

## PURPLE Category Industrial Components

The Purple category includes industrial components that typically are installed in industrial facilities and often have special certification such as Factory Mutual or ATEX. This category includes fixed gallonage industrial master stream nozzles, manual and remote control monitors, and hydrant related valves.

### Components Included In The Category

ZN Series Nozzles  
ZM Series Nozzles  
ZO Series Nozzles  
Masterstream 4000  
Masterstream 5000

Protector  
Manual Monitors

ATEX Certified Monitors

Industrial Valve Under Monitor  
Hydrant Under Monitor  
Booster  
Booster OSC

Flanged OSC Monitor  
Tornado OSC Monitor

Oasis Under Monitor

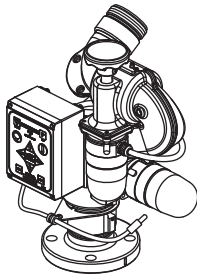
## ATEX MONITORS

TFT ATEX RC Monitors are electrically operated with high flow and low friction loss characteristics. Designed for 12 VDC or 24 VDC operation, selection is automatic. Horizontal and elevation stream positions are controlled by strong DC motors and a factory installed control panel mounted on the monitor. Position encoders and current limiting are used to protect the drive train at the ends of travel. Field changeable stops for horizontal rotation and elevation are included. Available with various inlets and outlets. TFT's ERP nozzle plugs into the factory installed nozzle power wire. Electric drives and control box are waterproof, meeting requirements for an IP65 rating. Main waterway made from hardcoat anodized ANSI 356-T6 aluminum with red powder coat finish inside and out.

TFT ATEX RC Monitors are designed, tested and approved for use in Classified Hazardous Locations as defined by European Directive 94/9/EC, commonly referred to as the ATEX Directive. Further classification identifies that Zone 2, Category 3 environments are suitable locations for this equipment. It is important to note that only the RC Monitor and Nozzle are certified for installation in the hazardous area. TFT RC Monitor Operator Stations may be used to control monitor functions, but must be installed outside of the hazardous area according to application requirements. It is the responsibility of the facility design engineer to determine suitable location and connection of components for use in the hazardous environment based on electrical, mechanical, hydraulic, and hazardous location classification requirements.

TFT ATEX RC Monitors are shipped for use with wired controls/operator stations. For 2.4 GHz wireless control, please consult factory for ordering details.

**Tornado**  
\$9590.00  
Information  
Page 148

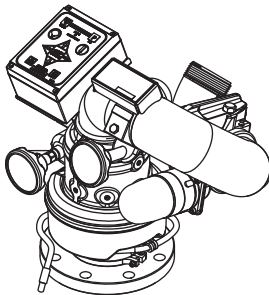


**Y2-E**

Inlet		Outlet
1) 2.5"-7.5 NH Female	6) 2.5" ANSI 150	1) 2.5"-7.5 NH Male
2) 2.5"-11 BSP Female	7) 2.5"-8 NPT Female	2) 2.5"-11 BSP Male
3) 2.0"-11 BSP Female	8) 2.0"-11.5 NPT Female	3) 1.5"-11 BSP Male
5) DN80, PN16	9) 3.0" -8 NPT Female	4) 1.5"-9 NH Male

**A-A**

**Hurricane**  
\$10355.00  
Information  
Page 156

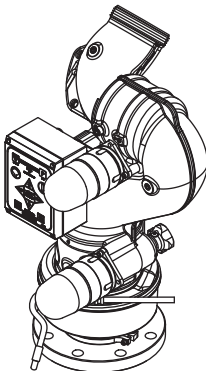


**XFIH-E**

Inlet		Outlet
1) 3" ANSI 150	6) 3" NPT Female	1) 2.5" - 7.5 NH Male (65mm)
2) 4" ANSI 150	7) 4" NPT Female	2) 2.5" - 11 BSP Male (65mm)
4) DN80, PN16	8) 3" BSP Male	
5) DN100, PN16	9) 4" BSP Male	

**A-A**

**Typhoon**  
\$10935.00  
Information  
Pages 160

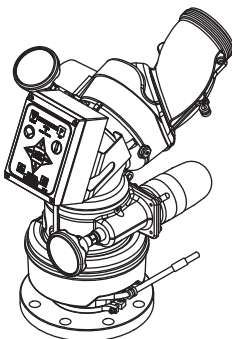


**Y5-E**

Inlet		Outlet
1) 3" ANSI 150	6) 3" NPT Female	1) 3.5"-6 NH Male
2) 4" ANSI 150	7) 4" NPT Female	2) 3.5"-11 BSP Male
5) DN100, PN16		4) 4.0"-11 BSP Male

**A-A**

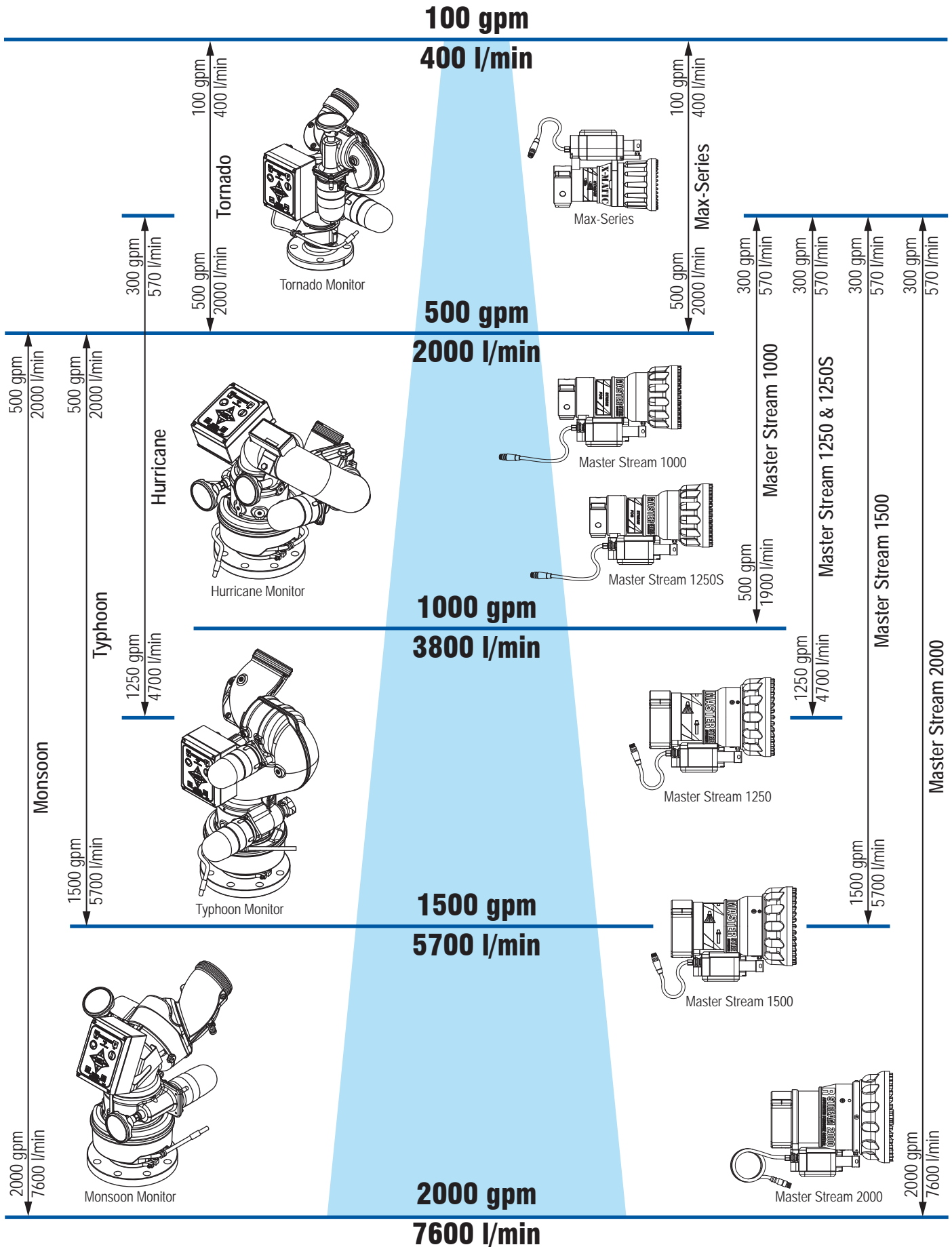
**Monsoon**  
\$11500.00  
Information  
Page 168



**Y4-E**

Inlet		Outlet
1) 3" ANSI 150	6) 3" NPT Female	1) 3.5"-6 NH Male
2) 4" ANSI 150	7) 4" NPT Female	2) 3.5"-11 BSP Male
3) 6" ANSI 150	8) 3" BSP Male	3) 3.5"-8 NPSH Male
4) DN80, PN16	9) 4" BSP Male	4) 4.0"-11 BSP Male
5) DN100, PN16		

**A-A**



## INDUSTRIAL NOZZLES

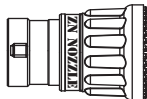
The Task Force Tips fixed gpm water nozzle is a simple and rugged industrial nozzle with superior stream quality and reach. This fixed gallonage fog nozzle rated at 100 psi (7 bar) is available with your choice of 350, 500, or 750 (1300, 2000, or 3000 l/min). fog angle is user adjustable between 120 degree wide fog and straight stream. The nozzle's baffle can be removed with a wrench for flushing debris. The standard inlet is 2.5" NH, NPSH, or BSP (65mm) female thread. The simple and basic design requires no grease or other maintenance. The rubber bumper is UV resistant. The fixed gpm water nozzle is Hardcoat anodized ANSI A356.0 T6 aluminum. The fixed gpm nozzle can be used with water or premixed foam solution.

### ZN11A

**\$575.00**

4.5 lb (2.0kg)

6.00" (15.2cm)



Choose your model from the chart on page 203. For example, model ZN12A is 2.5" NH female thread, 500 gpm at 100 psi nozzle. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

### SAMPLE PART NUMBER

Specify Thread and Flow by  
number from chart

## ZM INDUSTRIAL NOZZLES

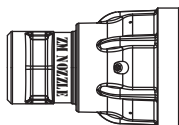
The Task Force Tips fixed gpm water nozzle is a simple and rugged industrial nozzle with superior stream quality and reach. This fixed gallonage fog nozzle rated at 100 psi (7 bar) is available with your choice of 500, 750, 1000, or 1250 (2000, 3000, 4000, or 4750 l/min). Fog angle is user adjustable between 120 degree wide fog and straight stream. The nozzle's baffle can be removed with a wrench for flushing debris. The standard inlet is 2.5" NH, NPSH, or BSP (65mm) female thread. The simple and basic design requires no grease or other maintenance. The fixed gpm water nozzle is powdercoated and hardcoat anodized ANSI A356.0 T6 aluminum. The fixed gpm nozzle can be used with water or premixed foam solution.

### ZM131

**\$810.00**

7.2 lb (3.3kg)

8.80" (22.4cm)



Choose your model from the chart on page 203. For example, model ZM131 is 2.5" NH female thread, 1000 gpm at 100 psi nozzle. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

### SAMPLE PART NUMBER

Specify Thread and Flow by  
number from chart



1000 gpm and 1250 gpm ZM Industrial nozzles are FM Approved.

## ZO INDUSTRIAL NOZZLES

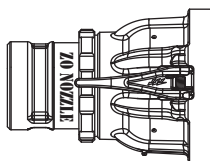
The Task Force Tips fixed gpm water nozzle is a simple and rugged industrial nozzle with superior stream quality and reach. This fixed gallonage fog nozzle at 100 psi (7 bar) is available with your choice of 1250, 1500, 1750, or 2000 (4750, 5500, 6750, or 7500 l/min). Fog angle is user adjustable between 120° wide fog and straight stream. Folding handles ease moving the shaper from full fog to straight stream. A locking ring can set the nozzle at a desired fog position. The nozzle's baffle can be removed with a wrench for flushing debris. The standard inlet is 3.5" NH or BSP (80mm) female thread. The simple and basic design requires no grease or other maintenance. The nozzle is powdercoated and hardcoat anodized ANSI A356.0 T6 aluminum. It can be used with water or premixed foam solution.

### ZO12

**\$1120.00**

22.0 lb (9.9kg)

11.60" (29.4cm)



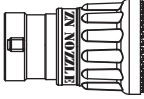
Choose your model from the chart on page 203. For example, model ZO13 is 3.5" NH female thread, 1750 gpm at 100 psi nozzle. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

### SAMPLE PART NUMBER

Specify Thread and Flow by  
number from chart



2.5" (65mm) Nozzle Series  
250, 350, 500 or 750 gpm Fixed Gallonage



Choose one option from each category. For example Model ZN12A is 2.5" NH Female thread, 500 gpm at 100 psi nozzle. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

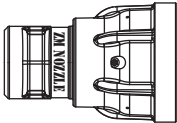
**ZN**

THREADS (Rigid)	FLOW
1) 2.5"-7.5 TPI NH FEMALE 2) 2.5"-11 TPI BSP FEMALE 3) 2.5"-11.5 TPI NPSH FEMALE 4) 2.5" CODE-AT (CSA)  (2.5" = 65mm)	0) 250 GPM @ 100 PSI — Kfactor = 25 (950 l/min @ 7 bar) 1) 350 GPM @ 100 PSI — Kfactor = 35 (1300 l/min @ 7 bar) 2) 500 GPM @ 100 PSI — Kfactor = 50 (2000 l/min @ 7 bar) 3) 750 GPM @ 100 PSI — Kfactor = 75 (3000 l/min @ 7 bar) 4) User Specified Kfactor = 15 - 75

**A**

ZM INDUSTRIAL NOZZLES

2.5" (65mm) Nozzle Series  
500, 750, 1000 or 1250 gpm Fixed Gallonage



Choose one option from each category. For example Model ZM111 is 2.5" NH Female thread, 500 gpm at 100 psi nozzle. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

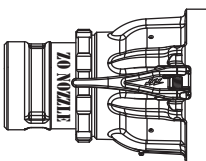
**ZM**

THREADS (Rigid)	FLOW
1) 2.5"-7.5 TPI NH FEMALE 2) 2.5"-11.5 TPI NPSH FEMALE 3) 2.5"-11 TPI BSP FEMALE  (2.5" = 65mm)	1) 500 GPM @ 100 PSI — Kfactor = 50 (2000 l/min @ 7 bar) 2) 750 GPM @ 100 PSI — Kfactor = 75 (3000 l/min @ 7 bar) 3) 1000 GPM @ 100 PSI — Kfactor = 100 (3800 l/min @ 7 bar) 4) 1250 GPM @ 100 PSI — Kfactor = 125 (4800 l/min @ 7 bar) 9) User Specified Kfactor = 50 - 125

