

Project : Repair Wet Pipe Fire Suppression System in Bldg 404A TCH, Camp Buehring, Kuwait

SUB CONTRACTOR : Naser M. Al-Baddah & Partner (NBTC)

Data Sheets

SL NO.	ITEM DESCRIPTION	MODEL	MANUFACTURER
1	Fire Pump, Diesel Operated, 750 GPM @ 65 psi	5AEF8A / JU4H-UF14	Peerless - USA
2	Jockey Pump, Electric Operated, 10 GPM @ 75 psi	CR 15-5	Grundfos - Europe
3	Fire Water Tank (GRP), Volume 200 m ³ , 10m x 5m x 4m.		Hi Tank - Korea
4	Conclealed Sprinkler Heads, K-115, 68 °C, 1/2" NPT	VK 202 - D (K8.0)	Viking - USA
5	Test and Drain Valve	A61	Giacomini - Italy
6	Fire Extinguishers 9L (2 1/2 Gallons) Water Type	4202	Croker - USA
7	Water Flow Switch (Vane Type)	VSR	Potter - USA
8	Check Valve 174 PSI	D-1 & G-1	Viking - USA
9	Gate Valve OS & Y w/ Supervisory Switch, 175 PSI	F-607-OTS	Nibco - USA
10	Alarm Bell	F-2	Viking - USA
11	Fire Department Connection, 4 x 2 Way	6410	Croker - USA
12	Fire Pump Test Header, 4 Way 6 x 2-1/2"	6824	Croker - USA
13	Steel Piping A/Gto ASTM A53 Sch 40, Black Steel Seamless		Al Jajeera - Oman
14	Ductile Iron Piping B/G to AWWA C151 / A21.51		SADIP - Saudi Arabia



OUR FIRE PUMPS ARE **PEERLESS**

— FULL RANGE EXPERTISE

PEERLESS PRODUCT BRAND > UL LISTED, ULC LISTED AND FM APPROVED

be
think
innovate

GRUNDFOS 

A formidable team of industry experts for *your unique fire pump solution.*

Peerless Fire Pump Units and Enclosed Packaged Systems

Thousands of Peerless Pump installations (UL, ULC or FM approved) deliver superior fire protection to facilities worldwide. For over eighty years Peerless Pump has been offering complete service, from engineering assistance to in-house fabrication to field start-up. Products are designed from a broad selection of pumps, drives, controls, baseplates and accessories. Fire pump choices include horizontal split case, in-line and end suction centrifugal, as well as vertical turbines pumps.



The Right Solution for Reliability

Reliability is one of the hallmarks of Peerless Pump technology, and it's built into every aspect of our distinctive pump designs. Our mindset is to construct pumps of the highest quality by paying attention to the details and investing in innovative research and development.

Building contractors, specifying engineers and facility managers alike trust the recognized global leader in pump technology and solutions. They look to Grundfos' expertise in developing new and improved ways to meet water and energy challenges in commercial buildings. Arriving at a solution that works requires the merging of many professional skill sets. Choosing Grundfos as your partner extends beyond sale and delivery and offers a unique collaborative partnership.



Providing Pumping Solutions to the Global Commercial / Fire Market, Peerless Can Fulfill Your Requirements:

- Recognized leader in the fire pump industry
- Thousands of installations of all sizes and types
- Represented by fully qualified personnel in most major U.S. and international cities
- Complete in-house fabrication capabilities
- Mechanical-run test capabilities
- Horizontal models for capacities to 5,000 gpm
- Vertical models for capacities to 5,000 gpm
- In-line models for capacities to 1,500 gpm
- End suction models for capacities to 500 gpm
- Drives: electric motor or diesel engine
- Basic units, packaged systems, and engineered enclosures

A unique collaborative partnership that extends beyond the sale and delivery

Custom Designs

Engineered designs for unusual applications have always been a specialty for Grundfos. From submersibles to end-suction pumps, no application is beyond our technical expertise. Drawing upon our many years of engineering and manufacturing experience is the best way to solve your difficult application, whether it's temperature extremes, or complex configurations.

Anticipating the future

Grundfos invests 5% of its annual revenue into research and development, with nearly 18,000 employees in 55 countries, dedicated to addressing the challenges of tomorrow, today.



Our Competencies

With the most efficient selections and superior local representation, we endeavor to partner with the fire protection contracting community to create the best value possible for each project.

Our long history of innovation in engineered pump systems for building management has opened doors and created a sizeable opportunity for optimizing installations in commercial structures.

Peerless Pump offers both modular and integrated solutions that further simplify installations and commissioning. These reliable solutions are a result of producing the most optimized pump hydraulics, hydraulics and accessories to make everything work holistically while communicating efficiently with the central system controller.

***A recognized global leader
in fire pump systems and accessories.***

The Full Range of Possibilities

Grundfos offers total fire pumping solutions on any scale. Our expertise in the full range of fire pump products and application areas in the commercial buildings sector can be tailored to your specific requirements.



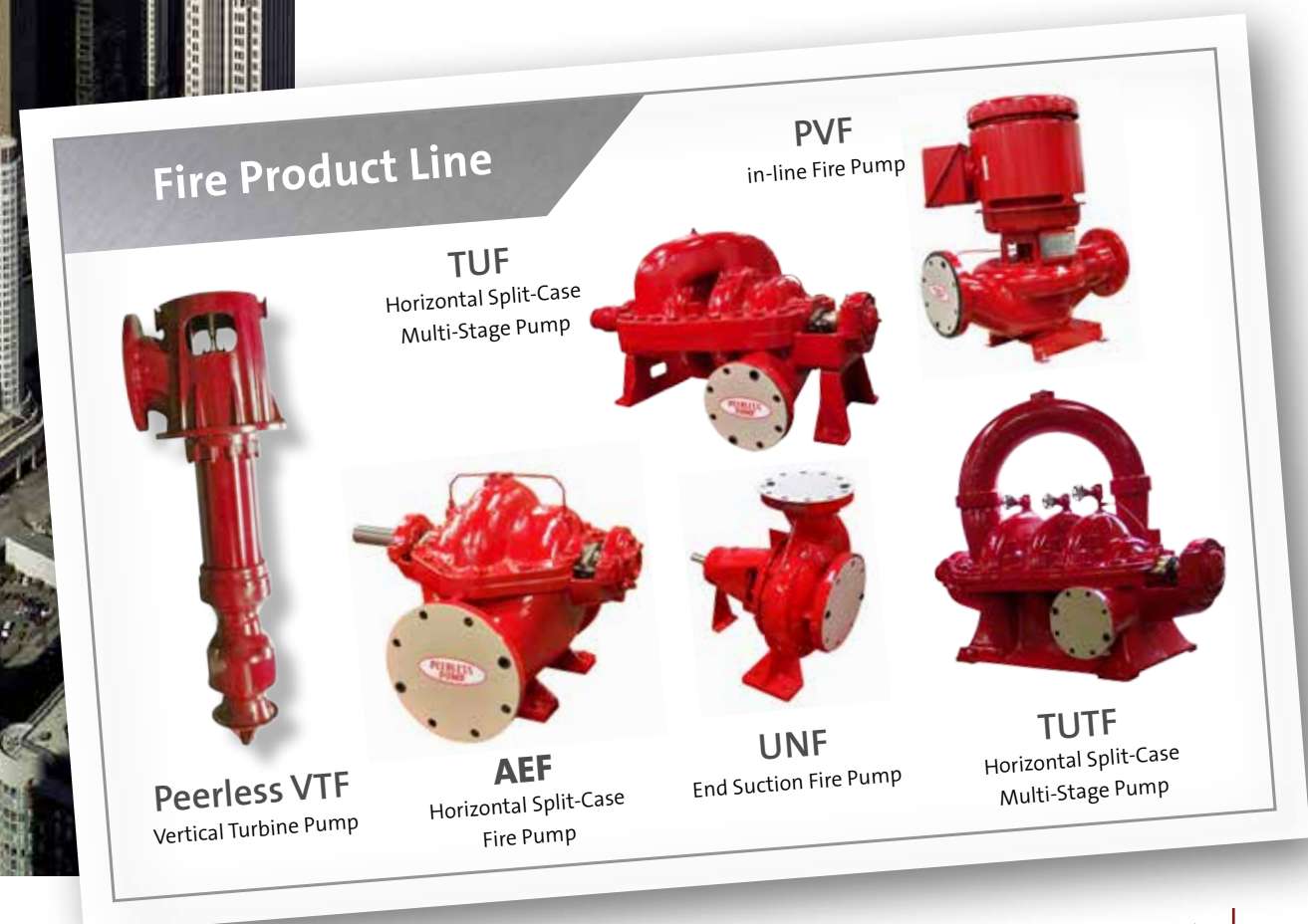


The Peerless Pump Fire Pump Units, Systems, and Enclosed Packaged Systems

Applications vary from small, basic electric motor units to diesel engine driven, enclosed, packaged systems. Standard units are designed to handle fresh water, but special materials are available for sea water applications.

Each enclosed pumping solution is typically a one-of-a-kind, configured by Peerless engineers to meet a specific application and operating condition.

Peerless Pump - A reliable global solution to commercial building and industrial applications



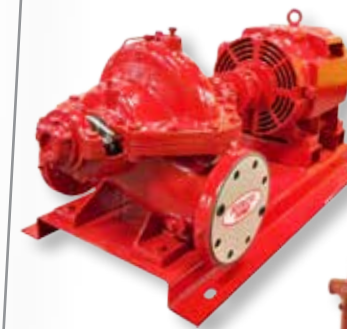


A Reliable Answer to Commercial Building Solutions

Peerless Pump can help you solve your unique needs and challenges, ensuring that the necessary fire protection water flow will meet facility demands and regulations when called upon. This is achieved by using a proven range of durable, horizontal, inline, end suction and vertical turbine pumps. These pumps are uniquely designed to deliver by reacting automatically to changing demands and conditions. To suit each situation, we supply the expertise to ensure that pumps and motors or engines are applied correctly.

*Proven pumping systems for changing
and demanding conditions*

Fire Pump Units

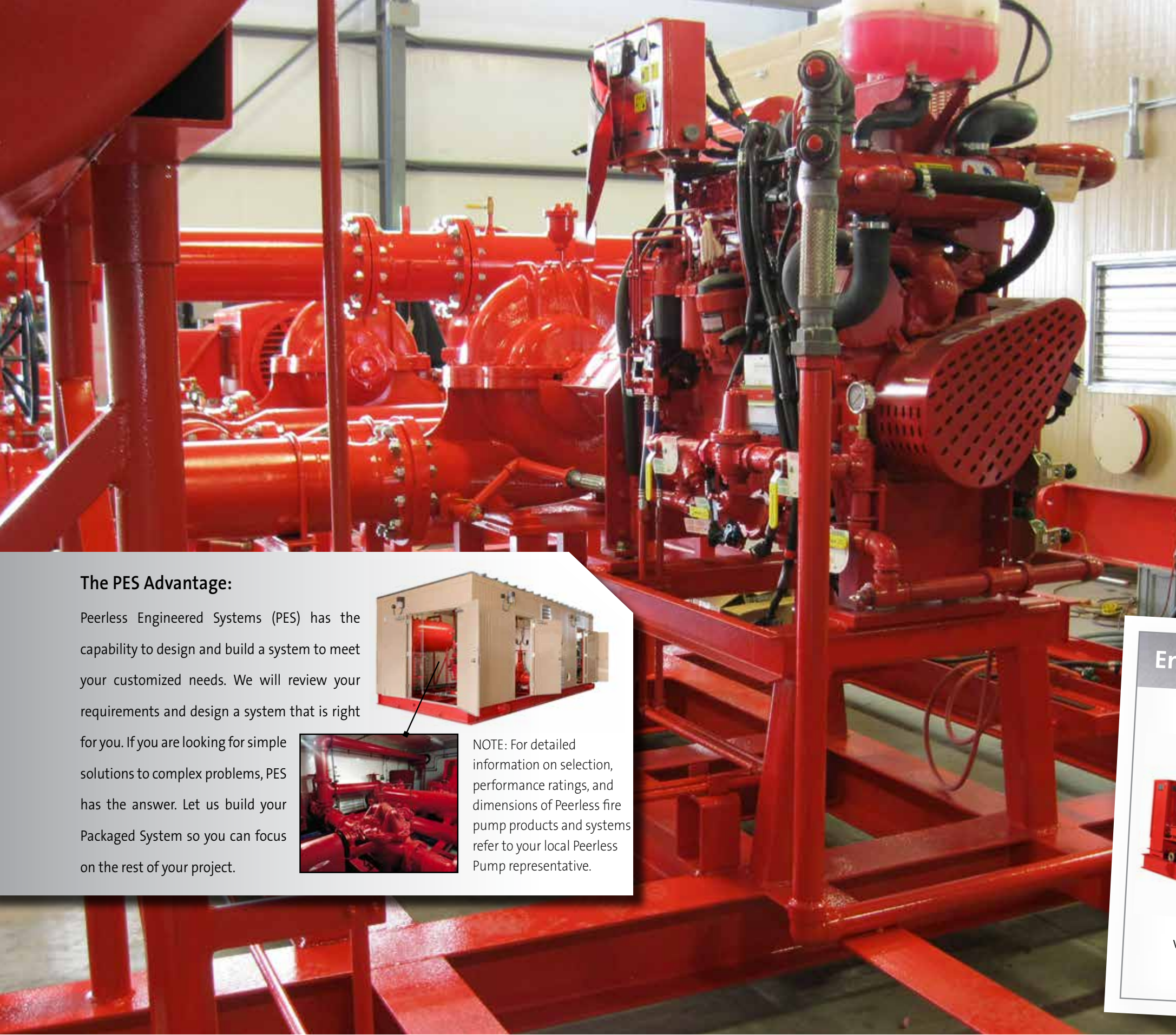


**Electric Motor
Drive Unit**
Horizontal Fire Pump

**Electric Motor
Drive Unit**
Inline Fire Pump



**Diesel Engine
Drive Unit**
Horizontal Fire Pump



**The Peerless Pump Fire Pump Units
and Enclosed Packaged Systems**

Thousands of Peerless Pump installations (UL, ULC or FM approved) deliver superior fire protection to facilities worldwide. For over eighty years Peerless Pump has been offering complete service, from engineering assistance to in-house fabrication to field start-up. Products are designed from a broad selection of pumps, drives, controls, baseplates and accessories. Pump choices include horizontal, in-line and end suction centrifugal fire pumps as well as vertical turbines

***State of the art engineered systems
arrive ready to install***

Applications vary from small, basic electric motor units to diesel engine driven, enclosed, packaged systems. Standard units are designed to handle fresh water, but special materials are available for sea water applications.

The PES Advantage:

Peerless Engineered Systems (PES) has the capability to design and build a system to meet your customized needs. We will review your requirements and design a system that is right for you. If you are looking for simple solutions to complex problems, PES has the answer. Let us build your Packaged System so you can focus on the rest of your project.



NOTE: For detailed information on selection, performance ratings, and dimensions of Peerless fire pump products and systems refer to your local Peerless Pump representative.

