

SECTION 1

GENERAL INFORMATION

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INDEX

SECTION 1.GENERAL INFORMATION

SECTION A. MODELS AND SYSTEMS

A.1 HORIZONTAL END SUCTION PUMP CPP 21	6
A.2 HORIZONTAL END SUCTION PUMP IRP	7
A.3 HORIZONTAL SPLIT CASE PUMP	8
A.4 VERTICAL TURBINE PUMP	9
A.5 VERTICAL IN LINE PUMP	10
A.6 JOCKEY PUMP	12
A.7 PREPACKAGED FIRE PUMP SYSTEMS	13

SECTION B. TYPICAL SPECIFICATIONS FOR FIRE PUMP

B.1 HORIZONTAL END SUCTION	17
B.2 HORIZONTAL SPLIT CASE PUMP	19
B.3 VERTICAL TURBINE PUMP	21
B.4 VERTICAL IN LINE PUMP	24

SECTION C. DE-RATED POWER CALCULATION PROCESS

C.1 DE-RATED POWER CALCULATION PROCESS	27
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SECTION D.ACCESSORY DIAGRAMS

D.1 HORIZONTAL FIRE PUMP	29
D.2 VERTICAL TURBINE PUMP	32

SECTION E. FPA-20 SPECIFICATION DRAWINGS

E.1 FIRE PUMP CHARACTERISTIC CURVE	35
E.2 HORIZONTAL SHAFT ROTATION	36
E.3 TOTAL HEAD OF STATIONARY PUMP	37
E.4 CORRECT AND INCORRECT PUMP SUCTION	38
E.5 TYPICAL VENTILATION SYSTEM FOR RADIATOR	39

SECTION F. QUOTATION REQUEST FORM

F.1 REQUEST FOR QUOTATION	41
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SECTION G. LEGAL AGREEMENTS

G.1 GENERAL PURCHASE AGREEMENTS	46
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SECTION H. MISCELLANEOUS

H.1 ACRONYMS	54
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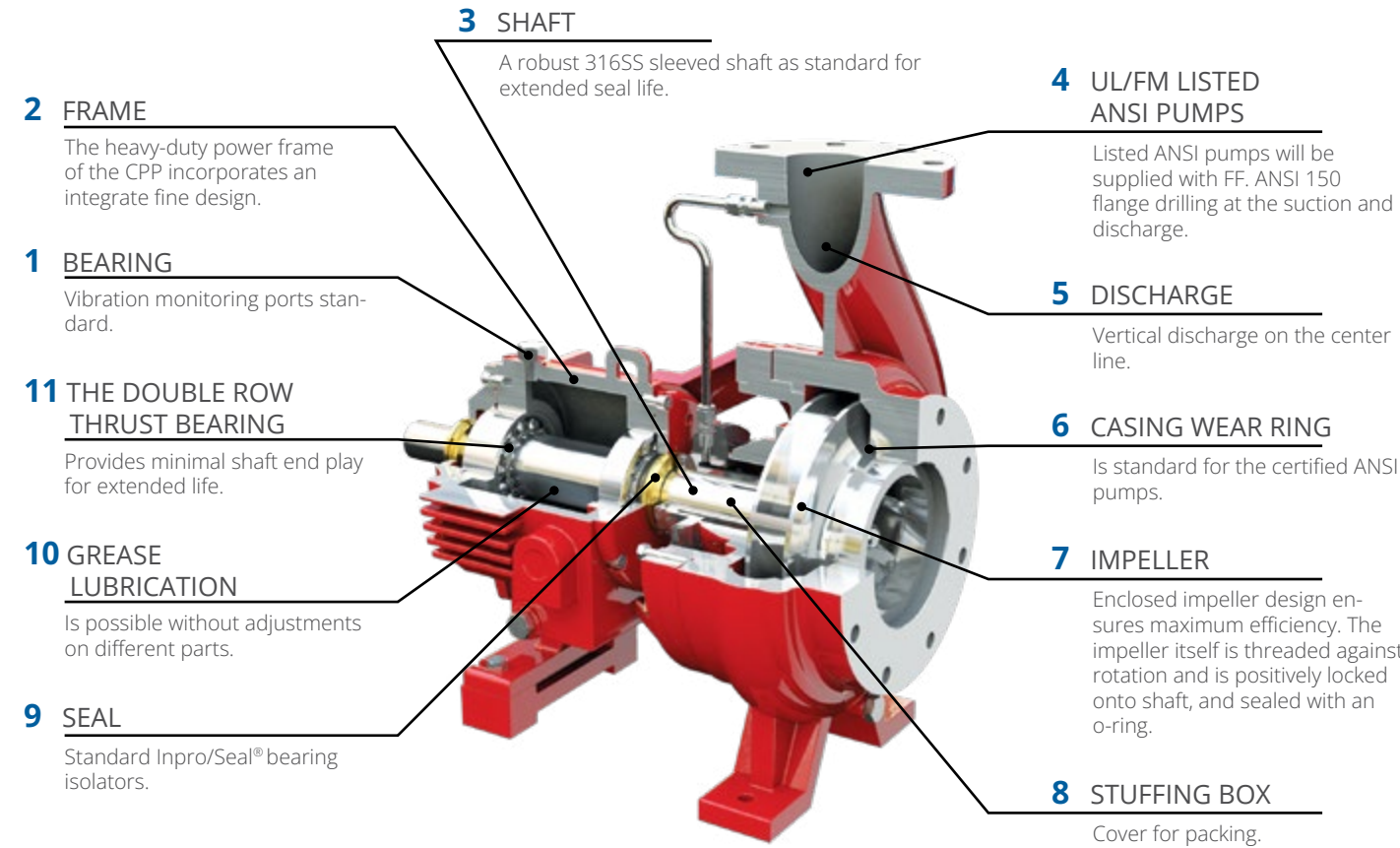
SECTION A. MODELS AND SYSTEMS

A. MODELS AND SYSTEMS

→ Index

A.1 Horizontal End Suction Pump CPP 21

CPP 21 Model



Description

- Standard Materials*: Ductile iron casing, impeller, casing-wear ring, shaft sleeve and Shaft in 316 SS.
- Single-stage horizontal centrifugal pump.
- Radially split casing with flanged connections.
- Horizontal end suction and top discharge on the center line.
- Enclosed impeller.
- Clockwise rotation (viewed from coupling end).
- Foot mounted.
- Grease lubrication.
- ANSI/ASME Standard B 73.1 (OH1).
- “Back pull-out” design allows easy removal of pump assembly and easy of maintenance without disturbing casing flange connections.
- Standard or large bore stuffing boxes are available for packing.
- Fabricated Steel Base .

* Special design and materials upon request.
** For Pump operation outside this range.

Design Features

- NFPA-20
- UL-448
- FM-1319

Performance Data**

Capacity	up to 90 m³/h	(400 U.S. gpm)
Head	up to 193 m	(635 ft)
Pressure	up to 19 bar	(275 PSig)
Temperature	up to 315°C	(600°F)

Notes:
Our End Suction Fire Pumps are designed according ANSI (ASME B73.1) and are certified by FM & UL Approvals.
Please contact our RP Team for more information regarding designs, materials & operations of our pumps.

→ **Index**

A.2 Horizontal End Suction Pump IRP

IRP Model

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A. MODELS AND SYSTEMS

→ Index

A.3 Horizontal Split Case Pump

HSC / HSD / HSL / HSR / ZW Models

1 COMPACT DESIGN

Heavy shaft and short bearing span reduce shaft deflection to a minimum, providing longer packing and bearing life and lower maintenance costs, while requiring less floor space. Clockwise rotation standard; counter-clockwise rotation optional.

2 BEARINGS

Radial and Thrust Bearings with grease lubrication for maximum life at minimum maintenance cost.

3 CASING

Horizontally split, upper and lower half bolted and dowelled. Flanged suction and discharge connections located in the lower half casing, allowing inspection and maintenance without disturbing piping or drive alignment.

4 STUFFING BOX

Deep Stuffing boxes are designed to accept a minimum of five rings of packing with lantern ring. Internally drilled liquid passage in upper-half casing provides lubrication to the packing area.

5 WEAR RING

Casing wear rings are standard and replaceable on all pumps. Impeller wear rings are optional.

