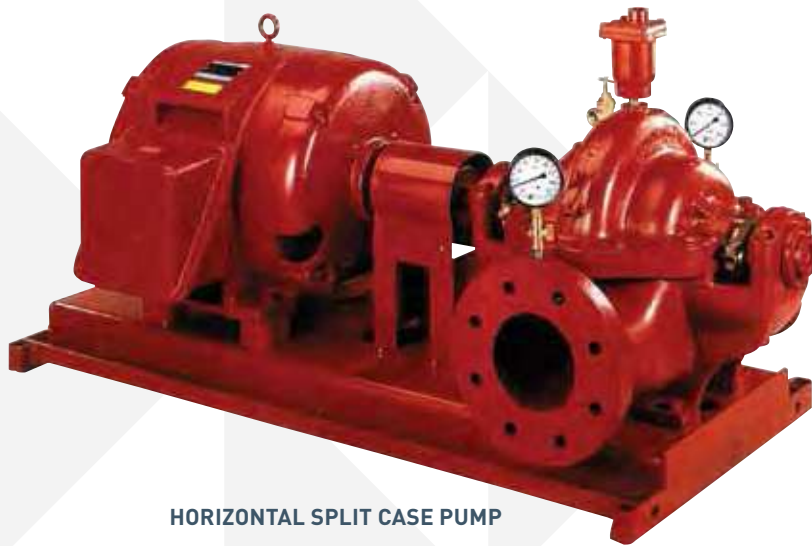


Fire Pumps Full Technical Submittal

Flow rate: 1000 GPM at Head: 145 PSI



HORIZONTAL SPLIT CASE PUMP



VERTICAL SPLIT CASE PUMP

FAIRBANKS NIJHUIS™ 900 SERIES SPLIT CASE FIRE PUMPS

Built Per NFPA 20



FAIRBANKS NIJHUIS™ 900 SERIES

Split Case Fire Pumps

Horizontal split case pumps are the most common type of fire pump. These pumps are specifically designed and tested for fire service applications where reliability of performance is of vital importance. Split case pumps are characterized by:

- Easy access to all working parts;
- Rugged construction;
- Liberal water passages; and
- Efficient operation.

Split case fire pumps are specified when the source of water is located above the surface of the ground and provides a positive suction pressure to the pump at any performance point. Single-stage or multistage pumps are available dependent upon discharge pressure requirements.

Fairbanks Nijhuis split case fire pumps are built per the rigid standards of NFPA 20 and are listed by Underwriters Laboratories (UL) and approved by Factory Mutual (FM).

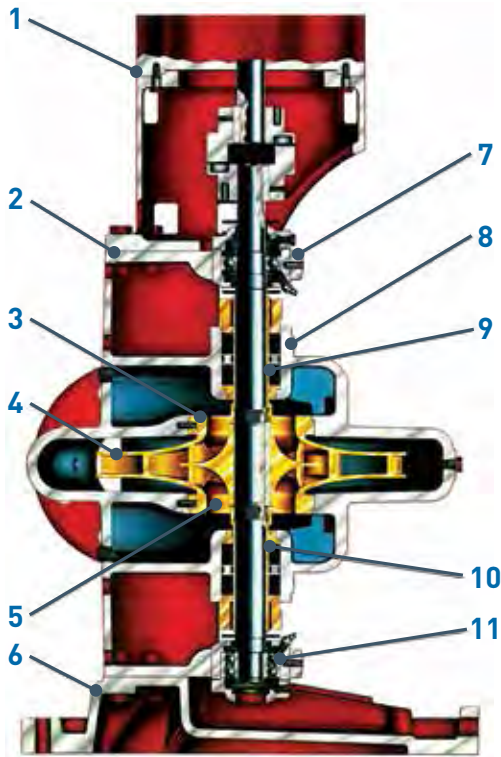
Available in a broad range of operating pressures and flows from a minimum of 250 GPM, Fairbanks Nijhuis split case pumps can be driven by either an electric motor or diesel engine. Fairbanks Nijhuis' UL-Listed, FM-Approved fire pump packages also include the system controller, with a full range of options and accessories available to complete the NFPA-compliant fire pump package.



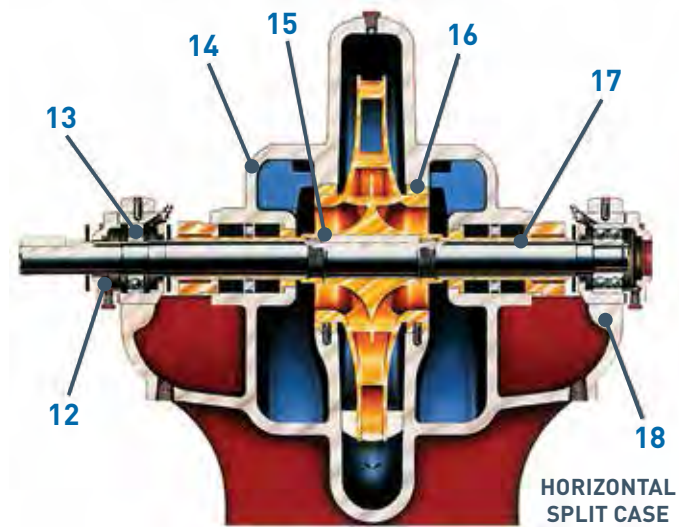
In addition to horizontal split case pumps, Fairbanks Nijhuis also offers split case performance in a vertical format. Vertical fire pumps provide distinct advantages over horizontal pump constructions.

- Less floor space is required.
- In-line piping arrangement allows piping in any direction in most cases.
- Elevated motor protects against potential flooding if the pump station is in a low area.
- Components are register-fitted to prevent misalignment.

Pump Features



**VERTICAL
SPLIT CASE**



**HORIZONTAL
SPLIT CASE**

- 1. Computer Machined**
major components with 360 degree registered fits to assure concentricity of parts.
- 2. Integral Bearing Arms**
eliminate bearing misalignment and simplify maintenance.
- 3. Enclosed Impeller Design**
provides high efficiency and performance.
- 4. Dynamically Balanced Impeller**
is keyed to the shaft and secured by adjustable shaft sleeves.
- 5. Double Suction Impeller**
balances hydraulic thrust loads.
- 6. Cast Iron Drip Rim Base**
directs condensation and any stuffing box leakage to drain.
- 7. Short Bearing Span**
holds shaft deflection to .002" at face of stuffing box at maximum load.
- 8. Internal Water Seal Passages**
between volute and stuffing box cannot be damaged.
- 9. Interwoven, Graphite Impregnated T.F.E.**
diagonally cut packing rings seal the pump shaft.
- 10. Stuffing Boxes**
are extra deep for proper sealing. Split packing glands simplify packing maintenance.
- 11. Double Row Thrust**
ball bearing.
- 12. Grease Seals**
and nonsparking neoprene rotating slingers protect both bearings during pump operation and washdown.
- 13. Bearings**
selected for 50,000 hour minimum life at maximum load. Average bearing life 5 x minimum.
- 14. Split Case Design**
simplifies disassembly. The suction and discharge piping and shaft alignment are not disturbed.
- 15. O-Ring Sealed Shaft Sleeves**
prevent corrosion of the shaft. This eliminates the need for stainless steel shafts.
- 16. Case Wearing Rings**
and throttle bushings protect the casing from wear and are easily and inexpensively replaced.
- 17. Bronze Shaft Sleeve**
prevents shaft wear, is slip fit over the shaft, keylocked, and extends the entire length of the seal box.
- 18. Certified Performance Test with Positive Suction Pressure**
is provided for each fire pump for customer approval. Pumps are also hydrostatically tested per NFPA 20 at no less than 250 psi.

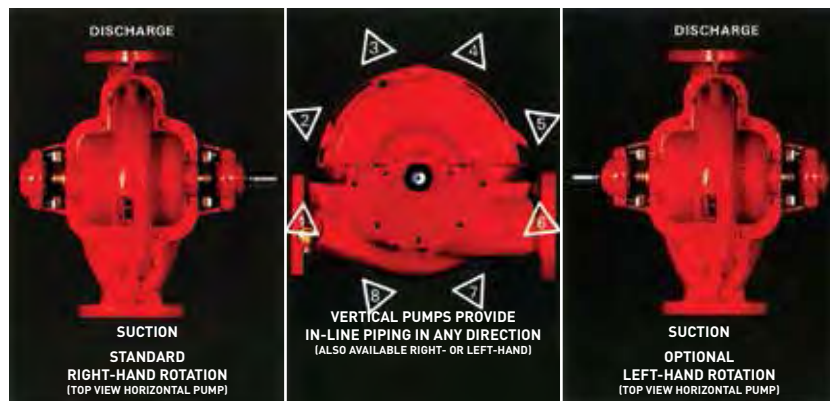
Fire Pump Feature Selector

Standard

- Bronze fitted pump construction
- Bronze shaft sleeves
- Bronze case wearing rings
- Dynamically balanced impellers
- Stainless steel impeller key
- Carbon steel shaft
- Corrosion-resistant lantern rings*
- Bronze stuffing box bushings
- Bronze or stainless steel glands
- Interwoven graphite-impregnated T.F.E. packing rings
- Cast integral bearing arms (most models)
- Regreaseable ball bearings
- Double row thrust bearing (outboard side)
- Upper casing lifting lugs
- Water slingers and grease seals
- Hydrostatic and Certified Performance test**
- Coupling guard
- Suction and discharge gauges with shutoff cocks
- Automatic air release valve
- Casing relief valve (electric driven units only)

Optional

- Ductile iron casings (available in selected 1800 and 1900 models)
- Some models available in 316 SST, duplex and super duplex
- Right- or left-hand rotation
- Impeller wearing rings
- Stainless steel shafts
- Double row ball bearings on inboard side
- External bypass line from casing to stuffing boxes (optional on Model 1800s and 1900s, standard on Model 2800s and 5800s)
- Formed steel drip-rim base (horizontal electric driven units only)
- 15' Suction lift test to verify performance at 150% of rated flow
- Available accessories include valves, headers, main relief valves, increasers and reducers, waste cones, and more.



* Standard on Model 2800s and 5800s; furnished when suction pressure is below 40 psi on Model 1800s and 1900s.

** Test is performed with positive suction pressure.



www.FairbanksNijhuis.com

800 AIRPORT ROAD, NORTH AURORA, ILLINOIS 60542 USA
PARALLELWEG 4, 7102 DE, WINTERSWIJK, THE NETHERLANDS
NO. 10 JIA YE ROAD BIN HU DISTRICT, WUXI CITY, JIANG SU PROVINCE, CHINA 214124

Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice.
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Electric Pump



SECTION A

ELECTRIC DRIVEN PUMP

A.1. Pump Base (UL Listed & FM Approved):

Fairbanks Nijhuis Fire pumps

- Horizontal Splitcase 5"-1822CF
- Flow: 1000 GPM
- Pressure rated: 145 Psi
- Speed: 2950 RPM
- Shutoff head: 158 Psi

Pump Construction:

- Material of construction: Cast Iron casing
- Impeller Material: Bronze
- Pump rotation: Right handed
- Flange rating (Suction/Discharge): 125/125 LB (6"/5")
- Pump base: Steel bent form base
- Shaft Material: Carbon Steel AISI C1045

A.2. Pump Motor (UL Listed):

- Manufacturer: Factory Choice.
- Horsepower: 125 HP
- Enclosure: ODP
- Speed: 3000 rpm
- Frequency: 50 Hz
- Voltage: 380 V
- Transition: Wye-Delta-Open.
- Insulation Class F, Design B, NEMA MG-1

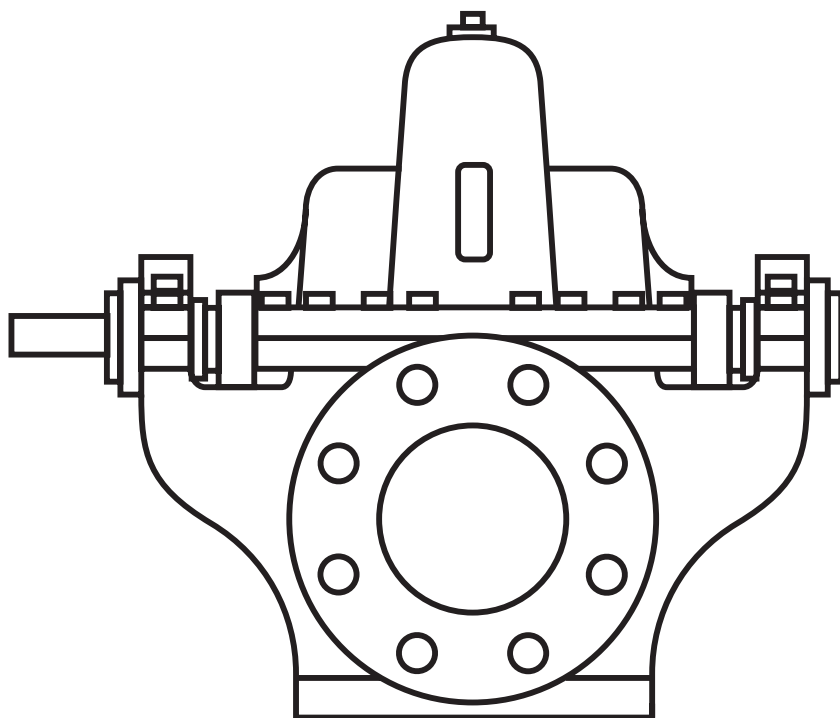
A.3. Pump Controller (UL Listed & FM Approved):

- Manufacturer: Tornatech GPY
- Horsepower: 125 HP
- Enclosure: NEMA 2
- Frequency: 50 Hz
- Voltage: 380 V
- Transition: Wye-Delta-Open

A.4. Pump Accessories:

- Casing relief valve: UL listed & FM approved.
- Air release valve.
- 2 Pressure gauges for suction & discharge.

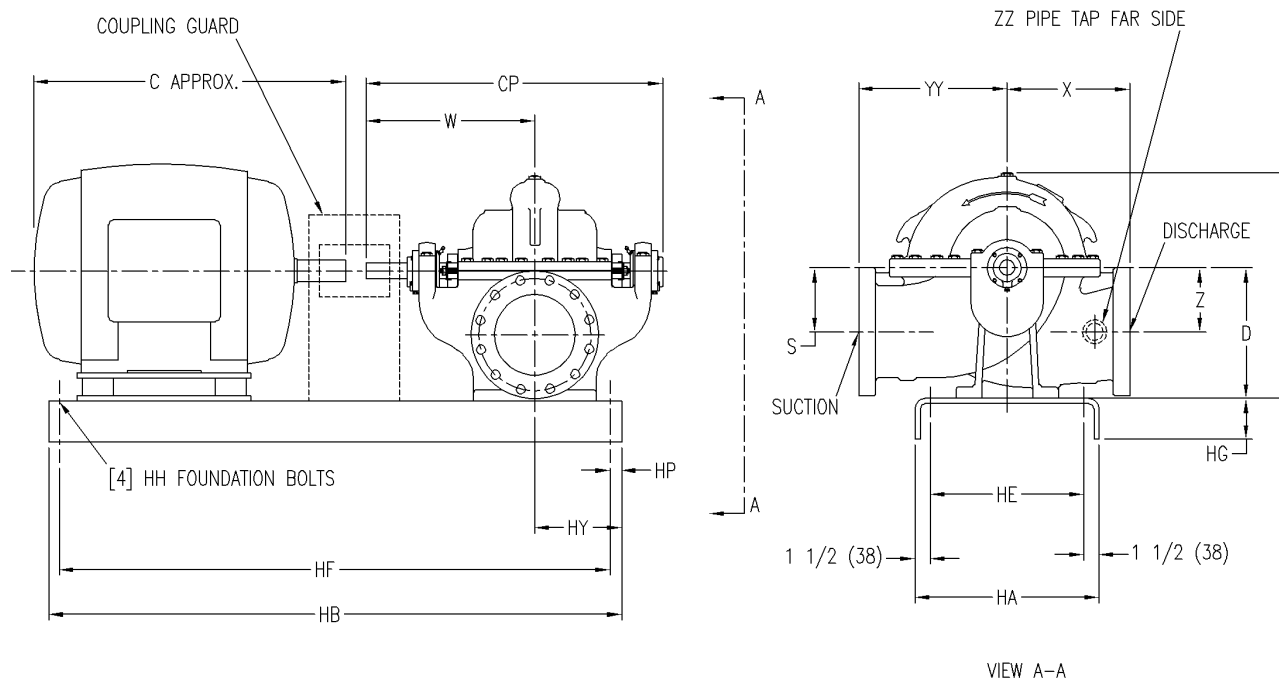
(Dimensions & Curves)



General Arrangement

WARNING

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.



CP	W	X	YY	D	Z	S	HY	ZZ
724	406	286	337	305	140	140	152	31.75

C	HA	HB	HE	HF	HG	HH	HP	O
813	559	1,524	483	1,473	102	15.87	25.40	502

NOTES:

Not for construction, installation, or application purposes unless certified.

All dimensions are in mm

Dimensions may vary $\pm 1/2"$ (13mm) due to normal manufacturing tolerances.

Bases are designed to be completely filled with grout.

Coupling gap may vary 1/8" (3mm) through 2 1/16" (52mm)

See configuration for estimated total weight.

Pump Data

Series	Horizontal Splitcase
Model	5"-1822CF
Size	5x6x11C
Flow	1,000.0 USgpm
Rated Pressure	10.00 bar.g
RPM	2950 rpm
Rotation	Right handed
Liquid Type	Water
Discharge Size	127 mm
Suction Size	152 mm
Impeller Diameter	279 mm
Connection Type	125/125
Base Type	Steel bent form base
-	-

Pump Materials of Construction

Pump	Bronze fitted with Cast Iron casing
Shaft	Carbon Steel AISI C1045

Motor Data

Power	125 hp
Phase	3
Frequency	50 Hz
Volts	380 V
RPM	3000
-	-

Service Factor	1.15
Enclosure	ODP
Manufacturer	UL Listed Factory Choice

Site Information

Elevation	91.44 m
Temperature	25.00 deg C

Estimated Weights

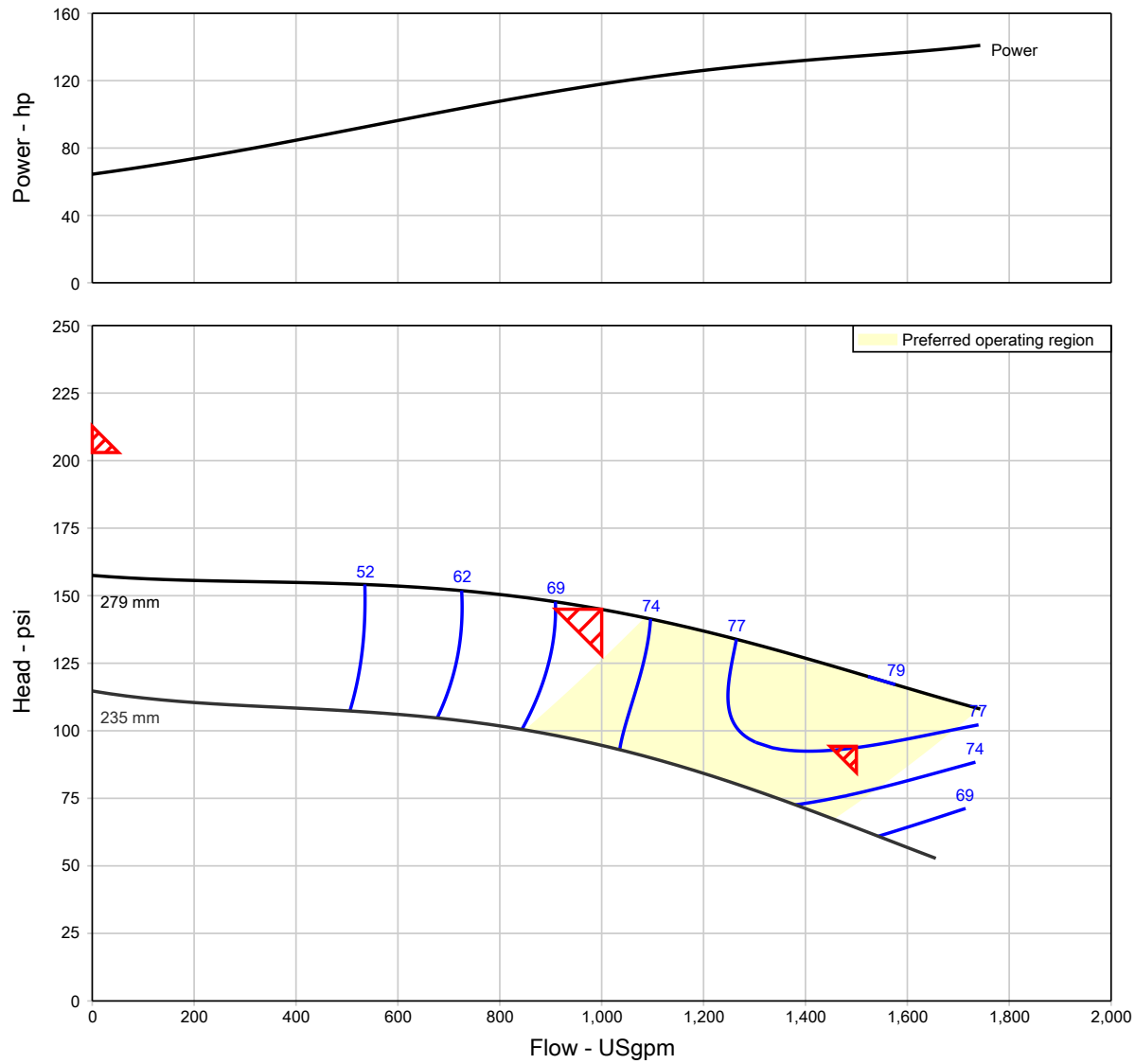
Pump	285.8 kg
Driver	430.9 kg

Quote Information

Customer	EGS
Customer Quote	
Job Name	
Market	-



Quote Item	001
Quote Date	



Item Number / Tags	: 001	Size	: 5"-1822CF
Service	:	Stages	: 1
Quantity	: 1	Driver type	: Motor
Quote number	:	Frequency	: 50 Hz
Date last saved	:	Speed, rated	: 2950 rpm
Flow, rated	: 1,000.0 USgpm	Based on curve number	: 184-5X6X11C-2950
Differential head / pressure, rated	: 145.0 psi	Efficiency	: 71.67 %
Flange rating (suction / discharge)	: 125/125	Max working pressure, allowable	: 12.07 bar.g
Secondary Point (150% of rated flow)	: 1,500.0 USgpm	Shutoffhead, Typical	: 158.0 psi
Secondary Point (65% of rated head)	: 94.25 psi	Max suction pressure, allowable	: 1.17 bar.g
Max Shutoff per NFPA	: 203.0 psi	Suction pressure, max (user specified)	: 0.00 bar.g
		Pump shutoff w/ suction pressure	: 10.89 bar.g
		Power driver, minimum	: 125 hp

(UL Listing Certificate)





Model 5-1822CF

File Number: EX743

COMPANY

PENTAIR PUMP GROUP INC, DBA FAIRBANKS NIJHUIS

800 AIRPORT RD

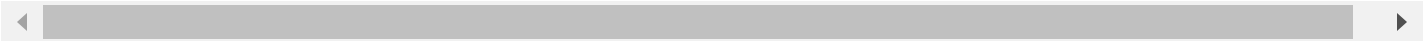
NORTH AURORA, IL 60542 United States

MODEL INFO

5-1822CF

Centrifugal Fire Pumps, Split Case, Single Stage

RATING DETAILS						
Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
750 (2,839)	6	5	105 (723)	154 (1,061)	2950	325 (2,240)
1,000 (3,785)	6	5	97 (668)	146 (1,006)	2950	325 (2,240)
1,000 (3,785)	6	5	90 (620)	160 (1,103)	3550	325 (2,240)
1,000 (3,785)	6	5	90 (620)	135 (930)	3300	325 (2,240)



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(FM Approval)



Fire Pump Components | Fire Pumps | Centrifugal Fire Pumps, Horizontal Split-Case Type (Horizontal Mounted)

5-1822CF

Details

Category	Centrifugal Fire Pumps, Horizontal Split-Case Type (Horizontal Mounted)
Class of Work	1311 - Centrifugal Fire Pumps, Horz
Approval Standard	FM 1311 - Centrifugal Fire Pumps Split-Case Type (Axial or Radial)
Certification Type	FM Approved
Rated Capacity, (gal/min)	1000
Rated Capacity, (dm³/min)	3785
Rated Net Head at Rated Capacity, psi	97-146
Rated Net Head at Rated Capacity, kPa	670-1005
Rated Speed, r/min	2950
Suction Inlet, dia., in.	6
Discharge Outlet, dia., in.	5
Stage(s)	1
Listing Country	United States of America

Company

Fairbanks Nijhuis, A Member of the Pentair Pump Group
800 Airport Rd, North Aurora , Illinois 60542
United States of America
<http://fairbanksnijhuis.com>

(Electric Controller)





TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

GPx Series

Full Service
Electric Fire Pump Controller



Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.

