x 5.563	232 1.6	175 6.889	UL	
XGQT13-200X150-1	200 x 150 8 x 6	219.1 x 219.1 x 165.1 8.625 x 8.625 x 6.500	300 2.07	175 6.889	UL	FM
XGQT13-200X150-2	200 x 150 8 x 6	219.1 x 219.1 x 168.3 8.625 x 8.625 x 6.625	300 2.07	175 6.889	UL	FM
XGQT13-200X100-2	250 x 100 10 x 4	273.0 x 273.0 x 114.3 10.750 x 10.750 x 4.500	300 2.07	215 8.465	UL	
XGQT13-200X125-2	250 x 125 10 x 5	273.0 x 273.0 x 139.7 10.750 x 10.750 x 5.500	300 2.07	215 8.465		
XGQT13-200X150-3	250 x 150 10 x 6	273.0 x 273.0 x 165.1 10.750 x 10.750 x 6.500	300 2.07	215 8.465		
XGQT13-200X150-4	250 x 150 10 x 6	273 x 273 x 168.3 10.750 x 10.750 x 6.625	300 2.07	215 8.465	UL	FM
XGQT13-250X200	250 x 200 10 x 8	273.0 x 273.0 x 219.1 10.750 x 10.750 x 8.625	300 2.07	215 8.465	UL	FM
XGQT13-300X100	300 x 100 12 x 4	323.9 x 323.9 x 114.3 12.750 x 12.750 x 4.500	300 2.07	245 9.646	UL	FM
XGQT13-300X150	300 x 150 12 x 6	323.9 x 323.9 x 165.1 12.750 x 12.750 x 6.500	300 2.07	245 9.646		
XGQT13-300X200	300 x 200 12 x 8	323.9 x 323.9 x 219.1 12.750 x 12.750 x 8.625	300 2.07	245 9.646	UL	
XGQT13-300X250	300 x 250 12 x 10	323.9 x 323.9 x 273.0 12.750 x 12.750 x 10.75	300 2.07	245 9.646	UL	FM

Reducing Tee Model: XGQT13



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	L1	L2	UL	FM
XGQT13-80X80X100	80 x 80 x 100 3 x 3 x 4	88.9 x 88.9 x 114.3 3.500 x 3.500 x 4.500	300 2.07	115 5.512	130 5.512	UL	FM
XGQT13-80X80X150-1	80 x 80 x 150 3 x 3 x 6	88.9 x 88.9 x 165.1 3.500 x 3.500 x 6.500	300 2.07	140 5.512	140 5.512	UL	FM
XGQT13-80X80X150-2	80 x 80 x 150 4 x 4 x 6	114.3 x 114.3 x 165.1 4.500 x 4.500 x 6.500	300 2.07	140 5.512	140 5.512	UL	FM

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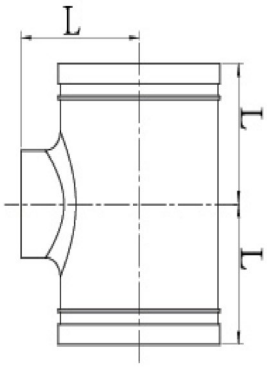
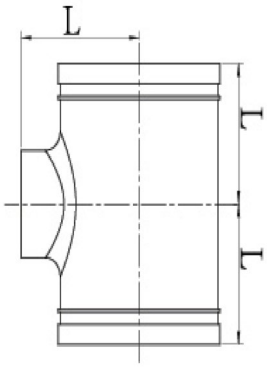
Reducing Tee Threaded Model: XGQT13S



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT13S-32X25	32 x 25 1 ¼ x 1	42.4 x 42.4 x 33.7 1.660 x 1.660 x 1.315	232 1.6	60 2.362	UL	
XGQT13S-40X25	40 x 25 1 ½ x 1	48.3 x 48.3 x 33.7 1.900 x 1.900 x 1.315	232 1.6	60 2.362	UL	
XGQT13S-40X32	40 x 32 1 ½ x 1 ¼	48.3 x 48.3 x 42.4 1.900 x 1.900 x 1.660	232 1.6	60 2.362	UL	
XGQT13S-50X25	50 x 25 2 x 1	60.3 x 60.3 x 33.7 2.375 x 2.375 x 1.315	300 2.07	70 2.755	UL	FM
XGQT13S-50X32	50 x 32 2 x 1 ¼	60.3 x 60.3 x 42.4 2.375 x 2.375 x 1.660	300 2.07	70 2.755	UL	FM
XGQT13S-50X40	50 x 40 2 x 1 ½	60.3 x 60.3 x 48.3 2.375 x 2.375 x 1.900	300 2.07	70 2.755	UL	FM
XGQT13S-65X25-1	65 x 25 2 ½ x 1	73.0 x 73.0 x 33.7 2.875 x 2.875 x 1.315	400 2.75	76 2.992	UL	FM
XGQT13S-65X32-1	65 x 32 2 ½ x 1 ¼	73.0 x 73.0 x 42.4 2.875 x 2.875 x 1.660	400 2.75	76 2.992	UL	FM
XGQT13S-65X40-1	65 x 40 2 ½ x 1 ½	73.0 x 73.0 x 48.3 2.875 x 2.875 x 1.900	400 2.75	76 2.992	UL	FM
XGQT13S-65X50-1	65 x 50 2 ½ x 2	73.0 x 73.0 x 60.3 2.875 x 2.875 x 2.375	400 2.75	76 2.992	UL	FM
XGQT13S-65X25-2	65 x 25 2 ½ x 1	76.1 x 76.1 x 33.7 3.000 x 3.000 x 1.315	300 2.07	76 2.992	UL	FM
XGQT13S-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 76.1 x 42.4 3.000 x 3.000 x 1.660	300 2.07	76 2.992	UL	FM
XGQT13S-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 76.1 x 48.3 3.000 x 3.000 x 1.900	300 2.07	76 2.992	UL	FM
XGQT13S-65X50-2	65 x 50 2 ½ x 2	76.1 x 76.1 x 60.3 3.000 x 3.000 x 2.375	300 2.07	76 2.992	UL	
XGQT13S-80X25	80 x 25 3 x 1	88.9 x 88.9 x 33.7 3.500 x 3.500 x 1.315	300 2.07	86 3.386	UL	FM
XGQT13S-80X32	80 x 32 3 x 1 ¼	88.9 x 88.9 x 42.4 3.500 x 3.500 x 1.660	300 2.07	86 3.386	UL	FM
XGQT13S-80X40	80 x 40 3 x 1 ½	88.9 x 88.9 x 48.3 3.500 x 3.500 x 1.900	300 2.07	86 3.386	UL	FM
XGQT13S-80X50	80 x 50 3 x 2	88.9 x 88.9 x 60.3 3.500 x 3.500 x 2.375	300 2.07	86 3.386	UL	FM
XGQT13S-80X65	80 x 65 3 x 2 ½	88.9 x 88.9 x 76.1 3.500 x 3.500 x 3.000	232 1.6	86 3.386	UL	
XGQT13S-100X25	100 x 25 4 x 1	114.3 x 114.3 x 33.7 4.500 x 4.500 x 1.315	300 2.07	102 4.016	UL	FM
XGQT13S-100X32	100 x 32 4 x 1 ¼	114.3 x 114.3 x 42.4 4.500 x 4.500 x 1.660	300 2.07	102 4.016	UL	FM
XGQT13S-100X40	100 x 40 4 x 1 ½	114.3 x 114.3 x 48.3 4.500 x 4.500 x 1.900	300 2.07	102 4.016	UL	FM
XGQT13S-100X50	100 x 50 4 x 2	114.3 x 114.3 x 60.3 4.500 x 4.500 x 2.375	300 2.07	102 4.016	UL	FM
XGQT13S-100X65-1	100 x 65 4 x 2 ½	114.3 x 114.3 x 73.0 4.500 x 4.500 x 2.875	300 2.07	102 4.016		
XGQT13S-100X65-2	100 x 65 4 x 2 ½	114.3 x 114.3 x 76.1 4.500 x 4.500 x 3.000	300 2.07	102 4.016	UL	FM
XGQT13S-100X80	100 x 80 4 x 3	114.3 x 114.3 x 88.9 4.500 x 4.500 x 3.500	300 2.07	102 4.016	UL	FM
XGQT13S-125X25-1	125 x 25 5 x 1	139.7 x 139.7 x 33.7 5.500 x 5.500 x 1.315	300 2.07	122 4.803	UL	FM
XGQT13S-125X32-1	125 x 32 5 x 1 ¼	139.7 x 139.7 x 42.4 5.500 x 5.500 x 1.660	300 2.07	122 4.803	UL	FM

Reducing Tee Threaded Model: XGQT13S



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT13S-125X40-1	125 x 40 5 x 1 ½	139.7 x 139.7 x 48.3 5.500 x 5.500 x 1.900	300 2.07	122 4.803	UL	FM
XGQT13S-125X50-1	125 x 50 5 x 2	139.7 x 139.7 x 60.3 5.500 x 5.500 x 2.375	300 2.07	122 4.803	UL	FM
XGQT13S-125X65-1	125 x 65 5 x 2 ½	139.7 x 139.7 x 76.1 5.500 x 5.500 x 3.000	300 2.07	122 4.803	UL	FM
XGQT13S-125X80	125 x 80 5 x 3	139.7 x 139.7 x 88.9 5.500 x 5.500 x 3.500	300 2.07	122 4.803	UL	FM
XGQT13S-125X25-2	125 x 25 5 x 1	141.3 x 141.3 x 33.7 5.563 x 5.563 x 1.315	300 2.07	122 4.803	UL	
XGQT13S-125X32-2	125 x 32 5 x 1 ¼	141.3 x 141.3 x 42.4 5.563 x 5.563 x 1.660	300 2.07	122 4.803	UL	
XGQT13S-125X40-2	125 x 40 5 x 1 ½	141.3 x 141.3 x 48.3 5.563 x 5.563 x 1.900	300 2.07	122 4.803	UL	
XGQT13S-125X50-2	125 x 50 5 x 2	141.3 x 141.3 x 60.3 5.563 x 5.563 x 2.375	300 2.07	122 4.803	UL	
XGQT13S-125X65-2	125 x 65 5 x 2 ½	141.3 x 141.3 x 76.1 5.563 x 5.563 x 3.00	300 2.07	122 4.803	UL	
XGQT13S-150X25-1	150 x 25 6 x 1	165.1 x 165.1 x 33.7 6.500 x 6.500 x 1.315	300 2.07	140 5.511	UL	FM
XGQT13S-150X32-1	150 x 32 6 x 1 ¼	165.1 x 165.1 x 42.4 6.500 x 6.500 x 1.660	300 2.07	140 5.511	UL	FM
XGQT13S-150X40-1	150 x 40 6 x 1 ½	165.1 x 165.1 x 48.3 6.500 x 6.500 x 1.900	300 2.07	140 5.511	UL	FM
XGQT13S-150X50-1	150 x 50 6 x 2	165.1 x 165.1 x 60.3 6.500 x 6.500 x 2.375	300 2.07	140 5.511	UL	FM
XGQT13S-150X65-1	150 x 65 6 x 2 ½	165.1 x 165.1 x 76.1 6.500 x 6.500 x 3.000	300 2.07	140 5.511	UL	FM
XGQT13S-150X80-1	150 x 80 6 x 3	165.1 x 165.1 x 88.9 6.500 x 6.500 x 3.500	300 2.07	140 5.511	UL	FM
XGQT13S-150X32-2	150 x 32 6 x 1 ¼	168.3 x 168.3 x 42.4 6.625 x 6.625 x 1.660	300 2.07	140 5.511	UL	FM
XGQT13S-150X40-2	150 x 40 6 x 1 ½	168.3 x 168.3 x 48.3 6.625 x 6.625 x 1.900	300 2.07	140 5.511	UL	FM
XGQT13S-150X50-2	150 x 50 6 x 2	168.3 x 168.3 x 60.3 6.625 x 6.625 x 2.375	300 2.07	140 5.511	UL	FM
XGQT13S-150X65-2	150 x 65 6 x 2 ½	168.3 x 168.3 x 76.1 6.625 x 6.625 x 3.000	300 2.07	140 5.511	UL	FM
XGQT13S-150X80-2	150 x 80 6 x 3	168.3 x 168.3 x 88.9 6.625 x 6.625 x 3.500	300 2.07	140 5.511	UL	FM
XGQT13S-200X80	200 x 80 8 x 3	219.1 x 219.1 x 88.9 8.625 x 8.625 x 3.500	300 2.07	175 6.889		

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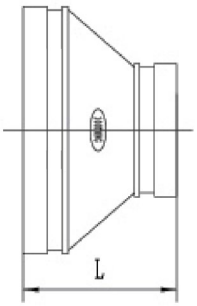
Grooved Reducer
Model: XGQT16



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT16-32X25	32 x 25 1 ¼ x 1	42.4 x 33.7 1.669 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16-40X25	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16-40X32	40 x 32 1 ½ x 1 ¼	48.3 x 42.4 1.900 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16-50X32	50 x 32 2 x 1 ¼	60.3 x 42.4 2.375 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16-65X25-1	65 x 25 2 ½ x 1	73 x 33.7 2.87 x 1.327	400 2.75	64 2.52		
XGQT16-65X32-1	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.87 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16-65X40-1	65 x 40 2 ½ x 1 ½	73 x 48.3 2.87 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16-65X50-1	65 x 50 2 ½ x 2	73 x 60.3 2.87 x 2.375	400 2.75	64 2.52	UL	FM
XGQT16-65X25-2	65 x 25 2 ½ x 1	76.1 x 33.7 2.996 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 42.4 2.996 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 48.3 2.996 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16-65X50-2	65 x 50 2 ½ x 2	76.1 x 60.3 2.996 x 2.375	400 2.75	64 2.52	UL	FM
XGQT16-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 3.500 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	400 2.75	64 2.52	UL	FM
XGQT16-80X65-1	80 x 65 3 x 2 ½	88.9 x 73.0 3.500 x 2.875	400 2.75	64 2.52	UL	FM
XGQT16-80X65-2	80 x 65 3 x 2 ½	88.9 x 76.1 3.500 x 3.000	400 2.75	64 2.52	UL	FM
XGQT16-100X32	100 x 32 4 x 1 ¼	114.3 x 42.4 4.500 x 1.669	400 2.75	76 3.00	UL	FM
XGQT16-100X40	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.900	400 2.75	76 3.00	UL	FM
XGQT16-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	400 2.75	76 3.00	UL	FM
XGQT16-100X65-1	100 x 65 4 x 2 ½	114.3 x 73.0 4.500 x 2.875	400 2.75	76 3.00	UL	FM
XGQT16-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 3.000	400 2.75	76 3.00	UL	FM
XGQT16-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	400 2.75	76 3.00	UL	FM
XGQT16-125X32	125 x 32 5 x 1 ¼	139.7 x 42.4 5.500 x 1.669	400 2.75	89 3.50	UL	FM
XGQT16-125X40	125 x 40 5 x 1 ½	139.7 x 48.3 5.500 x 1.900	300 2.07	89 3.50	UL	FM
XGQT16-125X50-1	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.3751	300 2.07	89 3.50	UL	FM
XGQT16-125X65-1	125 x 65 5 x 2 ½	39.7 x 76.1 5.500 x 3.000	300 2.07	89 3.50	UL	FM
XGQT16-125X80	125 x 80 5 x 3	139.7 x 88.9 5.500 x 3.500	300 2.07	89 3.50	UL	FM
XGQT16-125X100-1	125 x 100 5 x 4	139.7 x 114.3 5.500 x 4.500	300 2.07	89 3.50	UL	FM
XGQT16-125X50-2	125 x 50 5 x 2	141.3 x 60.3 5.563 x 2.375	300 2.07	89 3.50	UL	
XGQT16-125X65-2	125 x 65 5 x 2 ½	141.3 x 76.1 5.563 x 3.000	300 2.07	89 3.50	UL	
XGQT16-125X100-2	125 x 100 5 x 4	141.3 x 114.3 5.563 x 4.500	300 2.07	89 3.50	UL	

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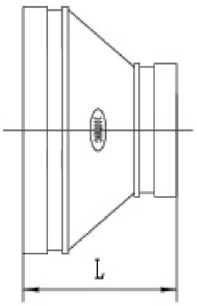
DESIGNED, INNOVATED & ENGINEERED IN **AUSTRALIA**

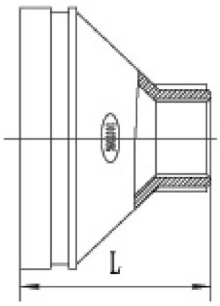
Grooved Reducer
Model: XGQT16



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT16-150X50-1	150 x 50 6 x 2	165.1 x 60.3 6.500 x 2.375	300 2.07	102 4.02	UL	FM
XGQT16-150X65-1	150 x 65 6 x 2 ½	165.1 x 76.1 6.500 x 3.000	300 2.07	102 4.02	UL	FM
XGQT16-150X80-1	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	300 2.07	102 4.02	UL	FM
XGQT16-150X100-1	150 x 100 6 x 4	165.1 x 114.3 6.500 x 4.500	300 2.07	102 4.02	UL	FM
XGQT16-150X125-1	150 x 125 6 x 5	165.1 x 139.7 6.500 x 5.500	300 2.07	102 4.02	UL	FM
XGQT16-150X125-2	150 x 125 6 x 5	165.1 x 141.3 6.500 x 5.563	300 2.07	102 4.02	UL	
XGQT16-150X50-2	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	300 2.07	102 4.02	UL	FM
XGQT16-150X65-2	150 x 65 6 x 2 ½	168.3 x 73 6.625 x 2.875	300 2.07	102 4.02	UL	FM
XGQT16-150X65-3	150 x 65 6 x 2 ½	168.3 x 76.1 6.625 x 3.000	300 2.07	102 4.02	UL	FM
XGQT16-150X80-2	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	300 2.07	102 4.02	UL	FM
XGQT16-150X100-2	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	300 2.07	102 4.02	UL	FM
XGQT16-150X125-3	150 x 125 6 x 5	168.3 x 139.7 6.625 x 5.500	300 2.07	102 4.02	UL	FM
XGQT16-200X150	200 x 150 8 x 6	216.3 x 165.1 8.625 x 6.500	300 2.07	127 5.00		
XGQT16-200X50	200 x 50 8 x 2	219.1 x 60.3 8.625 x 2.375	300 2.07	127 5.00	UL	FM
XGQT16-200X65-1	200 x 65 8 x 2 ½	219.1 x 73 8.625 x 2.875	300 2.07	127 5.00	UL	FM
XGQT16-200X65-2	200 x 65 8 x 2 ½	219.1 x 76.1 8.625 x 3.000	300 2.07	127 5.00	UL	FM
XGQT16-200X80	200 x 80 8 x 3	219.1 x 88.9 8.625 x 3.500	300 2.07	127 5.00	UL	FM
XGQT16-200X100	200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	300 2.07	127 5.00	UL	FM
XGQT16-200X125-1	200 x 125 8 x 5	219.1 x 139.7 8.625 x 5.500	300 2.07	127 5.00	UL	FM
XGQT16-200X125-2	200 x 125 8 x 5	219.3 x 141.3 8.625 x 5.563	300 2.07	127 5.00	UL	
XGQT16-200X150-1	200 x 150 8 x 6	219.1 x 165.1 8.625 x 6.500	300 2.07	127 5.00	UL	FM
XGQT16-200X150-2	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	300 2.07	127 5.00	UL	FM
XGQT16-250X100	250 x 100 10 x 4	273.0 x 114.3 10.75 x 4.500	300 2.07	152 5.98	UL	FM
XGQT16-250X150-1	250 x 150 10 x 6	273.0 x 165.1 10.75 x 6.500	300 2.07	152 5.98		FM
XGQT16-250X150-2	250 x 150 10 x 6	273.0 x 168.3 10.75 x 6.625	300 2.07	152 5.98	UL	FM
XGQT16-250X200	250 x 200 10 x 8	273.0 x 219.1 10.75 x 8.625	300 2.07	152 5.98	UL	FM
XGQT16-300X100	300 x 100 12 x 4	323.9 x 114.3 12.570 x 4.500	300 2.07	178 7.00		FM
XGQT16-300X125	300 x 125 12 x 5	323.9 x 139.7 12.570 x 5.500	300 2.07	178 7.00		FM
XGQT16-300X150-1	300 x 150 12 x 6	323.9 x 165.1 12.75 x 6.500	300 2.07	178 7.00		FM
XGQT16-300X150-2	300 x 150 12 x 6	323.9 x 168.3 12.75 x 6.500	300 2.07	178 7.00	UL	
XGQT16-300X200	300 x 200 12 x 8	323.9 x 219.1 12.75 x 8.625	300 2.07	178 7.00	UL	FM
XGQT16-300X250	300 x 250 12 x 10	323.9 x 273 12.75 x 10.75	300 2.07	178 7.00	UL	FM

Threaded Reducer
Model: XGQT16S



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT16S-40X25	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	400 2.75	64 2.52	UL	
XGQT16S-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16S-50X32	50 x 32 2 x 1 ¼	60.3 x 42.4 2.375 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16S-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16S-65X25-1	65 x 25 2 ½ x 1	73 x 33.7 2.87 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16S-65X32-1	65 x 32 2 ½ x 1 ¼	73 x 42.4 2.87 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16S-65X40-1	65 x 40 2 ½ x 1 ½	73 x 48.3 2.87 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16S-65X50-1	65 x 50 2 ½ x 2	73 x 60.3 2.87 x 2.375	400 2.75	64 2.52	UL	FM
XGQT16S-65X25-2	65 x 25 2 ½ x 1 ¼	76.1 x 33.7 2.996 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16S-65X32-2	65 x 32 2 ½ x 1 ¼	76.1 x 42.4 2.996 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16S-65X40-2	65 x 40 2 ½ x 1 ½	76.1 x 48.3 2.996 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16S-65X50-2	65 x 50 2 ½ x 2	76.1 x 60.3 2.996 x 2.375	400 2.75	64 2.52	UL	FM
XGQT16S-80X25	80 x 25 3 x 1	88.9 x 33.7 3.500 x 1.327	400 2.75	64 2.52	UL	FM
XGQT16S-80X32	80 x 32 3 x 1 ¼	88.9 x 42.4 3.500 x 1.669	400 2.75	64 2.52	UL	FM
XGQT16S-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	400 2.75	64 2.52	UL	FM
XGQT16S-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	400 2.75	64 2.52	UL	FM
XGQT16S-80X65-1	80 x 65 3 x 1 ½	88.9 x 73.0 3.500 x 2.875	400 2.75	64 2.52		
XGQT16S-80X65-2	80 x 65 3 x 1 ½	88.9 x 76.1 3.500 x 3.000	400 2.75	64 2.52	UL	
XGQT16S-100X25	100 x 25 4 x 1	114.3 x 33.7 4.500 x 1.327	400 2.75	76 3.00	UL	FM
XGQT16S-100X32	100 x 32 4 x 1 ¼	114.3 x 42.4 4.500 x 1.669	400 2.75	76 3.00	UL	FM
XGQT16S-100X40	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.900	400 2.75	76 3.00	UL	FM
XGQT16S-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	400 2.75	76 3.00	UL	FM
XGQT16S-100X65-1	100 x 65 4 x 2 ½	114.3 x 73.0 4.500 x 2.875	400 2.75	76 3.00		
XGQT16S-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 3.000	400 2.75	76 3.00	UL	FM
XGQT16S-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	400 2.75	76 3.00	UL	FM
XGQT16S-125X25	125 x 25 5 x 1	139.7 x 33.7 5.500 x 1.327	300 2.07	89 3.50	UL	FM
XGQT16S-125X32	125 x 32 5 x 1 ¼	139.7 x 42.4 5.500 x 1.669	300 2.07	89 3.50	UL	FM
XGQT16S-125X40	125 x 40 5 x 1 ½	139.7 x 48.3 5.500 x 1.900	300 2.07	89 3.50	UL	FM
XGQT16S-125X50	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.375	300 2.07	89 3.50	UL	FM
XGQT16S-125X65	125 x 65 5 x 2 ½	139.7 x 76.1 5.500 x 3.000	300 2.07	89 3.50	UL	FM
XGQT16S-125X80	125 x 80 5 x 3	139.7 x 88.9 5.500 x 3.500	300 2.07	89 3.50	UL	FM
XGQT16S-125X100	125 x 100 5 x 4	139.7 x 114.3 5.500 x 4.500	300 2.07	89 3.50		

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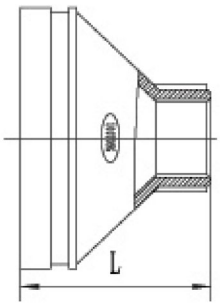
Threaded Reducer
Model: XGQT16S

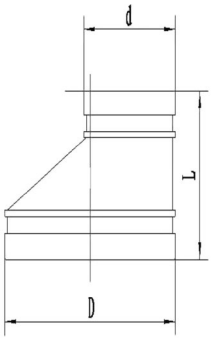


Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT16S-125X25	125 x 25 5 x 1	141.3 x 33.7 5.563 x 1.327	300 2.07	89 3.50	UL	
XGQT16S-125X32	125 x 32 5 x 1 - 1 ¼	141.3 x 42.4 5.563 x 1.669	300 2.07	89 3.50	UL	
XGQT16S-125X50	125 x 50 5 x 2	141.3 x 60.3 5.563 x 2.375	300 2.07	89 3.50	UL	
XGQT16S-125X65	125 x 65 5 x 2 ½	141.3 x 76.1 5.563 x 3.00	300 2.07	89 3.50	UL	
XGQT16S-150X25-1	150 x 25 6 x 1	165.1 x 33.7 6.500 x 1.327	300 2.07	102 4.02	UL	FM
XGQT16S-150X32-1	150 x 32 6 x 1 ¼	165.1 x 42.4 6.500 x 1.669	300 2.07	102 4.02	UL	FM
XGQT16S-150X40-1	150 x 40 6 x 1 ½	165.1 x 48.3 6.500 x 1.900	300 2.07	102 4.02	UL	FM
XGQT16S-150X50-1	150 x 50 6 x 2	165.1 x 60.3 6.500 x 2.375	300 2.07	102 4.02	UL	FM
XGQT16S-150X65-1	150 x 65 6 x 2 ½	165.1 x 76.1 6.500 x 3.000	300 2.07	102 4.02	UL	FM
XGQT16S-150X80-1	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	300 2.07	102 4.02	UL	FM
XGQT16S-150X100-1	150 x 100 6 x 4	165.1 x 114.3 6.500 x 4.500	300 2.07	102 4.02	UL	FM
XGQT16S-150X25-2	150 x 25 6 x 1	168.3 x 33.7 6.625 x 1.327	300 2.07	102 4.02	UL	FM
XGQT16S-150X32-2	150 x 32 6 x 1 ¼	168.3 x 42.4 6.625 x 1.669	300 2.07	102 4.02	UL	FM
XGQT16S-150X40-2	150 x 40 6 x 1 ½	168.3 x 48.3 6.625 x 1.900	300 2.07	102 4.02	UL	FM
XGQT16S-150X50-2	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	300 2.07	102 4.02	UL	FM
XGQT16S-150X65-2	150 x 65 6 x 2 ½	168.3 x 76.1 6.625 x 3.000	300 2.07	102 4.02	UL	FM
XGQT16S-150X80-2	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	300 2.07	102 4.02	UL	FM
XGQT16S-150X100-2	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	300 2.07	102 4.02	UL	FM
XGQT16S-200X32	200 x 32 8 x 1 ¼	219.1 x 42.4 8.625 x 1.669	300 2.07	127 5.00	UL	FM
XGQT16S-200X40	200 x 40 8 x 1 ½	219.1 x 48.3 8.625 x 1.900	300 2.07	127 5.00	UL	FM
XGQT16S-200X50	200 x 50 8 x 2	219.1 x 60.3 8.625 x 2.375	300 2.07	127 5.00	UL	FM
XGQT16S-200X65	200 x 65 8 x 2 ½	219.1 x 76.1 8.625 x 3.000	300 2.07	127 5.00	UL	FM
XGQT16S-200X80	200 x 80 8 x 3	219.1 x 88.9 8.625 x 3.500	300 2.07	127 5.00	UL	FM
XGQT16S-200X100	200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	300 2.07	127 5.00	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

Grooved Eccentric Reducer
Model: XGQT17



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT17-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	500 3.45	64 2.52	UL	FM
XGQT17-80X65-1	80 x 65 3 x 2 ½	88.9 x 73.0 3.500 x 2.875	500 3.45	64 2.52	UL	FM
XGQT17-80X65-2	80 x 65 3 x 2 ½	88.9 x 76.1 3.500 x 3.000	500 3.45	64 2.52	UL	FM
XGQT17-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	500 3.45	76 3.00	UL	FM
XGQT17-100X65-1	100 x 65 4 x 2 ½	114.3 x 73.0 4.500 x 2.875	500 3.45	76 3.00	UL	FM
XGQT17-100X65-2	100 x 65 4 x 2 ½	114.3 x 76.1 4.500 x 3.000	500 3.45	76 3.00	UL	FM
XGQT17-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	500 3.45	76 3.00	UL	FM
XGQT17-125X65	125 x 65 5 x 2 ½	139.7 x 76.1 5.500 x 3.000	500 3.45	89 3.50	UL	FM
XGQT17-125X80	125 x 80 5 x 3	139.7 x 88.9 5.500 x 3.500	500 3.45	89 3.50	UL	FM
XGQT17-125X100	125 x 100 5 x 4	139.7 x 114.3 5.500 x 4.500	500 3.45	89 3.50	UL	FM
XGQT17-150X50	150 x 50 6 x 2	159.0 x 60.3 6.250 x 2.375	500 3.45	102 4.02	UL	FM
XGQT17-150X65-1	150 x 65 6 x 2 ½	159.0 x 76.1 6.250 x 3.000	500 3.45	102 4.02	UL	FM
XGQT17-150X80-1	150 x 80 6 x 3	159.0 x 88.9 6.250 x 3.500	500 3.45	102 4.02	UL	FM
XGQT17-150X100-1	150 x 100 6 x 4	159.0 x 108.0 6.250 x 4.250	500 3.45	102 4.02	UL	FM
XGQT17-150X100-2	150 x 100 6 x 4	159.0 x 114.3 6.625 x 4.500	500 3.45	102 4.02	UL	FM
XGQT17-150X65-2	150 x 65 6 x 2 ½	165.1 x 76.1 6.500 x 3.000	500 3.45	102 4.02	UL	FM
XGQT17-150X80-2	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	500 3.45	102 4.02	UL	FM
XGQT17-150X100-3	150 x 100 6 x 4	165.1 x 114.3 6.500 x 4.500	500 3.45	102 4.02	UL	FM
XGQT17-150X125-1	150 x 125 6 x 5	165.1 x 139.7 6.500 x 5.500	500 3.45	102 4.02	UL	FM
XGQT17-150X80-3	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	500 3.45	102 4.02	UL	FM
XGQT17-150X100-4	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	500 3.45	102 4.02	UL	FM
XGQT17-150X125-2	150 x 125 6 x 5	168.3 x 139.7 6.625 x 5.500	500 3.45	102 4.02	UL	FM
XGQT17-200X80	200 x 80 8 x 3	219.1 x 88.9 8.625 x 3.500	500 3.45	127 5.00	UL	FM
XGQT17-200X100	200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	500 3.45	127 5.00	UL	FM
XGQT17-200X125	200 x 125 8 x 5	219.1 x 139.7 8.625 x 5.500	500 3.45	127 5.00	UL	FM
XGQT17-200X150-1	200 x 150 8 x 6	219.1 x 165.1 8.625 x 6.500	500 3.45	127 5.00	UL	FM
XGQT17- 200X150-2	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	500 3.45	127 5.00	UL	FM
XGQT17-250X150-1	250 x 150 10 x 6	273.0 x 165.1 10.75 x 6.500	500 3.45	152 5.98	UL	FM
XGQT17-250X150-2	250 x 150 10 x 6	273.0 x 168.3 10.75 x 6.625	500 3.45	152 5.98	UL	FM
XGQT17-250X200	250 x 200 10 x 8	273.0 x 219.1 10.75 x 8.625	500 3.45	152 5.98	UL	FM

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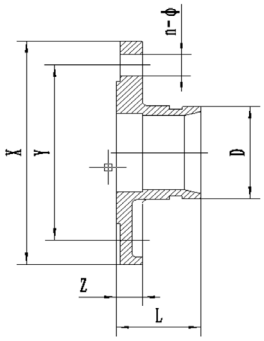
Flange Adaptor
PN16
Model: XGQT18



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D mm/in Dxd	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size No. - Size mm	UL	FM
				L	X	Y	Z			
XGQT18-50	50 2	60.3 2.375	300 2.07	61 2.40	165 6.496	125 4.92	19 0.748	4 - M16	UL	FM
XGQT18-65-1	65 2 ½	73.0 2.875	300 2.07	61 2.40	185 7.283	145 5.70	19 0.748	4 - M16	UL	FM
XGQT18-65-2	65 2 ½	76.1 3.000	300 2.07	61 2.40	185 7.283	145 5.70	19 0.748	4 - M16	UL	FM
XGQT18-80	80 3	88.9 3.500	300 2.07	61 2.40	200 7.874	160 6.29	19 0.748	8 - M16	UL	FM
XGQT18-100-1	100 4	108.0 4.250	300 2.07	61 2.40	220 8.661	180 7.08	19 0.748	8 - M16	UL	FM
XGQT18-100-2	100 4	114.3 4.500	300 2.07	70 2.755	220 8.661	180 7.08	19 0.748	8 - M16	UL	FM
XGQT18-125-1	125 5	133.0 5.250	300 2.07	61 2.40	250 9.842	210 8.26	19 0.748	8 - M16	UL	FM
XGQT18-125-2	125 5	139.7 5.500	300 2.07	61 2.40	250 9.842	210 8.26	19 0.748	8 - M16	UL	FM
XGQT18-150-1	150 6	159.0 6.250	300 2.07	70 2.755	285 11.22	240 9.448	19 0.748	8 - M20	UL	FM
XGQT18-150-2	150 6	165.1 6.500	300 2.07	70 2.755	285 11.22	240 9.448	19 0.748	8 - M20	UL	FM
XGQT18-150-3	150 6	168.3 6.625	300 2.07	70 2.755	285 11.22	240 9.448	19 0.748	8 - M20	UL	FM
XGQT18-200	200 8	219.1 8.625	300 2.07	76 2.99	340 13.38	295 11.61	20 0.748	12 - M20	UL	FM
XGQT18-250	250 10	273.0 10.750	300 2.07	85 3.346	405 15.944	355 13.97	22 0.866	12 - M20	UL	FM
XGQT18-300	300 12	323.9 12.750	300 2.07	90 3.543	460 18.11	410 16.14	24.5 0.96	12 - M20	UL	FM
XGQT18-350	350 14	377.0 14.843	300 2.07	100 3.937	520 20.47	470 18.50	26 1.02	16 - M24		

The specific items list shall be subject to the public notice of FM and UL website.