6 SHAFT

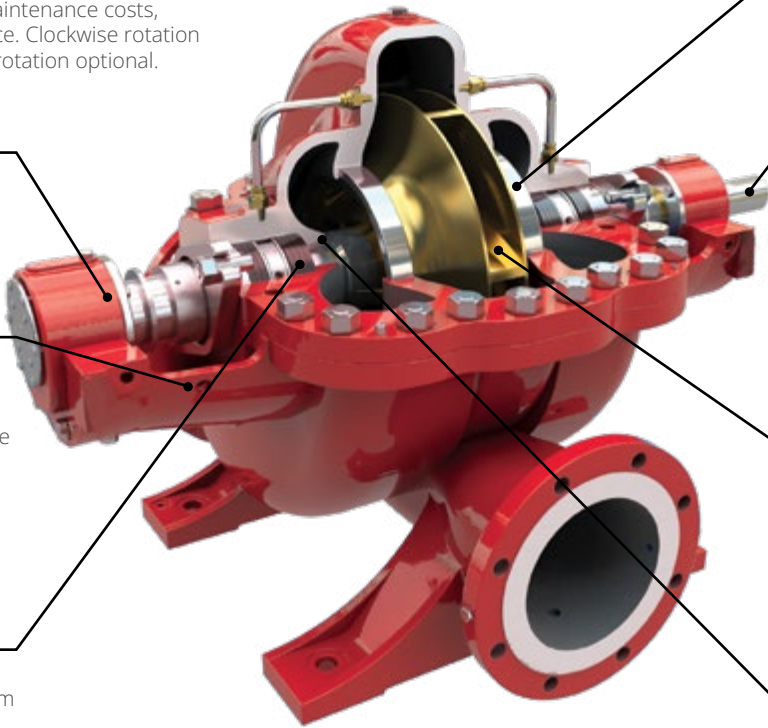
A rigid shaft results in low shaft deflections at all operating points. Low deflection reduces packing wear, ring wear and bearing loading, which ultimately results in sustained efficiency and economic operation.

7 IMPELLER

Enclosed, double-suction type. Cast in one-piece and balanced to minimize thrust and to ensure longer bearing life. Keyed to shaft and locked in position by threaded shaft sleeves.

8 SHAFT SLEEVE

Protects the shaft against corrosion and wear, extends through gland for maximum shaft protection.



Description

- Standard Materials*: Cast iron casing, stainless steel fitted, steel shaft.
- Single-stage double suction horizontal centrifugal pump.
- Split case design allows service without disturbing the piping.
- Dynamically balanced double suction Impeller to reduce thrust loads.
- Clockwise or counterclockwise rotation (viewed from coupling side) available.
- Grease lubricated bearings.

* Special design and materials upon request.
** For Pump operation outside this range.

Design Features

- NFPA-20
- UL-448
- FM-1311

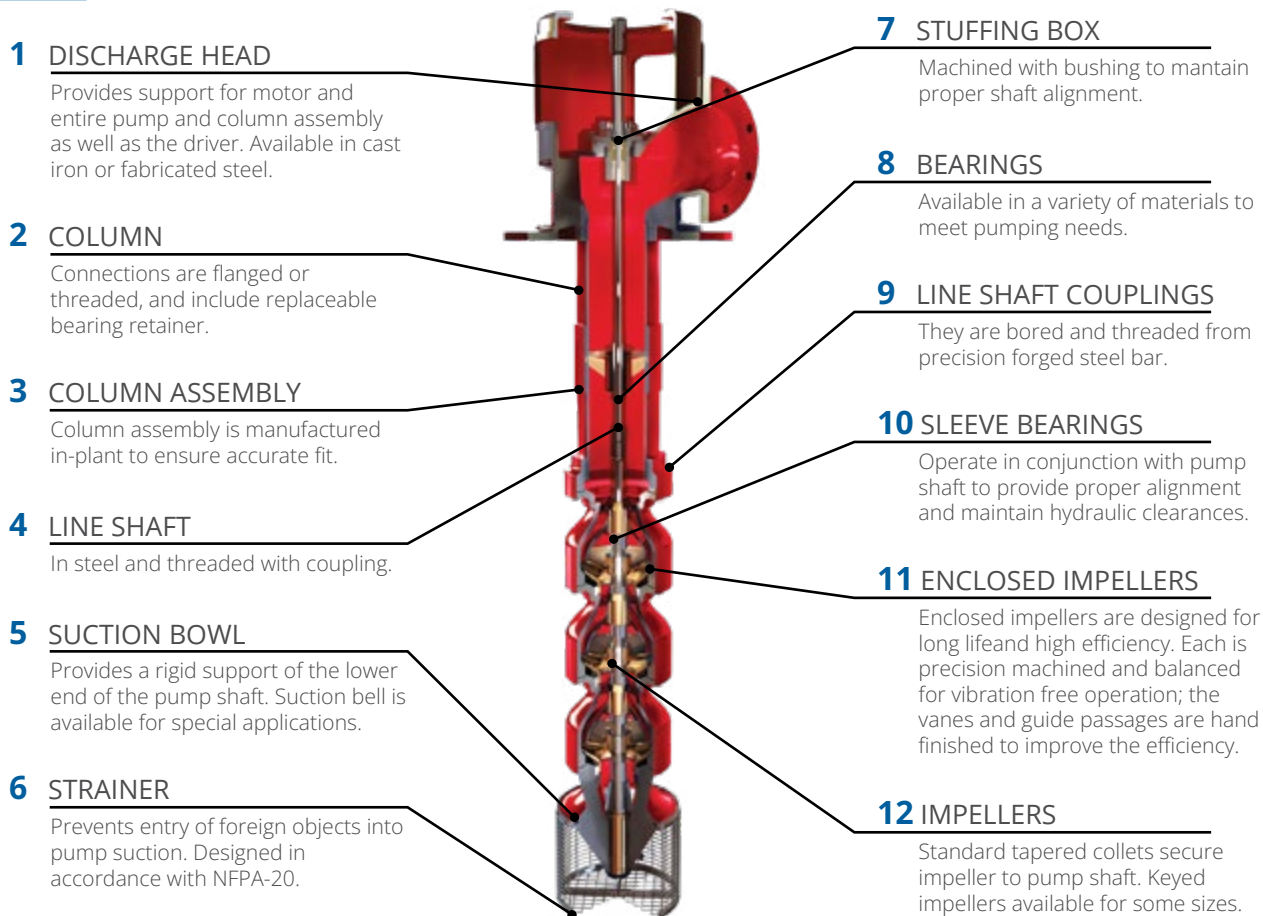
Performance Data**

Capacity	up to 1136 m ³ /h	(5000 U.S. gpm)
Head	up to 250 m	(820 ft)
Pressure	up to 24 bar	(355 PSig)
Temperature	up to 105°C	(220°F)

Notes:
Please contact our RP Team for more information regarding designs, materials & operations of our pumps.

A.4 Vertical Turbine Pump

VTP Model



Description

- Standard Materials*: Cast iron/fabricated steel discharge head; cast iron bowls; impellers, ring and other internal in stainless steel.
- Number of stages designed upon pressure requirements.
- Enclosed impellers, single suction.
- Counterclockwise rotation viewed from coupling end.
- Column lengths in accordance with applications.
- Column pipe threaded construction is standard thru 12".
- Standard open-line shaft construction.
- Large bowl shaft sizing provides longer life.
- Fabricated base capable of supporting the weight of pump diesel engine and gear drive (upon request).
- Available with Diesel and/or Electric driver.

Design Features

- NFPA-20
- UL-448
- FM-1312

Performance Data**

Capacity	up to 1250 m ³ /h	(5500 U.S. gpm)
Head	up to 227 m	(746 ft)
Pressure	up to 22 bar	(323 PSig)
Temperature	up to 105°C	(220°F)

* Special design and materials upon request.
** For Pump operation outside this range.

Notes:
Please contact our RP Team for more information regarding designs, materials & operations of our pumps.

A.5 Vertical In Line Pump

In-Line Model
Whole Component Breakdown

1 JP FRAME MOTOR FOR FAST SERVICE

Complete rotating assembly easily removed for inspection without disturbing piping. Full circle register protected by confined gasket assures permanent alignment.