**1**

ZO INDUSTRIAL NOZZLES

3.5" (80mm) Nozzle Series  
1250, 1500, 1750 or 2000 gpm Fixed Gallonage



Choose one option from each category. For example Model ZO11 is 3.5" NH Female thread, 1250 gpm at 100 psi nozzle. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

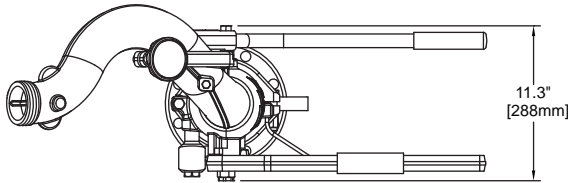
**ZO**

THREADS (Rigid)	FLOW
1) 3.5"-6 NH FEMALE 2) 3.5"-11 BSP FEMALE  (3.5" = 80mm)	1) 1250 GPM @ 100 PSI - Kfactor = 125 (4800 l/min @ 7 bar) 2) 1500 GPM @ 100 PSI - Kfactor = 150 (6000 l/min @ 7 bar) 3) 1750 GPM @ 100 PSI - Kfactor = 175 (6600 l/min @ 7 bar) 4) 2000 GPM @ 100 PSI - Kfactor = 200 (7600 l/min @ 7 bar) 9) User Specified Kfactor = 125 - 200

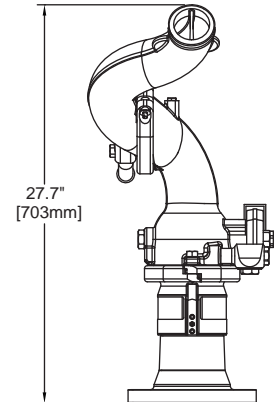
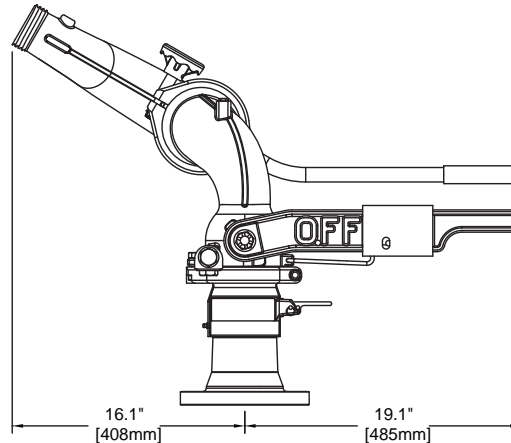


## Fixed Station Monitor - Up To 1250 GPM

The Task Force Tips' Protector is a simple and rugged fixed station monitor with many unique features. Its patented waterway gives low friction loss and delivers water to the nozzle with fewer twists and turns than a conventional monitor. The optional built-in on/off valve with position indicator eliminates the need to add a costly valve to the monitor installation. The Protector is capable of flowing up to 1250 gpm (4500 l/min) while maintaining a FULL 360° rotational ability. The lever-action rotational lock is activated in one motion, visually confirmed, and securely holds the monitor's horizontal position. The Protector can be directly bolted to many common pipe flanges. The outlet is available with various 2.5" (65mm) male threads. The simple and basic design requires no grease application or other maintenance. Swiveling elements and seals (including valve seat) can be replaced within a few minutes with common hand tools. Threaded ports (0.25" NPT) (6mm) are provided for drain valve (included) and pressure gauge installation. Maximum pressure is 250 psi (17 bar). The Protector is hardcoat anodized ANSI 356-T6 aluminum and is fully powder coat finished inside and out. Swivel clamps, 3" (75mm) valve ball, trunnions, and hardware are 18-8 stainless steel.



**OPTIONAL 6" FLANGE  
INLET ADAPTER  
AVAILABLE**

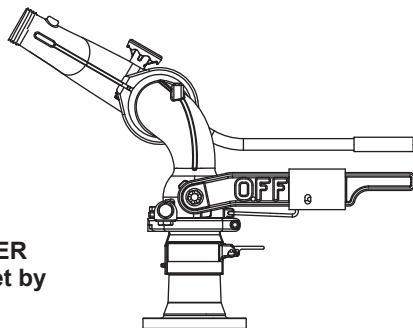


### INLET SPECIFICATIONS

FITS FLANGE	OUTSIDE DIAMETER	THICKNESS	BOLT HOLE CIRCLE	NUMBER OF BOLTS	SIZE OF BOLTS
3" ANSI 125/150 - DN80 PN20	7.50" / 190 mm	0.75" / 20 mm	6.00" / 152.5 mm	4	5/8" / M16
4" ANSI 150 - DN100 PN20	9.00" / 230 mm	0.94" / 3 mm	7.50" / 90.5 mm	8	5/8" / M16
DN80 PN16	200 mm	22 mm	160 mm	8	16 mm
DN100 PN16	220 mm	22 mm	180 mm	8	16 mm

**Z1111A**  
**\$2345.00**  
35.2 lb (15.7kg)

**SAMPLE PART NUMBER**  
Specify Inlet and Outlet by  
number from chart



**Z11**

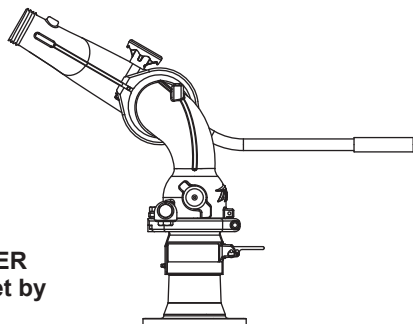
**Valve with Threaded Exit** - Protector monitor with on/off valve and 2.5" (65mm) threaded exit. 1250 gpm (4500 l/min) rating. See chart to obtain model number for specific inlet and outlet options.

Inlet	Outlet
1) 3" ANSI 150	1) 2.5" (65mm) - 7.5 NH
2) 4" ANSI 150	2) 2.5" (65mm) - 11 BSP
4) DN80, PN16	3) 2.5" (65mm) - 11.5 NPSH
5) DN100, PN16	9) SPECIAL THREADS

**A**

**Z1211A**  
**\$1760.00**  
27.8 lb (12.6kg)

**SAMPLE PART NUMBER**  
Specify Inlet and Outlet by  
number from chart



**Z12**

**No Valve with Threaded Exit** - Protector monitor without on/off valve and with 2.5" (65mm) threaded exit. 1250 gpm (4500 l/min) rating. See chart to obtain model number for specific inlet and outlet options.

Inlet	Outlet
1) 3" ANSI 150	1) 2.5" (65mm) - 7.5 NH
2) 4" ANSI 150	2) 2.5" (65mm) - 11 BSP
4) DN80, PN16	3) 2.5" (65mm) - 11.5 NPSH
5) DN100, PN16	9) SPECIAL THREADS

**A**



## Industrial Valve Under Monitor

The 4" Integrated Valve Under Monitor (IVUM) is a robust, low friction loss valve intended for installation directly beneath monitors on standpipes with 4" ANSI 150 or DN 100 PN16 flange connections. Maximum operation pressure is 300 psi (21 bar). Dual reflective valve position indicators allow 360 degree visual confirmation from a distance in all light conditions. The inlet flange, half ball and valve seat retainer are available in either hard anodized 6061-T6 aluminum or 316 stainless steel. Several options are available for monitor connection, as described below. When integrated with a TFT monitor (side B option X), the monitor flange is omitted to reduce weight, up-front cost and future maintenance expenses.

All models are equipped with an external automatic drain valve to fully drain the monitor and valve body after use, thus minimizing susceptibility to damage from corrosion and freezing water. An optional internal automatic drain valve located within the half ball allows the standpipe to draw atmospheric air to facilitate draining, even while the half ball is closed. It is beneficial in applications where the standpipe will typically be drained following use, especially where freezing conditions are a concern.

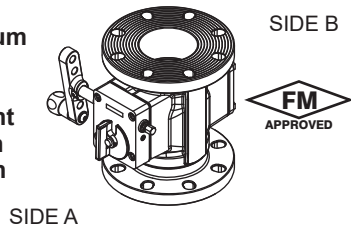
**Electrically controlled versions of these models are available.**

**(Electronic versions are not FM approved.)**

**Customer service should be contacted for availability and configurations.**

### Dimensional Maximum ZAA\*\*

23.7 lb (10.8 kg)  
10.1" (25.7 cm) height  
11.7" (29.7 cm) width  
11.6" (29.5 cm) depth



FM Approved for use with  
FM Approved Monitors

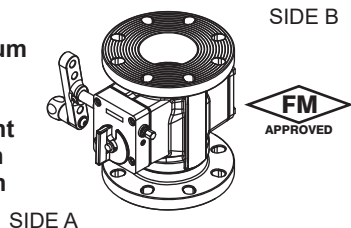
### Aluminum 4" ANSI 150 inlet

#### ZAA

Drain Option	SIDE B OUTLET	
D) Additional Drain in Half Ball Z) External Drain Only	O) No Side B Adapter (fits ZCH-Series Booster) X) CODE-RRF for Intergrated TFT Typhoon, Moonson or Hurricane Monitor	<b>\$1515.00</b>
	1) CODE-RPM male threaded outlet 3) 4" ANSI 150 Flange 5) 3" ANSI 150 Flange Q) 4.5" NH Quick Connect for Large Monitors T) 2.5" NH Quick Connect for Tornado V) Integrated Tornado (no coupling)	<b>\$1685.00</b>

### Dimensional Maximum ZAS\*\*

35.0 lb (15.9 kg)  
10.1" (25.7 cm) height  
11.7" (29.7 cm) width  
11.6" (29.5 cm) depth

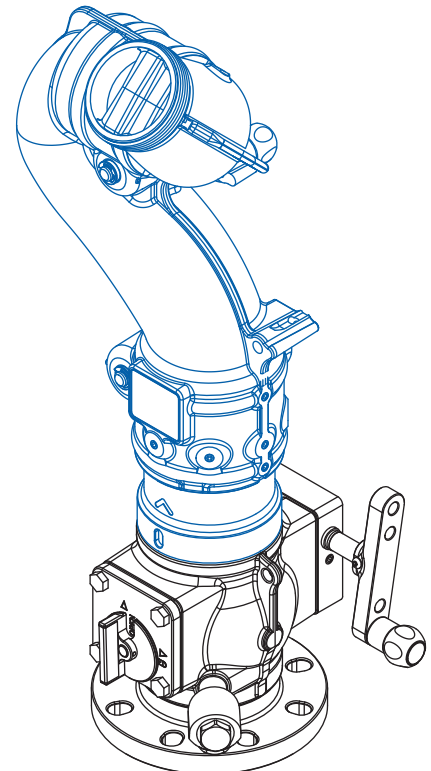


FM Approved for use with  
FM Approved Monitors

### Stainless Steel 4" ANSI 150 inlet

#### ZAS

Drain Option	SIDE B OUTLET	
D) Additional Drain in Half Ball Z) External Drain Only	O) No Side B Adapter (fits ZCH-Series Booster) X) CODE-RRF for Intergrated TFT Typhoon, Moonson or Hurricane Monitor	<b>\$1835.00</b>
	1) CODE-RPM male threaded outlet 3) 4" ANSI 150 Flange 5) 3" ANSI 150 Flange Q) 4.5" NH Quick Connect for Large Monitors T) 2.5" NH Quick Connect for Tornado V) Integrated Tornado (no coupling)	<b>\$1990.00</b>



Model ZAAZX or ZASZX  
For Integrated TFT Monitor  
(Typhoon Monitor Shown Not Included)

**AA9FL-FP** Aluminum SIDE A adapter to use ZAA models on 3" ANSI 150 standpipes. Height is 2" (5.1 cm). Not recommended for ZAS models. **\$200.00**

**AA9FP-FX** - Aluminum SIDE A adapter to use ZAA models on 6" ANSI 150 standpipes. Height 2.0" (5.1 CM) not recommended for ZAS models. **\$255.00**

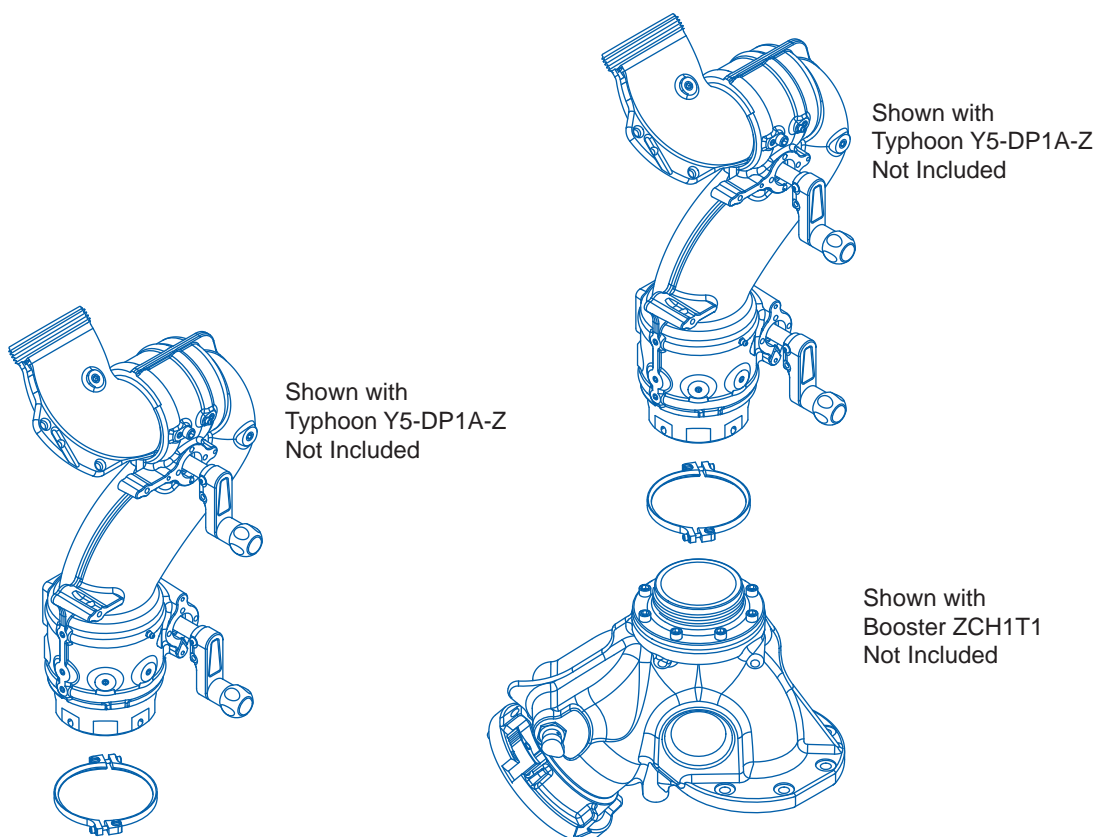
## HYDRANT UNDER MONITOR

The Hydrant Under Monitor (HUM) adds two versatile full flow LDH ports to the robust features of the Industrial Valve Under Monitor. Maximum operating pressure is 300 psi (21 bar). Two concentric slow-close half ball valves allow the monitor to be operated either independently or simultaneously with the LDH ports. The main shutoff valve has a huge 5.25" waterway, located immediately above the 6" ANSI 150 inlet flange. When the monitor valve above is also open, flow to the monitor from the standpipe is completely unobstructed for the lowest possible friction loss. Each valve control is clearly marked with separate color-coded position indicators that are retro-reflective for visibility in all light conditions. The cast A356-T6 aluminum valve body and all structural 6061-T6 aluminum components are hard anodized, and the inlet flange and valve body are powder coated red for additional resistance to galvanic corrosion.