Engineered Systems

PES
Vertical Turbine
Diesel Pump

PES
Horizontal Diesel
Driven Pump

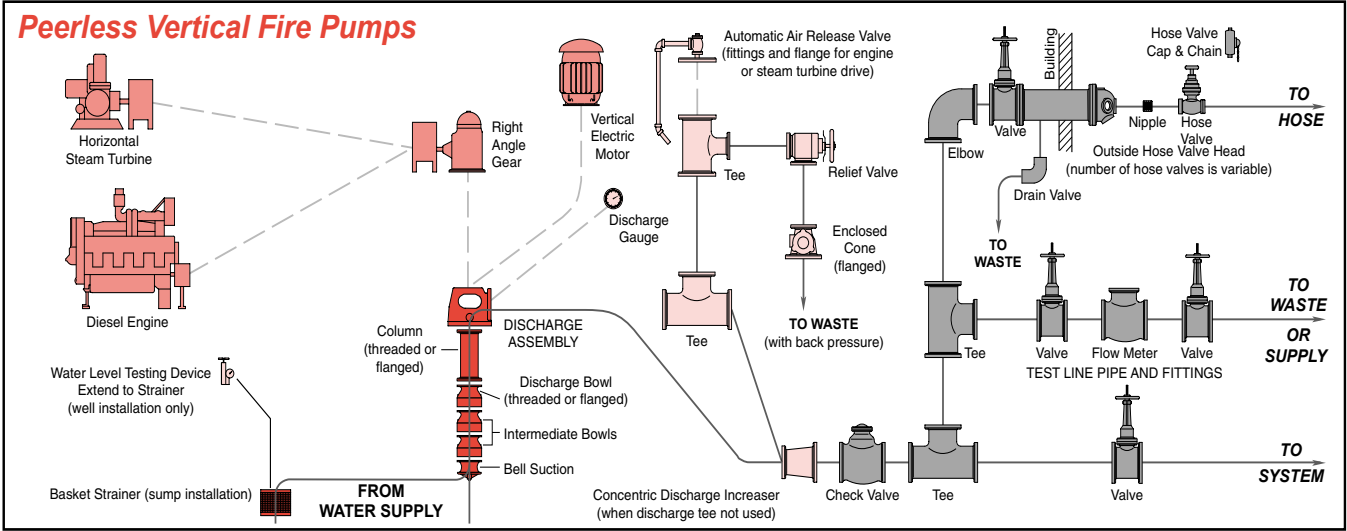
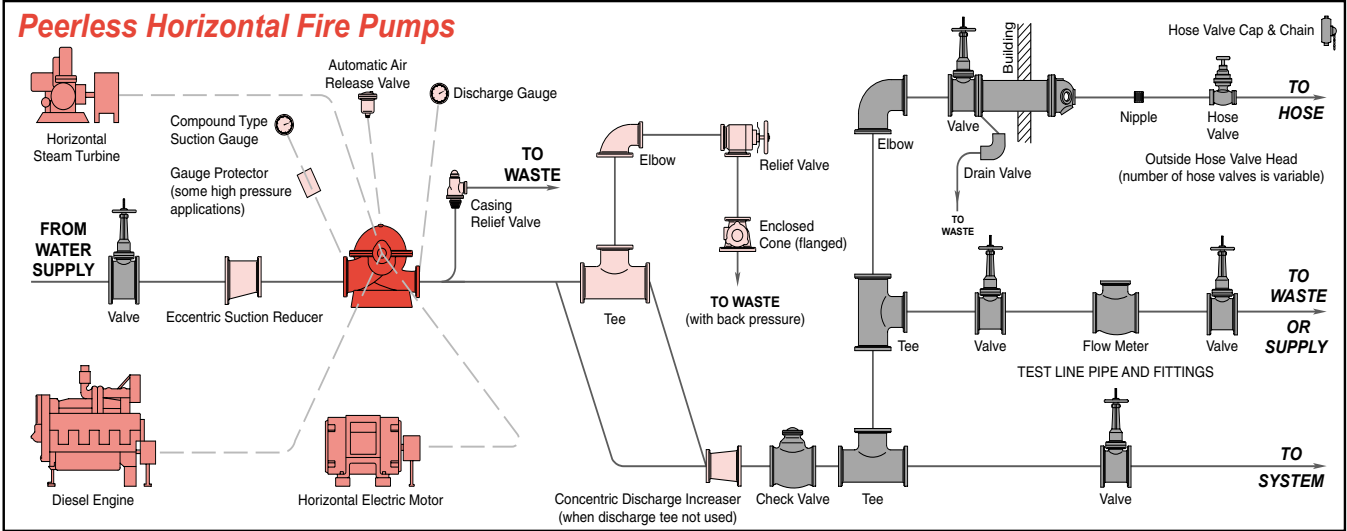
PES
Horizontal Diesel
Driven Pump

Accessories

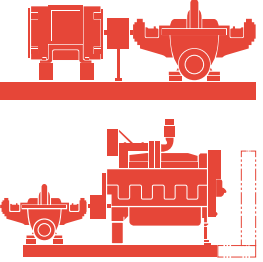
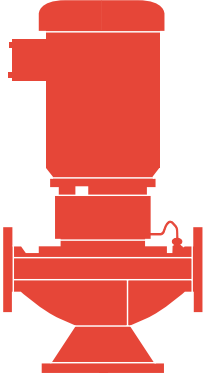
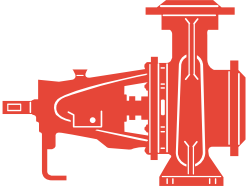
To meet the rigorous requirements of the NFPA 20 standards, certain accessories are required for all fire pump installations. They will vary, however, to fit the needs of each individual installation and the requirements of the local authority having jurisdiction. Peerless Pump provides a wide range of fire pump fittings which include: concentric discharge increaser, casing relief valve, eccentric suction reducer, increasing discharge tee, overflow cone, hose valve head, hose valves, hose valve caps and chains, suction and discharge gauges, relief

valve, automatic air release valve, flow meter, and ball drip valve. No matter what the requirements, Peerless Pump has a complete line of accessories available and can satisfy the requirements of each installation.

The charts below graphically illustrate the many accessories as well as the optional drives that are available with all Peerless fire pumps and packaged systems.



Peerless Fire Product Line
Features and Specifications

				
	Horizontal Fire Pumps, UL Listed, ULC Listed and FM Approved	In-Line Fire Pumps, UL and ULC Listed	End Suction Fire Pumps, UL Listed and FM Approved	Vertical Fire Pumps UL Listed, ULC Listed and FM Approved
Type	Horizontal centrifugal pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards. Types AF, ADF, AEF, TUF, TUTF.	Compact in-line centrifugal fire pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards. Type PVF.	End suction centrifugal fire pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards. Type UNF.	Vertical turbine pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards.
Capacities	250 to 5,000 gpm (57 to 1,136 m³/hr)	50 to 1,500 gpm (11 to 341 m³/hr)	Up to 1,500 gpm (341 m³/hr)	250 to 5,000 gpm (57 to 1,136 m³/hr)
Head	92 to 1178 feet (28 to 359 meters)	Up to 406 feet (123 meters)	Up to 367 feet (112 meters)	92 to 1,176 feet (28 to 359 meters)
Pressure	Up to 640 psi (45 kg/cm², 4,414 kPa)	Up to 175 psi (12 kg/cm², 1,207 kPa)	Up to 159 psi (11.2 kg/cm², 1,096 kPa)	Up to 500 psi (35.15 kg/cm², 3,515 kPa)
Horsepower	Up to 800 hp (597 kW)	Up to 125 hp (93 kW)	Up to 210 hp (157 kW)	Up to 600 hp (448 kW)
Drives	Horizontal electric motors, and diesel engines	Vertical close coupled electric motors	Horizontal electric motors and diesel engines	Vertical electric motors and diesel engines with right angle gears
Liquids Pumped	Water.	Water.	Water.	Water.
Temperature	Ambient within the limits for satisfactory equipment operation.	Ambient within the limits for satisfactory equipment operation.	Ambient within the limits for satisfactory equipment operation.	Up to 115°F (46°C)
Materials of Construction	Cast iron, bronze fitted as standard. Optional materials available for sea water applications.	Cast iron, bronze fitted.	Cast iron, bronze fitted.	Cast iron, bronze fitted as standard. Optional materials available for sea water applications.



GRUNDFOS FIRE PUMP SYSTEMS

Responsible stewardship and good business

Grundfos is guided by a desire to use technology in innovative ways to support a growing and fast-changing world. We are conscious of the impact our activities can have on people and the environment, and this is precisely why we put sustainability first. From our perspective, sustainability is a healthy mix of responsible stewardship, common sense and good business.

- To be sure that we have enough clean water tomorrow, we should look to more efficient water use today.
- By reducing energy costs on pumping systems, we play our part in conserving resources and making our North American pump and pumping solutions more competitive on local and global markets.

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www.grundfos.us/fire

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2941 Brighton Road
Oakville, Ontario
L6H 6C9
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www.grundfos.ca/fire

GRUNDFOS - Mexico
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Parque Industrial Stiva Aeropuerto
C.P. 66600 Apodaca, N.L. Mexico
Phone: 011-52-81-8144 4000
Fax: 011-52-81-8144 4010

www.grundfos.mx/fire



Pump Performance Datasheet

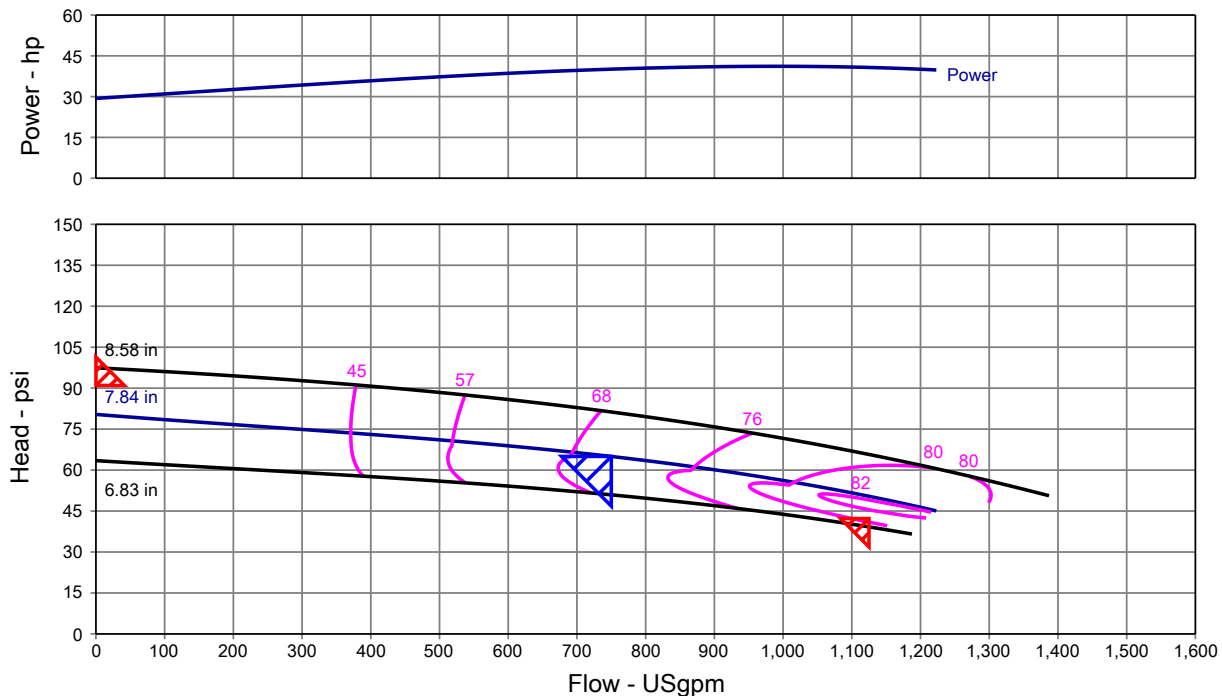
Customer :		Quote Number / ID :	PTSD - DI - 0221 - 17
Customer ref. / PO :		Peerless Model :	5AEF8A
Tag Number :	001	Stages :	1
Service :		Based on curve number :	5AEF8A-3000 Rev Feb 2020
Quantity :	2	Date last saved :	01 Mar 2021 1:06 PM
Operating Conditions		Liquid	
Flow, rated :	750 USgpm	Liquid type :	Cold Water
Differential head / pressure, rated (requested) :	65.00 psi	Additional liquid description :	
Differential head / pressure, rated (actual) :	64.94 psi	Solids diameter, max :	0.00 in
Suction pressure, rated / max :	3.00 / 10.00 psi.g	Solids concentration, by volume :	0.00 %
NPSH available, rated :	Ample	Temperature, max :	68.00 deg F
Site Supply Frequency :	60 Hz	Fluid density, rated / max :	1.000 / 1.000 SG
NPSHA Limits		Viscosity, rated :	1.00 cP
Speed, rated :	3000 rpm	Vapor pressure, rated :	0.34 psi.a
Impeller diameter, rated :	7.84 in	Material	
Impeller diameter, maximum :	8.58 in	Material selected :	Cast Iron
Impeller diameter, minimum :	6.83 in	Pressure Data	
Flow, rated :	750 USgpm	Maximum working pressure :	90.39 psi.g
Head, rated :	64.94 psi	Maximum allowable working pressure :	175.0 psi.g
Power, rated :	40.1 hp	Maximum allowable suction pressure :	N/A
Power required at 150% flow :	40.7 hp	Hydrostatic test pressure :	N/A
Peak power :	41.2 hp		
Efficiency, rated :	70.90 %		
Flow at 150% :	1,125 USgpm		
Head at 150%, actual/limit :	50.41 / 42.24 psi		
Closed valve pressure :	83.39 psi.g		
140% Head at shutoff :	90.98 psi		

Performance based on test acceptance - Hyd Inst 14.6 Unilateral (1U)

The rated point is the only guaranteed point (within the specified HI grade) on the performance curve.

The published closed valve head has a +6% tolerance.

Other specified duty points, including their tolerances, shall be per separate agreement between Peerless Pump Co. and buyer.



CR15-05 A-A-A-E-HQQE 3x400D 50 HZ

Grundfos pump 96501908



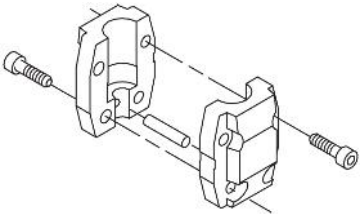
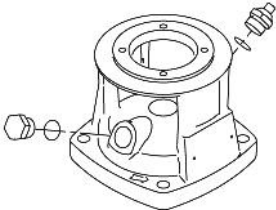
Thank you for your interest in our products. Please contact us for more information, or visit our website

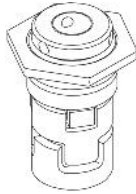
<https://www.lenntech.com/grundfos/CRFAM/96501908/CR-15-5-A-A-A-E-HQQE.html>

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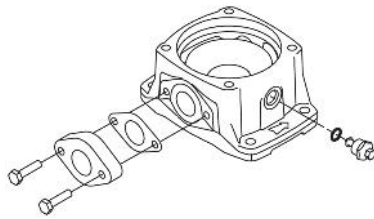
Position	Qty.	Description
	1	CR 15-5 A-A-A-E-HQQE  Product No.: On request Vertical, multistage centrifugal pump with inlet and outlet ports on same the level (inline). The pump head and base are in cast iron – all other wetted parts are in stainless steel. A cartridge shaft seal ensures high reliability, safe handling, and easy access and service. Power transmission is via a rigid split coupling. Pipe connection is via oval flanges with internal Rp threads. The pump is fitted with a 3-phase, fan-cooled asynchronous motor. Further product details Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An integral part of the process is a pretreatment. The entire process consists of these elements: 1) Alkaline-based cleaning. 2) Zinc phosphating. 3) Cathodic electro-deposition. 4) Curing to a dry film thickness 18-22 my m. The colour code for the finished product is NCS 9000/RAL 9005. Pump A standard split coupling connects the pump and motor shaft. It is enclosed in the pump head/motor stool by means of two coupling guards.  The pump head, pump head cover and flange for motor mounting is made in one piece. The pump head has a combined 1/2" priming plug and vent screw.  The pump is fitted with a balanced O-ring seal unit with a rigid torque-transmission system. This seal type is assembled in a cartridge unit which makes replacement safe and easy. Due to the balancing, this seal type is suitable for high-pressure applications. The cartridge construction also protects the pump shaft from possible wear from a dynamic O-ring between pump shaft and shaft seal. Primary seal: • Rotating seal ring material: silicon carbide (SiC) • Stationary seat material: silicon carbide (SiC) This material pairing is used where higher corrosion resistance is required. The high hardness of this material pairing offers good resistance against abrasive particles. Secondary seal material: EPDM (ethylene-propylene rubber) EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



The shaft seal is screwed into the pump head.

The chambers and impellers are made of stainless-steel sheet. The chambers are provided with a PTFE neck ring offering improved sealing and high efficiency. The impellers have smooth surfaces, and the shape of the blades ensure a high efficiency.

The base is made of cast iron. The oval flanges are bolted to the base. The outlet side of the base has a drain plug. The pump is secured to the foundation by four bolts through the base plate.



Motor

The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards. The motor is flange-mounted with tapped-hole flange (FT).

Motor-mounting designation in accordance with IEC 60034-7: IM B 14 (Code I) / IM 3601 (Code II).

Electrical tolerances comply with IEC 60034.

The motor efficiency is classified as IE3 in accordance with IEC 60034-30-1.

The motor has thermistors (PTC sensors) in the windings in accordance with DIN 44081/DIN 44082. The protection reacts to both slow- and quick-rising temperatures, e.g. constant overload and stalled conditions.

Thermal switches must be connected to an external control circuit in a way which ensures that the automatic reset cannot cause accidents. The motors must be connected to a motor-protective circuit breaker according to local regulations.

The motor can be connected to a variable speed drive for adjustment of pump performance to any duty point. Grundfos CUE offers a range of variable speed drives. Please find more information in Grundfos Product Center.