2 ROTOR ASSEMBLY EASY TO SERVICE

3 ENHANCED VOLUTE CASING DESIGN

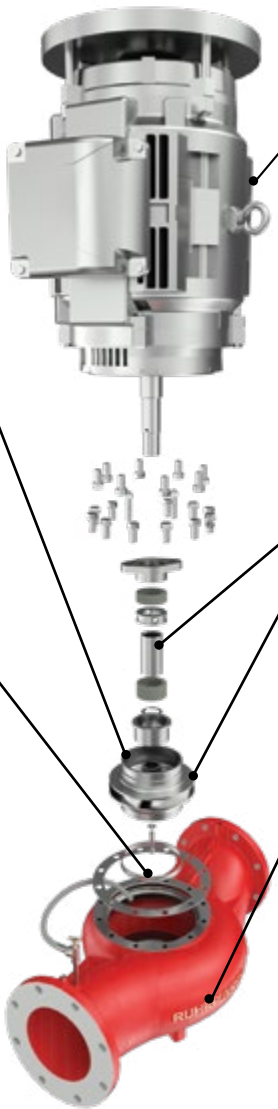
Made of cast iron material. Can be equipped with 125#FF to 250#RF flanges. Suction and discharge flanges on common centerline perpendicular to the shaft axis. Integral one-piece unit for in-line or pedestal mounting.

4 HIGH QUALITY INVESTMENT CASTED IMPELLER

Fully enclosed, balanced, one-piece design, made of stainless steel. Balance chamber provides safe, control of stuffing box pressure and limits axial thrust for long bearing life. Flow passages contoured for low NPSHr requirement. Adjustment not required. Impeller keyed to shaft.

5 CASING WEAR RING TO PROLONG CASING LIFE

Replaceable case wear rings available.



Materials of Construction

Ruhrpumpen's IVP pump is designed in:

- Cast Iron / SST (CF8)

Description

- Single stage, single suction vertical in-line pump.
- Close-coupling.
- Radially split casing with side-side suction and discharge configuration.
- Fully enclosed impeller dynamically balanced which avoids vibration.
- Top Pull-Out allows complete rotating assembly easily removed for inspection without disturbing piping.
- Flanged suction and discharge aligned center line.

Design Features

- NFPA-20
- UL-448
- FM-1371

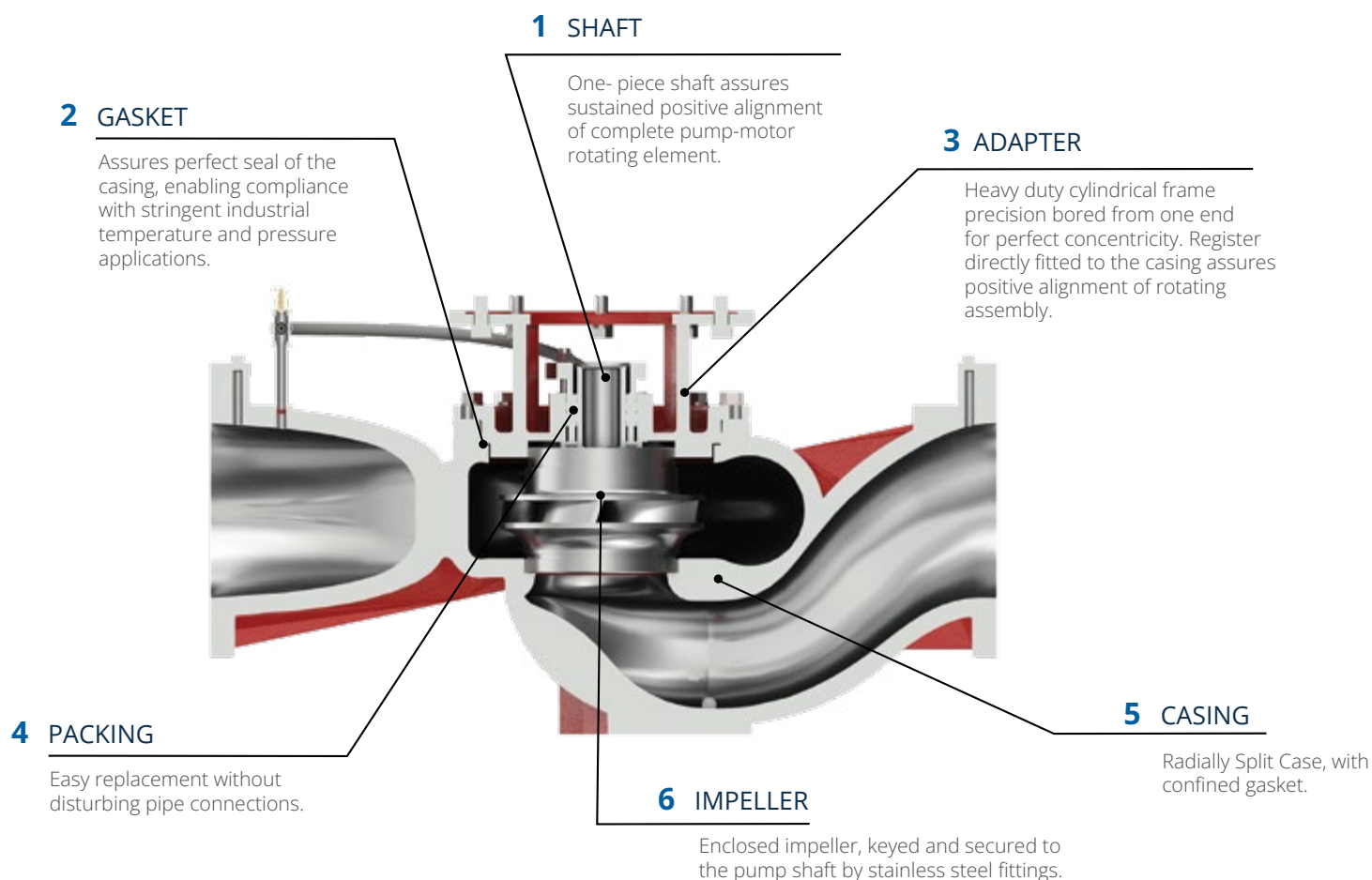
Performance Data**

Capacity	up to 227 m³/h	(1,000 U.S. gpm)
Head	up to 122 m	(200 ft)
Pressure	up to 13.9 bar	(275 PSig)
Temperature	-45 °C to 150 °C	(-50 °F to 300 °F)

* Special design and materials upon request.
** For Pump operation outside this range.

Notes:
Please contact our RP Team for more information regarding designs, materials & operations of our pumps.

Pump Breakdown



Materials of Construction

Ruhrpumpen's IVP pump is designed in:

- Cast Iron / SST (CF8)

Description

- Single stage, single suction vertical in-line pump.
- Close-coupling.
- Radially split casing with side-side suction and discharge configuration.
- Fully enclosed impeller dynamically balanced which avoids vibration.
- Top Pull-Out allows complete rotating assembly easily removed for inspection without disturbing piping.
- Flanged suction and discharge aligned center line.

Design Features

- NFPA-20
- UL-448
- FM-1371

Performance Data**

Capacity	up to 227 m ³ /h	(1,000 U.S. gpm)
Head	up to 122 m	(200 ft)
Pressure	up to 13.9 bar	(275 PSig)
Temperature	-45 °C to 150 °C	(-50 °F to 300 °F)

* Special design and materials upon request.

** For Pump operation outside this range.

Notes:
Please contact our RP Team for more information regarding designs, materials & operations of our pumps.

A. MODELS AND SYSTEMS

→ [Index](#)