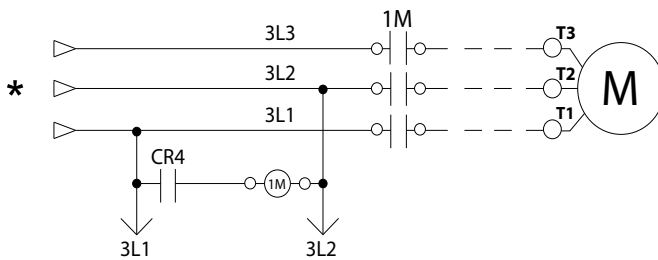


March 2024

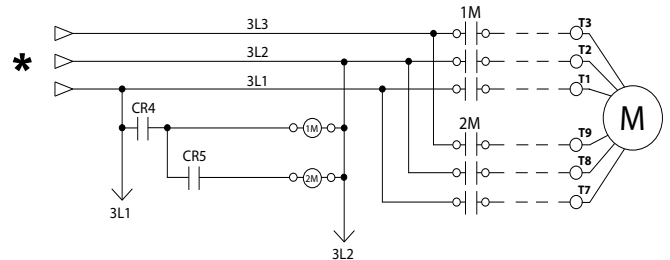


Select starting method

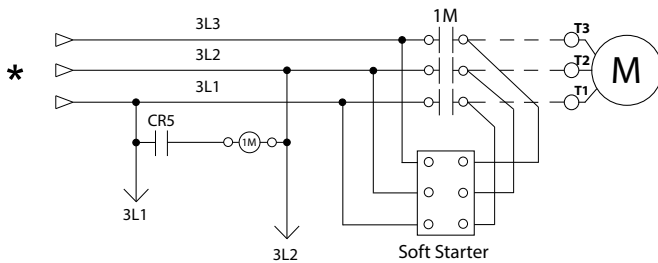
Model GPA Across the line



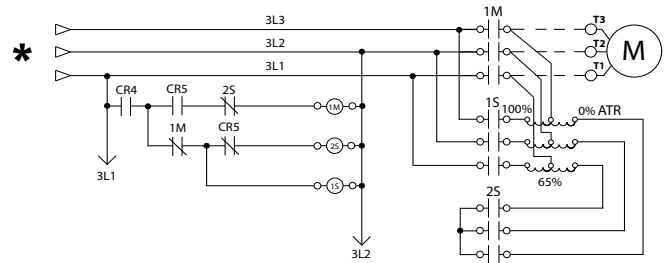
Model GPP Partwinding



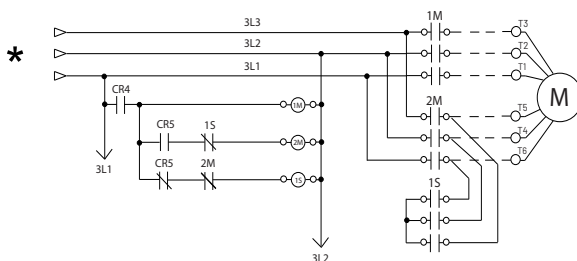
Model GPS Soft Start Soft Stop



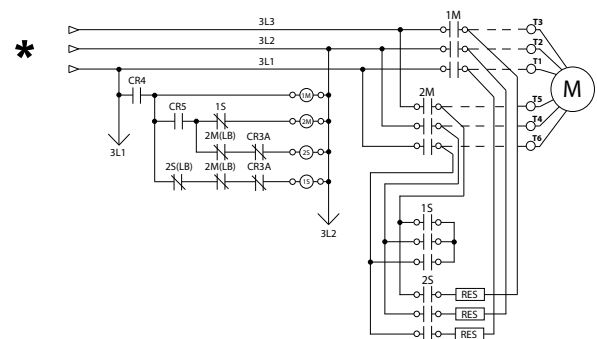
Model GPR Autotransformer



Model GPY Wye-Delta Open



Model GPW Wye-Delta Closed



*From normal incoming power through Disconnecting Means (IS/CB)



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)		
	Underwriters Laboratory (UL)	UL218 - Fire Pump Controllers	
	FM Global	Class 1321/1323	
	New York City	Accepted for use in the City of New York by the Department of Buildings	
	CE Mark	Various EN, IEC & CEE directives and standards	
	Built in Canada or U.A.E		Built in Europe
	CE Mark Option		Supplied as Standard
Enclosure	Protection Rating		
	Built in Canada or U.A.E		Built in Europe
	Standard: NEMA 2		Standard: IP55
	Optional		
	NEMA 12	NEMA 4X-304 sst painted	IP54
	NEMA 3	NEMA 4X-304 sst brushed finish	IP55
	NEMA 3R	NEMA 4X-316 sst painted	IP65
	NEMA 4	NEMA 4X-316 sst brushed finish	IP66
	Accessories • Bottom entry gland plate • Lifting Lugs • Keylock handle		Paint Specifications • Red RAL3002 • Powder coating • Glossy textured finish

Shortcircuit Withstand Rating	200V to 208V 60Hz	220V to 240V 60Hz	380V to 415V 50 Hz / 60Hz	440V to 480V 60Hz	575V to 600V 60Hz
	HP (kw)				
Standard 100kA	5 - 150 (3.7 - 110)	5 - 200 (3.7 - 149)	5 - 300 (3.7 - 223)	5 - 400 (3.7 - 298)	N/A
Optional 150kA					
Standard 50kA	200 (149)	250 (186)	350 - 450 (261-335)	450 - 500 (335 - 373)	5 - 500 (3.7- 373)
Optional 100kA	N/A	N/A	350 - 500 (261 - 373)	450 - 500 (335 - 373)	
Optional 200kA	5 - 150 (3.7 - 110)	5 - 200 (3.7 - 149)	5 - 300 (3.7 - 223)	5 - 400 (3.7 - 298)	N/A

*Please see Disconnecting Means details on page 4



Ambient Temperature Rating	Standard: 4°C to 40°C / 39°F to 104°F Optional: 4°C to 55°C / 39°F to 131°F
Surge Suppression	Surge arrestor rated to suppress surges above line voltage
Disconnecting Means	• Isolating switch and circuit breaker assembly: - Door interlocked in the ON position - Isolating switch rated not less than 115% of motor full load current - Circuit breaker continuous rating not less than 115% of motor full load current - Overcurrent sensing non-thermal type, magnetic only - Instantaneous trip setting of not more than 20 times the motor full load current • Common flange mounted operating handle
Service Entrance Rating	Suitable as service entrance equipment
Emergency Start Handle	• Flange mounted • Pull and latch activation • Integrated limit switch • Across the line start (direct on line)
Locked Rotor Protector	• Operate shunt trip to open circuit breaker • Factory set at 600% of motor full load current • Trip between 8 and 20 seconds
Electrical Readings	• Voltage phase to phase (normal power) • Amperage of each phase when motor is running
Pressure Readings	• Continuous system pressure display • Cut-in and Cut-out pressure settings
Pressure and Event recorder	• Pressure readings with date stamp • Event recording with date stamp • Under regular maintained operation, events are stored in memory for the life of the controller. • Data viewable on operator interface display screen • Downloadable by USB port to external memory device
Pressure Sensing	• Pressure transducer and run test solenoid valve assembly for fresh water application • Pressure sensing line connection 1/2" Female NPT • Drain connection 3/8" • Rated for 0-500PSI working pressure (standard display at 0-300PSI) • Externally mounted with protective cover



Audible Alarm	Alarm buzzer - 85dB at 3 meters		
Visual Indications	• Power available • Motor run • Periodic test • Manual start	• Deluge valve start • Remote automatic start • Remote manual start • Emergency start	• Pump on demand/Automatic start • Pump room temperature (°F or °C) • Lockout
Visual & Audible Alarms	Visual • Control voltage not healthy • Invalid cut-in • Lock rotor current • Loss of power • Low ambient temperature • Low water level • Motor trouble • Phase reversal (normal power) Visual and audible • Fail to start Overcurrent • Overcurrent • Overvoltage • Phase loss L1 • Phase loss L2 • Phase loss L3 • Phase unbalanced • Pressure transducer fault detected Pump on demand • Pump on demand • Pump room alarm • Service required • Undercurrent • Undervoltage • Check weekly test solenoid • Weekly test cut-in reached		
Remote Alarm Contacts	DPDT-8A-250V.AC • Power available • Phase reversal • Motor run • Common pump room alarm (field re-assignable)** • Overvoltage • Undervoltage • Phase unbalance • Low pump room temperature • High Pump room temperature • Common motor trouble (field re-assignable)** • Overcurrent • Fail to start • Undercurrent • Ground fault • Free (field programmable)**		

**Tornatech reserves the right to use any of these three alarm points for special specific application requirements.



ViZiTouch V2.1 Operator Interface	• Embedded microcomputer with software PLC logic • 7.0" color touch screen (HMI technology) • Upgradable software • Multi-language		
Communication Protocol Capability	• Protocol: Modbus • Connection type: Shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See bulletin MOD-GPx		
Operation	Automatic Start	• Start on pressure drop • Remote start signal from automatic device • Deluge valve start	
	Manual Start	• Start pushbutton • Run test pushbutton • Remote start from manual device	
	Stopping	• Manual with Stop pushbutton • Automatic after expiration of minimum run timer ***	
	Timers	Field Adjustable & Visual Countdown	• Minimum run timer ***(off delay) • Sequential start timer (on delay) • Periodic test timer
	Actuation	Visual Indication	• Pressure • Non-pressure
	Mode		• Automatic • Non-automatic

***Can only be used if approved by the AHJ



A4	Flow switch provision	C19	Emergency start alarm contact (DPDT)
A8	Foam pump application w/o pressure transducer and run test solenoid valve.	C20	Manual start alarm contact (DPDT)
A9	Low zone pump control function	C21	Deluge valve start alarm contact (DPDT)
A10	Middle zone pump control function	C22	Remote automatic start alarm contact (DPDT)
A11	High zone pump control function	C23	Remote manual start alarm contact (DPDT)
A13	Non-pressure actuated controller w/o pressure transducer and run test solenoid valve	C24	High pump room temperature alarm contact (DPDT)
A16	Lockout/interlock circuit from equipment installed inside the pump room	C25	Second set of standard alarm contacts (DPDT) (Typical for city of Los Angeles and Denver)
B11	Built in alarm panel (120V.AC supervisory power) providing indication for: • Audible alarm & silence pushbutton for motor run, phase reversal, loss of phase. • Pilot lights for loss of phase & supervisory power available	Cx	Additional visual and alarm contact (Specify function) (DPDT)
B11B	Built in alarm panel same as B11 but 220-240VAC supervisory power	D1	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
B19A	High motor temperature c/w thermostat relay and alarm contacts (DPDT)	D1A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
B19B	High motor temperature c/w PT100 relay and alarm contacts (DPDT)	D5	Pressure transducer and run test solenoid valve for fresh water rated for 0-500PSI (for factory calibration purposes only)
B21	Ground fault alarm detection c/w visual indication and alarm contact (DPDT)	D5D	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
C1	Extra motor run alarm contact (DPDT)	D10	Omit mounting feet (when applicable)
C4	Periodic test alarm contact (DPDT)	D13	High withstand rating for: • 200V to 208V @ 150HP max. = 150kA* • 200V to 208V @ 200HP = 100kA* • 220V to 240V @ 200HP max. = 150kA* • 220V to 240V @ 250HP = 100kA* • 380V to 415V @ 300HP max. = 150kA* • 380V to 415V @ 350HP to 450HP = 100kA* • 440V to 480V @ 400HP max. = 150kA* • 440V to 480V @ 450HP to 500HP = 100kA* • 600V @ 500HP max. = 100kA*
C6	Low discharge pressure alarm contact (DPDT)	D13A	High withstand rating for: • 380V to 480V = 65kA* • 600V = 25kA*
C7	Low pump room temperature alarm contact (DPDT)	D13B	High withstand rating for: • 200V to 208V @ 150HP max. = 200kA* • 220V to 240V @ 200HP max. = 200kA* • 380V to 415V @ 300HP max. = 200kA* • 440V to 480V @ 400HP max. = 200kA*
C10	Low water reservoir level alarm contact (DPDT)	D14	Anti-condensation heater & thermostat
C11	High electric motor temperature alarm contact (DPDT)	D14A	Anti-condensation heater & humidistat
C12	High electric motor vibration c/w visual indication and alarm contact (DPDT)	D14B	Anti-condensation heater & thermostat & humidistat
C14	Pump on demand / automatic start alarm contact (DPDT)		
C15	Pump fail to start alarm contact (DPDT)		
C16	Control voltage healthy alarm contact (DPDT)		
C17	Flow meter valve loop open c/w visual indication and alarm contact (DPDT)		
C18	High water reservoir level c/w visual indication and alarm contact (DPDT)		

*For fire pump controller section only.

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.



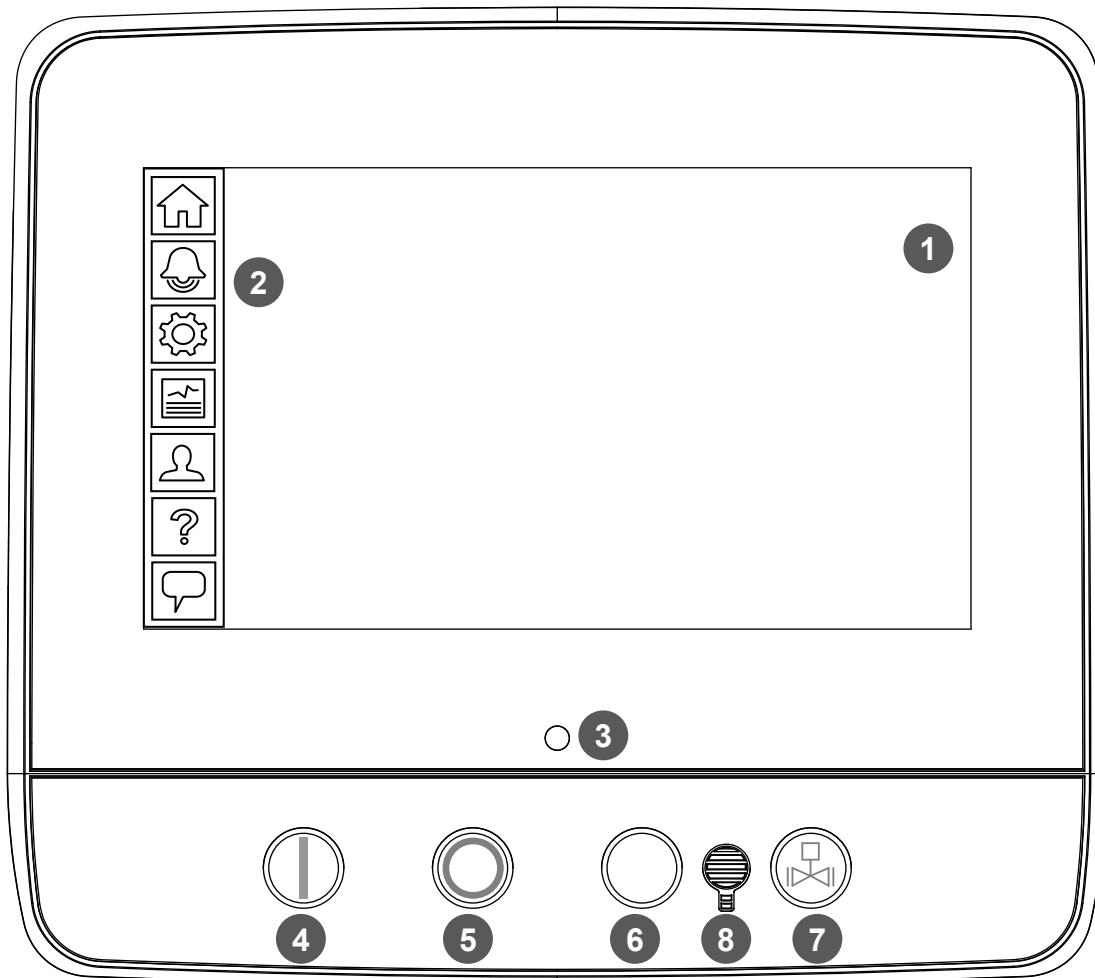
D15	Tropicalization
D18	CE Mark with factory certificate
D26	Modbus with RTU frame format and RS485 connection
D27	Motor heater connection (external single phase power source and heater on/off contact)
D27A	Motor heater connection (internal single phase power source and heater on/off contact)
D28	Customized drawing set
D34A	Field programmable I/O board - 5 Input / 5 output
D43	Seismic Certification compliant to CBC 2019, IBC 2018 rigid base/wall mounted only
D44	Special Seismic Certification compliant to OSHPD rigid base/wall mounted only

L01	Other language and English (bilingual)
L02	French
L03	Spanish
L04	German
L05	Italian
L06	Polish
L07	Romanian
L08	Hungarian
L09	Slovak
L10	Croatian
L11	Czech
L12	Portuguese
L13	Dutch
L14	Russian
L15	Turkish
L16	Swedish
L17	Bulgarian
L18	Thai
L19	Indonesian
L20	Slovenian
L21	Danish
L22	Greek
L23	Arabic
L24	Hebrew
L25	Chinese

Additional Options:

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

ViZiTouch V2.1 Operator Interface



- | | |
|------------------------|--------------------------|
| 1 - Color touch screen | 3 - Power LED (3 colors) |
| 2 - Onscreen menu | 4 - START button |
| • HOME page | 5 - STOP button |
| • ALARM page | 6 - Not Used |
| • CONFIGURATION page | 7 - RUN TEST button |
| • HISTORY page | 8 - Alarm buzzer |
| • SERVICE page | |
| • MANUAL page | |
| • LANGUAGES page | |

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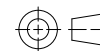
BY DD/MM/YY

DRAWN BY ACD 07/02/24

FINAL APPROVAL FC 07/02/24

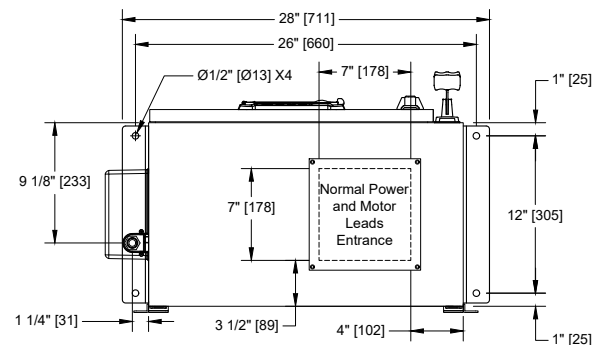
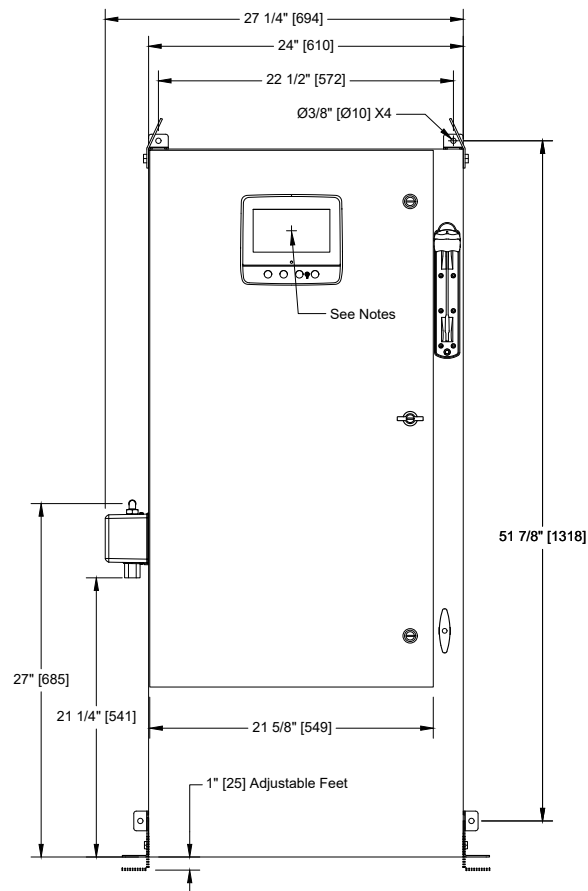
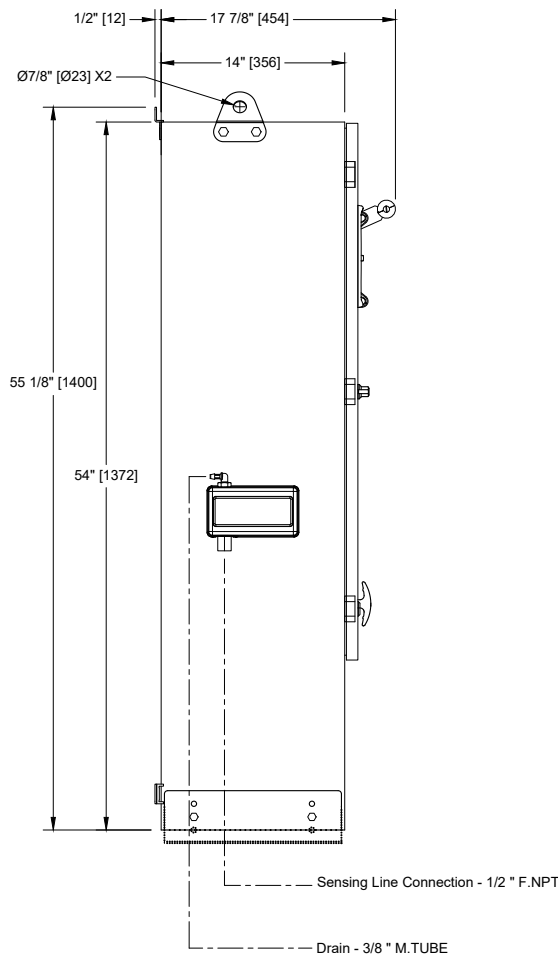
ELECTRIC FIRE PUMP CONTROLLER**MODEL: GPA/GPP/GPY**

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

THIRD ANGLE
PROJECTIONDRAWING NUMBER
GPX-DI820/E

DWG REV. 1

SHEET 1 OF 1

**Voltage / Power Table**

Voltage	Min HP	Max HP
208	40	60
220 - 240	40	75
380 - 400 - 415	75	125
440 - 480	75	150
600	100	200

Notes:

- Standard: NEMA 2
- Standard paint : textured red RAL 3002.
- All dimensions are in inches [millimeters].
- Center of screen: 47-5/8" [1208] from bottom.
- Bottom conduit entrance through removable gland plate recommended.
- Use watertight conduit and connector only.
- Protect equipment against drilling chips.
- Door swing equal to door width.