Technical data

Controls:

Frequency converter: NONE

Liquid:

Pumped liquid: Water
 Liquid temperature range: -20 .. 120 °C
 Liquid temperature during operation: 20 °C
 Density: 998.2 kg/m³

Technical:

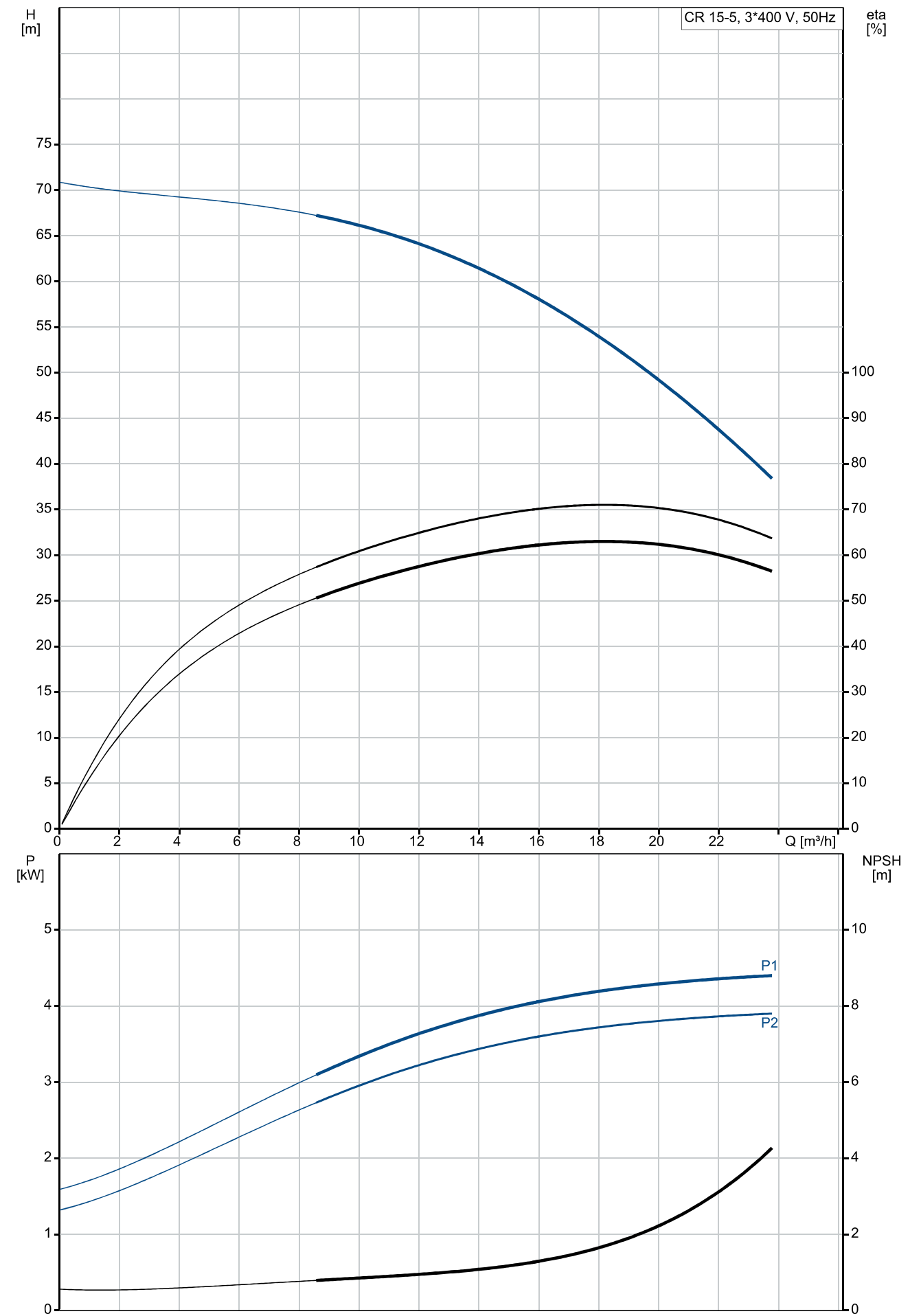
Rated flow: 17 m³/h
 Rated head: 55.4 m
 Pump orientation: Vertical
 Shaft seal arrangement: Single
 Code for shaft seal: HQQE
 Approvals on nameplate: CE, EAC, ACS
 Curve tolerance: ISO9906:2012 3B

Materials:

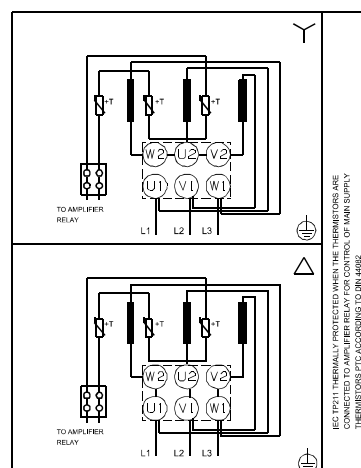
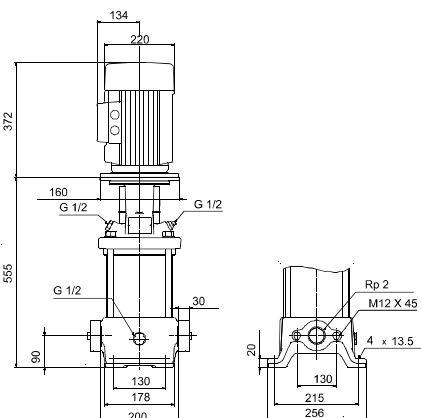
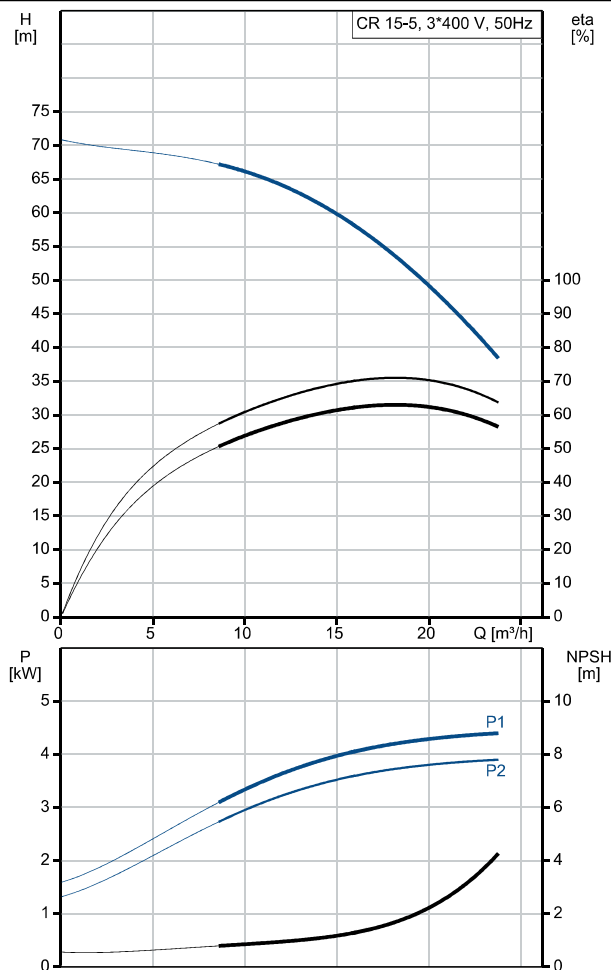
Base: Cast iron
 EN 1561 EN-GJL-200
 ASTM A48-25B

Position	Qty.	Description
		Impeller: Stainless steel EN 1.4301 AISI 304 Bearing: SIC Installation: Maximum ambient temperature: 60 °C Maximum operating pressure: 10 bar Max pressure at stated temp: 10 bar / 120 °C 10 bar / -20 °C Type of connection: Oval / Rp Size of inlet connection: 2 inch Size of outlet connection: 2 inch Pressure rating for pipe connection: PN 10 Flange size for motor: FT130 Electrical data: Motor standard: IEC Motor type: 112MC IE Efficiency class: IE3 Rated power - P2: 4 kW Power (P2) required by pump: 4 kW Mains frequency: 50 Hz Rated voltage: 3 x 380-415D V Rated current: 7.9 A Starting current: 1000-1110 % Cos phi - power factor: 0.87-0.87 Rated speed: 2920-2940 rpm Efficiency: IE3 88,1% Motor efficiency at full load: 88.1 % Motor efficiency at 3/4 load: 88.6 % Motor efficiency at 1/2 load: 85.2 % Number of poles: 2 Enclosure class (IEC 34-5): 55 Dust/Jetting Insulation class (IEC 85): F Others: Minimum efficiency index, MEI ≥: 0.70 Net weight: 73 kg Gross weight: 77 kg Shipping volume: 0.13 m³ Danish VVS No.: 385904050

On request CR 15-5 A-A-A-E-HQQE 50 Hz



Description	Value
General information:	
Product name:	CR 15-5 A-A-A-E-HQQE
Product No:	On request
EAN number:	On request
Technical:	
Rated flow:	17 m³/h
Rated head:	55.4 m
Stages:	5
Impellers:	5
Number of reduced-diameter impellers:	0
Low NPSH:	N
Pump orientation:	Vertical
Shaft seal arrangement:	Single
Code for shaft seal:	HQQE
Approvals on nameplate:	CE, EAC, ACS
Curve tolerance:	ISO9906:2012 3B
Pump version:	A
Model:	A
Materials:	
Base:	Cast iron
	EN 1561 EN-GJL-200
	ASTM A48-25B
Impeller:	Stainless steel
	EN 1.4301
	AISI 304
Material code:	A
Code for rubber:	E
Bearing:	SIC
Installation:	
Maximum ambient temperature:	60 °C
Maximum operating pressure:	10 bar
Max pressure at stated temp:	10 bar / 120 °C
	10 bar / -20 °C
Type of connection:	Oval / Rp
Size of inlet connection:	2 inch
Size of outlet connection:	2 inch
Pressure rating for pipe connection:	PN 10
Flange size for motor:	FT130
Connect code:	A
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-20 .. 120 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Motor standard:	IEC
Motor type:	112MC
IE Efficiency class:	IE3
Rated power - P1:	4 kW
Power (P2) required by pump:	4 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 380-415D V
Rated current:	7.9 A
Starting current:	1000-1110 %
Cos phi - power factor:	0.87-0.87
Rated speed:	2920-2940 rpm
Efficiency:	IE3 88,1%
Motor efficiency at full load:	88.1 %
Motor efficiency at 3/4 load:	88.6 %
Motor efficiency at 1/2 load:	85.2 %
Number of poles:	2
Enclosure class (IEC 34-5):	55 Dust/Jetting
Insulation class (IEC 85):	F
Motor protec:	PTC

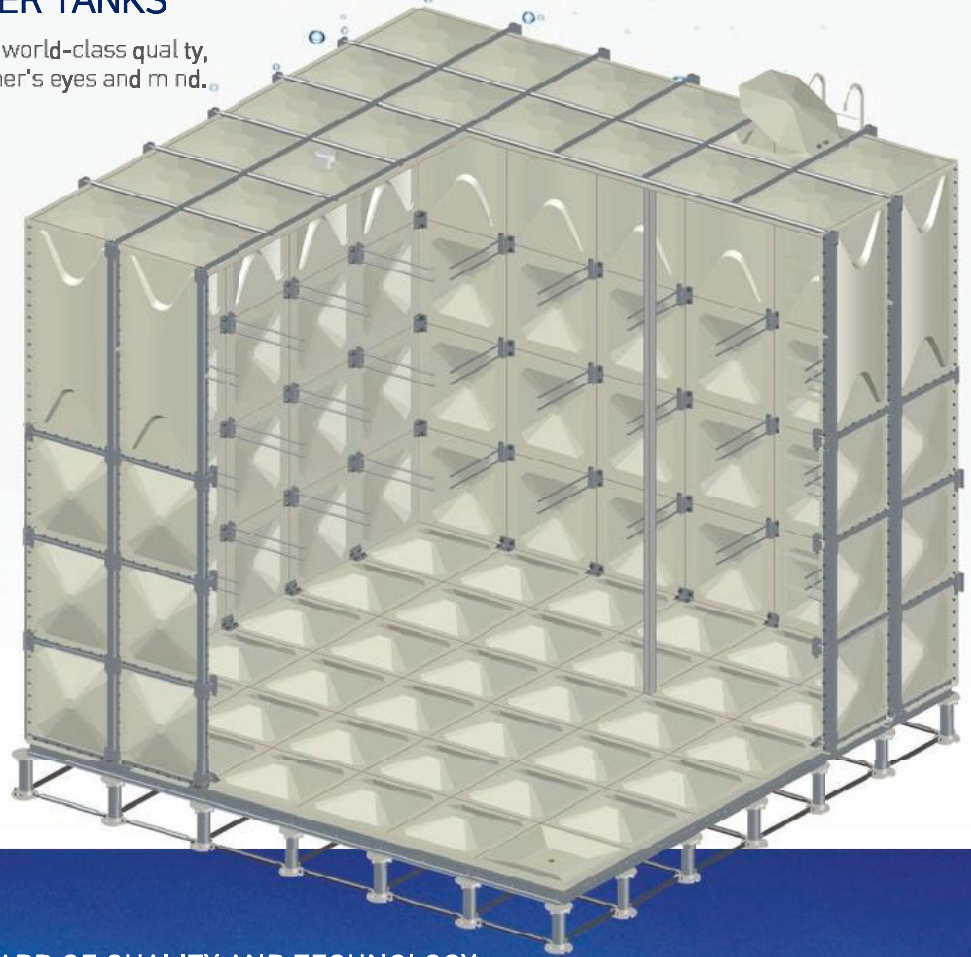


IDEAL OF CLEAN DRINKING

SERIM HI TANK

GRP SECTIONAL WATER TANKS

We will satisfy our customers with world-class quality,
supply the best products in customer's eyes and mind.



THE WORLD-CLASS STANDARD OF QUALITY AND TECHNOLOGY



SERIM HI TANK

Recognized for world-class quality and technology

SERIM Hi Tank has highly acclaimed technology with Singapore PSB, UK WARS, US NSF and ISO9001: 2010 certification. We will satisfy our customers with world-class quality and supply the best products in customer's eyes and mind.

Certification SERIM HI TANK



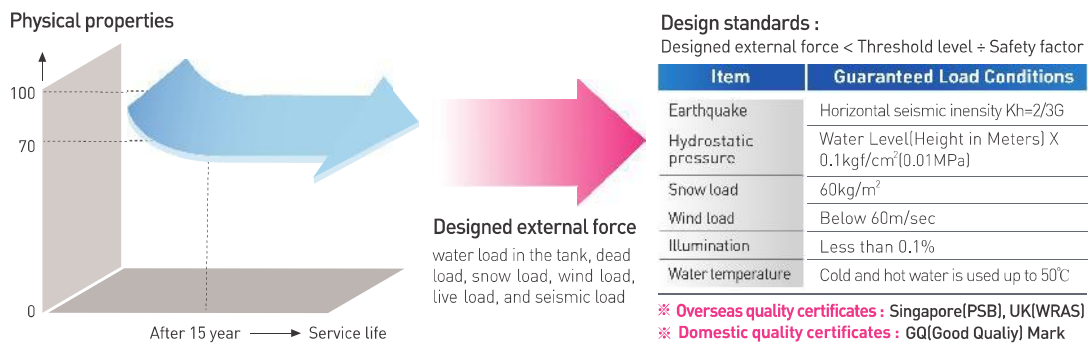
HIGH QUALITY

Hi Tank pursues an optimal system through quality management with strict design standard and reliable structural stress analysis.

A critical aspect in structural analysis is the design according to safety factor at a threshold level. Serim's expertise lies in the design of **optimal safety factor** considering the expected external force based on the physical properties of the SMC material after long-term use of more than 15years.

Since Hi Tank does not take account of the initial value (100%) of the SMC properties but only considers the minimum value (70%) and safety factor while designing, SERIM Hi Tank guarantees long-term durability.

SMC Degradation process

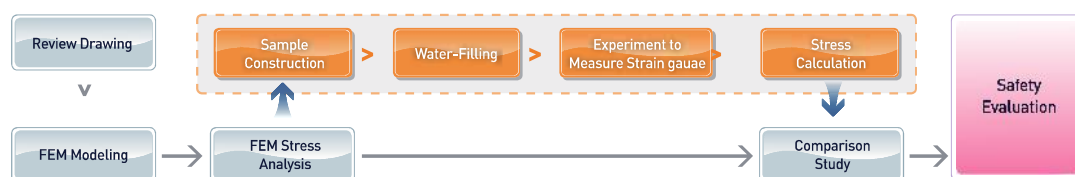


OPTIMAL STRUCTURE DESIGN

With years of expertise in structure design, we provide perfect structure safety.

We performed structure analysis by the Finite Element Method to secure reliability on a reinforcement system, the strength of panels and pursue the optimal design. By inputting all possible factors such as hydrostatic pressure, seismic load, snow load, wind load, etc., We estimated the stress and distortion level. Through intensive reinforcement on the part with maximum stress, we aimed to design the best stable system.