A.6 Jockey Pump

Characteristics

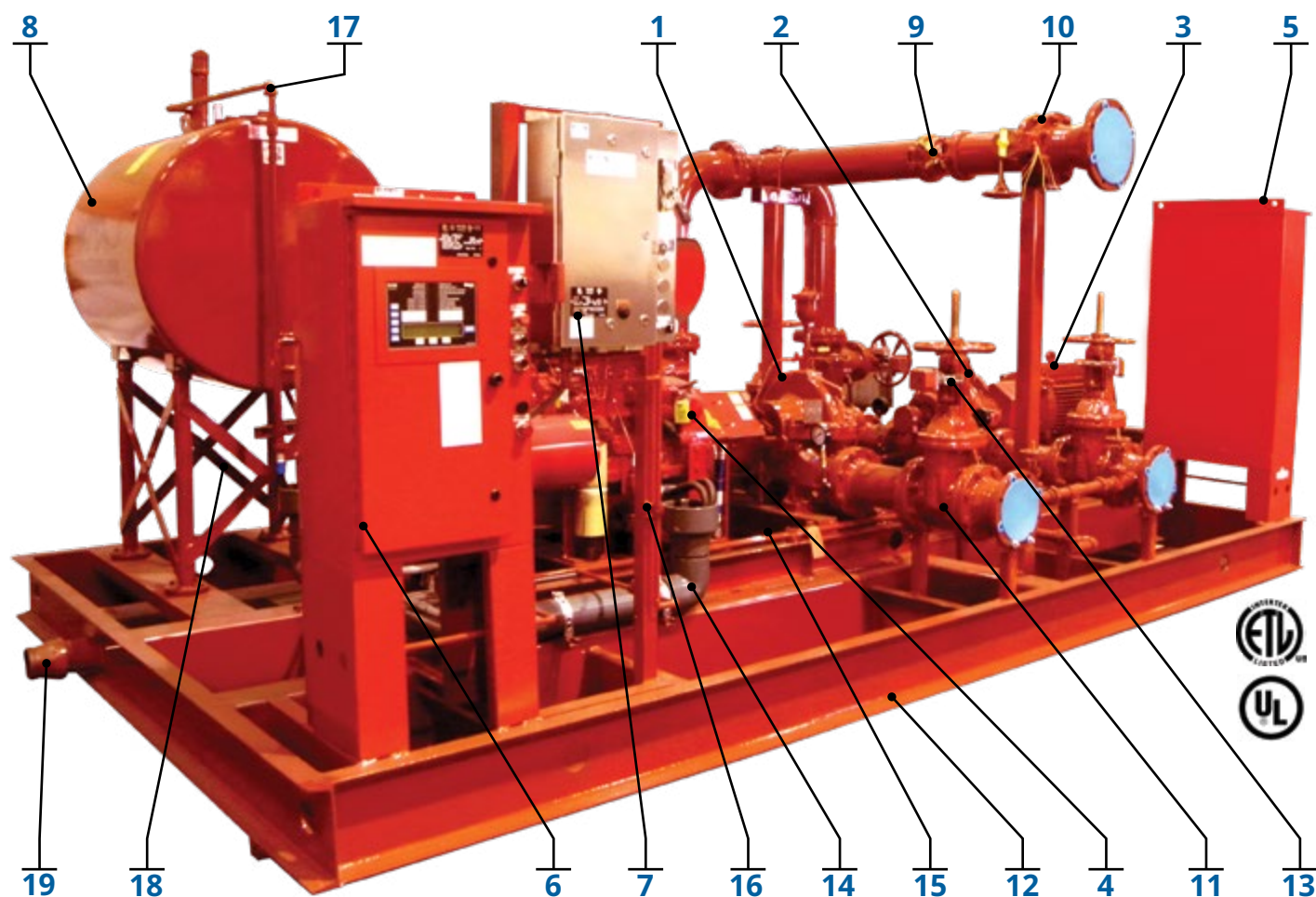
A jockey pump is a pressure maintenance pump.

Ruhrpumpen offers WDM's Vertical Multi-stage Centrifugal Pumps and Submersible Pumps as standard. Other brands available at request.



A.7 Prepackaged Fire Pump Systems

ETL Packaged Fire Pump systems can be designed and built to the requirements of the customer. These systems can be supplied with an electric motor and/or diesel engine. As a customer, you can choose skid-mounted units or pump-housed units. System designers appreciate the time savings and the Ruhrpumpen expertise built into each project.



NUMBER	NAME
1	UL/FM Fire Pump
2	Jockey Pump
3	UL Electric Motor
4	UL/FM Diesel Engine
5	UL/FM Electric Control Panel
6	UL/FM Diesel Control Panel
7	UL Jockey Pump Control Panel
8	UL-142 Double Wall Day Tank
9	FM Listed Flow Meter
10	Throttling Valve

NUMBER	NAME
11	FM Listed OS&Y Gate Valves
12	ASTM A 36 Structural Steel Skid
13	Tamper Switches
14	Schedule 8-CPVC Containment Piping for Fuel Piping
15	Sensing Lines
16	Electrical Lines
17	Fuel Lines
18	Seismic Bracing on Fuel Tank
19	Drain Connection

Notes:
Fire Pump Prepackaged System Available only upon request. Please contact our RP Team for more information on prepackaged systems.

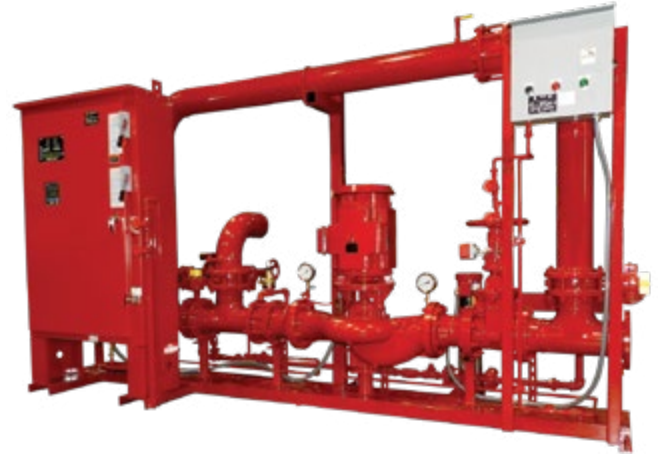
A. MODELS AND SYSTEMS

→ [Index](#)

[End Suction Skid](#)



[In-Line Skid](#)



Benefits in Packaged Fire System

- Single-source responsibility.
 - Pre-fabricated and factory tested.
 - Reduced field cost installation.
 - Delivered to site in a single shipment.
 - International distribution and start up capabilities.
 - Compactness & Space Efficiency.
 - Modular design upon request.
- Completely wired.
 - ETL Third-Party Listing.
 - UL/FM approved components.
 - NFPA 20 full compliance.
 - NFPA 850 Compliant.
 - Certified welders according to ASME Code.
 - NFPA 70 to compliant.



Notes:
Horizontal Split Case, End Suction, In-Line and Vertical Turbine Pumps are available for complete packaged Fire Pump systems, please contact our RP Team for pricing.

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SECTION B. TYPICAL SPECIFICATIONS FOR FIRE PUMP

B.1 Horizontal End Suction

(Continues on next page(s))

The pumps furnished for fire protection service will be supplied with the specified drivers, controls and pump accessory items by the pump manufacturer. These should be

- Underwriters Laboratories (UL) Listed
- Factory Mutual Research Corporation (FM) Approved
- Underwriters Laboratories-Canada (ULC) Listed

for fire protection service. The pumping equipment shall be installed as recommended in the National Fire Protection Association (NFPA) Pamphlet 20, Standard for the Installation of Centrifugal Fire Pumps. The fire pump must be designed to deliver _____ U.S. gallons per minutes (US GPM) at a total differential pressure of _____ PSIG. The fire pump should be capable of delivering not less than 150% of rated flow at not less than 65% rated head. Ruhrpumpen Pump Model _____ must be furnished with driver, controllers and accessories as detailed in this specification. The pump manufacturer will have unit responsibility for the proper operation of the complete unit assembly as indicated by field acceptance tests.

Each individual pump must be hydrostatically tested and performance tested prior to shipment. The pump shall be hydrostatically tested at a pressure of not less than one and on-half times the no flow (shut off) head of the pump's impeller plus the maximum allowable suction head but in no case less than 250 PSIG.

A field acceptance performance test must be conducted upon completion of pump installation. The test shall be made by flowing water through calibrated nozzles, approved flow meters or other such accurate devices as may be selected by the Authority Having Jurisdiction. The test must be conducted as recommended in NFPA 20 with the Ruhrpumpen authorized local representative who shall provide start up and acceptance testing on behalf of the below named

- The installing contractor
- The owner
- The owner's representative
- Other _____

and in the presence of the Authority Having Jurisdiction and with that authority's final approval and acceptance. Failure to submit documentation of factory and field tests will be just causes for equipment rejection.

Pump Construction

The fire pump shall be specifically labeled for fire service and must be a Ruhrpumpen Pump Model _____. The pump must be connected to the (fire standpipe) (fire sprinkler) (underground fire main) system. The suction supply for the fire pump shall be from a (public service

water main) (elevated storage tank) (ground storage tank) at a maximum pressure of _____ PSIG and a minimum pressure of _____ PSIG. The unit will be installed at _____ feet elevation above sea level with a maximum ambient temperature of _____ deg F. The pump must be an end suction radially split case design with suction and discharge flanges machined to American National Standard Institute (ANSI) dimensions. Impeller shall be 316SS with steel shaft with the packed stuffing boxes and grease lubricated single row anti-friction ball bearings. The packing box glands shall be of the steel split type. The pump shall be constructed such that the pump wet end and motor can be removed without disturbing the piping fittings, and must be of the back pull out design. Rotation should be clockwise when viewed from the driver end.