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ELECTRIC FIRE PUMP CONTROLLER REDUCED VOLTAGE / WYE DELTA (OPEN TRANSITION)

MODEL:GPY

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

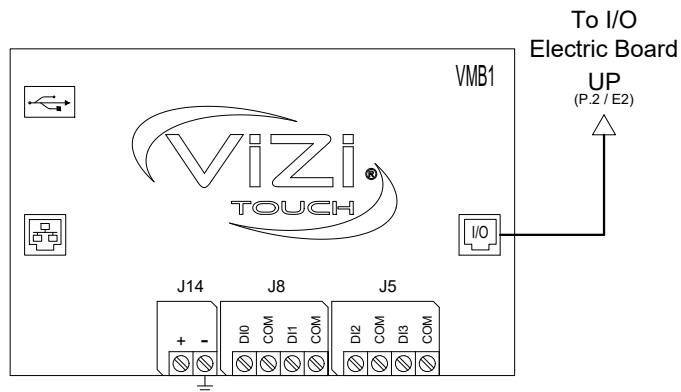
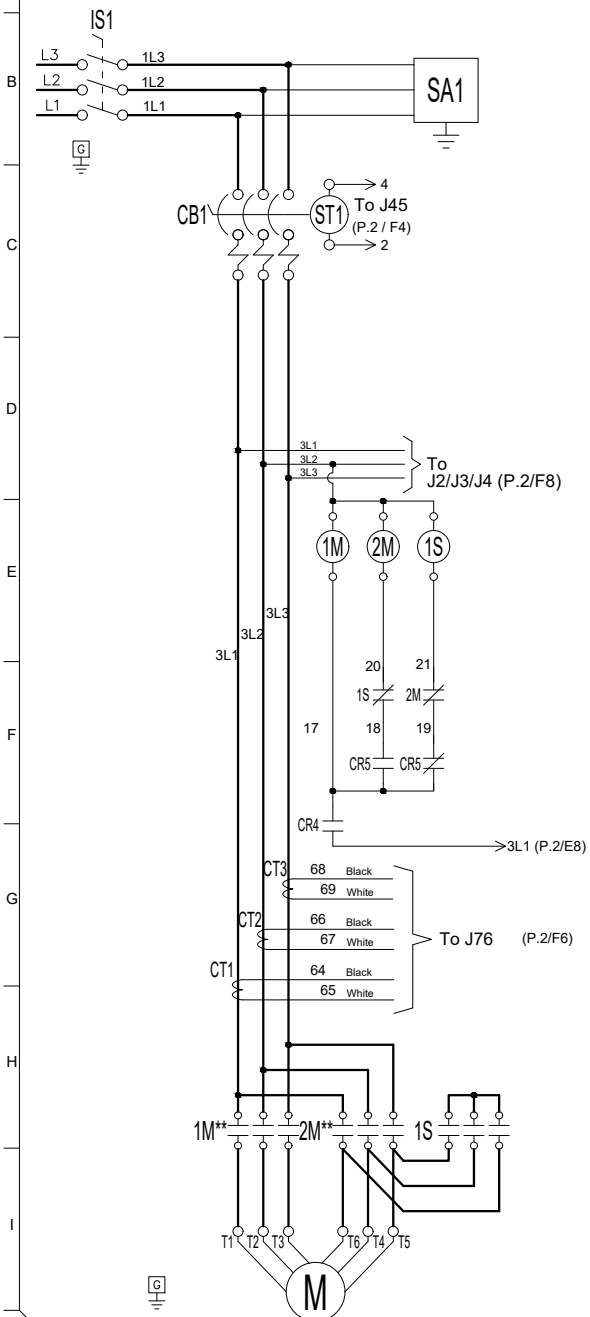


DRAWING NUMBER

GPY-WS800/E

DWG REV. 1

SHEET 1 OF 2



Legend	
1M-2M	Contactor
1S	Contactor
AB	Alarm Bell
CB	Circuit Breaker
CR	Control Relay
CT	Current Transformer
EB	Electric I/O Board
IS	Isolating Switch
J	Jumper
LS	Limit Switch
PT	Pressure Transducer
SA	Surge Arrester
ST	Shunt Trip
SV	Solenoid Valve
VMB	Main Board
XTR	Transformer



	BY	DD/MM/YY
DRAWN BY	ACD	11/01/24
FINAL APPROVAL	FC	11/01/24

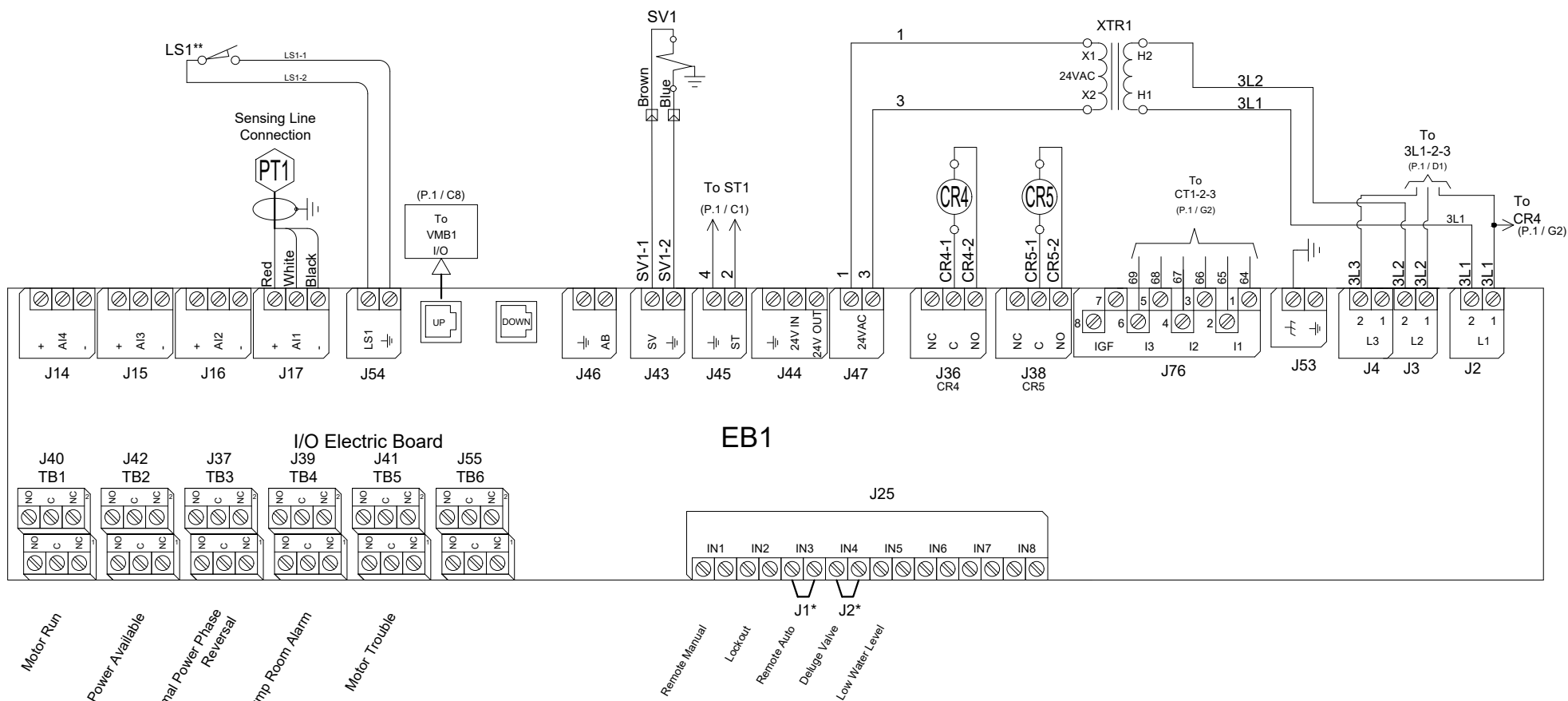
ELECTRIC FIRE PUMP CONTROLLER REDUCED VOLTAGE / WYE DELTA (OPEN TRANSITION)

MODEL:GPY

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC
Dpt of Building
Approved

DRAWING NUMBER	GPY-WS800/E
DWG REV. 1	
SHEET 2 OF 2	



** Contact closes when emergency start is in "ON" position



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DRAWN BY ACD 28/02/23

FINAL APPROVAL FC 28/02/23

ELECTRIC FIRE PUMP CONTROLLER

MODEL:GPX

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



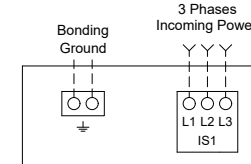
DRAWING NUMBER
GPX-TD800/E
DWG REV. 0
SHEET 1 OF 1

COPPER CONDUCTORS for Isolating Switch (IS1).

Field Wiring According to Bending Space (AWG or MCM). Terminals L1 - L2 - L3

Bending Space	5 " (127 mm)							8 " (203 mm)		
HP Voltage	5	7.5	10	15	20	25	30	40	50	60
208	1x (10 to 1/0)	1x (8 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)	1x (2 to 1/0)	1x (1/0 to 3/0)	1x (3/0 to 250)	1x (4/0 to 250)
220 to 240	1x (10 to 1/0)	1x (10 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)	1x (1 to 3/0)	1x (2/0 to 3/0)	1x (3/0 to 250)
380 to 416	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (8 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)	1x (3 to 1/0)
440 to 480	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (8 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)
600	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (8 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)

Power Terminals



Bending Space	12 " (305 mm)				16 " (406 mm)						
HP Voltage	75	100	125	150	200	250	300	350	400	450	500
208	2x (1/0 to 500)	2x (2/0 to 500)	2x (4/0 to 500)	2x (250 to 500)	3x (4/0 to 500)	-----	-----	-----	-----	-----	-----
220 to 240	1x (250)	2x (2/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (350 to 500)	3x (250 to 500)	-----	-----	-----	-----	-----
380 to 416	1x (1/0 to 3/0)	1x (3/0 to 250)	1x (250)	2x (1/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (400 to 500)	3x (250 to 500)	3x (300 to 500)	-----
440 to 480	1x (1 to 3/0)	1x (2/0 to 3/0)	1x (3/0 to 250)	1x (4/0 to 250)	2x (1/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (350 to 500)	2x (400 to 500)	3x (250 to 500)
600	1x (3 to 1/0)	1x (1 to 3/0)	1x (2/0 to 3/0)	1x (3/0 to 250)	1x (250)	2x (2/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (250 to 500)	2x (300 to 500)	2x (350 to 500)
Bending Space	5 " (127 mm)				12 " (305 mm)						

ALUMINUM CONDUCTORS for Isolating Switch (IS1).

Field Wiring According to Bending Space (AWG or MCM). Terminals L1 - L2 - L3

Bending Space	5 " (127 mm)							8 " (203 mm)		10 " (254 mm)
HP Voltage	5	7.5	10	15	20	25	30	40	50	60
208	1x (10 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)	1x (1 to 1/0)	1x (1/0)	1x (3/0)	1x (4/0 to 250)	1x (300) ** or 1x (250) 90°C *
220 to 240	1x (10 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)	1x (2 to 1/0)	1x (1 to 1/0)	1x (2/0 to 3/0)	1x (3/0) 90°C *	1x (250)
380 to 416	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (4 to 1/0)	1x (2 to 1/0)	1x (1 to 1/0)	1x (1/0)
440 to 480	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (2 to 1/0)	1x (1 to 1/0)
600	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (10 to 1/0)	1x (8 to 1/0)	1x (6 to 1/0)	1x (6 to 1/0)	1x (4 to 1/0)	1x (4 to 1/0)	1x (2 to 1/0)

Bending Space	12 " (305 mm)				16 " (406 mm)						
HP Voltage	75	100	125	150	200	250	300	350	400	450	500
208	2x (2/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (350 to 500)	3x (300 to 500)	-----	-----	-----	-----	-----	-----
220 to 240	1x (350) **	2x (3/0 to 500)	2x (250 to 500)	2x (300 to 500)	2x (500)	3x (400 to 500)	-----	-----	-----	-----	-----
380 to 416	N/A	1x (250 to 350)	1x (350) **	2x (3/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (500)	3x (300 to 500) ** 2x (500) 90°C *	3x (350 to 500)	3x (400 to 500)	-----
440 to 480	1x (1/0 to 3/0)	1x (3/0)	1x (250)	1x (300 to 350) ** 1x (250) 90°C *	2x (3/0 to 500)	2x (250 to 500)	2x (300 to 500)	2x (400 to 500)	2x (500)	2x (500) 90°C *	3x (350 to 500)
600	1x (1 to 1/0)	1x (2/0 to 3/0)	1x (3/0) 90°C *	1x (4/0 to 250)	1x (350 to 500)	2x (3/0 to 500)	2x (4/0 to 250)	2x (300 to 500)	2x (350 to 500)	2x (400 to 500)	2x (500)
Bending Space	5 " (127 mm)				12 " (305 mm)						

*For standard enclosure, use 90°C aluminium wire. Consult Factory for Use of Conductors Rated Lower than 90°C.

** Consult Factory

Notes:

- 1 - For proper wire sizing, refer to NFPA70 and NEC (USA) or CEC (Canada) or local code.
- 2 - Controller suitable for service entrance in USA.
- 3 - For more accurate motor connections refer to motor manufacturer or motor nameplate.
- 4 - Controller is phase sensitive. Incoming lines must be connected in ABC sequence.

Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.



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DRAWN BY ACD 28/02/23

FINAL APPROVAL FC 28/02/23

ELECTRIC FIRE PUMP CONTROLLER

MODEL:GPP/GPW/GPY

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



DRAWING NUMBER
GPX-TD802/E
DWG REV. 0
SHEET 1 OF 1

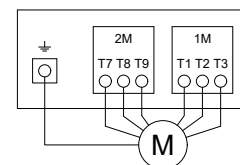
COPPER CONDUCTORS for Motor Connection (1M-2M).

Field Wiring According to Bending Space (AWG or MCM). Terminals T1-T2-T3-T4-T5-T6-T7-T8-T9

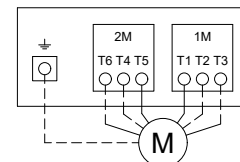
HP Voltage	5	7.5	10	15	20	25	30	40	50	60
208	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (8 to 4)	1x (8 to 4)	1x (6 to 4)	1x (6 to 4)	1x (4 to 2/0)	1x (2 to 2/0)	1x (1 to 2/0)
220 to 240	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (8 to 4)	1x (8 to 4)	1x (6 to 4)	1x (6 to 4)	1x (4)	1x (3 to 2/0)	1x (2 to 2/0)
380 to 416	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (8 to 4)	1x (8 to 4)	1x (6 to 4)	1x (4)
440 to 480	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (8 to 4)	1x (8 to 4)	1x (6 to 4)
600	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (10 to 4)	1x (8 to 4)	1x (8 to 4)

HP Voltage	75	100	125	150	200	250	300	350	400	450	500
208	1x (2/0 to 3/0)	1x (3/0 to 300)	1x (250 to 300)	2x (1/0 to 300)	2x (3/0 to 350)	-----	-----	-----	-----	-----	-----
220 to 240	1x (1/0 to 2/0)	1x (3/0)	1x (4/0 to 300)	1x (300)	2x (2/0 to 300)	2x (4/0 to 350)	-----	-----	-----	-----	-----
380 to 416	1x (4 to 2/0)	1x (2 to 2/0)	1x (1/0 to 2/0)	1x (2/0 to 3/0)	1x (4/0 to 300)	1x (300)	2x (2/0 to 300)	2x (3/0 to 300)	2x (4/0 to 350)	2x (4/0 to 350)	-----
440 to 480	1x (4)	1x (3 to 2/0)	1x (2 to 2/0)	1x (1/0 to 3/0)	1x (2/0 to 3/0)	1x (4/0 to 300)	1x (300)	2x (1/0 to 300)	2x (2/0 to 300)	2x (3/0 to 350)	2x (4/0 to 350)
600	1x (6 to 4)	1x (4)	1x (3 to 2/0)	1x (2 to 2/0)	1x (1/0 to 3/0)	1x (2/0 to 3/0)	1x (4/0 to 300)	1x (250 to 300)	1x (300)	2x (1/0 to 300)	2x (2/0 to 300)

Motor Terminals



Model:GPP



Models:GPY/GPW

ALUMINUM CONDUCTORS for Contactor (1M-2M).

Field Wiring According to Bending Space (AWG or MCM). Terminals T1-T2-T3-T4-T5-T6-T7-T8-T9

HP Voltage	5	7.5	10	15	20	25	30	40	50	60
208	1x (12 to 2/0) **	1x (10 to 2/0) **	1x (10 to 2/0) **	1x (8 to 2/0) **	1x (6 to 2/0) **	1x (4 to 2/0) **	1x (4 to 2/0) **	1x (2 to 2/0)	1x (1/0 to 2/0)	1x (2/0)
220 to 240	1x (12 to 2/0) **	1x (10 to 2/0) **	1x (10 to 2/0) **	1x (8 to 2/0) **	1x (8 to 2/0) **	1x (6 to 2/0) **	1x (4 to 2/0) **	1x (2 to 2/0) **	1x (1 to 2/0)	1x (1/0 to 2/0)
380 to 416	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (10 to 2/0) **	1x (10 to 2/0) **	1x (8 to 2/0) **	1x (8 to 2/0) **	1x (6 to 2/0) **	1x (4 to 2/0) **	1x (3 to 2/0) **
440 to 480	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (10 to 2/0) **	1x (10 to 2/0) **	1x (8 to 2/0) **	1x (8 to 2/0) **	1x (6 to 2/0) **	1x (4 to 2/0) **
600	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (12 to 2/0) **	1x (10 to 2/0) **	1x (10 to 2/0) **	1x (10 to 2/0) **	1x (8 to 2/0) **	1x (8 to 2/0) **	1x (6 to 2/0) **

HP Voltage	75	100	125	150	200	250	300	350	400	450	500
208	1x (3/0)	Consult Factory	1x (300) 90°C *	2x (3/0 to 300)	2x (250 to 350)	-----	-----	-----	-----	-----	-----
220 to 240	1x (2/0) 90°C *	Consult Factory	1x (300)	1x (300) 90°C *	2x (4/0 to 300)	2x (300 to 350)	-----	-----	-----	-----	-----
380 to 416	1x (2 to 2/0)	1x (1/0 to 2/0)	1x (1/0 to 2/0)	1x (3/0) 90°C *	1x (300)	1x (300) 90°C *	2x (4/0 to 300)	2x (250 to 300)	2x (300 to 350)	2x (300 to 350)	-----
440 to 480	1x (3 to 2/0) **	1x (2 to 2/0)	1x (2/0) 90°C *	1x (2/0 to 3/0)	1x (3/0) 90°C *	1x (300)	1x (300) 90°C *	2x (3/0 to 300)	2x (4/0 to 300)	2x (250 to 350)	2x (300 to 350)
600	1x (4 to 2/0) **	1x (3 to 2/0) **	1x (2 to 2/0)	1x (1/0 to 3/0)	1x (3/0)	1x (3/0) 90°C *	1x (300)	1x (300) 90°C *	Consult Factory	2x (3/0 to 300)	2x (4/0 to 300)

*For standard enclosure, use 90°C aluminium wire. Consult Factory for Use of Conductors Rated Lower than 90°C.

** Option V659 required.

Notes:

- 1 - For proper wire sizing, refer to NFPA70 and NEC (USA) or CEC (Canada) or local code.
- 2 - Controller suitable for service entrance in USA.
- 3 - For more accurate motor connections refer to motor manufacturer or motor nameplate.
- 4 - Controller is phase sensitive. Incoming lines must be connected in ABC sequence.

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DRAWN BY ACD 18/12/23

FINAL APPROVAL FC 19/12/23

ELECTRIC FIRE PUMP CONTROLLER

MODEL:GPX

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

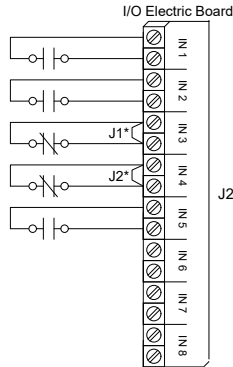


DRAWING NUMBER
GPX-TD803/E
DWG REV. 0
SHEET 1 OF 1

Field Connections

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

Remote Manual
Lockout
Remote Auto
Deluge Valve
Low Water Level



J25

Controller Terminal Strip

Network Connections

Terminals Wire Size:
Shielded Female Connector RJ45

Modbus TCP/IP RJ45

Located on Main Board



Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

Motor Run

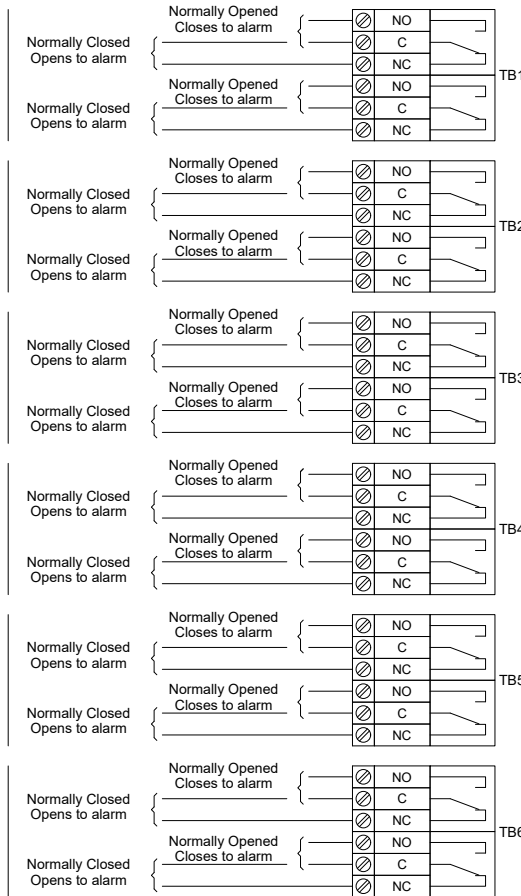
Power Available

Normal Power
Phase Reversal

Pump Room Alarm**

Motor Trouble**

(Field Programmable****)



* Remove jumper to use this feature
** Re-assignable
**** Not available on GPS models

Diesel Pump



SECTION B

Diesel DRIVEN PUMP

B.1. Pump Base (UL Listed & FM Approved):

Fairbanks Nijhuis Fire pumps:

- Horizontal Splitcase 5"-1822CF
- Flow: 1000 GPM
- Pressure rated: 145 Psi
- Speed: 3000 RPM
- Shut Off pressure: 158 Psi

Pump Construction:

- Material of construction: Cast Iron casing.
- Impeller Material: Bronze
- Pump rotation: Right handed
- Flange rating (Suction/Discharge): 125/125 LB (6"/5")
- Pump base: Structural Steel base.
- Shaft Material: Carbon Steel AISI C1045

B.2. Diesel Engine (UL listed & FM Approved):

- Manufacturer: Clarke
- Model: JU4H-UF54
- Horsepower: 145 HP
- Speed: 3000 RPM,
- Voltage: 12V.
- Cooling Method: Heat Exchanger

B.3. Pump Controller (UL Listed/FM Approved):

- Manufacturer: Tornatech GPD
- Voltage: 230 Volt AC
- Enclosure: NEMA 2

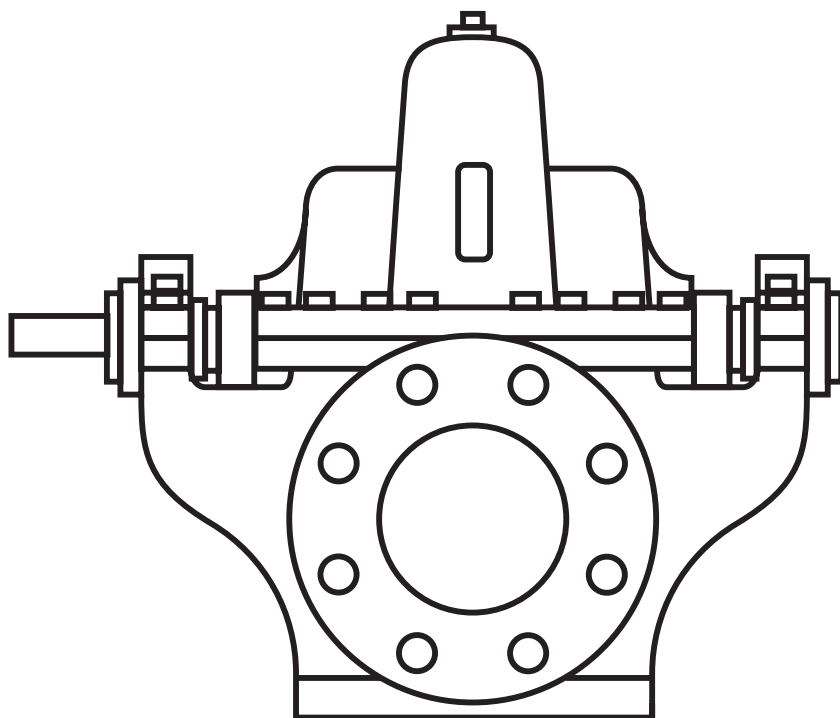
B.4. Pump Accessories:

- Air release valve.
- 2 Pressure gauges for suction & discharge.
- Main relief valve: 4" valve, Pilot operated, 125 lb.
- Enclosed waste cone: 4X8 waste cone.
- Flow meter: 6" Global Vision Venturi Flow Meter, 1000 GPM Grooved.

B.5. Diesel Engine Accessories:

- Muffler: Industrial Grade, 4"
- **UL Listed** Fuel tank and fuel tank fittings (**As per NFPA 20**): 187 US gallon tank, 165 usable US gallons, Single Wall
- 2 Batteries: 12 V

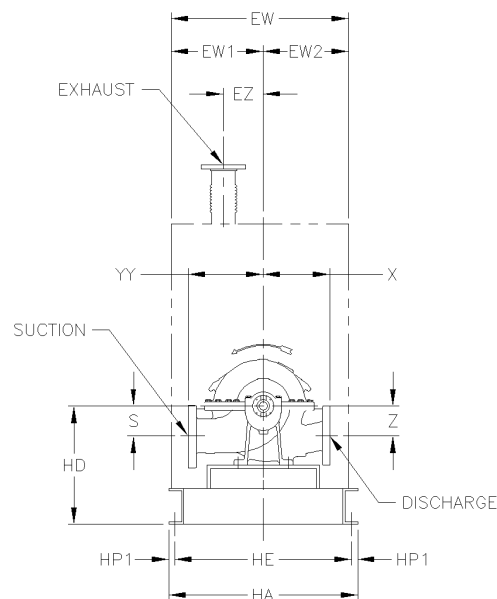
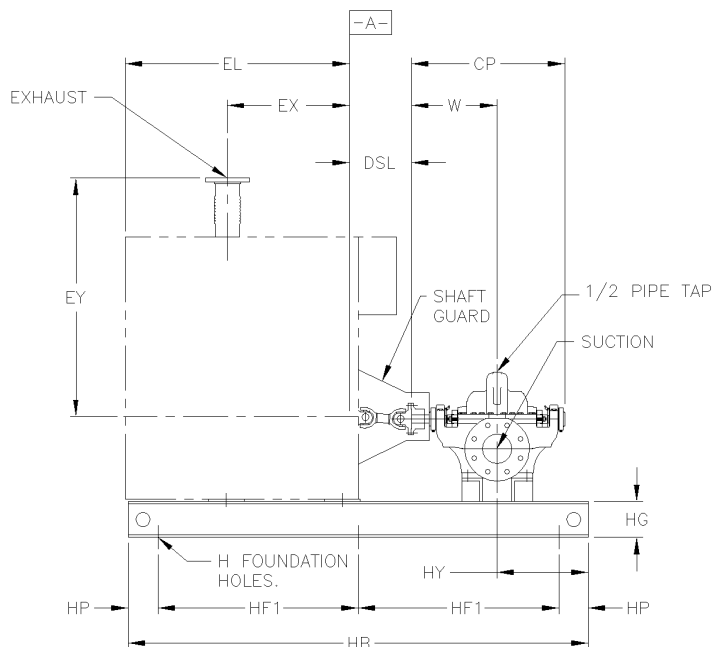
(Dimensions & Curves)



General Arrangement

WARNING

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.



EY	EL	EX	DSL	CP	W	EW	EW1	EW2	EZ	YY	X	S
1,143	980	521	397	724	406	765	397	368	127	337	286	140

Z	HD	HG	HP	HF1	HY	HB	HP1	HE	HA	H(Holes)	H(Dia)	H(Slot)
140	508	152	127	864	356	1,981	25.40	762	813	6	25.40	50.80

NOTES:

Not for construction, installation, or application purposes unless certified.

All dimensions are in mm

Dimensions may vary $\pm .38"$ (10mm) due to normal manufacturing tolerances.

Bases are designed to be completely filled with grout.

See configuration for estimated total weight.