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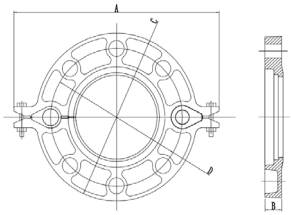
Grooved Flange
PN16
Model: XGQT19

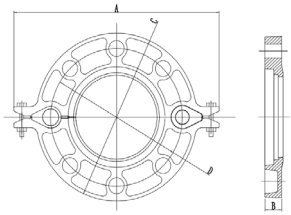


Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size No. - Size mm	UL	FM
				A	B	C	D			
XGQT19-50	50 2	60.3 2.375	300 2.07	220 8.740	21 0.826	165 6.496	125 4.921	4 - M16	UL	FM
XGQT19-65-1	65 2 ½	73.0 2.875	300 2.07	240 9.448	21 0.826	185 7.283	145 5.708	4 - M16	UL	FM
XGQT19-65-2	65 2 ½	76.1 3.000	300 2.07	240 9.448	21 0.826	185 7.283	145 5.708	4 - M16	UL	FM
XGQT19-80	80 3	88.9 3.500	300 2.07	255 10.039	21 0.826	200 7.874	160 6.299	8 - M16	UL	FM
XGQT19-100	100 4	114.3 4.500	300 2.07	280 9.763	22 0.866	220 8.661	180 7.086	8 - M16	UL	FM
XGQT19-125-1	125 5	139.7 5.500	300 2.07	316 12.44	22 0.866	250 9.842	210 8.267	8 - M16	UL	FM
XGQT19-125-2	125 5	141.3 5.563	300 2.07	324 12.44	22 0.866	250 9.842	210 8.267	8 - M16	UL	FM
XGQT19-150-1	150 6	165.1 6.500	300 2.07	346 13.622	22 0.866	285 11.22	240 9.448	8 - M20	UL	FM
XGQT19-150-2	150 6	168.3 6.625	300 2.07	346 13.622	22 0.866	285 11.22	240 9.448	8 - M20	UL	FM
XGQT19-200	200 8	219.1 8.625	300 2.07	410 16.456	26 1.023	340 13.38	295 11.614	12 - M20	UL	FM
XGQT19-250	250 10	273 8.625	300 2.07	500 19.685	27 1.063	405 15.945	355 13.976	12 - M20	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

Grooved Flange
ANSI - Class 150
Model: XGQT29



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/ in	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size No. - Size mm	UL	FM
				A	B	C	D			
XGQT29-50	50 2	60.3 2.375	300 2.07	206 8.110	22 0.866	152 5.984	121 4.763	4 - M16	UL	FM
XGQT29-65	65 2 ½	73.0 2.875	300 2.07	230 9.055	22 0.866	178 7.007	140 5.511	4 - M16	UL	FM
XGQT29-80	80 3	88.9 3.500	300 2.07	242 9.527	24 0.944	191 7.519	152 5.984	4 - M16	UL	FM
XGQT29-100	100 4	114.3 4.500	300 2.07	280 11.023	24 0.944	229 9.015	191 7.519	8 - M16	UL	FM
XGQT29-125-1	125 5	139.7 5.500	300 2.07	325 12.795	24.5 0.964	254 10	216 8.503	8 - M20		
XGQT29-125-2	125 5	141.3 5.563	300 2.07	325 12.795	24.5 0.964	254 10	216 8.503	8 - M20	UL	FM
XGQT29-150	150 6	168.3 6.625	300 2.07	345 13.583	24.5 0.964	282 11.102	241.5 9.508	8 - M20	UL	FM
XGQT29-200	200 8	219.1 8.625	300 2.07	414.3 16.311	28 1.102	341.4 13.44	298.5 11.751	8 - M20	UL	FM
XGQT29-250	250 10	273.0 10.75	150 1.04	500 19.685	30 1.181	405 15.945	362 14.252	12 - M24	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

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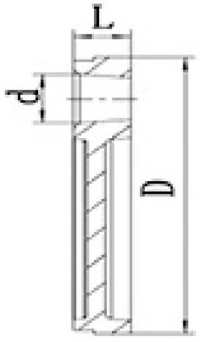
Drain Cap
Model: XGQT23

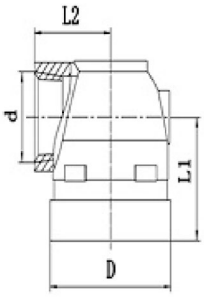


Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT23-40X25	40 x 25 1 ½ x 1	48.3 x 33.7 1.901 x 1.327	500 3.45	24.5 0.96		
XGQT23-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	500 3.45	24.5 0.96	UL	FM
XGQT23-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	500 3.45	24.5 0.96	UL	FM
XGQT23-65X25	65 x 25 2 ½ x 1	73.0 x 33.7 2.875 x 1.327	500 3.45	24.5 0.96	UL	FM
XGQT23-65X40	65 x 40 2 ½ x 1 ½	76.1 x 48.3 3.000 x 1.900	500 3.45	24.5 0.96	UL	FM
XGQT23-65X50	65 x 50 2 ½ x 2	76.1 x 60.3 3.000 x 2.375	500 3.45	24.5 0.96	UL	FM
XGQT23-80X25	80 x 25 3 x 1	88.9 x 33.7 3.500 x 1.327	500 3.45	24.5 0.96	UL	FM
XGQT23-80X40	80 x 40 3 x 1 ½	88.9 x 48.3 3.500 x 1.900	500 3.45	24.5 0.96	UL	FM
XGQT23-80X50	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	500 3.45	24.5 0.96	UL	FM
XGQT23-100X25	100 x 25 4 x 1	114.3 x 33.7 4.500 x 1.327	500 3.45	25 0.99	UL	FM
XGQT23-100X40	100 x 40 4 x 1 ½	114.3 x 48.3 4.500 x 1.902	500 3.45	25 0.99	UL	FM
XGQT23-100X50	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	500 3.45	25 0.99	UL	FM
XGQT23-125X50	125 x 50 5 x 2	139.7 x 60.3 5.500 x 2.375	500 3.45	25 0.99	UL	FM
XGQT23-150X25	150 x 25 6 x 1	168.3 x 33.7 6.625 x 1.327	500 3.45	25 0.99	UL	FM
XGQT23-150X40	150 x 40 6 x 1 ½	168.3 x 48.3 6.625 x 1.900	500 3.45	25 0.99		
XGQT23-150X50	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	500 3.45	25 0.99	UL	FM
XGQT23-200X50	200 x 50 8 x 2	219.1 x 60.3 8.625 x 2.375	500 3.45	30 1.81	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

Adapter Elbow
Model: 22

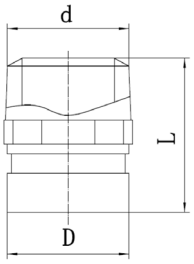


Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions mm/in		UL	FM
				L1	L2		
22-32X15	32 x 15 1 ¼ x ½	42.4 x 21.3 1.669 x 0.839	500 3.45	45 1.77	30.5 1.20	UL	FM
22-32X20	32 x 20 1 ¼ x ¾	42.4 x 26.9 1.669 x 1.059	500 3.45	45 1.77	30.5 1.20	UL	FM
22-32X25	32 x 25 1 ¼ x 1	42.4 x 33.7 1.669 x 1.327	500 3.45	48.5 1.91	31.5 1.24	UL	FM
22-40X15	40 x 15 1 ½ x ½	48.3 x 21.3 1.900 x 0.839	500 3.45	45 1.77	33.5 1.32	UL	FM
22-40X20	40 x 20 1 ½ x ¾	48.3 x 26.9 1.900 x 1.059	500 3.45	45 1.77	33.5 1.32	UL	FM
22-40X25	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	500 3.45	48.5 1.91	35.5 1.32	UL	FM
22-50X15	50 x 15 2 x ½	60.3 x 21.3 2.375 x 0.839	500 3.45	44.5 1.75	40 1.57	UL	FM
22-50X20	50 x 20 2 x ¾	60.3 x 26.9 2.375 x 1.059	500 3.45	45 1.77	40 1.57	UL	FM
22-50X25	50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.327	500 3.45	48.5 1.91	41.5 1.63	UL	FM
22-65X15	65 x 15 2 ½ x ½	73 x 21.3 2.87 x 0.839	500 3.45	44.5 1.75	44.5 1.75	UL	FM
22-65X20	65 x 20 2 ½ x ¼	73 x 26.9 2.87 x 1.059	500 3.45	44.5 1.75	44.5 1.75	UL	FM
22-65X25	65 x 25 2 ½ x 1	73 x 33.7 2.87 x 1.327	500 3.45	48.5 1.91	46 1.81	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

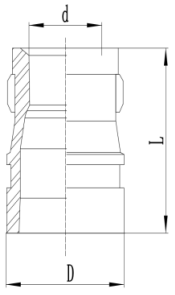
Adapter Nipple
Model: 36



Technical Data						
Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
36-40X40	40 x 40 1 ½ x 1 ½	48.3 x 48.3 1.900 x 1.900	500 3.45	63 2.48	UL	FM
36-50X50	50 x 50 2 x 2	60.3 x 60.3 2.375 x 2.375	500 3.45	63 2.48	UL	FM
36-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	500 3.45	63 2.48		
36-65X65	65 x 65 2 ½ x 2 ½	73 x 76.1 2.875 x 3.000	500 3.45	102 4.02		

The specific items list shall be subject to the public notice of FM and UL website.

Reducing
Adapter Nipple
Model: 37



Technical Data						
Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
37-40X25	40 x 25 1 ½ x 1	48.3 x 33.7 1.900 x 1.327	500 3.45	63 2.48	UL	FM
37-50X40	50 x 40 2 x 1 ½	60.3 x 48.3 2.375 x 1.900	500 3.45	63 2.48	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

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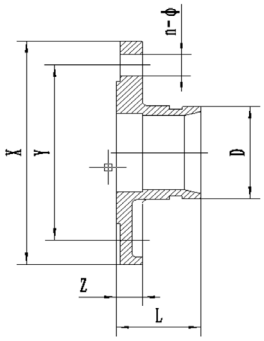
Flange Adaptor ANSI-Class 150 Model: XGQT28

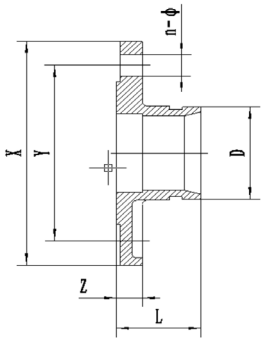


Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in D	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size No. - Size mm	UL	FM
				L	X	Y	Z			
XGQT28-50	50 2	60.3 2.375	300 2.07	65 2.56	152 5.98	120.5 4.744	16 0.629	4 - M16	UL	FM
XGQT28-65	65 2 ½	73.0 2.875	300 2.07	65 2.56	178 7.00	139.5 5.693	17.5 0.688	4 - M16	UL	FM
XGQT28-80	80 3	88.9 3.500	300 2.07	65 2.56	190 7.48	152.5 6.00	19 0.748	4 - M16	UL	FM
XGQT28-100	100 4	114.3 4.500	300 2.07	70 2.755	229 9.015	190.5 7.5	24 0.96	8 - M16	UL	FM
XGQT28-125	125 5	141.3 5.562	300 2.07	70 2.755	254 10	216 8.503	24 0.96	8 - M20	UL	FM
XGQT28-150	150 6	168.3 6.625	300 2.07	70 2.755	279 10.98	241.5 9.507	25.5 1.10	8 - M20	UL	FM
XGQT28-200	200 8	219.1 8.625	300 2.07	82 3.228	343 13.50	298.5 11.751	28.5 1.112	8 - M20	UL	FM
XGQT28-250	250 10	273.0 10.750	300 2.07	85 3.346	406 15.98	362 14.251	30 1.181	12 - M24	UL	FM
XGQT28-300	300 12	323.9 12.750	300 2.07	90 3.543	483 19.01	432 17.00	32 1.259	12 - M24	UL	FM

The specific items list shall be subject to the public notice of FM and UL website.

Table E Flange Adaptor Model: XGQT38



Technical Data

Part No.	Nominal Size mm/in	Pipe O.D. mm/in D	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size No. - Size mm	UL	FM
				L	X	Y	Z			
XGQT38-50	50 2	60.3 2.375	365 2.52	65 2.56	152 5.98	114 4.488	13 0.512	4 - M16	UL	FM
XGQT38-65	65 3 OD	76.1 2.996	365 2.52	70 2.755	166.5 6.56	128.5 5.059	13 0.512	4 - M16	UL	FM
XGQT38-80	80 3	88.9 3.500	365 2.52	70 2.755	186 7.32	146 5.748	15 0.591	4 - M16	UL	FM
XGQT38-100	100 4	114.3 4.500	365 2.52	70 2.755	216 8.504	179.5 7.063	17.5 0.689	8 - M16	UL	FM
XGQT38-150	150 6 - ½ OD	165.1 6.500	365 2.52	70 2.755	280 11.02	236.5 9.307	20 0.787	8 - M20	UL	FM
XGQT38-200	200 8	219.1 8.625	365 2.52	100 3.98	337 13.27	292 11.496	21 0.827	8 - M20	UL	FM

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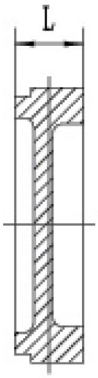
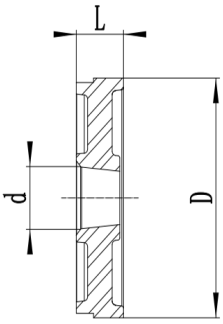
Cap
Model: XGQT20



Technical Data						
Part No.	Nominal Size mm/in	Pipe O.D. Dxd mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT20-25	25 1	33.7 1.315	400 2.75	24.5 0.96	UL	FM
XGQT20-32	32 1 ¼	42.4 1.660	400 2.75	24.5 0.96	UL	FM
XGQT20-40	40 1 ½	48.3 1.900	400 2.75	24.5 0.96	UL	FM
XGQT20-50	50 2	60.3 2.375	400 2.75	24.5 0.96	UL	FM
XGQT20-65-1	65 2 ½	73.0 2.875	400 2.75	24.5 0.96	UL	FM
XGQT20-65-2	65 2 ½	76.1 3.000	400 2.75	24.5 0.96	UL	FM
XGQT20-80	80 3	88.9 3.500	400 2.75	24.5 0.96	UL	FM
XGQT20-100-1	100 4	108.0 4.252	400 2.75	25 0.99	UL	FM
XGQT20-100-2	100 4	114.3 4.500	300 2.07	25 0.99	UL	FM
XGQT20-125-1	125 5	133.0 5.250	300 2.07	25 0.99	UL	FM
XGQT20-125-2	125 5	139.7 5.500	300 2.07	25 0.99	UL	FM
XGQT20-150-1	150 6	159.0 6.260	300 2.07	25 0.99	UL	FM
XGQT20-150-2	150 6	165.1 6.500	300 2.07	25 0.99	UL	FM
XGQT20-150-3	150 6	168.3 6.625	300 2.07	25 0.99	UL	FM
XGQT20-200	200 8	219.1 8.625	300 2.07	30 1.81	UL	FM
XGQT20-250	250 10	273.0 10.750	300 2.07	32 1.259	UL	FM

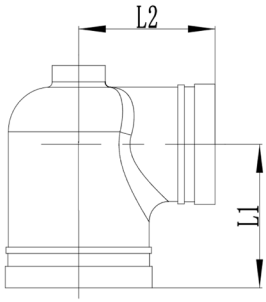
The specific items list shall be subject to the public notice of FM and UL website.

Threaded Cap
Model: XGQT20S



Technical Data						
Part No.	Nominal Size mm/in	Pipe O.D. Dxd mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	UL	FM
XGQT20S-100X25	100 x 25 4 x 1	114.3 x 33.7 4.500 x 1.327	500 3.45	25 0.99	UL	FM
XGQT20S-150X25-1	150 x 25 6 x 1	165.1 x 33.7 6.500 x 1.327	500 3.45	25 0.99	UL	FM
XGQT20S-150X25-2	150 x 25 6 x 1	168.3 x 33.7 6.625 x 1.327	500 3.45	25 0.99	UL	FM
XGQT20S-200X25	200 x 25 8 x 1	219.1 x 33.7 8.625 x 1.327	500 3.45	30 1.18	UL	FM
XGQT20S-250X25	250 x 25 10 x 1	273 x 33.7 10.750 x 1.327	500 3.45	32 1.259	UL	FM

Hydrant Elbow
Model: XGQT21



Technical Data							
Part No.	Nominal Size mm/in	Pipe O.D. mm/in Dxd	Working Pressure PSI/MPa	L1	L2	UL	FM
XGQT21-100X80	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	300 2.07	106 4.173	106 4.173	UL	FM
XGQT21-150X80	150 x 80 6 x 3	165.1 x 88.9 6.500 x 3.500	300 2.07	130.5 5.138	130.5 5.138		FM

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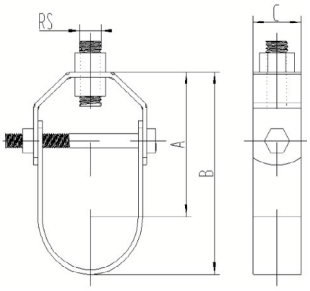
Clevis Hanger
Model: CH1



Technical Features

Size Range	1/2" through 12"
Material	Carbon Steel
Finish	Galvanized. Other finish available upon request.
Service	Recommended for the suspension of stationary pipe lines.
Approvals	Complies with Federal Specification A-A-1192A (Type 1), WW-H-171-E (Type 1), and MSS SP-58 (Type 1).
Ordering	Specify pipe size, figure number and name.

Technical Data

Part No.	Nominal Pipe Size mm/in	Pipe O.D. mm/in	RS mm/in	Dimensions mm/in			Max. Rec lbs/N	UL	FM
				A	B	C			
CH1-21	DN15 1/2	21.3 0.838	M10 3/8	41 1 5/8	55 2 1/6	22 7/8	610 2710	UL	
CH1-26	DN20 3/4	26.7 1.051		44 1 3/4	60 2 3/8			UL	FM
CH1-33	DN25 1	33.7 1.327		50 2	70 2 3/4		730 3240	UL	FM
CH1-42	DN32 1 1/4	42.4 1.669		61 2 3/8	85 3 5/16			UL	FM
CH1-48	DN40 1 1/2	48.3 1.900		73 2 7/8	100 3 5/16			UL	FM
CH1-60	DN50 2	60.3 2.245		82 3 1/4	115 4 1/2			UL	FM
CH1-73	DN65 2 1/2	73 2.375	M12 1/2	95 3 3/4	135 5 1/3	30 1 3/16	1350 6000	UL	FM
CH1-89	DN80 3	88.9 3.000		105 4 1/8	155 6 1/8			UL	FM
CH1-114	DN100 4	114.3 4.500	M16 5/8	140 5 1/2	200 7 7/8		1430 6360	UL	FM
CH1-141	DN125 5	141.3 5.563		175 6 7/8	250 10	40 1 9/16		UL	FM
CH1-168	DN150 6	168.3 6.625	M20 3/4	190 7 1/2	280 11		1940 8630	UL	FM
CH1-219	DN200 8	219.1 8.625		215 8 1/2	330 13	50 2	2000 8890	UL	FM
CH1-273	DN250 10	273 10.748		255 10	400 15 3/4		3600 16000	UL	FM
CH1-324	DN300 12	323.9 12.752		300 11 3/4	470 18 1/2		3800 16900	UL	FM

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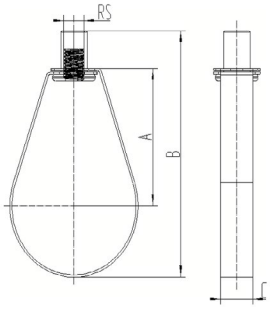
Ring Hanger
Model: RH1



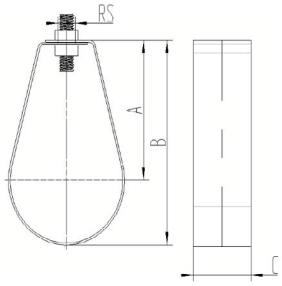
Technical Features

Size Range	1/2" through 8"
Material	Carbon Steel
Finish	Galvanized. Other finish available upon request.
Service	Recommended for suspension of non-insulated stationary pipe line. Manufactured to use the min. rod size permitted by NFPA for fire sprinkler pipe line.
Approvals	Complies with Federal Specification A-A-1192A (Type 10), WW-H-171-E (Type 10), and MSS SP-69 (Type 10).
Ordering	Specify part number.

Technical Data

Part No.	Nominal Pipe Size mm/in	Pipe O.D. mm/in	RS mm/in	Dimensions mm/in			Max. Rec lbs/N	UL	FM
				A	B	C			
RH1-21	DN15 1/2	21.3 0.838	M10 3/8	40 1 1/2	70 2 3/4	16 5/8	500 2220	UL	
RH1-26	DN20 3/4	26.7 1.051		45 1 3/4	78 3 1/16			UL	FM
RH1-33	DN25 1	33.7 1.327		48 1 7/8	84 3 5/16			UL	FM
RH1-42	DN32 1 1/4	42.4 1.669		50 2	90 3 9/16			UL	FM
RH1-48	DN40 1 1/2	48.3 1.900		55 2 3/16	98 3 7/8			UL	FM
RH1-60	DN50 2	60.3 2.245		60 2 3/8	109 4 1/4			UL	FM
RH1-73	DN65 2 1/2	73 2.375		78 3 1/16	132 5 3/16	20 13/16	1000 4440	UL	FM
RH1-89	DN80 3	88.9 3.000		82 3 1/4	145 5 11/16			UL	FM
RH1-114	DN100 4	114.3 4.500		100 4	175 6 7/8			UL	FM
RH1-141	DN125 5	141.3 5.563	M12 1/2	116 4 5/8	210 8 1/4		1900 8450	UL	FM
RH1-168	DN150 6	168.3 6.625		135 5 5/16	245 9 5/8			UL	FM
RH1-219	DN200 8	219.1 8.625		183 7 1/4	315 12 3/8			UL	FM

Pear Hanger
Model: PH1



Technical Features

Size Range	1/2" through 8"
Material	Carbon Steel
Finish	Galvanized. Other finish available upon request.
Service	Recommended for suspension of non-insulated stationary pipe line. Manufactured to use the min. rod size permitted by NFPA for fire sprinkler pipe line.
Approvals	Complies with Federal Specification A-A-1192A (Type 10), WW-H-171-E (Type 10), and MSS SP-69 (Type 10).
Ordering	Specify part number.

Technical Data

Part No.	Nominal Pipe Size mm/in	Pipe O.D. mm/in	RS mm/in	Dimensions mm/in			Max. Rec lbs/N	UL	FM
				A	B	C			
PH1-21	DN15 1/2	21.3 0.838	M10 3/8	64 2 1/2	77 3 1/16	25 1	500 2220	UL	
PH1-26	DN20 3/4	26.7 1.051		64 2 1/2	80 3 1/8			UL	FM
PH1-33	DN25 1	33.7 1.327		70 2 3/4	90 3 9/16			UL	FM
PH1-42	DN32 1 1/4	42.4 1.669		73 2 7/8	97 3 13/16			UL	FM
PH1-48	DN40 1 1/2	48.3 1.900		75 2 15/16	101.5 4			UL	FM
PH1-60	DN50 2	60.3 2.245		80 3 1/8	112.5 4 1/2			UL	FM
PH1-73	DN65 2 1/2	73 2.375	M12 1/2	91 3 9/16	130 5 1/8	32 1 1/4	1000 4400	UL	FM
PH1-89	DN80 3	88.9 3.000		105 4 1/8	152 6			UL	FM
PH1-114	DN100 4	114.3 4.500		115 4 1/2	175 6 7/8			UL	FM
PH1-141	DN125 5	141.3 5.563		175 6 7/8	249 9 7/8			UL	FM
PH1-168	DN150 6	168.3 6.625	M16 5/8	222 8 3/4	310 12 1/4	40 1 1/2	1260 5544	UL	FM
PH1-219	DN200 8	219.1 8.625		250 9 13/16	363 14 1/4			UL	FM

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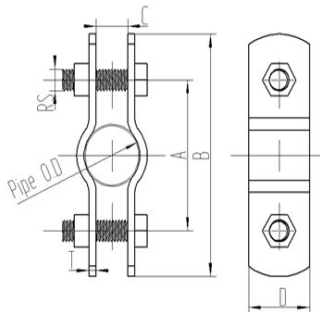
Medium Pipe Clamp Model: PC1



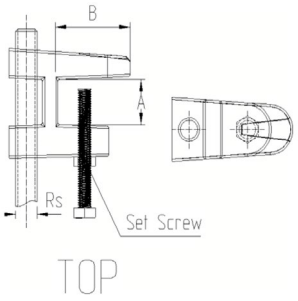
Technical Features

Size Range	1/2" through 8"
Material	Carbon Steel
Finish	Plain, Hot-Dip Galvanized with Zinc Plated Bolts & Nuts, Epoxy Coated or Painted.
Service	This product is not intended for use with hanger rods.
Approvals	Complies with Federal Specification A-A-1192A (Type 10), WW-H-171-E (Type 10), and MSS SP-69 (Type 10).
Ordering	Specify part number.

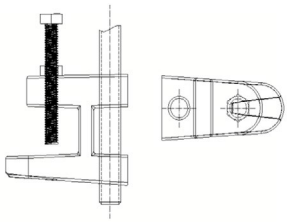
Technical Data

Part No.	Nominal Pipe Size mm/in	Pipe O.D. mm/in	RS mm/ in	Dimensions mm/in				Max. Rec lbs/N	UL	FM
				A	B	C	C			
PC1-21	DN15 1/2	21.3 0.838	M10 3/8	56 2 1/4	86 3 3/8	12 1/2	25 1	500 2220	UL	
PC1-26	DN20 3/4	26.7 1.051		65 2 1/2	95 3 3/4				UL	FM
PC1-33	DN25 1	33.7 1.327		70 2 3/4	100 4				UL	FM
PC1-42	DN32 1 1/4	42.4 1.669		80 3 1/8	110 4 5/16				UL	FM
PC1-48	DN40 1 1/2	48.3 1.900		90 3 1/2	120 4 3/4				UL	FM
PC1-60	DN50 2	60.3 2.245	M12 1/2	105 4 1/8	140 5 1/2				UL	FM
PC1-73	DN65 2 1/2	73 2.375		135 5 5/16	170 6 3/4				UL	FM
PC1-89	DN80 3	88.9 3.000		145 5 11/16	180 7 1/8				UL	FM
PC1-114	DN100 4	114.3 4.500		180 7 1/8	215 8 1/2	16 5/8		1000 4400	UL	FM
PC1-141	DN125 5	141.3 5.563		210 8 1/4	250 9 7/8		40 1 9/16		UL	FM
PC1-168	DN150 6	168.3 6.625		250 9 7/8	290 11 1/2	18 3/4		1260 5544	UL	FM
PC1-219	DN200 8	219.1 8.625	M16 5/8	305 12	350 13 3/4		50 2		UL	FM
PC1-273	DN250 10	273 10.75		365 14 3/8	435 17 1/8				UL	FM
PC1-324	DN300 12	323.9 12.75		415 16 3/8	485 19 1/8				UL	FM

Universal C Type Clamp Model: TC1



TOP



BOTTOM

Technical Features

Size Range	3/8", 1/2", 5/8"and 3/4"or M10, M12, M16 and M20
Material	Ductile iron clamp, hardened steel cup point set screw and lock nut.
Finish	Black or Galvanized.
Service	Structural attachment to top or bottom of metal beams, purlins, channel or angel iron.
Approvals	Complies with Federal Specification A-A-1192A (Type 1), WW-H-171-E (Type 1), and MSS SP-58 (Type 1).
Ordering	Specify part number and finish.

Technical Data

Part No.	Rs	A	B	Set Screw	Max. Rec (lbs)		UL	FM
	in	in	in	in	Top	Bottom		
TC1-100	3/8	3/4	1 1/8	3/8	500	250	UL	FM
TC1-120	1/2	3/4	1 1/4	1/2	950	760	UL	FM
TC1-160	5/8	1 3/8	1 1/4	1/2	1300	1080		
TC1-200	3/4	1 3/8	1 1/4	1/2	1300	1080		

Technical Data

Part No.	Rs	A	B	Set Screw	Max. Rec (N)		UL	FM
	mm	mm	mm	mm	Top	Bottom		
TC1 -M10	M10	20	29	M10	2220	1110	UL	FM
TC1 -M12	M12	20	32	M12	4220	3380	UL	FM
TC1-M16	M16	34	32	M12	5800	4800		
TC1-M20	M20	34	32	M12	5800	4800		

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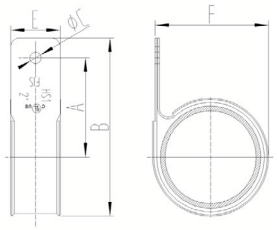
One Hole Pipe Strap Model: HS1



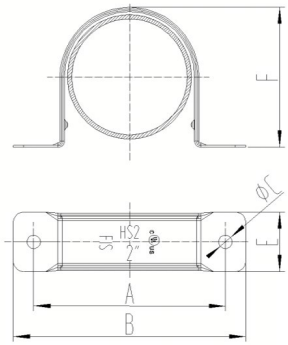
Technical Features

Size Range	3/4" through 2"
Material	Carbon Steel
Finish	Zinc Plated Steel (Hot-Dip Galvanized optional).
Service	Hanger for CPVC pipe in the horizontal position on the side of structural wood beams. It can also be used as a guide to limit movement of vertical CPVC pipe with the tab in the horizontal position.
Approvals	UL Listed
Ordering	Specify part number.

Technical Data - Dimensions (IN) Weight (LBS)

Part No.	CPVC Pipe Size	A in	B in	C in	E in	F in	Max. Hanger Spacing (FT.)	Approx Weight/100 (lbs)	UL
HS1-3/4	3/4	1 9/16	2 5/8	1/4	1 1/8	1 1/4	5 1/2	8	UL
HS1-1	1	1 3/4	2 15/16			1 1/2	6	9	UL
HS1-1 1/4	1 1/4	1 13/16	3 3/16			1 7/8	6 1/2	10	UL
HS1-1 1/2	1 1/2	2	3 9/16			2 1/8	7	12	UL
HS1-2	2	2 3/16	4			2 5/8	8	14	UL

Two Hole Pipe Strap Model: HS2



Technical Features

Size Range	3/4" through 2"
Material	Carbon Steel
Finish	Zinc Plated Steel (Hot-Dip Galvanized optional).
Service	Hanger for CPVC pipe in the horizontal position on the bottom and side of structural wood beams, composite beams. It can also be used as a guide to limit movement for pipe in the vertical position. When used on composite wood beams, web thickness must be 3/8" or greater.
Approvals	UL Listed
Ordering	Specify part number.

Technical Data - Dimensions (IN) Weight (LBS)

Part No.	CPVC Pipe Size	A in	B in	C in	E in	F in	Max. Hanger Spacing (FT.)	Approx Weight/100 (lbs)	UL
HS2-3/4	3/4	2 3/16	2 15/16	1/4	1 1/8	1 1/4	5 1/2	5	UL
HS2-1	1	2 7/16	3 7/32			1 1/2	6	6	UL
HS2-1 1/4	1 1/4	2 13/16	3 9/16			1 13/16	6 1/2	7	UL
HS2-1 1/2	1 1/2	3	3 13/16			2 1/8	7	8	UL
HS2-2	2	3 1/2	4 9/32			2 9/16	8	9	UL

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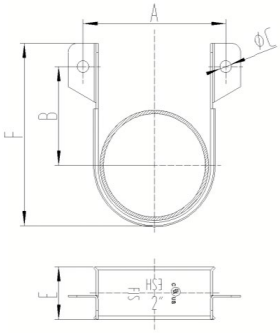
Two Hole 90° Side Mount Strap Model: HS3



Technical Features

Size Range 3/4" through 2"

Material Carbon Steel

Finish Zinc Plated Steel (Hot-Dip Galvanized optional).

Service Hanger for CPVC pipe in the horizontal position on the bottom of structural wood beams. During Installation, adjust hanger mounting flanges such that pipe contacts both mounting surface and hanger, minimizing vertical pipe movement.

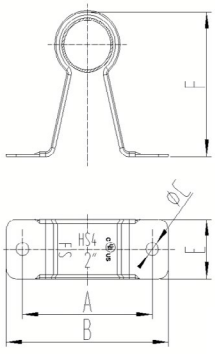
Approvals UL Listed.

Ordering Specify part number.

Technical Data - Dimensions (IN) Weight (LBS)

Part No.	CPVC Pipe Size	A in	B in	C in	E in	F in	Max. Hanger Spacing (ft)	Approx Weight/100 (lbs)	UL
HS3-3/4	3/4	1 25/32	1 1/2	1/4	1 1/8	2 5/8	5 1/2	5	UL
HS3-1	1	2 1/16	1 5/8			2 7/8	6	6	UL
HS3-1 1/4	1 1/4	2 13/32	1 3/4			3 1/4	6 1/2	7	UL
HS3-1 1/2	1 1/2	2 21/32	1 7/8			3 1/2	7	8	UL
HS3-2	2	3 1/8	2 1/8			3 7/8	8	9	UL

Two Hole Standoff Strap Model: HS4



Technical Features

Size Range 3/4" through 2"

Material Carbon Steel

Finish Zinc Plated Steel (Hot-Dip Galvanized optional).

Service Hanger for CPVC pipe in the horizontal position on the bottom of structural wood beams. It can also be used as a guide to limit movement for a pipe in the horizontal/vertical position on the side of structural wood beams, composite wood beams.

Approvals UL Listed.

Ordering Specify part number.