Motor UL Listed

The pump driver should be horizontal foot mounted ball bearing induction motor rated _____ horsepower, 3 phase, volt _____ (50) (60) Hertz with ODP _____ enclosure. The motor locked rotor current must not exceed the values stated in NFPA 20. The motor shall be of the (Across the Line) (Part Winding) (Wye-Delta) type starting and sized as not to exceed the permissible loading limits of NFPA 20. The motor must be mounted on a steel base common to the pump and should be connected to the pump with a flexible coupling protected by a suitable guard. The fire pump manufacturer must accurately align the pump and motor shafts prior to shipment. After field installation but prior to grouting the base, a millwright or similarly qualified person should check and verify or correct the shaft alignment.

Motor Controller (NEMA 2 Std)

The automatic electric motor controller must be (UL Listed) (FM Approved) specifically for fire pump service. The controller shall be designed for

- Full voltage Across-the-Line
- Part winding
- Primary resistance reduced voltage
- Wye-Delta open transition
- Wye-Delta closed transition
- Auto-transformer
- Solid state (Soft start)

type starting. The controller must be rated for the horsepower specified in the electric motor section and arranged to start with (automatic / manual stop). The controller should be capable of interrupting a short circuit current at least equal to the available short circuit current in the controller supply circuit. This fire pump controller installation requires a withstand rating of not less than 100,000 amps RMS symmetrical at an operating voltage of _____ volts. Automatic transfer switch for

B. TYPICAL SPECIFICATIONS FOR FIRE PUMP

→ Index

use with standby generator service (secondary utility source).

The controller must be:

- Floor mounted for electrical connection to the motor by the equipment installer.

Engine UL / FM

The pump driver shall be an internal combustion engine Model _____ manufactured by _____ at _____ RPM, clockwise rotation when viewed from the end opposite the pump. The engine must be derated for elevation above 300 feet ASL and temperatures exceeding 77 deg F. The engine shall be provided by the pump manufacturer with, at a minimum, the following accessories for automatic operation.

- Cooling water lines, pressure regulator, strainer, bypass lines and necessary fittings for engine cooling system , pre-piped and factory mounted.
- Flexible exhaust connector
- Exhaust silencer (Residential) (Industrial) (Hospital)
- Engine jacket water heater, factory installed
- One set dual batteries (lead acid) storage type
- Fuel system as recommended in NFPA 20
- Fuel storage tank sized to provide a minimum supply of 12 hours of engine runtime based on the fuel supply rate requirements of the engine plus 5% for sump area plus 5% for expansion area, or, one gallon of fuel per engine horsepower plus 5% for sump area plus 5% for expansion area. The tank shall be furnished with legs for floor mounting and with a direct reading level gauge. Fuel tank must be (single wall) (dual wall), UL-142 Listed.

Engine Controller (NEMA 2 Std)

The automatic engine controller must be (UL Listed) (FM Approved) specifically for fire pump service. The diesel engine controller shall be arranged to start the fire pump engine automatically on loss of system pressure with (Automatic / Manual Stop). The controller must be capable of performing or contain the following features

- Battery charger
- Time clock for weekly automatic test
- System pressure recorder
- Timing relay for automatic stop
- Power failure start
- Low fuel level switch
- Low fuel level alarm
- Pump room alarm audible and visual signals

(Continues from previous page)

- Fuel tank leak alarm (double wall tank)
- The engine controller can be floor or wall mounted for electrical connection to the engine by the equipment installer.

Jockey Pump

The jockey pump controller in a NEMA 2 enclosure complete with a fusible disconnect, H-O-A selector switch, overload relay, pressure switch, and with/without minimum run timer.

Accessories

The pump manufacturer shall furnish piping accessory items for the pump installation which will adapt the pump connections to the fire protection system and test connection as follows.

- Eccentric tapered suction reducer
- Concentric tapered discharge increaser
- Hose valve test header
- Hose valves with caps and chains
- Pump casing relief valve
- Automatic air release valve
- Hose valve head drain valve
- Suction and discharge pressure gauges
- Flow meter

Additional accessories required when pump is engine or steam turbine driven:

- Main relief valve
 - Direct acting (spring actuated)
 - Pilot operated (hydraulically actuated)
 - Relief valve overflow cone, enclosed typ
 - Discharge tee with elbow (for mounting relief valve)

Notes:

Controller can be mounted on a common base with the fire pump and wired to the motor by the pump manufacturer.
For Applications in diesel engine consult our RP Team.

B.2 Horizontal Split Case Pump

(Continues on next page(s))

The pumps furnished for fire protection service will be supplied with the specified drivers, controls and pump accessory items by the pump manufacturer. These should be

- Underwriters Laboratories (UL) Listed
- Factory Mutual Research Corporation (FM) Approved
- Underwriters Laboratories-Canada (ULC) Listed

for fire protection service. The pumping equipment shall be installed as recommended in the National Fire Protection Association (NFPA) Pamphlet 20, Standard for the Installation of Centrifugal Fire Pumps. The fire pump must be designed to deliver _____ U.S. gallons per minutes (US GPM) at a total differential pressure of _____ PSIG. The fire pump should be capable of delivering not less than 150% of rated flow at not less than 65% rated head. Ruhrpumpen Pump Model _____ must be furnished with driver, controllers and accessories as detailed in this specification. The pump manufacturer will have unit responsibility for the proper operation of the complete unit assembly as indicated by field acceptance tests.

Each individual pump must be hydrostatically tested and performance tested prior to shipment. The pump shall be hydrostatically tested at a pressure of not less than one and on-half times the no flow (shut off) head of the pump's plus the maximum allowable suction head but in no case less than 250 PSIG.

A field acceptance performance test shall be conducted upon completion of pump installation. The test must be made by flowing water through calibrated nozzles, approved flow meters or other such accurate devices as may be selected by the Authority Having Jurisdiction. The test shall be conducted as recommended in NFPA 20 with the Ruhrpumpen authorized local representative who shall provide start up and acceptance testing on behalf of the below named

- The installing contractor
- The owner
- The owner's representative
- Other _____

and in the presence of the Authority Having Jurisdiction and with that authority's final approval and acceptance. Failure to submit documentation of factory and field tests will be just causes for equipment rejection.

Pump Construction

The fire pump shall be of the horizontal centrifugal single stage construction specifically labeled for fire service and must be a Ruhrpumpen Pump Model _____. The pump must be connected to the (fire standpipe)(fire sprinkler)(underground fire main) system. The suction supply for the fire pump shall

be from a (public service water main) (elevated storage tank) (ground storage tank) at a maximum pressure of _____ PSIG and a minimum pressure of _____ PSIG. The unit will be installed at _____ feet elevation above sea level with a maximum ambient temperature of _____ deg F. The pump must be a double suction horizontal split case design with a casing of Ductile Iron with _____ inch (150) (300) pound ANSI B 16.42 / Cast Iron with _____ inch (125) (250) pound ANSI B 16.1 / Carbon Steel with _____ inch (150) (300) pound ANSI B 16.5 rated discharge flanges machined to American National Standard Institute (ANSI) dimensions, and stainless steel case and/ or impeller wear rings. Impeller in stainless steel with steel shaft with renewable stainless steel or bronze sleeves (if it applies) through the packing boxes and grease lubricated single row anti-friction ball bearings. The packing box glands shall be of the steel split type. Impellers should be balanced dynamically.

Motor UL Listed

The pump driver should be horizontal foot mounted ball bearing induction motor rated _____ horsepower, 3 phase, volt _____ (50) (60) Hertz with ODP _____ enclosure. The motor locked rotor current must not exceed the values stated in NFPA 20. The motor shall be of the (Across the Line) (Part Winding) (Wye-Delta) type starting and sized as not to exceed the permissible loading limits of NFPA 20. The motor must be mounted on a steel base common to the pump and should be connected to the pump with a flexible coupling protected by a suitable guard. The fire pump manufacturer must accurately align the pump and motor shafts prior to shipment. After field installation but prior to grouting the base, a millwright or similarly qualified person should check and verify or correct the shaft alignment.