Several options are available for monitor and hose connections, as described on the following pages. When integrated with a TFT monitor (side B option 1), the monitor flange is omitted to reduce weight, up-front cost and future maintenance expenses. Both LDH ports C1 and C2 can be configured with a Storz coupling, a male threaded spout, or a gated wye, with connection sizes ranging from 1.5" up to 6.0". All LDH connections are supplied with a pressure cap, and port C2 can also be configured with a blind plug for no charge if only one hose connection is needed.

For further versatility, the Booster can be mated between the HUM and monitor to allow pressure to be boosted using a pump or foam to be introduced. Choose side B option 0 (zero) for this option and see separate catalog section for Booster options.

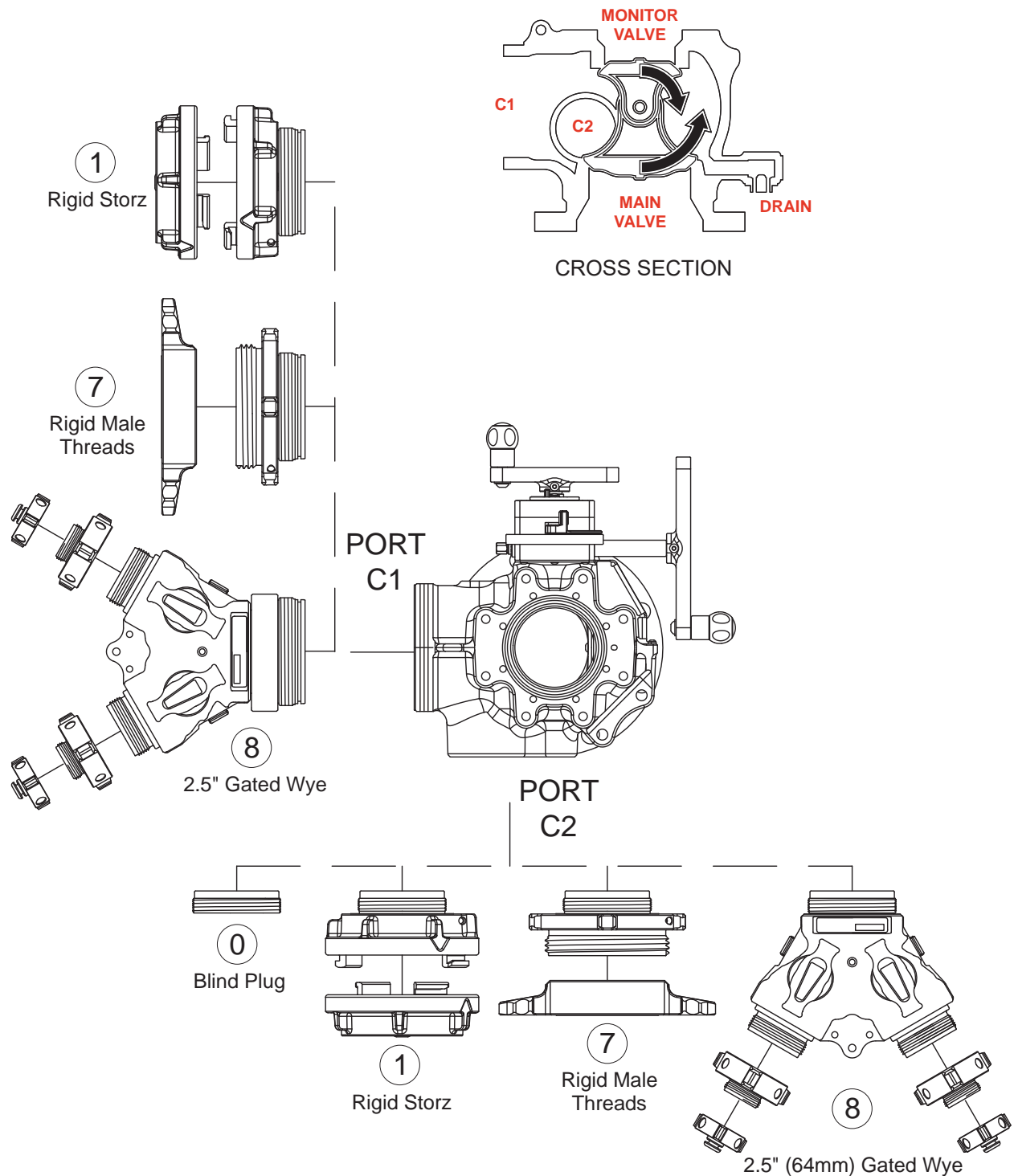
All models are equipped with an external automatic drain valve and a 2nd automatic drain valve within the monitor half ball. These valves fully drain the monitor and valve body after each use when pressure drops below 5 psi, thus minimizing susceptibility to damage from corrosion and freezing water. An optional 3rd automatic drain valve located within the main shutoff half ball allows the standpipe to draw atmospheric air to facilitate draining, even while the half ball is closed. It is beneficial in applications where the standpipe will typically be drained following use, especially where freezing conditions are a concern.



Hydrant Under Monitor  
ZBAZ11T1T

Hydrant Under Monitor  
ZBAZ01T1T



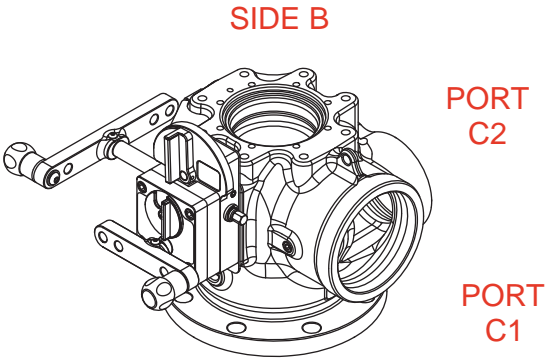


AUXILIARY PORT SPECIFICATIONS AND PRICING For Ports C1 & C2	
0) Blind Plug (port C2 only)	1) N/C
1) Rigid Storz (includes cap)	2) N/C
7) Rigid Male Threads (includes cap)	3) N/C
8) 2.5" Gated Wye (includes 2.5" x 1.5" reducers and 1.5"NH caps)	4) N/C

HYDRANT UNDER MONITOR

AUXILIARY PORT SPECIFICATIONS AND PRICING For Ports C1 & C2	
0) Blind Plug (port C2 only)	N/C
1) Rigid Storz (includes cap)	N/C
7) Rigid Male Threads (includes cap)	N/C
8) 2.5" Gated Wye (includes 2.5" x 1.5" reducers and 1.5"NH caps)	N/C

Dimensional Maximums  
\$4490.00  
Weight 64.0 lb (29.0 kg)  
Height 13.1 in (33.3 cm)  
Width 25.0 in (63.5 cm)  
Depth 27.0 in (68.6 cm)

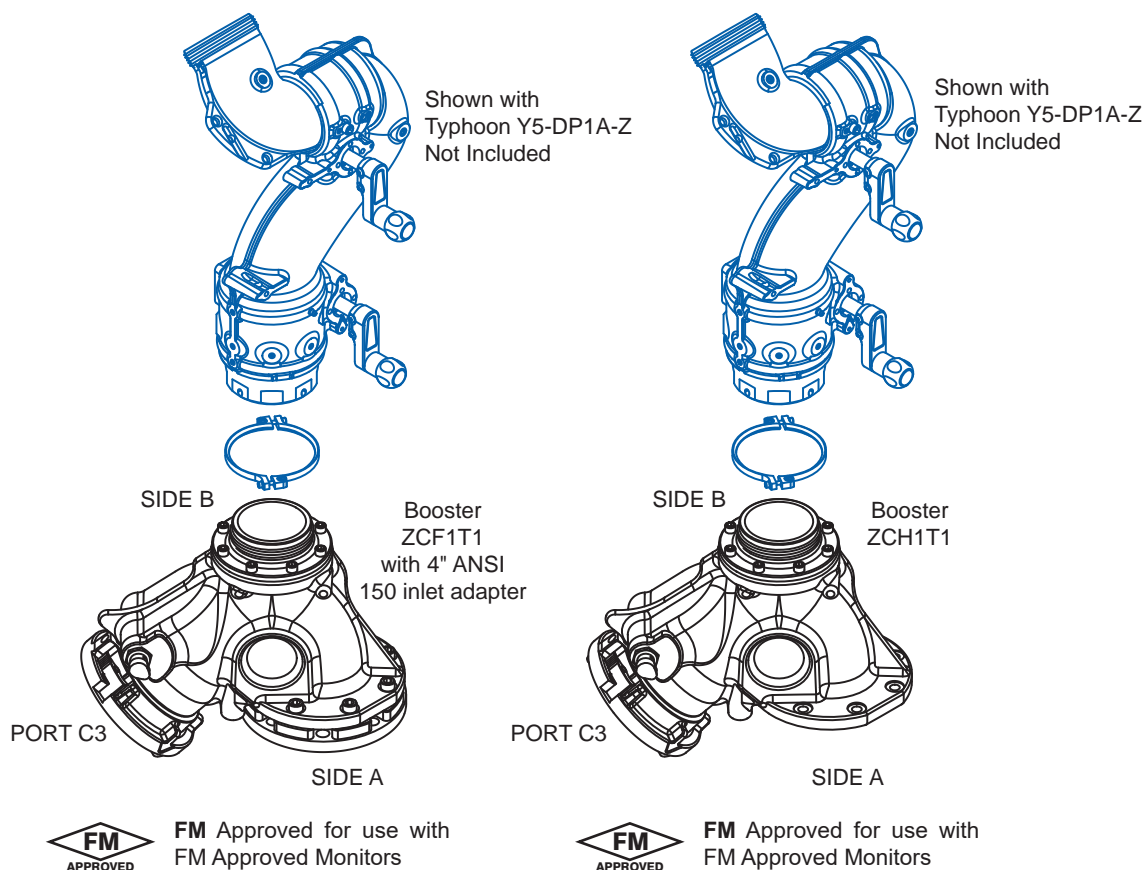


ZBA

Drain Option	Side B	Port C1 With Cap		Port C2 With Cap	
D) Drain in main half ball Z) External Drain Only	0) No Side B Adapter (fits ZCH-series Booster) 1) Code-RPM 3) 4" ANSI 150 Q) 4.5" NH Quick Connect T) 2.5" NH Quick Connect V) Integrated Tornado (no coupling)	STYLE 1) Rigid Storz 7) Rigid Male Threads 8) 2.5" Gated Wye (Size J Only)	SIZE J) 2.5" N) 3.5" P) 4.0" R) 4.5" T) 5.0" X) 6.0"	STYLE 0) Blind Plug* 1) Rigid Storz 7) Rigid Male Threads 8) 2.5" Gated Wye (Size J Only)	SIZE 0) N/A* J) 2.5" N) 3.5" P) 4.0" R) 4.5" T) 5.0"

\*Port C2 Blind plug requires "00" (two zeros), one for Style and one for Size.

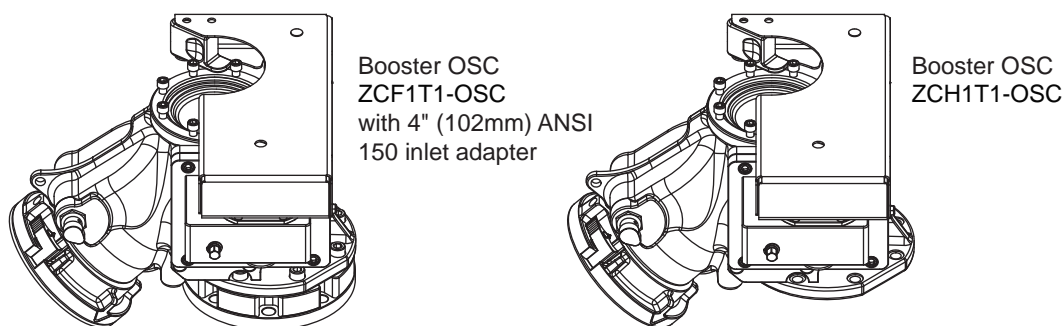
The Booster provides a secondary supply inlet for monitors rated up to 2500 gpm (9400 l/min), allowing pressure to be boosted using a pump and/or foam to be introduced. An LDH hose or in-line foam eductor may be connected to the secondary inlet with optional Storz or female hose threads ranging from 3.5" up to 6.0". A swing check valve within the secondary inlet allows connections to be made while the monitor is flowing from the main inlet (standpipe). The main inlet can be configured for direct connection to a TFT Hydrant Under Monitor (HUM) or Industrial Valve Under Monitor (IVUM). Alternately, the main inlet can be adapted to a 3" or 4" ANSI 150 bolt pattern. Several options are available for monitor connection. Integration with a TFT monitor (side B option 1) allows two additional flanges to be omitted. Avoiding flanges on both sides of the Booster substantially reduces the height, weight and cost. The cast A356-T6 aluminum body and all structural 6061-T6 aluminum components are hard anodized, and the inlet flange and body are powder coated for additional resistance to galvanic corrosion. All models are equipped with an external automatic drain valve. This allows the monitor and Booster to be fully drained after each use when pressure drops below 5 psi, thus minimizing susceptibility to damage from corrosion and freezing water.