Structural Analysis Flow chart





TECHNICAL DATA

STANDARD RESPONSE CONCEALED PENDENT SPRINKLER VK202-D (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

Viking Standard Response Concealed Pendent Sprinklers are thermosensitive glass bulb spray sprinklers pre-assembled with a threaded adapter for installation with a domed cover that provides up to 1/2" (13 mm) of vertical adjustment. The cover plate is available with several decorative finishes to meet design requirements. The Electroless Nickel PTFE (ENT) finish has been investigated for installation in corrosive environments and is listed/approved as indicated in the Approval Charts. The ENT finish is only available for the sprinkler assembly, the cover plate is not plated. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on", "thread-off" design of the concealed cover plate assembly allows easy installation of the cover plate after the system has been tested and the ceiling finish has been applied. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler.



2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV

FM Approved: Classes 2015



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

Refer to the Approval Charts and Design Criteria for Listing and Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
 Maximum Working Pressure: 175 psi (12 bar).
 Factory tested hydrostatically to 500 psi (34.5 bar).
 Thread Size: 3/4" (20 mm) NPT
 Nominal K-Factor: 8.0 U.S. (115.2 metric*)

* Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)
 Overall Length (sprinkler body): 2-5/16" (59 mm)

Material Standards:

Frame Casting: Brass UNS-C84400
 Deflector: Phosphor Bronze UNS-C51000 or Copper UNS-C19500
 Bulb: Glass, nominal 5 mm diameter
 Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
 Compression Screw: Brass UNS-C36000
 Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
 Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

Cover Assembly Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800
 Spring: Beryllium Nickel
 Solder: Eutectic

Ordering Information: (Also refer to the current Viking price list.)

Viking Standard Response Concealed Pendent Sprinkler VK202 and Cover Plate Assembly must be ordered separately:

Sprinkler: Base Part No. 10142A-X for brass finish, and 10142JN-X for ENT finish (includes sprinkler and adapter pre-assembled, with a protective plastic cap covering the unit)

Specify sprinkler temperature rating by adding the appropriate suffix for the temperature rating to the base part number:

Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E

For example, concealed sprinkler VK202, brass finish, with a 155 °F (68 °C) temperature rating = 10142ABX.

NOTE: When ordering this sprinkler using the SIN, add suffix -D. For example, concealed sprinkler VK202 = VK202-D.



TECHNICAL DATA

STANDARD RESPONSE CONCEALED PENDENT SPRINKLER VK202-D (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Cover Plate Assembly: Base Part No. 12381

Specify finish and temperature rating of the cover plate assembly by adding the appropriate suffixes for the finish and the cover temperature rating to the base part number:

Finish Suffix: Polished Chrome = F, Painted White = M-W, Painted Ivory = M-I, and Painted Black = M-B

Temperature Suffix: 135 °F (57 °C) = A (for use with 155 °F (68 °C) rated sprinklers only), 165 °F (74 °C) = C (for use with 175 °F (79 °C) or 200 °F (93 °C) rated sprinklers).

For example, cover 12381 with a Polished Chrome finish and a 135 °F (57 °C) temperature rating = 12381FA.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrench: Part No. 13577W/B** (available since 2006)

**A ½" ratchet is required (not available from Viking).

Sprinkler Cabinet: Part No. 01731A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand and the bulb to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Standard Response Concealed Pendent Sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

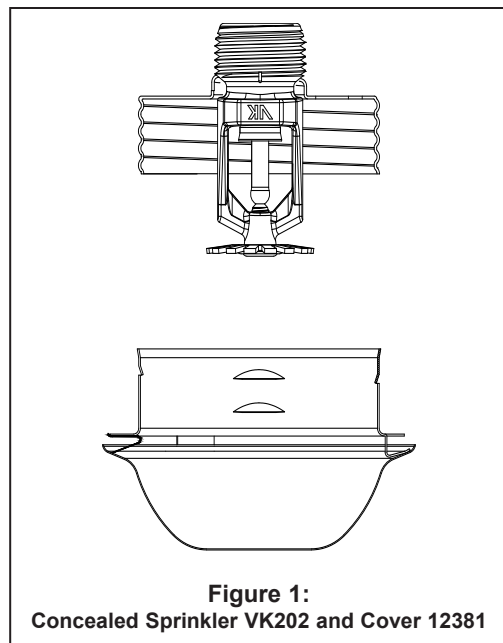


Figure 1:
Concealed Sprinkler VK202 and Cover 12381



TECHNICAL DATA

STANDARD RESPONSE CONCEALED PENDENT SPRINKLER VK202-D (K8.0)

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TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green

Cover Plate Finishes: Polished Chrome, Painted White, Painted Ivory, and Painted Black

Sprinkler Finishes: Brass or ENT

Corrosion-Resistant Coatings³: ENT

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

³ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway. For ENT coated sprinklers the belleville spring is exposed.

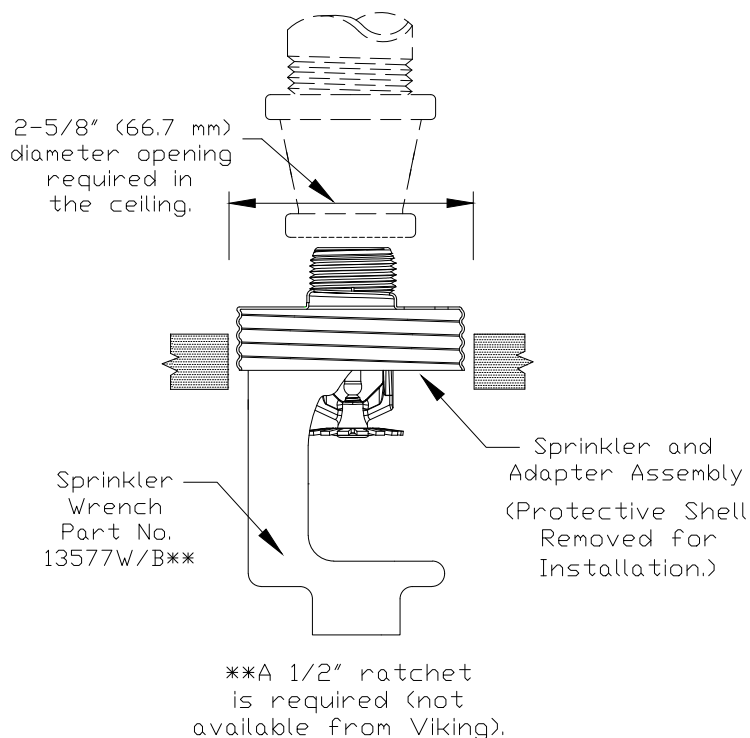


Figure 2:

Sprinkler Installation and Correct Use of Wrench



Identification of Custom Paint Color:
 All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 3: Identification of Custom Paint Color for Concealed Covers



TECHNICAL DATA

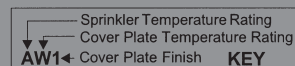
STANDARD RESPONSE CONCEALED PENDENT SPRINKLER VK202-D (K8.0)

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Approval Chart 1 (UL)

Standard Response Concealed Pendent Sprinklers

Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Overall Length (Sprinkler Body)		Listings and Approvals ³ (Refer also to Design Criteria below.)
		Inch	mm	U.S.	metric ²	Inches	mm	cULus ⁴
10142A-X	VK202	3/4"	20	8.0	115.2	2-5/16"	59	AW1, BX1
10142JN-X ⁶	VK202	3/4"	20	8.0	115.2	2-5/16"	59	AW1, BX1
Sprinkler Temperature Ratings A - 155 °F (68 °C) B - 175 °F (79 °C) and 200 °F (93 °C)				Cover Plate Assembly Temp. Ratings⁵ W - 135 °F (57 °C) cover 12381 ¹ X - 165 °F (74 °C) cover 12381 ¹				Finishes of the Cover Plate Assembly⁷ 1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black

Footnotes

- ¹ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
- ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- ³ This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
- ⁴ Listed by Underwriter's Laboratories for use in the U.S. and Canada.
- ⁵ The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label.
- ⁶ cULus Listed as corrosion-resistant.
- ⁷ Standard painted finishes consist of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

Viking Standard Response Concealed Pendent Sprinklers are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light, Ordinary, and Extra Hazard occupancies.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13.
- Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from walls is 4 in. (102 mm).
- Maximum distance from walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.
- DEFLECTOR POSITION:** Install Concealed Pendent Sprinkler VK202 with the deflector 3/8" (9.5 mm) to 7/8" (22.2 mm) below the ceiling. Refer to Figures 2 and 4.

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



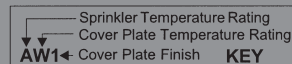
TECHNICAL DATA

STANDARD RESPONSE CONCEALED PENDENT SPRINKLER VK202-D (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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Approval Chart 2 (FM)

Standard Response Concealed Pendent Sprinklers
 Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Overall Length (Sprinkler Body)		FM Approvals ³ (Refer also to Design Criteria below.)
		Inch	mm	U.S.	metric ²	Inches	mm	
10142A-X	VK202	3/4"	20	8.0	115.2	2-5/16"	59	AW1, BX1
10142JN-X ⁶	VK202	3/4"	20	8.0	115.2	2-5/16"	59	AW1, BX1
Sprinkler Temperature Ratings A - 155 °F (68 °C) B - 175 °F (79 °C) and 200 °F (93 °C)				Cover Plate Assembly Temp. Ratings⁴ W - 135 °F (57 °C) cover 12381 ¹ X - 165 °F (74 °C) cover 12381 ¹				Finishes of the Cover Plate Assembly⁵ 1 - Polished Chrome, Painted White, Painted Ivory, or Painted Black

Footnotes

- ¹ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
- ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- ³ This chart shows the FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
- ⁴ The 135 °F (57 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label.
- ⁵ Standard painted finishes consist of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Approvals apply for any paint manufacturer. Contact Viking for additional information.
- ⁶ FM approved as corrosion resistant.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

Viking Concealed Pendent Sprinkler VK202-D is FM Approved as a standard response **Non-Storage** concealed pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

- **DEFLECTOR POSITION:** Install Concealed Pendent Sprinkler VK202 with the deflector 3/8" (9.5 mm) to 7/8" (22.2 mm) below the ceiling. Refer to Figures 2 and 4.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

STANDARD RESPONSE CONCEALED PENDENT SPRINKLER VK202-D (K8.0)

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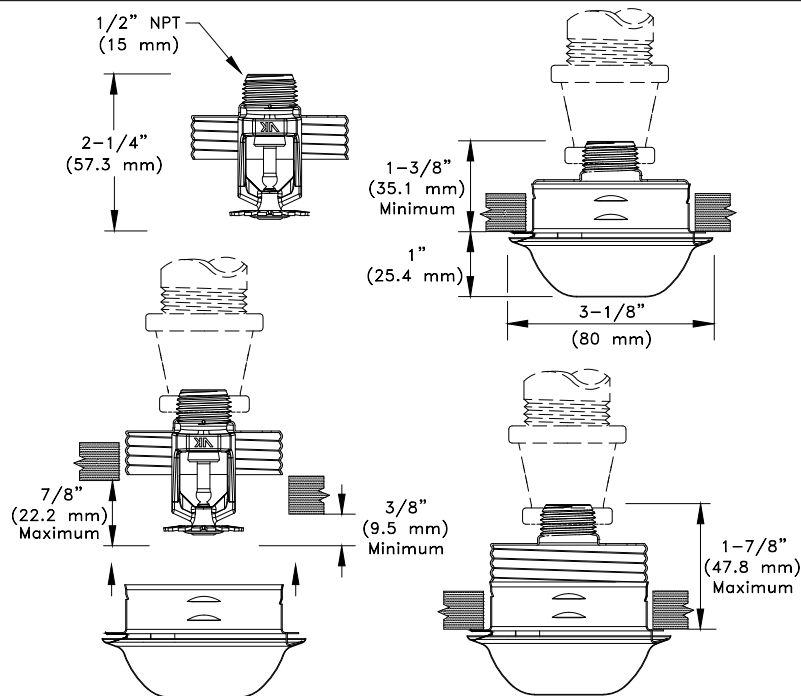


Figure 4: Concealed Sprinkler VK202 Dimensions and Cover Installation


A61
FEMALE x FEMALE
A61
GROOVE x GROOVE

Description

A61 Giacomini Test and Drain valve for sprinkler systems combines the functions of test and drain for wet sprinkler systems.

A61 valves have forged brass body with chrome plated brass ball valve and PTFE seats. The valves complies with the requirements of NFPA-13, NFPA-13R and NFPA-13D. The A61 valves are single handle ball valves with three working positions. They include tamper resistant test orifice and sight glass for the visual control.

Versions and product codes

Series	Size	Type
A61	1"	Rp, EN 10226 (F) x Rp, EN 10226 (F)
	1 1/4"	
	1 1/2"	
	2"	
	1"	NPT (F) x NPT (F)
	1 1/4"	
	1 1/2"	
	2"	
	1 1/4"	Groove x Groove
	2"	

Orifice codes

Valves size	Size	K factor
1"	3/8"	2,8
	7/16"	4,2
	1/2"	5,6
	17/32"	8,0
1 1/4"	3/8"	2,8
	7/16"	4,2
	1/2"	5,6
	17/32"	8,0
	5/8"	11,2
1 1/2"	3/4"	14,0
	7/16"	4,2
	1/2"	5,6
	17/32"	8,0
	5/8"	11,2
	3/4"	14,0
	15/16"	16,8
2"	15/64"	22,4
	19/64"	25,2

Technical data

- Rated pressure: 300 psi

Materials

- Forged brass body
- Chrome plated ball
- Steel handle
- Valve seat in PTFE
- Indication disk in brass
- Sight glasses in polycarbonate

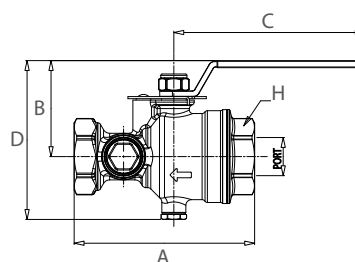
Approvals



LISTED 36Y7 1 1/2" size UL listed only

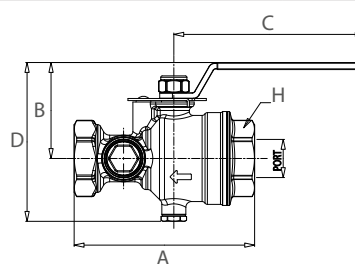
Dimensions

A61 - FEMALE Rp x FEMALE Rp



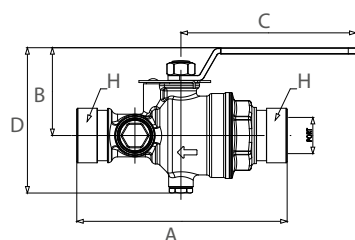
Size	C (plug)	PORT	A	B	C	D	H
1"	1/4"	1 1/16"	5 1/18"	2 43/64"	5 11/32"	4 27/64"	1 57/64"
1 1/4"	1/4"	1 1/16"	5 7/16"	2 43/64"	5 11/32"	4 27/64"	1 57/64"
1 1/2"	1/4"	1 18/32"	6 3/16"	4"	6 26/32"	6 21/64"	2 40/64"
2"	1/4"	1 12/16"	6 21/32"	4"	6 26/32"	6 21/64"	2 40/64"

A61 - FEMALE NPT x FEMALE NPT



Size	C (plug)	PORT	A	B	C	D	H
1"	1/4"	1 1/16"	5 1/32"	2 43/64"	5 11/32"	4 27/64"	1 57/64"
1 1/4"	1/4"	1 1/16"	5 1/32"	2 43/64"	5 11/32"	4 27/64"	1 57/64"
1 1/2"	1/4"	1 18/32"	6 6/32"	4"	6 26/32"	6 21/64"	2 40/64"
2"	1/4"	1 12/16"	6 6/32"	4"	6 26/32"	6 21/64"	2 40/64"

A61 - GROOVE x GROOVE



Size	C (plug)	PORT	A	B	C	D	H
1 1/4"	1/4"	1 1/16"	6 13/32"	2 43/64"	5 11/32"	4 27/64"	1 1/4" GROOVE
2"	1/4"	1 12/16"	7 17/32"	4"	6 26/32"	6 21/64"	2" GROOVE



Product specifications

A61

Test and drain valve for sprinkler systems combines the functions of test and drain for wet sprinkler systems. complies with the requirements of NFPA-13, NFPA-13R and NFPA-13D and is FM approved and UL listed.