Motor Controller (NEMA 2 Std)

The automatic electric motor controller must be (UL Listed) (FM Approved) specifically for fire pump service. The controller shall be designed for

- Full voltage Across-the-Line
- Part winding
- Primary resistance reduced voltage
- Wye-Delta open transition
- Wye-Delta closed transition
- Auto-transformer
- Solid state (Soft start)

type starting. The controller must be rated for the horsepower specified in the electric motor section and arranged to start with (automatic / manual stop). The controller should be capable of interrupting a short circuit current at least equal to the available short circuit current in the controller supply circuit. This fire pump controller installation requires

B. TYPICAL SPECIFICATIONS FOR FIRE PUMP

→ Index

a withstand rating of not less than 100,000 amps RMS symmetrical at an operating voltage of ____ volts. (Automatic transfer switch for use with (stand-by generator service (secondary utility source).

The controller must be:

- Floor mounted for electrical connection to the motor by the equipment installer.

Engine UL / FM

The pump driver shall be a internal combustion engine Model _____ manufactured by _____ at _____ RPM, clockwise rotation when viewed from the end opposite the pump. The engine must be derated for elevation above 300 feet ASL and temperatures exceeding 77 deg F. The engine shall be provided by the pump manufacture with, at a minimum, the following accessories for automatic operation.

- Cooling water lines, pressure regulator, strainer, bypass lines and necessary fittings for engine cooling system , pre-piped and factory mounted.
- Flexible exhaust connector
- Exhaust silencer (Residential) (Industrial) (Hospital)
- Engine jacket water heater, factory installed
- One set dual batteries (lead acid) storage type
- Fuel system as recommended in NFPA 20
- Fuel storage tank sized to provide a minimum supply of 12 hours of engine runtime based on the fuel supply rate requirements of the engine plus 5% for sump area plus 5% for expansion area, or, one gallon of fuel per engine horsepower plus 5% for sump area plus 5% for expansion area. The tank shall be furnished with legs for floor mounting and with a direct reading level gauge. Fuel tank must be (single wall) (dual wall), UL-142 Listed.

Engine Controller (NEMA 2 Std)

The automatic engine controller must be (UL Listed) (FM Approved) specifically for fire pump service. The diesel engine controller shall be arranged to start the fire pump engine automatically on loss of system pressure with (Automatic / Manual Stop). The controller must be capable of performing or contain the following features

- Battery charger
- Time clock for weekly automatic test
- System pressure recorder
- Timing delay for automatic stop
- Power failure start
- Low fuel level switch

- Low fuel level alarm
- Pump room alarm audible and visual signals
- Fuel tank leak alarm (double wall tank)
- The engine controller can be floor or wall mounted for electrical connection to the engine by the equipment installer.

Jockey Pump

The pressure maintenance pump must be a cast iron, stainless steel fitted vertical multistage centrifugal with mechanical seal, rigid coupled to a ____ HP, ____ RPM, ____ volts, ____ phase, ____ Hertz TEFC motor. The jockey pump start at 10 PSIG over the fire pump discharge pressure.

Jockey Pump Controller

The jockey pump controller can be in a NEMA 2 enclosure complete with a fusible disconnect, H-O-A selector switch, overload relay, pressure switch, and with/without minimum run timer.

Accessories

The Pump manufacturer shall furnish piping accessory items for the pump installation which will adapt the pump connections to the fire protection system and test connection as follows.

- Eccentric tapered suction reducer
- Concentric tapered discharge increaser
- Hose valve test header
- Hose valves with caps and chains
- Pump casing relief valve
- Automatic air release valve
- Hose valve head drain valve
- Suction and discharge pressure gauges
- Flow meter

Additional accessories required when pump is engine or steam turbine driven:

- Main relief valve
 - Direct acting (spring actuated)
 - Pilot operated (hydraulically actuated)
 - Relief valve overflow cone
 - Discharge tee with elbow (for mounting relief valve)

Notes:

Controller can be mounted on a common base with the fire pump and wired to the motor by the pump manufacturer.
For Applications in diesel engine consult our RP Team.

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B.3 Vertical Turbine Pump

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The pumps furnished for fire protection service will be supplied with the specified drivers, controls and pump accessory items by the pump manufacturer. These should be

- Underwriters Laboratories (UL) Listed
- Factory Mutual Research Corporation (FM) Approved
- Underwriters Laboratories-Canada (ULC) Listed

for fire protection service. The pumping equipment shall be installed as recommended in the National Fire Protection Association (NFPA) Pamphlet 20, Standard for the Installation of Centrifugal Fire Pumps. The fire pump must be designed to deliver _____ U.S. gallons per minutes (US GPM) at a total differential pressure of _____ PSIG. The fire pump should be capable of delivering not less than 150% of rated flow at not less than 65% rated head. Ruhrpumpen Pump Model _____ must be furnished with driver, controllers and accessories as detailed in this specification. The pump manufacturer must have unit responsibility for the proper operation of the complete unit assembly as indicated by field acceptance tests.

Each individual pump must be hydrostatically tested and performance tested prior to shipment. The pump shall be hydrostatically tested at a pressure of not less than one and on-half times the no flow (shut off) head of the pump's plus the maximum allowable suction head but in no case less than 250 PSIG. A field acceptance performance test shall be conducted upon completion of pump installation. The test must be made by flowing water through calibrated nozzles, approved flow meters or other such accurate devices as may be selected by the Authority Having Jurisdiction. The test shall be conducted as recommended in NFPA 20 with the Ruhrpumpen authorized local representative who shall provide start up and acceptance testing on behalf of the below named

- The installing contractor
- The owner
- The owner's representative
- Other _____

and in the presence of the Authority Having Jurisdiction and with that authority's final approval and acceptance. Failure to submit documentation of factory and field tests will be just causes for equipment rejection.

Pump Construction

The fire pump shall be specifically labeled for fire service and must be a Ruhrpumpen Pump Model _____ vertical turbine pump. Each unit shall include a bowl assembly, strainer, column and shaft assembly, surface discharge head, driver, and controller.

The pump should be rated for _____ GPM at a total discharge

pressure of _____ PSIG at the centerline of the discharge flange. The maximum lift below the distance from the discharge head center line to the minimum low water level will not exceed _____ feet. The unit will be installed at _____ feet elevation above sea level with a maximum ambient temperature of _____ degrees F.

The total installed length of the pump from bottom of base plate to bottom of suction inlet shall be _____ feet.

Discharged Head

The pump discharged head assembly can be cast iron #125/250 ANSI B 16.1 / carbon steel #150/300 ANSI B 16.5 and fitted with a _____ inch discharge connection machined to American National Standards Institute (ANSI), to provide rigid mounting support for the complete pump assembly and for the

- Vertical hollow shaft motor (electric motor driven pumps)
- Right angle gear drive (diesel engine driven pumps)

The discharge head shall be furnished with a packed stuffing box, a lantern ring, and bronze stuffing box bearing. The discharge head shall be provided with a _____"NPT tap for packing box drainage. On motor driven pumps a two piece top shaft shall be furnished and connected to the head shaft at a point above the packing box with a threaded coupling. The discharge head shall be hydrostatically tested.

Column Pipe and Line Shaft

Pump column pipe (and oil tube when applicable) shall be in sections not longer than 10 feet each. Bronze bearing retainers with rubber line shaft bearings shall be provided.

Bowl Assembly

Pump bowl assemblies shall include cast iron bowls, stainless steel enclosed impellers held in place with steel impeller lock collets, and stainless steel bowl bearings. Pump bowl assemblies shall be submerged as recommended in NFPA 20. The bowl assembly shall be hydrostatically tested to _____ PSIG, and performance tested and certified performance curves supplied. Each pump shall be installed with a 316SS strainer having a free area of not less than four times the suction inlet area. Strainer openings shall be sized to restrict the passage of objects one-half inch sphere size.

Motor UL Listed

The pump driver should be a vertical hollow shaft induction motor rated _____ horsepower, 3 phase, (50) (60) Hertz weather protected Type I enclosure with non-reverse ratchet for operation on _____ volt service. Motor shall be of the

B. TYPICAL SPECIFICATIONS FOR FIRE PUMP

→ Index

(Across-the-Line)(Part winding) (Wye-Delta) type starting and sized so as not to exceed the permissible loading limits of NFPA 20. Motor must be provided with thrust bearings having an average life of 5 years continuous operation and capable of sustaining the maximum pump down thrust.

The motor locked rotor current shall not exceed the values stated in NFPA 20. The motor shall be constructed so that the total maximum thrust of the pump's rotating assembly can be carried by the motor thrust bearing (s). The motor shall mount directly on the pump discharge head assembly with a registered fit for correct shaft alignment. The motor shall be equipped with a top drive coupling and nut for axial adjustment of the pump impellers and shall have a non-reverse ratchet to prevent pump back-spin.