Technical Data - Dimensions (IN) Weight (LBS)

Part No.	CPVC Pipe Size	A in	B in	C in	E in	F in	Max. Hanger Spacing (ft)	Approx Weight/100 (lbs)	UL
HS4-3/4	3/4	2 5/8	3 1/4	1/4	1 1/8	2 3/4	5 1/2	5	UL
HS4-1	1	2 21/32	3 5/16			3	6	6	UL
HS4-1 1/4	1 1/4	3	3 11/16			3 3/8	6 1/2	7	UL
HS4-1 1/2	1 1/2	3 5/8	4 1/4			3 5/8	7	8	UL
HS4-2	2	4	4 21/32			4 1/8	8	9	UL

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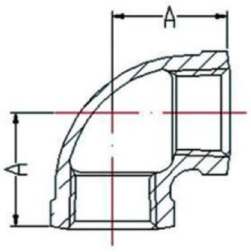
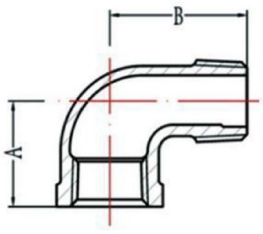
90° Elbow, Equal
Model: FISA1



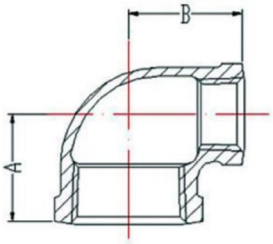
Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISA101	1/8"	6	18	30.38	31	600
FISA102	1/4"	8	20	42.14	43	600
FISA103	3/8"	10	24	60.76	62	500
FISA104	1/2"	15	27	96.04	98	400
FISA105	3/4"	20	32	139.16	142	210
FISA106	1"	25	37	213.64	218	120
FISA107	1 1/4"	32	44.5	340.06	347	64
FISA108	1 1/2"	40	48.5	423.36	432	48
FISA109	2"	50	57	674.24	688	32
FISA110	2 1/2"	65	68.5	1068.2	1090	16
FISA111	3"	80	77.5	1489.6	1520	10
FISA112	4"	100	96.5	2700.88	2756	6
FISA113	6"	150	129	6089.72	6214	2

90° M&F Elbow, Equal
Model: FISA4



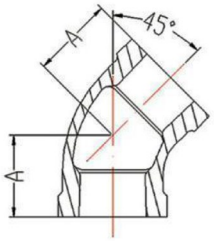
Part No	Size		A	B	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv.	
					g	g	Pcs/ctn
FISA401	1/4"	8	20	28	37.24	38	600
FISA402	3/8"	10	25	33	54.88	56	500
FISA403	1/2"	15	28	38	87.22	89	300
FISA404	3/4"	20	33	44	132.3	135	180
FISA405	1"	25	38	52	204.82	209	104
FISA406	1 1/4"	32	45	60	339.08	346	60
FISA407	1 1/2"	40	50	65	434.14	443	52
FISA408	2"	50	58	74	701.68	716	26
FISA409	2 1/2"	65	69	90	1125.04	1148	12
FISA410	3"	80	77.5	100	1547.42	1579	10
FISA411	4"	100	96.5	120	2703.82	2759	6

90° Elbow, Reducing
Model: FISRA1



Part No	Size		A	B	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv.	
					g	g	Pcs/ctn
FISRA101	1/2" x 3/8"	15 x 10	25	25	74.48	76	270
FISRA102	3/4" x 1/2"	20 x 15	29	30	122.5	125	270
FISRA103	1" x 3/8"	25 x 10	29	31	143.08	146	160
FISRA104	1" x 1/2"	25 x 15	31	33	161.7	165	160
FISRA105	1" x 3/4"	25 x 20	34	35	184.24	188	160
FISRA106	1-1/4" x 3/8"	32 x 10	31	36	213.64	218	100
FISRA107	1-1/4" x 1/2"	32 x 15	34	37	227.36	232	100
FISRA108	1-1/4" x 3/4"	32 x 20	36	40	252.84	258	100
FISRA109	1-1/4" x 1"	32 x 25	40	41	285.18	291	90
FISRA110	1-1/2" x 1/2"	40 x 15	35	41	266.56	272	90
FISRA111	1-1/2" x 3/4"	40 x 20	37	43	302.82	309	90
FISRA112	1-1/2" x 1"	40 x 25	41	45	342.02	349	70
FISRA113	1-1/2" x 1-1/4"	40 x 32	45	47	400.82	409	56
FISRA114	2" x 1/2"	50 x 15	37	47	398.86	407	68
FISRA115	2" x 3/4"	50 x 20	40	49	423.36	432	52
FISRA116	2" x 1"	50 x 25	43	51	476.28	486	50
FISRA117	2" x 1-1/4"	50 x 32	47	53	552.72	564	40
FISRA118	2" x 1-1/2"	50 x 40	51	54	588	600	30
FISRA119	2-1/2" x 1/2"	65 x 15	40.5	56	579.18	591	46
FISRA120	2-1/2" x 3/4"	65 x 20	43.5	57	613.48	626	40
FISRA121	2-1/2" x 1"	65 x 25	47.5	59	686	700	34
FISRA122	2-1/2" x 1-1/4"	65 x 32	51.5	61	732.06	747	30
FISRA123	2-1/2" x 1-1/2"	65 x 40	54.5	61	772.24	788	26
FISRA124	2-1/2" x 2"	65 x 50	59.5	64	904.54	923	24

45°Elbow
Model: FISA1/45



Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	Galv.	Pcs/ctn
FISA1-4501	3/8"	10	20	56.84	58	500
FISA1-4502	1/2"	15	22	91.14	93	400
FISA1-4503	3/4"	20	25	131.32	134	240
FISA1-4504	1"	25	28	196.98	201	140
FISA1-4505	1 1/4"	32	33	315.56	322	96
FISA1-4506	1 1/2"	40	36	392	400	72
FISA1-4507	2"	50	43	646.8	660	36

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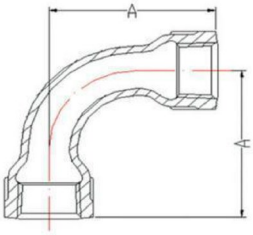
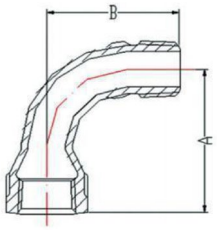
90° Female Long Sweep Bend Model: FISG1



Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISG101	3/8"	10	48	87.22	89	400
FISG102	1/2"	15	55	142.1	145	220
FISG103	3/4"	20	69	223.44	228	120
FISG104	1"	25	85	372.4	380	70
FISG105	1-1/4"	32	105	607.6	620	40
FISG106	1-1/2"	40	116	807.52	824	20
FISG107	2"	50	140	1268.12	1294	12
FISG108	2-1/2"	65	176	2243.22	2289	8
FISG109	3"	80	205	3234	3300	6
FISG110	4"	100	260	6056.4	6180	2

90° M&F Long Sweep Bend Model: FISG4



Part No	Size		A	B	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv	
					g	g	Pcs/ctn
FISG401	3/8"	10	48	42	71.54	73	400
FISG402	1/2"	15	55	48	115.64	118	280
FISG403	3/4"	20	69	60	187.18	191	150
FISG404	1"	25	85	75	304.78	311	80
FISG405	1-1/4"	32	105	95	519.4	530	50
FISG406	1-1/2"	40	116	105	665.42	679	24
FISG407	2"	50	140	130	1123.08	1146	12
FISG408	2-1/2"	65	176	165	2067.8	2110	8
FISG409	3"	80	205	190	2955.68	3016	6
FISG410	4"	100	260	245	5396.86	5507	2

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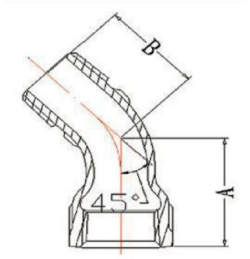
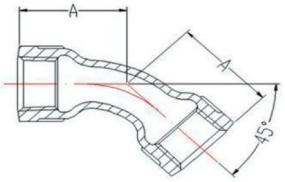
45° M&F Short Sweep Bend Model: FISG4/45



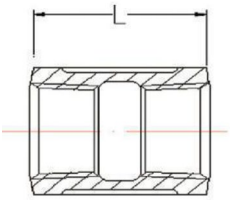
Part No	Size		A	B	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv	
					g	g	Pcs/ctn
FISG4-4501	1/2"	15	36	30	87	88	180
FISG4-4502	3/4"	20	43	36	88	144	160
FISG4-4503	7"	25	51	42	89	224	80
FISG4-4504	1-1/4"	32	64	54	90	362	50
FISG4-4505	1-1/2"	40	68	58	91	450	24
FISG4-4506	2"	50	81	70	92	752	12
FISG4-4507	2-1/2"	65	99	86	93	1344	8
FISG4-4508	3"	80	113	100	94	1963	6

45° Female Short Sweep Bends Model: FISD1



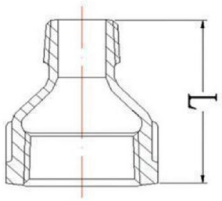
Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISD101	2"	50	81	-	-	12

Part Thread Socket
Model: FISM2



Part No	Size		L	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISM201	1/8"	6	23.5	-	-	-
FISM202	1/4"	8	26	36.26	37	800
FISM203	3/8"	10	29	46.06	47	700
FISM204	1/2"	15	35	80.36	82	450
FISM205	3/4"	20	38	113.68	116	300
FISM206	1"	25	44	176.4	180	180
FISM207	1 1/4"	32	49	264.6	270	120
FISM208	1 1/2"	40	53	319.48	326	72
FISM209	2"	50	63	543.9	555	48
FISM210	2 1/2"	65	72	825.16	842	32
FISM211	3"	80	77.5	1003.52	1024	24
FISM212	4"	100	91.5	1702.26	1737	10
FISM213	6"	150	118	3776.92	3854	4

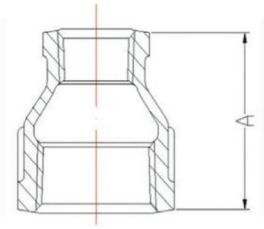
Socket Reducing, M&F
Model: FISRM4



Part No	Size		L	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISRM401	3/4" x 1/2"	20 x 15	47	93.1	95	380
FISRM402	1" x 1/2"	25 x 15	54	132.3	135	180
FISRM403	1" x 3/4"	25 x 20	54	143.08	146	180
FISRM404	1-1/4" x 3/4"	32 x 20	59	202.86	207	120
FISRM405	1-1/4" x 1"	32 x 25	59	213.64	218	120
FISRM406	1-1/2" x 3/4"	40 x 20	62	252.84	258	80
FISRM407	1-1/2" x 1"	40 x 25	62	266.56	272	80
FISRM408	1-1/2" x 1-1/4"	40 x 32	62	288.12	294	80
FISRM409	2" x 1"	50 x 25	69	397.88	406	48
FISRM410	2" x 1-1/4"	50 x 32	69	425.32	434	48
FISRM411	2" x 1-1/2"	50 x 40	69	429.24	438	48

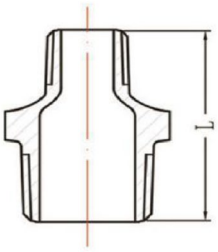
Socket, Reducing
Model: FISRM2

FIS FIS MENA



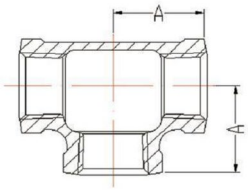
Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv.	
				g	g	Pcs/ctn
FISRM201	3/8" x 1/4"	10 x 8	29	42	43	500
FISRM202	1/2" x 1/4"	15 x 8	35	66	67	500
FISRM203	1/2" x 3/8"	15 x 10	36	69	70	500
FISRM204	3/4" x 1/4"	20 x 8	38	86	88	360
FISRM205	3/4" x 3/8"	20 x 10	38	91	93	360
FISRM206	3/4" x 1/2"	20 x 15	38	105	107	360
FISRM207	1" x 1/4"	25 x 8	44	132	135	200
FISRM208	1" x 3/8"	25 x 10	44	128	131	200
FISRM209	1" x 1/2"	25 x 15	44	142	145	200
FISRM210	1" x 3/4"	25 x 20	44	150	153	200
FISRM211	1-1/4" x 1/2"	32 x 15	49	203	207	144
FISRM212	1-1/4" x 3/4"	32 x 20	49	214	218	144
FISRM213	1-1/4" x 1"	32 x 25	49	225	230	120
FISRM214	1-1/2" x 1/2"	40 x 15	53	247	252	140
FISRM215	1-1/2" x 3/4"	40 x 20	53	254	259	140
FISRM216	1-1/2" x 1"	40 x 25	53	277	283	120
FISRM217	1-1/2" x 1-1/4"	40 x 32	53	312	318	100
FISRM218	2" x 1/2"	50 x 15	63	392	400	80
FISRM219	2" x 3/4"	50 x 20	63	406	414	80
FISRM220	2" x 1"	50 x 25	63	414	422	72
FISRM221	2" x 1-1/4"	50 x 32	63	435	444	72
FISRM222	2" x 1-1/2"	50 x 40	63	475	485	48
FISRM223	2-1/2" x 1/2"	65 x 15	72	568	580	60
FISRM224	2-1/2" x 3/4"	65 x 20	72	578	590	60
FISRM225	2-1/2" x 1"	65 x 25	72	594	606	60
FISRM226	2-1/2" x 1-1/4"	65 x 32	72	614	627	60
FISRM227	2-1/2" x 1-1/2"	65 x 40	72	634	647	60
FISRM228	2-1/2" x 2"	65 x 50	72	713	728	40
FISRM229	3" x 1/2"	80 x 15	77.5	699	713	40
FISRM230	3" x 3/4"	80 x 20	77.5	735	750	40
FISRM231	3" x 1"	80 x 25	77.5	747	762	40
FISRM232	3" x 1-1/4"	80 x 32	77.5	764	780	40
FISRM233	3" x 1-1/2"	80 x 40	77.5	785	801	40
FISRM234	3" x 2"	80 x 50	77.5	839	856	36
FISRM235	3" x 2-1/2"	80 x 65	77.5	860	878	24
FISRM236	4" x 1/2"	100 x 15	91.5	1139	1162	20
FISRM237	4" x 3/4"	100 x 20	91.5	1223	1248	20
FISRM238	4" x 1"	100 x 25	91.5	1233	1258	20
FISRM239	4" x 1-1/4"	100 x 32	91.5	1279	1305	20
FISRM240	4" x 1-1/2"	700 x 40	91.5	1294	1320	20
FISRM241	4" x 2"	100 x 50	91.5	1326	1353	16
FISRM242	4" x 2-1/2"	100 x 65	91.5	1378	1406	14
FISRM243	4" x 3"	100 x 80	91.5	1438	1467	12

Nipple, Reducing
Model: FISRN8



Part No	Size		L	S	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv.	
					g	g	Pcs/ctn
FISRN801	1/2" x 1/4"	15 x 8	44	22	47.04	48	600
FISRN802	1/2" x 3/8"	15 x 10	44	22	59.78	61	600
FISRN803	3/4" x 1/2"	20 x 15	47	29.9	91.14	93	400
FISRN804	1" x 1/2"	25 x 15	53	35.8	115.64	118	260
FISRN805	1" x 3/4"	25 x 20	53	35.8	137.2	140	240
FISRN806	1-1/4" x 1/2"	32 x 15	57	45.6	177.38	181	160
FISRN807	1 -1/4" x 3/4"	32 x 20	57	45.6	181.3	185	140
FISRN808	1-1/4" x 1"	32 x 25	57	45.6	192.08	196	140
FISRN809	1-1/2" x 1/2"	40 x 15	59	50.5	202.86	207	130
FISRN810	1-1/2" x 3/4"	40 x 20	59	50.5	207.76	212	130
FISRN811	1-1/2" x 1"	40 x 25	59	50.5	225.4	230	120
FISRN812	1-1/2" x 1-1/4"	40 x 32	59	50.5	235.2	240	100
FISRN813	2" x 1/2"	50 x 15	68	63.5	323.4	330	75
FISRN814	2" x 3/4"	50 x 20	68	63.5	334.18	341	72
FISRN815	2" x 1"	50 x 25	68	63.5	343	350	72
FISRN816	2" x 1-1/4"	50 x 32	68	63.5	352.8	360	72
FISRN817	2" x 1-1/2"	50 x 40	68	63.5	366.52	374	60
FISRN818	2-1/2" x 2"	65 x 50	73	79.4	-	-	-
FISRN819	3" x 2"	80 x 50	81	91.6	749.7	765	24
FISRN820	3" x 2-1/2"	80 x 65	81	91.6	-	-	-

Tee, Equal
Model: FISB1



Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISB101	1/8"	6	18	44.1	45	400
FISB102	1/4"	8	20	63.7	65	400
FISB103	3/8"	10	24	88.2	90	300
FISB104	1/2"	15	27	137.2	140	240
FISB105	3/4"	20	32	198.94	203	140
FISB106	1"	25	37	308.7	315	90
FISB107	1 1/4"	32	44.5	479.22	489	56
FISB108	1 1/2"	40	48.5	600.74	613	40
FISB109	2"	50	57	977.06	997	20
FISB110	2 1/2"	65	68.5	1520.96	1552	12
FISB111	3"	80	77.5	2045.26	2087	10
FISB112	4"	100	96.5	3589.74	3663	4
FISB113	6"	150	129	8157.52	8324	2

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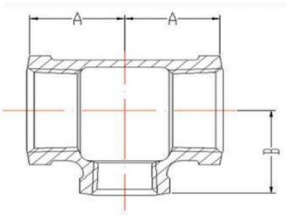
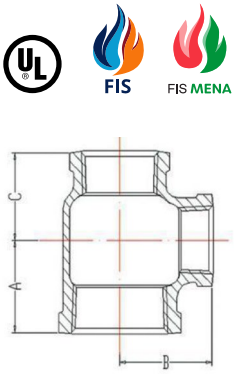
Tee, Reducing
Model: FISRB1-1



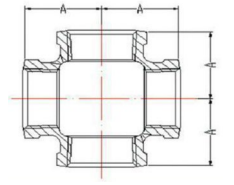
Part No	Size		A	B	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv	
					g	g	Pcs/ctn
FISRB1-101	3/4" x 1/2"	20 x 15	29	30	180.32	184	150
FISRB1-102	1" x 3/8"	25 x 10	29	31	225.4	230	100
FISRB1-103	1" x 1/2"	25 x 15	31	33	238.14	243	100
FISRB1-104	1" x 3/4"	25 x 20	34	35	261.66	267	100
FISRB1-105	1-1/4" x 3/8"	32 x 10	31	36	309.68	316	64
FISRB1-106	1-1/4" x 1/2"	32 x 15	34	37	341.04	348	64
FISRB1-107	1-1/4" x 3/4"	32 x 20	36	40	371.42	379	64
FISRB1-108	1-1/4" x 1"	32 x 25	40	41	407.68	416	64
FISRB1-109	1-1/2" x 1/2"	40 x 15	35	41	406.7	415	52
FISRB1-110	1-1/2" x 3/4"	40 x 20	37	43	427.28	436	52
FISRB1-111	1-1/2" x 1"	40 x 25	41	45	481.18	491	42
FISRB1-112	1-1/2" x 1-1/4"	40 x 32	45	47	557.62	569	42
FISRB1-113	2" x 1/2"	50 x 15	37	47	589.96	602	40
FISRB1-114	2" x 3/4"	50 x 20	40	49	642.88	656	40
FISRB1-115	2" x 1"	50 x 25	43	51	687.96	702	30
FISRB1-116	2" x 1-1/4"	50 x 32	47	53	750.68	766	30
FISRB1-117	2" x 1-1/2"	50 x 40	51	54	826.14	843	24
FISRB1-118	2-1/2" x 1/2"	65 x 15	40.5	56	887.88	906	24
FISRB1-119	2-1/2" x 3/4"	65 x 20	43.5	57	919.24	938	24
FISRB1-120	2-1/2" x 1"	65 x 25	47.5	59	1017.24	1038	20
FISRB1-121	2-1/2" x 1-1/4"	65 x 32	51.5	61	1075.06	1097	16
FISRB1-122	2-1/2" x 1-1/2"	65 x 40	54.5	61	1145.62	1169	16
FISRB1-123	2-1/2" x 2"	65 x 50	59.5	64	1294.58	1321	16
FISRB1-124	3" x 1/2"	80 x 15	42.5	64	1114.26	1137	12
FISRB1-125	3" x 3/4"	80 x 20	45.5	65	1174.04	1198	12
FISRB1-126	3" x 1"	80 x 25	49.5	67	1267.14	1293	12
FISRB1-127	3" x 1-1/4"	80 x 32	54.5	69	1342.6	1370	12
FISRB1-128	3" x 1-1/2"	80 x 40	57.5	71	1440.6	1470	12
FISRB1-129	3" x 2"	80 x 50	61.5	71	1589.56	1622	10
FISRB1-130	3" x 2-1/2"	80 x 65	71.5	74	1862	1900	10
FISRB1-131	4" x 1/2"	100 x 15	49.5	78	1915.9	1955	8
FISRB1-132	4" x 3/4"	100 x 20	53.5	79	2038.4	2080	8
FISRB1-133	4" x 1"	100 x 25	56.5	82	2100.14	2143	8
FISRB1-134	4" x 1-1/4"	100 x 32	60.5	85	2214.8	2260	6
FISRB1-135	4" x 1-1/2"	100 x 40	62.5	85	2303.98	2351	6
FISRB1-136	4" x 2"	100 x 50	68.5	86	2558.78	2611	6
FISRB1-137	4" x 2-1/2"	100 x 65	77.5	89	2799.86	2857	6
FISRB1-138	4" x 3"	100 x 80	82.5	90	3138.94	3203	6

Tee, Reducing
Model: FISRB1-2



Part No	Size		A	B	C	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	mm	Black	Galv	
						g	g	Pcs/ctn
FISRB1-201	3/4" x 1/2" x 1/2"	20 x 15 x 15	29	30	27	159.74	163	120
FISRB1-202	1" x 1/2" x 3/4"	25 x 15 x 20	31	33	29	191.1	195	120
FISRB1-203	1" x 3/4" x 3/4"	25 x 20 x 20	34	35	32	157.78	161	120
FISRB1-204	1-1/4" x 1/2" x 1"	32 x 15 x 25	33	37	31	234.22	239	80
FISRB1-205	1-1/4" x 3/4" x 1"	32 x 20 x 25	36	40	34	287.14	293	60
FISRB1-206	1-1/4" x 1" x 1"	32 x 25 x 25	39	40	36	355.74	363	60
FISRB1-207	1-1/4" x 1-1/4" x 1"	32 x 32 x 25	44.5	44.5	41	406.7	415	40
FISRB1-208	1-1/2" x 1/2" x 1-1/4"	40 x 15 x 32	35	41	33	539.98	551	32
FISRB1-209	1-1/2" x 3/4" x 1-1/4"	40 x 20 x 32	37	43	36	514.5	525	36
FISRB1-210	1-1/2" x 1" x 1"	40 x 25 x 25	40	44	36	641.9	655	28
FISRB1-211	1-1/2" x 1" x 1-1/4"	40 x 25 x 32	41	45	40	711.48	726	20
FISRB1-212	1-1/2" x 1-1/4" x 1"	40 x 32 x 25	45	47	41	897.06	897	16
FISRB1-213	1-1/2" x 1-1/4" x 1-1/4"	40 x 32 x 32	45	47	44.5	1056.44	1078	12
FISRB1-214	1-1/2" x 1-1/2" x 1"	40 x 40 x 25	48.5	48.5	45	1025.08	1045	16
FISRB1-215	1-1/2" x 2" x 1-1/4"	40 x 50 x 32	54	51	53	1336.72	1364	10
FISRB1-216	2" x 1/2" x 1-1/2"	50 x 15 x 40	37	47	35	1622.88	1656	10
FISRB1-217	2" x 3/4" x 1-1/2"	50 x 20 x 40	40	49	37	2530.36	2582	6
FISRB1-218	2" x 1" x 1-1/4"	50 x 25 x 32	43	51	40	299.88	306	64
FISRB1-219	2" x 1" x 1-1/2"	50 x 25 x 40	42	49	40	344.96	352	68
FISRB1-220	2" x 1-1/4" x 1-1/4"	50 x 32 x 32	47	53	44.5	392	400	60
FISRB1-221	2" x 1-1/4" x 1-1/2"	50 x 32 x 40	47	53	45	491.96	502	40
FISRB1-222	2" x 1-1/2" x 1"	50 x 40 x 25	51	54	45	377.3	385	42
FISRB1-223	2" x 1-1/2" x 1-1/2"	50 x 40 x 40	51	54	48.5	406.7	415	40

Cross Female
Model: FISC1



Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISC101	1/2"	15	27	167	170	180
FISC102	3/4"	20	32	246	251	96
FISC103	1"	25	37	380	388	72
FISC104	1 1/4"	32	44.5	576	588	36
FISC105	1 1/2"	40	48.5	712	727	30
FISC106	2"	50	57	1147	1170	12
FISC107	2 1/2"	65	68.5	1740	1776	10
FISC108	3"	80	77.5	2478	2529	6
FISC109	4"	100	96.5	4211	4297	2

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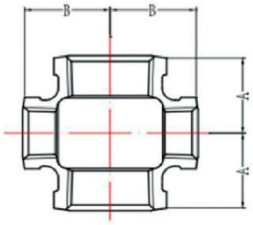
Cross, Female, Reducing
Model: FISRC1

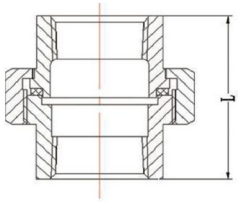
FIS FIS MENA



Part No	Size		A	B	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv	
					g	g	Pcs/ctn
FISRC101	3/4" x 1/2"	20 x 15	29	30	199	203	120
FISRC102	1" x 1/2"	25 x 15	31	33	261	266	96
FISRC103	1" x 3/4"	25 x 20	34	35	310	316	80
FISRC104	1-1/4" x 1/2"	32 x 15	34	37	365	372	64
FISRC105	1-1/4" x 3/4"	32 x 20	36	40	407	415	60
FISRC106	1-1/4" x 1"	32 x 25	40	41	460	469	56
FISRC107	1-1/2" x 1/2"	40 x 15	35	41	414	422	52
FISRC108	1-1/2" x 3/4"	40 x 20	37	43	473	483	52
FISRC109	1-1/2" x 1"	40 x 25	41	45	522	533	42

Union, Flat Seat
Model: FISU1

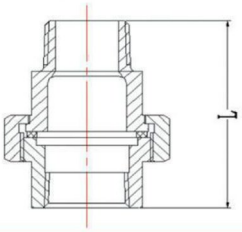
FIS FIS MENA



Part No	Size		L	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv	
				g	g	Pcs/ctn
FISU101	3/8"	10	39	156.8	160	280
FISU102	1/2"	15	46	200.9	205	180
FISU103	3/4"	20	50	265.58	271	120
FISU104	1"	25	56	392	400	88
FISU105	1-1/4"	32	63	583.1	595	56
FISU106	1-1/2"	40	68	733.04	748	36
FISU107	2"	50	76	1056.44	1078	28
FISU108	2-1/2"	65	83	1675.8	1710	12
FISU109	3"	80	93	2175.6	2220	10
FISU110	4"	100	113.5	3724	3800	6

Union, Flat Seat, M&F
Model: FISU2

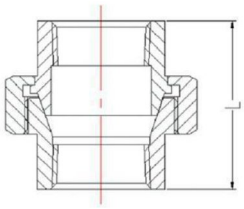
FIS FIS MENA



Part No	Size		L	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv.	
				g	g	Pcs/ctn
FISU201	1/2"	15	64	219.52	224	140
FISU202	3/4"	20	70	275.38	281	120
FISU203	1"	25	78	423.36	432	80
FISU204	1-1/4"	32	88	661.5	675	40
FISU205	1-1/2"	40	93	784	800	32
FISU206	2"	50	104	1200.5	1225	20

Union, Taper Seat
Model: FISU3

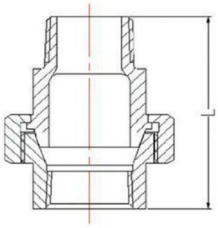
FIS FIS MENA



Part No	Size		L	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv.	
				g	g	Pcs/ctn
FISU301	1 /4"	8	42	103.88	106	200
FISU302	3/8"	10	45	152.88	156	200
FISU303	1 /2"	15	47	164.64	168	180
FISU304	3/4"	20	51.5	251.86	257	120
FISU305	1 "	25	57	330.26	337	88
FISU306	1-1/4"	32	65	560.56	572	56
FISU307	1-1/2"	40	71	703.64	718	36
FISU308	2"	50	79	1023.12	1044	28
FISU309	2-1/2"	65	85.5	1615.04	1648	12
FISU310	3"	80	94.5	2242.24	2288	10
FISU311	4"	100	110.5	3615.22	3689	6

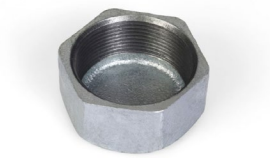
Union, Taper Seat, M&F
Model: FISU4

FIS FIS MENA

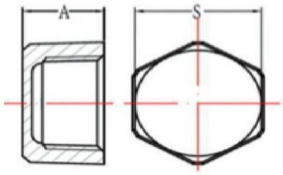


Part No	Size		L	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv.	
				g	g	Pcs/ctn
FISU201	1/2"	15	65	196	200	140
FISU202	3/4"	20	71.5	289.1	295	120
FISU203	1"	25	79	392	400	80
FISU204	1-1/4"	32	90	635.04	648	40
FISU205	1-1/2"	40	96	801.64	818	32
FISU206	2"	50	107	1149.54	1173	20

Cap
Model: FIST1



UL FIS FIS MENA



Part No	Size		A	S	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv	
					g	g	Pcs/ctn
FIST101	3/8"	10	17	20.6	29.4	30	1200
FIST102	1/2"	15	19	24.6	44.1	45	700
FIST103	3/4"	20	22	30.4	68.6	70	500
FIST104	1"	25	24	37.2	106.82	109	360
FIST105	1-1/4"	32	27	47	180.32	184	220
FIST106	1-1/2"	40	28	53	223.44	228	160
FIST107	2"	50	32	65	349.86	357	100

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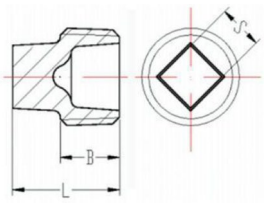
Plain Plug
Model: FIST8



Part No	Size		L	B	S	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	mm	Black	Galv	
						g	g	Pcs/ctn
FIST801	1/4"	8	15.5	10	6	8.82	9	2400
FIST802	3/8"	10	17	10	7	15.68	16	2200
FIST803	1/2"	15	22.5	13	10	24.5	25	1400
FIST804	3/4"	20	24	14	12	36.26	37	800
FIST805	1"	25	27	16.5	15	57.82	59	500
FIST806	1-1/4"	32	30	20	18	103.88	106	300
FIST807	1-1/2"	40	31	21	22	140.14	143	200
FIST808	2"	50	36	25	26	230.3	235	120
FIST809	2-1/2"	65	40.5	27	30	348.88	356	72
FIST810	3"	80	45.5	29.5	34	512.54	523	64
FIST811	4"	100	58.5	38	44	978.04	998	36

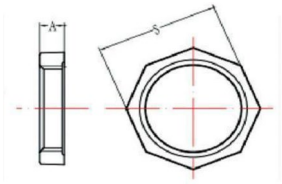
Beaded Plug
Model: FIST9

Part No	Size		A	S	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv.	
					g	g	Pcs/ctn
FIST901	1/4"	8	22.5	6	17.64	18	2000
FIST902	3/8"	10	25	7	29.4	30	1300
FIST903	1/2"	15	28	10	35.28	36	900
FIST904	3/4"	20	32	12	55.86	57	600
FIST905	1"	25	36	16	93.1	95	300
FIST906	1-1/4"	32	38.5	20	148.96	152	220
FIST907	1-1/4"	40	41	22	177.38	181	150
FIST908	2"	50	47	28	293.02	299	80
FIST909	2-1/2"	65	53	30	512.54	523	64
FIST910	3"	80	58	34	748.72	764	36
FIST911	4"	100	72	44	1097.6	1120	28

Bushing
Model: FISN4

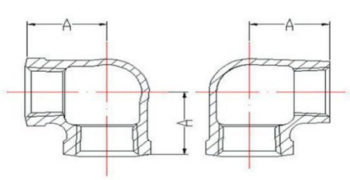
Part No	Size		L	S	H	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	mm	Black	Galv	
						g	g	Pcs/ctn
FISN401	1/4" x 1/8"	8 x 6	18.5	16.8	6	14.7	15	1800
FISN402	3/8" x 1/8"	10 x 6	18	20	6	22.54	23	1500
FISN403	3/8" x 1/4"	10 x 8	18.5	18.4	6	18.62	19	1800
FISN404	3/4" x 3/8"	15 x 8	22.5	22	6	61.74	63	500
FISN405	3/4" x 1/4"	15 x 10	22.5	22	6	66.64	68	600
FISN406	1/2" x 3/8"	20 x 8	24.5	29.6	6	32.34	33	960
FISN407	1/2" x 1/4"	20 x 10	24.5	29.6	6	38.22	39	900
FISN408	3/4" x 1/2"	20 x 15	24.5	29.6	6	50.96	52	600
FISN409	1" x 1/4"	25 x 8	28	37.4	6.5	105.84	108	300
FISN410	1" x 3/8"	25 x 10	28	37.4	6.5	111.72	114	300
FISN411	1" x 1/2"	25 x 15	28	37.4	6.5	97.02	99	300
FISN412	1" x 3/4"	25 x 20	28	37.4	6.5	81.34	83	300
FISN413	1-1/4" x 1/2"	32 x 15	30	45.6	7	167.58	171	200
FISN414	1-1/4" x 3/4"	32 x 20	30	45.6	7	151.9	155	200
FISN415	1-1/4" x 1"	32 x 25	30	45.6	7	126.42	129	200
FISN416	1-1/2" x 1/2"	40 x 15	30	50	7.5	197.96	202	160
FISN417	1-1/2" x 3/4"	40 x 20	30	50	7.5	207.76	212	160
FISN418	1-1/2" x 1"	40 x 25	30	50	7.5	182.28	186	160
FISN419	1-1/2" x 1-1/4"	40 x 32	30	50	7.5	123.48	126	160
FISN420	2" x 1/2"	50 x 15	33	64.1	8.5	289.1	295	96
FISN421	2" x 3/4"	50 x 20	33	64.1	8.5	298.9	305	96
FISN422	2" x 1"	50 x 25	33	64.1	8.5	342.02	349	96
FISN423	2" x 1-1/4"	50 x 32	33	64.1	8.5	302.82	309	96
FISN424	2" x 1-1/2"	50 x 40	33	64.1	8.5	255.78	261	96
FISN425	2-1/2" x 1/2"	65 x 15	39	79.6	9	441	450	68
FISN426	2-1/2" x 3/4"	65 x 20	39	79.6	9	456.68	466	68
FISN427	2-1/2" x 1"	65 x 25	39	79.6	9	448.84	458	68
FISN428	2-1/2" x 1-1/4"	65 x 32	39	79.6	9	512.54	523	68
FISN429	2-1/2" x 1-1/2"	65 x 40	39	79.6	9	519.4	530	68
FISN430	2-1/2" x 2"	65 x 50	39	79.6	9	446.88	456	68
FISN431	3" x 1/2"	80 x 15	42	93	10	633.08	646	36
FISN432	3" x 3/4"	80 x 20	42	93	10	632.1	645	36
FISN433	3" x 1"	80 x 25	42	93	10	650.72	664	36
FISN434	3" x 1-1/4"	80 x 32	42	93	10	637.98	651	36
FISN435	3" x 1-1/2"	80 x 40	42	93	10	694.82	709	36
FISN436	3" x 2"	80 x 50	42	93	10	773.22	789	36
FISN437	3" x 2-1/2"	80 x 65	42	93	10	556.64	568	36
FISN438	4" x 1/2"	100 x 15	49	118.4	11	1070.16	1092	18
FISN439	4" x 3/4"	100 x 20	49	118.4	11	1085.84	1108	18
FISN440	4" x 1"	100 x 25	49	118.4	11	1078.98	1101	18
FISN441	4" x 1-1/4"	100 x 32	49	118.4	11	1126.02	1149	18
FISN442	4" x 1-1/2"	700 x 40	49	118.4	11	1097.6	1120	18
FISN443	4" x 2"	100 x 50	49	118.4	11	1121.12	1144	18
FISN444	4" x 2-1/2"	100 x 65	49	118.4	11	1350.44	1378	18
FISN445	4" x 3"	100 x 80	49	118.4	11	1203.44	1228	18

Backnut
Model: FISP4



Part No	Size		A	S	Unit Weight		Packing Carton
	BSPT	DN	mm	mm	Black	Galv.	
					g	g	Pcs/ctn
FISP401	1/2"	15	9	29	28.42	29	700
FISP402	3/4"	20	10	36	44.1	45	500
FISP403	1"	25	11	45	75.46	77	400
FISP404	1-1/4"	32	11	56	99.96	102	300
FISP405	1-1/2"	40	12	63	135.24	138	240
FISP406	2"	50	13	77	205.8	210	160
FISP407	2-1/2"	65	15	93	298.9	305	60
FISP408	3"	80	18	109	495.88	506	50

Side Outlet Elbow
Model: FISZA1



Part No	Size		A	Unit Weight		Packing Carton
	BSPT	DN	mm	Black	Galv.	
				g	g	Pcs/ctn
FISZA101	1/2"	15	27	125.4	128	240
FISZA102	3/4"	20	32	196	200	140
FISZA103	1"	25	37	-	-	-

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1 Introduction

Discovery® is a range of high-specification, analogue addressable fire detectors and alarm devices. Discovery detectors offer effective false alarm management by a combination of EN54 approved operating modes and sophisticated algorithms.