Main feature as following:

- Rp, EN 10226 threads 1" - 1 1/4" - 1 1/2" - 2"
- NPT threads 1" - 1 1/4" - 1 1/2" - 2"
- Groove connections 1 1/4" - 2"
- Forged brass body
- Chrome plated brass ball
- PTFE seats.
- Single handle ball valves with three working positions
- Tamper resistant test orifice and sight glass included

Additional information

For more information, go to www.giacomini.com or contact our technical assistance service: ☎ +39 0322 923372 📠 +39 0322 923255 ✉ consulenza.prodotti@giacomini.com

This document provides only general indications. Giacomini S.p.A. may change at any time, without notice and for technical or commercial reasons, the items included herewith.

The information included in this technical sheet do not exempt the user from strictly complying with the rules and good practice standards in force.

Giacomini S.p.A. Via per Alzo, 39 - 28017 San Maurizio d'Opaglio (NO) Italy



Figure No. 4202



WATER 2 1/2 GALLON

**U/L LISTED
STANDARD EQUIPMENT:**

Water a liquid agent only recommended for fighting Class "A" fires in hand portable extinguishers.

IDEAL USES:

Schools, theaters, department and retail store rooms.

WATER MIST 2 1/2 GALLON

**U/L LISTED
STANDARD EQUIPMENT:**

Distilled water extinguishing agent. White Painted finish.

IDEAL USES:

Hospitals, Health Care Facility and Clean Rooms



Figure No. 4206

Figure No.	U/L Rating	Capacity (gallons)	Height	Width	Depth (dia.)	Range of Sream	Valve Material	Cylinder Material	Bracket	Shipping Weight (lbs.)
4202	2A	2 1/2	24 1/2"	9"	7"	40-55'	Brass	Stainless Steel	Wall	7 1/2 Lbs.
4206	2A:C	2 1/2	24 1/2"	11"	7"	10-12'	Brass	Painted Steel	Wall	8 Lbs.



Figure No. 4305

REGULAR BC

Regular BC

Series 4300

U/L LISTED

STANDARD EQUIPMENT:

Sodium Bicarbonate based dry agent capable of fighting Class "B" and "C" type fires.

IDEAL USES:

Kitchens, garages, vehicles and boats.



Figure No. 4310

Figure No.	U/L Rating	Capacity (lbs.)	Height	Width	Depth (dia.)	Range of Sream	Valve Material	Cylinder Material	Coast Guard Approved	Bracket	Shipping Weight (lbs.)
4302	10B:C	2 1/2	15 1/2"	5 3/4"	3"	9-15'	Alum.	Steel	Yes	V/M	5 1/2 Lbs.
4305	10B:C	5	15 1/2"	5 1/2"	4 1/4"	12-18'	Alum.	Steel	Yes	V/M	9 1/4 Lbs.
4310	60B:C	10	20"	7 3/4"	5"	15-21'	Alum.	Steel	Yes	Wall	18 Lbs.
4320	120B:C	20	23 1/4"	10 3/4"	7"	15-21'	Alum.	Alum.	Yes	Wall	38 Lbs.



Specifications subject to change without notice.

Ordering Information			
Nominal Pipe Size		Model	Part Number
2"	DN50	VSR-2	1144402
2 1/2"	DN65	VSR-2 1/2	1144425
3"	DN80	VSR-3	1144403
3 1/2"	-	VSR-3 1/2	1144435
4"	DN100	VSR-4	1144404
5"	-	VSR-5	1144405
6"	DN150	VSR-6	1144406
8"	DN200	VSR-8	1144408

Optional: Cover Tamper Switch Kit, stock no. 0090148

Replaceable Components: Retard/Switch Assembly, stock no. 1029030

UL, CUL and CSFM Listed, FM Approved, LPCB Approved, For CE Marked (EN12259-5) / VdS Approved model use VSR-EU

Service Pressure: 450 PSI (31 BAR) - UL

Flow Sensitivity Range for Signal:

4-10 GPM (15-38 LPM) - UL

Maximum Surge: 18 FPS (5.5 m/s)

Contact Ratings: Two sets of SPDT (Form C)
10.0 Amps at 125/250VAC
2.0 Amps at 30VDC Resistive
10 mAmps min. at 24VDC

Conduit Entrances: Two knockouts provided for 1/2" conduit.
Individual switch compartments suitable for dissimilar voltages.

Environmental Specifications:

- NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket and die-cast housing when used with appropriate conduit fitting.
- Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL
- Non-corrosive sleeve factory installed in saddle.

Service Use:

Automatic Sprinkler	NFPA-13
One or two family dwelling	NFPA-13D
Residential occupancy up to four stories	NFPA-13R
National Fire Alarm Code	NFPA-72

WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.

Important: This document contains important information on the installation and operation of the VSR waterflow switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

General Information

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on a steel pipe; schedules 5 through 40, sizes 2" - 6" and is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR switches and retard device are enclosed in a general purpose, die-cast housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

Potter Electric Signal Company, LLC • St. Louis, MO • Phone: 866-956-1211/Canada 888-882-1833 • www.pottersignal.com

Installation (see Fig. 1)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

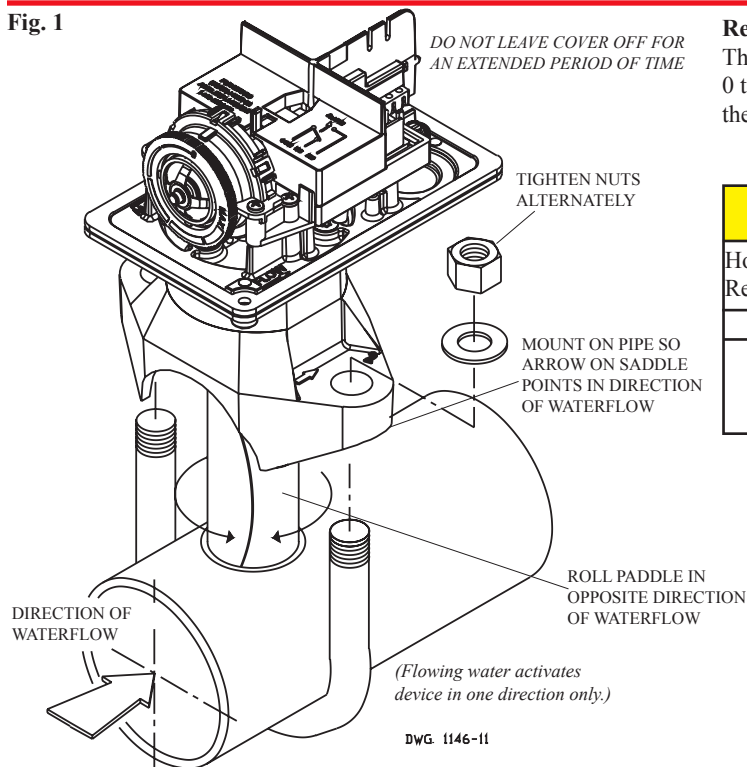
NOTE: Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty. Do not obstruct or otherwise prevent the trip stem of the flow switch from moving when water flows as this could damage the flow switch and prevent an alarm. If an alarm is not desired, a qualified technician should disable the alarm system.

Fig. 1

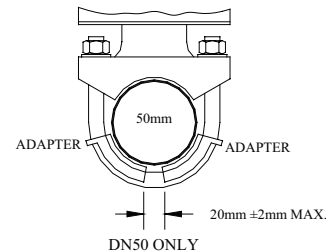
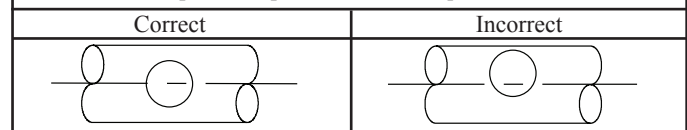


Retard Adjustment

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms

CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered. Refer to the Compatible Pipe/Installation Requirements chart for size.



USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

DWG# 1146-1F

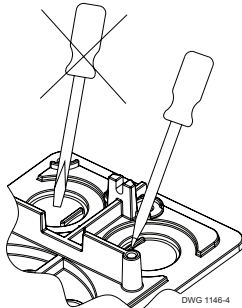
Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness										Hole Size		U-Bolt Nuts Torque			
					Lightwall		Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)							
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m		
VSR-2	2	DN50	2.375	60.3	.065	1.651	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 ± .125/- .062	33.0 ± 2.0	20	27		
VSR-2 1/2	2.5	-	2.875	73.0	.084	2.134	0.120	3.05	0.203	5.16	-	-	-	-						
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	-	-	0.142	3.6	0.102	2.6						
VSR-3	3	DN80	3.500	88.9	.083	2.108	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0				
VSR-3 1/2	3.5	-	4.000	101.6	-	-	0.120	3.05	0.226	5.74	-	-	-	-						
VSR-4	4	DN100	4.500	114.3	.084	2.134	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2						
VSR-5	5	-	5.563	141.3	-	-	0.134	3.40	0.258	6.55	-	-	-	-						
VSR-6	6	DN150	6.625	168.3	.115	2.921	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0						
VSR-8	8	DN200	8.625	219.1	-	-	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5						

NOTE: For copper or plastic pipe use Model VSR-CF.

Fig. 2

To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



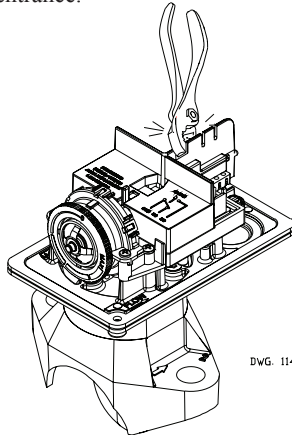
DWG. 1146-4

NOTICE

Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

Fig. 3

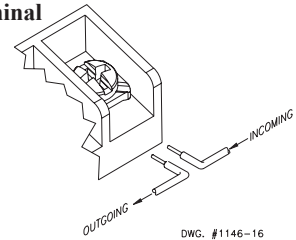
Break out thin section of cover when wiring both switches from one conduit entrance.



DWG. 1146-13

Fig. 4

Switch Terminal Connections Clamping Plate Terminal



DWG. #1146-16

WARNING

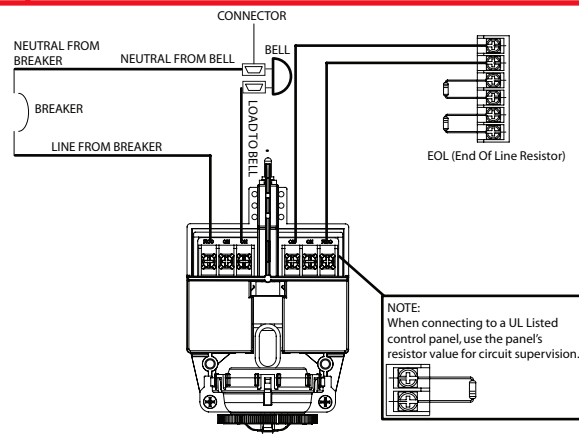
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Fig. 5 Typical Electrical Connections

Notes:

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).



NOTE:
When connecting to a UL Listed control panel, use the panel's resistor value for circuit supervision.

Testing

The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

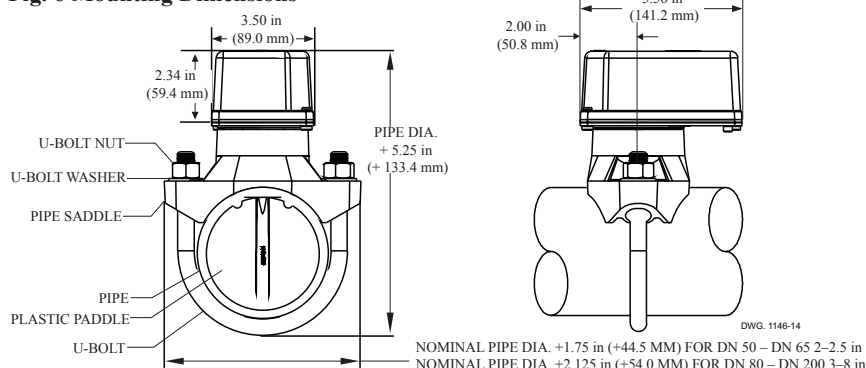
If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.

A minimum flow of 10 GPM (38 LPM) is required to activate this device.

NOTICE

Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

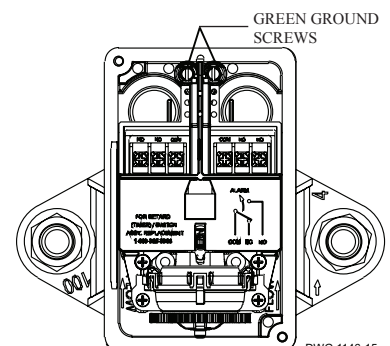
Fig. 6 Mounting Dimensions



DWG. 1146-14

NOMINAL PIPE DIA. +1.75 in (+44.5 mm) FOR DN 50 - DN 65 2-2.5 in
NOMINAL PIPE DIA. +2.125 in (+54.0 mm) FOR DN 80 - DN 200 3-8 in

Fig. 7



DWG. 1146-15

Maintenance

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 8). There is no maintenance required, only periodic testing and inspection.

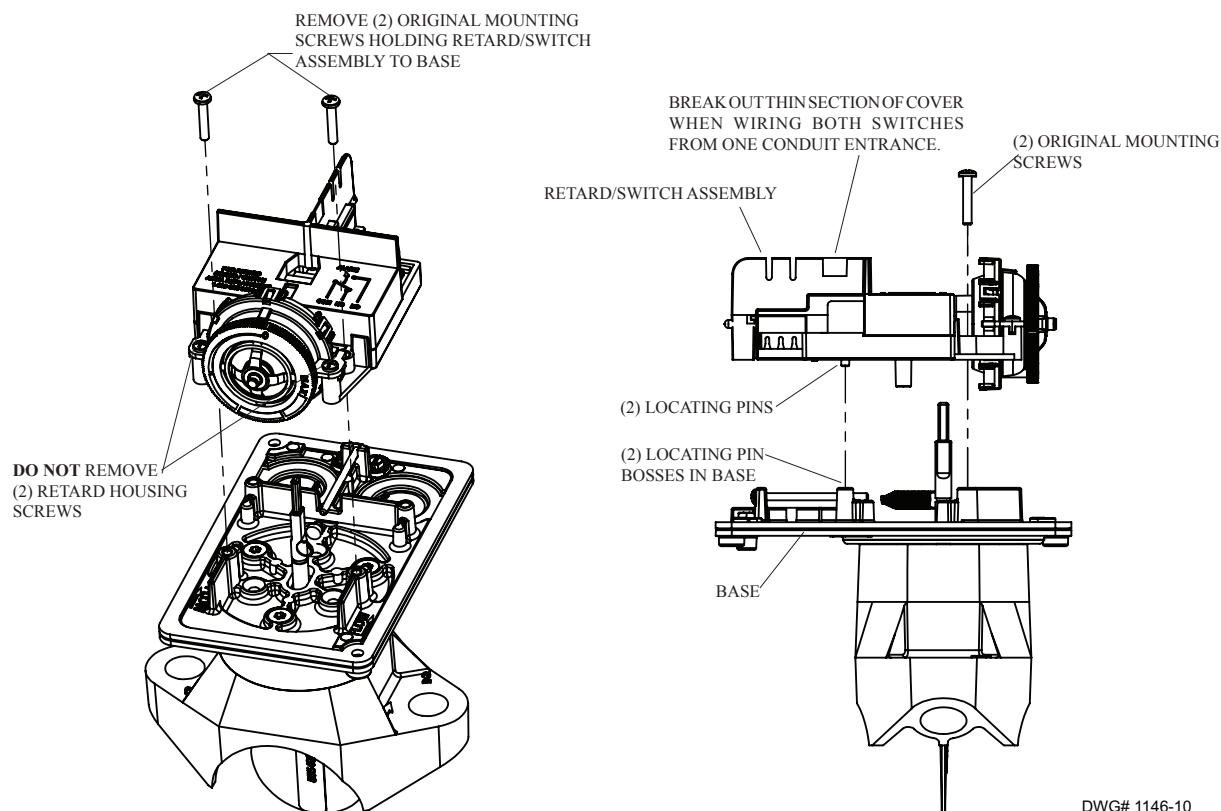
Retard/Switch Assembly Replacement (See Fig. 8)

NOTICE

The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe.

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

Fig. 8



Removal of Waterflow Switch

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.



TECHNICAL DATA

SWING CHECK VALVE MODEL D-1 & G-1

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking Swing Check Valve is a general purpose rubber-faced check valve approved for use in fire protection systems. The Swing Check Valve is manufactured with a ductile iron body, brass seat, and a rubber-faced clapper assembly, hinged to a removable access cover for easy inspection and maintenance.

The valve may be installed vertically or horizontally with access cover facing up. For availability of flanged-flanged and grooved-grooved options, refer to Table 1. Tapped openings (with plugs) and gauge connections are provided on both the inlet and outlet chambers of the valve.