For additional dimensions, refer to engine manufacturer's website.

Pump Data

Series	Horizontal Splitcase
Model	5"-1822CF
Size	5x6x11C
Flow	1,000.0 USgpm
Rated Pressure	10.00 bar.g
RPM	3000 rpm
Rotation	Right handed
Liquid Type	Water
Discharge Size	127 mm
Suction Size	152 mm
Impeller Diameter	278 mm
Connection Type	Flanged
Base Type	Structural steel base
-	-

Pump Materials of Construction

Pump	Bronze fitted with Cast Iron casing
Shaft	Carbon Steel AISI C1045

Engine Data

Engine Model	JU4H-UF54
Power Rated	145 hp
Power Available	145 hp
Speed	3000 rpm
Tier	T1
Manufacturer	Clarke
Cooling Type	Heat exchanger
Heater Voltage	230 Volt
Muffler Type	Industrial Grade, 4" (Qty 1)
Exhaust Connection	NPT Flex Exhaust
Battery Type	Lead acid
Battery Voltage	12 Volt DC

Site Information

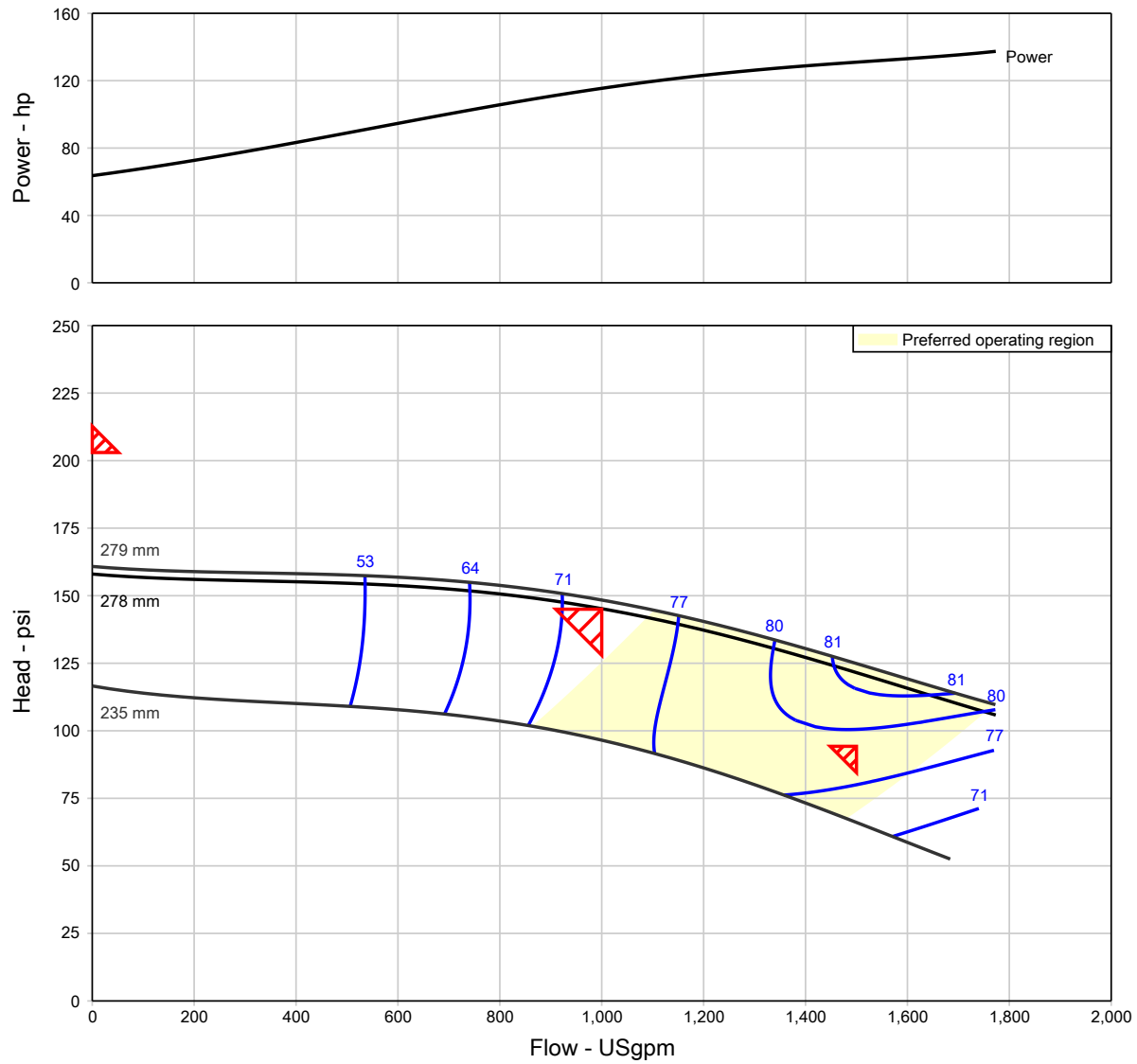
Elevation	91.44 m
Temperature	25.00 deg C

Estimated Weights

Pump	267.6 kg
Driver	582.9 kg

Quote Information

Customer	EGS
Customer Quote	
Job Name	
Market	-



Item Number / Tags	: 002	Size	: 5"-1822CF
Service	:	Stages	: 1
Quantity	: 1	Driver type	: Engine
Quote number	:	Frequency	: 50 Hz
Date last saved	:	Speed, rated	: 3000 rpm
Flow, rated	: 1,000.0 USgpm	Based on curve number	: 184-5X6X11C-2950
Differential head / pressure, rated	: 145.0 psi	Efficiency	: 73.36 %
Flange rating (suction / discharge)	: 125/125	Max working pressure, allowable	: 12.07 bar.g
Secondary Point (150% of rated flow)	: 1,500.0 USgpm	Shutoffhead, Typical	: 158.0 psi
Secondary Point (65% of rated head)	: 94.25 psi	Max suction pressure, allowable	: 1.17 bar.g
Max Shutoff per NFPA	: 203.0 psi	Suction pressure, max (user specified)	: 0.00 bar.g
		Pump shutoff w/ suction pressure	: 10.89 bar.g
		Power driver, minimum	: 140 hp

(UL Listing Certificate)





Model 5-1822CF

File Number: EX743

COMPANY

PENTAIR PUMP GROUP INC, DBA FAIRBANKS NIJHUIS

800 AIRPORT RD

NORTH AURORA, IL 60542 United States

MODEL INFO

5-1822CF

Centrifugal Fire Pumps, Split Case, Single Stage

RATING DETAILS						
Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
750 (2,839)	6	5	105 (723)	154 (1,061)	2950	325 (2,240)
1,000 (3,785)	6	5	97 (668)	146 (1,006)	2950	325 (2,240)
1,000 (3,785)	6	5	90 (620)	160 (1,103)	3550	325 (2,240)
1,000 (3,785)	6	5	90 (620)	135 (930)	3300	325 (2,240)



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(FM Approval)



Fire Pump Components | Fire Pumps | Centrifugal Fire Pumps, Horizontal Split-Case Type (Horizontal Mounted)

5-1822CF

Details

Category	Centrifugal Fire Pumps, Horizontal Split-Case Type (Horizontal Mounted)
Class of Work	1311 - Centrifugal Fire Pumps, Horz
Approval Standard	FM 1311 - Centrifugal Fire Pumps Split-Case Type (Axial or Radial)
Certification Type	FM Approved
Rated Capacity, (gal/min)	1000
Rated Capacity, (dm³/min)	3785
Rated Net Head at Rated Capacity, psi	97-146
Rated Net Head at Rated Capacity, kPa	670-1005
Rated Speed, r/min	2950
Suction Inlet, dia., in.	6
Discharge Outlet, dia., in.	5
Stage(s)	1
Listing Country	United States of America

Company

Fairbanks Nijhuis, A Member of the Pentair Pump Group
800 Airport Rd, North Aurora , Illinois 60542
United States of America
<http://fairbanksnijhuis.com>

(Diesel Controller)





TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model GPD

Diesel Engine Driven Fire Pump Controller



Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.



N.Y.C.
APPROVED



March 2024



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)		
	Underwriters Laboratory (UL)	UL218 - Fire Pump Controllers	
	FM Global	Class 1321/1323	
	New York City	Accepted for use in the City of New York by the Department of Buildings	
	CE Mark	Various EN, IEC & CEE directives and standards	
	Built in Canada or U.A.E		Built in Europe
	CE Mark Option		Supplied as Standard
Enclosure	Protection Rating		
	Built in Canada or U.A.E		Built in Europe
	Standard: NEMA 2		Standard: IP55
	Optional		
	NEMA 12	NEMA 4X-304 sst painted	IP54
	NEMA 3	NEMA 4X-304 sst brushed finish	IP55
	NEMA 3R	NEMA 4X-316 sst painted	IP65
	NEMA 4	NEMA 4X-316 sst brushed finish	IP66
	Accessories • Bottom entry gland plate • Lifting Lugs • Keylock handle		Paint Specifications • Red RAL3002 • Powder coating • Glossy textured finish
	Ambient Temperature Rating	Standard 4°C to 40°C / 39°F to 104°F	
Optional 4°C to 55°C / 39°F to 131°F			





General	AC	120V / 1ph / 60hz 208V to 240V / 1ph / 50-60hz
	DC	12VDC 24VDC
	Grounding system	• Negative
	Battery chargers	• Two independent fully automatic • 10A continuous charge • 500mA trickle charge
Electrical Reading	• Battery 1 & Battery 2 voltage • Battery 1 & Battery 2 charging amperage • Charging mode	
Pressure Reading	• Continuous system pressure display • Cut-in and cut-out pressure setting	
Pressure and Event Recorder	• Pressure readings with date stamp • Event recording with date stamp • Under regular maintained operation, events are stored in memory for the life of the controller. • Data viewable on operator interface display screen • Downloadable by USB port to external memory device	



Pressure sensing	• Pressure transducer and run test solenoid valve assembly for fresh water application • Pressure sensing connection 1/2" Female NPT • Drain connection 3/8" • Rated and calibrated for 0-500psi working pressure • Externally mounted with protective cover		
Audible Alarm	Alarm buzzer - 85dB at 3 meters		
Visual Indications	• Engine run • Main switch AUTO • Main switch in OFF • Main switch in HAND • Periodic test • Cranking Cycle • AC Power available • Pump room temperature (°F or °C)		
Visual & Audible Alarms	Visual only • Pump room trouble • Pump on demand • AC Failure • Charger 1 & 2 Failure • Weak battery 1 & 2 • Battery 1 & 2 overvoltage • Loss of continuity 1 & 2 • High fuel level • Fuel tank leak • PLD low suction pressure • High raw water temperature • Low pump room temperature • Service required • ECM warning • Weekly test cut-in not reached • Check weekly test solenoid • Pressure transducer fault • Invalid Cut-In Visual and Audible • Engine trouble • Controller trouble • Engine low oil pressure • Engine high temperature • Engine low temperature • Engine overspeed • DC Failure • Battery 1 & 2 Failure • Engine fail to start • Low fuel level • ECM fault • ECM SS in Alternate Position • Fuel injection malfunction		
Remote Alarm Contacts	DPDT-8A-250V.AC • Engine run • Common controller trouble • Charger #1 & Charger #2 failure • Pressure transducer fault • Common engine trouble • High engine temperature • Fail to start • Fuel injection malfunction** • ECM selector switch in alternate position*** • Battery #1 & battery #2 failure • DC failure • Loss of continuity (starter) #1 and/or #2 • PLD low suction pressure • Overspeed • Fail when running • Low oil pressure • Common pump room trouble (field re-assignable)* • Low fuel level • High fuel level • Fuel tank leak • Low pump room temperature • High pump room temperature • AC Failure • H-O-A selector switch in OFF or HAND • Free (field programmable)*		

*Except if option C13 is ordered. Tornatech reserves the right to use any of these four alarm points for special specific application requirements

**Applicable to electronic engines only.

*** Applicable to electronic engines only. Alarms when ECM selector switch on the engine is in alternate mode.



Terminals for Field Connections for External Devices	• Low fuel level • Remote AUTOMATIC start • Water reservoir low (re-assignable) • Fuel tank leak (re-assignable) • High fuel level (re-assignable)		
ViZiTouch V2.1 Operator Interface	• Embedded microcomputer with software PLC logic • 7.0” color touch screen (HMI technology) • Upgradable software • Multi-language		
Operation	Selector Switch	• Hand-Off-Auto • Behind lockable and breakable cover	
	Automatic Start	• Start on pressure drop • Remote start signal from automatic device	
	Manual Start	• Crank 1 and Crank 2 start pushbuttons • Run test pushbutton	
	Crank Cycle	• 6 consecutive cycle attempts • 3 X 15s crank from battery 1 or 2 alternatively • 15s rest in between each crank attempt	
	Stopping	• Manual with Stop pushbutton • Automatic after expiration of minimum run timer ****	
	Timers	Field Adjustable & Visual Countdown	• Minimum run timer ****(off delay) • Sequential start timer (on delay) • Periodic test timer
	Actuation	Visual Indication	• Pressure • Non-pressure
	Mode		• Automatic • Non-automatic
Communication Protocol Capability	• Protocol: Modbus • Connection type: Shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See bulletin MOD-GPD		

Alarm and shutdown schedule		Automatic Start	Manual or Remote Start	Run Test or Periodic Test
	High Coolant	Alarm only	Alarm only	Shutdown
	Low Oil Pressure	Alarm only	Alarm only	Shutdown
	Overspeed	Shutdown	Shutdown	Shutdown

	Wall Mount		Floor Mount	
Starting Voltage	Approx. shipping dimensions in inches (mm)	Approx. Shipping Weight in Lbs (kg)	Approx. shipping dimensions in inches (mm)	Approx. Shipping Weight in Lbs (kg)
12V.DC	32" l x 29" w x 16" h (813 x 737 x 407)	85 (39)	32" l x 29" w x 26" h (813 x 737 x 661)	115 (52)
24V.DC				

**** Automatic shutdown shall be approved by the AHJ.



A1	Periodic test alarm contact (DPDT)
A2	Overspeed alarm contact (DPDT)
A3	Low oil pressure alarm contact (DPDT)
A4	High coolant temperature alarm contact (DPDT)
A5	Failure to start alarm contacts alarm contact (DPDT)
A6	Battery 1 & 2 failure alarm contact (2 x DPDT)
A7	Charger 1 & 2 failure alarm contact (2 x DPDT)
A8	AC failure alarm contact (DPDT)
A9	System overpressure alarm contact (For engines with PLD) (DPDT)
A11	Extra controller trouble alarm contact (DPDT)
A12	Extra engine trouble alarm contact (DPDT)
Ax	Additional engine alarm contact (DPDT) (specify function)
B1	Low fuel level alarm contact (DPDT)
B2	Water reservoir level low alarm contact (DPDT)
B3	Water reservoir empty alarm contact (DPDT)
B4	Low pump room temperature alarm contact (DPDT)
B5	High fuel level alarm contact (DPDT)
B6	Low system (discharge) pressure alarm contact (DPDT)
B7	Low suction pressure alarm contact (DPDT)
B8	Pump on demand alarm contact (DPDT)
B9	Fuel tank leak alarm contact (DPDT)
B10	Main relief valve open alarm contact (DPDT)
B11	Flow meter loop valve open alarm contact (DPDT)
B12	Water reservoir level high alarm contact (DPDT)
B13	High pump room temperature alarm contact (DPDT)
Bx	Additional pump room alarm contact (DPDT) (specify function)
C5	CE Mark with factory certificate
C6	Nickel – cadmium battery chargers (Battery data sheet required)
C7	Engine block heater circuit - 3KW max (same voltage as battery charger primary)

C7A	Engine block heater circuit - 6KW max (same voltage as battery charger primary) Confirm power rating of block heater
C9	Non pressure actuated controller w/o pressure transducer and run test solenoid valve
C13	Louver activation circuit (battery power specific)
C14	Delayed automatic start on AC power failure (factory set at 15 minutes)
C15	Low zone pump control function
C16	Middle zone pump control function
C17	High zone pump control function
C19	Lockout/interlock circuit from equipment installed inside the pump room
D4	Pressure transducer and run test solenoid valve for fresh water rated for 0-500psi (for factory calibration purposes only)
D6	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
D7A	Low fuel level float switch supplied as separate item (1-1/4")
D7B	Low fuel level float switch supplied as separate item (1-1/2")
D8A	High fuel level float switch supplied as separate item (1-1/4")
D8B	High fuel level float switch supplied as separate item (1-1/2")
D9A	Anti-condensation heater & thermostat
D9B	Anti-condensation heater & humidistat
D9C	Anti-condensation heater & thermostat & humidistat
D11	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
D11A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
D12	Tropicalization
D25	Mounting stand
D25A	Mounting stand SST- 304 painted
D25B	Mounting stand SST- 304 brushed finish
D25C	Mounting stand SST- 316 painted
D25D	Mounting stand SST- 316 brushed finish
D26	Combined low and high fuel level float switch (1-1/4")

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.



D26A	Combined low and high fuel level float switch (1-1/2")
D27	Fuel level probe (2") Level indication
D28A	Field programmable I/O board - 5 Input / 5 output
D30	Redundant pressure transducer for fresh water rated for 0-500PSI
D31	Redundant pressure transducer for sea water rated for 0-500PSI
D32	Modbus with RTU frame format and RS485 connection
D35	Seismic Certification compliant to CBC 2019, IBC 2018 rigid base/wall mounted only
D38	Special Seismic Certification compliant to OSHPD rigid base/wall mounted only

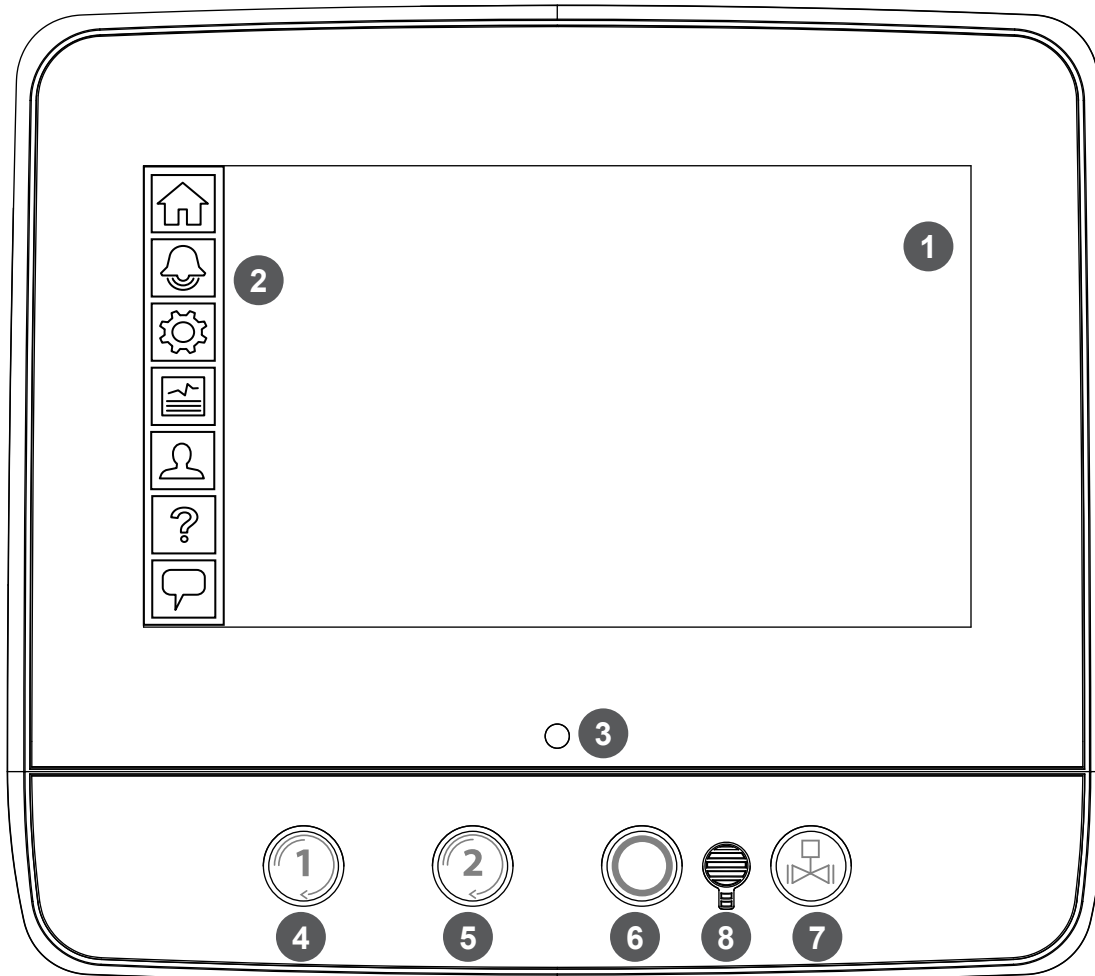
L01	Other language and English (bilingual)
L02	French
L03	Spanish
L04	German
L05	Italian
L06	Polish
L07	Romanian
L08	Hungarian
L09	Slovak
L10	Croatian
L11	Czech
L12	Portuguese
L13	Dutch
L14	Russian
L15	Turkish
L16	Swedish
L17	Bulgarian
L18	Thai
L19	Indonesian
L20	Slovenian
L21	Danish
L22	Greek
L23	Arabic
L24	Hebrew
L25	Chinese

Additional Options:

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.



ViZiTouch V2.1 Operator Interface



1 - Color touch screen

2 - Onscreen menu

- HOME page
- ALARM page
- CONFIGURATION page
- HISTORY page
- SERVICE page
- MANUAL page
- LANGUAGES page

3 - Power LED (3 colors)

4 - CRANK 1 button

5 - CRANK 2 button

6 - STOP button

7 - RUN TEST button

8 - Alarm buzzer

**TORNATECH**

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BY DD/MM/YY

DRAWN BY ACD 28/02/23

FINAL APPROVAL FC 28/02/23

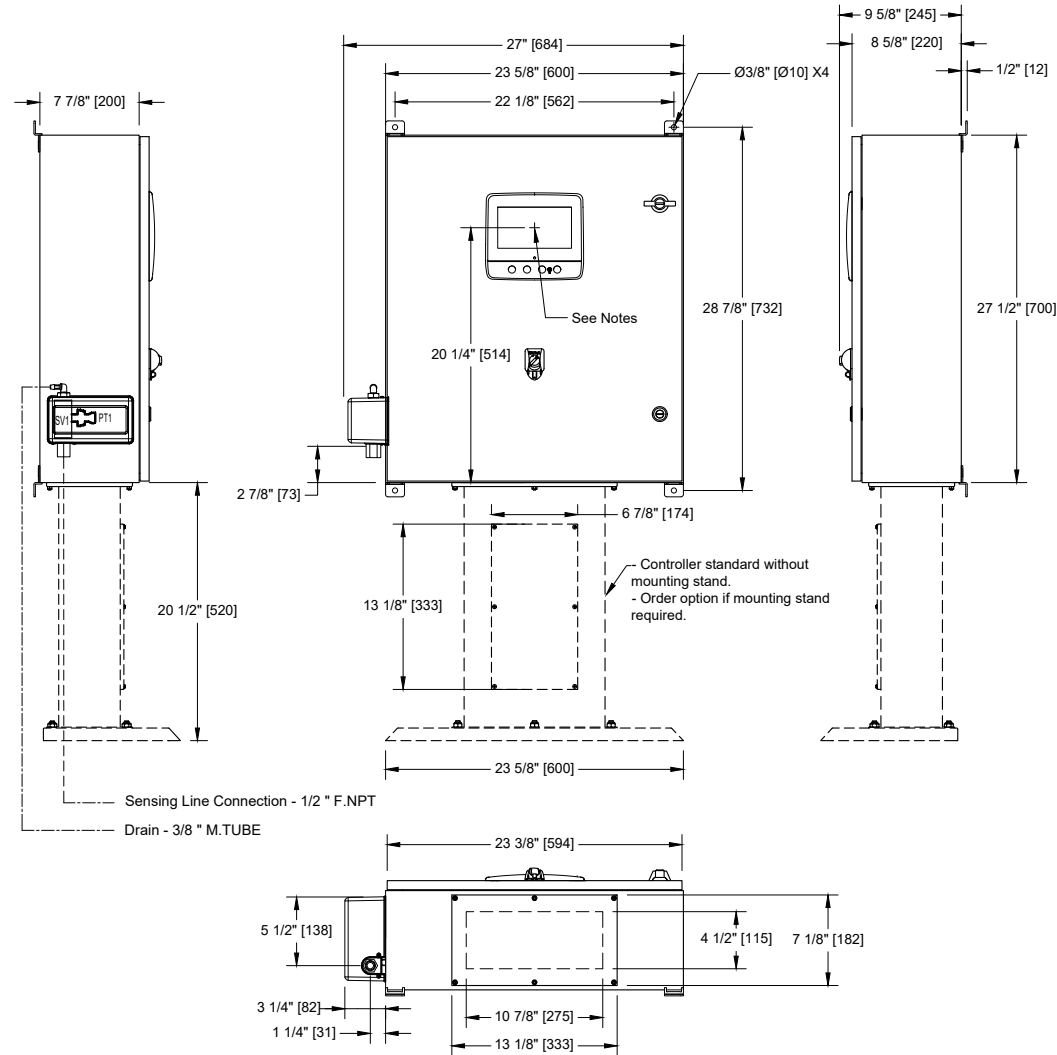
DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

THIRD ANGLE
PROJECTION

DRAWING NUMBER
GPD-DI800/E
DWG REV. 0
SHEET 1 OF 1

**Notes:**

- Standard: NEMA 2
- Standard paint : textured red RAL 3002.
- All dimensions are in inches [millimeters].
- Center of screen: 20-1/4" [514] from bottom (no feet).
- Bottom conduit entrance through removable gland plate recommended.
- Use watertight conduit and connector only.
- Protect equipment against drilling chips.
- Door swing equal to door width.