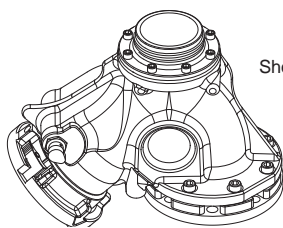
# BOOSTER OSC

The Booster OSC adds the capability to oscillate a TFT monitor horizontally up to 120 degrees using energy from a water-driven turbine. All of the turbine water exits the monitor nozzle, thus avoiding the water expelled below the monitor that plagues other manufacturers' oscillating units. Oscillation is activated by water flow from 1000 gpm to 2000 gpm (3800 to 7600 l/min), supplied either from the main inlet or secondary inlet of the Booster. Oscillating sweep angle can be adjusted from zero to 120 degrees in 10 degree increments at any time while oscillating or stationary, without removing the hard anodized safety guard that encloses the oscillating mechanism. Oscillating pattern can be verified without flowing water, using a 1/2" hex wrench. Oscillating speed is directly proportional to flow rate, and is 4 cycles per minute at 2000 gpm (7600 l/min) with the default pulley set installed. An alternate pulley set stored within the safety guard allows the oscillating speed to be doubled by exchanging the pulleys using common hand tools.

The Booster OSC is compatible with TFT Monsoon, Typhoon and Hurricane monitors that are specified with inlet option W) swivel base.



## OPTIONAL 6" FLANGE INLET ADAPTER AVAILABLE



Booster ZCF1T1  
Shown With 4" ANSI 150  
Inlet Adapter



FM Approved for use with  
FM Approved Monitors

### Dimensional Maximum ZCH\*\*\*

29.9 lb (13.6 kg)  
10.9" (27.7 cm) height  
17.4" (44.2 cm) width  
8.8" (22.4 cm) depth

**ZCH**  
\$1630.00

### Booster for direct-connection to HUM or IVUM and TFT Monitor

Port C3 Relay Inlet			Side B outlet
Style	Size	T) 5" X) 6"	1) CODE-RPM for TFT monitor integration Q) 4.5"NH Quick Connect for Lg. Monitors T) 2.5"NH Quick Connect for Tornado V) Integrated Tornado (no coupling)
1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	N) 3.5" P) 4" R) 4.5"		

### Dimensional Maximum ZCH\*\*3

32.1 lb (14.6 kg)  
11.4" (29.0 cm) height  
17.4" (44.2 cm) width  
8.8" (22.4 cm) depth

**ZCH**  
\$1630.00

### Booster for direct connection to HUM or IVUM; 4" ANSI 150 outlet

Port C3 Relay Inlet			Side B outlet
			<b>3</b>
Style	Size	T) 5" X) 6"	3) 4" ANSI 150
1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	N) 3.5" P) 4" R) 4.5"		

### Dimensional Maximum ZCF\*\*\*

36.5 lb (16.6 kg)  
12.2" (31.0 cm) height  
17.5" (44.5 cm) width  
8.9" (22.6 cm) depth

**ZCF**  
\$1630.00

### Booster with 4" ANSI 150 inlet adapter and direct-connection to TFT Monitor

Port C3 Relay Inlet			Side B outlet
Style	Size	T) 5" X) 6"	1) CODE-RPM for TFT monitor integration Q) 4.5"NH Quick Connect for Lg. Monitors T) 2.5"NH Quick Connect for Tornado
1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	N) 3.5" P) 4" R) 4.5"		

### Dimensional Maximum ZCF\*\*3

38.7 lb (17.6 kg)  
12.7" (32.3 cm) height  
17.5" (44.5 cm) width  
8.9" (22.6 cm) depth

**ZCF**  
\$1630.00

### Booster with 4" ANSI 150 inlet adapter and 4" ANSI 150 outlet

Port C3 Relay Inlet			Side B outlet
			<b>3</b>
Style	Size	T) 5" X) 6"	3) 4" ANSI 150
1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	N) 3.5" P) 4" R) 4.5"		

### Dimensional Maximum ZCG\*\*\*

36.5 lb (16.6 kg)  
12.2" (31.0 cm) height  
17.5" (44.5 cm) width  
8.9" (22.6 cm) depth

**ZCG**  
\$1630.00

### Booster with 3" ANSI 150 inlet adapter and direct-connection to TFT Monitor

Port C3 Relay Inlet			Side B outlet
Style	Size	T) 5" X) 6"	1) CODE-RPM for TFT monitor integration Q) 4.5"NH Quick Connect for Lg. Monitors T) 2.5"NH Quick Connect for Tornado
1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	N) 3.5" P) 4" R) 4.5"		

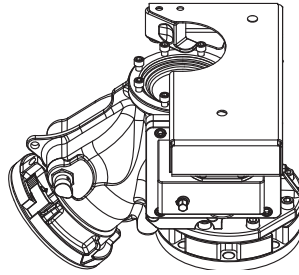
### Dimensional Maximum ZCG\*\*3

38.7 lb (17.6 kg)  
12.7" (32.3 cm) height  
17.5" (44.5 cm) width  
8.9" (22.6 cm) depth

**ZCG**  
\$1630.00

### Booster with 3" ANSI 150 inlet adapter and 4" ANSI 150 outlet

Port C3 Relay Inlet			Side B outlet
			<b>3</b>
Style	Size	T) 5" X) 6"	3) 4" ANSI 150
1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	N) 3.5" P) 4" R) 4.5"		



Booster OSC  
ZCF1T1-OSC  
with 4" ANSI 150  
inlet adapter

**Dimensional Maximum**  
**ZCH\*\*-OSC**  
32.1 lb (14.6 kg)  
11.4" (29.0 cm) height  
17.4" (44.2 cm) width  
8.8" (22.4 cm) depth

**ZCH**  
**\$4400.00**

**Booster OSC for direct connection to HUM or IVUM**

Port C3 Relay Inlet			Side B outlet
			<b>-OSC</b>
Style 1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	Size N) 3.5" P) 4" R) 4.5"	T) 5" X) 6"	-OSC) Accepts TFT monitor with option W swivel base

**Dimensional Maximum**  
**ZCF\*\*-OSC**  
38.7 lb (17.6 kg)  
12.7" (32.3 cm) height  
17.5" (44.5 cm) width  
8.9" (22.6 cm) depth

**ZCF**  
**\$4400.00**

**Booster OSC with 4" ANSI 150 inlet adapter**

Port C3 Relay Inlet			Side B outlet
			<b>-OSC</b>
Style 1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	Size N) 3.5" P) 4" R) 4.5"	T) 5" X) 6"	-OSC) Accepts TFT monitor with option W swivel base

**Dimensional Maximum**  
**ZCG\*\*-OSC**  
38.7 lb (17.6 kg)  
12.7" (32.3 cm) height  
17.5" (44.5 cm) width  
8.9" (22.6 cm) depth

**ZCG**  
**\$4400.00**

**Booster OSC with 3" ANSI 150 inlet adapter**

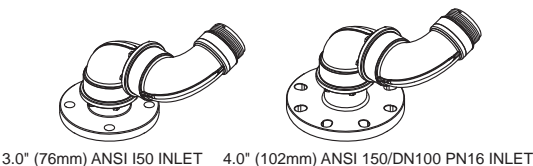
Port C3 Relay Inlet			Side B outlet
			<b>-OSC</b>
Style 1) Storz Rigid w/ Cap 4) Female Rocker Lug (NFS)	Size N) 3.5" P) 4" R) 4.5"	T) 5" X) 6"	-OSC) Accepts TFT monitor with option W swivel base



FLANGED MONITOR SERIES

The Flanged Oscillating Monitor can be used for exposure protection, cooling, or any other situation where it is desirable to have a monitor sweep back and forth. It is intended for mounting on fixed piping structures and is offered with a 3" ANSI I50 or 4" ANSI I50 150/DN100 PN16 inlet flange. The Flanged Oscillating Monitor operates between 20 degrees either side of center, and is adjustable to 90 degrees up and 45 degrees down relative to the flange. The maximum flow rate is 500 gallons per minute. The sweep can be set for a 20, 30, or 40 degree sweep. The oscillating mechanism can be disengaged and the stream can be aimed manually. The speed of the oscillator is a function of the flow rate.

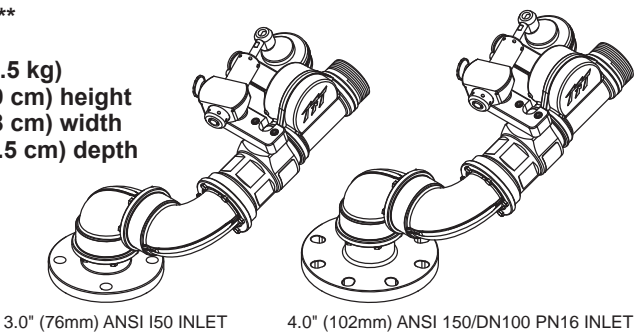
XX-\*\*  
\$945.00  
11.5 lb (5.2kg)  
6.7" (16.9 cm) height  
7.4" (18.8 cm) width  
5.9" (14.9 cm) depth



XX-

SIDE A - Inlet Flange	SIDE B - Outlet
A) 3" ANSI 150 B) 4" ANSI 150/DN100 PN16	A) 2.5" NH B) 2.5" BSP C) 2.5" NPSH D) SPECIAL THREADS

XX-OSC-\*\*  
\$2575.00  
21.0 lb (9.5 kg)  
6.7" (16.9 cm) height  
7.4" (18.8 cm) width  
16.3" (41.5 cm) depth



XX-OSC-

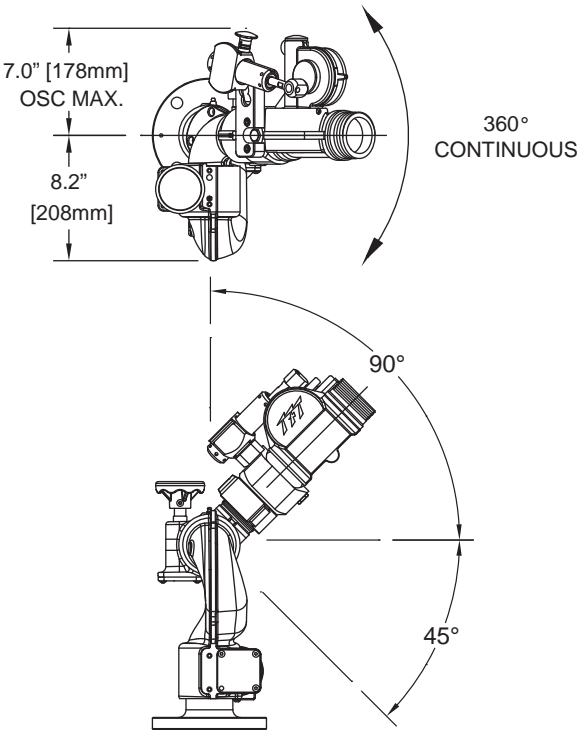
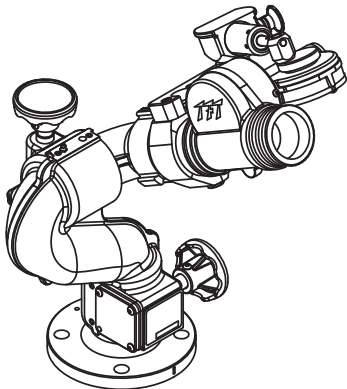
SIDE A - Inlet Flange	SIDE B - Outlet
A) 3" ANSI 150 B) 4" ANSI 150/DN100 PN16	A) 2.5" NH B) 2.5" BSP C) 2.5" NPSH D) SPECIAL THREADS

OPTIONAL 6" FLANGE INLET  
ADAPTER AVAILABLE



Rated up to 500 gpm, the Tornado OSC is a truck-mounted or fixed installation monitor. The monitor outlet shall have a user adjustable sweep pattern of 20°, 30°, or 40° automatic oscillating sweep pattern with manual override. The oscillating outlet component can be rotated to allow side to side, up and down, or any angle in between. An internal water-driven turbine shall power the oscillation without discharging water to the ground below the unit. The handwheels shall provide elevation control from 90° above horizontal to 45° below horizontal, and a full 360° continuous horizontal rotation. User installed travel limit stops shall be included. The monitor shall be constructed of hard coat anodized aluminum alloy and shall have a red powder coat finish inside and out. Various flange inlets shall be available (specify). Unit shall have serial number and a 5-year warranty.

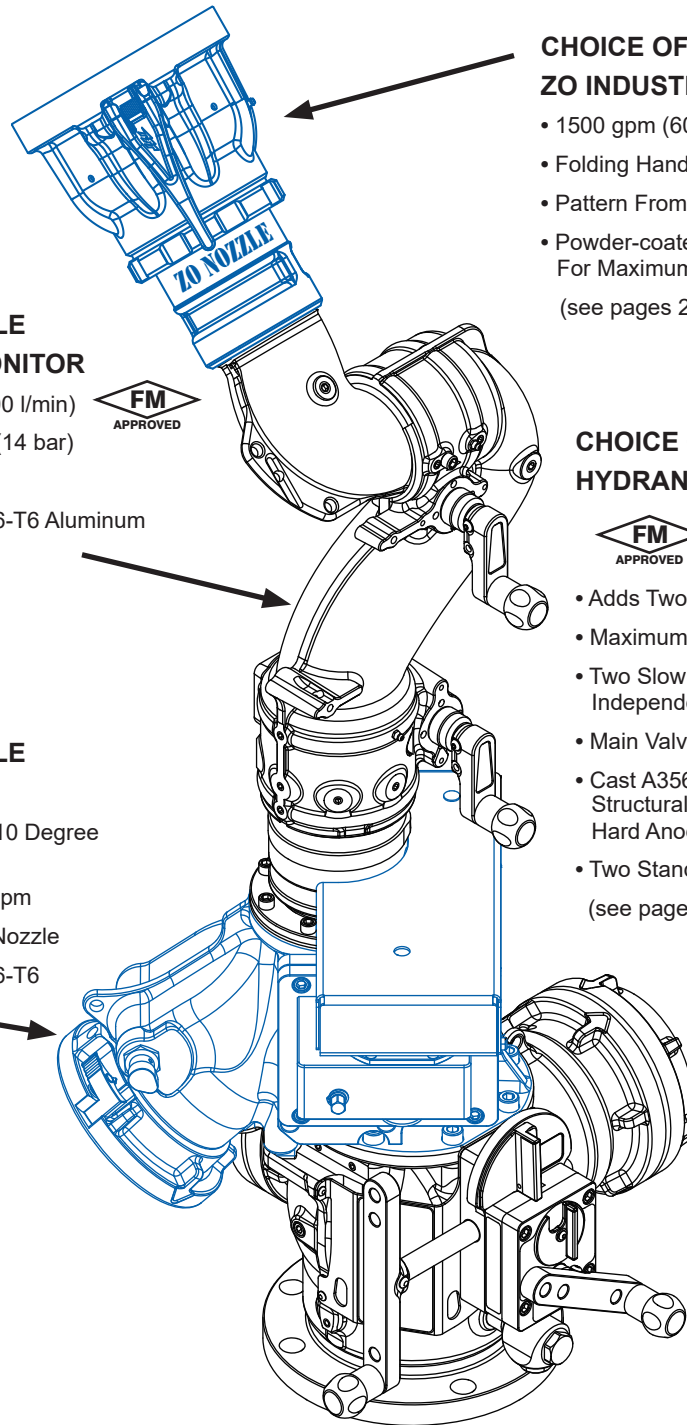
Y2-S\*\*A  
\$2465.00  
26.8 lb (12.2kg)



When ordering a Tornado OSC, choose one option from each category.