FEATURES

- A. Ductile iron body for less weight and extra strength.
- B. Rated to 300 psi (20.7 bar) water working pressure.
- C. Rubber-faced clapper hinged to access cover for quick removal and easy servicing. All moving parts can be serviced without removing the valve from the installed position.
- D. With the cover/clapper assembly removed, the clapper rubber replacement requires removal of only one screw.
- E. Can be installed vertically or horizontally with access cover facing up.



2. LISTINGS AND APPROVALS

cULus Listed: Guide No. HMER

FM Approved: Single Check Valves

NYC Department of Buildings: MEA 89-92-E, Vol. XI

3. TECHNICAL DATA

Specifications:

Rated to 300 psi (20.7 bar) water working pressure.

Factory tested hydrostatically to 600 psi (41.4 bar).

Standard Flanged Connections: ANSI B16.42 Class 150 (mates with ANSI Class 125 and Class 150 flanges).

Standard Grooved Connections: ANSI/AWWA C606

Tapped Bosses: 2-1/2" (DN65), 3" (DN80) and 4" (DN100): Two 1/2" (15 mm) NPT
6" (DN150) and 8" (DN200): Two 3/4" (20 mm) NPT

Material Standards: Refer to Figure 1.

Ordering Information: Refer to Table 1 for part numbers and shipping weight.

Viking Technical Data may be found on The Viking Corporation's Web site at <http://www.vikinggroupinc.com>. The Web site may include a more recent edition of this Technical Data Page.

Table 1

Size Valve Nominal	Inlet Type	Outlet Type	Friction Loss*	Shipping Weight	Part No.
2-1/2" (DN65)	Groove	Groove	6 ft.(1.8 m)	16 lbs. (7 kg)	05497C
3" (DN80)	Goove	Groove	10 ft. (3.1 m)	20 lbs. (9 kg)	08536
4" (DN100)	Flange	Flange	13 ft. (4.0 m)	47 lbs. (21 kg)	08538
4" (DN100)	Groove	Groove	13 ft. (4.0 m)	27 lbs. (12 kg)	08539
6" (DN150)	Flange	Flange	20 ft. (6.0 m)	75 lbs. (34 kg)	08542
6" (DN150)	Groove	Groove	20 ft. (6.0 m)	51 lbs. (23 kg)	08543
8" (DN200)	Flange	Flange	23 ft. (7.0 m)	135 lbs. (61 kg)	08546
8" (DN200)	Groove	Groove	23 ft. (7.0 m)	106 lbs. (48 kg)	08547

*Expressed in equivalent length of Schedule 40 pipe based on Hazen & Williams formula: C = 120.

Systems with water working pressures above 175 psi (12 bar) may require extra-heavy pattern fittings. Viking Swing Check Valve flanges are Ductile Iron ANSI B16.42, Class 150, with a maximum water working pressure of 300 psi (20.7 bar). ANSI B16.42, Class 150 flanges are NOT compatible with ANSI Class 250 or Class 300 flanges. To mate the Viking Swing Check Valve with ANSI Class 250 or Class 300 flanges, use the grooved-inlet/grooved-outlet style installed with listed grooved/ flanged adapters of the appropriate pressure rating. For piping with grooved connections, the grooved-inlet/grooved-outlet style Swing Check Valve may be installed with listed grooved couplings of the appropriate pressure rating.

**TECHNICAL DATA****SWING CHECK VALVE
MODEL D-1 & G-1**

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Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

4. INSTALLATION

The Swing Check Valve must be installed in an area not subject to physical damage. When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the Swing Check Valve and associated equipment. Prior to installing the valve, thoroughly flush the water supply piping to verify that no foreign matter is present. The Swing Check Valve may be installed in the vertical position with direction of flow up, or in the horizontal position with the access cover up.

Systems with water working pressures above 175 psi (12 bar) may require extra-heavy pattern fittings. Viking Swing Check Valve flanges are Ductile Iron ANSI B16.42, Class 150, with a maximum water working pressure of 300 psi (20.7 bar). ANSI B16.42, Class 150 flanges are not compatible with ANSI Class 250 or Class 300 flanges. To mate the Viking Swing Check Valve with ANSI Class 250 or Class 300 flanges, use the grooved-inlet/grooved-outlet style installed with listed grooved/flanged adapters of the appropriate pressure rating. For piping with grooved connections, the grooved-inlet/grooved-outlet style Swing Check Valve may be installed with listed grooved couplings of the appropriate pressure rating.

5. OPERATION (Refer to Figure 1)

Flow through the Viking Swing Check Valve lifts the rubber-gasketed clapper (8, and 9) off the seat (12) to enter the sprinkler piping. When flow through the valve stops, the clapper (8) closes quickly. The rubber gasket (9) forms a tight seal against the brass water seat (12), trapping pressure above the clapper and preventing reverse flow from sprinkler piping.

Hydrostatic Test:

The Swing Check Valve is manufactured and listed for use at a maximum water working pressure of 300 psi (20.7 bar). The valve is factory tested at 600 psi (41.4 bar). Check Valves may be hydrostatically tested (in accordance with NFPA 13) at 350 psi (24.1 bar) and/or 50 psi (3.4 bar) above the normal water working pressure for limited periods of time (two hours) for the purpose of acceptance by the Authority Having Jurisdiction. If air testing is required, do not exceed 40 psi (2.8 bar) air pressure.

6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE: The owner is responsible for maintaining the fire-protection system and devices in proper operating condition.

The Viking Swing Check Valve must be kept free of foreign matter, freezing conditions (when used on wet systems), corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the device.

It is imperative that the system be inspected and tested on a regular basis. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, and corrosive atmospheres. For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

WARNING: Any system maintenance which involves placing a control valve or detection system out of service may eliminate the fire-protection capabilities of that system. Prior to proceeding, notify all the Authority Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

6-A. Five-Year Internal Inspection

Internal inspection of Swing Check Valves is recommended every five years unless inspections and tests indicate more frequent inspections are required.

(Refer to Figure 1)

1. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the area affected that the system will be taken out of service. Consideration should be given to employment of a fire patrol in the affected areas.
2. Close the water supply main control valve, placing the system out of service.
3. Open the main drain. If necessary, open the system test valve to vent and completely drain the system.
4. Use the appropriate wrench to loosen and remove the cover screws (14), and remove the cover/clapper assembly (2-11).
5. Inspect the water seat (12). Wipe away all contaminants, dirt, and mineral deposits. DO NOT use solvents or abrasives.
6. Inspect the cover/clapper assembly (2-11) and the cover gasket (13). Test the hinged clapper (8) for freedom of movement. Renew or replace damaged or worn parts as required.

CAUTION: Never apply any lubricant to seats, gaskets, or any internal operating parts of the valve. Petroleum-based grease or oil will damage rubber components and may prevent proper operation.

7. When Internal inspection of the Check Valve is complete, perform step 6 of paragraph 11. VALVE MAINTENANCE to re-install the cover/clapper assembly (2-11).



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6-B. Valve Maintenance

(Refer to Figure 1)

1. Perform steps 1 through 5 of paragraph 6.A - FIVE-YEAR INTERNAL INSPECTION.
2. To remove clapper rubber (9):
 - a. Use the appropriate wrenches to loosen and remove the button-head socket screw (11), hex nut (6), sealing washer (7), and rubber retainer (10).
 - b. Remove the clapper rubber (9) for inspection. If the clapper rubber shows signs of wear, such as cracking, cuts, or excessively deep grooves where the rubber contacts the water seat, replace the rubber.
3. To re-install clapper rubber (9):
 - a. Place the clapper rubber (9) over the center hub of the rubber retainer (10).
 - b. Position the retainer (10) (with rubber in place) against the clapper (8) as shown in Figure 1.
 - c. Replace and tighten the button-head socket screw (11), sealing washer (7), and hex nut (6). The sealing washer (7) and hex nut (6) must be located on the top side of the clapper as shown in Figure 1. Do not over-tighten.
4. To remove clapper (8), and/or hinge pin (4):
 - a. Remove the hinge pin retaining rings (5) to free the hinge pin (4) for removal. After the hinge pin (4) is removed, the clapper (8) can be removed.
5. To re-install clapper (8), and/or hinge pin (4):
 - a. Verify that the clapper rubber (9) is in good condition and that it is properly installed.
 - b. Position the clapper (8) with the elongated hinge holes aligned between the holes of the hinge bracket welded inside the cover (2). The system (top) side of the clapper (8) must face the direction indicated by the flow arrow stamped inside the cover (2).
 - c. Insert the hinge pin (4) through the holes at one end of the hinge assembly. Continue to push the hinge pin (4) through the holes at the remaining end of the hinge assembly.
 - d. Re-install the hinge pin retaining rings (5).
6. To re-install cover/clapper assembly (2-11):
 - a. Verify that cover gasket (13) is in position and in good condition.
 - b. Slide the cover/clapper assembly (2-11) into the Swing Check Valve so that the clapper rubber (9) contacts the water seat (12).
 - c. Replace the cover screws (14). Use the appropriate wrench to cross-tighten all screws to the torque value shown in Table 2 for the valve used. DO NOT over-tighten.

7. AVAILABILITY

The Viking Swing Check Valve is available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact The Viking Corporation directly.

Table 2: Torque Values for Viking Swing Check Valve Cover Screws

Valve Size	Screw Size	Torque Values
2-1/2" (DN65)	3/8"-16 HHC	19 ft-lbs 2.63 kg-m
3" (DN80)	3/8"-16 HHC	19 ft-lbs 2.63 kg-m
4" (DN100)	3/8"-16 HHC	19 ft-lbs 2.63 kg-m
6" (DN150)	1/2"-13 HHC	45 ft-lbs 6.23 kg-m
8" (DN200)	5/8"-11 HHC	93 ft-lbs 12.9 kg-m

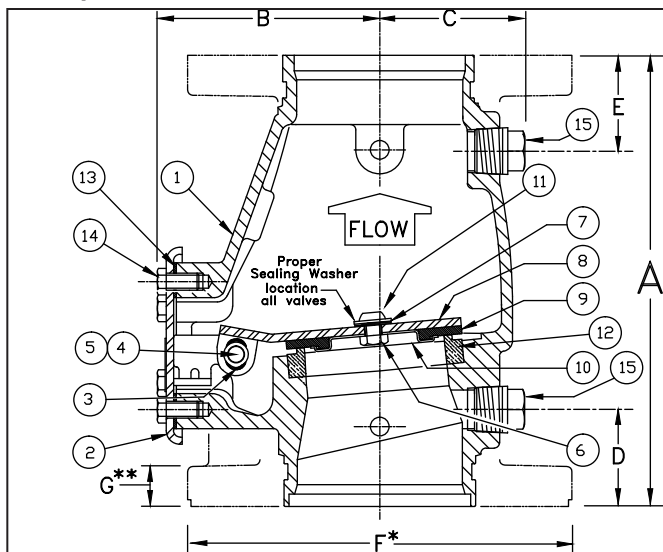


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SIZE	A	B	C	D	E	F	G**
2-1/2" (65mm)	9" (228,6)	4-1/2" (114,3)	2-5/8" (66,7)	2" (50,8)	2" (50,8)	Flg-Flg Not Available	
3" (80mm)	10-1/8" (257)	4-13/16" (122,2)	2-11/16" (68,3)	2-9/32" (58,1)	2-9/32" (58,1)	Flg-Flg Not Available	
4" (100mm)	10-5/8" (269,9)	5-3/16" (131,8)	3-1/8" (79,4)	2-1/4" (57,2)	2-1/4" (57,2)	9" (228,6)	15/16" (23,81)
6" (150mm)	13-3/8" (340)	6-13/16" (173,3)	4-1/16" (103,2)	2-1/4" (57,2)	2-1/4" (57,2)	11" (279,4)	1" (25,4)
8" (200mm)	17" (431,8)	8-13/16" (223,4)	5" (127)	2-1/2" (63,4)	2-7/8" (73,0)	13-1/2" (342,9)	1-1/8" (28,58)

Dimensions shown in parentheses are millimeters.

** 4", 6", and 8" valves are manufactured with sculptured flanges.
Dimension indicates thickness of flange at bolt holes.

Figure 1

ITEM NO.	PART NUMBER					DESCRIPTION	MATERIAL	NO. REQ'D				
	D-1	G-1	G-1	G-1	G-1			2-1/2"	3"	4"	6"	8"
	2-1/2" (DN65)	3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)							
1	--	--	--	--	--	Body	Ductile Iron, ASTM A536 (65-45-12)	1	1	1	1	1
2	--	--	--	--	--	Cover Assembly, 300 PSI WWP	E-Coated HSLA Steel, A715 and Stainless Steel, UNS-S30400	1	1	1	1	1
3	07576	07576	07576	07576	None	Bushing	Lubricomp 189 Ryton	2	2	2	2	0
4	05355A	05355A	04900A	04991A	05334A	Clapper Hinge Pin	Stainless Steel, UNS-S30400	1	1	1	1	1
5	05445A	05445A	05445A	05445A	05369A	Hinge Pin Retaining Ring	Stainless Steel, UNS-S15700	2	2	2	2	2
6	01755A					Clapper Hex Jam Nut #10-24 UNC	Stainless Steel, UNS-S30400	1	0	0	0	0
		08159	08159			Clapper Hex Jam Nut 3/8"-24 UNF	Stainless Steel, UNS-S30400	0	1	1	0	0
				08144	08144	Clapper Hex Jam Nut 1/2"-20 UNC	Stainless Steel, UNS-S30400	0	0	0	1	1
7	06595A	08158	08158	08143	08143	Sealing Washer	EPDM and Stainless Steel	1	1	1	1	1
8	*	*	*	*	*	Clapper	Teflon® Coated HR Steel UNS-G10180	1	1	1	1	1
9	*	*	*	*	*	Clapper Rubber	EPDM, ASTM D2000	1	1	1	1	1
10	*	*	*	*	*	Clapper Rubber Retainer	Stainless Steel, UNS-S30400	1	1	1	1	1
11	06595A					H.H.C. Screw #10-24 UNC x 1/2" (12.7 mm) lg.	Stainless Steel, UNS-S30400	1	0	0	0	0
		10194	10194			Screw, Button Head, Socket, 3/8" - 24 UNF x 1/2"	Stainless Steel, UNS-S30400	0	1	1	0	0
				10308		Screw, Button Head, Socket, 1/2" - 20 UNF x 3/4" (19.1 mm) lg.	Stainless Steel, UNS-S30400	0	0	0	1	1
					10686	Screw, Button Head, Socket, 1/2" - 20 UNF x 7/8"	Stainless Steel, UNS-S30400	0	0	0	0	1
12	--	--	--	--	--	Seat	Brass, UNS-C84400	1	1	1	1	1
13	05354B	05354B	04649B	04992B	05339C	Cover Gasket	EPDM, ASTM D2000	1	1	1	1	1
14	01517A	01517A	01517A			H.H.C. Screw 3/8"-16 UNC x 3/4" (19,1 mm) lg.	Steel, Zinc Plated	4	4	6	0	0
				04993A		H.H.C. Screw 1/2"-13 UNC x 7/8" (22.2 mm) lg.	Steel, Zinc Plated	0	0	0	6	0
					01922A	H.H.C. Screw 5/8"-11 UNC x 1-1/4" (31.8 mm) lg.	Steel, Zinc Plated	0	0	0	0	6
15	--	--	--			1/2" (15 mm) NPT Pipe Plug	Steel	2	2	2	0	0
				--	--	3/4" (20 mm) NPT Pipe Plug	Steel	0	0	0	2	2

-- Indicates replacement part is not available

* Indicates replacement part only available in a Sub-Assembly listed below.

Sub-Assemblies

3, 6-11	05499B	08518	08519	08520	08521	Clapper Assembly
9, 10	--	14864	14865	14866	--	Replacement Clapper Rubber Kit*

*Clapper rubbers are different on 3", 4", & 6" G-1 valve than original manufacture. If clapper rubber requires replacement, order replacement rubber kit.