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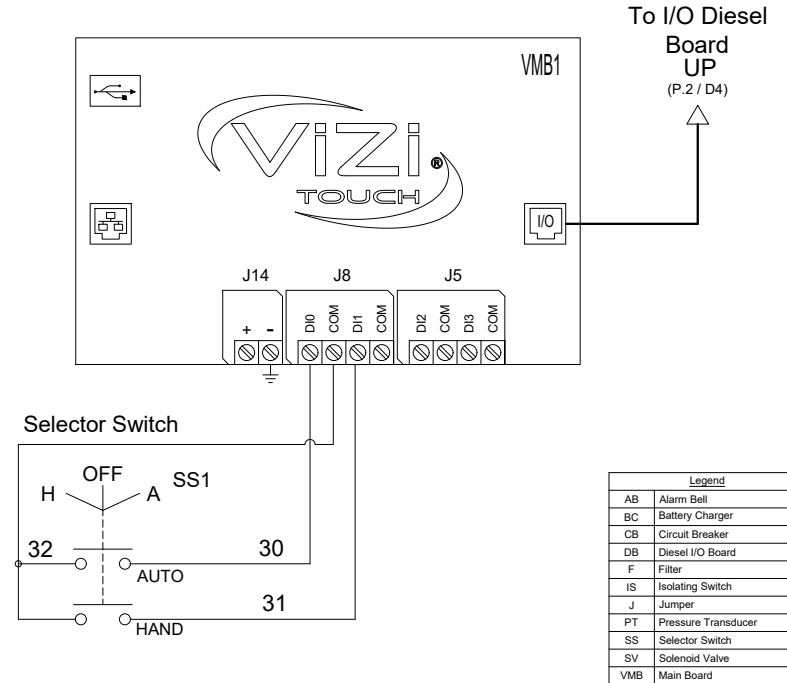
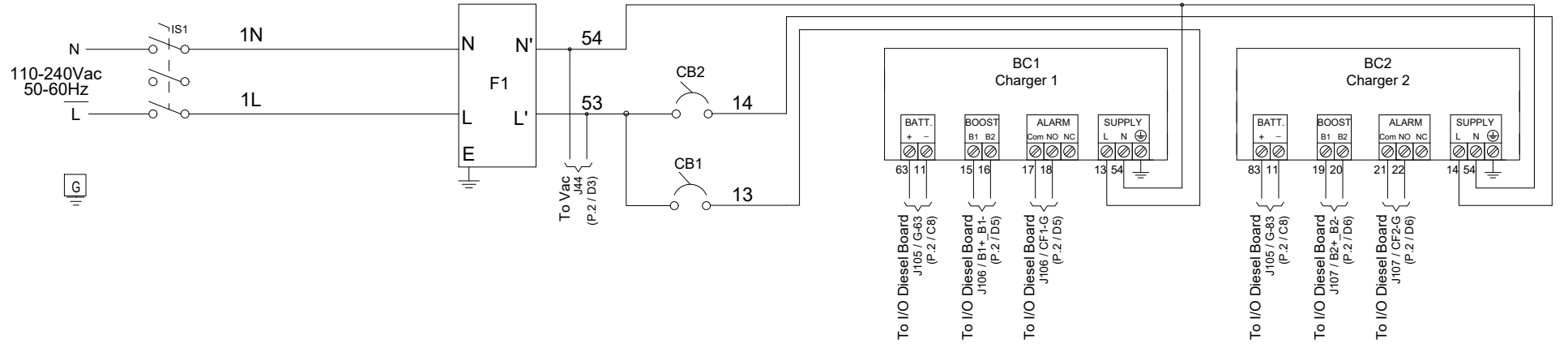
DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL:GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



DRAWING NUMBER
GPD-WS800/E
DWG REV. 0
SHEET 1 OF 2



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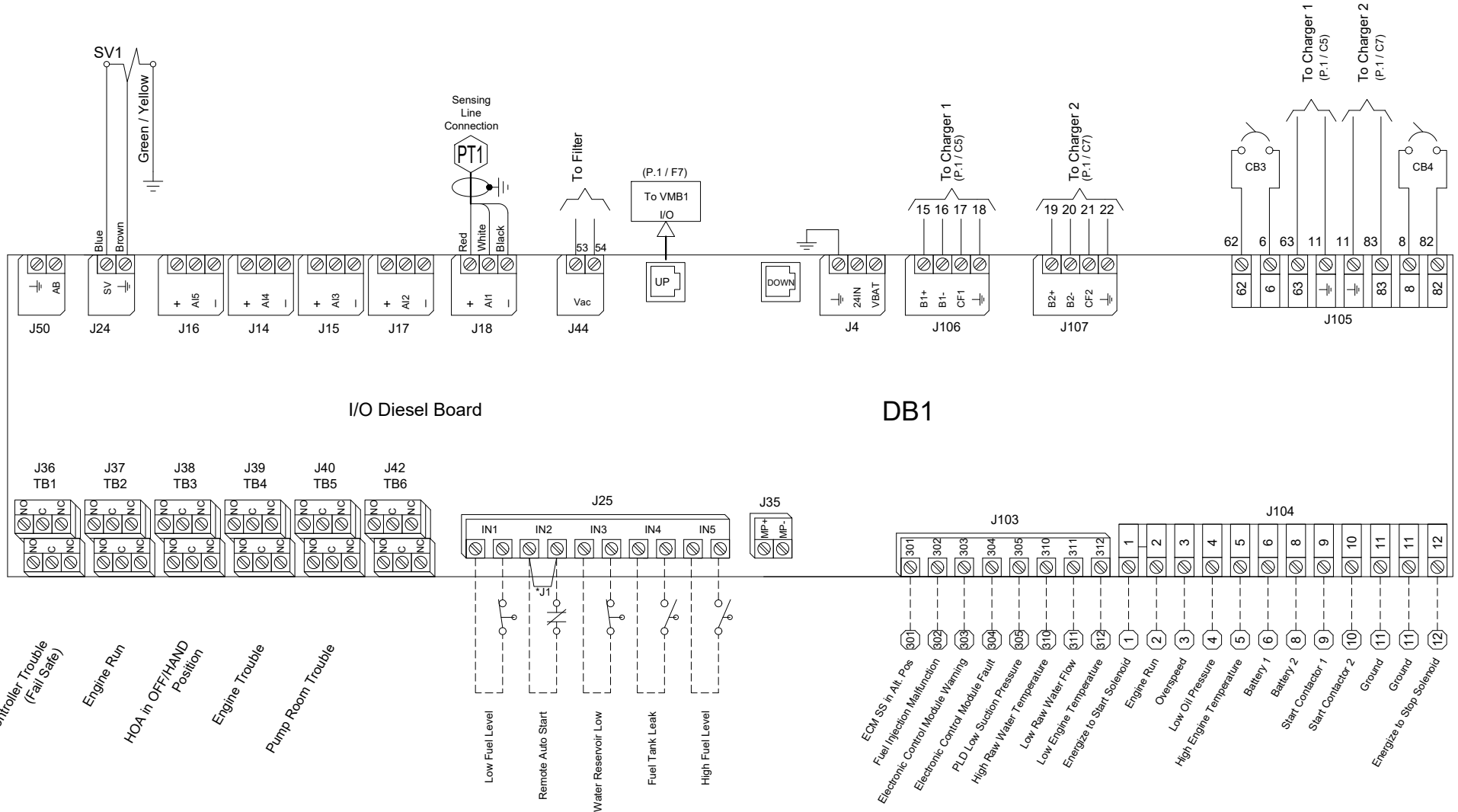
BY DD/MM/YY

DRAWN BY ACD 28/02/23

FINAL APPROVAL FC 28/02/23

**DIESEL ENGINE FIRE PUMP CONTROLLER
12VDC OR 24VDC NEGATIVE GROUND****MODEL:GPD**

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

DRAWING NUMBER
GPD-WS800/E
DWG REV. 0
SHEET 2 OF 2

* Remove this jumper to use this feature



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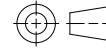
DRAWN BY ACD 28/02/23

FINAL APPROVAL FC 28/02/23

DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL:GPD

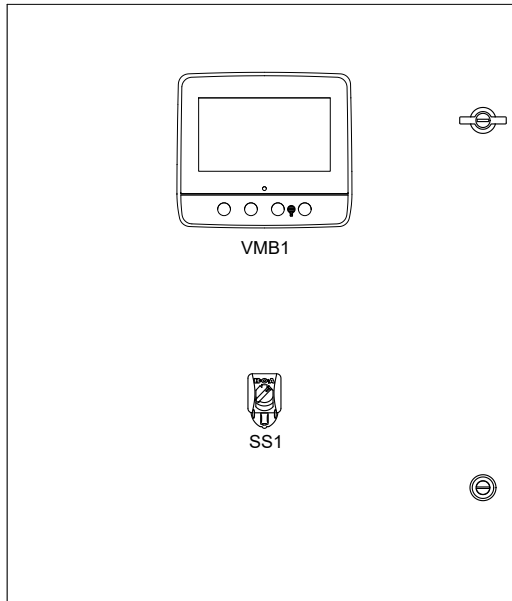
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



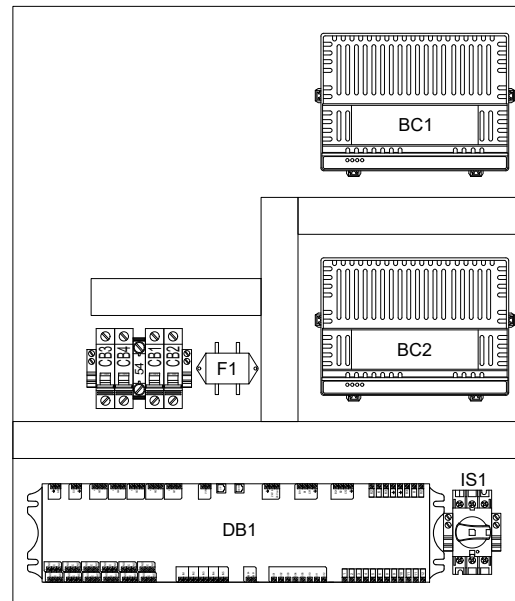
THIRD ANGLE
PROJECTION

DRAWING NUMBER
GPD-LY800/E
DWG REV. 0
SHEET 1 OF 1

Designation	Description
BC1-BC2	Battery Charger #1 and #2
CB1-2	Magnetic Breaker 1 Pole 10 A
CB3-4	Magnetic Breaker 1 Pole 16 A
DB1	I/O Diesel Board
F1	Filter
IS1	Isolating Switch
SS1	Lockable 3 Position Selector Switch
VMB1	Main Board



Front Door Layout



Internal Layout



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FINAL APPROVAL	FC	28/02/23

DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL:GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

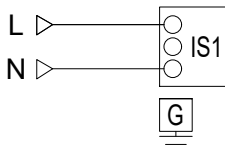


DRAWING NUMBER
GPD-TD800/E
DWG REV. 0
SHEET 1 OF 1

Power Supply

Terminals Wire Size:
14 - 6 AWG
1.8-2 Nm

110-240Vac
50-60Hz



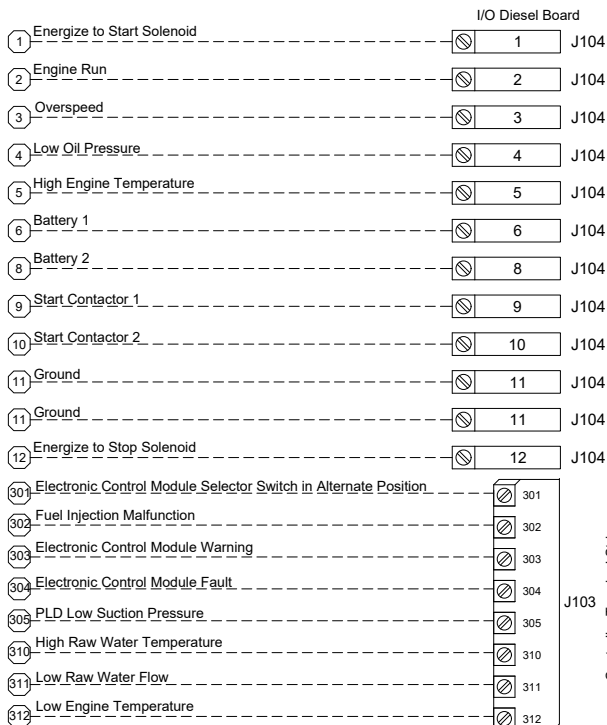
Engine Connections

All wiring between the controller and diesel engine shall be stranded (NFPA20)
Wiring between controller and engine (terminals 301, 302, 303, 304, 305, 310, 311, 312, 2, 3, 4, 5) must be #14AWG as minimum.

Wiring between controller and engine (terminals 12 [rated at 10A or 22A for 20 seconds] 1, 9, 10 [rated at 10A]) must be stranded #10AWG as minimum.

Wiring between controller and engine (terminals 6, 8, 11 [rated at 30A]) must be stranded and sized according to distance.

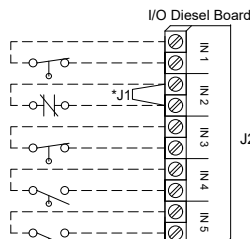
0-5' (0-1.5m) - 12 AWG (4 mm2)
6-10' (1.8-3m) - 10 AWG (6 mm2)
11-15' (3.3-4.5m) - 8 AWG (10 mm2)
16-20' (4.8-6m) - 2x10 AWG (2x6 mm2)
21-32' (6.4-9.75m) - 2x8 AWG (2x10 mm2)



Field Connections

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

Low Fuel Level
Remote Auto Start
Water Reservoir Low
Fuel Tank Leak
High Fuel Level



Network Connections

Terminals Wire Size:
Shielded Female Connector RJ45

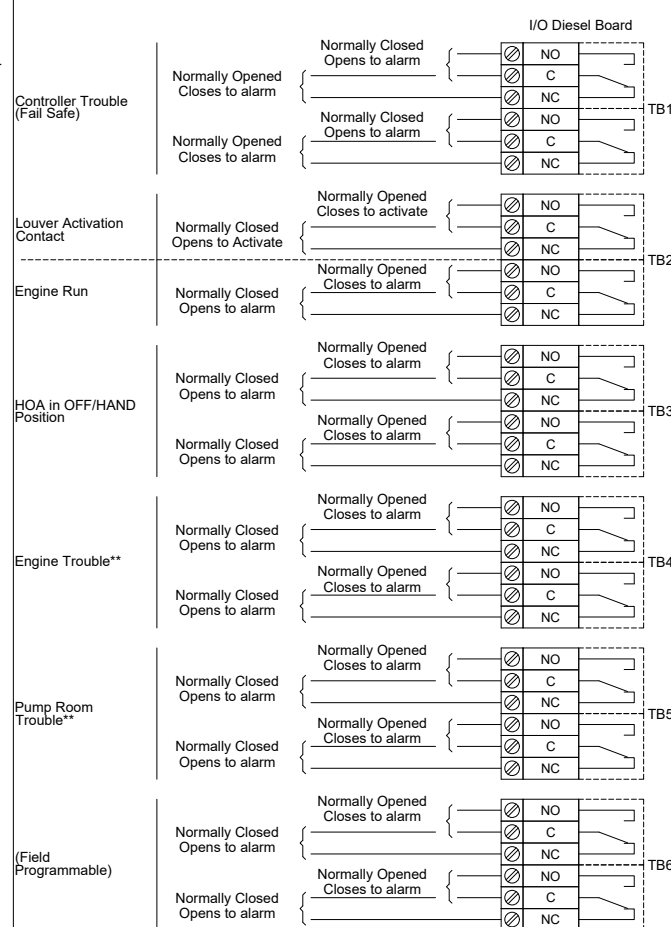
Modbus TCP/IP

Located on Main Board



Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



* Remove this jumper to use this feature

** Re-assignable



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DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL:GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



DRAWING NUMBER
GPD-TD801/E
DWG REV. 0
SHEET 1 OF 1

Located in Controller

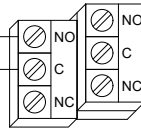
Engine Run Alarm Contacts

C-NO

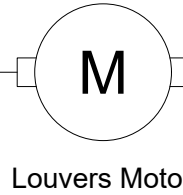
Normally open
Closes to alarm

C-NC

Normally closed
Opens to alarm



J37
TB2



Louvers Motor

Power Supply from a Reliable
External Power Source
(See NFPA20-2016 11.3.2 & A 11.3.2)

Jockey Pump

PVM/PVMI/PVMX VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

HIGH HYDRAULIC EFFICIENCY, MOTOR DESIGNED TO EN STANDARDS

The PVM, PVMI and PVMX are non-self priming vertical multistage pump of in-line design, flange or with Victaulic coupling with equally sized suction and discharge ports.

Stage construction with stainless steel impellers, chambers and pressure casing. Pump stub shaft and motor shaft of the IEC-standards motor are directly close coupled.

All pumps are equipped with high efficiency motors (IE3) and with a cartridge type mechanical seal for easy maintenance.

PVM, PVMI and PVMX pumps have different pump sizes and various numbers of stages to provide the flow and the pressure required.



APPLICATIONS

- Water supply
- Pressure boosting systems
- Water treatment/filtration
- Irrigation
- High pressure washes
- Liquid transfer
- Firefighting systems
- Boiler feed



SECTION C

JOCKEY PUMP

C.1. Pump Base:

Pressure Maintenance Pump

- Pump type: Vertical Multistage
- JP details: PVM10-12, Stackable CI
- Flow rate: 25 GPM
- Pressure rated: 160 Psi
- Horsepower: 5 HP
- Voltage: 380 V
- Frequency: 50 Hz
- Material of Construction: Stainless Steel
- Motor enclosure: Totally Enclosed Fan Cooled-Premium Eff. Motor (TEFC)

C.2. Pump Controller (UL Listed):

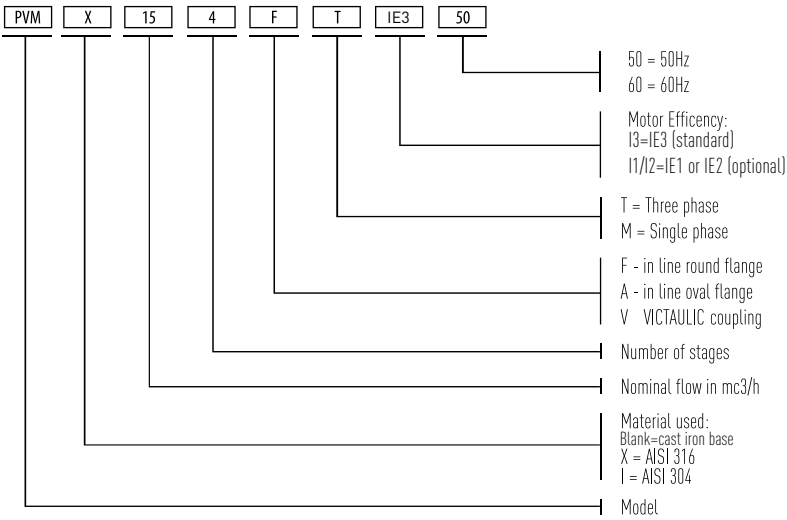
- Manufacturer: Tornatech JPLT
- Voltage: 380 V
- Frequency: 50 Hz
- Horsepower: 5 HP
- Transition: Across-The-Line
- Enclosure: NEMA 2
- Minimum Run Timer.

(Dimensions & Curves)

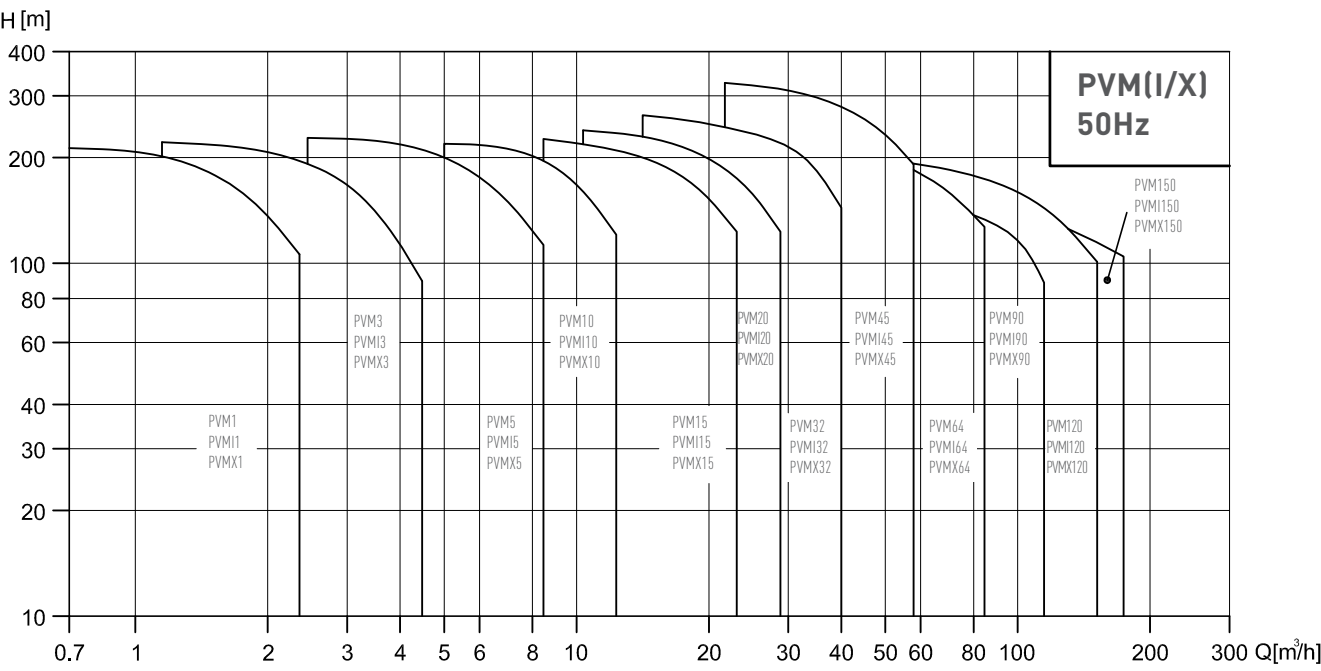
PVM/PVMI/PVMX

VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

IDENTIFICATION CODE



PERFORMANCE RANGE



PVM/PVMI/PVMX

VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

MOTOR

- Asynchronous electric motor with enclosed stator and external ventilation
- Main dimensions are in accordance with DIN and IEC standards
- Energy efficiency: IE3 (IE1-IE2 motors available on request)
- Class F insulation
- Level of protection IP55
- Maximum environmental temperature 50°C
- Speed of rotation 2900 rpm

MOTOR TYPE -2 POLES				NOMINAL CURRENT IN [A]	
[HP]	[KW]	Flange	Frame	3~230V	3~400V
0.5	0.37	B14	71	1,9	1,1
0.75	0.55		71	2,7	1,6
1	0.75		80	3,5	2,1
1.5	1.1		90S	5,2	3,0
2	1.5		90L	5,2	3,0
3	2.2		90L	8,0	4,6
4	3		100L	9,7	5,6
5.5	4		112M	12,2	7,0
		B5		3~400V	3~690V
7.5	5.5		132S	10,0	5,8
10	7.5		132S	13,1	7,6
				3~690V	3~400V
15	11		160M	19,7	11,4
20	15		160M	26,7	15,5
25	18.5		160L	33,0	19,1
30	22		180M	40,8	23,7
40	30		200L	52,8	30,6
50	37		200L	65,6	38
60	45		225M	82,4	47,8
75	55		250M	93,6	54,3
100	75		280S	123,1	71,4

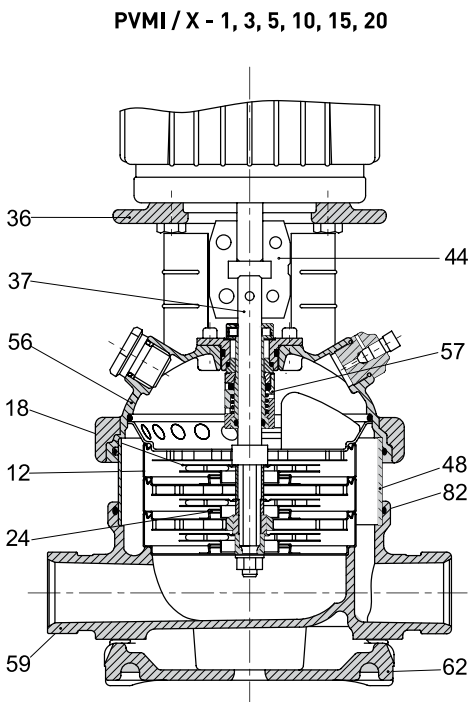
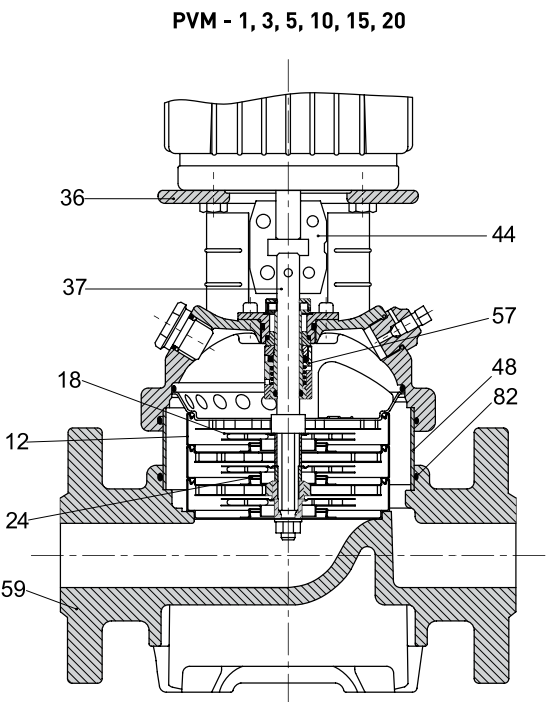
* The Nominal Current values indicated refer to a standard motor configuration.
For detailed information, please contact your country's Pentair office