Drift compensation further reduces the likelihood of false alarms caused by a build-up of dust in the sensing chamber. In addition to the familiar smoke and heat detectors, the Discovery range features two multisensor detectors. One is an optical/heat multisensor which can be used to protect against many types of fire risk. The other is a carbon monoxide/heat multisensor which protects against both smouldering fires and those generating heat.

- Five approved response modes for ease of optimisation to different environments
- Rejection of transient signals
- Drift compensation to ensure constant sensitivity
- 360° visibility in alarm
- Flashing LED option
- Alarm flag for fast alarm reporting
- Four bytes of non-volatile memory for user data
- Compatibility with XP95 systems

2 Communications

Discovery uses a digital communications protocol which has been developed from the XP95 protocol but which differs in that it allows communication in three different modes: Normal, Read and Write to allow a more extensive exchange of information and commands than previous analogue addressable ranges. In addition, Discovery can store data in non-volatile memory.

The Normal mode is identical to the XP95 protocol with the exception that the five additional analogue value bits in the XP95 protocol extension have been re-defined so that the control panel is able to distinguish between Discovery and XP95 devices.

The Read mode is used to check information stored in the non-volatile memory of each detector. It is accessed by using a simple extension to the Normal mode communication method from the control panel to the detector.

In Write mode the panel is able to write information to the detector by extending the communication method in the same way as in Read mode.

During Read or Write modes a detector can signal an alarm by means of the alarm flag and alarm address bits.

Discovery detectors are compatible with XP95. It should be noted, however, that Discovery features will not be available when Discovery is used with XP95 control panels. Panels with drift compensation algorithms should disable the algorithms when communicating with Discovery.

3 Approvals

The Discovery range of detectors and bases is approved by a large number of certification bodies. These include approvals to EN54:2001 including amendment A1:2002 and amendment A2 2006 with LPCB, AS1603 with Activfire, AS7240 with SAI Global.

Discovery complies with the requirements of a number of European New Approach Directives such as the EMC Directive 89/336/EEC and the Construction Products Directive 89/106/EEC.

All Discovery products will comply with the marking requirements of the WEEE Directive, 2002/96/EC.

Australian Standards

Currently there are two standards in Australia for point type smoke detectors, the older AS1603.2 standard, and AS7240.7 – which has been adopted from the ISO7240.7 standard (this standard is heavily based on the European EN54.7 standard).

AS1603.2 requires the nominal sensitivity (S) of the detector to be between 0 and 15 %Obs/m, with the maximum sensitivity being greater than 0.5S or S-2 and a minimum sensitivity being less than 1.5S or S+2. The test method is specified in AS2362.17 – which states the smoke is produced by burning untempered hardboard (masonite) and the spread of the smoke is unassisted. In practise the smoke does not disperse evenly and tends to "clump" together, and therefore it is not uncommon to get a "spread" of obscuration levels.

AS7240.7 does NOT require the sensitivity of the detector to be within a set range. The detector is tested with 4 "test fires" (smouldering wood, smouldering cotton, flaming plastics and flaming heptane) – and the detector must go into alarm before the end of test condition. The end of test condition is an obscuration level (obscuration level is different for each "test fire" type). The obscuration threshold of the detector is determined (using an aerosol generated from pharmaceutical grade paraffin oil) to verify the repeatability, directional dependence and reproducibility of the detector meets the requirements of the standard. The test apparatus used to determine the sensitivity uses wind to assist the dispersion of the aerosol.

As the composition of the "smoke" between AS1603.2 and AS7240.7 is different and the test apparatus is different – the resulting threshold sensitivities between the two standards differ. Generally the sensitivities measured under AS1603.2 are higher (up to 5%Obs/m) than measured under AS7240.7. A reason for this is that the smoke spread under AS7240.7 is uniform – as it is wind assisted.

It should be noted that under AS7240.7 – the performance of the detector is determined by the response to the 4 test fires, NOT the threshold sensitivity level.

4 Discovery Feature-Smoke & Heat Detectors

4.1 Response Setting

Each detector in the Discovery range can operate in one of five response modes, any of which can be selected from the control panel. Each mode corresponds to a unique response behaviour, which can be broadly related to sensitivity to fire. Whatever the type of detector, Mode 1 will give a higher sensitivity to fire than Mode 5. The selection of the most suitable mode depends on the application.

For ionisation and optical smoke detectors, the modes relate to different combinations of smoke response threshold and response time. For the heat detector, the mode relates to the fixed temperature setting and the sensitivity to rate-of-rise of temperature. For the optical/heat multisensor, the mode relates to the levels of smoke and heat sensitivity and to the way in which the responses of the two sensors are combined, although one mode is a 'smoke only' response and another is a 'heat only' response.

For the CO/Heat Multisensor the two outputs are also combined to provide one output, although one operating mode is CO only and one is heat only.

The response characteristics of the detectors have been carefully set so that detectors will comply with the requirements of the relevant part of EN54 in all response modes. The mathematical algorithms embedded in the detectors are used to carry out changes in characteristics between modes. Since the response characteristics are defined within the detectors, Apollo takes responsibility for compliance with standards in different response modes.

The internal signal processing of the detectors is designed so that the analogue value reported is always close to 25 for a normal condition. The alarm threshold is 55, irrespective of the response mode selected. Similarly, the alarm flag in the protocol is always set when the analogue value exceeds 55, irrespective of mode. This simplifies the switching between response modes since the alarm threshold in the control panel can remain fixed at 55 and the alarm flag is valid in all modes.

The response mode, which is selected through the protocol, is stored in non-volatile memory and will therefore be retained when the detector is powered down. All Discovery detectors are factory set to mode 3 before shipping. Response modes are defined more fully in the individual detector descriptions. It is, however, possible for the control panel to read the smoke and heat values of the optical/heat multisensor detector and the CO and heat values of the CO/ Heat Multisensor separately. This is a highly effective measure to reduce false alarms. The feature is control panel dependent and the panel manufacturer should be contacted for further details.

4.2 User bytes and other stored data

All Discovery devices contain non-volatile memory, in the form of Electrically Erasable Programmable Read Only Memory (EEPROM), which is included primarily to store data needed for the correct operation of the device. However, four bytes of this EEPROM are available to the user and can be accessed by the control panel through the protocol. This block of non-volatile memory can be used, for example, to store the installation date, the site code or date of last service. The only restriction on use is that the maximum number of write cycles should not exceed 10,000 over the life of the device.

4.3 Flashing LED

All Discovery detectors have two integral LED indicators, which can be illuminated at any time by the control panel to indicate devices in alarm. When activated, the LEDs will draw an extra 3.5mA from the loop. In addition to this mode of operation it is possible to enable a flashing LED mode by writing to one of the memory locations. In this mode the LEDs will flash each time the device is polled.

This facility is available on all Discovery detectors and the manual call point. Discovery detectors and call points are factory set to non flashing mode.

4.4 Remote test feature

This feature, available on all Discovery detectors and the call points, is enabled from the control panel by changing the state of a forward command bit. On receipt of the command the detector is forced by electrical means into an alarm condition. After a delay of up to 20 seconds due to signal processing, an analogue value of 85 is returned, provided that the detector is functioning correctly. This value is sustained until the forward command bit is changed back to its original state, after which a period of 20 seconds is required for the detector to return to its normal analogue value.

The manual call point is different in that the receipt of the command bit will cause the call point to generate the interrupt sequence, followed by a sustained analogue value of 64. The call point resets when the forward command bit is changed back to its original state.

4.5 Rejection of transient signals

All Discovery detector algorithms are designed to give low sensitivity to very rapid changes in the sensor output, since these are unlikely to be caused by real fire conditions. This is achieved by digital low-pass filtering of the sensor values which optimises the rejection of false alarm sources while maintaining the response to fire.

The filter parameters depend on the mode selected and for some modes the filtering is minimal. The filtering has no significant effect on the response to fires but does affect the way in which detectors respond to transients and to step changes of smoke or heat.

This is seen in the “minimum time to alarm” given in individual detector specifications. These times represent the time taken by the detector to reach the alarm condition when responding to a large step change in input.

4.6 Interchangeability

Any Discovery detector may be replaced by any other type in the range. For example, if a smoke detector proved unsuitable in a particular application, it could be simply replaced with a heat detector set to the appropriate mode, provided that the maximum floor area coverage does not exceed that specified by BS5839: Part 1 or other local code. Discovery detectors can also be used to replace XP95 detectors and again, it is possible to change types, e.g. smoke for heat or vice versa. Factory-new Discovery detectors are set to mid range, equivalent to XP95, and the flashing LED feature is disabled.

Notes

1. The control panel must not have a drift compensation algorithm activated when interrogating Discovery detectors.
2. When replacing an XP95 detector with a Discovery detector ensure the control panel configuration is modified accordingly.

Servicing Note

The "minimum time to alarm" referred to above is important when detectors are tested in situ, for example using aerosol test gas. A delay in response may be apparent.

Warning: all detectors are supplied with a red cover to protect against dust. The covers should be left in place until commissioning of the system when they should be removed. If, however, further building work is anticipated after commissioning, the covers should be replaced and alternative fire protection arrangements made. When the system is handed over all covers should be removed.

5 Discovery Features - Smoke Detectors

5.1 Drift compensation

All Discovery smoke detectors include compensation for sensor drift as part of the internal signal processing algorithm. The algorithm will compensate for changes in sensor output caused, for example, by dust in the chamber, and will therefore hold the sensitivity at a constant level even with severe chamber contamination. This increased stability is achieved without significantly affecting the detector's sensitivity to fire.

The compensation level is stored in the detector's memory as a single value between 0 and 31. The normal level, that is, with no compensation applied, is 16. Values above or below this indicate drift towards alarm or away from alarm respectively. For compensation values in the range 4 to 30 the detector is working within its allowable range. A value which is less than 4 or greater than 30 results in a warning flag. A value of zero results in a fault signal. The maximum compensation that can be applied is 31. If further drift occurs, the analogue values will simply track the drift and the detector will become more sensitive. Compensation values are stored in non-volatile memory and will be retained even if detectors are disconnected. With few exceptions, it is possible to use the control panel to ascertain the level of compensation applied at any time. For the Discovery smoke detectors, the compensation algorithms are designed such that the detectors meet the requirements of the European standard EN54–7:2000 in all response modes.

It is possible, through the protocol, to carry out a normalisation procedure which rapidly "updates" the drift compensation. This facility should only be used after a compensated detector has been cleaned and instant confirmation is required. (Otherwise the detector will automatically update itself within 24 hours).

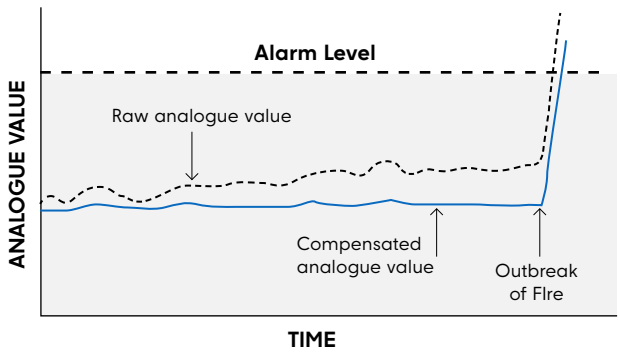


Figure 1 – Drift Compensation Graph

6 Optical Smoke Detector

6.1 Operating Principles

The Discovery Optical Detector has a white moulded polycarbonate case with wind-resistant smoke inlets. The indicator LEDs are colourless when the detector is in quiescent state and red in alarm. Within the case is a printed circuit board which, on one side, has the light-proof chamber with integral gauze surrounding the optical measuring system and, on the other, the signal processing and communications electronics.

An infra-red light emitting diode within its collimator is arranged at an obtuse angle to the photo-diode. The photo-diode has an integral daylight-blocking filter. The IR LED emits a burst of collimated light every second. In clear air the photodiode receives no light directly from the IR LED, because of the angular arrangement and the chamber baffles. When smoke enters the chamber it scatters light from the emitter IR LED onto the photo-diode in an amount related to the smoke characteristics and density. The photodiode signal is processed to provide an analogue value for transmission when the detector is interrogated.

Mode	Alarm threshold %/m	dB/m	Minimum time to alarm a(sec)
1	1.4	0.06	5
2	1.4	0.06	30
3	2.1	0.09	5
4	2.1	0.09	30
5	2.4	0.11	5

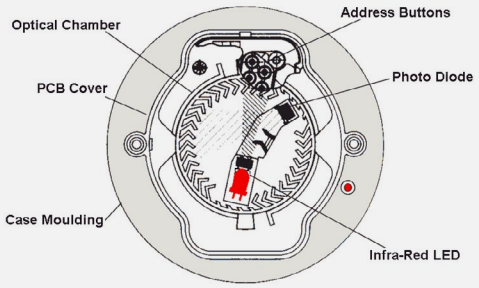


Figure 2 - Top Section - Discovery Optical Smoke Detector

6.2 Product Codes

Product Description	EN54-7	AS7240-7
Discovery Optical Smoke Detector	58000-600AMP	4106-2005

6.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Detector Type	Point type smoke detector for fire detection and alarm systems for buildings
Detection Principle:	Photo-electric detection of light scattered in a forward direction by smoke particles
Chamber Configuration:	Horizontal optical bench housing an infra-red emitter and sensor arranged radially to detect forward scattered light
Sensor:	Silicon PIN photo-diode
Emitter:	GaAlAs Infra-red light emitting diode
Sampling Frequency:	1 per second
Supply Wiring:	Two wire monitored supply, polarity insensitive
Terminal Functions:	L1 and L2: supply in and out connections +R remote indicator positive connection (internal 2.2KΩ resistance to positive) -R remote indicator negative connection (internal 2.2KΩ resistance to positive)
Supply Voltage:	17 - 28V DC
Communication Protocol	Apollo Discovery 5-9V peak to peak
Ripple Voltage:	2V peak to peak maximum at 0.1Hz to 100KHz
Quiescent Current:	300µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	10s
Alarm Current, LED on:	3.5mA
Remote output characteristics:	Connects positive line through 4.5KΩ (5mA maximum)
Clean-air analogue value:	23 +4/-0
Alarm level analogue value:	55
Alarm Indicator:	2 colourless Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED
Temperature range:	-40°C to +70°C
Humidity:	0% to 95% relative humidity (no condensation or icing)
Effect of Atmospheric Pressure:	None
Effect of Wind Speed:	None
Vibration, Impact & Shock	To EN54-7: 2000
IP Rating:	44 in accordance with BS EN 60529
Dimensions:	Detector: 100mm Dia x 42mm H, Detector in Base: 100mm Dia x 50mm H
Weights:	Detector 105g, Detector in Base:160g
Material:	Detector housing: White polycarbonate rated V-0 in accordance with UL 94. Terminals: Nickel plated stainless steel

7 Optical/Heat Multisensor Detector

7.1 Operating Principles

The Discovery Multisensor construction is similar to that of the optical detector but uses a different lid and optical mouldings to accommodate the thermistor (heat sensor). The sectional view (Fig 3) shows the arrangement of the optical chamber and the thermistor.

The Discovery Optical/Heat multisensory detector contains an optical smoke sensor and a thermistor temperature sensor whose outputs are combined to give the final analogue value. The way in which the signals from the two sensors are combined depends on the response mode selected. The five modes provide response behaviour which incorporates pure heat detection, pure smoke detection and a combination of both. The multisensor is therefore useful over the widest range of applications.

The signals from the optical smoke sensing element and the temperature sensor are independent, and represent the smoke level and the air temperature respectively in the vicinity of the detector. The detector's micro-controller processes the two signals according to the mode selected. When the detector is operating as a multisensor (i.e. modes 1, 3 and 4) the temperature signal processing extracts only rate-of-rise information for combination with the optical signal. In these modes the detector will not respond to a slow temperature increase – even if the temperature reaches a high level. A large sudden change in temperature can, however, cause an alarm without the presence of smoke, if sustained for 20 seconds.

Additional heat sensor information

Discovery optical/heat multisensor detectors manufactured from mid 2009 incorporate additional temperature information that is intended for use in signal processing. Temperature data can be read separately by the control panel (see Note 1) and used to validate an alarm signalled by the multisensor analogue value. An example of this would be a high multisensor analogue value not accompanied by an increase in heat: this would indicate that an agent other than smoke, e.g. steam, had caused the high analogue value.

The exact method of polling to make use of this feature is described in a Technical Sales document available to panel partners. This feature offers protection from false alarms.

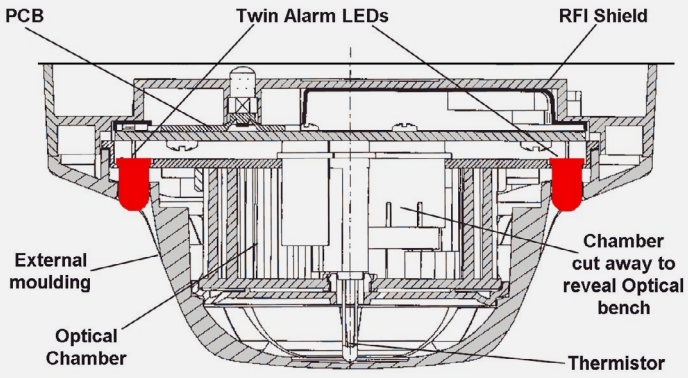


Figure 3 – Sectional View – Discovery Multisensor Detector

Mode	Smoke Sensitivity (grey smoke) %/m dB/m	Temperature Sensitivity	Response Type	Minimum Time to Alarm (seconds)
1	1.1 0.05	>15°C Increase	Multisensor	20
2	2.1 0.09	Not set to heat response	Optical	30
3	2.8 0.12	>21°C Increase	Multisensor	20
4	4.2 0.19	>15°C Increase	Multisensor	20
5	No response to smoke	Refer Mode 5 below	Heat A1R	15

Characteristics of the response modes

The processing algorithms in modes 1 to 4 incorporate drift compensation.

The characteristics of the five response modes are summarised below.

Mode 1 has very high smoke sensitivity combined with high heat sensitivity. This gives a high overall sensitivity to both smouldering and flaming fires.

Mode 2 has a smoke sensitivity similar to that of a normal optical smoke detector. This mode is therefore equivalent to a standard optical detector. It is suitable for applications in which wide temperature changes occur under normal conditions.

Mode 3 has moderate smoke sensitivity combined with a moderate sensitivity to heat. This combination is considered the optimum for most general applications since it offers good response to both smouldering and flaming fires.

Mode 4 has lower than normal smoke sensitivity combined with high heat sensitivity. This makes it suitable for applications in which a certain amount of fumes or smoke is considered normal.

Mode 5 has no smoke sensitivity at all, but gives a pure heat detector response meeting the response time requirements for a Class A1R detector in the European standard EN54–5:2000. In this mode the detector will respond to slowly changing temperatures and has a "fixed temperature" alarm threshold at 58°C. The analogue value in this mode will give the approximate air temperature over the range 15°C to 55°C.

In mode 5, the smoke sensor is still active though it does not contribute to the analogue signal. As a consequence, if the detector is used in a dirty or smoky environment the optical sensor drift flag may be activated in the heat-only mode.

Notes

1. This applies only to panels which have been programmed to read the additional information.
2. In situ testing of the Multisensor detector should be carried out as for smoke detectors in response mode 2 and for heat detectors in response mode 5. Both optical and heat sensors must be tested in modes 1,3 and 4.
3. If the Multisensor is to be used in mode 5, heat detector spacing/coverage should be applied.

7.2 Product Codes

Product Description	EN54-5 & 7 (CEA4021)	AS7240-15	AS1603-1 & 2
Discovery Multisensor Detector	58000-700AMP	4106-2008	201-0094 (58000-730)

7.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Detector Type:	**Point type heat detector for fire detection and alarm systems for buildings**
Detection Principle:	Smoke: Photo-electric detection of light scattered in a forward direction by smoke particles Heat: Temperature dependant resistance
Chamber Configuration:	Horizontal optical bench housing an infra-red emitter and sensor arranged radially to detect forward scattered light
Supply Wiring:	Two wire monitored supply, polarity insensitive
Terminal Functions:	L1 and L2: supply in and out connections +R remote indicator positive connection (internal 2.2KΩ resistance to positive) -R remote indicator negative connection (internal 2.2KΩ resistance to positive)
Supply Voltage:	17 - 28V DC
Communication Protocol	Apollo Discovery 5-9V peak to peak
Quiescent Current:	400µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	10s
Alarm Current, LED on:	3.5mA
Remote output characteristics:	Connects positive line through 4.5KΩ (5mA maximum)
Clean-air analogue value:	23 +4/-0
Alarm level analogue value:	55
Alarm Indicator:	2 colourless Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED
Temperature range:	-40°C to +70°C
Humidity:	0% to 95% relative humidity (no condensation or icing)
Effect of Atmospheric Pressure:	None
Effect of Wind Speed:	None
Vibration, Impact & Shock	To EN54-7: 2000 and EN54-5: 2000
IP Rating:	44 in accordance with BS EN 60529
Dimensions:	Detector: 100mm Dia x 50mm H, Detector in Base: 100mm Dia x 58mm H
Weights:	Detector 105g, Detector in Base:160g
Material:	Detector housing: White polycarbonate rated V-0 in accordance with UL 94. Terminals: Nickel plated stainless steel
Smoke element only:	
Chamber confirmation:	Horizontal optical bench housing infra –red emitter and sensor, arranged radially to light detect forward scattered
Sensor:	Silicon PIN photo diode
Emitter:	GaAlAs infra red light emitting diode
Sampling frequency:	1 per second

8 Ionisation Smoke Detector

8.1 Operating Principles

The Discovery Ionisation Smoke Detector uses the same outer case as the optical smoke detector and is distinguished by the red indicator LEDs. Inside the case is a printed circuit board which has the ionisation chamber mounted on one side and the signal processing and communications electronics on the other.

The ionisation chamber consists of a reference chamber contained inside a smoke chamber (Fig. 4). The outer smoke chamber has inlet apertures fitted with insect resistant mesh.

At the junction between reference and smoke chambers, the sensing electrode converts variations in chamber current into voltage changes.

When smoke particles enter the ionisation chamber, ions become attached to them with the result that the current flowing through the chamber decreases. This effect is greater in the smoke chamber than in the reference chamber, and the imbalance causes the sensing electrode to become more positive.

The analogue voltage at the sensor electrode is converted to a digital format which is processed to provide an analogue value for transmission to the control panel when the device is polled. The Discovery Ionisation Detector, like all ionisation detectors, has some sensitivity to air movement (wind). The extent to which the analogue value will change depends on the wind speed and on the orientation of the detector relative to the wind direction. Relatively small changes in wind direction can cause significant changes in analogue value.

For wind speeds up to 1m/s (200ft/min) the change in analogue value will not exceed 5 counts. Continuous operation in wind speeds greater than 2m/s (400ft/min) is not recommended. However, wind speeds up to 10m/s (2000ft/min) can be tolerated for short periods and will not under any conditions increase the probability of false alarms. Ionisation smoke detectors are supplied in individual packing with a red lid serving as a dust cover which can be left in place after fitting to prevent ingress of dust and dirt until commissioning of the system takes place. At this point the covers must be removed.

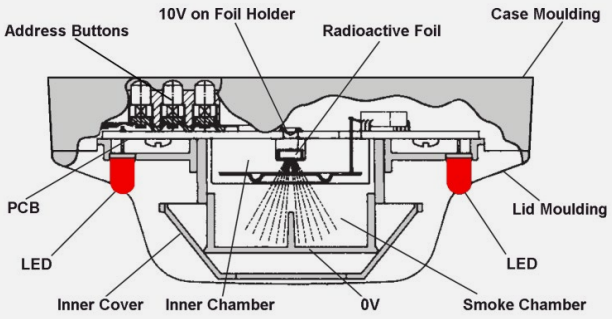


Figure 4 – Sectional View – Discovery Ionisation Smoke Chambe

Mode	Alarm Threshold y value	Minimum time to alarm (sec)
1	0.45	5
2	0.45	30
3	0.70	5
4	0.70	30
5	1.0	5

Table 3 – Ionisation Detector Operating Modes (rates comply with EN54-7: 2000

8.2 Product Codes

Product Description	EN54-7	AS7240-7
Discovery Ionisation	58000-500AMP	4106-2006

Safety Note

In the United Kingdom, ionisation smoke detectors are subject to the requirements of the Radioactive Substances Act 1993 and to the Ionising Radiations Regulations 1999 made under the provisions of the Health and Safety at Work Act 1974.

The detectors, independently tested by the Health Protection Agency (HPA), conform to all the requirements specified in the 'Recommendations for ionisation smoke detectors in implementation of radiation standards' published by the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD) 1977.

There is no limit to the number of ionisation smoke detectors which may be installed in any fire protection system. Storage regulations depend on local standards and legislation, but, in the UK, up to 500 detectors may be stored in any premises, although there are stipulations on storage facilities if more than 100 ionisation detectors are stored in one building.

At the end of their recommended working life of ten years, ionisation smoke detectors should be returned to the manufacturer for safe disposal.

Guidance on storage and handling details can be requested from:

- Radioactive Substances Regulation Function
- Environment Agency
- Rio House, Waterside Drive
- Aztec West, Almondsbury
- Bristol BS32 4UD.

Outside the UK, please contact the relevant national agency.

8.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Detector Type:	Point type smoke detector for fire detection and alarm systems for buildings
Detection Principle:	Ionisation Chamber
Chamber Configuration:	Twin compensating chambers using one single sided ionising radiation source
Radioactive isotope:	Americium 241
Activity:	33.3 kBq, 0.9µCi
Supply Wiring:	Two wire monitored supply, polarity insensitive
Terminal Functions:	L1 and L2: supply in and out connections +R remote indicator positive connection (internal 2.2KΩ resistance to positive) -R remote indicator negative connection (internal 2.2KΩ resistance to positive)
Supply Voltage:	17 - 28V DC
Communication Protocol	Apollo Discovery 5-9V peak to peak
Quiescent Current:	300µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	10s
Alarm Current, LED on:	3.5mA
Remote output characteristics:	Connects positive line through 4.5KΩ (5mA maximum)
Clean-air analogue value:	23 +4/-0
Alarm level analogue value:	55
Alarm Indicator:	2 Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED
Temperature range:	-30°C to +70°C
Humidity:	0% to 95% relative humidity (no condensation or icing)
Effect of Temperature:	Less than 10% change in sensitivity over rated range
Effect of Atmospheric Pressure:	Operating: Suitable for installation up to 2,000m above sea level.
Effect of Wind Speed:	Less than 20% change in sensitivity at speeds up to 10m/s Note: slow changes in ambient conditions will automatically be compensated and will not affect sensitivity.
Vibration, Impact & Shock	To EN54-7: 2000
IP Rating:	44 in accordance with BS EN 60529
Dimensions:	Detector: 100mm Dia x 42mm H, Detector in Base: 100mm Dia x 50mm H
Weights:	Detector 105g, Detector in Base:160g
Material:	Detector housing: White polycarbonate rated V-0 in accordance with UL 94. Terminals: Nickel plated stainless steel

9 Carbon Monoxide / Heat Multisensor Detector

9.1 Operating Principles

The Discovery CO/Heat Multisensor Detector contains a CO detection cell and a thermistor temperature sensor whose outputs are combined to give the final analogue value. The way in which the signals from the two sensors are combined depends on the response mode selected. The CO/ Heat Multisensor detects the presence of carbon monoxide or heat or a combination of both.

The Multisensor construction is similar to that of a CO detector but uses a different lid in order to expose the thermistor to the surrounding air.

The signals from the CO sensing cell and the thermistor are independent and represent the amount of CO or the temperature present in the vicinity of the detector. When the detector is used in heat only mode (Mode 5) it operates as an A1R rate-of-rise heat detector with a static threshold of 58°C. Discovery CO/Heat Multisensor detectors incorporate additional temperature information that is intended for use in signal processing which is achieved in the same way as that of the Optical/Heat Multisensor.

Characteristics of Response Modes

Mode 1 has very high sensitivity to carbon monoxide combined with moderate sensitivity to heat. This gives a high overall sensitivity to both smouldering and flaming fires.

Mode 2 is set to report the presence of carbon monoxide only.

Mode 3 has moderate sensitivity to carbon monoxide combined with moderate sensitivity to heat and is used for general applications.

Mode 4 has lower than normal carbon monoxide sensitivity combined with moderate heat sensitivity making it suitable to areas where a certain amount of carbon monoxide might be considered normal.

Mode 5 has no response at all to carbon monoxide and acts as a rate-of-rise heat detector.

Notes

1. If the Multisensor is to be used in mode 5 heat detector spacing & coverage should be applied. Observe the recommendations of BS5839: Part 1 or other applicable code
2. In situ testing of the multisensory detector should be carried out as for CO detectors in response mode 2 and for heat detectors in response mode 5. Both CO and heat sensors must be tested in modes 1, 3 and 4.

Mode	CO Sensitivity (ppm)	Temperature Sensitivity (relative)	Response Type	Minimum time to alarm (seconds)
1	42	>21°C Increase	Multisensor	20
2	45	Not set to heat response	Carbon Monoxide	30
3	52	>21°C Increase	Multisensor	20
4	57	>21°C Increase	Multisensor	20
5	No response to CO	A1R*	Heat Rate of Rise; Static limit of 58°C	15

* Response is A1R to EN54-5 with fixed upper threshold of 58°C

Table 4 – CO/Heat Multisensor Response Modes

9.2 Product Codes

Product Description	EN54-5, LPS1274 & 1265	AS7240-5
Discovery Ionisation	58000-305AMP	4106-2009

9.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Detector Type:	Point type detector for fire detection and alarm systems for buildings
Detection Principle:	CO: Ambient carbon monoxide level Heat: Temperature dependant resistance
Supply Wiring:	Two wire monitored supply, polarity insensitive
Terminal Functions:	L1 and L2 supply in and out connections +R remote indicator positive connection (internal 2.2KΩ resistance to positive) -R remote indicator negative connection (internal 2.2KΩ resistance to positive)
Supply Voltage:	17 - 28V DC
Communication Protocol	Apollo Discovery 5-9V peak to peak
Quiescent Current:	400µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	10s
Alarm Current, LED on:	3.5mA
Remote output characteristics:	Connects positive line through 4.5KΩ (5mA maximum)
Clean-air analogue value:	25 ±2
Alarm-level analogue value	55
Alarm Indicator:	2 Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED
Storage Temperature:	Continuous +10 to +30°C
Operating Temperature:	Continuous 0°C to +50°C Transient -20° to +55°C (no condensing or icing)
Operating Pressure:	Atmospheric pressure ±10%
Humidity:	Continuous 15 to 90% relative humidity; Transient 0 to 99% relative humidity
Effect of Temperature on CO Cell:	Less than 15% change in sensitivity over rated range
Effect of Wind on CO Cell:	None
Minimum CO Cell life:	7 Years (assumes regular checks are satisfactory)
Transport Pressure:	If air freighted this detector should be carried in a pressurized hold
Vibration, Impact & Shock	To EN54
IP Rating:	44
Dimensions:	Detector: 100mm Dia x 54mm H, Detector in Base: 100mm Dia x 60mm H
Weights:	Detector 105g, Detector in Base:160g
Material:	Detector housing: White polycarbonate rated V-0 in accordance with UL 94. Terminals: Nickel plated stainless steel

10 Carbon Monoxide Detector

10.1 Operating Principles

Discovery CO fire detectors contain a long-life electro-chemical carbon monoxide sensor which is tolerant of low levels of common vapours and household products. The sensing technology is fast, accurate and needs only very low power. The detection capabilities are enhanced by a rate sensitive response. Fast rises in the carbon monoxide level are often associated with hot fires and the detector will respond earlier under these conditions.

The analogue reply from the detector is rate limited to remove nuisance alarms resulting from short-term high levels caused by sources such as pipe smokers or gas flame ignition.

Application

CO detectors do not detect smoke particles or heat and are not universal replacements for smoke detectors. Apollo does not endorse the use of CO detectors as the main method of fire detection if:

- the protected area is an escape route
- there is a requirement to detect overheating of electrical equipment or cables
- the protected area is exposed to sources of CO such as vehicle exhausts, or to hydrogen or to high levels of alcohol vapour as emitted by some cleaning agents
- there is a requirement to detect fires involving flammable liquids

CO fire detectors are particularly suitable for supplementing smoke detection when there is:

- a deep seated smouldering fire risk
- a risk of fire starting in an enclosed space
- a likelihood of stratification taking place

Carbon monoxide detectors may be used as the primary fire detector in areas where the following conditions exist:

- the main risk is smouldering fires
- optical smoke detectors are deemed unsuitable (see 'False Alarms' below)
- the fire compartment is not greater than 50m²

Typical applications include hotel bedrooms, halls of residence, sheltered accommodation and hospital wards.