For example: Model Y2-SF1A is a 3.0" ANSI 150 Inlet with a 2.5"-7.5 NH Male Outlet. For assistance in ordering, please call 1-800-348-2686 and speak to a nozzle specialist.

Y2-S	SIDE A - Inlet Flange	SIDE B - Outlet	A
	D) 2.5" ANSI 150 F) 3.0" ANSI 150 G) 4.0" ANSI 150/DN100 PN16	1) 2.5"-7.5 NH MALE 2) 2.5"-11 BSP MALE 3) 2.5"-8 NPSH MALE 9) SPECIAL 2.5"	



### CHOICE OF COMPATIBLE TYPHOON MANUAL MONITOR

- Flows Up To 1500 gpm ( 6000 l/min)
- Operating Pressure 200 psi (14 bar)
- Only 19 psi (1.3 bar) Loss
- Hardcoat Anodized ANSI 356-T6 Aluminum (see page 158)



### CHOICE OF COMPATIBLE ZO INDUSTRIAL NOZZLE

- 1500 gpm (6000 l/min) Fixed Gallonage Nozzle
- Folding Handles for Shaper Control
- Pattern From Straight Stream To 120° Wide Fog
- Powder-coated and Hardcoat Anodized Aluminum For Maximum Resistance To Corrosion And Wear (see pages 202-203)



### CHOICE OF COMPATIBLE HYDRANT UNDER MONITOR



FM Approved for use with  
FM Approved Monitors

- Adds Two Full Flow LDH Ports
- Maximum Operating Pressure 300 psi (21 bar)
- Two Slow Close Shutoff Valves Allow Independent Or Simultaneous Operation
- Main Valve Has A 5.25" Waterway
- Cast A356-T6 Aluminum Valve Body And All Structural 6061-T6 Aluminum Components Are Hard Anodized
- Two Standard Automatic Drains (see pages 206-208)

### CHOICE OF COMPATIBLE BOOSTER OSC

- Sweeps 0 - 120 Degrees In 10 Degree Increments
- Operating At 1000 To 2000 gpm
- All Water Exits The Monitor Nozzle
- Hardcoat Anodized ANSI 356-T6 Aluminum (see pages 209-211)

**ULTIMATE COMBO**  
**\$11,215.00**  
 147.7 lb (66.9kg)

QUICK CONNECT INLET ADAPTERS

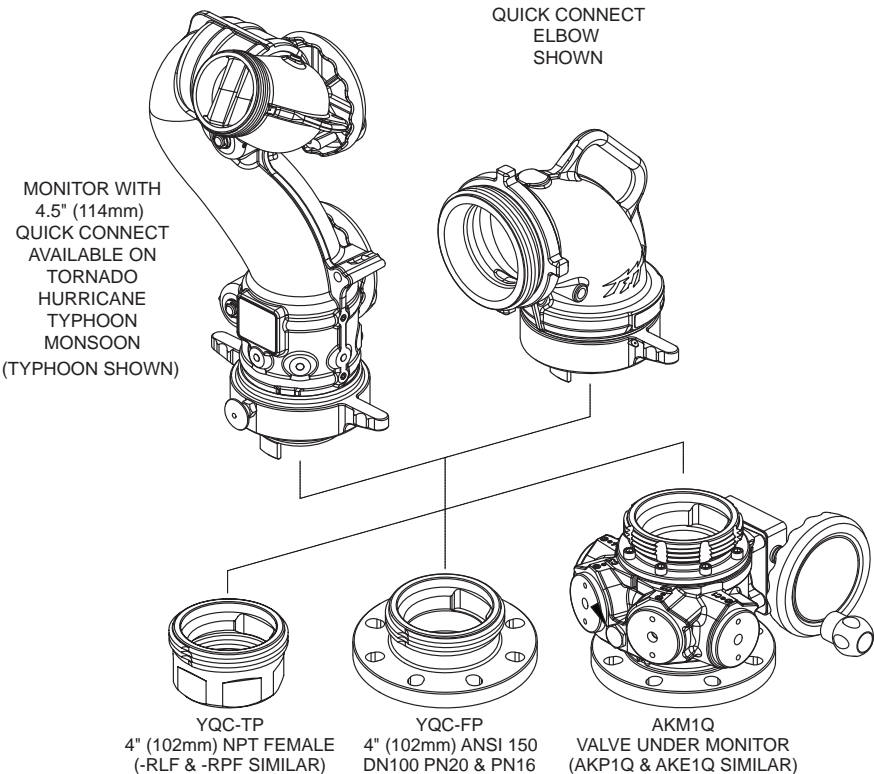
Inlet adapters have 4.5"NH male threaded outlet with proprietary internal slots to secure TFT Quick Connect Monitors and Elbows. Available for Hurricane, Typhoon and Monsoon Monitors. Standard 4.5"NH female hose couplings may also be attached to these inlet adapters. Constructed of corrosion resistant, hardcoat anodized aluminum alloy. Maximum operating pressure is 250 psi (17 bar).

**YQC-TP**  
**\$330.00**  
**Inlet Adapter 4"NPT Female**  
2.3 lb (1.0 kg)  
3.20" (8.1 cm) Height  
5.7" (14.5 cm) OD

**YQC-RLF**  
**\$330.00**  
**Inlet Adapter CODE-RLF**  
**For 3" Extend-A-Gun**  
**(manual & RC3)**  
2.0 lb (0.9 kg)  
3.20" (8.1 cm) Height  
5.7" (14.48 cm) OD

**YQC-RPF**  
**\$330.00**  
**Inlet Adapter CODE-RPF**  
**For 4" Extend-A-Gun RC4**  
2.0 lb (0.9 kg)  
3.00" (8.1 cm) Height  
5.7" (14.48 cm) OD

**YQC-FP**  
**\$330.00**  
**Inlet Adapter 4"ANSI 150**  
**Also fits DN100 PN20 & PN16**  
5.9 lb (2.6 kg)  
3.20" (8.1 cm) Height  
9.0" (23.0 cm) OD

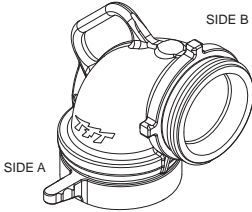


**ALSO AVAILABLE:**  
**Valve Under Monitor with 4.5" Quick Connect**  
See Valve Under Monitor section, Items AKM1Q, AKP1Q and AKE1Q

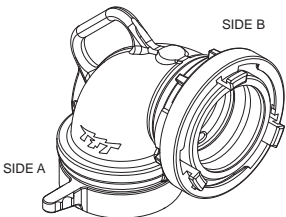
QUICK CONNECT ELBOW

The Quick Connect Elbow is interchangeable with the Quick Connect Inlet options offered on the Monsoon, Typhoon and Hurricane monitors. Full-time ball bearing swivel allows 360° rotation while coupling remains secured. Blind 1/4" NPT port may be drilled through to add pressure gauge or bleeder. Constructed of hardcoat anodized aluminum alloys, with powdercoat finish inside and out on the elbow casting for maximum corrosion protection. Maximum operating pressure is 300 psi (17 bar).

**Dimensional Maximum**  
**AF9NR-SX**  
**\$710.00**  
19.0 lb (8.6 kg)  
12.6" (32.1 cm) Height  
8.5" (21.7 cm) Width  
13.20" (33.6 cm) Depth



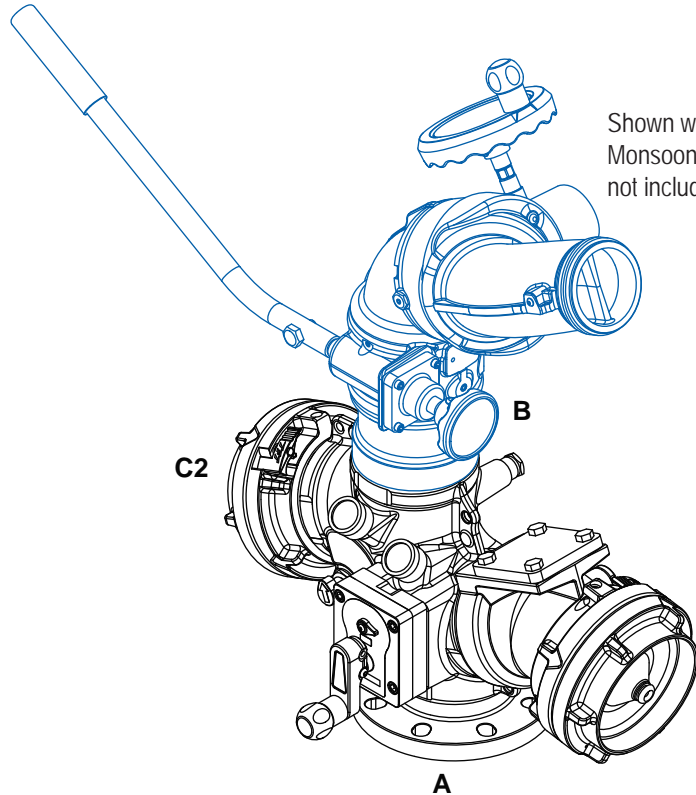
**AF**  **QNR -**   
(Choose Side B suffix from Tables)  
**Example:**  
4.0" NH Male Thread on Side B  
would be AF5QNR-NP



AF5		SIDE A - Female Swivel NH
		4.5" Quick Connect
SIDE B - Male NH	4.0" Threaded	AF5QNR-NP
	4.5" Threaded	AF5QNR-NR
	5.0" Threaded	AF5QNR-NT
	6.0" Threaded	AF5QNR-NX

AF9		SIDE A - Female Swivel NH
		4.5" Quick Connect
SIDE B - Rigid Storz	4.0" Storz	AF9QNR-SP
	5.0" Storz	AF9QNR-ST
	6.0" Storz	AF9QNR-SX

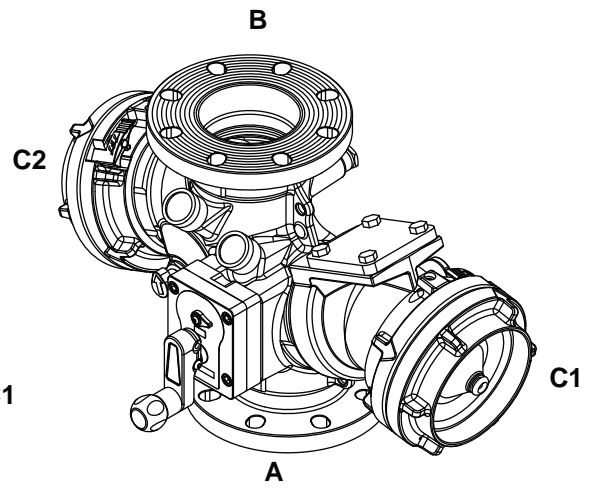
The Oasis Under monitor can be used to boost pressure to a monitor, supply foam to a monitor, or to supply water to a hose line. In monitor boosting operation, the valve is first opened and water is supplied to the monitor at line pressure. Inlet and outlet supply lines on a boost pumper are then connected to the valve to divert water through the boost pump and increase pressure/flow to the monitor. A clapper valve provides uninterrupted water flow to the fire when transitioning to boost mode and in the event of boost pump failure. Two unique valve position indicators tell the operator if the ball and clapper valves are open or closed. The side B monitor port is available with a 4" ansi flange, direct monitor connection and quick connect, as well as other options. Designed for use with 3.5, 4, 4.5, 5 or 6 inch (89, 100, 115, 125 or 152 mm) hose. In addition to an aluminum half ball, A356-T6 aluminum castings are hardcoat anodized and TFT powdercoated red inside and out to provide additional resistance to galvanic corrosion. The maximum operating pressure is 250 psi (17 bar).



**OASIS UNDER MONITOR  
ARZAX2T2T  
INLET FLANGE 4" (102mm) ANSI 150 ALUM**

Shown with Y4-TX1A-Z  
Monsoon Tiller Monitor  
not included

**Contact Factory  
for Delivery  
and Configurations**



**OASIS UNDER MONITOR  
ARZA32T2T  
INLET FLANGE 4" (102mm) ANSI 150 ALUM**

**Dimensional Maximums  
ARZA\*\*\*\*  
\$3150.00  
Weight 68.5 lb (31.0 kg)  
Height 13.6 in (34.5 cm)  
Width 24.0 in (70.0 cm)  
Depth 16.1 in (40.9 cm)**

<b>ARZA</b>					
-------------	--	--	--	--	--

(Choose Side B/Side C1/Side C2 suffix from table)  
Example: An integrated TFT Monitor adaptor on Side B, a Storz 5"  
on Side C1 and Storz 5" on Side C2 would be

ARZA	X	2	T	2	T
------	---	---	---	---	---

**Dimensional Maximums  
ARZAX\*\*\*  
\$3150.00  
Weight 68.5 lb (31.0 kg)  
Height 13.6 in (34.5 cm)  
Width 24.0 in (70.0 cm)  
Depth 16.1 in (40.9 cm)**

**OPTIONAL 6" FLANGE  
OUTLET OR INLET  
ADAPTER AVAILABLE**

	SIDE B OUTLET	SIDE C1 OUTLET TO BOOST	SIDE C2 BOOSTED INLET
ARZA			
	X) CODE-RRF for integrated TFT Typhoon, Monsoon, or Hurricane Monitor 1) CODE-RPM male threaded outlet 3) 4"ANSI 150 Flange Q) 4.5" NH Quick Connect for Large Monitors T) 2.5" NH Quick Connect for Tornado V) Integrated Tornado (no coupling)	STYLE 2) Storz 3) F Rocker Lug Swivel 5) F Long Handle Swivel 7) M Rigid	SIZE N) 3.5" P) 4" R) 4.5" T) 5" X) 6"
			STYLE 2) Storz 3) F Rocker Lug Swivel 5) F Long Handle Swivel 7) M Rigid
			SIZE N) 3.5" P) 4" R) 4.5" T) 5" X) 6"



## FIELD REPAIR KITS

### 1.0" TWISTER, QUADRAFOG, AND D75 SERIES BALL VALVES

D10-KIT	1.0" Twister Front End Seat/Seal Kit	\$45.00
D75-KIT	1.0" Rear Valve Seat Kit	\$20.00
D75-HDL	Bail Handle & Valve Seat Kit (NO Mandrel)	\$40.00
D75-HRK	Bail Handle & Valve Seat Kit (Incl. Mandrel)	\$90.00