PVM/PVMI/PVMX

VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

PUMP CONSTRUCTION

POS.	NAME	MATERIAL	PVM 1, 3, 5, 10, 15, 20	PVMI 1, 3, 5, 10, 15, 20	PVMX 1, 3, 5, 10, 15, 20
36	Pump head	Cast Iron	EN-GJL-200 ; ASTM 25B	EN-GJS-450-10 ; ASTM 65-45-12	EN-GJS-450-10 ; ASTM 65-45-12
56	Pump head cover	Stainless Steel	N/A	1.4301 ; AISI 304	1.4401 ; AISI 316
18	Impeller	Stainless Steel	1.4301 ; AISI 304	1.4301 ; AISI 304	1.4401 ; AISI 316
37	Shaft	Stainless Steel	1.4057 ; AISI 431	1.4057 ; AISI 431	1.4401 ; AISI 316
48	Outer sleeve	Stainless Steel	1.4301 ; AISI 304	1.4301 ; AISI 304	1.4401 ; AISI 316
82	O-Ring for outer sleeve	EPDM	-	-	-
12	Chamber	Stainless Steel	1.4301 ; AISI 304	1.4301 ; AISI 304	1.4401 ; AISI 316
24	Neck Ring	PTFE	-	-	-
59	Base	Cast Iron	EN-GJL-200 ; ASTM 25B	N/A	N/A
		Stainless Steel	N/A	1.4301 ; AISI 304	1.4401 ; AISI 316
62	Base plate	Cast Iron	N/A	EN-GJL-200 ; ASTM 25B	EN-GJL-200 ; ASTM 25B
44	Coupling	Fe-Cu-C	SINT C11 ; MPIF FC0525	SINT C11 ; MPIF FC0525	SINT C11 ; MPIF FC0525
57	Mechanical seal	Cartridge type	-	-	-

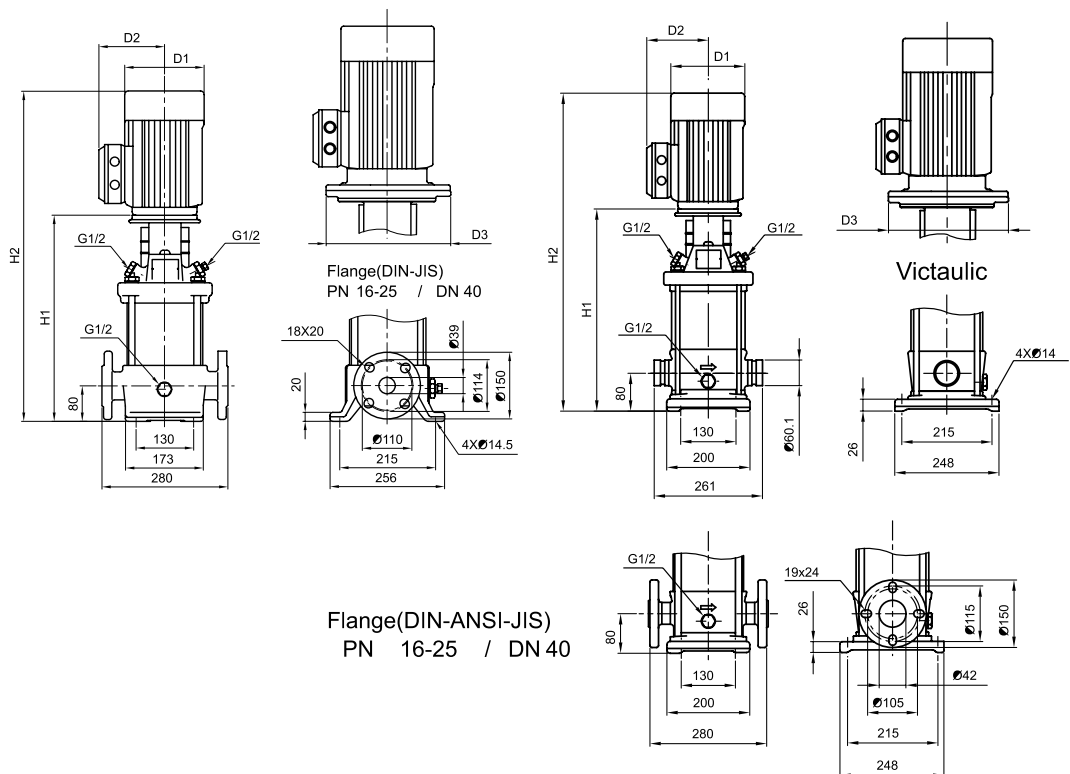


PVM/PVMI/PVMX 10

VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

PUMP DIMENSIONS

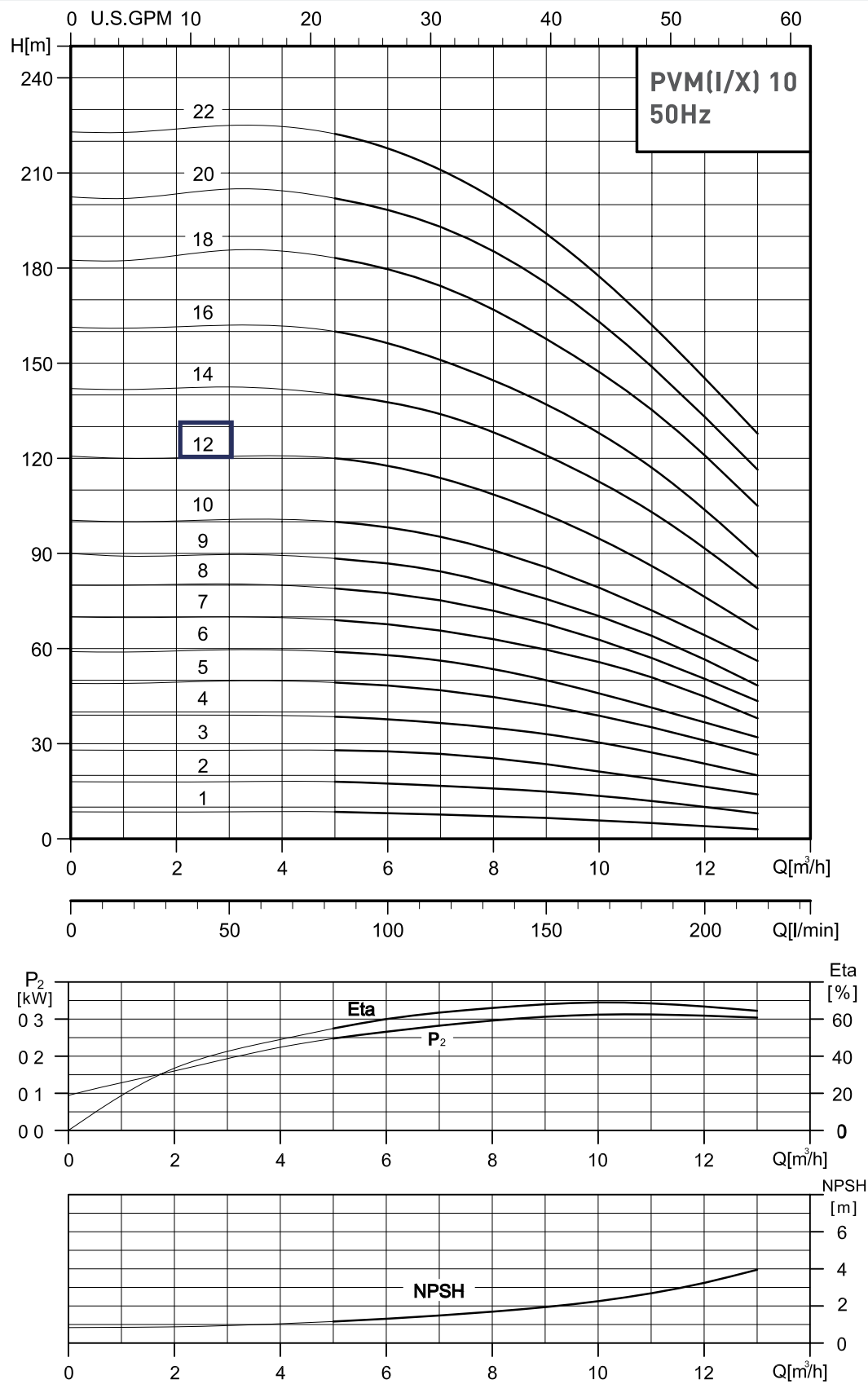
PUMP TYPE	MOTOR		PVM						PVMI - PVMX								
			DIMENSION [mm]					Net Weight [kg]	DIMENSION [mm]							Net Weight [kg]	
	P ₂		DIN Flange		D1	D2	D3	DIN Flange	Victaulic		DIN Flange		D1	D2	D3	Victaulic	DIN Flange
	[HP]	[KW]	H1	H2					H1	H2	H1	H2					
PVM 10-1	0,5	0,37	343	538	141	115	—	35,9	353	548	353	548	141	115	—	31,6	31,4
PVM 10-2	1	0,8	347	582	141	115	—	38,2	357	592	357	592	141	115	—	34,3	34,2
PVM 10-3	1,5	1,1	377	612	141	115	—	40,3	387	622	387	622	141	115	—	36,4	36,3
PVM 10-4	2	1,5	423	690	180	138	—	50,1	433	724	433	700	180	138	—	46,1	46,0
PVM 10-5	3	2,2	453	720	180	138	—	53,9	463	754	463	730	180	138	—	50,0	49,8
PVM 10-6	3	2,2	483	750	180	138	—	55,0	493	784	493	760	180	138	—	51,0	50,8
PVM 10-7	4	3	518	839	194	145	—	63,8	528	844	528	849	194	145	—	59,1	58,9
PVM 10-8	4	3	548	869	194	145	—	64,9	558	874	558	879	194	145	—	60,1	60,0
PVM 10-9	4	3	578	899	194	145	—	65,9	588	904	588	909	194	145	—	61,1	61,0
PVM 10-10	5,5	4	608	936	225	160	—	70,3	618	944	618	946	225	160	—	65,6	65,4
PVM 10-12	5,5	4	668	996	225	160	—	72,4	678	1004	678	1006	225	160	—	67,6	67,5
PVM 10-14	7,5	5,5	760	1125	248	194	300	104,1	770	1132	770	1135	248	194	300	100,4	100,3
PVM 10-16	7,5	5,5	820	1185	248	194	300	106,2	830	1192	830	1195	248	194	300	102,5	102,4
PVM 10-18	10	7,5	880	1265	248	194	300	113,6	890	1288	890	1275	248	194	300	110,9	110,8
PVM 10-20	10	7,5	940	1325	248	194	300	116,7	950	1348	950	1335	248	194	300	113,0	112,8
PVM 10-22	10	7,5	1000	1385	248	194	300	118,8	1010	1408	1010	1395	248	194	300	115,1	114,9



PVM/PVMI/PVMX 10

VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

HYDRAULIC PERFORMANCE



Head and NPSH values valid with water density $\rho = 1.0 \text{ Kg / dm}^3$ at 20°C

PVM(I/X) 10	2900 rpm	50 Hz	ISO 9906 - Annex A
-------------	----------	-------	--------------------

MEI ≥ 0.4 - MEI reference ≥ 0.70 - The reference efficiency information is available on the website: www.europump.org/efficiencycharts

(Jockey Controller)





TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model JPLT

Across the Line Start
Jockey Pump Controller



Contents:

Data Sheets

Dimensional Data

Wiring Schematics

Field Connections

Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.



N.Y.C.
APPROVED



February 2024



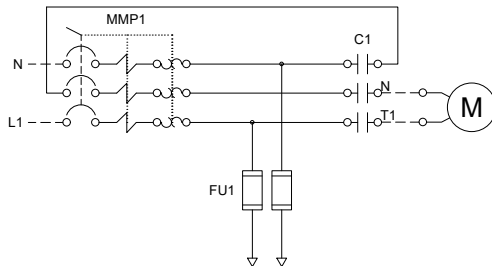
TORNATECH

Technical Data

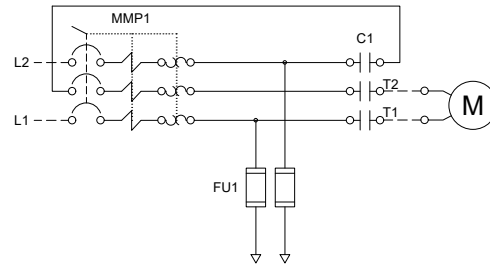
Model JPLT Jockey Pump Controller

Select Incoming Voltage

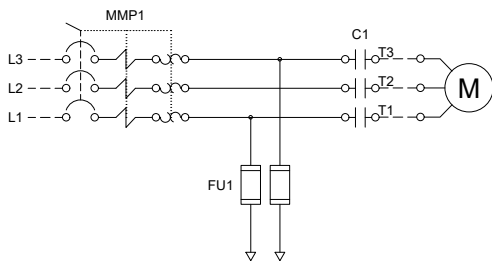
☐ 110-120V



☐ 200-240V



☐ 200-600V



N.Y.C.
APPROVED



Listing	Underwriters Laboratory (UL)	UL508A - Industrial Pump Controllers
	New York City	Accepted for use in the City of New York by the Department of Buildings
	Optional	
	☐ CE Mark	Various EN, IEC & CEE directives and standards
Enclosure	Protection Rating	
	☐ Standard: NEMA 2	
	Optional	
	☐ NEMA 12 ☐ NEMA 3 ☐ NEMA 3R ☐ NEMA 4	☐ NEMA 4X-304 sst painted ☐ NEMA 4X-304 sst brushed finish ☐ NEMA 4X-316 sst painted ☐ NEMA 4X-316 sst brushed finish
Accessories • Wall mounting lugs (x4)		Paint Specifications • Red RAL3002 • Powder coating • Glossy textured finish

Short circuit current rating

	Voltage						
HP	110 - 120V	200 - 240V	200 - 208V	220 - 240V	380 - 415V	440 - 480V	600V
0.25	65kA	65kA	65kA	65kA	65kA	65kA	10kA
0.5	65kA	65kA	65kA	65kA	65kA	65kA	10kA
0.75	42kA	65kA	65kA	65kA	65kA	65kA	10kA
1	42kA	65kA	65kA	65kA	65kA	65kA	10kA
1.5	42kA	65kA	65kA	65kA	65kA	65kA	10kA
2	42kA	65kA	65kA	65kA	65kA	65kA	10kA
3	CF	42kA	65kA	65kA	65kA	65kA	10kA
4	CF	42kA	42kA	42kA	65kA	65kA	10kA
5	CF	42kA	42kA	42kA	65kA	65kA	10kA
5.5	CF	CF	42kA	42kA	65kA	65kA	10kA
7.5	CF	CF	42kA	42kA	42kA	65kA	10kA
10	CF	CF	CF	42kA	42kA	42kA	10kA
15	CF	CF	CF	CF	42kA	42kA	5kA
20	CF	CF	CF	CF	CF	42kA	5kA
25	CF	CF	CF	CF	CF	CF	5kA



Fuseless Motor Starter	• Type -F fuse-less magnetic motor starter • Rotary handle, padlockable • Door interlocked		
Control Circuit	• 24V.AC		
ViZiLT Operator Interface	• High luminosity alphanumeric digital display • HAND-OFF-AUTO pushbuttons • MENU navigation pushbuttons		
Pressure Sensing	• Pressure transducer for fresh water application 316 stainless steel construction • Rated for 0-600psi working pressure • Pressure sensing line connection 1/2" brass Male NPT		
Visual Indications	• H-O-A position • System pressure • Cut-out and Cut-In pressure setting • Manual motor run • Automatic motor run • Motor overload (occured) • Pump start counter • Elapsed time meter (hours / non-resettable)		
Timers	• Minimum run timer (off delay) • Delay start timer (on delay) • Visual countdown		
Counters	• Pump start counter • Elapsed timer meter (hours / non-resettable)		
Operators	• Main disconnect handle • HAND-OFF-AUTO pushbuttons • MENU navigation pushbuttons		
Operation	Automatic Start	Start on pressure drop	
	Manual Start	Start pushbutton	
	Stopping	Stop pushbutton	
	Timers	Field adjustable & visual countdown	• Minimum run timer (off delay) • Delay start timer (on delay)

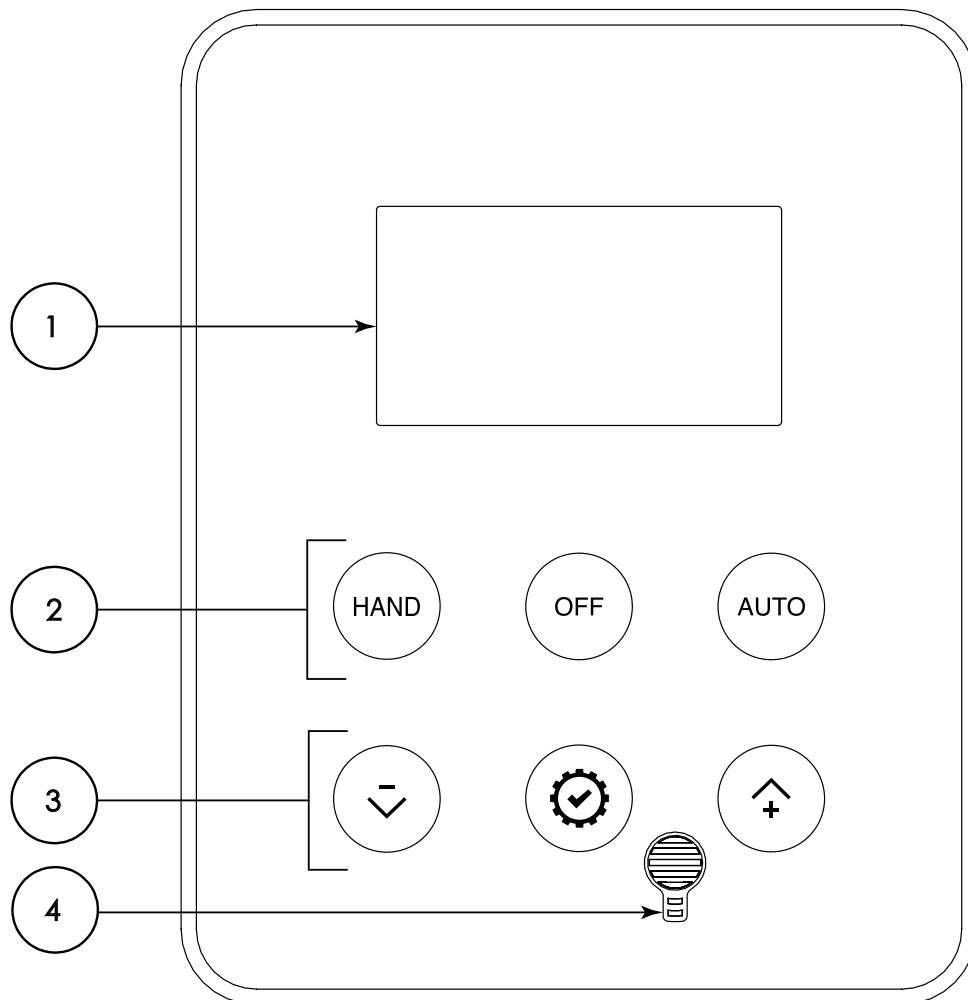


☐ A5	Motor run alarm contact
☐ A6	Loss of power alarm contact
☐ A7	Overload or short circuit alarm contact
☐ D11D	Pressure transducer 0-600psi with ½" MNPT 316 stainless steel bushing
☐ D13A	Externally mounted wetted parts
☐ D18	Audible alarm
☐ D19	Anti-condensation heater and thermostat
☐ D20	Anti-condensation heater and humidistat
☐ D21	Tropicalization
☐ D22	Phase reversal / failure pilot light and alarm contact
☐ D23	Controller power healthy pilot light and alarm contact
☐ D24	Pump failure via current sensing relay with pilot light and dry alarm contact
☐ D25	Low zone pump control function
☐ D26	Mid zone pump control function
☐ D27	High zone pump control function
☐ D28	Controller in AUTO alarm contacts
☐ D29	Controller not in AUTO alarm contacts
☐ D30	Motor heater circuit
☐ D35	Seismic Certification compliant to CBC 2019, IBC 2018 rigid base/wall mounted only
☐ D36	Special Seismic Certification compliant to OSHPD rigid base/wall mounted only
☐ D37	100kA high short circuit withstand rating for 200V to 600V

☐ L01	Other language and English (bilingual)
☐ L02	French
☐ L03	Spanish
☐ L04	German
☐ L05	Italian
☐ L06	Polish
☐ L07	Romanian
☐ L08	Hungarian
☐ L09	Slovak
☐ L10	Croatian
☐ L11	Czech
☐ L12	Portuguese
☐ L13	Dutch
☐ L14	Russian
☐ L15	Turkish
☐ L16	Swedish
☐ L17	Bulgarian
☐ L18	Thai
☐ L19	Indonesian
☐ L20	Slovenian
☐ L21	Danish
☐ L22	Greek
☐ L23	Arabic
☐ L24	Hebrew
☐ L25	Chinese

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

ViZiLT Operator Interface



- 1 - High luminosity alphanumeric digital display
- 2 - HAND-OFF-AUTO pushbuttons
- 3 - MENU navigation pushbuttons
- 4 - Audible Alarm



TORNATECH

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BY DD/MM/YY

DRAWN BY ACD 15/05/23

FINAL APPROVAL FC 15/05/23

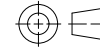
JOCKEY PUMP CONTROLLER

MODEL: JPLT

BUILT TO THE LATEST EDITION OF THE UL 508A

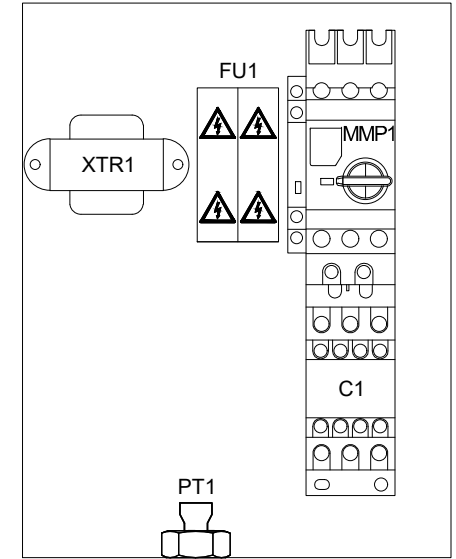
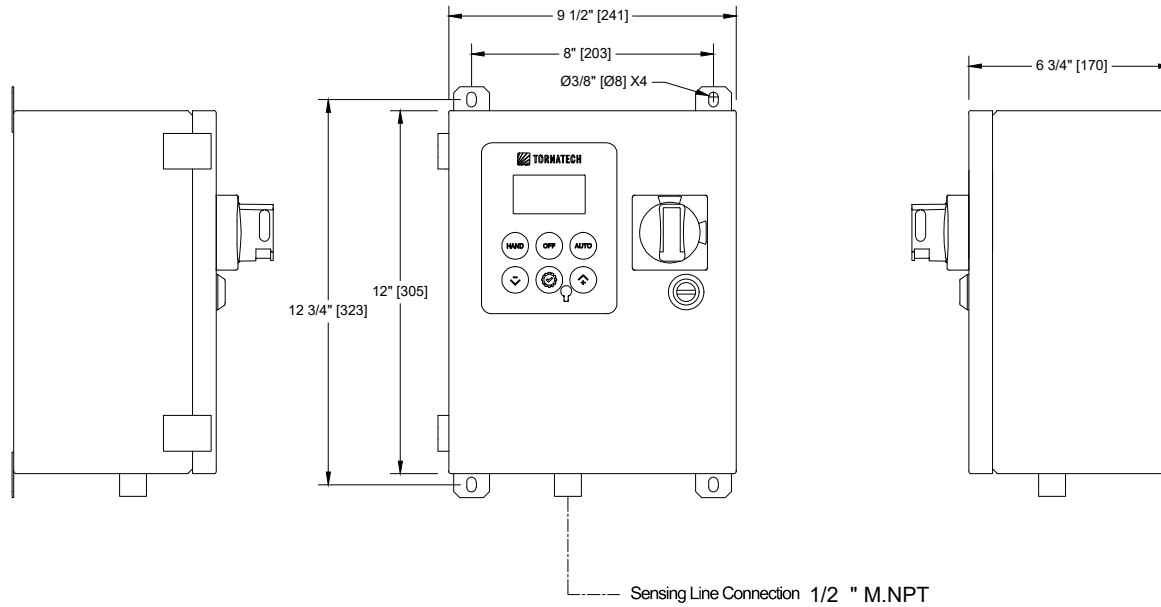


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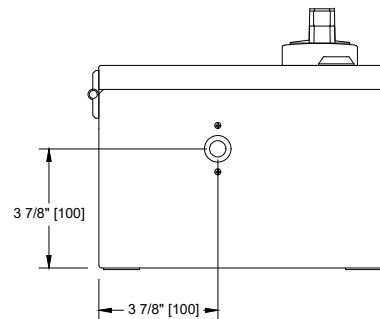


THIRD ANGLE
PROJECTION

DRAWING NUMBER
JPLT-DI001/E
DWG REV. 0
SHEET 1 OF 1



Standard Internal Layout



Voltage / Power Table	
Voltage	Max HP
1 Phase	
110 - 120	2
200 - 208	5
220 - 240	5
3 Phases	
200 - 208	7.5
220 - 240	10
380 - 400 - 415	15
440 - 480	20
600	25

Notes:

- Standard NEMA: NEMA 2
- Standard Paint: Textured Red RAL 3002.
- All Dimensions are in Inches [Millimeters]
- Use Watertight Conduit and Connector Only.
- Protect Equipment Against Drilling Chips.
- Door Swing Equal to Door Width

Drawing for information only.