Detector Sitting

CO fire detectors should be sited using the recommendations from BS5839: Part 1 (or other applicable code).

In the development of a fire, smoke and CO in the smoke plume is spread by convection to a fire detector. As CO is a gas, it further spreads, like smells, by diffusion. For this reason CO may reach a detector faster than smoke would. This potential advantage can be exploited when designing a fire protection system and CO detectors may be used for supplementary detection. Equally, the opposite effect might occur, with CO moving away from a detector. **The behaviour of CO is therefore unpredictable** and diffusion should not be relied on when designing a fire protection system.

False Alarms

Carbon monoxide detectors are less susceptible than smoke detectors to false alarms from sources such as toast, steam, cooking, plumbing work and hair spray. They may therefore be used in **some** applications in which smoke detectors would be susceptible to unwanted alarms.

Conversely, they may be more susceptible than smoke detectors to false alarms from fumes containing CO, such as vehicle exhausts, open fires and gas appliances.

Notes:

1. Discovery CO detectors should not be used with isolating base 45681- 321. Use 45681-284.
2. It is necessary to wait 30s after power-up to receive valid data from the CO detector.

Limitations

Carbon monoxide detectors also have important limitations. They are set to a higher sensitivity than the maximum allowed by the domestic CO alarm standard and will respond to CO from faulty gas appliances or vehicle exhausts. These detectors **should not** be used in place of carbon monoxide alarms complying with BS7860 or UL2034.

Operating Modes

The Discovery CO detector has five operating modes, each having a set combination of sensitivity and response delay, which the user can select for any given application. See table below.

Drift Compensation

In view of the inherent stability of CO cells, there is no need for Discovery CO detectors to compensate for drift. Discovery CO detectors are set to report a drift value of 16.

Cell Test

The Discovery carbon monoxide fire detector has a remote test feature, which is used to verify that the electrochemical cell is fitted and that it is active. A test must be carried out at least once a year but preferably more frequently to ensure that the cell has not dried out. (Note that the cell will not be affected by the test, even if the remote test is carried out once a day.) If the test indicates a sensor failure, i.e. the detector returns a pre-set analogue value of 25, the detector should be returned to the manufacturer for cell replacement and detector recalibration. When carrying out the cell test, observe the 30s delay referred to above.

Precautions When Investigating Alarms

It is important to remember that CO is a colourless, odourless gas, which is not directly detectable by human senses. If a CO fire detector is in an alarm condition, it is possible that a dangerous level of CO exists around the detector. Extreme care must be taken when investigating alarms from CO fire detectors even if no combustion products can be seen or smelled. Because of this danger, it is imperative that CO fire detectors are correctly identified at the control panel so that personnel investigating alarms may take the relevant precautions.

Maintenance and Service

The electrochemical cell used in the Discovery CO fire detector has a more limited life than would normally be expected from a smoke detector. In a typical environment, the life of the cell is seven years.

High temperature or low relative humidity can, however, reduce the life significantly. The limits given in the section '**TECHNICAL DATA**' overleaf should be carefully observed.

It is essential that systems using CO fire detectors be correctly maintained and that the maintenance schedule include functional testing of the CO fire detectors. CO fire detectors will not respond to the aerosol testers commonly used for the in-situ testing of smoke detectors. The Apollo (No Climb) detector tester with a CO test gas canister can be used to test CO detectors. If there is any doubt over the sensitivity of a Discovery CO fire detector it should be returned to Apollo for servicing and calibration.

Note: The CO detector cannot be tested with the Discovery Test Set

Health and Safety Guidelines

This product contains a sealed electrochemical cell and in normal usage represents no chemical hazard in the sense of COSHH and the Health and Safety at Work Act 1974. Chemical hazard can, however, arise if the following notes on storage, handling and disposal are not observed.

For maximum life, the product should be stored before installation in clean dry conditions between 0°C and 20°C. It should not be exposed to temperatures outside the range –40°C to +55°C or to organic vapours. The electrochemical cell contained in this product is fitted into sockets on the printed circuit board; to avoid damage to the cell do not remove it. The electrochemical cell contains sulphuric acid in a relatively concentrated state. In the event of leakage (which may be caused by mechanical damage or use outside the operating specification for the cell) the cell should be removed from the detector using protective gloves. Avoid contact with any liquid. If skin or eye contact with the electrolyte occurs, wash immediately with plenty of water and obtain medical advice. All traces of electrolyte should be washed away with copious amounts of clean water. The cell should be disposed of according to local waste management requirements and environmental legislation. It should not be burnt since it may release toxic fumes.

Mode	Alarm Threshold (ppm)	Minimum time to alarm (seconds)	Typical application
1	30	60	Sleeping with no ambient CO
2	45	30	General use fast response such as supplementary protection in atria
3	45	60	General use and sleeping risk with some low level CO (such as from light smoking or an unventilated gas fire)
4	60	30	General smoking area and supplementary detection of deep seated fires such as laundry rooms
5	75	30	Supplementary use in kitchen or boiler room

10.2 Product Codes

Product Codes		AS1603-14
Discovery Carbon Monoxide Detector	58000-300AMP	201-0102 (58000-330)

10.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Detector Type:	Point type detector for fire detection and alarm systems for buildings
Detection Principle:	Ambient carbon monoxide level
Supply Wiring:	Two wire monitored supply, polarity insensitive
Terminal Functions:	L1 and L2 supply in and out connections +R remote indicator positive connection (internal 2.2KΩ resistance to positive) -R remote indicator negative connection (internal 2.2KΩ resistance to positive)
Supply Voltage:	17 - 28V DC
Communication Protocol	Apollo Discovery 5-9V peak to peak
Quiescent Current:	300µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	10s
Alarm Current, LED on:	3.5mA
Remote output characteristics:	Connects positive line through 4.5KΩ (5mA maximum)
Clean-air analogue value:	25 ±2
Alarm level analogue value:	55
Alarm Indicator:	2 Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED
Storage Temperature:	Continuous +10 to +30°C Transient: -40°C to +55°C (no condensation or icing)
Operating Temperature:	Continuous 0°C to +50°C Transient -20° to +55°C (no condensing or icing)
Operating Pressure:	Suitable for installation up to 2,000m above sea level
Operating Humidity:	Continuous 15 to 90% relative humidity; Transient 0 to 99% relative humidity
Effect of Temperature on CO Cell:	Less than 15% change in sensitivity over rated range
Effect of Wind:	None
Minimum CO Cell life:	7 Years (assumes regular checks are satisfactory)
Transport Pressure:	If air freighted this detector should be carried in a pressurized hold
Vibration, Impact & Shock	To EN54-7: 2000
IP Rating:	54 in accordance with BSEN60529
Dimensions:	Detector: 100mm Dia x 42mm H, Detector in Base: 100mm Dia x 50mm H
Weights:	Detector 105g, Detector in Base:160g
Material:	Detector housing: White polycarbonate rated V-0 in accordance with UL 94. Terminals: Nickel plated stainless steel

11 Heat Detector

11.1 Operating Principles

Discovery heat detectors have a common profile with ionisation and optical smoke detectors but have a low air flow resistance case made of self extinguishing white polycarbonate.

The Discovery Heat Detector uses a single thermistor to sense the air temperature at the detector position. The thermistor is connected in a resistor network, which produces a voltage output dependent on temperature. The design of the resistor network, together with the processing algorithm in the microcontroller, gives an approximately linear characteristic from 10°C to 80°C. The linear signal is further processed, depending on the response mode selected, and converted to an analogue output.

For the European standard version of the detector, the five modes correspond to five "classes" as defined in EN54–5:2001. The classes in this standard correspond with different response behaviour, each of which is designed to be suitable for a range of application temperatures. All modes incorporate "fixed temperature" response, which is defined in the standard by the "static response temperature". The application temperatures and static response temperatures for all response modes are given in Table 6. In addition to the basic classification, a detector may be given an "R" or "S" suffix. The "R" suffix indicates that the detector has been shown to have a rate-of- rise characteristic. Such a detector will still give a rapid response even when starting from an ambient temperature well below its typical application temperature. This type of detector is therefore suitable for areas such as unheated warehouses in which the ambient temperature may be very low for long periods.

The "S" suffix on the other hand indicates that the detector will not respond below its minimum static response temperature even when exposed to high rates of rise of air temperature. This type is therefore suitable for areas such as kitchens and boiler rooms where large, rapid temperature changes are considered normal.

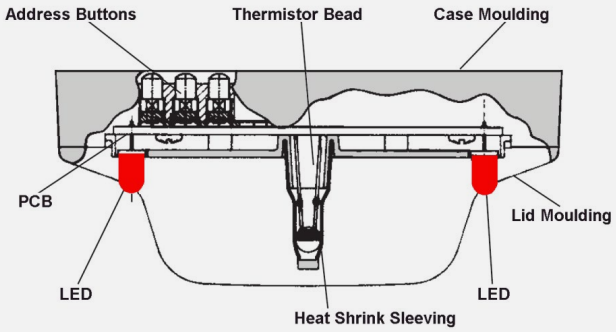


Figure 5 – Sectional View – Discovery Heat Detector

Mode	Class EN54-5	AS1603-1	Application Temperature		Static Response Temperature °C		
			Typical	Max	Min	Typical	Max
1	A1R	Type A	25	50	54	57	65
2	A2R	Type A	25	50	54	61	70
3	A2S	Type B	25	50	54	61	70
4	CR	Type C	55	80	84	90	100
5	CS	Type D	55	80	84	90	100

Table 6 – Heat Detector Response Modes

For air temperature in the range 15°C to 55°C, the analogue value for a detector in mode 1 will correspond approximately to the air temperature.

11.2 Product Codes

Product Description	EN54-4	AS7240-7	AS1603-1
Discovery Heat Detector	58000-400AMP	4106-2007	201-0089 / 201-0090 (58000-430)

11.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Detector Type:	Point type heat detector for fire detection and alarm systems for buildings
Detection Principle:	Heat sensitive resistance
Supply Wiring:	Two wire monitored supply, polarity insensitive
Terminal Functions:	L1 and L2 supply in and out connections +R remote indicator positive connection (internal 2.2KΩ resistance to positive) -R remote indicator negative connection (internal 2.2KΩ resistance to positive)
Supply Voltage:	17 - 28V DC
Communication Protocol	Apollo Discovery 5-9V peak to peak
Quiescent Current:	400µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	10s
Alarm Current, LED on:	3.5mA
Remote output characteristics:	Connects positive line through 4.5KΩ (5mA maximum)
Alarm level analogue value:	55
Alarm Indicator:	2 Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED
Temperature Range:	Maximum operating – refer table above Minimum operating (no condensing/icing) -40°C Storage -40°C to +80°C
Operating Humidity:	0 to 90% relative humidity (no condensation)
Vibration, Impact & Shock	To EN54-5: 2001
IP Rating:	54 in accordance with BSEN60529
Dimensions:	Detector: 100mm Dia x 42mm H, Detector in Base: 100mm Dia x 50mm H
Weights:	Detector 105g, Detector in Base:160g
Material:	Detector housing: White polycarbonate rated V-0 in accordance with UL 94. Terminals: Nickel plated stainless steel

12 Mounting Bases

12.1 Technical Description

Item No	Description
45681-210AMP	XP95/Discovery Detector Base with Xpert Card

All detectors in the Discovery range fit into XP95 mounting bases. An earth connection is not required for either safety or correct operation of detectors. The ground (earth) terminal is isolated and is provided for tidy termination of grounded conductors or cable screens and to maintain earth continuity where necessary. All terminals are marked according to their function.

Bases have a wide interior diameter for ease of access to cables and terminals and there are two slots for fixing screws. The slots enable two fixing screws to be located at a spacing of 51 to 69mm.

Detectors fit into bases one way only, without snagging, and require clockwise rotation without push force to be plugged in.

Universal address cards, known as XPERT cards, are supplied with all bases. Consult the coding guide in the installation instructions to determine which pips are to be removed from the card to give the correct address. Lay the card on a flat surface, pips down, insert a screwdriver into the slot on the reverse of the pip to be removed and give a firm twist.

When the card is coded, insert it into the slot in the side of the appropriate base, making sure that the card locks itself into place. As a detector is inserted into the base, the remaining pips operate the address buttons on the detector and the detector electronics reads the address.

The bases are 100mm diameter and have five terminals:

Terminal	Description	Type
L1	Line In and Line Out	Double Terminal
L2	Line In and Line Out	Double Terminal
-R	Remote LED negative supply	Double Terminal
+R	Remote LED positive supply	Double Terminal
E	Earth	Single Terminal

13 Manual Call Point

13.1 Operating Principles

Item No	Description
58100-908AMP	Discovery Manual Call Point with Isolator
58100-910AMP	Discovery Manual Call Point

The Discovery EN54–11:2001 compliant Manual Call Point (MCP) is based on the KAC conventional MCP range. It is electronically and mechanically compatible with previous call points based on KAC's World Series product.

The address of each call point is set at the commissioning stage by means of a seven-segment DIL switch. If an MCP is activated, it interrupts the normal protocol to give a fast response.

A single bi-coloured alarm LED is provided on the call point. This LED is controlled, independently of the call point, by the control panel and may be set to flash each time the call point is polled. The red LED is lit when the call point has been activated and sent into alarm. On the isolated versions an amber/yellow LED indicates a short circuit on the loop wiring either side of the call point.

Call points can be remotely tested from the panel by transmission of a single bit in the communications protocol. Call points respond by providing a value of 64 which corresponds to the alarm value. The panel should recognise this response as a test signal and should not raise a general alarm.

The Discovery Manual Call Point incorporates an integral short circuit isolator together with a resettable element and a backbox for surface mounting as standard. If a glass option is required, spare glasses are available on request. For ease of installation Discovery manual call points are supplied with clip-on terminal blocks and a connector which allows continuity testing before call points are commissioned.

To provide additional protection against accidental operation, a transparent hinged cover with a locking tag, is available, which can be fitted to the manual call point. Please note that the call point does not conform to EN54-11:2001 when this lid is fitted and secured with the locking tag.

13.2 Non Standard Call Points

Discovery waterproof (IP67) manual call points are available in red or yellow. For special purposes, such as initiating 'Hazard' alarm, specially coloured call points can be used on the fire system – see table below. However, these do not conform to EN54-11:2001 requirements.

Item No	Colour	Deformable Element	Backbox for surface	Isolator	Non-Isolator	Waterproof IP67 Rated
58100-908AMP	Red	•	•	•		
58100-951AMP (213-0067)	Red	•	•	•		•
58100-926	White	•	•		•	
58100-927	Yellow	•	•		•	
58100-928	Blue	•	•		•	
58100-929	Green	•	•		•	
58100-953	Yellow	•	•	•		•

Table 7 – Manual Call Point Item Numbers

13.3 Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Call Point Type:	Deformable element
Call Point Principle:	Operation of a switch
Alarm Indicator:	Red Light Emitting Diode (LED)
Fault Indicator:	Amber/Yellow Light Emitting Diode (LED)
Supply Wiring:	Two wire monitored supply, polarity insensitive
Loop Connections:	Terminal Block L1 –ve and L2 +ve supply in and out connections
Operating Voltage:	17 - 28V DC
Communication Protocol:	Apollo Discovery 5-9V peak to peak
Quiescent Current:	100µA at 24V DC
Power-up Surge Current:	1mA
Maximum power up time:	1s
Alarm Current, LED on:	4mA
Normal analogue value:	16
Alarm State Value:	64
Temperature Range:	-20°C to +60°C
Humidity:	0 to 90% relative humidity (no condensation)
Compliance Standard:	To EN54-11: 2001, EN54-17:2005 (isolated version)
IP Rating:	24D IP67 (weatherproof)
Dimensions:	89mm x 93mm x 26.5mm (manual call point) 87mm x 87mm x 32mm (back box)
Weights:	Flush Mounted: 110g Surface Mounted: 160g
Material:	Housing: Red self-coloured polycarbonate/ABS

Ancillary Items

Item No	Description
26729-152	Hinged Cover
26729-179	Security Locking Tags for above (pack of 5)
26729-155	Discovery Glasses

14 Interfaces

A comprehensive range of interfaces for use with Discovery systems and incorporating the Ampac fire alarm control panels is available. They are designed to enable fire protection systems to be engineered simply and effectively without the need for custom-designed equipment.

These interfaces are available in three types of housing. The standard interfaces are designed to be surface or flush-mounted while the DIN-rail versions feature enclosures that clip to a standard 35mm DIN rails (DIN46277) or are screwed to the base of a larger enclosure. Miniature interfaces use very compact enclosures for installation into other equipment.

The standard interface range is fitted with bi-directional, short-circuit isolators. These interfaces allow for easier installation when large numbers of interfaces are required.

The following interfaces may be incorporated into Discovery systems:

- Input/Output Unit provides a relay output and one monitored input
- 3-channel Input/Output Unit provides 3 relay outputs and 3 monitored inputs
- Mains Switching Input/Output Unit switches machinery operating at 230V
- Output Unit provides one relay output
- Zone Monitor controls a zone of conventional detectors
- Switch Monitor monitors the operation of a switch
- Switch Monitor Plus monitors the operation of a switch; also incorporates a time delay
- Sounder Controller controls the operation of conventional sounders
- Mini Switch Monitor monitors the operation of a switch and is small enough to fit into other equipment

For further information on the range of compatible interfaces refer to Ampac Product Guide MAN3040.

15 Isolators

All XP95 isolators and isolating bases are suitable for use with Discovery detectors and manual call points. These are:

For further information on the use of isolators in Discovery systems refer to Ampac Product Data sheet PDS201-9001.

15.1 Product Codes

Product Description	Product Number	Item Number
XP95/Discovery Isolating Base with Xpert Card	45681-284AMP	201-0125
XP95/Discovery Isolator	55000-720AMP	201-0172
XP95/Discovery Isolator Base (for above)	45681-211AMP	201-0006

16 Sounder Beacon Base

The Discovery Sounder Beacon Base is a multifunctional device comprising a mounting base for Discovery fire detectors, a sounder, a beacon and a short-circuit isolator.

The Discovery Sounder Beacon Base is used to provide audible and visual warning of fire and is controlled by the fire control panel by means of the Discovery protocol. The particular features of this base are available only when it is being controlled by the full Discovery protocol with the panel programmed accordingly. Information on features should be requested from the panel manufacturer.

The Discovery Sounder Beacon Base can be used with a detector fitted or with a cap for operation as a stand-alone alarm device.

The right tone for your installation

The Discovery Sounder Beacon Base offers a choice of 15 evacuation tones, including a standard evacuation tone. One of these tones is selected during commissioning in order to suit local regulations or customs. The tones include those required by Dutch, Swedish, German, Australian, New Zealand and North American standards as well as the UK. Whichever evacuation tone is selected there is a secondary tone which may be used for alerting or warning of a possible evacuation.

The right level of sound

The sounder is set during commissioning to one of 7 levels of sound, the highest level being nominally 90dB(A). At 60dB(A) the lowest level falls outside the scope of the standard, EN54. It has been included to provide a very local warning for the use of personnel in particular environments, such as nurse stations in hospitals.

Flexibility of group addressing

In many installations a fire alarm must be raised by switching more than one sounder beacon to alert or alarm simultaneously. This is achieved with Discovery Sounder Beacon Bases by assigning devices to groups on commissioning, with the group information being stored in each device. One command will then switch all devices in the group.

Sounder, beacon or both

The Discovery Sounder Beacon Base normally switches both sounder and beacon to provide an alert or evacuation signal. The sounder and beacon of the Discovery Sounder Beacon Base can, however, be switched independently of each other by the control panel.

Location-specific volume setting

Detectors and sounder beacons are installed in many different types of environment. When configuring the Discovery Sounder Beacon Base, the adjustment of volume can be done at the point of installation. The commissioning engineer simply sets the control panel to 'Setup' and then walks from one device to the next to set the required volume, using a magnetic wand, part no 29650-001.

When all devices have been set the control panel is used to register all the individual volume settings.

Features

- 15 evacuation tones and 15secondary or alert tones
- 7 volume levels
- Software-defined group addressing
- Alarm switching by individual device, by group or of all devices on loop
- Independent control of sounder and beacon
- Set-up and testing of devices at point of installation
- Isolator status information

Product Description	EN54-3
Discovery Sounder Beacon Base with Indicator	45681-393AMP
White Base Sounder Cap	45681-292
Red Base Sounder Cap	45681-293

Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Audio/Visual Type:	Point type sounder/beacon for fire detection and alarm systems for buildings
Operating Voltage:	17-28V d.c. (polarity sensitive)
Protocol Pulses:	5-9V
Current consumption at 24V:	Switch on surge, <1s = 1.2mA Quiescent = 350µA Device operated at maximum volume = 8mA
Maximum sound output at 90°:	90±3dB(A) Sound pressure level data is published in Product Data Sheet PDS201-9002
Operating Temperature:	-20°C to +60°C
Humidity (no condensation or icing):	0-95%
IP Rating:	21D

Note: do not connect XP95 sounders if Discovery sounders are being used.

17 Open Area Sounder Beacon

The Discovery® Open Area Sounder Beacon is an alarm device comprising a sounder, a beacon and a short circuit isolator for use with Discovery detection systems. It is supplied with a mounting base which incorporates a short-circuit isolator.

The Discovery Open Area Sounder Beacon is used to provide audible and visual warning of fire and is controlled by the fire control panel by means of the Discovery protocol. The particular features of this sounder beacon are available only when it is being controlled by the full Discovery protocol with the panel programmed accordingly. Information on available features should be requested from the panel manufacturer.

Features & advantages

These are identical to the Discovery Sounder Beacon Base but the Open Area Sounder Beacon is a wall mounted stand alone device that produces a higher sound output of up to 100dB(A).

Product Description	EN54-3
Discovery Sounder Beacon Red Open-Area	58000-005AMP
Discovery Sounder Beacon White Open-Area	58000-007AMP

Technical Data

Specifications are typical and given at 23°C and 50% relative humidity unless specified otherwise.

Visual Type:	Point type beacon for fire detection and alarm systems for buildings
Operating Voltage:	17-28V d.c. (polarity sensitive)
Protocol Pulses:	5-9V
Current consumption at 24V:	Switch on surge, <1s = 1.2mA Quiescent = 350µA Device operated at maximum volume = 8.2mA
Maximum sound output at 90°:	100dB(A) Sound pressure level data is published in Product Data Sheet PDS201-9002
Operating Temperature:	-20°C to +60°C
Humidity (no condensation or icing):	0-95%
IP Rating:	65

18 Maintenance of Detectors

Detectors should be maintained according to BS5839 or other locally applicable code. Test equipment can be ordered from Ampac for testing smoke and heat detectors. Detectors should not be cleaned in the field except for careful removal of exterior dirt with a damp cloth. For cleaning and recalibration detectors should be returned to the manufacturer or to the local distributor.).

19 Application of Discovery Detectors

The process of designing a fire detection system using Discovery detectors is the same as that used for any other detector range, except that Discovery offers more choices to the system designer. The principles set out in relevant codes of practice such as BS5839: Part 1 should be followed in any system design. The notes below are intended to supplement the codes of practice and to give some specific guidance on the choices available with the Discovery range.

Choice of Detector Type

The choice of detector from the Discovery range follows the well established principles of system design. That is, the optimum detector type will depend on the type of fire risk and fire load, and the type of environment in which the detector is sited.

For general use, smoke detectors are recommended since these give the highest level of protection. Smoke detectors from the Discovery range may be ionisation, optical or multisensory types. The most widely used single sensor detector is the optical smoke detector. For the greatest versatility in designing fire detection systems the optical/heat multisensor is the detector of choice.

Ionisation smoke detectors are excellent at detecting small particle smoke and providing early warning of a fire but they must be used in an environmentally friendly way.

The optical/heat multisensor is basically an optical smoke detector and will therefore respond well to the smoke from smouldering fires. In response modes 1, 3 and 4, however, (ie, in the multisensor modes) the detector also senses air temperature. This temperature sensitivity allows the multisensor to give a response to fast burning (flaming) fires which is similar to that of an ionisation detector. The multisensor can therefore be used as an alternative to an ionisation detector while still retaining the benefits of an optical smoke detector.

Where the environment is smoky or dirty under normal conditions, a heat detector may be more appropriate. It must be recognised, however, that any heat detector will respond only when the fire is well established and generating a high heat output. The Discovery heat detector can be used in a wide range of conditions by selecting the correct mode (see Table 9).

The relative performance of the six detector types for different fire types is given in Table 8.

	Optical	Multisensor	Ionisation	CO/Heat	CO	Heat
Overheating/thermal decomposition	Very Good	Very Good	Poor	Very Poor	Very Poor	Very Poor
Smouldering/glowing combustion	Good	Good	Moderate /Good	Excellent	Excellent	Very Poor
Flaming combustion	Good	Good	Very Good	Moderate	Poor	Poor
Flaming with high heat output	Good	Very Good	Very Good	Very Good	Moderate	Moderate /Good
Flaming – clean burning	Very Poor	Moderate /Good	Poor	Moderate /Good	Very Poor	Moderate /Good

Table 8 – Relative Performance of Detectors in Test Fires

	Cleanroom EDP Suite					Hotel Room, Studio, Small Flat (<50m²)					Office, Long Corridor, Hospital Wards Light Industry Factory					Warehouse, Bar					Loading Bay Car Park (enclosed & ventilated)					Kitchen, Laundry					Boiler Room				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Optical	■							■	■	■				■	■	■				■				■												
Mukti	■							■	■	■				■	■		■	■	■	■		■	■	■	■			■	■			■				
Ion	■							■	■	■				■	■			■	■					■	■										■
Co/Heat								■			■	■	■						■	■							■	■	■						■
CO						■		■				S						S	S										■	■			■		■
Heat																■	■				■	■						■	■	■					

KEY ■ Recommended ■ Suitable S Suitable as supplement

Table 9 – Discovery Response Mode Selection Grid

20 Acknowledgement

The Discovery range of detectors and products are manufactured for Ampac by Apollo Fire Detectors Ltd.

UNCONTROLLED DOCUMENT

NOTE: Due to AMPAC's commitment to continuous improvement specifications may change without notice.

Choice of Response Mode

A major objective in designing a detection system is to achieve the best detection performance while keeping the number of unwanted alarms at a low level. Unwanted alarms are normally caused by environmental influences. For any given environment, unwanted alarms will, as a rule, be more frequent for detectors of higher sensitivity.

It has already been pointed out that the response modes for Discovery detectors correspond to different sensitivity to fire, with response mode 1 being more sensitive than mode 5. It follows, then, that Discovery

detectors set to mode 1 will be most suitable for environments in which sources of unwanted alarms are rare. Such environments include clean rooms and computer suites.

At the other extreme, response mode 5 will be suited to more dusty or smoky environments such as loading areas where diesel forklift trucks are operating. Response mode 3 is a general-purpose setting for which the response is similar to that of the corresponding XP95 detector.

It will be seen, then, that it is often more useful to think of particular response modes being suited to different environments rather than simply having different sensitivity to fire. Table 9 shows response modes for Discovery detectors that are considered suitable for different environment types. Any of those identified as suitable should give acceptable performance. The recommended detector/mode combinations will give the best available performance from Discovery.

Time-related systems

Discovery detectors are particularly useful for installations in which it is desirable to set different detector response characteristics at different times of the day because of changes in the environment. For example, if an industrial process generates smoke or fumes during working hours and the area is clean at other times the optimum response mode will be different at different times of the day. Outside working hours the sensitivity can be switched to a higher level to maintain maximum protection.

The Discovery multisensor is especially suitable for time-related systems. Because its response can be switched from a pure heat response to a sensitive multisensor smoke response, it can be optimised for very clean or dirty (smoky) environments. However, if mode switching between heat and smoke (or multisensor) modes is used, it is important to remember that the area coverage in the heat-only mode is less than that of the smoke or multisensory modes. The detector spacing must therefore be based on the heat detector spacing of the relevant standard.

EvacU[Elite] Voice Alarm & Emergency Voice Communication System

EvacU[Elite] 24U & 13U Cabinets

- ✓ Conforms to EN54-16 and EN54-4.
- ✓ Easy to navigate touch screen user interface.
- ✓ Fully scalable system architecture.
- ✓ Software supports up to 512 Voice Alarm Zones
- ✓ Designed to meet the requirements for EN and BS5839-9 Code of Practice installation requirements.
- ✓ 1024 EVCS Outstations conforming to BS5839-9 Code of Practice.
- ✓ Networkable up to 64 nodes using fibre optic, Cat5/6 or two core 1.5mm twisted copper cable.
- ✓ Background Music Inputs.
- ✓ Dual 25 Watt, 50 Watt, & 150 Watt Amplifier options.
- ✓ Configuration Tool (PC App) with integrated sequence simulator.

Product Overview

The EvacU[Elite] is Ampac's next generation of Voice Alarm Control and Indicating Equipment (VACIE) with a fully integrated Emergency Voice Communication System (EVCS).

The system is designed to receive input signals from a fire detection system then broadcast and facilitate the orderly evacuation of buildings (or large complexes) in the event of a fire alarm or emergency evacuation management plan or lockdown situation.

The EvacU[Elite] supports a high-level interface to an Ampac FireFinder[PLUS] in a combination or individual cabinets. Low level interface is available for third party fire detection systems via hardwired inputs.

Each cabinet size supports a number of universal rack frame assemblies, touch screen graphical user interfaces, power supplies and module cards.

The primary graphical touchscreen user interface incorporates the menu system, common and individual controls and indicators for Voice Alarm Zones and EVCS Outstations.

Secondary graphical user interfaces support additional individual controls and indicators for Voice Alarm zones to suit the quantity required.

Universal rack frames accommodate the following cards:

- CPU Card / Network Interface Card.
- 8 Way Output Cards (Strobes & VADs) supports single end O/Ps or 2 wire reverse polarity connection.
- 8 Input Multi-Purpose Interface Card (FIP inputs or others).
- Dual 25 Watt Amplifier Card.
- Single Output 50 Watt Amplifier Card.
- 150 Watt Amplifier with Built in 4 Way Splitter Card.
- 4 Way Radial Interface Card for EVCS Outstations.
- Dual Loop EVCS Interface Card (supports 20 Outstations per loop interface, 40 total).

EvacU[Elite] Voice Alarm & Emergency Voice Communication System

Networking Capability

The EvacU[Elite] can be networked, and supports up to 64 nodes in a fault tolerant loop network. This allows monitoring and control to be taken from multiple locations on site, ultimately dictated by a programmable hierarchy system design.

Networking communication mediums include multimode and single mode fibre optic cable, CAT 5/6 cable and two core twisted copper.

Emergency Voice Communication System (EVCS)

The Emergency Voice Communication System supports two interfaces options for Outstations (Emergency Phone).

The first is the traditional radial or point to point connection. This allows a single pair cable to be routed to each Outstation. Each Outstation is also fitted with a remote buzzer output, required when the Outstation is mounted inside a security enclosure.

The second interface is a fault tolerant design that allows the Outstation to be wired in a loop configuration saving on install time and cabling costs. The innovative two wire design allows further savings compared to similar four wire market configurations. Each Outstation is fitted with a short circuit isolator to ensure all Outstations on the loop remain operational with a short circuit condition on the loop.

Each Outstation is fitted with a connection for an Emergency Alarm Initiating Device (EAID). The Outstation programming and zone association of a connected EAID is done through the configuration tool.

Audio

The EvacU[Elite] uses digital audio throughout—including the network. The tone generation of all Voice Alarm signals are handled within software. Pre-recorded messages are stored as audio files which can be distributed according to the programmed configuration.

Audio mapping software allows any audio source or file to be routed to any amplifier. This allows multiple Voice Alarm signals (Bespoke Tones and Messages) to be broadcast as part of a phased Voice Alarm evacuation or life safety sequence.

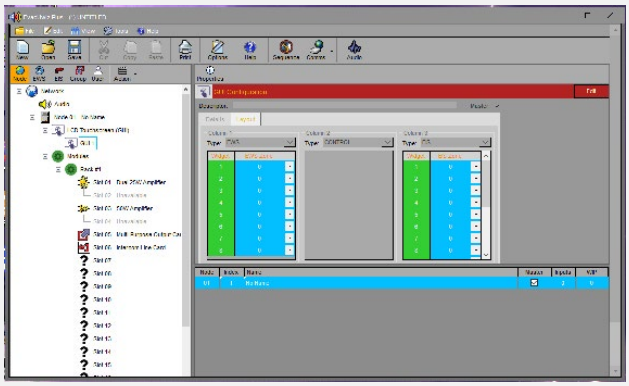
Configuration Tool

Programming of the EvacU[Elite] is done by a highly flexible, easy to use configuration tool (PC App), which enables the system to be custom configured to the site requirements.

The configuration tool supports USB connection to the panel to allow upload application files and configuration files and download configuration files and log files. This is complemented by a network send function to ensure the ease of single point programming.

A specialized sequence builder and simulator is built into the configuration tool. The sequence builder enables the sequences to be configured as per requirements and includes a sequence simulator, allowing the sequences to be tested prior to site implementation and commissioning.

The EvacU[Elite] supports complete user programming flexibility to ensure the seamless functionality and integration of ever changing consultant and site engineering requirements.