Motor Controller (NEMA 2 Std)

The automatic electric motor controller must be (UL Listed) (FM Approved) specifically for fire pump service. The controller shall be designed for

- Full voltage
- Part winding
- Primary resistance reduced voltage
- Wye-Delta open transition
- Wye-Delta closed transition
- Auto-transformer
- Solid state (Soft start)

type starting. The controller must be rated for the horsepower specified in the electric motor section and arranged to start with (automatic / manual stop). The controller should be capable of interrupting a short circuit current at least equal to the available short circuit current in the controller supply circuit. This fire pump controller installation requires a withstand rating of not less than 100,000 amps RMS symmetrical at an operating voltage of ____ volts. Automatic transfer switch for use with standby generator service (secondary utility source).

The controller must be:

- Floor mounted for electrical connection to the motor by the equipment installer

Gear

Engine driven vertical turbine pumps shall be furnished with a vertical hollow shaft right angle gear FM approved. The drive shall be direct connected to the pump shaft and be equipped with a non-reverse ratchet. The driver shall be connected to the engine by an approved flexible universal joint type drive shaft with an enclosing guard as recommended in NFPA 20. The driver shall have provision for adjusting the pump impeller lateral setting for proper pump operation and performance.

(Continues from previous page)

Engine UL / FM

The pump driver shall be an internal combustion diesel engine Model _____ manufactured by _____ at _____RPM, clockwise rotation when viewed from the end opposite the pump. The engine must be provided by the pump manufacture with, at a minimum, the following accessories for automatic operation.

- Cooling water lines, pressure regulator, strainer, bypass lines and necessary fittings for engine cooling system , pre-piped and factory mounted.
- Flexible exhaust connector
- Exhaust silencer (Residential) (Industrial) (Hospital)
- Engine jacket water heater, factory installed
- One set dual batteries (lead acid) storage type
- Fuel system as recommended in NFPA 20
- Fuel storage tank sized to provide a minimum supply of 12 hours of engine runtime based on the fuel supply rate requirements of the engine plus 5% for sump area plus 5% for expansion area, or, one gallon of fuel per engine horsepower plus 5% for sump area plus 5% for expansion area. The tank shall be furnished with legs for floor mounting and with a direct reading level gauge. Fuel tank must be (single wall) (dual wall), UL-142 Listed.

Engine Controller (NEMA 2 Std)

The automatic engine controller must be (UL Listed) (FM Approved) specifically for fire pump service. The diesel engine controller shall be arranged to start the fire pump engine automatically on loss of system pressure with (Automatic/ Manual Stop). The controller must be capable of performing or contain the following features

- Battery charger
- Time clock for weekly automatic test
- System pressure recorder
- Timing relay for automatic stop
- Power failure start
- Low fuel level switch
- Low fuel level alarm
- Fuel tank leak alarm (double wall tank)
- The engine controller can be floor or wall mounted for electrical connection to the engine by the equipment installer.

Jockey Pump

The pressure maintenance pump can be a vertical turbine / submersible pump to a ____ HP, ____RPM, ____volts, ____ phase, ____Hertz motor. The jockey pump start at 10 PSig over the fire pump discharge pressure.

(Continues from previous page)

Jockey Pump Controller

The jockey pump controller can be in a NEMA 2 enclosure complete with a fusible disconnect, H-O-A selector switch, overload relay, pressure switch, and with/without minimum run timer.

Accessories

The pump manufacturer shall furnish piping accessory items for the pump installation which will adapt the pump connections to the fire protection system and test connection as follows.

- Concentric tapered discharge increaser
- Hose valve test header
- Hose valves with caps and chains
- Automatic air release valve
- Hose valve head drain valve
- Discharge pressure gauges
- Flow meter, FM Approved only

Additional accessories required when pump is engine or steam turbine driven:

- Main relief valve
 - Direct acting (spring actuated)
 - Pilot operated (hydraulically actuated)
 - Relief valve overflow cone, enclosed type
 - Discharge tee with elbow (for mounting relief valve)

Notes:
 Controller can be mounted on a common base with the fire pump and wired to the motor by the pump manufacturer.
 For Applications in diesel engine consult our RP Team.

B. TYPICAL SPECIFICATIONS FOR FIRE PUMP

→ Index

B.4 Vertical In Line Pump

(Continues on next page(s))

The pumps furnished for fire protection service will be supplied with the specified drivers, controls and pump accessory items by the pump manufacturer. These should be

- Underwriters Laboratories (UL) Listed
- Factory Mutual Research Corporation (FM) Approved
- Underwriters Laboratories-Canada (ULC) Listed

for fire protection service. The pumping equipment shall be installed as recommended in the National Fire Protection Association (NFPA) Pamphlet 20, Standard for the Installation of Centrifugal Fire Pumps. The fire pump must be designed to deliver _____ U.S. gallons per minutes (US GPM) at a total differential pressure of _____ PSIG. The fire pump should be capable of delivering not less than 150% of rated flow at not less than 65% rated head. Ruhrpumpen Pump Model _____ must be furnished with driver, controllers and accessories as detailed in this specification. The pump manufacturer shall have unit responsibility for the proper operation of the complete unit assembly as indicated by field acceptance tests.

Each individual pump must be hydrostatically tested and performance tested prior to shipment. The pump shall be hydrostatically tested at a pressure of not less than one and on-half times the no flow (shut off) head of the pump's plus the maximum allowable suction head but in no case less than 250 PSIG.

A field acceptance performance test must be conducted upon completion of pump installation. The test must be made by flowing water through calibrated nozzles, approved flow meters or other such accurate devices as may be selected by the Authority Having Jurisdiction. The test must be conducted as recommended in NFPA 20 with the Ruhrpumpen authorized local representative who shall provide start up and acceptance testing on behalf of the below named

- The installing contractor
- The owner
- The owner's representative
- Other _____

and in the presence of the Authority Having Jurisdiction and with that authority's final approval and acceptance. Failure to submit documentation of factory and field tests will be just causes for equipment rejection.

Pump Construction

The fire pump shall be specifically for fire service and must be a Ruhrpumpen Pump Model _____. The pump must be connected to the (fire standpipe)(fire sprinkler) (underground fire main) system. The suction supply for the

fire pump shall be from a (public service water main)(elevated storage tank) (ground storage tank) at a maximum pressure of _____ PSIG and a minimum pressure of _____ PSIG. The unit will be installed at _____ feet elevation above sea level with a maximum ambient temperature of _____ deg F. The pump must be radially split case design with a casing of cast iron with _____ discharge and suction flanges machined to American National Standard Institute (ANSI) dimensions. Impeller shall be stainless steel with steel shaft with the packed stuffing boxes. The pump shall be constructed such that the pump wet end and motor can be removed without disturbing the piping fittings. Rotation shall be clockwise when viewed from the driver end.

Motor UL Listed

The pump driver should be vertical foot mounted ball bearing induction motor rated _____ horsepower, 3 phase, (50) (60) Hertz with ODP _____ enclosure for operation on _____ volt service. The motor locked rotor current must not exceed the values stated in NFPA 20. The motor should be of the (Across the Line) (Part Winding) (Wye-Delta) type starting and sized as not to exceed the permissible loading limits of NFPA 20. The fire pump manufacturer shall accurately align the pump and motor shafts prior to shipment.

Motor Controller (NEMA 2 Std)

The automatic electric motor controller must be (UL Listed) (FM Approved) specifically for fire pump service. The controller shall be designed for

- Full voltage Across-the-Line
- Part winding
- Primary resistance reduced voltage
- Wye-Delta open transition
- Wye-Delta closed transition
- Auto-transformer
- Solid state (Soft start)

type starting. The controller must be rated for the horsepower specified in the electric motor section and arranged to start with (automatic / manual stop). The controller should be capable of interrupting a short circuit current at least equal to the available short circuit current in the controller supply circuit. This fire pump controller installation requires a withstand rating of not less than 100,000 amps RMS symmetrical at an operating voltage of _____ volts. (Automatic transfer switch for use with (standby generator service (secondary utility source).

The controller must be:

- Floor mounted for electrical connection to the motor by the equipment installer.

(Continues from previous page)

Jockey Pump

The pressure maintenance pump must be a cast iron, stainless steel fitted vertical multistage centrifugal with mechanical seal, rigid coupled to a ____ HP, ____RPM, ____volts, ____phase, ____Hertz motor. The jockey pump start at 10 PSIg over the fire pump discharge pressure.