Manufacturer reserves the right to modify this drawing without notice.

Contact manufacturer for "As Built" drawing.

*Dimensions may change depending on option required. Consult Factory for exact dimensions.



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JOCKEY PUMP CONTROLLER ACROSS THE LINE / 3 PHASES

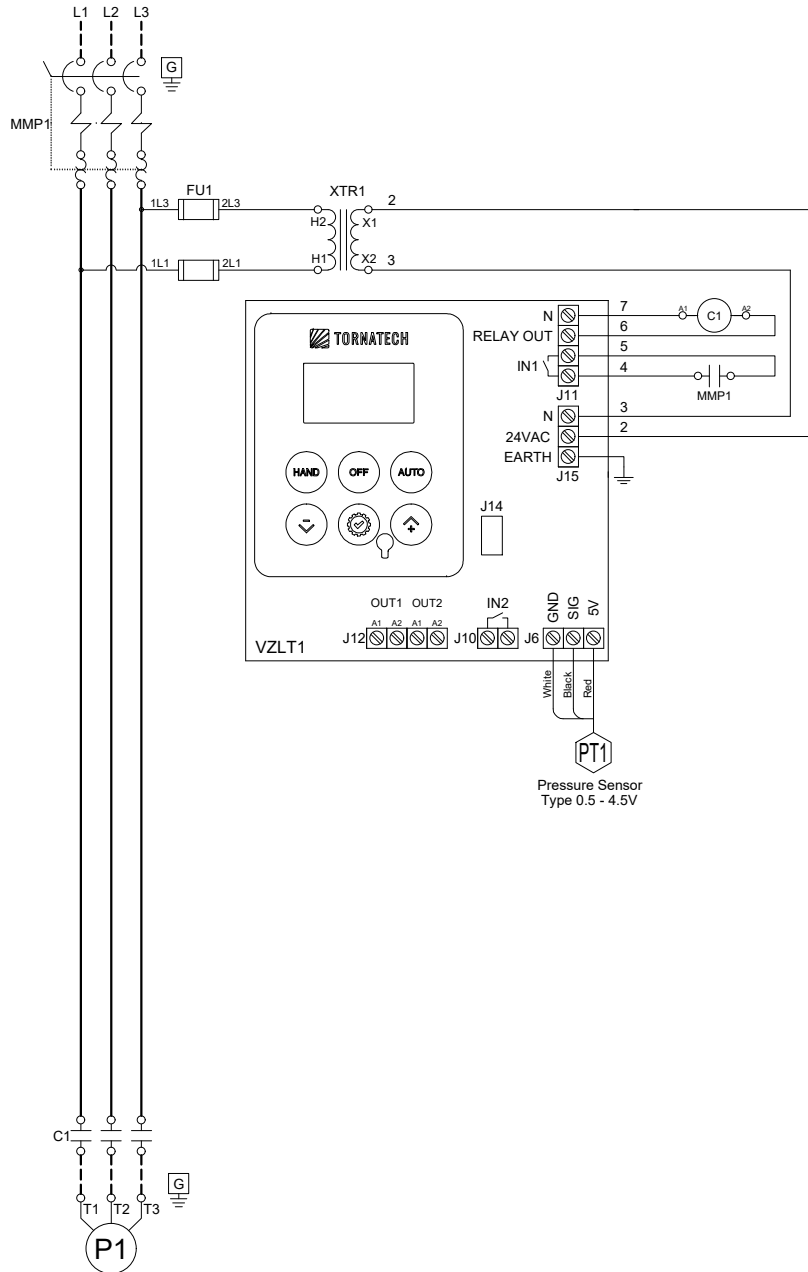
MODEL: JPLT

BUILT TO THE LATEST EDITION OF THE UL 508A



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DRAWING NUMBER
JPLT-WS003/E
DWG REV. 0
SHEET 1 OF 1





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FINAL APPROVAL FC 15/05/23

JOCKEY PUMP CONTROLLER ACROSS THE LINE / 3 PHASES

MODEL: JPLT

BUILT TO THE LATEST EDITION OF THE UL 508A



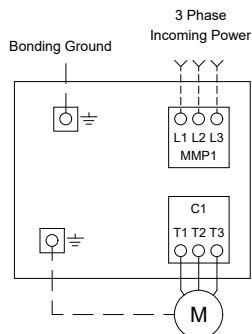
NYC
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DRAWING NUMBER
JPLT-TD003/E

DWG REV. 0

SHEET 1 OF 1

Power Connections and Motor Connections



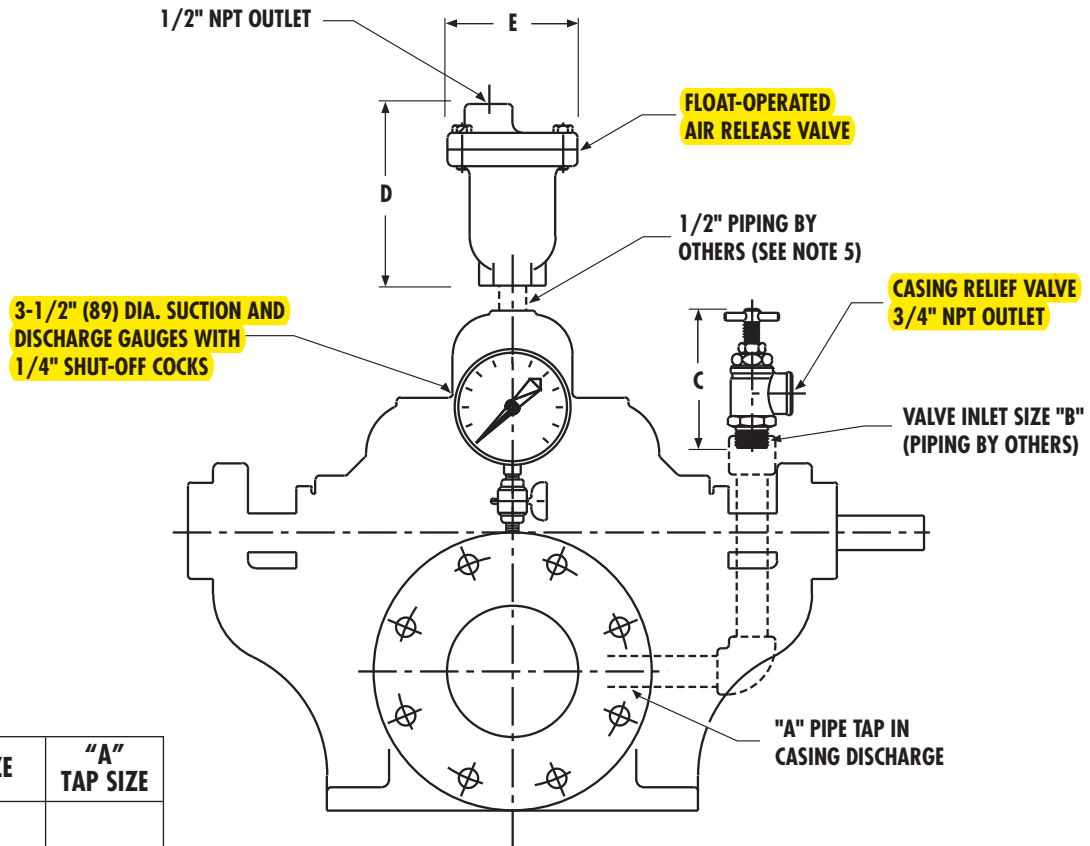
Line Terminals (L1,L2,L3,GND)

Maximum Motor Horsepower					Wire Size Copper Only	Torque	Wire Size Ground Copper Only
200-208V	220-240V	380-416V	440-480V	575-600V			
7.5HP	10HP	15HP	20HP	25HP	#14 AWG - #8 AWG	2.5 Nm	#14 AWG - #2 AWG

Motor Terminals (T1,T2,T3,GND)

Maximum Motor Horsepower					Wire Size Copper Only	Torque	Wire Size Ground Copper Only
200-208V	220-240V	380-416V	440-480V	575-600V			
3HP	4HP	5.5HP	7.5HP	10HP	#14 AWG - #10 AWG	1.7 Nm	#14 AWG - #2 AWG
7.5HP	10HP	15HP	20HP	25HP	#14 AWG - #8 AWG	2.5 Nm	#12 AWG - #2 AWG

Accessories



PIPE SIZE	"A" TAP SIZE
2.5" 1823F	1-1/4"
3" 1824F	
4" 1823F	
4" 1824F	
5" 1822F	
5" 1823F	
5" 1824F	
6" 1822F	
6" 1822HHF	
6" 1823HHF	
6" 1823F	2"
6" 1824F	
6" 1825F	
8" 1822F	
8" 1825F	
10" 1823F	3/4"
10" 1824DF	
8" 1824F	
10" 1824F	1-1/4"
12" 1824F	
ALL VERTICAL (1840) MODELS	3/4"
ALL 2-STAGE (1920) MODELS	1-1/4"
2800/5800 MODELS	3/4"

CASING RELIEF VALVE

SYSTEM G.P.M.	VALVE INLET SIZE - "B"	"C"
250	3/4"	4-1/2" (114)
500		
750		
1000		
1250		
1500	1"	5-1/2" (140)
2000		
2500		
3000		
3500	1"	5-1/2" (140)
4000		

NOTES:

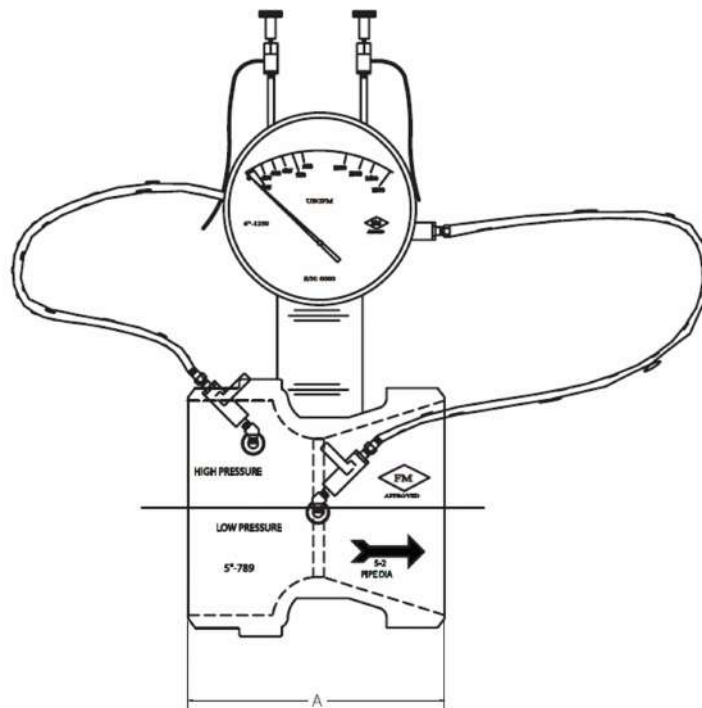
1. Dimensions are in inches (mm) and may vary $\pm 1/4"$ (6).
2. Accessories shown are shipped loose for field installation.
3. Casing relief valve is to be adjusted to appropriate pressure upon field installation.
4. Casing relief valve is furnished on electric motor driven units only.
5. Two stage pumps require both vent taps piped to air release valve.
6. Suction gauge range is 30"-0-150 PSI for suction pressures up to 75 PSI, or 30"-0-300 PSI for suction pressures over 75 PSI.
7. Discharge gauge range is 0-300-PSI for pumps with rated discharge pressures up to 150 PSI, or 0-600 PSI for pumps with rated discharge pressures over 150 PSI.

FLOAT OPERATED AIR RELEASE VALVE

SYSTEM OPERATING PRESSURE	"D"	"E"
UP TO 175 P.S.I.	5-7/8" (149)	3-3/4" (95)
OVER 175 P.S.I.	6-11/16" (170)	5-5/8" (143)



General Arrangement



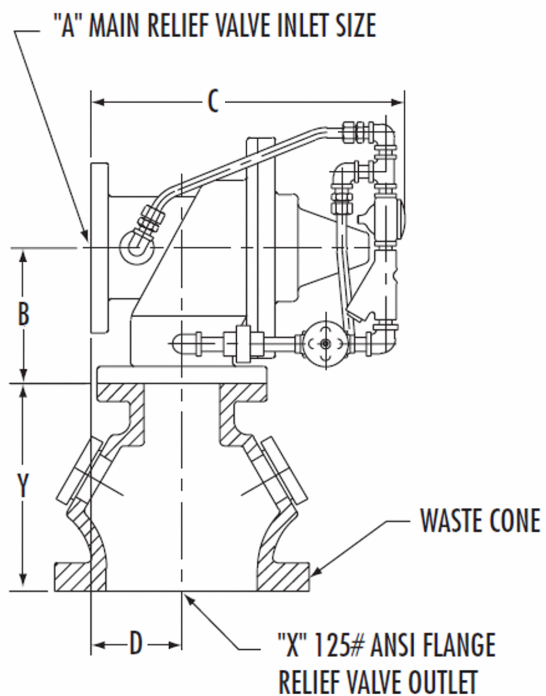
NOMINAL FLOW RATE G.P.M	PIPE SIZE	A
25,400	152	178

NOTES:

1. ACCURACY IS APPROXIMATELY 2%.
2. FLOWMETER IS GLOBAL VISION INCORPORATED VENTURI TYPE RATED FOR 500 PSI WITH BUTT-WELD, GROOVED, OR CLASS 300 FLANGED CONNECTIONS AND FOR 275 PSI WITH CLASS 150 FLANGED CONNECTIONS.
3. PROPER OPERATION REQUIRES THAT MINIMUM DISTANCES OF STRAIGHT PIPE RUNS BE MAINTAINED BOTH UPSTREAM AND DOWNSTREAM FROM FLOWMETER. REFER TO MANUFACTURER'S INSTRUCTIONS BEFORE ATTEMPTING INSTALLATION.
4. METER RANGE IN 50% TO 200% OF NOMINAL FLOW. DIAL IS DIRECT READING IN G.P.M.AND L.P.M. FOR THE SPECIFIED RANGE.
5. PART NUMBER INCLUDES COMPLETE ASSEMBLY OF VENTURI, 4" DIAMETER DIAL AND INTERCONNECTING HOSES.
6. EACH ASSEMBLY TO BE INDIVIDUALLY BOXED, WITH THE AURORA PART NO. CLEARLY MARKED ON THE OUTSIDE OF THE BOX.

Quote Information		
Customer	EGS	
Customer Quote		
Job Name		
Market	-	
 PENTAIR	Quote Item	002
	Quote Date	

General Arrangement



A	B	C	D
102	194	430	129

X	Y
203	292

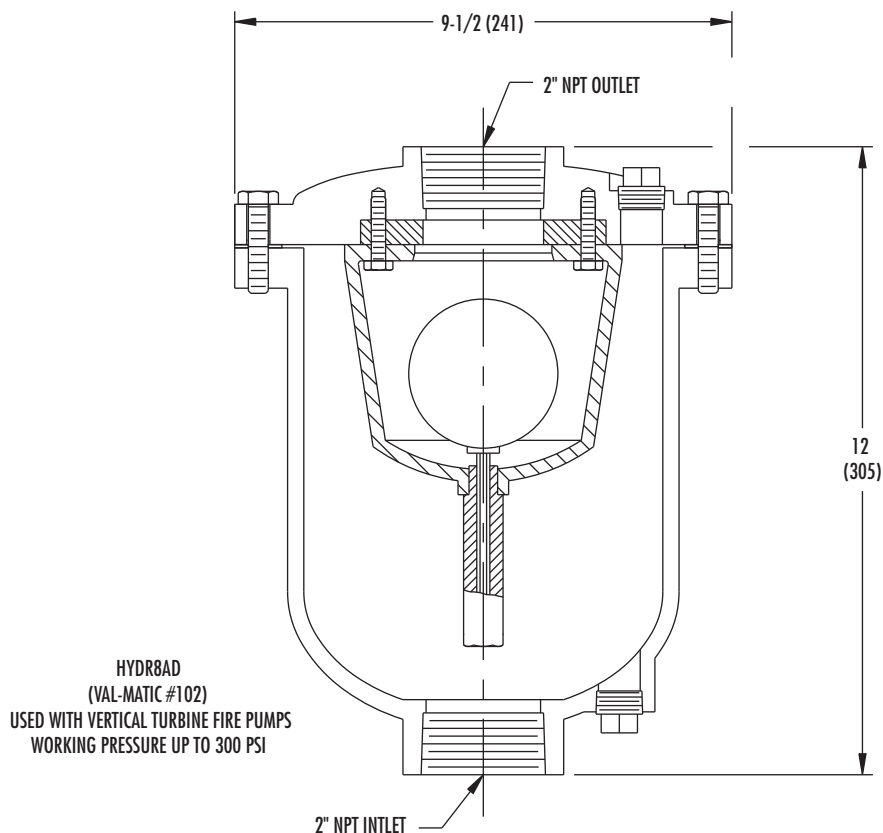
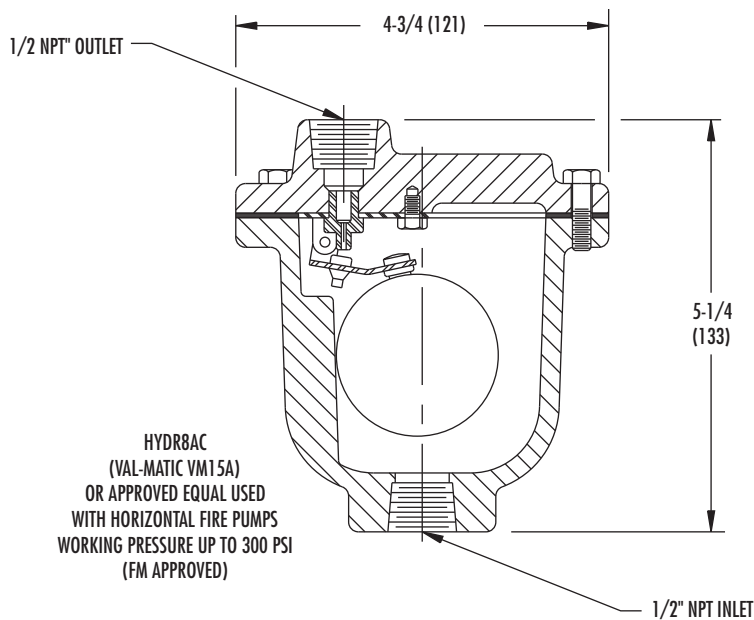
NOTES:

1. Dimensions are in inches (mm) and may vary $\pm 1/4$ (6).
2. Valves are available with inlet flange ratings of 125# or 250#. All waste cones have 125# flange ratings.
3. Dimensions for conventional relief valves are not affected by flange rating.
4. Relief valve discharge is intended to be piped to waste. Refer to factory if discharge is to be piped to a line where back pressure is present.
5. Maximum operating pressure for valves rated for 125# is 175 PSI.
6. Maximum operating pressure for valves rated for 250# is 300 PSI.

Quote Information			
Customer	EGS		
Customer Quote			
Job Name			
Market	-		
	Quote Item	002	
	Quote Date		

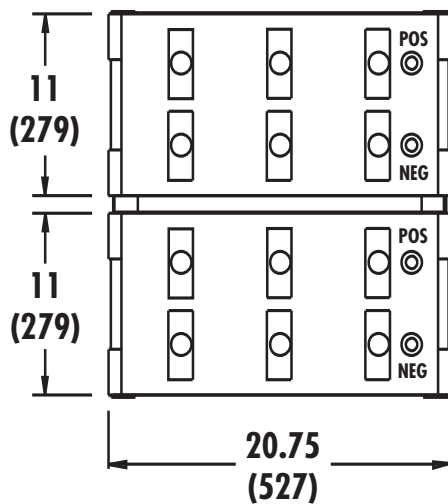
FAIRBANKS NIJHUIS™ FIRE PUMPS

AUTOMATIC AIR RELEASE VALVE



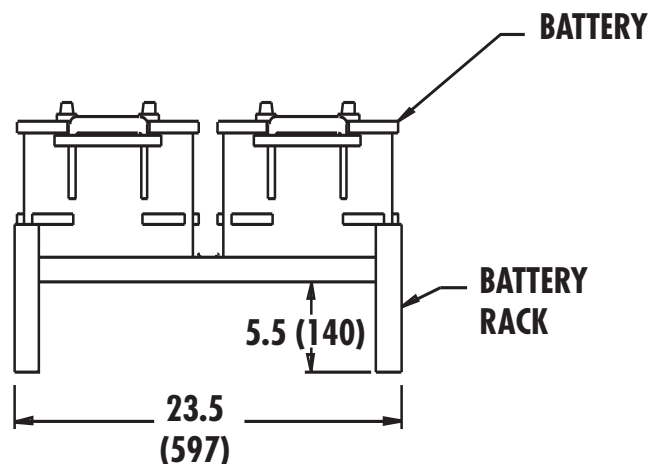
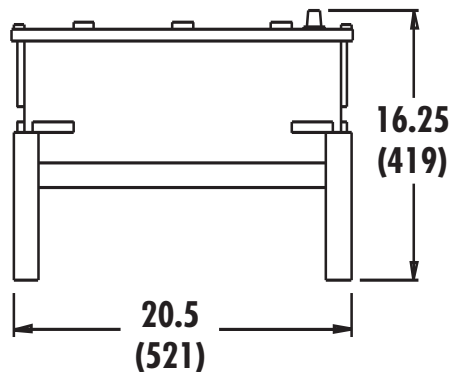
NOTES:

1. All dimensions are in inches (mm) and may vary $\pm 1/4$ (6).



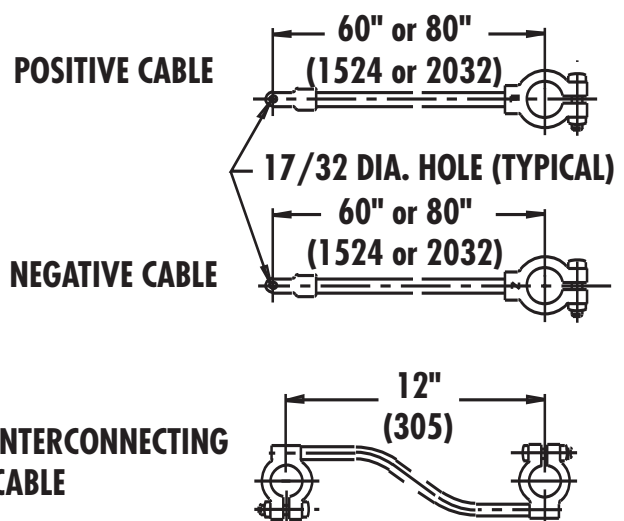
NOTES:

1. Dimensions are in inches (mm) and may vary $\pm 1/4"$ (6).
2. Batteries are 12 volt, lead-acid type D-8D, approximately 95 lbs. each, dry.
3. Batteries are shipped dry. Electrolyte (approx. 19 quarts per battery) must be procured locally.
4. Refer to Section 916 page 252 for exact number of batteries & cables to be furnished based on the diesel engine manufacturer and model used.
5. Battery racks are fabricated steel, approximately 20 lbs. each.
6. Each rack holds 2 batteries. Racks are not to be stacked.

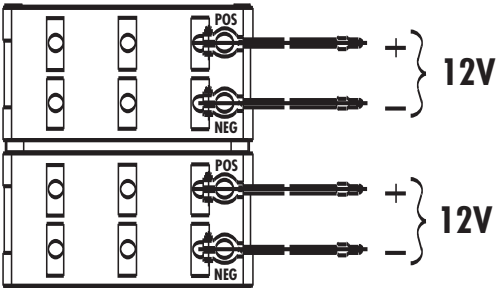


NOTES:

1. All cables are SAE J55BA type SGT with tensile attachment of 700-800 lbs.
2. Positive & negative cables 60" (1524) long are 2/0 gauge; positive & negative cables 80" (2032) long are 3/0 gauge.
3. Terminal clamps have steel reinforced inserts.
4. Not all cable types are required for every engine. Refer to Section 916 page 252 for cable applicability.