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EvacU[Elite] Voice Alarm & Emergency Voice Communication System

Specifications	
Cabinet Options	13U Wall Mount & 24U Floor Standing
Dimensions (mm)	13U - H 900 x W 650 x D 380 24U - H 1800 x W 650 x D 380
External Operating Voltage	204 - 264 V AC
Max No. of Voice Alarm Zones	512
Max No. of Outstations	1024
Max No. of Nodes	64
Amplifiers Sizes	Dual 25 Watt, 50 Watt & 150 Watt (4 Way Splitter)
Output to Warning Devices (Visual) Contacts Rated at 2 Amps Max Current Draw 6 Amps	2 Wire Single End O/Ps 8 x 750mA OR Reverse Polarity Option 4 O/Ps x 1.5 Amps Each
Graphical User Interfaces	13U - 4 24U - 8
Universal Rack Frames	13U - 2 24U - 5
Temperature	-5°C to +50°C
Humidity	0% to 95% (Non-Condensing)
Networking Specifications (Node to Node)	2 core 1.5mm2 twisted Cat 5/6e (up to 100M) Single Mode Fibre Multimode Fibre
Power Supply	13U - Max 2.4 kW 24U - Max 3.6 kW
Max Battery Size (Pair)	13U - 100 Ah 24U - 190 Ah
Mains Current (Max)	13U - 13 Amps fitted with a 25 Amp Breaker 24U - 19.5 Amps fitted with a 25 Amp Breaker

Graphical User Interface	
Description	9 inch TFT LCD 800 x 480 with LED backlight and resistive touch screen
Microphone	600 Ω with capsule monitoring
Emergency Voice Communication Handset	Electret capsule with 150 Ω speaker
USB Support	Host (USB stick) and Device (mini USB) connection
SD Card Support	Yes
HLI (to FDCIE)	1 x RJ45 connector with RS485 signal levels
Ethernet Support	2 x RJ45, with proprietary power and transformer isolation
Inputs	2 x monitored and 2 x unmonitored
Current Consumption	0.185 Amps (Quiescent)

Universal Rack Frame	
No. of Slots	16 + Dedicated Slot for the CPU
Max No. of Dual 25 Watt Amplifier Cards	8
Max No. of 50 Watt Amplifier Cards	8
Max No. of 150 Watt Amplifier Cards	8
Max No. of EIS Line Cards (Radial or Loop)	16
Max No. of Multi-Purpose Interface Cards	16
Max No. of Multi-Purpose Output Cards	6
Max Current Per Rack	48 Amps

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FireFinder^{Plus} EN54 - Intelligent Analogue Addressable Fire Control Panel

FireFinder Plus SP1M Control Panel

Features

- Fully Expandable 1 to 8 Loop Fire Alarm Control Panel
- Large Graphic (240 x 64 pixel) Display
- 500mA Loop Current
- 4 Programmable Monitored Inputs
- 4 Programmable Monitored Sounder Outputs
- 5 Programmable Relays
- 2 Auxiliary Power Outputs
- Programmable via front panel
- Networkable
- Supports High Level Graphics Interface
- Supports a Range of Panel Add-ons
- Rack Mount options available
- EN54-2 and EN54-4 compliant

Description

FireFinder Plus is an Intelligent Analogue Addressable Fire Alarm Control Panel that is available in 1 to 8 loop panel options.

The FireFinder Plus is suitable for medium to large sized fire detection systems and is compatible with Apollo XP95 and Discovery Detectors.

Powerful and flexible programming is achieved via AMPAC's configuration tool ConfigManager Plus which includes many pre-engineered programming functions. Simple system programming is easily achieved via the front panel.

FireFinder Plus is configurable as a peer to peer network up to 100 panels/nodes with a maximum of 150 Loops.

FireFinder Plus supports a large range of internal and external optional Panel Add-ons.

- Fire Fan Control Module
- 8-way Switch and Indicator Module
- 32 Zone Alarm Indicator Module
- Zone Disable and Indicator Module
- 16-way Input Board
- 8-way Relay Board
- 8-way Sounder Board
- 8 Zone Conventional Board
- Front panel mounted printer
- SmartTerminal (LCD Repeater)

The FireFinder Plus is available in four standard cabinet options:

- SP1M – accommodates up to 4 Loops, 64 Zone LEDs (32 as standard) and 2 Add-on termination boards
- SP1X – includes a locked glazed outer door and accommodates up to 4 loops, 64 Zone LEDs (32 as standard) 2 Add-on modules and 2 Add-on termination boards. Requires 32 Zone Indication Module to meet EN54-2.
- SP8X – has a locked glazed outer door and accommodates up to 8 loops, 64 Zone LEDs (as standard), 4 Add-on modules and 4 Add-on termination boards
- SP16X – comes with a locked glazed outer door and accommodates up to 16 loops (2 nodes), 128 Zone LEDs (64 fitted as standard), 8 Add-on modules and 10 Add-on termination boards

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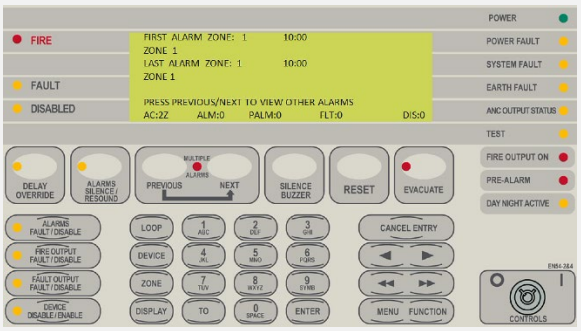
FireFinder^{Plus} EN54 - Intelligent Analogue Addressable Fire Control Panel

Item Numbers	
Panels	
8681-0108x	FireFinderPLUS 1 Loop 32Z 5A SP1M
8681-0208x	FireFinderPLUS 2Loop 32Z 5A SP1M
8681-0308x	FireFinderPLUS 3 Loop 32Z 5A SP1M
8681-0408x	FireFinderPLUS 4 Loop 32Z 5A SP1M
8681-0110xx	FireFinder Plus 1 Loop 32Z 5A SP1X
8681-0113x	FireFinder Plus 1 Loop 64Z 5A SP8X
8681-0916	FireFinder Plus 9 Loop 64Z 14A SP16X
Panel Extras	
4210-0042	SP1X/M Cabinet Flush Surround
4210-0044	SP8X Cabinet Flush Surround
4210-0040	SP1X/M Batter Cabinet
4210-0041	SP8X Battery Cabinet
Panel Add-ons	
8610-0001x	Slave CPU Board (Loop Activation)
8610-0002x	Dual Loop Termination Board
4210-0006x	2 Wire Network Interface Board
4310-0021	Fire Fan Module
4310-0071	Fire Fan Module (Loop Driven)
4310-0030	8-Way Switch and Indicator Module
4310-0040	16-Way Input Board
4310-0050	8-Way Relay Board
4310-0060	8-Way Sounder Board
4310-0080x	HLI Expander Board
4310-0082x	8 Zone Conventional Board
4310-0085x	32Z Alarm Indicator Card (SP1M)
4310-0086x	32Z Alarm Indicator Module
4310-0087	Zone Disable & Indicator Module
Repeater Panels (Refer to individual Datasheets for specifications)	
4350-0004	SmartTerminal ABS
4350-0005	SmartTerminal inc PSU ABS
4350-0006	SmartTerminal Slimline ABS

Note - Other Panel options and accessories available.
Contact the Ampac office for details.
(xdenotes items covered by LPCB approval)
(xxdenotes product requires 4310-0086 to meet EN54-2)

Specifications		
Cabinet Size	SP1X	SP8X/SP16X
Power Supply	5A PSU Versionx	5A PSU Versionx/ 14A PSU Version
Input Voltage	195 - 264VAC	195 - 264VAC
Protection	2Amp 3AG	2Amp 3AG (5A PSU)/ 5Amp 3AG (14A PSU)
Output Current	5.6Amps	5.6Amps / 14Amp
Charger Current	1.25A	1.25A / 3A
Power Supply Output Voltage: Power Supply Ripple Voltage:	27.5VDC +/- 0.1VDC 250mV	
Charger Output Voltage: Battery Type: Maximum Battery Capacity: Discharge Cut-off voltage:	27.5 +/- 0.1VDC 2 x 12V Sealed Lead Acid 18Ahr (SP1X), 26Ahr(SP1M), 33Ahr (SP8X), 40Ahr (SP16X)	
Panel Quiescent Current 1 Loop, 8 Loop Additional Loops (even) Additional Loops (odd)	 220mA, 580mA +40mA for each Loop +75mA for each Loop	
Loop Capacity Max No of Devices per Loop Cabling Requirements Fault supervision	500mA max per Loop 126 2 core 1.5 to 2.5mm² O/C, S/C, Over current	
Number of Zones	1999	
Devices Per Zone	32 Max	
Outputs: (Programmable) Relay outputs (Programmable) Auxiliary Power Outputs	4 x 24VDC @ 1 Max, 10K EOL 5 x Voltage Free - 24VDC@1A 2 x 24VDC @ 2A	
Inputs (Programmable)	4 x O/C, S/C, 10K EOL	
Comms External to FACP Comms Printer port Comms PC Interface	RS485 RS232 or Parallel RS232 or USB 2.0	
Temperature	-5°C to + 40°C	
Humidity	25% to 95% (non-condensing)	
Mechanical		
Material	1.2mm Mild Steel	
Colour/Finish	Surf Mist Ripple (Dulux)	
Dimensions (mm) SP1M SP1X SP8X SP16X	 500H x 405W x 150D 500H x 405W x 150D 845H x 518.5W x 173D 1200H x 625X x 240D	
IP Rating	IP30 (Indoor Use Only)	



FireFinder Plus Controls and Indicators

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XP95 - Optical Smoke Detector

Features

- Alarm flag for fast alarm reporting
- Electronics-free base
- Responds well to slow buming, smouldering fires
- Easy installation
- Well suited for bedrooms and escape routes
- Elegant design
- Unaffected by wind or atmospheric pressure
- Insect resistant|

Applications

- Living Areas & Hospitals
- Warehouses
- Computer Rooms

Item Numbers	
LPCB (EN54-7)	
55000-620AMP	XP95 Optical Smoke Detector
55000-660AMP	XP95 Optical Smoke (Black) Detector
SAI Global (AS7240-7)	
4106-2001	XP95 Optical Smoke Detector
4106-2010	XP95 Optical Smoke (Black) Detector
Activfire (AS1603-2)	
201-0003 (55000-630)	XP95 Optical Smoke Detector
201-0092 (55000-660)	XP95 Optical Smoke [Black) Detector

Description

XP95 range of analogue addressable fire detectors combines proven design with performance and has unique features that benefit the installer and end user.

The XP95 Optical Smoke Detector works using the light scatter principle and is ideal for applications where slow-burning or smouldering fires are likely. The Detector continuously monitors the environment for contamination of clean air by smoke particles. This facilitates early warning of incipient fires.

The Optical arrangement inside the detector uses an internal pulsing LED together with a photo-diode which is located at an obtuse angle. In normal clear air conditions, the photo-diode in the detector receives no light from the LED and produces a corresponding signal. This signal increases when smoke enters the chamber and light is scattered onto the photo-diode. The signal is processed by the electronic circuitry and transmitted to the main fire control equipment via the detection loop circuit.

The Optical Smoke Detector shares the same mechanical dimensions and colour as that of other detectors in the XP95 range of products.

As with all detectors in the XP95 range, the Optical Smoke Detector is used in conjunction with the XP95 universal Detector Base which incorporates the unique XPERT card and is used to configure the address of the detector.

Specifications		
Operating voltage	17 to 28 VDC|	
Quiescent current	340uA average 600pA peak	
Alarm current LED on	3.5mA	
Remote LED current	4mA at 5V	
Dimensions	100mm Dia x 50mm H inc base	
Sensitivity Settings Normal (100%) High (80%) Low (120%6)	AS1603 7.5 % obs./m 6% obs/m 9% obs./m	EN54 & AS7240 3 % obs./m 2.4 %obs./m 3.6 % abs /m
Operating temperature	-20°C to +60°C (no icing)	
Relative humidity.	0 to 95% (non condensing) |	
IP rating	IP23D (indoor use)	
Weight	157 grams inc base	

For further information refer Product Guide MAN3037.

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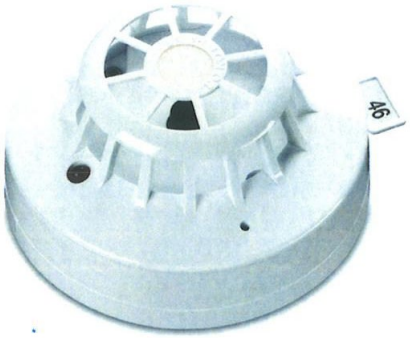
XP95 - Heat Detector



Features

- Alarm flag for fast alarm reporting
- Electronics-free base
- Ideal in environments that are dirty or smoky under normal conditions
- Well suited for warehouses. loading bays and car parks
- Unaffected by wind or atmospheric pressure
- Elegant design
- Insect resistant
- Easy installation

Applications

- Dusty Environments
- Warehouses
- Car Parks
- Kitchens & Restaurants
- Loading Bays

Description

The XP95 range of analogue addressable fire detectors combines proven design with performance and has unique features that benefit the installer and end user.

The XP95 Heat Detector monitors temperature by using a single thermistor which provides a count output proportional to the external air temperature. The XP95 range features two heat detectors, the standard device and high temperature device. The standard heat detector is classified as an A2S device and will report an alarm at 55°C. The high temperature detector is classified as a CS device, and will report an alarm at 90°C.

The XP95 Heat Detector shares the same mechanical dimensions and colour as that of other detectors in the XP95 range of products.

As with all detectors in the XP95 range, the Heat Detector is used in conjunction with the XP95 universal Detector Base which incorporates the unique XPERT card and is used to configure the address of the detector.

Item Numbers	
LPCB (EN54-5)	
55000-420AMP	XP95 Heat Detector A2S
55000-401AMP	XP95 Heat Detector High Temp CS (90°C)
SAI Global (AS7240-5)	
4106-2003	XP95 Heat Detector (Type A & B) A2S
Activfire (AS1603-1)	
201-0001 (55000-430)	XP95 Heat Detector (Type A & B) A2S|

Specifications	
Operating voltage	17 to 28 VDC|
Quiescent current	250uA average 500uA peak
Alarm current LED on	2mA
Remote LED current	4mA at 5V
Dimensions	100mm Dia x 50mm H inc base
Operating temperature	-20°C to +70°C (no icing)
Relative humidity.	0 to 95% (non condensing)
IP rating	IP53
Weight	157 grams inc base

For further information refer Product Guide MAN3037.

XP95 Discovery Detector Base

- ✓ XPERT addressing.
- ✓ One way fit of detector.
- ✓ Locking feature to prevent unauthorised detector removal.

Product Overview

All detectors in the XP95 and Discovery range fit the Intelligent Mounting Base.

The mounting base is a low insertion force base with stainless steel contacts for the detector terminals.

XPERT cards are supplied with all bases.

Specifications	
Dimensions	100mm Dia x 8mm H
IP Rating	IP23D (Indoor Use)
Weight	55 grams

Item Numbers		
ENS4	AS 7240	Description
45681-210AMP	201-0004	Detector Base with XPERT Card
45681-361APO	201-0093|	Detector Base (Black)

Discovery Sounder Base

Product Overview	
Product	Sounder Base
Part No.	45681-702
Digital communication	Discovery

Product Information

The Discovery Sounder Base is a multifunctional device made up of a mounting base for Discovery fire detectors, a sounder and a short-circuit isolator.

The Discovery Sounder Base can be used with a detector fitted or with a cap for operation as a stand-alone alarm device.

- 15 evacuation tones and 15 secondary or alert tones
- Seven volume levels
- Software defined group addressing
- Unique acoustic self-test
- Alarm switching by individual device, by group or all devices on a loop
- Set-up and testing of devices at the point of installation
- Complies with NEN 2575, DIN 33404 and DIN 0833
- Built-in isolator with status information

Discovery Sounder Base

Manufacturer's Specification	
All data is supplied subject to change without notice. Specifications	
Supply voltage	17-28 V dc polarity sensitive
Protocol pulses	5 V - 9 V
Maximum loop current consumption at 24V dc	
Quiescent	370 µA
Switch-on surge	1.2 mA for <1 second
Device operated at maximum volume	5.5 mA
Sound output - maximum at 90°	90 dB (A) ± 3 db(A)
Nominal sounder output ± 3 dB(A) at 28 V	
Level 1 - 60 db(A)	1 mA (not EN54-3 compliant)
Level 2 - 70 dB(A)	1.3 mA
Level 3 - 74 dB(A)	1.6 mA
Level 4 - 78 dB(A)	2.1 mA
Level 5 - 82 dB(A)	2.8 mA
Level 6 - 86 dB(A)	4 mA
Level 7 - 90 dB(A)	5.5 mA
Operating temperature	-20°C to +60°C
Humidity (no condensation)	0-95% RH
Designed to IP Rating	IP21C
Dimensions	115 mm diameter x 38 mm height
Weight	140 g
Materials	Housing: White flame-retardant polycarbonate Terminals: Nickel plated stainless steel

Application

The Discovery Sounder Base is used to provide audible warning of fire and is controlled by the fire control panel by means of the Discovery protocol. The particular features of this base are available only when it is being controlled by the full Discovery protocol with the panel programmed accordingly. Information on this should be requested from the appropriate panel manufacturer.

The Advantages of the Sounder Base

The right tone for your installation

The Discovery Sounder Base offers a choice of 15 evacuation tones, including the standard Apollo evacuation tone. One of these tones should be selected during commissioning in order to suit local regulations or customs. The tones include those required by Dutch, Swedish, German, Australian, New Zealand and North American Standards as well as the U.K.

Whichever evacuation tone is selected there is a secondary tone which may be used for alerting or warning of a possible evacuation.

The right level of sound

The sounder is set during commissioning to one of seven levels of sound, the highest level being nominally 90 dB(A). The lowest level, 60 dB(A) falls outside the scope of the standard EN54. It has been included to provide a very local warning for the use where personnel are in particular environments such as nurse stations.

Flexibility of group addressing

In many installations a fire alarm must be raised by switching more than one sounder to alert or alarm simultaneously. This is achieved with Discovery Sounder Bases by assigning devices to groups on commissioning, with the group information being stored in each device. One command will the switch on all devices in the group.

Location-specific volume setting

Discovery Sounder Bases are installed in many different types of environment.

When configuring the Discovery Sounder Base the volume adjustment can be made at the point of installation.

Depending on the panel the commissioning engineer simply sets the control panel to 'Set-up' and then goes from one device to the next to set the required volume using the magnetic wand (Part No. 29650-001). When all the devices have been set the engineer simply presses a button on the control panel which then registers all the individual settings.

Discovery Sounder Base

Protocol usage

The Discovery Open-Area Voice Alarm devices only operate with the Discovery protocol as shown below:

Output bits	
2	Visual indicator control
1	Sounder control
0	0 = Alert, 1 = Evacuate
Interrupt	No
Analogue value	
1	Sounder failure
2	Visual indicator failure
3	Sounder and visual indicator failure
4	General fault
17 to 23	Quiescent, volume setting 1 to 7
Input bits	
2	Visual indicator status, 1 = On
1	Sounder status, 1 = On
0	Confirmation of alert (0), Evacuate (1)
Flag setting	
XP95 flag	Yes
Alarm flag	No

EMC Directive 2014/30/EU

The Discovery Sounder Base complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this datasheet.

A copy of the Declaration of Conformity is available from the Apollo website: www.apollo-fire.co.uk

Conformity of the Discovery Sounder Base with the EMC Directive, does not confer compliance with the directive on any apparatus or systems connected to it.

Construction Products Regulation (EU) 305/2011

The Discovery Sounder Base complies with the essential requirements of the Construction Products Regulation (EU) 305/2011.

A copy of the Declaration of Performance is available from the Apollo website:

www.apollo-fire.co.uk.

Tone Settings

Byte Value	Primary Tone		Tone No.	Secondary Tone		Tone No.
1	Apollo Evacuation Tone*	567 Hz for 0.5 seconds 850 Hz for 0.5 seconds	T1	Apollo Alert Tone*	1 second off, 1 second 850 Hz	T0
2	Alternating - Hochiki and Fulleon*	925 Hz for 0.25 seconds 626 Hz for 0.25 seconds	T12	Continuous* Hochiki and Fulleon	925 Hz	T11
3	Medium Sweep*	800 Hz to 970 Hz at 1 Hz	T14	Continuous	970 Hz	T13
4	Fast Sweep	2500 Hz -2850 Hz at 9 Hz	T16	Continuous	2850 Hz	T15
5	Dutch Slow Whoop - sweep*	500 Hz to 1200 Hz for 3.5 sec, 0.5 sec off	T3	Continuous*	850 Hz	T2
6	DIN Tone - sweep*	1200 Hz to 500 Hz for 1 sec	T4	Continuous*	850 Hz	T2
7	Swedish Fire Tone*	660 Hz, 150 ms on, 150 ms off	T18	Swedish all clear signal - continuous*	660 Hz	T17
8	Australia - fast rise sweep	3 x (500 Hz - 1200 Hz for 0.5 sec), 0.5 sec off	T6	Australia Alert Tone	420 Hz, 0.625 sec, 0.625 sec off	T5
9	New Zealand - slow rise sweep	500 Hz - 1200 Hz for 3.75 sec, 0.25 sec off	T7	New Zealand Alert Tone	420 Hz, 0.625 sec, 0.625 sec off	T5
10	US Temporal LF ISO8201	3 x (970 Hz, 0.5 sec on, 0.5 sec off) 1 sec off	T19	Continuous	970 Hz	T13
11	US Temporal HF ISO8201	3 x (2850 Hz, 0.5 sec on, 0.5 sec off) 1 sec off	T20	Continuous	2850 Hz	T15
12	Simulated Bell - Continuous	Continuous	T8	Simulated Bell - Intermittent	1second on 1 second off	T9
13	Emergency Warning Siren	N/A	T10	Emergency Warning - All Clear	N/A	T10
14	Evacuation Tone*	970 Hz continuous	T13	Alert Tone	Silence for 1 second 970 Hz for one second	T21
15	Apollo Evacuation Tone*	567 Hz for 0.5 sec, 850 Hz for 0.5 sec	T1	Apollo Alert Tone*	1 second off 1 second 850 Hz	T0

Tones marked * are EN54 compliant

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Intelligent Manual Call Point

Features

- Suitable for Flush or Surface Mount Application
- Plug E-Z Fit Connector
- Easy Access
- Front Reset Mechanism
- 170° viewable LED
- Ergonomic Reset Key
- Integral Short Circuit isolator
- Continuity Link for Cable Insulation Testing

Operating Principles

The address of each call point is set at commissioning stage by means of integral DIL switch.

A solid red alarm LED is provided on the manual call point. This LED is controlled independently of the call point by the Ampac fire control panel. When configured as a Discovery device, the LED will flash yellow if there is a fault and flash green when the device is polled. Once activated, the Intelligent Manual Call Point can be reset by inserting the reset key into the front facing LED, turning clockwise until a positive click and reset occurs.

The Intelligent Manual Call Point incorporates a short circuit isolator which will ensure its operation in the event of a short circuit fault on the detection loop cabling. The isolator operation is indicated by a solid yellow LED.

Installation time is reduced by use of a removable terminal block which fits neatly into the back of the manual call point.

Description

The Intelligent Manual Call Point is intended for indoor use and has been designed to operate on a loop of intelligent addressable fire detection devices. An alarm is initiated by pressing the resettable element. The manual call point signals to the Ampac fire control panel using an interrupt feature within the digital protocol.

An alarm status is indicated through the rotation of the resettable element, displaying yellow and black indication bars and a solid red LED. The manual call point can be easily reset from the front using the reset key supplied.

Protocol Compatibility

The Intelligent Manual Call Point will operate with the Ampac control panel using the digital XP95 or Discovery protocol which is switch selectable at the commissioning stage.

Specifications	
Supply Voltage	17-35V DC
Quiescent Current Alarm Current	100µA at 24V DC 4mA at 24V DC
Dimensions MCP MCP inc back box	(H x W x D) 90mm x 90mm x 26mm 90mm x 90mm x 63mm
Material	Fire retardant polycarbonate
Operating Temperature	-40°C to +70°C
Humidity	0 – 95% RH non-condensing
EMC Directive	2004/108/EC
IP Rating	44 (indoor use)
Weight	180g

To provide additional protection against accidental operation, a transparent hinged cover is available which can be fitted to the Manual Call Point.

For further details on the isolator refer to PDS201-9001

Item Numbers		
LPCB	SAI Global	
(EN54-11 & 17)	(AS 7240-11)	
SA5900-908AMP	4105-2005	Intelligent Manual Call Point with Isolator
44251-175	4105-2003	Transparent Cover

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Intelligent Waterproof Manual Call Point

Features

- IP67 rated
- A unique, ergonomically designed key for resetting and front cover removal
- Backward compatibility and retro-fit
- Resettable element
- Integral short circuit isolator
- Captive screws for easy installation
- 180° viewable LED

Description

The Discovery Waterproof Manual Call Point has been designed to operate on a loop of intelligent addressable fire detection devices and when activated interrupts the polling cycle for a very fast response.

The Waterproof Manual Call Point is available in two versions, with and without isolator and has an IP67 rating. It is intended for use where water and dirt are a problem. The isolated version of the Waterproof Manual Call Point incorporates a short circuit isolator which will ensure its operation in the event of a short circuit fault on the detection loop.

The Discovery Waterproof Manual Call Point has a highly visible alarm indicator which can be seen from up to 10 metres away. A combined LED indicator and front reset mechanism allows for a quick and simple reset.

To provide additional protection against accidental operation, a transparent hinged cover is available which can be fitted.

Specifications	
Supply Voltage	18-28V DC
Quiescent Current Alarm Current	100µA at 24V DC 4mA at 24V DC
Material	Fire retardant polycarbonate
Operating Temperature	-30°C to +70°C
Humidity	0 – 95% RH non-condensing
EMC Directive	2004/108/EC
CPD Directive	89/106/EEC
IP Rating	67
Weight	180g

Item Numbers		
LPCB	SAI Global	
(EN54-11 & 17)	(AS 7240-11)	
58200-951AMP	4105-2002	Waterproof Manual Call Point with Isolator
58200-950AMP		Waterproof Manual Call Point
44251-175	4105-2003	Transparent Cover

Audio Visual Devices | Open-Area Alarm Devices

Product Overview	
Product	Sounder - Red - Apollo, Slow whoop and DIN tones
Part No.	55000-001
Product	Sounder - White - Apollo, Slow - whoop and DIN tones
Part No.	55000-002
Product	Sounder Visual indicator - Red - Apollo, Slow-whoop and DIN tones and Apollo flash
Part No.	55000-005
Product	Sounder Visual indicator - White - Apollo, Slow-whoop and DIN tones and Apollo flash
Part No.	55000-006
Product	Visual indicator - Red - Apollo flash
Part No.	55000-009
Product	Visual indicator - White - Apollo flash
Part No.	55000-010
Digital Communication	XP95, Discovery and CoreProtocol® compatible

Compliance*

CE LPCB

Technical Data	
All data is supplied subject to change without notice. Specifications are typical at 24V, 25°C and 50% RH unless otherwise stated.	
Supply voltage	17-28 V dc polarity sensitive
Maximum loop current consumption at 24V dc	
Quiescent	333 µA
Switch-on surge	1.2 mA for <1 second
Operated sounder	5 mA
Operated sounder Visual indicator	8 mA
Operated Visual indicator	3.1 mA
Sound output - maximum	100 dB (A)
Operating temperature	-10°C to +55°C
Humidity (no condensation)	0-95% RH
Designed to IP Rating	IP65
Standards and approvals	CPR, LPCB, VdS, VNIIPO, CNBOP, CCMG, Kazaksthan
Dimensions	104 mm diameter x 97.5 mm height
Weight Sounder	225g
Sounder Visual indicator	260g
Visual indicator	205g
Materials	Body - red polycarbonate. Diffuser - translucent polycarbonate

Notes:

1. All dB (A) figures are to within ± 3 dB (A).
2. For sound pressure levels measured to EN54-3 see document PP2203 and for isolator operation information see document PP2090, both available from www.apollo-fire.co.uk

Product Information

The Open-Area Alarm Devices are loop-powered, wall mounted devices designed for use in open areas and can be connected to any XP95, Discovery or CoreProtocol system.

The range includes sounders, Visual indicators and Sounder Visual indicators all designed to fit a common mounting base.

- Three tones on standard devices; Apollo, Slow-whoop and DIN all of which comply with EN 54-3
- Two volume settings 92 dB (A) and 100 dB (A)
- Synchronisation of tones and flashes
- Individual and group addressing
- EN54 versions available with built-in isolator
- Wire-to base for simple interchange of devices
- Device locking facility

CAUTION: Product Use
Visual Indicators have not been approved as a Visual Alarm Device and the visual element alone may not be suitable for use as a fire warning device.

Audio Visual Devices | Open-Area Alarm Devices

Features

A nominal sound output of 100 dB (A) is achieved at a current consumption of 5 mA in the case of the sounder and 8 mA for the sounder Visual indicator. Many control panels will be able to drive up to 20 sounders and up to 15 sounder Visual indicators per loop on average. However, the maximum number of devices that may be connected to a particular loop should be determined by a loop loading calculation using the Apollo Loop Calculator, which is available as a free download from www.apollo-fire.co.uk/loop calc.

Since the Open-Area Alarm Devices are intended for use in open areas it is possible for more than one device to be audible at any given point in a building For this reason the operation of all may be synchronised by the control panel.

The devices can be assigned either group or individual group addresses so that the functional options of the sounder are identical with those of the Sounder Control Unit, Part No. 55000-182.

Electrical operation

The Open-Area Alarm Devices are powered directly from the loop and need no external power supply. They operate at 17 V - 28 V dc and are polarity sensitive.

Tone frequency and volume control

The Open-Area Alarm Devices have three selectable tones and flashes, either Apollo, Slow-whoop or DIN.

The volume control can be used to adjust the sound from 100 dB (A) to 92 dB (A) if required.

The Apollo tone version produces a pulsed alert tone of 984 Hz, one second off and one second on, and a continuous evacuation tone of 644 Hz for 0.5 seconds followed by 984 Hz for 0.5 seconds.

Synchronisation

The sounder also offers synchronisation of continuous and pulsed tones. This ensures the integrity of alert-signals - tones from different sounders do not merge into one signal that could be mistaken for an 'evacuate' tone.

Addressing

The Open-Area Alarm Devices respond to their own individual addresses set with a DIL switch.

They can also respond to a 'Group Address' which enables multiple sounders to be controlled simultaneously. A group address may be any spare address between 112 and 126 and is selected by means of a four segment DIL switch. A device under group address control must have an individual address between one and 111 otherwise a fault value of four is transmitted. Devices not using the group address facility may be addressed at any address (1 - 126).

Protocol compatibility

The features of the Open-Area Alarm Devices are available only when the sounder is connected to a control panel with the appropriate software.

EMC Directive 2014/30/EU

The Open Area Alarm Devices comply with the essential requirements of the EMC Directive 2014/30/EU, provided that they are used as described in this datasheet.

A copy of the Declaration of Conformity is available from the Apollo website: www.apollo-fire.co.uk

Conformity of the Open Area Alarm Devices with the EMC Directive, does not confer compliance with the directive on any apparatus or systems connected to them.

Construction Products Regulation 305/2011/EU

The Open Area Alarm Devices comply with the essential requirements of the Construction Products Regulation 305/2011/EU.

A copy of the Declaration of Performance is available from the Apollo website: www.apollo-fire.co.uk.

Tone Selection

DIL switch setting		Tone	Output Bit 1 Set to logic 1	Output Bit 0 Set to logic 1	Output Bit 0 and 1 Set to logic 1
5	6				
0	0	Apollo Standard	Apollo alert and visual indicator	Apollo evacuate and visual indicator	Apollo evacuate and visual indicator
1	0	Slow - Whoop	Constant tone and visual indicator	Dutch NEN2575 and visual indicator	Dutch NEN2575 and visual indicator
0	1	DIN Tone	Constant tone and visual indicator	German DIN33404 and visual indicator	German DIN33404 and visual indicator
1	1	Apollo Standard	Apollo alert and visual indicator	Apollo evacuate and visual indicator	Apollo evacuate and visual indicator

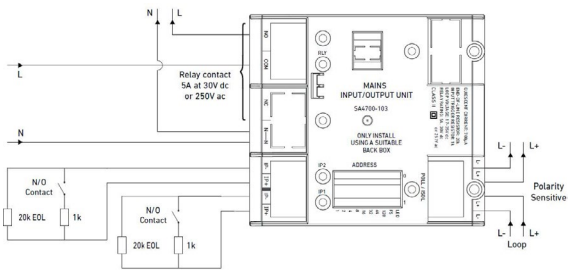
Soteria Input Output Unit

Features

- Improved design for ease of wiring meaning faster installation
- Short circuit isolator
- Address range 1 - 126
- Compatibility with XP95 and Discovery protocol
- Two input channels
- Failsafe mode (meets BS 7273-4 requirements)

Status Indicators		
Legend	**LED Status**	**Description**
RLY	Continuous Red	Relay Active
RLY	Continuous Yellow	Relay Fault
Poll/ISO	Flashing Green	Polling LED
Poll/ISO	Continuous Yellow	Isolator LED
I/P	Continuous Yellow	Input Fault
I/P	Continuous Red	Input Active

Part Number	Item Number	Description
SA4700-103AMP	4110-1107	Soteria Mains Input Output Unit



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Description

The Soteria Mains Input Output Unit provides a single line tolerant circuit containing one or more normally open contacts connected to a single pair of cables. It also provides a voltage free change over relay output capable of switching mains.

Mechanical Construction

The Soteria Mains Input Output Unit is available in the new faceplate style enclosure. This can be mounted with the supplied back-box for surface mounting or flush mounted using a UK double gang, flush mounting back-box of minimum depth 30mm.

EMC Directive 2014/30/EU

The Soteria Mains Input Output Unit complies with the essential requirements of the EMC Directive 2014/30/ EU, provided that it is used as described in this datasheet.

Construction Products Regulation 305/2011/EU

The Soteria Mains Input Output Unit complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

Connectivity

Refer to the Installation Guide for the installation instructions on this product.

Specifications	
Supply Voltage (Vmin—Vmax)	17 to 35V dc
Protocol	5-13V peak to peak
Power-up surge current	1.1mA
Quiescent Current	700µA
Max Current LEDs On	5.2mA
Max current LEDs disabled	700µA
Relay output contact rating	5A at 30V dc or 250V ac
Isolator data	Refer to short-circuit isolation datasheet PDS201-9001
Operating Temperature	-40°C + 70°C
Humidity	0% to 95% RH (no condensation or icing)
Vibration, impact and shock	EN54.17, EN54.18, AS7240.17 & AS7240.18
Standards & Approvals	EN54.17, EN54.18, CPR, LPCB, AS7240.17, AS7240.18 & SAI Global
Dimensions	60mm height x 150mm width x 90mm depth
Weight	301g

All data supplied is subject to change without notice.

Specifications are typical at 24V, +25°C and 50% RH unless stated otherwise.

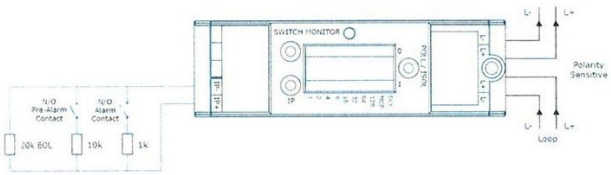
Soteria Switch Monitor Unit

Features

- Improved design for ease of wiring, meaning faster installation
- Short circuit isolator
- Address range 1 - 126
- Compatibility with XP95 and Discovery protocol

Status Indicators		
Legend	**LED Status**	**Description**
Poll/ISO	Flashing Green	Polling LED
Poll/ISO	Continuous Yellow	Isolator LED
I/P	Continuous Yellow	Input Fault
I/P	Continuous Red	Input Active

Part Number	Item Number	Description
SA4700-100AMP	4110-1104	Soteria Switch Monitor Unit



Description

The Soteria Switch Monitor Unit is designed to monitor the state of one or more single pole, volt-free contacts connected on a single pair of cables to report the status. It has a selectable status reporting delay making it suitable for monitoring flow switches.