### 1.5" Twister, QuadraFog, QuadraCup, and F100 Series Ball Valves

F20-KIT	1.5" Twister Front End Seat/Seal Kit	\$50.00
F100-KIT	Valve Rear Seat Kit	\$20.00
F100-HDL	Bail Handle & Valve Seat Kit (NO Mandrel)	\$40.00
F100-HRK	Bail Handle & Valve Seat Kit (Incl. Mandrel)	\$100.00

### 1.5" and 2.5" ThunderFog, F140 and J140 Ball Valve Series

F140-KIT	Valve Rear Seat Kit	\$20.00
F140-HDL	Bail Handle & Valve Seat Kit (NO Mandrel)	\$40.00
F140-HRK	Bail Handle & Valve Seat Kit (Incl. Mandrel)	\$105.00
J140-HRK	Bail Handle & Valve Seat Kit (Incl. Mandrel)	\$110.00

### Bubble Cup SERIES

D285-KIT	1.0" Bubble Cup Stream Shaper Kit	\$120.00
F685-KIT	1.5" Bubble Cup Stream Shaper Kit	\$115.00
F675-KIT	QuadraCup Aluminum Stream Shaper Kit	\$110.00
F675-UPGRADE	QuadraCup Aluminum Sleeve Upgrade	\$110.00

### ULTIMATIC SERIES - Manufactured After 1983

B950-KIT	Bail Handle Kit (Metal)	\$45.00
B955-KIT	Bail Handle Kit (Manuf After 8/05)	\$20.00
B960-KIT	Valve Seal Kit	\$10.00
B880-KIT	Stream Shaper Kit	\$50.00

### MIDRANGE SERIES

HM960-KIT	Nozzle Seal Kit	\$10.00
HMD830-KIT	Dual Pressure Knob 100 Psi	\$40.00
HMD830-75KIT	Dual Pressure Knob 75 Psi	\$40.00
HM840-KIT	100 Psi Control Unit	\$55.00
HM840-75-KIT	75 Psi Control Unit	\$55.00
HMD840-KIT	Dual Pressure Control Unit 100/55 Psi	\$115.00
HM997N-KIT	1.5 NH Coupling Kit	\$35.00
HM997I-KIT	1.5 NPSH Coupling Kit	\$35.00
HM590-KIT	-V and -VPGI Valve Plug	\$15.00
HM592-KIT	STO Valve Plug	\$20.00
HM950-KIT	Bail Handle Kit	\$20.00
HM880-KIT	Stream Shaper Kit	\$55.00

### HANDLINE SERIES

(manufactured after 1983 to current)

H994I-KIT	1.5 NPSH Coupling Kit	\$35.00
H994N-KIT	1.5 NH Coupling Kit	\$35.00
H880-KIT	Stream Shaper Kit	\$65.00
H960-KIT	Valve Seal Kit	\$40.00
P920-KIT	Playpipe Handle/Hdw Kit	\$75.00
HX950-KIT	Bail Handle Kit (Replaces Metal Handle)	\$40.00

(manufactured after Jan 01, 2004)

HX840-75-KIT	Pressure Control Unit 75 Psi	\$175.00
HX840-KIT	Pressure Control Unit 100 Psi	\$175.00
HXD830-KIT	Dual Pressure Knob 100 Psi	\$55.00
HXD830-75KIT	Dual Pressure Knob 75 Psi	\$55.00
HXD840-KIT	Dual Pressure Control Unit 100/55 Psi	\$155.00
HXDL840-KIT	Dual Pressure Control Unit 75/45 Psi	\$155.00

### HANDLINE SERIES UPGRADE KITS

(manufactured between 1985 to 2003)

#### Single Pressure

HX-100-KIT	95-300 GPM @ 100 PSI	\$415.00
HX-75-KIT	95-250 GPM @ 75 PSI	\$415.00
HX-55-KIT	95-225 GPM @ 55 PSI	\$415.00

#### Dual Pressure

HXD-100-KIT	95-300 GPM @ 100/55 PSI (dual pressure)	\$415.00
HXD-75-KIT	95-250 GPM @ 75/45 PSI (dual pressure)	\$415.00

### EXTEND-A-GUN SERIES

XG840-KIT	MANUAL EXTEND-A-GUN REED SWITCH	\$15.00
XGA840-KIT	RC3 EXTEND-A-GUN REED SWITCH (made before June 2009)	\$15.00
XGA841-KIT	RC4 EXTEND-A-GUN REED SWITCH (made before June 2009)	\$15.00
XGE695-KIT	RC EXTEND-A-GUN REED SWITCH (made after June 2009)	\$50.00
XGE690-KIT	RC EXTEND-A-GUN DRIVE BOX Repair Kit (6/1/09 and newer)	\$315.00

### LDH SERVICE KITS

A1520-KIT	AB, AC, and ABS Series BIV Valve Seat Kit	\$65.00
A1082-KIT	AX, AP, and AQ Series Jumbo BIV Valve Seat Kit	\$65.00
A1621-KIT	Vent Drain Kit - Lever Style	\$45.00
A1633-KIT	Parallel Shaft Gear Box Kit	\$230.00
A1890NJ	Pressure Relief Valve Test Kit - Flanged	\$130.00
A1891NJ	Pressure Relief Valve Test Kit - Threaded	\$130.00
AX1690-KIT	BIV RC Upgrade	\$1515.00
A4178-KIT	Storz lever lock alum upgrade kit - 4"	\$50.00
A4179-KIT	Storz lever lock alum upgrade kit - 5"	\$50.00
THA401	Retaining Strip Removal Tool	\$16.50
AM-BAND-KIT	Suction Hose Repair Kit	\$355.00
A1410-KIT	Suction Screen 5"	\$45.00
A1411-KIT	Suction Screen 6"	\$75.00
JET-ELBOWKIT	Jet Siphon Elbow Upgrade Kit	\$175.00

### LUBRICANTS

VSA-101	Dow 112 Grease 5.3Oz Tube	\$17.75
VSA-110	Breakfree 4Oz Aerosol	\$10.36
VSA-112	Breakfree 12Oz Aerosol	\$15.50
H-LUBE-KIT	Nozzle Lubrication Kit	\$ 35.00

### 2.5" GATED WYE

AY175-KIT	200 psi Gauge Kit For Ay Series 2.5" Gated Wye	\$65.00
AY176-KIT	300 psi Gauge Kit for AY Series 2.5" Gated Wye	\$65.00
A1621-KIT	Vent Drain Kit - Lever Style	\$45.00
AY970-KIT	Slow Close Valve Kit	CALL

### CROSSFIRE - BLITZFIRE

X455-KIT	Tie Down Strap	\$60.00
XX482-KIT	Blitzfire Spike Replacement Kit	\$35.00
XX830-KIT	Elevation Swivel Clutch Assembly	\$85.00
XX910-KIT	Blitzfire Trip Mechanism Kit	\$70.00
XX-STRAP-KIT	Blitzforce Strap	\$40.00
XF400-KIT	Truck Mount Block	\$260.00

### EDUCTOR

UE960-KIT	Cam Lock Adaptor	\$60.00
-----------	------------------	---------

### MONITORS

TETHER01-KIT	Stacked Tips Tether Kit	\$55.00
--------------	-------------------------	---------



## H-VO VALVES

P690-KIT	Ball Valve Repair Kit	\$25.00
	<b>PRO/pak</b>	
U230-KIT	PRO/pak Knob Repair Kit	\$55.00
	<b>DECON/pak</b>	
U232	DECON/pak Knob Repair Kit	CALL

## METRO SERIES FLOW/PRESSURE CHANGE KITS

ME0-KIT	Metro0 Flow Pressure Change Kit	CALL
ME1-TO-KIT	Metro TO Flow Pressure Change Kit	CALL
ME1-V-KIT	Metro Valved Flow Pressure Change Kit	CALL
ME2-KIT	Metro 2 Flow Pressure Change Kit	CALL

## INTEGRAL SMOOTH BORE ORIFICE REPLACEMENT

P116-KIT	Stream Straightener 1-1/2"	\$30.00
HVIT1-KIT	VIT Ball Valve Outlet 7/8"	\$115.00
HVIT2-KIT	VIT Ball Valve Outlet 15/16"	\$115.00
HVIT3-KIT	VIT Ball Valve Outlet 1"	\$115.00
HVIT4-KIT	VIT Ball Valve Outlet 1-1/8"	\$115.00
HVIT5-KIT	VIT Ball Valve Outlet 1-1/4"	\$115.00
HVIT6-KIT	VIT Ball Valve Outlet 1-3/8"	\$115.00

## VALVE UNDER MONITOR SERIES

AY321-KIT	Aluminum Long Handle 4.75" swing radius	\$55.00
AY322-KIT	Aluminum T-Handle 2.25" swing radius	\$55.00

## COLORED HANDLE KITS

### Colored Valve Handle Covers

All nozzles delivered after 09/01/09 have the ability to have colored valve handles added. Colored handle covers for TFT series of nozzles are available at no charge when the warranty card is filled out and mailed in, or if the warranty information is filled out online at tft.com. The following colors are available and for a nominal fee can be custom laser engraved. For additional information on this option, contact TFT customer service.

HM925BLK-KIT	BLACK COVER	\$10.00
HM925BLU-KIT	BLUE COVER	\$10.00
HM925GRN-KIT	GREEN COVER	\$10.00
HM925GRY-KIT	GRAY COVER	\$10.00
HM925ORG-KIT	ORANGE COVER	\$10.00
HM925PNK-KIT	PINK COVER	\$10.00
HM925PPL-KIT	PURPLE COVER	\$10.00
HM925RED-KIT	RED COVER	\$10.00
HM925RW-KIT	RED & WHITE COVER	\$10.00
HM925TAN-KIT	TAN COVER	\$10.00
HM925WHT-KIT	WHITE COVER	\$10.00
HM925YEL-KIT	YELLOW COVER	\$10.00

## PISTOL GRIP KITS

### Colored Pistol Grips for TFT Nozzles

All TFT nozzles delivered after 03/01/01 have the ability to have colored pistol grips added. For nozzles manufactured before this date, contact TFT's service department for availability. When a nozzle is ordered with a pistol grip, it will be shipped from TFT with a black grip and the offer to provide a free colored grip of your choice when the warranty card is filled out and mailed in, or if the warranty information is filled out online at tft.com. Kits can also be ordered for adding a grip to a non-grip model for a nominal fee.

HM692BLK-KIT	BLACK GRIP	\$20.00
HM692BLU-KIT	BLUE GRIP	\$20.00
HM692GRN-KIT	GREEN GRIP	\$20.00
HM692GRY-KIT	GRAY GRIP	\$20.00
HM692ORG-KIT	ORANGE GRIP	\$20.00
HM692PNK-KIT	PINK GRIP	\$20.00
HM692PPL-KIT	PURPLE GRIP	\$20.00
HM692RED-KIT	RED GRIP	\$20.00
HM692TAN-KIT	TAN GRIP	\$20.00
HM692WHT-KIT	WHITE GRIP	\$20.00
HM692YEL-KIT	YELLOW GRIP	\$20.00

## PISTOL GRIP KITS

### Colored Pistol Grips for TFT Impulse Nozzles With A Trigger Valve System

When a nozzle is ordered with a Trigger Valve System, it will be shipped from TFT with a black grip and the offer to provide a free colored grip of your choice when the warranty card is filled out and mailed in, or if the warranty information is filled out online at tft.com.

TN691BLK-KIT	BLACK GRIP COVER	\$10.00
TN691BLU-KIT	BLUE GRIP COVER	\$10.00
TN691GRN-KIT	GREEN GRIP COVER	\$10.00
TN691GRY-KIT	GRAY GRIP COVER	\$10.00
TN691ORG-KIT	ORANGE GRIP COVER	\$10.00
TN691PNK-KIT	PINK GRIP COVER	\$10.00
TN691PPL-KIT	PURPLE GRIP COVER	\$10.00
TN691RED-KIT	RED GRIP COVER	\$10.00
TN691TAN-KIT	TAN GRIP COVER	\$10.00
TN691WHT-KIT	WHITE GRIP COVER	\$10.00
TN691YEL-KIT	YELLOW GRIP COVER	\$10.00

## INSTRUCTION MANUALS

(instruction manuals available at no charge)

All Manuals are available on line at tft.com or call customer service at 1-800-348-2686.

## FOLDING PISTOL GRIP

**FOLDING PISTOL GRIP KIT** – This space-saving, folding pistol grip will take up less space and allow the TFT nozzle to fit into tight crosslays and hose beds. It deploys quickly and easily, locking in place automatically. When ready to stow, simply press the lock release button and fold it back. Pistol grip is machined from aluminum alloy and hardcoat anodized for durability and corrosion resistance. Pistol grip is black with white Scotchlite reflective inserts. Other NFPA Scotchlite color code inserts are available on request. Fits all TFT nozzles delivered after 03/01/2001. New nozzles may be ordered with folding pistol grip installed at the factory.

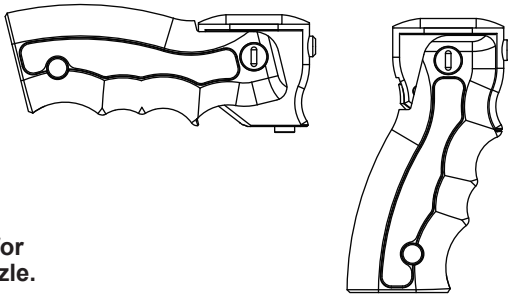
### HM792-KIT

**\$140.00**

**1.7 lb (0.7kg)**

**8.50" (21.6cm)**

**When ordered for an existing nozzle.**



HM792-KIT comes standard with a white Scotchlite Insert.