175 PSI WWP Iron Body Gate Valves

Fire Protection Valve • Bolted Bonnet • Outside Screw and Yoke • Solid Wedge •
Pre-Grooved Stem for Supervisory Switch Mounting

175 PSI/12.1 Bar Non-Shock Cold Water

CONFORMS TO MSS SP-70 •

UL/ULC LISTED* • FM APPROVED •

APPROVED BY THE NEW YORK CITY B.S.A. 143-69-SA

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Copper Alloy, ASTM B16 C36000
2. Nut, Handwheel	Cast Copper Alloy, ASTM B584 C84400
3. Handwheel, Orange	Cast Iron, ASTM A126-B
4. Bushing, Yoke	Cast Copper Alloy, ASTM B584 C84400
5. Screw, Hex - Bonnet Cap	Steel, ASTM A307 / SAE J429
6. Cap, Bonnet	Ductile Iron ASTM A536
7. Nut, Square - Bonnet Cap	Steel, ASTM A563
8. Bonnet ¹	Cast Iron, ASTM A126-B
9. Nut, Heavy Hex - Gld Follow	Steel, ASTM A563
10. Gland Follower	Ductile Iron ASTM A536
11. Pack Gland	Powdered Metal ASTM B783
12. Pack Ring	Aramid Fiber / Graphite
13. Bolt, Sq Head - Gld Follow	Steel, ASTM A307 / SAE J429
14. Screw, Hex - Body	Steel, ASTM A307 / SAE J429
15. Gasket, Body	Synthetic Fiber / Nitrile
16. Nut, Hex - Body	Steel, ASTM A563
17. Collar, Stem	Copper Alloy, ASTM B16 C36000
18. Pin, Wedge	Copper Alloy, ASTM B140 C31600
19. Ring, Seat - Wedge	Cast Copper Alloy, ASTM B584 C84400
20. Wedge ²	Cast Iron, ASTM A126-B
21. Ring, Seat - Body	Cast Copper Alloy, ASTM B584 C84400
22. Body	Cast Iron, ASTM A126-B

¹ Sizes thru 8", Yoke and Bonnet are intergral. 10" and 12" sizes separate Yoke is bolted to Bonnet.

² Sizes 2½" thru 6" have Cast Copper Alloy Wedges.

Sizes 8" thru 12" made with Cast Iron Wedge with Cast Copper Alloy Face Rings.

TS: Pre-grooved Stem for Supervisory Switch Activation.

NOTE: 1. Valve Flanges per ASME B16.1, Class 125

2. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.

* Compliance with the Standard for Gate Valves for Fire Protection Service, UL 262, and the Canadian Requirements.

DIMENSIONS—WEIGHTS—QUANTITIES

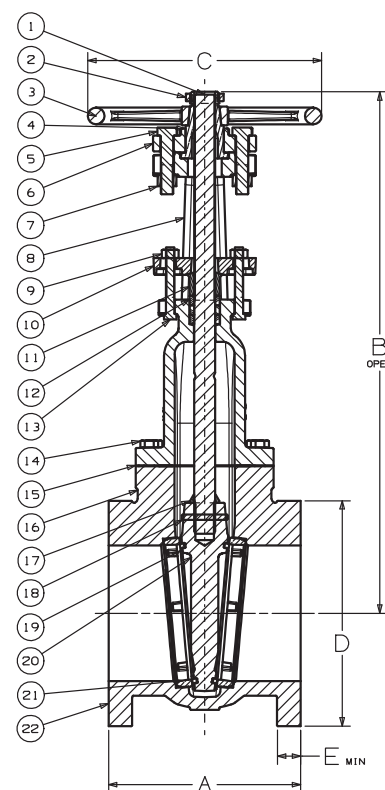
Dimensions													
Size		Dimensions										Weight	
A		B		C		D		E					
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	Lbs.	Kg.
2½	65	7.50	191	17.26	438	8.00	203	7.00	178	0.69	18	55	25
3	80	8.00	203	19.44	494	8.00	203	4.50	114	0.75	19	67	30
4	100	9.00	229	23.54	598	10.25	260	9.00	229	0.94	24	107	49
5	125	10.00	254	27.01	686	10.25	260	10.00	254	0.94	24	145	66
6	150	10.50	267	30.73	781	12.00	305	11.00	279	1.00	25	178	81
8	200	11.50	292	40.29	1023	14.00	356	13.50	343	1.12	28	309	140
10	250	13.00	330	48.45	1231	16.25	413	16.00	406	1.19	30	481	219
12	300	14.00	356	56.26	1429	18.00	457	19.00	483	1.25	32	706	321

WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



F-607-OTS

Flanged



F-607-OTS

Flg x Flg

FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, gate valve should be in an open position to allow complete drainage.

Visit our website for the most current information.



TECHNICAL DATA

WATER MOTOR ALARMS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking water motor alarms are mechanical devices actuated by a flow of water. They are designed to sound a continuous alarm while a sprinkler system operates. An alarm is a required component of every sprinkler system having more than 20 sprinklers.

A. Features

1. The water motor alarms are tapped 3/4" NPT on the inlet and 1" NPT on the drain outlet.
2. The water motor alarm package includes a drive shaft 16-3/4" (425 mm) long for walls 14" (356 mm) thick or less. A special extension shaft is available for walls up to 30-1/4" (768 mm) thick.
3. The package also includes the required 3/4" (20 mm) NPT strainer for installation on the alarm line.
4. Rated water working pressure of Model F-2 is 250 PSI (17.2 bar).

B. Accessories: (order separately)

1. Extension Mounting Cup: Viking Part Number 05957B, Material: 14-Gauge Cold Rolled Steel, UNS-G10080, coated with black E-coat. The extension mounting cup is required when the wall thickness is less than 3" (76.2 mm). Refer to "INSTALLATION" instructions. See Figure 2.
2. Closure Plate: For use with Model F-2 only, Viking Part Number 05820B, Material: 16-Gauge Galvanized Steel, UNS-G10080. The closure plate is required when the Model F-2 Water Motor Alarm gong is mounted on an irregularly surfaced wall. It serves to prevent birds from entering the inside of the gong. The closure plate also serves as a mounting plate for sheet metal walls. Refer to "INSTALLATION" instructions. See Figure 2.
3. Special Extension Shaft: Viking Part Number 03312B, Material: Stainless Steel, UNS-S30400. The extension shaft is required when the F-2 or G-2 Water Motor Alarm is installed on walls from 14" (356 mm) to 30-1/4" (768 mm) thick.



2. LISTINGS AND APPROVALS

Model F-2:



cULus Listed - VPLX



FM Approved - Water Motor Gongs



LPCB Approved



CE - Standard EN 12259-4, EC-certificate of conformity 1725-CPD-H0001

New York City Board of Standards and Appeals - Calendar No. 219-76-SA

Model G-2:



VdS



CE - Standard EN 12259-4, EC-certificate of conformity 1725-CPD-H0001

The 07862 and 07868 Water Motor Alarms Model F-2 and Model G-2 conform to the provision of EN12259-4 standard.

EN12259-4 approvals are provided by: FM Approvals Ltd. 1 Windsor Dials Windsor, Berkshire, UK. SL4 1 RS

Approval Certificate No. issued February 15, 2010.

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.

3. TECHNICAL DATA

Specifications

Available since 1991

Shipping Weight: Model F-2: 11 lbs. (5.0 kg); Model G-2: 13 lbs. (5.9 kg)

Water working pressure: Rated to 175 PSI (12 bar)

Material Standards (See Figure 3)

Viking E-coat Spec: SPF02 W01

Ordering Information

Model F-2, Viking Part No. 07862

Model G-2, Viking Part No. 07868

4. INSTALLATION

Locate the water motor on an exterior wall as close as practical to the valve being monitored for water flow. A 3/4" (20 mm) strainer (included) is required on the alarm line as close as possible to the alarm outlet of the valve being monitored for water flow (or outlet of the retard chamber, if used). The location must be easily accessible for cleaning.



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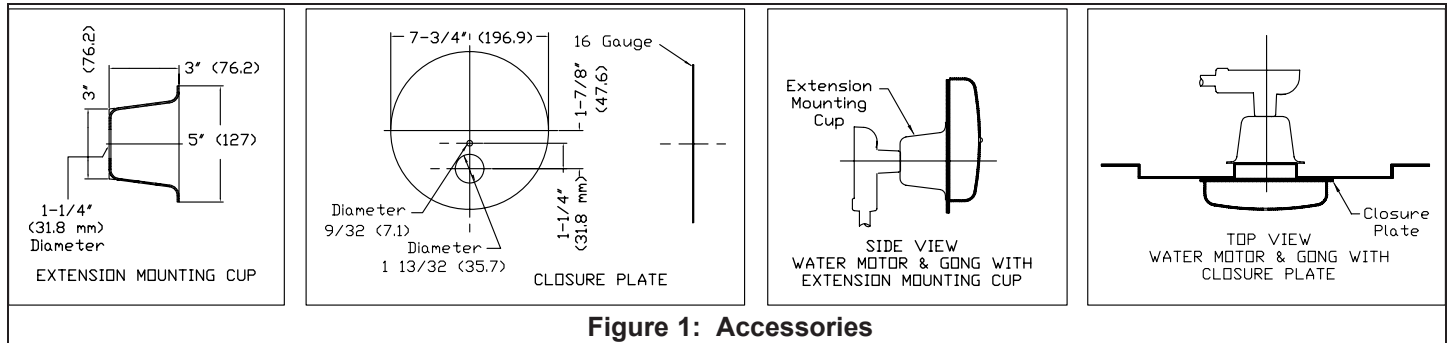


Figure 1: Accessories

- Cut a 1-7/16" (36.5 mm) minimum to 1-5/8" (41.3 mm) maximum diameter hole in the building wall to accommodate the 3/4" (20 mm) galvanized spacer pipe. (Note: Spacer pipe is NOT included in Water Motor Alarm Package). The hole through the wall must be level or pitched slightly downward toward the water motor.
- Measure the wall thickness.
- Cut and thread the spacer pipe to a length equal to: The wall thickness minus 1" (25.4 mm). If the extension mounting cup is used, add an additional 3" (76 mm) to the spacer pipe.
- Cut the drive shaft (10) to a length equal to: The total wall thickness plus 2-3/4" (70 mm). If extension mounting cup is used, add an additional 3" (76 mm).
- File the drive shaft to provide a 3/32" (2.4 mm) x 450 chamfer on both corners of both ends. File off all burrs and insert the drive shaft into the hole of the striker arm shaft.
- Slide the spacer pipe over the shaft and thread the end of the spacer pipe into the gong support assembly coupling (12).
- Slide the closure plate (if used) over the free end of the spacer pipe, up to the back of the gong. If desired, the closure plate may be fastened to the gong support by using the 9/32" (7.14 mm) diameter hole in the gong support. Use only a flat or round headed fastener that will not interfere with striker arm movement.
- Position the support assembly on the exterior wall surface by sliding the free threaded end of the spacer pipe into the hole from outside the building.
- On the inside surface of the wall: Slide the wall plate provided (9), over the free threaded end of the spacer pipe. (If an extension mounting cup is used, place it over the end of the spacer pipe with the flared end toward the wall before sliding the wall plate into position).

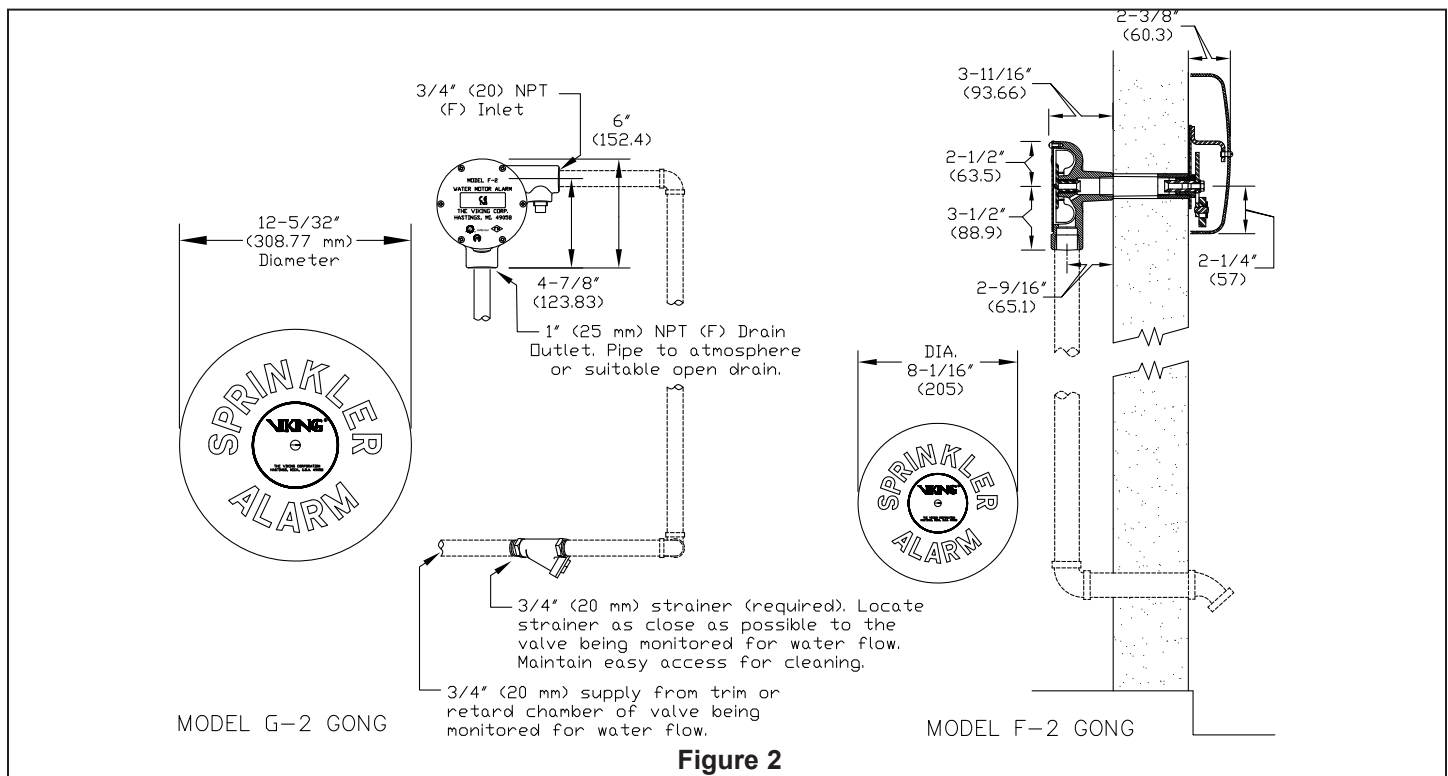


Figure 2



TECHNICAL DATA

WATER MOTOR ALARMS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

- J. Remove the plastic thread protectors from the threaded openings in the body of the water motor.
- K. Attach the water motor assembly by threading the body (3) onto the free threaded end of the spacer pipe. The chamfered ends of the drive shaft allow it to slide into position as the water motor body is threaded onto the spacer pipe. When the assembly is properly tightened, the water motor should be positioned with the 1" (25 mm) NPT drain outlet facing downward and the 3/4" (20 mm) NPT alarm line inlet horizontal. See Figures 1 and 3.
- L. Attach the gong, the flat washer, and the gong label (16, 17, and 18) to the gong support installed on the exterior surface of the wall, with the 5/16-18 x 12" (13 mm) screw (19). Note: The flat washer must be installed between the gong and the gong support (17).
- M. With galvanized, brass, or other approved corrosion-resistant piping, not less than 3/4" (20 mm) diameter, connect the water motor inlet to the alarm outlet of the waterflow detecting device. A 3/4" (20 mm) strainer (included) is required on the alarm line as close as possible to the alarm outlet of the waterflow detecting device (or outlet of the retard chamber if used). The location must be easily accessible for cleaning.
- N. The drain outlet of the impeller housing must discharge to an open drain. Care shall be taken to keep the drain line clean at all times.
- O. Note: A water motor drain line that:
 - 1. Has too many fittings, and/or
 - 2. Has a very short length of pipe between the 1" (25 mm) outlet and the first elbow in the water motor drain pipe, and/or
 - 3. Is very long may result in slow drainage and reduced water motor speed. This condition can be remedied by increasing the drain pipe diameter, increasing the length of pipe to the first elbow, and/or pitching the pipe toward the discharge location.

5. OPERATION (See Figure 3)

When a sprinkler system is activated, water flows from the alarm outlet of the valve, through the 3/4" (20 mm) strainer and alarm line piping, into the inlet of the water motor. From the 1/8" inlet orifice, the water flows through a nozzle (4), which restricts the flow into a pressurized stream directed onto the impeller (7). Force from the water stream turns the impeller and drive shaft (10), causing the striker arm (20) to rotate. The striker (25) impacts against the gong (16), producing a continuous alarm. A minimum of 5 PSI (.34 bar) is required at the nozzle to cause a continuous alarm. When properly installed, the Model F-2 Water Motor Alarm produces the required 90 decibel output and the Model G-2 produces 100 decibels. After passing through the water motor, the water is discharged through a 1" (25 mm) drain outlet in the bottom of the impeller housing. The discharged water must be piped through the wall to atmosphere or to a suitable open drain.

6. INSPECTIONS, TESTS AND MAINTENANCE

Weather-resistant materials are used in the construction of the water motor alarm. At regular intervals, examine and test the water motor to ensure that the nozzle and drain line are clean and free of obstruction, and that the alarm functions properly. Also, at regular intervals and before disassembly of the water motor, clean and inspect the alarm line strainer located at the alarm outlet of the water-flow detecting device, or the outlet of the retard chamber, if used. (Note: Some retard chambers may be equipped with a strainer built in). For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed. Before proceeding with disassembly of the water motor alarm, notify the Authority Having Jurisdiction and occupants of the area covered by the system affected. Take all appropriate precautions. The water motor alarm will be disabled during disassembly.