Mechanical Construction

The Soteria Switch Monitor Unit is available in the new faceplate style enclosure. This can be mounted with the supplied back-box for surface mounting or flush mounted using a UK double gang, flush mounting back-box of minimum depth 30mm.

EMC Directive 2014/30/EU

The Soteria Switch Monitor Unit complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this datasheet.

Construction Products Regulation 305/2011/EU

The Soteria Switch Monitor Unit complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

Connectivity

Refer to the Installation Guide for the installation instructions on this product.

Specifications	
Supply Voltage (Vmin—Vmax)	17 to 35V dc
Protocol	5-13V peak to peak
Power-up surge current	900µA per Switch Monitor
Quiescent Current	500µA per Switch Monitor
Max Current LEDs On	2mA per Switch Monitor
Max current LEDs disabled	500µA per Switch Monitor
Isolator data	Refer to short-circuit isolation datasheet PDS201-9001
Operating Temperature	-40°C + 70°C
Humidity	0% to 95% RH (no condensation or icing)
Vibration, impact and shock	EN54.17, EN54.18, AS7240.17 & AS7240.18
Standards & Approvals	EN54.17, EN54.18, CPR, LPCB, AS7240.17, AS7240.18 & SAI Global
Dimensions	60mm height x 150mm width x 90mm depth
Weight	239g

All data supplied is subject to change without notice.

Specifications are typical at 24V, +25°C and 50% RH unless stated otherwise.

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UL Certificate of Compliance – Fittings

Certificate of Compliance

Certificate Number:
EX29478

Report Reference:
EX29478-2024-11-11

Issue Date:
2024-DEC-10

Issued to:
FIRE INSPECTION SERVICES
35 THE GROVE
COBURG, VICTORIA 3058 AUSTRALIA

This certificate confirms that representative samples of:
HHXX – Fittings, Cast Iron, Ductile Iron, Malleable Iron and Bronze
See addendum for model information

Has been evaluated by UL LLC in accordance with Standard(s) for Safety:
ISO 49 – Malleable Cast Iron Fittings Threaded to ISO 7-1
Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Certificate of Compliance

Certificate Number: EX29478
Report Reference: EX29478-2024-11-11
Issue Date: 2024-DEC-10

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

ISO 49, "Malleable Cast Iron Fittings Threaded to ISO 7-1"

Model	Configuration	Size, in.	Rated Pressure, psig (kPa)
FISA1 /45	45° Elbow	3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2	363 (2502)
FISA1	90° Elbow	1/8, 1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 6	363 (2502)
FISA4	M x F 90° Elbow	1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FISB1	Equal Tee	1/8, 1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 6	363 (2502)
FISC1	Cross	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FISD1	90° Short bend	2	363 (2502)
FISG1 /45	45° Long Sweep bend	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	--
FISG1	90° Long Sweep bend	3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FISG4 /45°	45° M x F Long Sweep bend	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	363 (2502)
FISG4	90° M x F Long Sweep bend	3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FISM2	Socket	1/8, 1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 6	363 (2502)
FISM4	M x F Socket	1/2, 3/4, 1, 1-1/4	363 (2502)
FISN4	Bushing	1/4 x 1/8. 3/8 x 1/8, 1/4. 1/2 x 1/4, 3/8. 3/4 x 1/4, 3/8, 1/2. 1 x 1/4, 3/8, 1/2, 3/4. 1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1, 1-1/4. 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2. 2-1/2 x 1, 1-1/4, 1-1/2, 2. 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2. 4 x 2, 3	363 (2502) 363 (2502)
FISN8	Hexagon Nipple	1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FISP4	Back nut	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	363 (2502)
FISRA 1	90° Reducing Elbow	1/2 x 3/8. 3/4 x 1/2. 1 x 1/2, 3/4. 1-1/4 x 3/4, 1. 1-1/2 x 1, 1-1/4. 2 x 1-1/2. 2-1/2 x 2	363 (2502)
FISRA 4	M x F 90° Reducing Elbow	3/4 x 1/2. 1 x 3/4	363 (2502)
FISRB 1	Tee reducing on the branch	3/4 x 1/2. 1 x 3/8, 1/2, 3/4. 1-1/4 x 3/8, 1/2, 3/4, 1. 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2. 2-1/2 x 1, 1-1/4, 1-1/2, 2. 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2. 4 x 2, 3 1/2 x 3/4, 1. 3/4 x 1, 1-1/4. 1 x 1-1/4, 1-1/2. 1-1/4 x 1-1/2, 2. 1-1/2 x 2	363 (2502)
	Tee reducing on the run and the branch	3/4 x 1/2 x 1/2. 1 x 1/2 x 3/4. 1 x 3/4 x 3/4. 1-1/4 x 1/2 x 1. 1-1/4 x 3/4 x 1. 1-1/4 x 1 x 1 1-1/2 x 1/2 x 1-1/4. 1-1/2 x 3/4 x 1-1/4. 1-1/2 x 1 x 1. 1-1/2 x 1 x 1-1/4. 1-1/2 x 1-1/4 x 1. 1-1/2 x 1-1/4 x 1-1/4 2 x 3/4 x 1-1/2. 2 x 1 x 1-1/2. 2 x 1-1/4 x 1-1/4, 1-1/2. 2 x 1-1/2 x 1-1/2	363 (2502)
FISRC 1	Reducing Cross	3/4 x 1/2. 1 x 1/2, 3/4. 1-1/4 x 3/4, 1. 1-1/2 x 1	363 (2502)
FISR M2	Reducing Socket	3/8 x 1/4. 1/2 x 1/4, 3/8. 3/4 x 1/4, 3/8, 1/2. 1 x 3/8, 1/2, 3/4. 1-1/4 x 1/2, 3/4, 1. 1-1/2 x 1/2, 3/4, 1, 1-1/4 2 x 1/2, 3/4, 1, 1-1/4, 1-1/2. 2-1/2 x 1-1/4, 1-1/2, 2. 3 x 1-1/2, 2, 2-1/2. 4 x 2, 2-1/2, 3	363 (2502) 363 (2502)

Certificate of Compliance

Certificate Number: EX29478
Report Reference: EX29478-2024-11-11
Issue Date: 2024-DEC-10

Model	Configuration	Size, in.	Rated Pressure, psig (kPa)
FISR M4	--	3/4 x 1/2. 1 x 1/2, 3/4. 1-1/4 x 3/4, 1. 1-1/2 x 1, 1-1/4. 2 x 1-1/4, 1-1/2	363 (2502)
FISRN 8	--	1/2 x 1/4, 3/8. 3/4 x 1/2. 1 x 1/2, 3/4. 1-1/4 x 1/2, 3/4, 1. 1-1/2 x 3/4, 1, 1-1/4. 2 x 1, 1-1/4, 1-1/2. 2-1/2 x 2. 3 x 2, 2-1/2	363 (2502)
FIST1	--	3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2	363 (2502)
FIST8	--	1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FIST9	--	1/4, 3/8, 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	363 (2502)
FISZA 1	--	1/2, 3/4, 1	363 (2502)

Trademark and/or Tradename: FIS MENA, FIS
Note: For additional marking information, refer to the Guide Information Page.

UL Certificate of Compliance – Gate Valves

Certificate of Compliance

Certificate Number:
EX29410

Report Reference:
EX29410-20240731

Issue Date:
2024-OCT-25

Issued to:

FIRE INSPECTION SERVICES
35 THE GROVE
COBURG, VICTORIA 3058 AUSTRALIA

This certificate confirms that representative samples of:

HMRZ – Gate Valves

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.

UL 262 – Gate Valves for Fire-Protection Service

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Manager

CERTIFICATE OF COMPLIANCE

Certificate number EX29410
Report reference EX29410-20240731
Date 2024-OCT-25

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Pattern	Size, in.	End Configuration	Rated Pressure, psig (kPa)	Notes
NRS-FRA	NRS	2-1/2, 3, 4, 5, 6, 8, 10, 12	Flange & Grooved	300 (2068)	Flanges comply with ASME/ANSI B16.1 Class 125, or ASME/ANSI B16.42 Class 150, or BS EN1092-2, or GB/T9113.1. Grooves comply with AWWA C606. Mechanical Joints comply with ANSI/AWWA C110 and ANSI/AWWA C153. For 300 psi, use Face flange, for 200 psi, use Raised-face flange.
NRS-FRD	NRS	2-1/2, 3, 4, 5, 6, 8, 10, 12	Flange & Flange	300 (2068)	Flanges comply with ASME/ANSI B16.1 Class 125, or ASME/ANSI B16.42 Class 150, or BS EN1092-2, or GB/T9113.1. Grooves comply with AWWA C606. Mechanical Joints comply with ANSI/AWWA C110 and ANSI/AWWA C153. For 300 psi, use Face flange, for 200 psi, use Raised-face flange.
NRS-RED	NRS	2-1/2, 3, 4, 5, 6, 8, 10, 12	Grooved & Grooved	300 (2068)	Flanges comply with ASME/ANSI B16.1 Class 125, or ASME/ANSI B16.42 Class 150, or BS EN1092-2, or GB/T9113.1. Grooves comply with AWWA C606. Mechanical Joints comply with ANSI/AWWA C110 and ANSI/AWWA C153. For 300 psi, use Face flange, for 200 psi, use Raised-face flange.
OSY-FRA	OS&Y	2-1/2, 3, 4, 5, 6, 8, 10, 12	Flange & Grooved	300 (2068)	Flanges comply with ASME/ANSI B16.1 Class 125, or ASME/ANSI B16.42 Class 150, or BS EN1092-2, or GB/T9113.1. Grooves comply with AWWA C606. Mechanical Joints comply with ANSI/AWWA C110 and ANSI/AWWA C153. For 300 psi, use Face flange, for 200 psi, use Raised-face flange.
OSY-FRD	OS&Y	2-1/2, 3, 4, 5, 6, 8, 10, 12	Flange & Flange	300 (2068)	Flanges comply with ASME/ANSI B16.1 Class 125, or ASME/ANSI B16.42 Class 150, or BS EN1092-2, or GB/T9113.1. Grooves comply with AWWA C606. Mechanical Joints comply with ANSI/AWWA C110 and ANSI/AWWA C153. For 300 psi, use Face flange, for 200 psi, use Raised-face flange.

David Piecuch
UL Mark Certification Program Manager

CERTIFICATE OF COMPLIANCE

Certificate number R9607
Report reference R9607-20240118
Date 2024-01-19

OSY-RED	OS&Y	2-1/2, 3, 4, 5, 6, 8, 10, 12	Grooved & Grooved	300 (2068)	Flanges comply with ASME/ANSI B16.1 Class 125, or ASME/ANSI B16.42 Class 150, or BS EN1092-2, or GB/T9113.1. Grooves comply with AWWA C606. Mechanical Joints comply with ANSI/AWWA C110 and ANSI/AWWA C153. For 300 psi, use Face flange, for 200 psi, use Raised-face flange.

Trademark and/or Tradename: FIS MENA , FIS

David Piecuch
UL Mark Certification Program Manager

FM Certificate of Compliance

FM Approvals

Certificate of Compliance

This certificate is issued for the following:

Fire Service Water Control Valves (OS&Y and NRS Type Gate Valves)

Models OSY-FRD, OSY-RED, and OSY-FRA
Models NRS-FRD, NRS-RED, and NRS-FRA (1130)

Prepared for:

Fire Inspection Services
35 The Grove Coburg, Melbourne, Victoria 3058
Australia

Approval Standard: FM 1120, 1130 (April 1997)

Approval Identification: PR469939 Approval Granted: 2 December 2024

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

David B. Fuller
VP, Manager – Fire Protection
FM Approvals
One Technology Way
Norwood, MA 02062

FM APPROVED

FM Approvals

Certificate of Compliance

This certificate is issued for the following:

Indicating Valves (Butterfly or Ball Type)

Models BVW-001 and BVG-001

Prepared for:

Fire Inspection Services
35 The Grove Coburg, Melbourne, Victoria 3058
Australia

Approval Standard: FM 1112 (December 2020)

Approval Identification: PR469939 Approval Granted: 2 December 2024

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

David B. Fuller
VP, Manager – Fire Protection
FM Approvals
One Technology Way
Norwood, MA 02062

FM APPROVED

UL Certificate of Compliance – Butterfly Valves

Certificate of Compliance

Certificate Number:
EX29411

Report Reference:
EX29411-2024-07-31

Issue Date:
2024-SEP-17

Issued to:
FIRE INSPECTION SERVICES
35 THE GROVE
COBURG, VICTORIA 3058 AUSTRALIA

This certificate confirms that representative samples of:
HLXS – Butterfly Valves
See addendum for model information

Has been evaluated by UL LLC in accordance with Standard(s) for Safety:
ANSI/CAN/UL/ULC 1091 – Butterfly Valves for Fire-Protection Service

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Certificate of Compliance

Certificate Number: EX29411
Report Reference: EX29411-2024-07-31
Issue Date: 2024-SEP-17

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Size, NPS	End Config	Pressure Rating, psig (kPa)	Indicator Post	Supervisory Tamper Switch
BVG-001	2, 2-1/2, 76.1 mm, 3, 4, 139.7 mm, 5, 165.1 mm, 6 8, 216.3 mm, 10, 267.4 mm 12, 318.4 mm	Groove	300 (2068)	No	Indoor installation, Outdoor installation
BVW-001	2, 2-1/2, 3, 4, 5, 6 8, 10 12	Wafer	300 (2068))	No	Indoor installation, Outdoor installation

Trademark and/or Tradename: FIS MENA

UL Certificate of Compliance – Landing Valves

Certificate of Compliance

Certificate Number:
EX29412

Report Reference:
EX29412-2024-08-24

Issue Date:
2024-SEP-17

Issued to:
FIRE INSPECTION SERVICES
35 THE GROVE
COBURG, VICTORIA 3058 AUSTRALIA

This certificate confirms that representative samples of:
VTSR – Hose Valves
See addendum for model information

Has been evaluated by UL LLC in accordance with Standard(s) for Safety:
UL 668 – Hose Valves for Fire-Protection Service

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Certificate of Compliance

Certificate Number: EX29412
Report Reference: EX29412-2024-08-24
Issue Date: 2024-SEP-17

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	For use on	Inlet, NPS w/ End Configuration+	Outlet, NPS w/ End Configuration+	Max Rated Inlet Pressure, psig (kPa)
FIS281 (1.1/2"-Female x Female)	Fire hose rack assembly;Fire department outlet connection	1-1/2 FNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 GRV 2-1/2 GRV 2-1/2 MNH	1-1/2 MNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 MNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 MNYC 2-1/2 MNH 2-1/2 MNYC 2-1/2 MNYC	300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068)
FIS281 (1.1/2"-Female x Male)	Fire hose rack assembly;Fire department outlet connection	1-1/2 FNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 GRV 2-1/2 GRV 2-1/2 MNH	1-1/2 MNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 MNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 MNYC 2-1/2 MNH 2-1/2 MNYC 2-1/2 MNYC	300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068)
FIS281 (2.1/2"-Female x Female)	Fire hose rack assembly;Fire department outlet connection	1-1/2 FNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 GRV 2-1/2 GRV 2-1/2 MNH	1-1/2 MNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 MNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 MNYC 2-1/2 MNH 2-1/2 MNYC 2-1/2 MNYC	300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068)

Certificate of Compliance

Certificate Number: EX29412
Report Reference: EX29412-2024-08-24
Issue Date: 2024-SEP-17

Model	For use on	Inlet, NPS w/ End Configuration+	Outlet, NPS w/ End Configuration+	Max Rated Inlet Pressure, psig (kPa)
FIS281 (2.1/2"-Female x Male)	Fire hose rack assembly;Fire department outlet connection	1-1/2 FNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 FNPT 2-1/2 GRV 2-1/2 GRV 2-1/2 MNH	1-1/2 MNPSH 1-1/2 FNPT 1-1/2 FNPSH 2-1/2 MNPSH 2-1/2 FNPT 2-1/2 FNPSH 2-1/2 MNYC 2-1/2 MNH 2-1/2 MNYC 2-1/2 MNYC	300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068) 300 (2068)

Code - NPSH - National Pipe Straight Hose;NPT - National Pipe Thread;NST (NH, NHT) - National Straight/Hose Thread;GRV- Grooved;NYC - New York City Fire Department; F - Female;M - Male

Trademark and/or Tradename: FIS MENA

UL Certificate of Compliance – Pressure Restricting Valves

Certificate of Compliance

Certificate Number:
EX29413

Report Reference:
EX29413-2024-08-19

Issue Date:
2024-SEP-17

Issued to:
FIRE INSPECTION SERVICES
35 THE GROVE
COBURG, VICTORIA 3058 AUSTRALIA

This certificate confirms that representative samples of:
VUTX – Pressure-reducing and Restricting Devices
See addendum for model information

Has been evaluated by UL LLC in accordance with Standard(s) for Safety:
UL 1468– Direct Acting Pressure Reducing and Pressure Restricting Valves

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Certificate of Compliance

Certificate Number: EX29413
Report Reference: EX29413-2024-08-19
Issue Date: 2024-SEP-17

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Valve Type	Body Type	Size, NPS	Bonnet Type	Max Rated Pressure, psig (kPa)	Supervisory Tamper Switch	End Connection Types
FIS282 (1.1/2"-Female x Male)	Adjustable	Angle	1-1/2	--	175 (1206)	Not Included	NPT - National Pipe Thread
FIS282 (1.1/2"-Female xFemale)	Adjustable	Angle	1-1/2	--	175 (1206)	Not Included	NPT - National Pipe Thread
FIS282(2.1/2"-Female x Female)	Adjustable	Angle	2-1/2	--	175 (1206)	Not Included	NPT - National Pipe Thread
FISJ282 (2.1/2"-Female x Male)	Adjustable	Angle	2-1/2	--	175 (1206)	Not Included	NPT - National Pipe Thread

End Configuration, inlet by outlet – Female by Male or Female by Female NPT

Bonnet Configurations - Different bonnet configurations are selected based upon inlet pressure conditions and desired outlet pressure.

Trademark and/or Tradename: FIS MENA

UL Certificate of Compliance – Sprinkler Pipes

Certificate of Compliance

Certificate Number:
EX29441

Report Reference:
EX29441-20240926

Issue Date:
2024-OCT-22

Issued to:
Fire Inspection Services
35 The Grove
Coburg Victoria 3058 AU

This certificate confirms that representative samples of:
METALLIC SPRINKLER PIPE

See addendum page for Model/Product

Has been evaluated by UL LLC in accordance with Standard(s) for Safety:

UL 852 – Metallic Sprinkler Pipe for Fire Protection

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at https://www.ul.com/contact-us.

Page 1 of 2

UL Solutions

Form-ULID- 019496 – ver 1.0

Certificate of Compliance

Certificate Number: EX29441
Report Reference: EX29441-20240926
Issue Date: 2024-OCT-22

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Schedule Pipe Size
FIS-Schedule10	1 NPS, 1-1/4 NPS, 1-1/2 NPS, 2 NPS, 2-1/2 NPS, 3 NPS, 3-1/2 NPS, 4 NPS, 5 NPS, 6 NPS, 8 NPS, 10 NPS
FIS-Schedule40	1/2 NPS, 3/4 NPS, 1 NPS, 1-1/4 NPS, 1-1/2 NPS, 2 NPS, 2-1/2 NPS, 3 NPS, 4 NPS, 6 NPS, 8 NPS, 10 NPS

Trademark and/or Tradename: FIS MENA , FIS

UL Solutions

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Page 2 of 2

Form-ULID- 019496 – ver 1.0

FM Certificate of Compliance – Sprinkler Pipes

FM Approvals

FM APPROVED

Certificate of Compliance

This certificate is issued for the following equipment:

Automatic Sprinklers for Fire Protection

Model	K	Type	Resp.	Element	NPT (in.)	Finishes	Temperature Ratings °F (°C)
HA01	5.6	Horizontal Sidewall	SR	5 mm	1/2	Brass, Chrome Polyester	135, 155, 175, 200, 286 (57, 68, 79, 93, 141)
HA02	5.6	Horizontal Sidewall	QR	3 mm	1/2	Brass, Chrome, Polyester	135, 155, 175, 200, 286 (57, 68, 79, 93, 141)
HA03	5.6	Upright	SR	5 mm	1/2	Brass, Chrome, Polyester	135, 155, 175, 200, 286 (57, 68, 79, 93, 141)
HA04	5.6	Upright	QR	3 mm	1/2	Brass, Chrome, Polyester	135, 155, 175, 200, 286 (57, 68, 79, 93, 141)
HA05	5.6	Pendent	SR	5 mm	1/2	Brass, Chrome, Painted	135, 155, 175, 200, 286 (57, 68, 79, 93, 141)
HA06	5.6	Pendent	QR	3 mm	1/2	Brass, Chrome, Painted	135, 155, 175, 200, 286 (57, 68, 79, 93, 141)

Prepared for: Fire Inspection Services
35 The Grove Coburg, Melbourne, Victoria 3058, Australia

FM Approvals Class: 2012, 2016, 2017
FM Approval Standard: Class Number 2000 (February 2018)

Approval Identification: PR470281 Approval Granted: 13 December 2024

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

David B. Fuller
VP, Manager – Fire Protection
FM Approvals
One Technology Way
Norwood, MA 02062 USA

LPCB Certificate of Compliance – Hose Reels

LPCB®

www.redbooklive.com

Certificate of Product Approval

Certificate Number: 1038BKa Issue: 01

Fire Inspection Services Pty Ltd

35 The Grove Coburg
Victoria 3058
Australia

is certified by BRE Global Ltd. and is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix having complied with the requirement(s) of the standards as detailed below:

Products

'FIS MENA' Fire Hose Reels
(Refer to attached appendix for details)

Standards

EN 671-1:2012
Fixed firefighting systems. Hose systems. Hose reels with semi-rigid hose

This certificate and appendix is maintained and held in force through regular surveillance activities

Signed for BRE Global Ltd.	Joe Milton Verifier	8 August 2024 Date of Issue	8 August 2024 Date of First Issue

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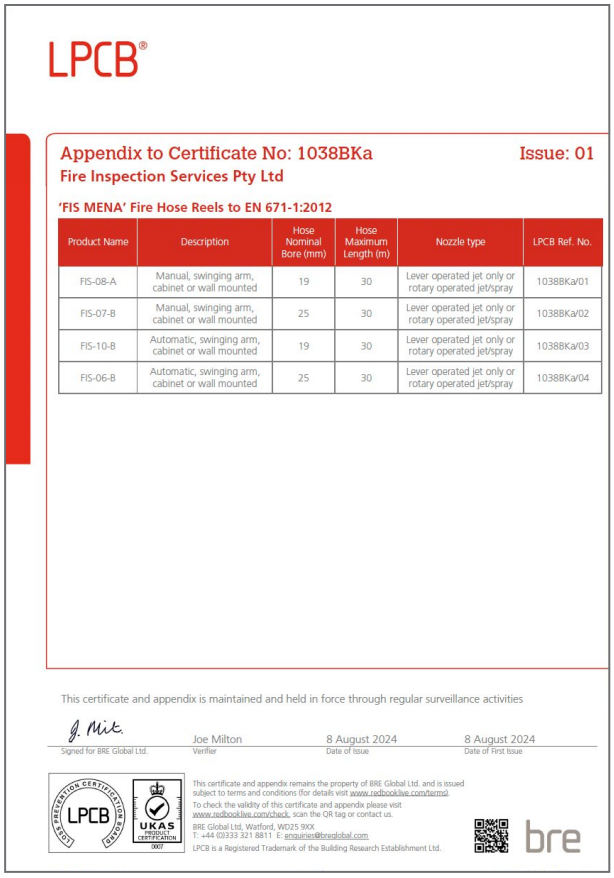
To check the validity of this certificate and appendix please visit www.redbooklive.com/check, scan the QR tag or contact us.
BRE Global Ltd, Watford, WD25 9XX
T: +44 (0)333 321 8811 E: enquiries@breglobal.com
LPCB is a Registered Trademark of the Building Research Establishment Ltd.

bre



LPCB®

Appendix to Certificate No: 1038BKa Issue: 01

Fire Inspection Services Pty Ltd

'FIS MENA' Fire Hose Reels to EN 671-1:2012

Product Name	Description	Hose Nominal Bore (mm)	Hose Maximum Length (m)	Nozzle type	LPCB Ref. No.
FIS-08-A	Manual, swinging arm, cabinet or wall mounted	19	30	Lever operated jet only or rotary operated jet/spray	1038BKa/01
FIS-07-B	Manual, swinging arm, cabinet or wall mounted	25	30	Lever operated jet only or rotary operated jet/spray	1038BKa/02
FIS-10-B	Automatic, swinging arm, cabinet or wall mounted	19	30	Lever operated jet only or rotary operated jet/spray	1038BKa/03
FIS-06-B	Automatic, swinging arm, cabinet or wall mounted	25	30	Lever operated jet only or rotary operated jet/spray	1038BKa/04

This certificate and appendix is maintained and held in force through regular surveillance activities

Signed for BRE Global Ltd.	Joe Milton Verifier	8 August 2024 Date of Issue	8 August 2024 Date of First Issue

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To check the validity of this certificate and appendix please visit www.redbooklive.com/check, scan the QR tag or contact us.
BRE Global Ltd, Watford, WD25 9XX
T: +44 (0)333 321 8811 E: enquiries@breglobal.com
LPCB is a Registered Trademark of the Building Research Establishment Ltd.

bre

LPCB Certificate of Compliance – Ampac

LPCB®

www.redbooklive.com

Certificate of Product Approval

Certificate Number: 966c Issue: 02

Ampac Pty Ltd

7 Ledgar Road,
Balcatta,
6021,
Australia

is certified by BRE Global Ltd. and is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix having complied with the requirement(s) of the standards as detailed below:

Products

Control and Indicating equipment
13U EvacU Elite Cabinet
24U EvacU Elite Cabinet

Standards

EN 54-4:1997 + A1:2002 + A2:2006
EN 54-16:2008

This Certificate is maintained and held in force through regular surveillance activities and subject to the corresponding ISO 9001 Certificate being maintained.

Signed for BRE Global Ltd	Verifier	Date of Issue	Date of First Issue
	S. David	28 February 2024	14 April 2022

bre

LPCB®

Appendix to Certificate No: 966c Issue: 02

Ampac Pty Ltd

Certified Product	Description	LPCB Ref.No.
13U EvacU Elite	Wall Mounted Voice Alarm Control and Indicating Equipment (VACIE) Incorporating the following mandatory modules: BRD63PDB1-A Power Distribution Board BRD63ABB1-A Amplifier Backplane Board BRD63CPU1-A Distribution CPU BRD63GUI1-A Graphical User Interface Primary ASS63CPU-NET EvacU Elite CPU Network incorporating: BRD63NIC1-A Network Interface Card ASS63PSU12M Primary Power Supply incorporating: BRD63PCC1-A Power Control Card - Primary RCB-1600-24 Meanwell Power Supply Network SFP Modules OEM3087 IC SFP VDSL Transceiver Module SFP-V5311-L-O "COPPER" OEM3088 IC SFP VDSL Transceiver Module SFP-V5311-L-R "COPPER" Incorporating the following optional modules: BRD63ILC1-A Quad Radial Line Card BRD63LILC1-A Dual Loop Line Card BRD63LPA1-A Dual 25W Amplifier BRD63LPA1-B 50W Amplifier BRD63MIC1-A Multi-Purpose Interface Card	966c/01

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Signed for BRE Global Ltd | S. David, Verifier | 28 February 2024, Date of Issue | 14 April 2022, Date of First Issue

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Appendix to Certificate No: 966c Issue: 02

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Certified Product	Description	LPCB Ref.No.
	BRD63MOC1-A Multi-Purpose Output Card BRD63GUI1-B Graphical User Interface Secondary ASS63PSU12S Secondary Power Supply incorporating: BRD63PCC1-B Power Control Card - Secondary RCB-1600-24 Meanwell Power Supply ASS63HPA High Power Amplifier 150W incorporating: BRD63HDC1-A HPA DC-DC Converter Board BRD63HPA1-A High Power Amplifier Board Certified with the following options with requirements from EN 54-16: 7.3 Audible warning 7.4 Delays to entering the voice alarm condition 7.5 Phased evacuation 7.6.2 Manual silencing of the voice alarm condition 7.7.2 Manual reset of the voice alarm condition 7.8 Output to fire alarm devices 7.9 Voice alarm condition output 8.3 Indication of faults related to the transmission path to the CIE 8.4 Indication of faults related to voice alarm zones 9 Disabled condition 10 Voice alarm manual control 12 Emergency microphone(s)	

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Appendix to Certificate No: 966c Issue: 02

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Certified Product	Description	LPCB Ref.No.
	Notes: 1. The ASS63WIPM Primary warden intercom phone, ASS63WIPS Radial WIP Handset and ASS63LWIP Loop WIP Handset were connected to the VACIE as ancillary equipment to verify the functionality only. 2. The OEM3095 EVACU Elite SFP Single Mode Single Fibre Side A (SFP-GE-BX, BIDI, 1000Base, 1310TX/1490nmRX, SMF, 10km, LC simplex, DOM) and OEM3096 EVACU Elite SFP Single Mode Single Fibre Side B (SFP-GE-BX, BIDI, 1000Base, 1490TX/1310nmRX, SMF, 10km, LC simplex, DOM) were functionally tested but were not subjected to the environmental and EMC tests.	
24U EvacU Elite	Floor Mounted Voice Alarm Control and Indicating Equipment (VACIE) Incorporating the following mandatory modules: BRD63PDB1-A Power Distribution Board BRD63ABB1-A Amplifier Backplane Board BRD63CPU1-A Distribution CPU BRD63GUI1-A Graphical User Interface Primary ASS63CPU-NET EvacU Elite CPU Network incorporating: BRD63NIC1-A Network Interface Card ASS63PSU12M Primary Power Supply incorporating: BRD63PCC1-A Power Control Card - Primary RCB-1600-24 Meanwell Power Supply Network SFP Modules OEM3087 IC SFP VDSL Transceiver Module SFP-V5311-L-O "COPPER"	966c/02

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Appendix to Certificate No: 966c Issue: 02

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Certified Product	Description	LPCB Ref.No.
	OEM3088 IC SFP VDSL Transceiver Module SFP-V5311-L-R "COPPER" Incorporating the following optional modules: BRD63ILC1-A Quad Radial Line Card BRD63LILC1-A Dual Loop Line Card BRD63LPA1-A Dual 25W Amplifier BRD63LPA1-B 50W Amplifier BRD63MIC1-A Multi-Purpose Interface Card BRD63MOC1-A Multi-Purpose Output Card BRD63GUI1-B Graphical User Interface Secondary ASS63PSU12S Secondary Power Supply incorporating: BRD63PCC1-B Power Control Card - Secondary RCB-1600-24 Meanwell Power Supply ASS63HPA High Power Amplifier 150W incorporating: BRD63HDC1-A HPA DC-DC Converter Board BRD63HPA1-A High Power Amplifier Board Certified with the following options with requirements from EN 54-16: 7.3 Audible warning 7.4 Delays to entering the voice alarm condition 7.5 Phased evacuation 7.6.2 Manual silencing of the voice alarm condition 7.7.2 Manual reset of the voice alarm condition	

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Appendix to Certificate No: 966c Issue: 02

Ampac Pty Ltd

Certified Product	Description	LPCB Ref.No.
	7.8 Output to fire alarm devices 7.9 Voice alarm condition output 8.3 Indication of faults related to the transmission path to the CIE 8.4 Indication of faults related to voice alarm zones 9 Disabled condition 10 Voice alarm manual control 12 Emergency microphone(s) Notes: 1. The ASS63WIPM Primary warden intercom phone, ASS63WIPS Radial WIP Handset and ASS63LWIP Loop WIP Handset were connected to the VACIE as ancillary equipment to verify the functionality only. 2. The OEM3095 EVACU Elite SFP Single Mode Single Fibre Side A (SFP-GE-BX, BIDI, 1000Base, 1310TX/1490nmRX, SMF, 10km, LC simplex, DOM) and OEM3096 EVACU Elite SFP Single Mode Single Fibre Side B (SFP-GE-BX, BIDI, 1000Base, 1490TX/1310nmRX, SMF, 10km, LC simplex, DOM) were functionally tested but were not subjected to the environmental and EMC tests.	

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Certificate of Product Approval

Certificate Number: 966d Issue: 01

Ampac Pty Ltd

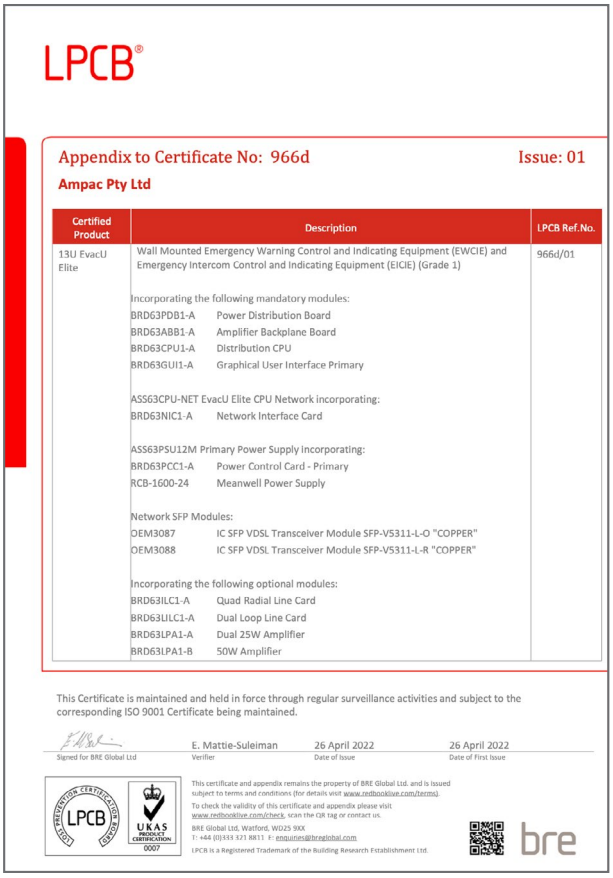
7 Ledgar Road,
Balcatta,
6021,
Australia

is certified by BRE Global Ltd. and is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix having complied with the requirement(s) of the standards as detailed below:

Products	Standards
Control and Indicating equipment	**AS4428.16:2020**
13U EvacU Elite Cabinet	**AS7240.4:2018**
24U EvacU Elite Cabinet	**AS4428.4:2016**

This Certificate is maintained and held in force through regular surveillance activities and subject to the corresponding ISO 9001 Certificate being maintained.