FAIRBANKS NIJHUIS™ 1800 & 1900 PUMPS
DIESEL BATTERY CABLE DIAGRAMS

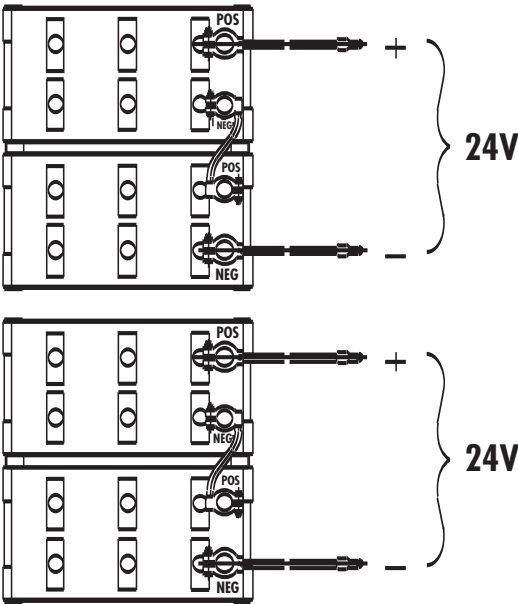


12 VOLT SYSTEM

REQUIRED COMPONENTS	ENGINE APPLICABILITY
(1) BATTERY RACK (2) BATTERIES (2) POSITIVE CABLES (2) NEGATIVE CABLES	CUMMINS: ALL "CFP" MODELS CLARKE: ALL "JU4H" MODELS ALL "JU64" MODELS ALL "JW6H" MODELS EDWARDS: ALL MODELS

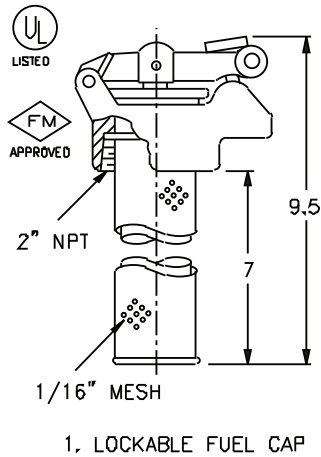
NOTES:

- Clarke "VMFP," "JU4H" & "JU6H" Engines require cable sets of different lengths. On these engine models, a 2/0 guage postive and negative cable set 60" (1524 mm) long, and a 3/0 guage positive and negativecable set 80" (2032 mm) long are furnished.
- Refer to Section 916, Page 251 for details of batteries, racks and cables.

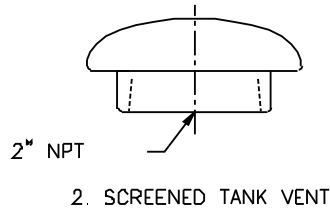


24 VOLT SYSTEM

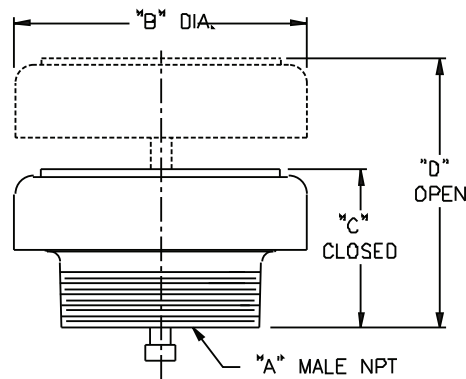
REQUIRED COMPONENTS	ENGINE APPLICABILITY
(2) BATTERY RACKS (4) BATTERIES (2) POSITIVE CABLES (2) NEGATIVE CABLES (2) INTERCONNECTING CABLES	CLARKE: ALL "JX6H" MODELS CATERPILLAR: ALL MODELS



1. LOCKABLE FUEL CAP

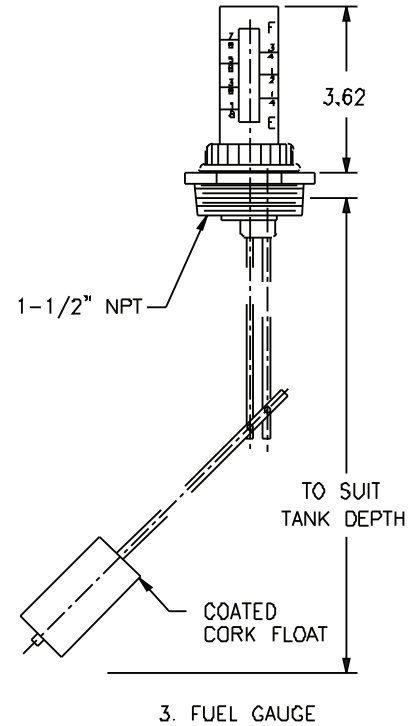


2. SCREENED TANK VENT

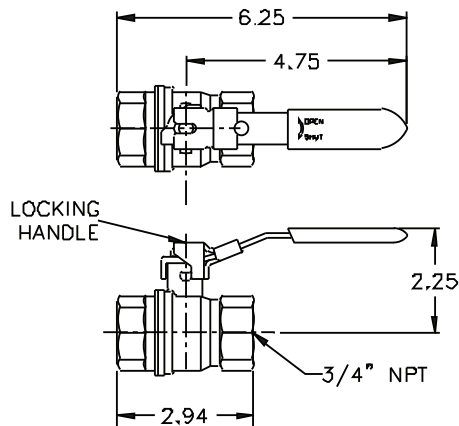


19. EMERGENCY VENT

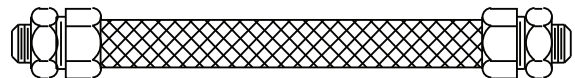
"A"	"B"	"C"	"D"
4"	7.00	3.78	6.44
6"	10.20	4.46	6.53



3. FUEL GAUGE



12. LOCKABLE FUEL VALVE

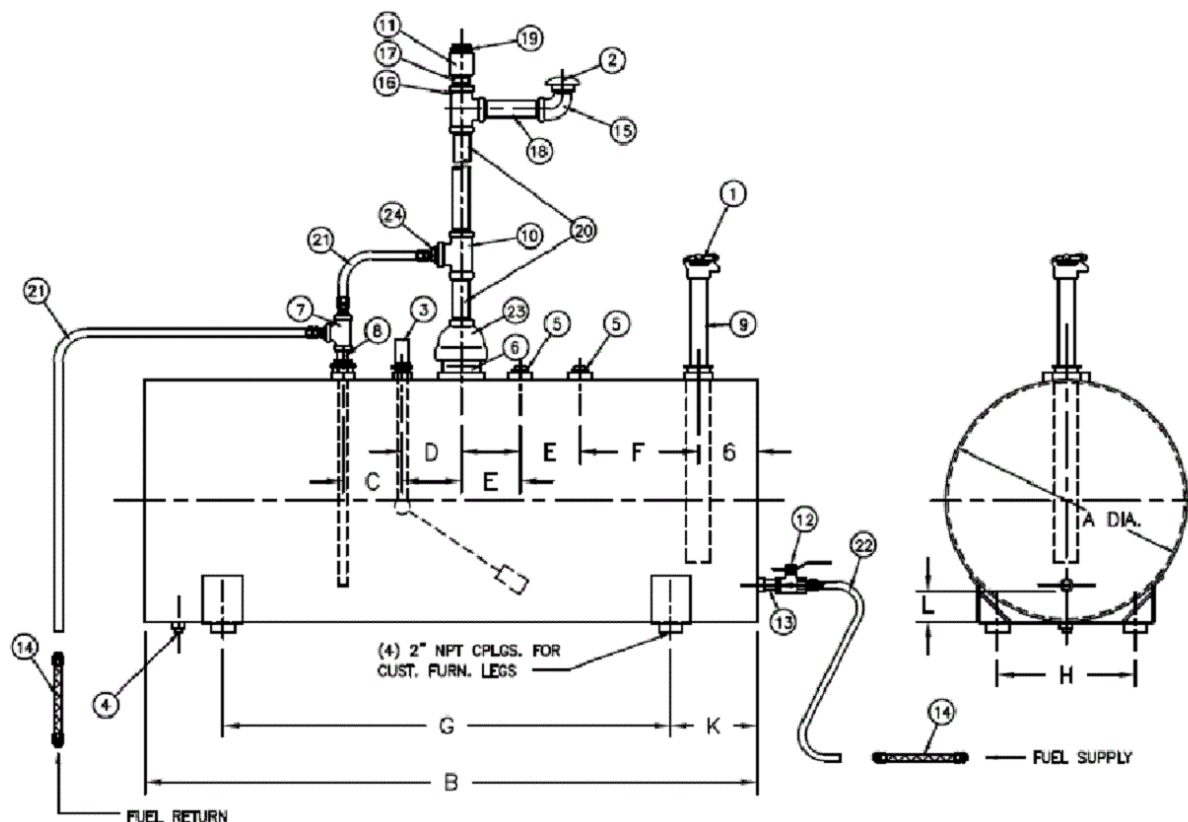


14. FLAME RESISTANT FLEXIBLE FUEL HOSE
(2) FURNISHED BY ENGINE MANUFACTURER
FOR SUPPLY AND RETURN LINES

NOTES

1. All dimensions are in inches and may vary $\pm 1/4"$.
2. Components shown are shipped loose for field assembly.
3. Illustration is for component identification only. Actual installation must meet local codes and all applicable standards.
4. Refer to Section 916 pages 255 through 258 for the location and applicability of each component shown above

General Arrangement



A	B	C	D	E	F	G	H	K	L	Z
762	1,549	152	152	152	330	1,118	406	216	76.20	3\" NPT

DIESEL FUEL TANK NOTES:

1. Tanks are constructed and labeled in accordance with UL-142.
2. Fittings shown are consistent with N.F.P.A. 30 and UL-142.
3. Tank to be pitched toward drain 1/4\" per foot with outlet on the same elevation as engine fuel pump. Means of elevating Tank (by others) may be required.
4. Usable tank volume is total capacity less 5% for expansion.

ILLUSTRATION NOTES:

1. All dimensions are in mm and may vary ± 25 \" (6.35 mm).
2. Components shown are shipped loose for field assembly.
3. Illustration is for component identification only. Actual installation must meet local codes and all applicable standards.
4. Refer to section 916 page 259 for details of Pentair furnished components.

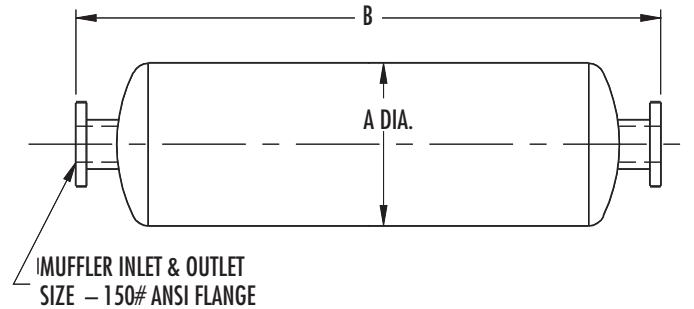
Fuel Tank Information			
Nominal Tank Size		187 US gallon	
Usable Volume		165 US gallon	
Tank Type		Single Wall	
Fuel Tank Sizing		NFPA 20 & UL 142	
Fuel Tank Includes 3" emergency vent			
Weight		145.1 kg	
Components Furnished By Pentair			
Item No.	Qty	Description	
1	1	2" NPT Lockable Fuel Cap	
2	1	2" NPT Screened Tank Vent"	
3	1	Fuel Gauge 1 1/2" NPT	
4	1	1" NPT Drain Plug	
5	2	2" NPT Pipe Plug	
6	1	4" NPT Close Nipple	
7	1	1/2" NPT Tee	
8	1	1/2" NPT Close Nipple	
9	1	2" Fuel Fill Black Pipe	
10	1	"Z"x"Z"x2" NPT Tee	
11	1	"Z" NPT Pipe Coupling	
12	1	3/4" NPT Lockable Fuel Value	
13	1	3/4" NPT Close Nipple	
14	2	Fuel Hoses For Supply & Return (Furnished By Engine Mfr.)	
15	1	2" NPT Street Elbow	
16	1	"Z"x"Z"x"2" NPT Tee	
17	1	"Z" NPT Closed Nipple	
18	1	2" NPT X 6" Long Nipple	
19	1	"Z" NPT Emergency Vent	
23	1	4"x"Z" NPT Reducer	
24	1	2"x1/2" NPT Reducer	
Components Furnished By Others			
Item No.	Qty	Description	
20	1	"Z" Size Piping For Vent	
21	1	1/2" Tubing And Fittings or 1/2" Black Pipe	
22	1	3/4" Tubing And Fittings or 3/4" Black Pipe	
Quote Information			
Customer		EGS	
Customer Quote			
Job Name			
Market		-	
 PENTAIR		Quote Item	002
		Quote Date	

DIESEL ENGINE MUFFLERS

Date **July 2012**

Supersedes Section 916 Page 261

Dated August 2011



ENGINE MODEL	MUFFLER INLET & OUTLET	COMMERCIAL GRADE			RESIDENTIAL GRADE			CRITICAL GRADE		
		A	B	WGT	A	B	WGT	A	B	WGT
CATERPILLAR										
3406C	6" FLANGED	12	42	35	12	54	43	16	73	131
3412C*, 3508C, C18*	8" FLANGED	18	49	110	18	61	124	20	75	220
CLARKE FIRE PROTECTION										
JU4H-UF10, -UF12, -UF14, -UF20, -UF22, -UF24, -UFAB26, -UFAEA0, -UFAEE8, -UFAEF2, -UFADJ2, -UFADJ8	3" NPT	8	36	19	8	42	21	10	42	42
JU4R-UF09, -UF11, -UF13, -UF19, -UF21, -UF23, -UFAEA9, -UFAEE7, -UFAEF1										
JU4H-UF30, -UF32, -UF34, -UF40, -UF42, -UF50, -UF52, -UF54, -UF58, -UFADJG, -UFADPO, -UFADRO, -UFADW8, -UFADY8, -UFAD5G	4" FLANGED	10	36	24	10	46	29	12	55	68
JU4R-UF40, -UF49, UF51 -UF53										
JU6H-UF30, -UF32, -UF34, -UF50, -UF52, -UF54, -UF58, -UF60, -UF62, -UF68, -UF84, -UFAAPG, -UFAAQ8, -UFAARG, -UFAASO, -UFAB76, -UFABLO, -UFABL8, -UFDO, -UFD2, -UFG8, -UFMO, -UFM2, -UFM8, -UFAD58, -UFAD88, -UFADMO, -UFADM8, -UFADNO, -UFADNG, -UFADP8	5" FLANGED	10	42	27	10	54	34	14	61	92
DP6H SERIES										
JW6H-UF30, -UF40, UF48										
DSOH SERIES*										
DR8H SERIES*	5" FLANGED	10	42	27	10	54	34	14	61	92
JW6H-UF50, -UF58, -UF60, -UF8, -UFAAM8, -UFAA80, -UFADDO, -UFADBO, -UFADFO, -UFADJO, -FAD70, -UFAD80										
JU6H-UFAD98, -UFADPO, -UFADQO, -UFADRO, -UFADR8, -UFADSO, -UFADS8, -FADTO, -UFADW8 -UFADX8	6" FLANGED	12	42	35	12	54	43	16	73	131
DQ6H SERIES										
DT2H SERIES*										
JX6H SERIES										
JX6H SERIES	8" FLANGED	18	49	110	18	61	124	20	75	220
CUMMINS										
CFP5E, CFP59, CFP7E Series	4" NPT, FLANGED	10	36	24	10	46	29	12	55	68
CFP83 Series	4" NPT, FLANGED	10	36	24	10	46	29	12	55	68
CFP9E Series	5" NPT, FLANGED	10	42	27	10	54	34	14	61	92
CFP11E Series	5" NPT, FLANGED	10	42	27	10	54	34	14	61	92
CFP15E Series	6" FLANGED	12	42	35	12	54	43	16	73	131
CFP23E Series	8" NPT, FLANGED	18	49	110	18	61	124	20	75	220
CFP30E Series	10" NPT, FLANGED	22	64	205	22	75	220	28	99	360
DEUTZ										
DFP4-2011 Series	3" NPT	8	36	19	8	42	21	10	42	42
DFP4-2012 Series	4" FLANGED	10	36	24	10	46	29	12	55	68
DFP6 Series	6" FLANGED	12	42	35	12	54	43	16	73	131



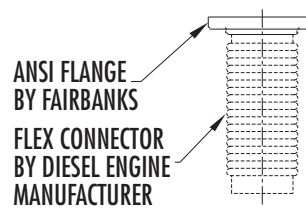
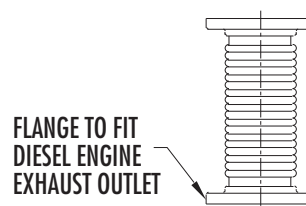
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FAIRBANKS NIJHUIS™ FIRE PUMPS

EXHAUST FLEX CONNECTORS

ENGINE MODEL	MUFFLER CONNECTION SIZE	FLEX CONNECTOR STYLE
CATERPILLAR		
3406C	6" FLANGED	B
3412C*, 3508C, C18*	8" FLANGED	B
CLARKE FIRE PROTECTION		
JU4H-UF10, -UF12, -UF14, -UF20, -UF22, -UF24, -UFAB26, -UFAEAO, -UFAEE8, -UFAEF2, -UFADJ2, -UFADJ8	3" NPT	A
JU4R-UF09, -UF11, -UF13, -UF19, -UF21, -UF23, -UFAEA9, -UFAEE7, -UFAEF1		
JU4H-UF30, -UF32, -UF34, -UF40, -UF42, -UF50, -UF52, -UF54, -UF58, -UFADJG, -UFADPO, -UFADRO, -UFADW8, -UFADY8, -UFAD5G	4" FLANGED	A
JU4R-UF40, -UF49, -UF51, -UF53	5" FLANGED	B
JU6H-UF30, -UF32, -UF34, -UF50, -UF52, -UF54, -UF58, -UF60, -UF62, -UF68, -UF84, -UFAAPG, -UFAAQ8, -UFAARG, -UFAASO, -UFAB76, -UFABLO, -UFABL8, -UFDO, -UFD2, -UFG8, -UFMO, -UFM2, -UFM8, -UFAD58, -UFAD88, -UFADMO, -UFADM8, -UFADNO, -UFADNG, -UFADP8		
DP6H SERIES		
JW6H-UF30, -UF40, UF48		
DSOH SERIES*		
DR8H SERIES*	5" FLANGE	B
JW6H-UF50, -UF58, -UF60, -UF8, -UFAAM8, -UFAA80, -UFADDO, -UFADBO, -UFADFO, -UFADJO, -FAD70, -UFAD80		
JU6H-UFAD98, -UFADPO, -UFADQO, -UFADRO, -UFADR8, -UFADSO, -UFADS8, -FADTO, -UFADW8 -UFADX8	6" FLANGED	B
DQ6H SERIES		
DT2H SERIES*		
JX6H SERIES	8" FLANGED	B
CUMMINS		
CFP5E, CFP59, CFP7E Series	3" NPT, FLANGED, CUFF	A, B
CFP83 Series	4" NPT, FLANGED, CUFF	A, B
CFP9E Series	4" NPT, FLANGED, CUFF	A, B
CFP11E Series	5" NPT, FLANGED, CUFF	A, B
CFP15E Series	6" FLANGED	B
CFP23E Series	6" FLANGED	B
CFP30E Series	6" FLANGED	B
DEUTZ		
DFP4-2011 Series	3" NPT	A
DFP4-2012 Series	4" FLANGED	B
DFP6 Series	6" FLANGED	B

**STYLE A****STYLE B***

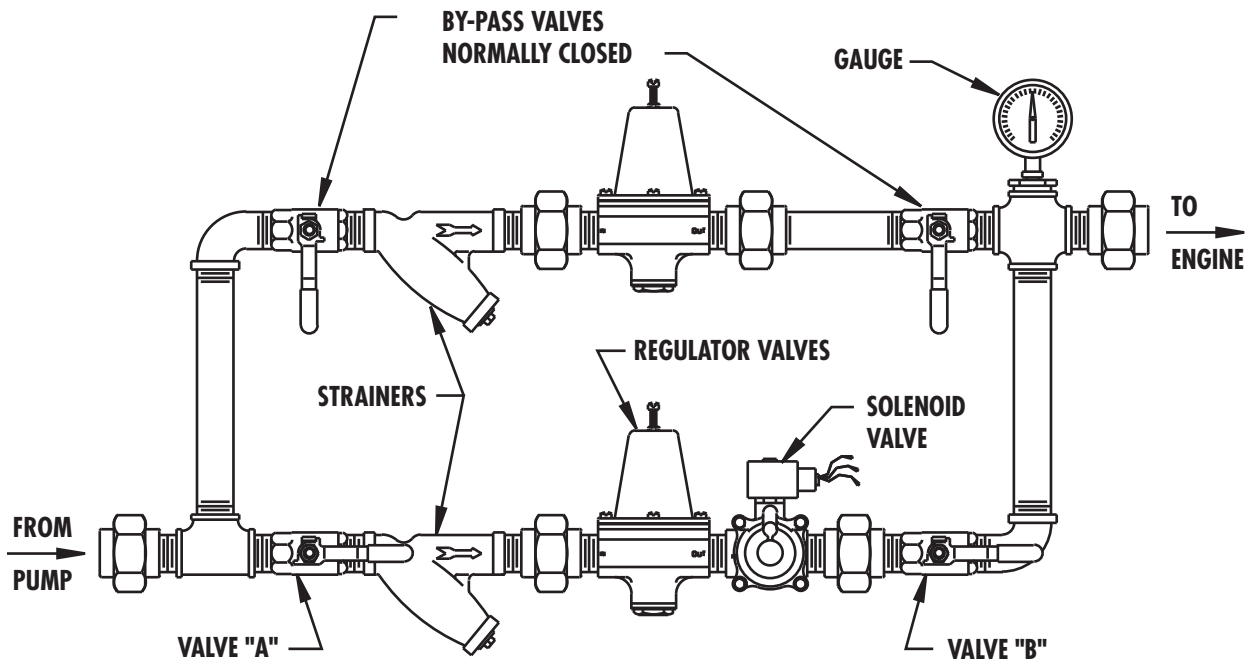
*FLANGED FLEX CONNECTOR PROVIDED BY DIESEL ENGINE MANUFACTURER. NO ADDITIONAL FLEX CONNECTOR OR ADAPTOR FITTING IS REQUIRED OR PROVIDED BY FAIRBANKS NIJHUIS™.

DIESEL ENGINE DRIVEN FIRE PUMP
 COOLING WATER PIPING DATA

 Date **April 2006**

Supersedes Section 916 Page 301

Dated January 1997



This instructional data explains the installation and operation of the cooling system for UL listed, FM approved Fire Pump engines equipped with heat exchangers.

Engines equipped with heat exchangers use an engine mounted water pump to circulate jacket water around the tubes of the heat exchanger to maintain proper jacket water temperatures. Cooling water, supplied by the Fire Pump, is piped through the tubes and discharged to waste.

REQUIREMENTS

The loop portion of the cooling water supply piping, shown above, incorporates all components required by NFPA and is sized to provide the required volume of water at the proper pressure for the heat exchangers of the engine models listed in Table A.

Model 1800 & 1900 pumps are shipped from the plant with the loop piped between the pump and engine. The pipe and loop sizes are determined by the engine model.

COMPONENTS

1. A flushing type strainer is used to protect the regulator valve, solenoid valve and the tubes of the heat exchanger from foreign material.
2. The regulator valve is used to control the volume and pressure of the cooling water.
3. The solenoid valve opens automatically when the engine is started and closes automatically on engine

shutdown to prevent the waste of cooling water. (One red wire must be connected to terminal #1 of the engine junction box, the other red wire to terminal #11 of the engine junction box, and the green wire grounded to the engine block. Refer to applicable wiring diagrams.)

4. The valves in the BYPASS line of the loop are normally CLOSED. They should ONLY be opened to provide cooling water to the engine if the regulator valve or solenoid valve require repair.
5. Valves "A" and "B" are normally OPEN. They should ONLY be closed if repair is required to the regulator valve or solenoid valve.
6. The gauge indicates back pressure on the cooling water discharge. The recommended back pressure to assure adequate flow is 15-20 PSI and should not exceed the allowable pressure shown in Table A.
7. Since cooling loop components are subject to bumps and movement during shipping, all components must be checked for pipe strain and leakage prior to initial startup.

INSTALLATION -COOLING WATER OUTLET

The cooling water outlet piping from the engine heat exchanger must be at least the size listed in Table A. The piping must be short, have no valves and discharge into an open waste cone. If deviations from the requirement of discharge to an open waste cone are permitted by the authority having jurisdiction, the proposed plumbing must be reviewed to assure that the back pressure created will not reduce the cooling water flow to below that required for the engine.


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DIESEL ENGINE DRIVEN FIRE PUMP COOLING WATER PIPING DATA

If the outlet piping from two or more engines is connected to a common manifold, the manifold piping should be sized such that the velocity resulting from the combined flow is the same as that in the outlet piping between the manifold and heat exchanger.

Adequate pipe supports must be provided for the loop and outlet piping to minimize vibration and prevent excessive strain at the heat exchanger, pump and engine connections.

Engine coolant should be added in accordance with the engine manufacturer's recommendations.

OPERATION

The regulator valve is adjusted during operational tests at the plant and set between 15 and 20 PSI back pressure. If additional

adjusting is necessary, see the following procedure:

With the pump operating at the rated duty, the adjustment is made after the engine block temperature has risen to the level required to open the engine thermostat. The thermostat opens at approximately 170°F. The temperature will stabilize and then decrease slightly. At this point, the regulator is adjusted between 15 and 20 PSI by turning the regulator screw clockwise to increase the pressure and counterclockwise to reduce the pressure. The regulator screw is then locked into place with the locknut provided.

MAINTENANCE

1. Strainers must be inspected frequently and kept clean.
2. If cooling water temperature changes, the regulator valve may require adjustment.