A. Water Motor Disassembly (See Figure 3)

1. Isolate the water motor alarm by closing the alarm line valve in the trim of the waterflow detecting device. (Refer to appropriate technical data for the system used.)
2. Remove pipe plug (5).
3. Remove all round head machine screws (1) from the water motor cover.
4. Separate the cover (2) and the gasket (6) from the housing (3).
5. Remove the impeller (7).
6. Inspect and, if necessary, carefully clean the nozzle (4) with a wire or pipe cleaner brush.
7. Flush the nozzle way and drain line with water or compressed air.

B. Water Motor Re-Assembly

1. Re-install the pipe plug (5).
2. Re-install the impeller (7).
3. Replace cover gasket (6) and attach cover (2) by using round head machine screws (1).
4. Open the alarm line valve.
5. Test the water motor alarm.
6. When test is complete and water motor alarm operation is satisfactory, place the alarm line valve in the proper "alarm" position. Reset and return the affected systems to service.

7. AVAILABILITY

Viking Water Motor Alarms are available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

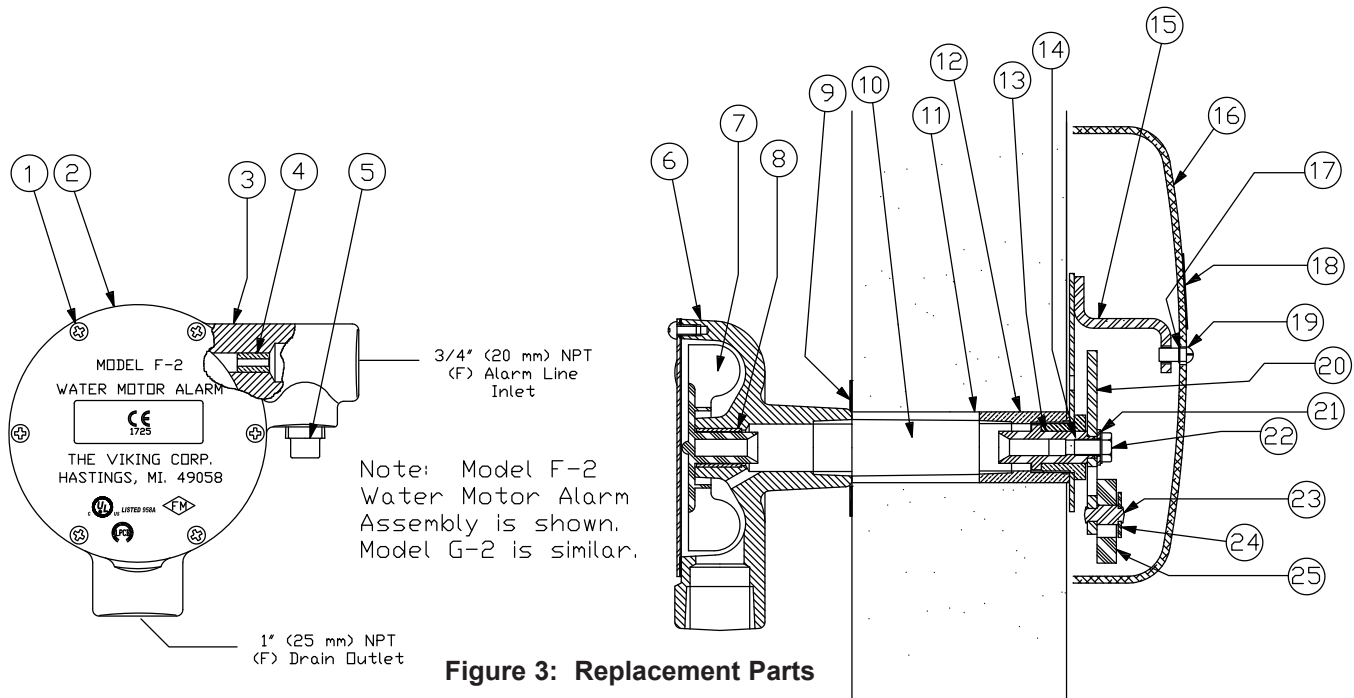


TECHNICAL DATA

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ITEM NO.	PART NUMBER		DESCRIPTION	MATERIAL	NO. REQ'D
	F-2	G-2			
1	*	*	Screw, R. H. Self-tap #10-24 x 3/8" lg.	Zinc Plated Steel	6
2	07867	07870	Cover	Steel	1
3	*	*	Housing	Cast Iron	1
4	*	*	Nozzle	Brass	1
5	01925S	01925S	1/2" Pipe Plug	Cast Iron	1
6	02550B	02550B	Cover Gasket	Cellulose/Nitrile/Glass Blend	1
7	02547C	02547C	Impeller	Delrin	1
8	*	*	Bearing	Brass: Sintered Bronze	1
9	05603A	05603A	Wall Plate	Galvanized Steel	1
10	05604B	05604B	Drive Shaft	Stainless Steel	1
11	--	--	3/4" Pipe (C.O.J.) not furnished	Galvanized Steel	1
12	*	*	Coupling	Brass	1
13	02556B	02556B	Striker Arm Shaft	Celcon Glass Filled	1
14	*	*	Bearing	Brass	1
15	*	*	Gong Support	Stainless Steel	1
16	05821C	06508C	Gong	Aluminum	1
17	02766A	02766A	Flat Washer, 11/32" ID x 11/16" ID x 1/16"	Stainless Steel	1
18	05768A	06505C	Gong Label	Aluminum (F-2), Vinyl (G-2)	1
19	--	--	Screw, B.H. Slotted, 5/16-18 x 1/2" lg.	Stainless Steel	1
20	*	*	Striker Arm	Stainless Steel	1
21	--	--	Flat Washer, 11/32" ID x 11/16" OD x 1/16"	Stainless Steel	1
22	--	--	Screw, H.H. Self-tap 5/16-18 x 1/2" lg.	Zinc Plated Steel	1
23	*	*	Striker Pin	Stainless Steel	1
24	*	*	Striker Arm Washer	Stainless Steel	1
25	*	*	Striker	Canvas Phenolic	1

--Indicates replacement part not available

*Indicates replacement part only available in a Sub-Assembly listed below

SUB-ASSEMBLIES

1-8	07863	07869	Motor Assembly
20, 23-25	02558B	02558B	Striker Arm Assembly
12-15, 20-25	05606C	06506C	Support Assembly



Figure No. 6405



Figure No. 6407

SINGLE CLAPPER TWO-WAY INLETS

An exposed auxiliary inlet connection with 500 G.P.M. inlet capacity to supplement fire protection water supply. Exposed design provides an economical method of satisfying Fire Dept. inlet requirements.

STANDARD EQUIPMENT: Cast brass two-way inlet body only with single swing clapper and pin lug swivel back or angle outlet connection as selected by figure number.

SPECIFY THREAD.

BRANDING: "Auto Spkr." **FINISH:** Cast Brass

***U/L LISTED AND FM APPROVED**

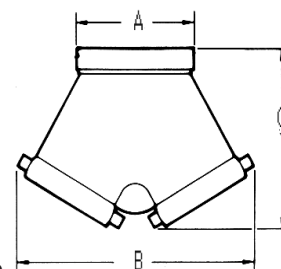
OPTIONAL FINISHES:

PB - Polished Brass

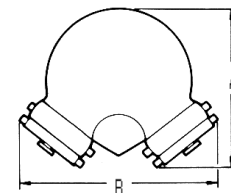
RC - Rough Chrome Plated

PC - Polished Chrome Plated

Model	Outlet Style	Dimensions		
		A	B	C
6405	Back	5 1/4	8 5/64	6 1/2
6407	Angle	6 5/16	7 11/16	4 3/4



6405 Back Outlet



6407 Angle Outlet

DOUBLE CLAPPER TWO-WAY INLETS



Figure No. 6410-6415



Figure No. 6420-6425

An exposed auxiliary inlet connection with 500 G.P.M. Inlet capacity to supplement fire protection water supply. Exposed design provides an economical method of satisfying Fire Department Inlet requirements.

STANDARD EQUIPMENT: Cast brass two-way inlet body only with double drop clappers and pin lug swivels; back or angle outlet connection as selected by figure number. Branding as selected. **SPECIFY THREAD AND BRANDING.**

BRANDING: "Standpipe", "Auto Spkr."

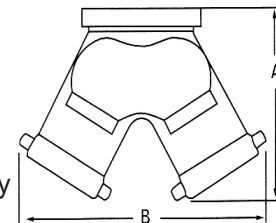
FINISH: Cast Brass

OPTIONAL FINISHES:

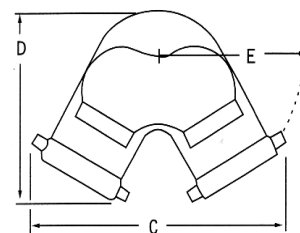
PB - Polished Brass

RC - Rough Chrome Plated

PC - Polished Chrome Plated



6410 Back Outlet



6420 Angle Outlet

***U/L LISTED AND FM APPROVED**
NY BSA-MEA APPROVED

Outlet Style		Size	Dimensions				
Back	Angle		A	B	C	D	E
*6410		4 X 2 1/2 X 2 1/2	9 5/8	12 1/4			
	6420	4 X 2 1/2 X 2 1/2			11 3/4	9 5/8	7 1/4
6412		6 X 2 1/2 X 2 1/2	10 1/4	11 3/4			
	6422	6 X 2 1/2 X 2 1/2			12 1/2	10 1/8	7 1/2
6413		4 X 3 X 3	10	12 1/2			
	6423	4 X 3 X 3			12 1/2	10 1/8	7 1/2
6414		5 X 3 X 3	10 1/8	12 1/2			
	6424	5 X 3 X 3			12 1/4	10 1/2	7 1/2
6415		6 X 3 X 3	10 3/8	12 1/2			
	6425	6 X 3 X 3			12 1/4	10 7/8	7 1/4

OPEN ADAPTERS



Fig No. 6702-6706

Used to connect fire hose to Standpipe or Sprinkler Systems.

STANDARD EQUIPMENT: Cast Brass with size and type of inlet and outlet as selected by figure number. All exposed parts are polished brass. **SPECIFY THREAD.**

OPTIONAL FINISH: PC - Polished Chrome Plated



Fig No. 6710-6712



Figure No.	Size and Type
6702	2 1/2" Female (Swivel) Hose inlet X 2 1/2" Female NPT Outlet
6704	2 1/2" Female (Swivel) Hose inlet X 3" Female NPT Outlet
6706	3" Female (Swivel) Hose inlet X 3" Female NPT Outlet
6710	2 1/2" Male Hose Outlet X 2 1/2" Female NPT inlet
6712	2 1/2" Male Hose Outlet X 3" Female NPT inlet
6720	1 1/2" Female (Swivel) Hose Inlet X 1 1/2" Male NPT Outlet
6721	2 1/2" Female (Swivel) Hose Inlet X 2" Male NPT Outlet
6722	2 1/2" Female (Swivel) Hose Inlet X 2 1/2" Male NPT Outlet
6724	2 1/2" Female (Swivel) Hose Inlet X 3" Male Outlet
6726	3" Female (Swivel) Hose inlet X 3" Male NPT Outlet.

CHECK SNOOTS

Fig No. 6720-6726

Used to connect fire hose on multiple Inlet Fire Dept. connections. Checks excess back flow of water.



Fig No. 6730-6736

STANDARD EQUIPMENT: Cast brass with size and type of inlet and outlet, and checking device as selected by figure number.

SPECIFY THREAD. OPTIONAL FINISH: PB - Polished Brass
PC - Polished Chrome Plated

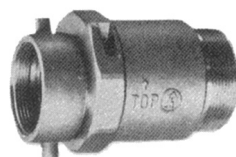


Fig No. 6738-6740

Spring Check Snoots	
Figure No.	Size and Type
6730	2 1/2" Female (Swivel) Hose Inlet X 3" Female NPT Outlet
6732	3" Female (Swivel) Hose Inlet X 3" Female NPT Outlet
6734	2 1/2" Female (Swivel) Hose Inlet X 3" Male NPT Outlet
6736	3" Female (Swivel) Hose Inlet X 3" Male NPT Outlet
Clapper Snoots	
Figure No.	Size and Type
6738	2 1/2" Female (Swivel) Hose Inlet X 3" Female NPT Outlet U/L LISTED
6740	2 1/2" Female (Swivel) Hose Inlet X 3" Male NPT Outlet U/L LISTED

PLUGS AND CHAINS



Fig No. 6745-6746

Used on Fire Dept. inlet connections. Prevents entry of foreign matter and protects female threads.

STANDARD EQUIPMENT: Cast pin lug with male hose thread and attached chain. Cast Iron and Cast Brass as selected by figure number. **SPECIFY THREAD AND COLOR OR FINISH.**

Cast Iron	
Figure No.	Size
6745	2 1/2" (NYT or NST)
6746	3" (NYT)

FINISH: PAINTED

Red
Green
Yellow



Fig No. 6747

Cast Brass	
Figure No.	Size
6744	1 1/2"
6747	2 1/2"
6748	3"

OPTIONAL FINISHES:

PB- Polished Brass
RC- Rough Chrome Plated
PC- Polished Chrome Plated

BREAKABLE CAPS

For use on Fire Department inlet connections. Prevents entry of foreign matter and protect female threads. Breakable ears feature permits fast hose connection.



Fig. No. 6750-
6751

STANDARD EQUIPMENT: Cast iron, Aluminum or plastic cap with breakable ears, two eyebolts with nuts for attachment to female pin lug swivel. **SPECIFY SIZE AND COLOR.**

FINISH: Painted

R-Red
G-Green
Y-Yellow

Model No.	Size	Finish
6750	2 1/2"	Iron
6751	3"	Iron
6752	2 1/2"	Aluminum
6753	2 1/2"	Plastic

ROUND ESCUTCHEON PLATES

Used to identify and trim exposed Fire Dept. Connection Installations.



Fig. No. 6760-6766



Fig. No. 6770

STANDARD EQUIPMENT: Brass or red painted aluminum plate, size and material as selected by figure number. Branding as selected. **SPECIFY BRANDING and FINISH.**

BRANDING: "Standpipe", "Auto Spkr.", "Standpipe-Sprinkler", "Dry Standpipe", "Wall Hydrant", "Fire Pump Test". (Figure No. 6766 "Auto Spkr.", "Standpipe", "Standpipe-Sprinkler"). Special lettering available.

Figure No.	Size	Plate Diameter	Material
6758	2 1/2"	6 1/2"	Brass
6759	3"	7 5/8"	Brass
6760	4"	9 1/2"	Brass
6762	5"	10 5/8"	Brass
6764	6"	11 7/8"	Brass
6766	4"	9 1/2"	Aluminum
6770	4" (Sillcock)	9 1/2"	Brass

OPTIONAL FINISHES:

PB- Polished Brass
RC- Rough Chrome Plated Brass
PC- Polished Chrome Plated Brass

RECTANGULAR WALL PLATES

Used for identifying Fire Dept. Connections.

STANDARD EQUIPMENT: Brass or red painted 4 1/2" X 10" plate, material as selected by figure number. Branding as selected. **SPECIFY BRANDING AND MATERIAL.**

OPTIONAL FINISHES:

PB- Polished Brass
RC- Rough Chrome Plated Brass
PC- Polished Chrome Plated Brass



Fig. No. 6778

BRANDING: "Standpipe", "Auto Spkr.", "Standpipe-Auto Spkr.", "Dry Standpipe", "Fire Pump Test". **SPECIAL LETTERING AVAILABLE UPON REQUEST.**

Figure No.	Material
6778	Brass

AUTOMATIC BALL DRIP

Used to drain low point of system between swing check valve and Fire Dept. Connection. Must be installed in a horizontal position.

STANDARD EQUIPMENT: Cast brass straight or angle connection, Male NPT both ends. Size and Style selected by figure number.



Fig. No.
6780-6781



Fig. No.
6782-6783

Figure No.	Size	Style
6780	1/2"	Straight
6781	3/4"	Straight
6782	1/2"	Angle
6783	3/4"	Angle

SILLCOCK

Fig. No. 6790

Used to manually drain low point of system between swing check valve and Fire Dept. connection.

STANDARD EQUIPMENT: Cast brass flanged Sillcock with 3/4" Fem. NPT inlet X Male G.H.T.

OPTIONAL FINISHES:

PB- Polished Brass
RC- Rough Chrome Plated Brass
PC- Polished Chrome Plated Brass