Signed for BRE Global Ltd	Verifier	Date of Issue	Date of First Issue
	E. Mattie-Suleiman	26 April 2022	26 April 2022



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Appendix to Certificate No: 966d Issue: 01

Ampac Pty Ltd

Certified Product	Description	LPCB Ref.No.
13U EvacU Elite	Wall Mounted Emergency Warning Control and Indicating Equipment (EWCIE) and Emergency Intercom Control and Indicating Equipment (EICIE) (Grade 1) Incorporating the following mandatory modules: BRD63PDB1-A Power Distribution Board BRD63ABB1-A Amplifier Backplane Board BRD63CPU1-A Distribution CPU BRD63GUI1-A Graphical User Interface Primary ASS63CPU-NET EvacU Elite CPU Network incorporating: BRD63NIC1-A Network Interface Card ASS63PSU12M Primary Power Supply Incorporating: BRD63PCC1-A Power Control Card - Primary RCB-1600-24 Meanwell Power Supply Network SFP Modules: OEM3087 IC SFP VDSL Transceiver Module SFP-V5311-L-O "COPPER" OEM3088 IC SFP VDSL Transceiver Module SFP-V5311-L-R "COPPER" Incorporating the following optional modules: BRD63ILC1-A Quad Radial Line Card BRD63LILC1-A Dual Loop Line Card BRD63LPA1-A Dual 25W Amplifier BRD63LPA1-B 50W Amplifier	966d/01

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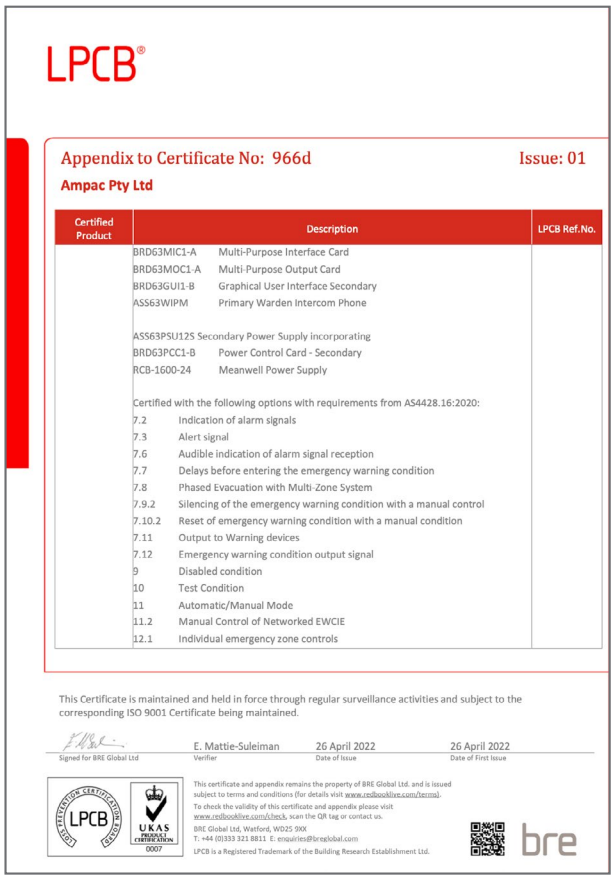
Signed for BRE Global Ltd	Verifier	Date of Issue	Date of First Issue
	E. Mattie-Suleiman	26 April 2022	26 April 2022



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Appendix to Certificate No: 966d Issue: 01

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Certified Product	Description	LPCB Ref.No.
	BRD63MIC1-A Multi-Purpose Interface Card BRD63MOC1-A Multi-Purpose Output Card BRD63GUI1-B Graphical User Interface Secondary ASS63WIPM Primary Warden Intercom Phone ASS63PSU12S Secondary Power Supply incorporating BRD63PCC1-B Power Control Card - Secondary RCB-1600-24 Meanwell Power Supply Certified with the following options with requirements from AS4428.16:2020: 7.2 Indication of alarm signals 7.3 Alert signal 7.6 Audible indication of alarm signal reception 7.7 Delays before entering the emergency warning condition 7.8 Phased Evacuation with Multi-Zone System 7.9.2 Silencing of the emergency warning condition with a manual control 7.10.2 Reset of emergency warning condition with a manual condition 7.11 Output to Warning devices 7.12 Emergency warning condition output signal 9 Disabled condition 10 Test Condition 11 Automatic/Manual Mode 11.2 Manual Control of Networked EWCIE 12.1 Individual emergency zone controls	

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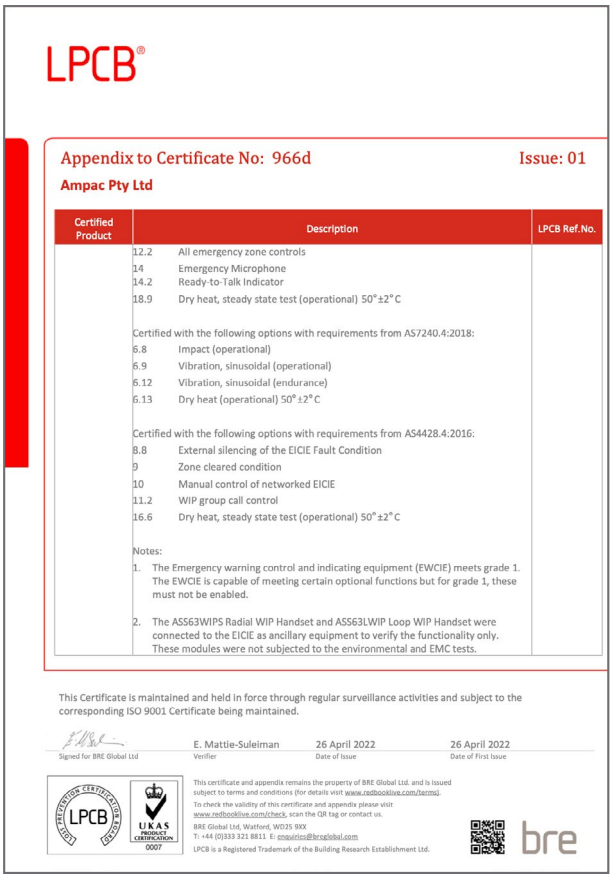
Signed for BRE Global Ltd	Verifier	Date of Issue	Date of First Issue
	E. Mattie-Suleiman	26 April 2022	26 April 2022



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Appendix to Certificate No: 966d Issue: 01

Ampac Pty Ltd

Certified Product	Description	LPCB Ref.No.
	12.2 All emergency zone controls 14 Emergency Microphone 14.2 Ready-to-Talk Indicator 18.9 Dry heat, steady state test (operational) 50°±2°C Certified with the following options with requirements from AS7240.4:2018: 6.8 Impact (operational) 6.9 Vibration, sinusoidal (operational) 6.12 Vibration, sinusoidal (endurance) 6.13 Dry heat (operational) 50°±2°C Certified with the following options with requirements from AS4428.4:2016: 8.8 External silencing of the EICIE Fault Condition 9 Zone cleared condition 10 Manual control of networked EICIE 11.2 WIP group call control 16.6 Dry heat, steady state test (operational) 50°±2°C Notes: 1. The Emergency warning control and indicating equipment (EWCIE) meets grade 1. The EWCIE is capable of meeting certain optional functions but for grade 1, these must not be enabled. 2. The ASS63WIPS Radial WIP Handset and ASS63LWIP Loop WIP Handset were connected to the EICIE as ancillary equipment to verify the functionality only. These modules were not subjected to the environmental and EMC tests.	

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	E. Mattie-Suleiman	26 April 2022	26 April 2022

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Appendix to Certificate No: 966d Issue: 01

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Certified Product	Description	LPCB Ref.No.
	3. The OEM3095 EVACU Elite SFP Single Mode Single Fibre Side A (SFP-GE-BX, BIDI, 1000Base, 1310TX/1490nmRX, SMF, 10km, LC simplex, DOM) and OEM3096 EVACU Elite SFP Single Mode Single Fibre Side B (SFP-GE-BX, BIDI, 1000Base, 1490TX/1310nmRX, SMF, 10km, LC simplex, DOM) were functionally tested but were not subjected to the environmental and EMC tests.	
24U EvacU Elite	Floor Mounted Emergency Warning Control and Indicating Equipment (EWCIE) and Emergency Intercom Control and Indicating Equipment (EICIE) (Grade 1) Incorporating the following mandatory modules: BRD63PDB1-A Power Distribution Board BRD63ABB1-A Amplifier Backplane Board BRD63CPU1-A Distribution CPU BRD63GUI1-A Graphical User Interface Primary ASS63CPU-NET EvacU Elite CPU Network incorporating: BRD63NIC1-A Network Interface Card ASS63PSU12M Primary Power Supply incorporating BRD63PCC1-A Power Control Card - Primary RCB-1600-24 Meanwell Power Supply Network SFP Modules OEM3087 IC SFP VDSL Transceiver Module SFP-V5311-L-O "COPPER" OEM3088 IC SFP VDSL Transceiver Module SFP-V5311-L-R "COPPER"	966d/02

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Appendix to Certificate No: 966d Issue: 01

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Certified Product	Description	LPCB Ref.No.
	Incorporating the following optional modules: BRD63ILC1-A Quad Radial Line Card BRD63LILC1-A Dual Loop Line Card BRD63LPA1-A Dual 25W Amplifier BRD63LPA1-B 50W Amplifier BRD63MIC1-A Multi-Purpose Interface Card BRD63MOC1-A Multi-Purpose Output Card BRD63GUI1-B Graphical User Interface Secondary ASS63WIPM Primary Warden Intercom Phone ASS63PSU12S Secondary Power Supply incorporating BRD63PCC1-B Power Control Card - Secondary RCB-1600-24 Meanwell Power Supply Certified with the following options with requirements from AS4428.16:2020: 7.2 Indication of alarm signals 7.3 Alert signal 7.6 Audible indication of alarm signal reception 7.7 Delays before entering the emergency warning condition 7.8 Phased Evacuation with Multi-Zone System 7.9.2 Silencing of the emergency warning condition with a manual control 7.10.2 Reset of emergency warning condition with a manual condition 7.11 Output to Warning devices 7.12 Emergency warning condition output signal	

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Certified Product	Description	LPCB Ref.No.
	9 Disabled condition 10 Test Condition 11 Automatic/Manual Mode 11.2 Manual Control of Networked EWCIE 12.1 Individual emergency zone controls 12.2 All emergency zone controls 14 Emergency Microphone 14.2 Ready-to-Talk Indicator 18.9 Dry heat, steady state test (operational) 50°±2°C Certified with the following options with requirements from AS7240.4:2018: 6.8 Impact (operational) 6.9 Vibration, sinusoidal (operational) 6.12 Vibration, sinusoidal (endurance) 6.13 Dry heat (operational) 50°±2°C Certified with the following options with requirements from AS4428.4:2016: 8.8 External silencing of the EICIE Fault Condition 9 Zone cleared condition 10 Manual control of networked EICIE 11.2 WIP group call control 16.6 Dry heat, steady state test (operational) 50°±2°C	

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Appendix to Certificate No: 966d Issue: 01

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Certified Product	Description	LPCB Ref.No.
	Notes: 1. The Emergency warning control and indicating equipment (EWCIE) meets grade 1. The EWCIE is capable of meeting certain optional functions but for grade 1, these must not be enabled. 2. The ASS63WIPS Radial WIP Handset and ASS63LWIP Loop WIP Handset were connected to the EICIE as ancillary equipment to verify the functionality only. These modules were not subjected to the environmental and EMC tests. 3. The OEM3095 EVACU Elite SFP Single Mode Single Fibre Side A (SFP-GE-BX, BIDI, 1000Base, 1310TX/1490nmRX, SMF, 10km, LC simplex, DOM) and OEM3096 EVACU Elite SFP Single Mode Single Fibre Side B (SFP-GE-BX, BIDI, 1000Base, 1490TX/1310nmRX, SMF, 10km, LC simplex, DOM) were functionally tested but were not subjected to the environmental and EMC tests.	

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Civil Defence Certification

United Arab Emirates
Ministry of Interior
General Directorate of Civil Defense

دولة الامارات العربية المتحدة
وزارة الداخلية
القيادة العامة للدفاع المدني

رقم الترخيص : 404940-3-2024
سنة الترخيص : 2024
عدد التراخيص : 1

ترخيص وكيل

تم إصدار الترخيص استنادا إلى القرار الوزاري رقم (24) لسنة 2012 ، في شأن تنظيم خدمات الدفاع المدني

الاسم التجاري للمنشأة	المقر للتجارة ذ.م.م.ش.ش.و	رقم الرخصة	908682	رقم السجل	2024-3-404940
اسم صاحب الترخيص	علي خالد محمد ال بخيت الفلاسي	الجنسية	الإمارات العربية المتحدة		
نوع النشاط	تجارة معدات واجهزة السلامة واطفاء الحريق – بالجملة , تجارة مواد مكافحة واطفاء الحريق – بالجملة			منطقة النشاط	الشارقة
رقم الهاتف	0551551507	رقم الفاكس		ص.ب	78147
عنوان الشركة	ميغا مول تاور – خلف ميغا مول , بوداتق الشارقة الشارقة				
الموقع و البريد الإلكتروني	mk@sfpmena.com				
تاريخ تأسيس المنشأة	02/08/2024	تاريخ الإصدار	22/11/2024	تاريخ الانتهاء	01/08/2025
عدد المعدات و الأجهزة المراد ترخيصها	6				
عدد المهندسين المعتمدين	1	عدد الفنيين المعتمدين	1		

– تم تسديد الرسوم بإيصال رقم (104177499272688671118)

mohamad04 - 22/11/2024 11:30 AM - نسخة رقم 1

رؤيتنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة

تم إصدار الشهادة إلكترونياً ولا تحتاج إلى توقيع

3 / 1

United Arab Emirates
Ministry of Interior
General Directorate of Civil Defense

دولة الامارات العربية المتحدة
وزارة الداخلية
القيادة العامة للدفاع المدني

رقم الترخيص : 404940-3-2024
سنة الترخيص : 2024
عدد التراخيص : 1

الاسم التجاري للمنشأة : المقر للتجارة ذ.م.م.ش.ش.و

م	اسم المعدة/المواد/النظام	الاسم التجاري	بلد الصنع	رقم قيد الوكالة	منطقة الوكالة	تاريخ انتهاء قيد الوكالة	رقم شهادة السلامة	اسم المختبر الصادر للشهادة
1	المرشات الطفائية/الخراطيم/نقطة تزويد المياه/الأنظمة المائية : الصمام المؤشر	FIS MENA	الصين	20294	الشارقة	27/10/2025	HLXS.EX294 11	UL UNDERWRITERS LABORATORIES INC. USA
	رقم الموديل : BVG-001,BVW-001							
2	المرشات الطفائية/الخراطيم/نقطة تزويد المياه/الأنظمة المائية : الصمامات البوابية	FIS	الصين	20294	الشارقة	27/10/2025	HMRZ.EX294 10	UL UNDERWRITERS LABORATORIES INC. USA
	رقم الموديل : OSY-FRD,OSY-RED, OSY-FRA, NRS-FRD, NRS-RED,NRS-FRA,							
3	المرشات الطفائية/الخراطيم/نقطة تزويد المياه/الأنظمة المائية : الصمامات البوابية	FIS MENA	الصين	20294	الشارقة	27/10/2025	HMRZ.EX294 10	UL UNDERWRITERS LABORATORIES INC. USA
	رقم الموديل : OSY-FRD,OSY-RED,OSY-FRA,NRS-FRD,NRS-RED,NRS-FRA,							

ملاحظة:
1 . يعتبر الوكيل مرخص من قبل الإدارة العامة للدفاع المدني – الشارقة و يحق له مزاولة نشاطه في إمارة الشارقة فقط، استنادا إلى قرار مجلس الوزاري رقم (24) لسنة 2012 في شأن تنظيم المدني للائحة التنفيذية رقم (213) لسنة 2017 ، و لا يحق له مزاولة أنشطته في باقي الإمارات إلا بعد استخراج ترخيص موزع من قبل الإدارات العامة ذات الاختصاص بكل إمارة.
2 . يحق للوكيل تركيب و صيانة المعدات المراد تداولها و المسجلة بترخيصه فقط.
3 . إبلاغ الإدارة العامة للدفاع المدني في حالة تغيير أو تعديل في البيانات المتعلقة في ترخيص الصادر من قبل الإدارة العامة للدفاع المدني.

mohamad04 - 22/11/2024 11:30 AM - نسخة رقم 1

رؤيتنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة

تم إصدار الشهادة إلكترونياً ولا تحتاج إلى توقيع

3 / 2

United Arab Emirates
Ministry of Interior
General Directorate of Civil Defense

دولة الامارات العربية المتحدة
وزارة الداخلية
القيادة العامة للدفاع المدني

رقم الترخيص : 404940-3-2024
سنة الترخيص : 2024
عدد التراخيص : 1

الاسم التجاري للمنشأة : المقر للتجارة ذ.م.م.ش.ش.و

م	اسم المعدة/المواد/النظام	الاسم التجاري	بلد الصنع	رقم قيد الوكالة	منطقة الوكالة	تاريخ انتهاء قيد الوكالة	رقم شهادة السلامة	اسم المختبر الصادر للشهادة
4	المرشات الطفائية/الخراطيم/نقطة تزويد المياه/الأنظمة المائية : صمام التحكم بالضغط	FIS MENA	الصين	20303	الشارقة	30/10/2025	VUJX.EX294 13	UL UNDERWRITERS LABORATORIES INC. USA
	رقم الموديل : Pressure-reducing and -Restricting Devices Model(s):FIS282 (1.1/2 Female x Male)FIS282 (1.1/2 Female x (Female)FIS282(2. 1/2 Female x Female)FISJ282 (2. 1/2 Female x Male							
5	المرشات الطفائية/الخراطيم/نقطة تزويد المياه/الأنظمة المائية : صمام الإشراف	FIS MENA	الصين	20303	الشارقة	30/10/2025	VTSR.EX294 12	UL UNDERWRITERS LABORATORIES INC. USA
	رقم الموديل : (Hose Valves Model(s): FIS281 (1.1/2 Female x Female)FIS281 (1.1/2 Female x Male)FIS281 (2.1/2 Female x Female)FIS281 (2.1/2 Female x Male							
6	المرشات الطفائية/الخراطيم/نقطة تزويد المياه/الأنظمة المائية : الخراطيم	FIS MENA	الصين	20310	الشارقة	05/11/2025	1038BKa Issue 01	BRE GLOBAL LTD, UNITED KINGDOM
	رقم الموديل : Fire Hose Reels Model(s):FIS-08-A, FIS-07-B, FIS- 10-B, FIS-06-B,							

ملاحظة:
1 . يعتبر الوكيل مرخص من قبل الإدارة العامة للدفاع المدني – الشارقة و يحق له مزاولة نشاطه في إمارة الشارقة فقط، استنادا إلى قرار مجلس الوزاري رقم (24) لسنة 2012 في شأن تنظيم المدني للائحة التنفيذية رقم (213) لسنة 2017 ، و لا يحق له مزاولة أنشطته في باقي الإمارات إلا بعد استخراج ترخيص موزع من قبل الإدارات العامة ذات الاختصاص بكل إمارة.
2 . يحق للوكيل تركيب و صيانة المعدات المراد تداولها و المسجلة بترخيصه فقط.
3 . إبلاغ الإدارة العامة للدفاع المدني في حالة تغيير أو تعديل في البيانات المتعلقة في ترخيص الصادر من قبل الإدارة العامة للدفاع المدني.

mohamad04 - 22/11/2024 11:30 AM - نسخة رقم 1

رؤيتنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة

تم إصدار الشهادة إلكترونياً ولا تحتاج إلى توقيع

3 / 3

Establishment Compliance Certificate (Headquarter)

حكومة الشارقة
هيئة الشارقة للدفاع المدني
Government of Sharjah
Sharjah Civil Defense Authority

شهادة استيفاء منشأة

رقم الشهادة	صلاحية الشهادة	حررت بتاريخ	رقم ملف المنشأة	رقم الطلب	رقم إيصال الدفع
A EST-1-2024-63882085	من 02/08/2024 الى 01/08/2025	26/08/2024	EF-2024-02448029	EST-24-016381	400000160718

المنشأة
المقر للتجارة ذ.م.م.ش.ش.و
908682 . الحارة الاقتصادية - الشارقة

العنوان الرئيسي تم الاضافة يوم 26/08/2024
مدينة الشارقة - بوداية - محمد احمد محمد أحمد
سعيد القاسمي - مكتب # 4003-07

رقم الارض
260 ملك | 504 | 506 | 508 منحة

أنشطة المنشأة
- تجارة مواد مكافحة واطفاء الحريق - بالجملة
- تجارة معدات واجهزة السلامة واطفاء الحريق - بالجملة

أطراف الرخصة
علي خالد محمد ال بخيت الفلاسي — الإمارات العربية المتحدة

لا يوجد أنشطة مواد خطرة

الشهادة صادرة إلكترونياً ولا تحتاج إلى توقيع أو ختم رسمي
أي كشط او تعديل في هذه الشهادة يلغيها

الشروط و الاحكام

- أي تعديلات في أنظمة وأجهزة ومعدات السلامة والوقاية من الحريق أو النشاط يتطلب موافقة من الدفاع المدني
- توفير شهادة استيفاء المنشأة سنوياً بعد انتهاء صلاحية الشهادة
- توضع الشهادة في مكان بارز وواضح
- يتم تطبيق لائحة المخالفات الصادرة بقرار المجلس التنفيذي رقم 10 لسنة 2020 في حال عدم الالتزام باشتراطات الدفاع المدني

للطوارئ 997 "سلامة المجتمع مسؤولية الجميع" هاتف 06-5163333 الموقع الالكتروني shjcd.gov.ae موقع الخدمة الذكية smartservices.shjcd.gov.ae

MOHAMAD FAIEZ KHAL...
نسخة رقم 1
p 02:14 26/08/2024

صفحة 1 - 1

Federal Certificate of Completion

United Arab Emirates
Ministry of Interior
General Directorate of Civil Defense

دولة الامارات العربية المتحدة
وزارة الداخلية
القيادة العامة للدفاع المدني

الرقم: 2024-3-404940

شهادة استيفاء شروط السلامة الوقائية

صدرت هذه الشهادة استنادا إلى قرار مجلس الوزراء رقم (24) لسنة 2012 م في شأن تنظيم خدمات الدفاع المدني بالدولة

الاسم التجاري للمنشأة : المقر للتجارة ذ.م.م.ش.ش.و — **رقم الرخصة :** 908682 (تجاري) — **رقم الأرض :**

المالك: علي خالد محمد ال بخيت الفلاسي — **الجنسية:** الإمارات العربية المتحدة

العنوان: خلف ميغا مول- بوداية - الشارقة — **صلاحية الشهادة:** من 05/09/2024 إلى 04/09/2025 — **حررت بتاريخ:** 05/09/2024

ملاحظات:
- تم تسديد الرسوم بإيصال رقم ().
- يجب الإلتزام بإعتماد عقود الصيانة الدورية لأجهزة ومعدات السلامة والوقاية من الحريق من إحدى الشركات المعتمدة.
- أي تعديلات في أنظمة وأجهزة السلامة والوقاية من الحريق أو النشاط يتطلب موافقة مسبقة من الدفاع المدني.
- يجب ربط المبنى بنظام حصنتك لحماية المباني - رقم التواصل (800333363).
- في حال الإخلال بأي من اشتراطات السلامة الوقائية سيتم مخالفة المنشأة (نموذج المخالفات خلف الشهادة).
- توضع الشهادة في مكان بارز وواضح للعيان.
- مراجعة الدفاع المدني سنوياً للكشف على المبنى.
- يرجى الانتهاء من إجراءات التدريب خلال 60 يوم كحد أقصى و إلا سوف تتعرض المنشأة للمساءلة القانونية وفقا لقرار مجلس الوزارة رقم 24 لسنة 2012 م.

هاتف: 5163333 - 06 فاكس: 5654278 - 06 الموقع الالكتروني: www.shjcd.gov.ae
نظام الشكاوى والمقترحات: www.fms.ae

للطوارئ
997
999
Emergency

رؤيتنا أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم في تحقيق الأمن و السلامة

نسخة رقم 1 - 05/09/2024 09:46 AM - mohamad04

1 / 1 تم إصدار الشهادة إلكترونياً ولا تحتاج إلى توقيع

Trading License

GOVERNMENT OF SHARJAH
Economic Development Department

حكومة الشارقة
دائرة التنمية الاقتصادية

رخصة تجارية
Trading License

908682

License Details — تفاصيل الرخصة

Issue Date	02-08-2024	تاريخ الإصدار	License No.	908682	رقم الرخصة
Expiry Date	02-08-2025	تاريخ الإنتهاء	Registration No.	907662	رقم السجل
				المقر للتجارة ذ.م.م.ش.ش.و	الاسم التجاري
Trade Name	HEADQUARTERS TRADING L.L.C SP				
Legal status	Individual Company L.L.C			شركة ذات مسؤولية محدودة – الشخص الواحد (ذ م م)	الشكل القانوني

License Members — أطراف الرخصة

الحصص Shares	الصفة Type	رقم الهوية / الجواز ID \ Passport No	الجنسية Nationality	اسم المستثمر Investor Name	رقم المستثمر Investor No
100.0 %	المالك Owner	784199074958242	الإمارات UAE	علي خالد محمد ال بخيت الفلاسي ALI KHALID MOHAMMAD ALBAKHIT ALFALASI	4997163

المدير	محمد سوري مهتدي
أنشطة الرخصة	تجارة مواد مكافحة واطفاء الحريق - بالجملة,تجارة معدات واجهزة السلامة واطفاء الحريق - بالجملة
العنوان	الشارقة-بودانق/الشارقة-- خلف شارع الملك عبدالعزيز مكتب رقم 07-4003 طابق رقم 4 ملك محمد أحمد سعيد القاسمي
الهاتف المتحرك:	0501532315
صندوق البريد:	الشارقة 0
البريد الالكتروني:	legal@arada.com

User Name 39737 | رقم المستخدم | Printing Date 05-08-2024 | تاريخ الطباعة

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www.sedd.ae 80080000

ISO Certificate

CERTIFICATE OF APPROVAL

This is to Certify that the Management System of

HEADQUARTERS TRADING L.L.C SP
P.O Box: 78147, Office No. 4003-7, Floor No. 4, Owner Mohamed Ahmad Said Al- Qassimi, Behind King Abdul Aziz Street, Du Danig, Sharjah, UAE

has been assessed by Technical Standards Institute to the following Management System Standard:

ISO 9001 : 2015
Quality Management System
to the below applicable scope

Trade in Fire Fighting and Extinguishing Materials - Wholesale,
Trade in Safety and Fire Extinguishing Equipment and Devices - Wholesale

Certificate No: TQM/AE325/03570909
Initial Registration Date: 03 September 2024
Issuance Date: 09 September 2024
Date of Expiry: 08 September 2027
Revision: 00

1st Surveillance Due: 30 August 2025
2nd Surveillance Due: 30 August 2026

To verify the certificate please scan the above QR code.

Email: info@techstandi.com
Website: www.techstandi.com

Registered Accreditation Office: Accredited by World Accreditation Systems (WAS) Suite 2A, Blackthorn House, St. Pauls Square, Birmingham, B3 1RL, UK
This certificate is subject to the maintenance of management system to the required standards by the organization, which will be assessed by TSI
The use of this certificate and the TSI certification mark are subject to the regulations applicable to holders of TSI Certificates.
This certificate is the property of TSI and shall be returned when requested. It may only be returned when requested.
It may only be reproduced in its entirety and without change.

Chamber of Commerce Certificate

غرفة تجارة وصناعة الشارقة
Sharjah Chamber of Commerce & Industry

شهادة عضوية
Membership Certificate

شهادة تسجيل عضوية لعام
Membership Registration Certificate For Year

2024

إن غرفة تجارة وصناعة الشارقة بناءً على قانونها رقم (٩) لعام ٢٠١٨م
Sharjah Chamber of Commerce and Industry according to the law no. (9) 2018

قد سجلت المقر للتجارة ذ.م.م.ش.ش.و
Company Name: HEADQUARTERS TRADING L.LC SP

رقم العضوية : 248186
Membership Number:

رقم الترخيص : 908682
License NO:

رقم السجل التجاري : 907662
Commercial Registration NO:

الجنسية : الامارات
Nationality:

الفئة : المتناز ع م
Category:

الشكل القانوني : شركة الشخص الواحد / ذات مسئولية محدودة (ذ م م)
Legal Form:

جنسية الشركاء : الامارات
Partners Nationality:

العنوان : الشارقة-بودانق/الشارقة-- خلف شارع الملك عبدالعزيز مكتب رقم 07-4003 طابق رقم 4 ملك محمد أحمد سعيد القاسمي
Address: SHARJAH-BU DANG-King Abdul Aziz Street Office No 4003-07 Floor No 4

لممارسة نشاط : تجارة معدات واجهزة السلامة واطفاء الحريق - بالجملة ، تجارة مواد مكافحة واطفاء الحريق - بالجملة
Activity: , Fire Fighting & Safety Equipment Wholesale , Fire Extinguishing Materials Wholesale

ملاحظات :
Remarks:

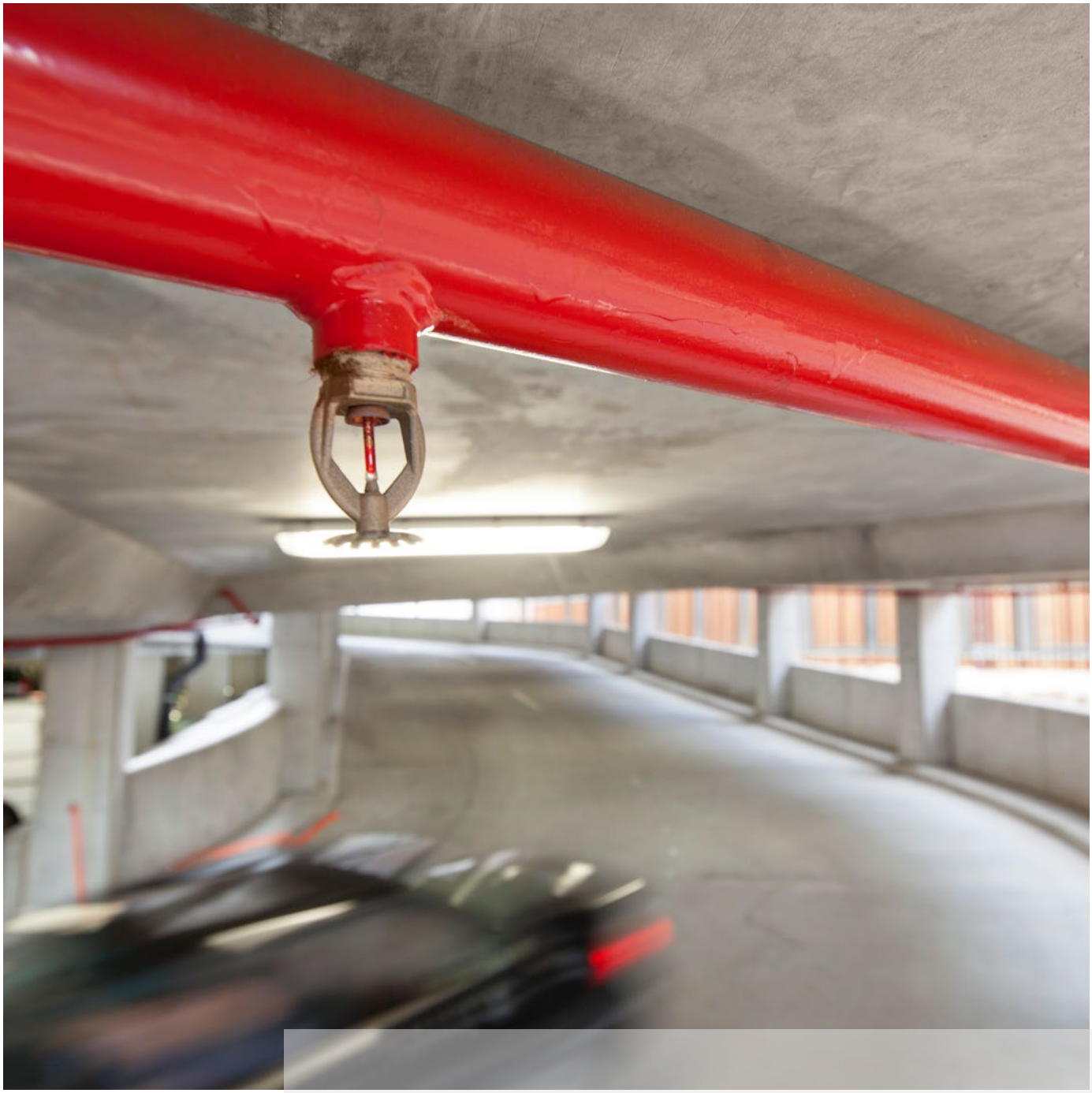
SEDD

تاريخ الإنتهاء 2/8/2025

تاريخ الإصدار 2/8/2024

غرفة تجارة وصناعة الشارقة
Sharjah Chamber of Commerce & Industry
HEAD OFFICE المركز الرئيسي

M 308494



Statutory Approvals

Civil Defence

UL Certificate

FM Certificate

LPCB Certificate

Trading License

Ministry of Economy

Chamber of Commerce

rhinotek

DESIGNED, INNOVATED & ENGINEERED IN **AUSTRALIA**

Our Investment in the UAE

Rhinotek began operations in the UAE from a 300,000-square-foot warehouse in Aljada, Sharjah, and has since grown into a leader in the supply of fire protection products and consultancy services.

The company invests heavily in its on-site R&D facility, equipped with a fully operational fire system, where customers, authorities, and licensing agencies are invited to test, train, and collaborate alongside factory-trained staff.

Rhinotek's products are meticulously designed, engineered, and manufactured under strict quality protocols. Its advanced facilities feature state-of-the-art ordering, packing, and dispatch technology to ensure an efficient and streamlined experience for clients.

All Rhinotek staff undergo comprehensive training and education at manufacturers' facilities across Australia, Europe, and Asia, ensuring expertise in every stocked product. Quarterly inspections by internal and third-party ISO inspectors, along with batch testing, guarantee consistent quality across Rhinotek's and its partners' manufacturing facilities worldwide.

Proudly 100% UAE-owned and operated, Rhinotek is staffed by a dedicated team of internationally experienced engineers, managers, and industrial designers, bringing innovative and reliable fire protection solutions to the UAE market.

rhinotek

Gate 2, Aljada Logistics Area,
Behind Arada Project Management
Office, Near Airport Road,
Muweilah, 22436, Sharjah

rhinotek.ae