### When Ordered With a New Nozzle

HM792-DKIT	TWISTER, QUADRAFOG, Bubble Cup D- SERIES
HM792-FKIT	TWISTER, QUADRAFOG, Bubble Cup F- SERIES
HM792-FTKIT	FLIP-TIP SERIES
HM792-GKIT	G-FORCE SERIES
HM792-HKIT	HANDLINE / DUAL-FORCE SERIES / METRO 2
HM792-HMKIT	MIDMATIC / MID-FORCE SERIES / METRO 1
HM792-JKIT	THUNDERFOG J-SERIES
HM792-UKIT	ULTIMATIC SERIES / METRO 0

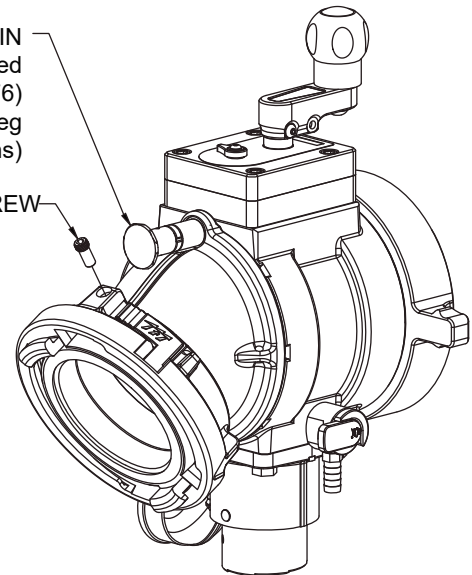
## CHANGING COUPLING LOCK-OUT

To change a coupling from rigid to full time swivel, use a 7/32" Allen driver to back out the lockout screw until the coupling moves freely.

To change a coupling from full time swivel to rigid, first align the pull pin in the elbow to vertical. Rotate the coupling until the lockout screw is aligned with the pull pin. Use a 7/32" Allen driver to tighten the lockout screw into the lockout divot in the elbow.

**PULL PIN**  
(May Be Replaced  
With (A1576)  
An Optional Peg  
For Tight Situations)

**LOCK-OUT SCREW**



## FLANGE SPECIFICATIONS

FLANGE SPECIFICATIONS					
FITS FLANGE	OUTSIDE DIAMETER	THICKNESS	BOLT HOLE CIRCLE	NUMBER OF BOLTS	SIZE OF BOLTS
3" ANSI 125/150 DN80 PN20	7.50" 190 mm	0.75" 20 mm	6.00" 152.5 mm	4 4	5/8" M16
4" ANSI 150 DN100 PN20	9.00" 230 mm	0.94" 23 mm	7.50" 190.5 mm	8 8	5/8" M16
DN80 PN16	200 mm	22 mm	160 mm	8	16 mm
DN100 PN16	220 mm	22 mm	180 mm	8	16 mm

## STANDARD FIRE HOSE THREADS

Size	ODM	TPI	Size	ODM	TPI	Size	ODM	TPI	Size	ODM	TPI
Nat'l. Hose Thread (NHT)			Eastern Hose Thread			NY Corp. Thread			Quebec Standard Thread (QST)		
.75	1.3750	8	.75	1.0781	11	1.5	2.093	11	2.5	3.046	7
1	1.3750	8	1	1.4219	11	2	2.547	11	2.5	3.046	7
1.25	1.6718	9	1.25	1.6875	11.5	2.5	3.000	8	Alberta Mutual Aid Thread (AMA)		
1.5	1.9900	9	1.5	2.1250	11	Chicago FD Thread			2.5	2.990	8
2	2.5156	8	2	2.6719	7.5	1	1.375	8	2.5	2.990	8
2.5	3.0686	7.5	2.5	3.0000	8	1.5	1.933	11.5	British Columbia (BCT)		
.3	3.6239	6	Pacific Coast Thread			2.5	2.990	7.5	2.5	3.000	8
3.5	4.2439	6	.75	1.0625	11	3.5	4.052	8	Western Canada Fire Underwriters Thread		
4	5.000	4	1	1.3125	11.5	4	5.000	4	2.5	3.250	6
4.5	5.7609	4	1.25	1.8600	11	4.5	5.7609	4	Buffalo, NY Thread		
5	6.260	4	1.5	2.1000	11	5	6.260	4	2.5	3.065	8
6	7.025	4	2	2.5500	10	Chicago Hose Thread			2.5	3.065	8
Nat'l. Pipe Straight Hose Thread (NPSH)			2.5	3.0350	7.5	.75	1.0810	11.5	Cincinnati, OH Thread		
.75	1.0353	14	NYFD Thread			1	1.2951	11.5	2.5	3.058	6
1	1.2951	11.5	1	1.660	8	1.25	1.7050	11.5	Cleveland, OH & Omaha, NE Thread		
1.25	1.6399	11.5	1.5	2.100	8	1.5	1.9460	11.5	2.5	3.0781	8
1.5	1.8788	11.5	2	2.530	8	2	2.5220	8	Detroit, MI Thread		
2	2.3528	11.5	2.5	3.030	8	2	3.0430	7	2.5	3.125	7.5
2.5	2.843	8	3	3.630	8	Standard Chemical Thread			2.5	3.125	7.5
3	3.4700	8	3.5	4.070	8	.75	1.375	8	Pittsburgh, PA Thread		
3.5	3.9700	8	4	4.610	8	2.5	3.0625	6	Toledo, OH Thread		
4	4.4700	8	4.5	5.800	4	1.5	1.8788	11.5	2.5	3.000	8
4.5	4.9700	8	Underwriter Tip Thread			2.5	3.1250	5			
			1.5	2.1875	12						

## SUCTION HOSE THREADS

Size	ODM	TPI	Size	ODM	TPI
American LaFrance Thread			Seagrave Thread		
4.0	5.085	4	4.0	5.000	4
4.5	5.750	4	4.5	5.750	4
5	6.150	4	5	6.250	4
6	7.000	4	6	7.000	4
Mack Thread			Hale Fire Pump Thread		
4.0	4.999	4	4.0	5.000	4
4.5	5.7609	4	4.5	5.7609	4
5	6.230	4	5	6.250	4
Ward LaFrance Thread			Maxim Thread		
4.0	5.000	4	4.0	5.000	4
4.5	5.750	4	4.5	5.750	4
5	6.250	4	5	6.250	4
6	7.000	4	6	7.000	4
Pirsch Thread			Waterous Fire Pump Thread		
4.0	5.000	4	4.0	5.0109	4
4.5	5.750	4	4.5	5.7609	4
5	6.250	4	5	6.260	4
6	7.000	4	6		

## FLANGE SPECIFICATIONS

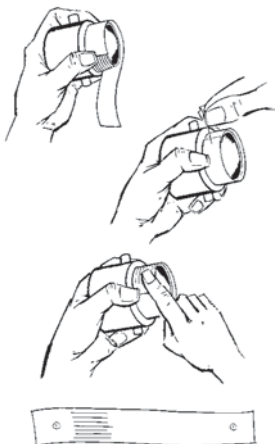
ANSI Flange Size	2.5"-150#	3.0"-150#	3.0"-300#	4.0"-150#	4.0"-300#	6.0"-150#	6.0"-300#
Diam. of Flange	7.00"	7.50"	8.25"	9.00"	10.00"	11.00"	12.50"
Bolt Circle Diam.	5.50"	6.00"	6.625"	7.50"	7.875"	9.50"	10.625"
Bolt Hole Diam.	.750"	.750"	.875"	.750"	.875"	.875"	.875"
No. Bolt Holes	4	4	8	8	8	8	12
Bolt Diameter	.625"	.625"	.750"	.625"	.750"	.750"	.750"

### ABBREVIATION DEFINITIONS

ODM – outside diameter of male  
TPI – threads per inch

### THREAD DESIGNATIONS

National Hose – NH or NHT; also called National Standard Thread (NST)  
National Pipe Straight Hose – NPSH; also called Straight Iron Pipe Thread (SIPT)  
National Pipe Thread – NPT; also called Tapered Iron Pipe Thread (TIPT)  
British Standard Parallel Pipe – BSPP  
British Standard Pipe Taper – BSP  
Please call customer service at 800 348-2686 to check availability of a specific thread on your product.



## METHODS FOR DETERMINING THREAD DIMENSIONS

If Leaf Thread Gauge and Thread Caliper are not available; or sample cannot be sent, the following method may be used to obtain the needed information about threads.

- 1) Cut a strip of paper about 1" wide and long enough to completely encircle the male thread.
- 2) Wrap this paper snugly around the male thread making sure it is against the shoulder all the way around.
- 3) Pierce the paper with a pin at some point where the paper overlaps.
- 4) Press firmly against the threads with finger. This impression in the paper is used to determine the threads per inch.
- 5) Remove strip and circle pin holes with pencil.
- 6) The distance between the pin holes divided by 3.1416 equals the ODM (outside diameter of the male).

Both the ODM and the threads per inch are needed for ordering purposes. Unified thread form supplied unless otherwise specified.

# DISCHARGE AND REACTION

Gallons Per Minute (gpm) Pounds Reaction Force (Lb<sub>f</sub>)

Smooth Bore Nozzle Discharge and Reaction Chart

Diameter	3/8"	1/2"	5/8"	3/4"	7/8"	15/16"	1"	1-1/8"	1-1/4"	1-3/8"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"	2-3/4"	
40	26	47	73	106	144	165	188	238	294	355	423	575	752	951	1174	1421	gpm
	9	16	25	35	48	55	63	79	98	119	141	192	251	318	393	475	Lb <sub>f</sub>
45	28	50	78	112	153	175	199	252	311	377	448	610	797	1009	1246	1507	gpm
	10	18	28	40	54	62	71	89	110	134	159	216	283	358	442	534	Lb <sub>f</sub>
50	30	53	82	118	161	185	210	266	328	397	473	643	840	1064	1313	1589	gpm
	11	20	31	44	60	69	79	99	123	148	177	240	314	397	491	594	Lb <sub>f</sub>
55	31	55	86	124	169	194	220	279	344	417	496	675	881	1115	1377	1666	gpm
	12	22	34	49	66	76	86	109	135	163	194	264	345	437	540	653	Lb <sub>f</sub>
60	32	58	90	129	176	202	230	291	360	435	518	705	921	1165	1438	1740	gpm
	13	24	37	53	72	83	94	119	147	178	212	288	377	477	589	712	Lb <sub>f</sub>
65	34	60	94	135	183	211	240	303	374	453	539	734	958	1213	1497	1811	gpm
	14	26	40	57	78	90	102	129	159	193	230	313	408	517	638	772	Lb <sub>f</sub>
70	35	62	97	140	190	218	249	315	388	470	559	761	994	1258	1554	1880	gpm
	15	27	43	62	84	97	110	139	172	208	247	337	440	556	687	831	Lb <sub>f</sub>
75	36	64	101	145	197	226	257	326	402	486	579	788	1029	1303	1608	1946	gpm
	17	29	46	66	90	103	118	149	184	223	265	361	471	596	736	890	Lb <sub>f</sub>
80	37	66	104	149	203	234	266	336	415	502	598	814	1063	1345	1661	2010	gpm
	18	31	49	71	96	110	126	159	196	237	283	385	502	636	785	950	Lb <sub>f</sub>
85	39	68	107	154	210	241	274	347	428	518	616	839	1096	1387	1712	2071	gpm
	19	33	52	75	102	117	133	169	209	252	300	409	534	676	834	1009	Lb <sub>f</sub>
90	40	70	110	159	216	248	282	357	440	533	634	863	1127	1427	1762	2132	gpm
	20	35	55	79	108	124	141	179	221	267	318	433	565	715	883	1069	Lb <sub>f</sub>
95	41	72	113	163	222	255	290	366	452	547	652	887	1158	1466	1810	2190	gpm
	21	37	58	84	114	131	149	189	233	282	336	457	597	755	932	1128	Lb <sub>f</sub>
100	42	74	116	167	227	261	297	376	464	562	668	910	1188	1504	1857	2247	gpm
	22	39	61	88	120	138	157	199	245	297	353	481	628	795	981	1187	Lb <sub>f</sub>
105	43	76	119	171	233	268	304	385	476	576	685	932	1218	1541	1903	2302	gpm
	23	41	64	93	126	145	165	209	258	312	371	505	659	835	1030	1247	Lb <sub>f</sub>
110	44	78	122	175	239	274	312	394	487	589	701	954	1246	1577	1948	2356	gpm
	24	43	67	97	132	152	173	219	270	327	389	529	691	874	1079	1306	Lb <sub>f</sub>
115	45	80	124	179	244	280	319	403	498	602	717	976	1274	1613	1991	2409	gpm
	25	45	71	102	138	159	181	229	282	341	406	553	722	914	1128	1365	Lb <sub>f</sub>
120	46	81	127	183	249	286	325	412	509	615	732	997	1302	1648	2034	2461	gpm
	26	47	74	106	144	166	188	238	294	356	424	577	754	954	1178	1425	Lb <sub>f</sub>
125	47	83	130	187	254	292	332	420	519	628	747	1017	1329	1682	2076	2512	gpm
	28	49	77	110	150	172	196	248	307	371	442	601	785	994	1227	1484	Lb <sub>f</sub>
130	48	85	132	191	259	298	339	429	529	640	762	1037	1355	1715	2117	2562	gpm
	29	51	80	115	156	179	204	258	319	386	459	625	816	1033	1276	1544	Lb <sub>f</sub>
135	49	86	135	194	264	303	345	437	539	653	777	1057	1381	1748	2157	2611	gpm
	30	53	83	119	162	186	212	268	331	401	477	649	848	1073	1325	1603	Lb <sub>f</sub>
140	49	88	137	198	269	309	352	445	549	665	791	1077	1406	1780	2197	2658	gpm
	31	55	86	124	168	193	220	278	343	416	495	673	879	1113	1374	1662	Lb <sub>f</sub>
145	50	89	140	201	274	314	358	453	559	676	805	1096	1431	1811	2236	2706	gpm
	32	57	89	128	174	200	228	288	356	430	512	697	911	1152	1423	1722	Lb <sub>f</sub>
150	51	91	142	205	279	320	364	461	569	688	819	1114	1455	1842	2274	2752	gpm
	33	59	92	132	180	207	236	298	368	445	530	721	942	1192	1472	1781	Lb <sub>f</sub>
175	55	98	154	221	301	345	393	497	614	743	884	1204	1572	1990	2456	2972	gpm
	39	69	107	155	210	241	275	348	429	519	618	841	1099	1391	1717	2078	Lb <sub>f</sub>
200	59	105	164	236	322	369	420	532	657	794	945	1287	1681	2127	2626	3177	gpm
	44	79	123	177	240	276	314	397	491	594	707	962	1256	1590	1963	2375	Lb <sub>f</sub>

National Fire Protection Association (NFPA) Fire Protection Handbook - 17th Edition  
 International Fire Service Training Association (IFSTA) Fire Protection Publications -  
 Fire Stream Practices - 7th Edition  
 Nozzle Pressure Measured With Pitot Gauge, Reaction Force Measured In Pounds

Smooth Bore Reaction Formula:  $NR = 1.57D^2NP$   
 Smooth Bore Discharge Formula:  $GPM = 29.7D^2\sqrt{NP}$   
 D = Bore Diameter in inches NP = Nozzle Pressure in PSI

## CRITICAL APPLICATION RATES

COMMON ITEMS	AREA IN SQ FT (LXW)	INVOLVEMENT			
		100%	75%	50%	25%
Dumpster	24 (6x4)	8	6	4	2
Car Fire	‡ Full Size	125	125	125	125
Bedroom	225 (15x15)	75	56	38	19
Living Room	300 (15x20)	100	75	50	25
Multiple Bedrooms (2)	450 (15x15)x2	150	113	75	38
Detached Garage	574 (24x24)	192	144	96	48
Mobile Home (house trailer)	980 (14x70)	327	245	164	82
Tax Payer First Floor (downtown store front)	1000 (20x50)	333	250	167	83
Small Ranch House	1125 (45x25)	375	281	188	94
Large 2 Story House (1 Floor)	1600 (40x40)	533	400	267	133
Large 2 Story House (2 Floors)	3200 (40x40)x2	1,066	800	533	267
Pole Barn	3000 (40x50)x1.5*	1,000	750	500	250
Warehouse	40,000 (100x200)x2*	13,333	10,000	6,667	3,333

\* Additional Height Factor

### GPM FLOW REQUIRED

‡ Minimum application for a car fire is 125 gpm, due to fuel hazards involved.

This water application chart has been designed to provide a quick means of calculating an approximation of the initial flow rates needed. Actual flow rates required will vary depending on the conditions at the scene. This water application chart is not designed to, nor can it, provide the user with the definitive requirements to address a particular fire fighting situation. The selection of application devices and application methods for the fire hazard being addressed is the responsibility of the fire fighting professional.

Ref: IFSTA Fire Protection Publications Fire Stream Practices 7th Edition.

Quick fireground formula: NFA, National Fire Academy water application rates for room & contents.

$$\frac{L \times W}{3} = \text{GPM}$$

L = Length in feet

W = Width in feet

GPM = Water flow rate required to black out the fire in approximately ten seconds, when properly applied.

This assumes approximate standard combustible contents and heights of 10 feet per story. Adjust for % of involvement, and number of stories involved. Be prepared to increase flow to match 100% involvement, if necessary. Add 25% for exposures.

## PUMP DISCHARGE PRESSURE CHARTS

1.75" Hose Flow (GPM)	75 PSI Nozzle Pressure Length Of Hose			100 PSI Nozzle Pressure Length Of Hose		
	150 FT (PSI)	200 FT (PSI)	250 FT (PSI)	150 FT (PSI)	200 FT (PSI)	250 FT (PSI)
60	83	86	89	108	111	114
95	96	103	110	121	128	135
125	111	123	136	136	148	161
150	127	145	162	152	170	187
175	146	170	194	171	195	219
200	168	199	230	193	224	255
225	193	232	271	218	257	296
250	220	269	—	245	294	—
275	251	—	—	276	—	—
300	—	—	—	—	—	—
325	—	—	—	—	—	—
350	—	—	—	—	—	—

2.50" Hose Flow (GPM)	75 PSI Nozzle Pressure Length Of Hose			100 PSI Nozzle Pressure Length Of Hose		
	150 FT (PSI)	200 FT (PSI)	250 FT (PSI)	150 FT (PSI)	200 FT (PSI)	250 FT (PSI)
60	76	76	77	101	101	102
95	78	79	80	103	104	105
125	80	81	83	105	106	108
150	82	84	86	107	109	111
175	84	87	90	109	112	115
200	87	91	95	112	116	120
225	90	95	100	115	120	125
250	94	100	106	119	125	131
275	98	105	113	123	130	138
300	102	111	120	127	136	145
325	107	117	128	132	142	153
350	112	124	136	137	149	161

**NOTE:** Flows may vary with brand or condition of hose. Flows are approximate and do not reflect losses in preconnect piping.

### Formula Used: PDP = NP + FL

PDP = Pump Discharge Pressure

NP = Nozzle Pressure

FL = Friction Loss

FL =  $CQ^2L$

C for 1.75" Hose = 15.5

C for 2.50" Hose = 2

Q Flow Rate in Hundreds of GPM

L Length of Hose in Hundreds of Feet



DISCHARGE FOR HYDRANT OUTLETS									
Outlet Pressure (lbs.)	Outlet Diameter				Outlet Pressure (lbs.)	Outlet Diameter			
	2.5"	3.0"	4.0"	4.5"		2.5"	3.0"	4.0"	4.5"
	U.S. Gallons per Minute					U.S. Gallons per Minute			
1	170	240	430	540	16	670	970	1720	2180
2	240	340	610	770	17	690	1000	1770	2240
3	290	420	740	940	18	710	1030	1820	2310
4	340	480	860	1090	19	730	1050	1870	2370
5	380	540	960	1220	20	750	1080	1920	2430
6	410	590	1050	1340	22	790	1130	2020	2550
7	440	640	1140	1440	24	820	1180	2110	2660
8	480	680	1220	1540	26	860	1230	2190	2770
9	500	730	1290	1640	28	890	1280	2280	2880
10	530	760	1360	1730	30	920	1320	2350	2980
11	560	800	1430	1810	32	950	1370	2430	3080
12	580	840	1490	1890	34	980	1410	2510	3170
13	610	870	1550	1960	36	1010	1450	2580	3260
14	630	900	1610	2040	38	1040	1490	2650	3350
15	650	940	1660	2110	40	1060	1530	2720	3440

## HYDRANT DISCHARGE FORMULA

To obtain the flow from hydrant outlets use the same formula as given for smooth bore nozzles but use the factor "C" equal to 0.90. Every Fire Department should check the flow from their hydrants. This can be done simply and easily using only a cap with a pressure gauge attached. Merely place the gauge on one outlet, open the hydrant and read the gauge. Remove another cap, open the hydrant and read the gauge again and obtain the gallons per minute using the above method or from the discharge table for hydrant outlets. Obtain the maximum amount of water available from the discharge table for hydrant outlets. Then to obtain the maximum amount of water available from the hydrant in gallons per minute with a residual of 10 lbs. (which is the lowest you should draw down the pressure on the hydrant) use the following formula.

$$A = \frac{B \times \sqrt{P_1 - 10}}{\sqrt{P_1 - P_2}}$$

Where: A = Gallons per minute available at 10 lbs residual.

B = Gallons per minute obtained.

P1 = Static pressure on hydrant with no water flowing.

P2 = Residual pressure on hydrant with water flowing.

## DEFINITIONS OF COMMON PRESSURE TERMS

**Static or Sidewall Pressure:** "Static" means not moving. Static Pressure can be the pressure on a hydrant while it is not flowing. It can also be the pressure measured at a small hole through the side of a pipe—even if there is flow going through the pipe. Since there is no flow going into the small hole this is another measure of static pressure. Pressure measured through a small hole in the side of a pipe is also known as Sidewall Pressure.

**Dynamic Pressure:** Dynamic Pressure is pressure caused by the fluid's velocity. In mathematical terms the Dynamic Pressure varies with the velocity squared. So doubling the velocity increases the Dynamic Pressure by four (2 squared equals 4). A pitot tube can be used to measure Dynamic Pressure. A pitot tube is a special device that measures Total and Static Pressures simultaneously. The Dynamic Pressure equals the Total Pressure minus the Static Pressure.

**Total Pressure:** Total Pressure is the Dynamic Pressure added to the Static Pressure. The Total Pressure can be measured with a "stagnation tube". A stagnation tube is a curved piece of tubing with a pressure gage. Total Pressure is measured by orienting the tubing so it's opening is impacted squarely by the fluid flow. A Stagnation Tube is often called a Pitot Tube in the fire service and is used to measure the Total Pressure at a nozzle's outlet. Since the stream exiting a nozzle has zero Static (or Sidewall) Pressure, a Stagnation Tube in the exit stream gives the Total Pressure.

**Residual Pressure:** Residual Pressure is the static (or sidewall) pressure at a location while a system is flowing. Due to Friction Loss, the residual pressure decreases as flow increases.

**Friction Loss:** Friction loss is the amount of pressure difference between two points while flowing. It is determined by comparing the Total Pressure between the two points. For example: A device with a Total Pressure of 120 psi at the inlet and a Total Pressure of 95 psi at the outlet while flowing 1000 gpm. The device's Friction Loss would be 25 psi at 1000 gpm. The Friction Loss varies with the square of the flow. So doubling the flow yields four times the friction loss.

**Operating Pressure:** Operating Pressure is the Static (or Sidewall) pressure in a device during use.

## LIQUID VOLUME

To Convert	Into	Multiply by
Ounces (oz)	Milliliters (ml)	29.57
Pints (pt)	Liters (l)	0.4732
Quarts (qt)	Liters (l)	0.9464
Gallons (gal)	Liters (l)	3.785
Milliliters (ml)	Ounces (oz)	0.0338
Liters (l)	Pints (pt)	2.113
Liters (l)	Quarts (qt)	1.057
Liters (l)	Gallons (gal)	0.2642

## SOLID VOLUME - WEIGHT

To Convert	Into	Multiply by
Ounces (oz)	Grams (g)	28.3495
Pounds (lb)	Kilograms (kg)	0.4536
Grams (g)	Ounces (oz)	0.035
Kilograms (kg)	Pounds (lb)	2.205

## PRESSURE

To Convert	Into	Multiply by
Pounds per square inch (psi)	Kilopascals (kPa)	6.895
Pounds per square inch (psi)	bar	0.06895
Kilopascals (kPa)	Pounds per square inch (psi)	0.145
Kilopascals (kPa)	bar	0.01
bar	Pounds per square inch (psi)	14.503
bar	Kilopascals (kPa)	100.00

## LENGTH

To Convert	Into	Multiply by
Inches (in)	Millimeters (mm)	25.4
Inches (in)	Centimeters (cm)	2.54
Feet (ft)	Centimeters (cm)	30.48
Yards (yd)	Meters (m)	0.9144
Miles (mi)	Kilometers (km)	1.609
Millimeters (mm)	Inches (in)	0.039
Centimeters (cm)	Inches (in)	0.394
Meters (m)	Yards (yd)	1.0936
Kilometers (km)	Miles (mi)	0.6214

## AREA

To Convert	Into	Multiply by
Square inches (sq in)	Square Centimeters (cm <sup>2</sup> )	6.452
Square feet (sq ft)	Square Meters (m <sup>2</sup> )	0.093
Square Yards (sq yd)	Square Meters (m <sup>2</sup> )	0.836
Square Miles (sq mi)	Square Kilometers (km <sup>2</sup> )	2.59
Square Centimeters (cm <sup>2</sup> )	Square inches (sq in)	0.155
Square Meters (m <sup>2</sup> )	Square feet (sq ft)	1.196
Square Kilometers (km <sup>2</sup> )	Square Yards (sq yd)	0.386

## TIP SIZES

3/4" Tip = 19 mm	1-1/2" Tip = 38 mm
7/8" Tip = 22 mm	1-3/4" Tip = 45 mm
1" Tip = 25 mm	2" Tip = 50 mm
1-1/8" Tip = 28 mm	2-1/4" Tip = 57 mm
1-1/4" Tip = 32 mm	2-1/2" Tip = 64 mm
1-3/8" Tip = 35 mm	3" Tip = 76 mm

## HOSE SIZES

1" Hose = 25.4 mm	4" Storz = 100.00 mm
1.5" Hose = 38.1 mm	4" Hose = 101.60 mm
1.75" Hose = 44.5 mm	4.5" Hose = 114.30 mm
2" Hose = 50.8 mm	5" Storz = 125.00 mm
2.5" Hose = 63.5 mm	5" Hose = 127.00 mm
3" Hose = 76.2 mm	6" Hose = 152.40 mm
3.5" Hose = 88.9 mm	

## PRESSURES

50 psi = 345 kPa = 3.45 bar	300 psi = 2069 kPa = 20.69 bar
60 psi = 414 kPa = 4.14 bar	350 psi = 2413 kPa = 24.13 bar
70 psi = 488 kPa = 4.88 bar	400 psi = 2758 kPa = 27.58 bar
75 psi = 517 kPa = 5.17 bar	450 psi = 3103 kPa = 31.03 bar
80 psi = 552 kPa = 5.52 bar	500 psi = 3448 kPa = 34.48 bar
90 psi = 621 kPa = 6.21 bar	550 psi = 3792 kPa = 37.92 bar
100 psi = 690 kPa = 6.90 bar	600 psi = 4137 kPa = 41.37 bar
150 psi = 1034 kPa = 10.34 bar	650 psi = 4482 kPa = 44.82 bar
200 psi = 1379 kPa = 13.79 bar	700 psi = 4827 kPa = 48.27 bar
250 psi = 1723 kPa = 17.23 bar	

## FLOW RATE

12 gpm	=	45.42 l/min	=	45 l/min
13 gpm	=	49.20 l/min	=	50 l/min
20 gpm	=	75.70 l/min	=	75 l/min
23 gpm	=	87.06 l/min	=	90 l/min
25 gpm	=	94.62 l/min	=	95 l/min
30 gpm	=	113.55 l/min	=	115 l/min
40 gpm	=	151.40 l/min	=	150 l/min
50 gpm	=	189.25 l/min	=	190 l/min
55 gpm	=	208.18 l/min	=	210 l/min
60 gpm	=	227.10 l/min	=	230 l/min
70 gpm	=	264.95 l/min	=	265 l/min
75 gpm	=	283.88 l/min	=	285 l/min
85 gpm	=	321.73 l/min	=	320 l/min
95 gpm	=	359.58 l/min	=	360 l/min
100 gpm	=	378.50 l/min	=	380 l/min
120 gpm	=	454.20 l/min	=	460 l/min
125 gpm	=	473.13 l/min	=	475 l/min
150 gpm	=	567.75 l/min	=	550 l/min
175 gpm	=	662.38 l/min	=	660 l/min
200 gpm	=	757.00 l/min	=	750 l/min
250 gpm	=	946.25 l/min	=	950 l/min
300 gpm	=	1135.50 l/min	=	1140 l/min
350 gpm	=	1324.75 l/min	=	1325 l/min
375 gpm	=	1419.38 l/min	=	1420 l/min
400 gpm	=	1514.00 l/min	=	1525 l/min
450 gpm	=	1703.25 l/min	=	1700 l/min
500 gpm	=	1892.50 l/min	=	1900 l/min
700 gpm	=	2649.50 l/min	=	2660 l/min
750 gpm	=	2838.75 l/min	=	2900 l/min
800 gpm	=	3028.00 l/min	=	3030 l/min
1000 gpm	=	3785.00 l/min	=	3800 l/min
1200 gpm	=	4542.00 l/min	=	4500 l/min
1250 gpm	=	4731.25 l/min	=	4800 l/min
1500 gpm	=	5677.50 l/min	=	6000 l/min
2000 gpm	=	7570.00 l/min	=	7600 l/min