Jockey Pump Controller

The jockey pump controller can be in a NEMA 2 enclosure complete with a fusible disconnect, H-O-A selector switch, overload relay, pressure switch, and with/without minimum run timer.

Accessories

The pump manufacturer shall furnish piping accessory items for the pump installation which will adapt the pump connections to the fire protection system and test connection as follows.

- Concentric tapered discharge increaser
- Hose valve test header
- Hose valves with caps and chains
- Automatic air release valve
- Hose valve head drain valve
- Suction and discharge pressure gauges
- Flow meter, FM Approved only

Notes:

Controller can be mounted on a common base with the fire pump and wired to the motor by the pump manufacturer.
For Applications in diesel engine consult our RP Team.

SECTION C. DE-RATED POWER CALCULATION PROCESS

C.1 De-rated Power Calculation Process

If you are reading this section it means that your driver will operate above the specified altitude and/or temperature. Before we can determine if your driver is suitable to operate at a higher altitude or temperature, it is important that we explain the De-rated Power Calculation.

What's the De-rated Power Calculation?

The density of the surrounding air of a driver is a key factor that affects the driver's ability to dissipate heat. The higher the air density, the more heat can be transferred. Generally, the density of the air at a specific is very constant, but air density does vary when motors are installed at locations at different elevations where the air density varies. Thus, when drivers are installed at locations where the elevation is substantially above sea level, consideration must be given at this factor.

As a general rule, standard drivers will operate successfully within their normal temperature ration at the following elevations:

- - Electric Motors: 3,300 ft & 104° F
- - Diesel Engine: 300 ft & 77° F

When driver are to be operated above the altitude mentioned above, the driver design should be checked for its suitability at the required elevation. When required, driver designs can be modified to make them suitable for a high elevation operation.

Electric Motor De-rating Factor

Altitude (feet)	HP De-rating Factor
3,301 - 5,000	0.97
5,001 - 6,600	0.94
6,601 - 8,300	0.90
8,301 - 9,900	0.86
9,901 - 11,500	0.82
11,501 - 13,100	0.78
13,101 - 14,700	0.74
14,701 - 16,300	0.70

Diesel Engine De-rating Factor

Altitude (feet)	HP De-rating Factor	Temperature	HP De-rating Factor
301 - 1,300	0.97	78 - 87	0.99
1,301 - 2,300	0.94	88 - 97	0.98
2,301 - 2,300	0.91	98 - 107	0.97
3,301 - 4,300	0.88	108 - 117	0.96
4,301 - 5,300	0.85	118 - 127	0.95
May continued as necessary		May continued as necessary	

How do I calculate the "De-rated HP of the pump engine driver"?

The easiest and fastest way to calculate a "de-rated HP of a driver" is to calculate it through major engines manufactures website, such as Clarke and Cummins.

In your web browser, log into the manufacture's website of your choice. Just to name a few:

Clarke: <http://clarkefire.com/Design-tools/pump-room-calculators/engine-selection-calculator>

Where do I find it?

Calculators -> Engine Selection / Derate / Speed (RPM Interpolar USA.

- Fill in the information as requested.
- Clarke will suggest a suitable motor/engine based on the specifications provided.

Cummins: <http://cumminsfirepower.com/Engines.htm>

Where do I find it?

Follow -> Engines -> Engine Selector

- Fill in the information as requested.
- Cummins will suggest a suitable motor/engine based on the specifications provided.

Do I need to substitute the motor / engine?

As discussed earlier, this section only applies for driver that will operate above a standard elevations & temperature (please see "What's the de-rated Power Calculation?" above).

As a general rule, the NFPA 20 establishes that all UL listed drivers must operate with the HP under any pump load condition. This means that once a driver has been de-rated, it's new HP capacity should be enough to operate the fire pump under any pump load condition.

Contact our RP team for more information on this process.

SECTION D. ACCESSORY DIAGRAMS

[illegible]

- | | |
|--|----------------------------------|
| 1) Jockey Pump | 11) Hose Valves |
| 2) Flow Meter | 12) Main Relief Valve |
| 3) Gauges | 13) Ball Valve |
| 4) Air Vent | 14) Check Valves |
| 5) Drip Ball Valves | 15) Check Valve FDC |
| 6) Isolation Valve | 16) Waste Cone |
| 7) Casing Relief / Pressure Relief Valve | 17) Indicating Gate or Butterfly |
| 8) Fire Department Connection | 18) Tamper Switch |
| 9) OS&Y Gate Valve | 19) Eccentric Reducer |
| 10) Gate Valve | 20) Concentric Reducer |

29

D. ACCESSORY DIAGRAMS

→ Index

(Continues on next page(s))

1) Jockey Pump

The purpose of the Jockey Pumps is to maintain pressure in the system where a pressure drop is due to a leak load. It is also suggest that it not be sized larger than the flow rate of (1) sprinkler.

2) Flow Meter

The Flow Meter is an non electric device which allows for the periodic testing of the pump to insure performance, Refer to NFPA 20 and NFPA 25 for testing requirements and frequency. A system requires either a Flow Meter or Hose Valve Header to meet testing requirements.

3) Gauges

Dry Gauges are provided on the fire pump suction and discharge for testing purposes. Please provide suction pressure in order to supply the correct Gauge Ranges. An upgrade to liquid filled gauges are available.

4) Air Vent

Air Vents should be located at all high points in the system in order to purge air from the pump and system. Horizontal Split Case Pumps are supplied with a standard construction Air Vent.

5) Drip Ball Valves

Drips Ball Valves are required on any line that exits the building and will be filled intermittently. They allow for the automatic draining of these lines when not used.

6) Isolation Valves

With Tamper Switches Isolations Valves (Typically Butterfly Valves) are required to supplied with UL/FM listing and a tamper switch which indicate if the valve is not completely closed.

7) Casing Relief / Pressure Relief Valve

A Relief Valve is required on the pump casing in order to keep it from overheating when the pump has gone to shutoff. Pumps driven by an engine with a cooling loop do note require the valve. Jockey Pumps with a system shut-off pressure exceeding the working pressure of the fire pump components requires a Relief Valves sized so that the system is never exposed to those pressures.

8) Fire Department Connection

An optional connection may be placed on the discharge of the Fire Pump System to allow for the connection of a Fire Truck in order to supplementary flow. A Check Valve is supplied in the line to keep water from back through the line.

9) OS&Y Gate Valve

An OS&Y (Outside Screw & Yoke) is require on the suction pump suction. The design allows for a visual indication that valve is open as well as a machined groove to allow for the actuation of a tamper switch. The Gate Valve should be located at the source if the supply is an adjacent above ground tank.

10) Gate Valve

Jockey Pumps are normally supplied with either OS&Y Gate Valves which can mounted with a tamper switch. The Gate Valve should be located at the source if the supply is an adjacent above ground tank.

11) Flow Device

NFPA 20 requires either a Flow Meter or a Hose Valve in order to periodically test the Fire Pump performance. When Hose Valves are supplied they are mated to a header sized per NFPA 20. Hose Valves are normally supplied with caps and chains.

12) Main Relief Valve

When mated to a Diesel Engine, a Fire Pump with a suction pressure plus 121 % of shut-off pressure exceeding the pressure rating of the components of the system shall require a main components of the system shall require a main Relief Valve. Relief Valve shall be sized per NFPA 20 and shall have pressure rating not less than system shutoff pressure.

13) Ball Valve

The pump suction and discharge gauges will supplied with wither test cocks to allow for isolation and service of the gauges.

14) Check Valves

UL/FM check valves are offered in the accessories catalog.

15) Check Valve FDC

FDC lines are typically sized with 2 ports (4" line) or 3 port (6" line). A UL/FM check valves is placed in the line to insure water does not flow out of the FDC.

16) Waste Cone

A Waste cone is supplied with a sight glass in order to provide a means of detecting water flow through the cone.

17) Indicating Gate or Butterfly

The design allows for a visual indication that valve is open.

(Continues from previous page)

18) Tamper Switch

Where provided, the Suction Valve, Discharge Valve, Bypass Valves and Isolation Valves on the back flow preventor shall be supervised open. The Tamper Switch meets this requirement.

19) Eccentric Reducer

When the Piping is larger than the pump suction, an eccentric reducer shall be required. The reducer shall be installed with the flat size on top in order to minimized trapped air.

20) Concentric Reducer

When the Piping is larger than the Pump Discharge, a Concentric Reducer shall be required.

D. ACCESSORY DIAGRAMS

→ [Index](#)

D.2 Vertical Turbine Pump

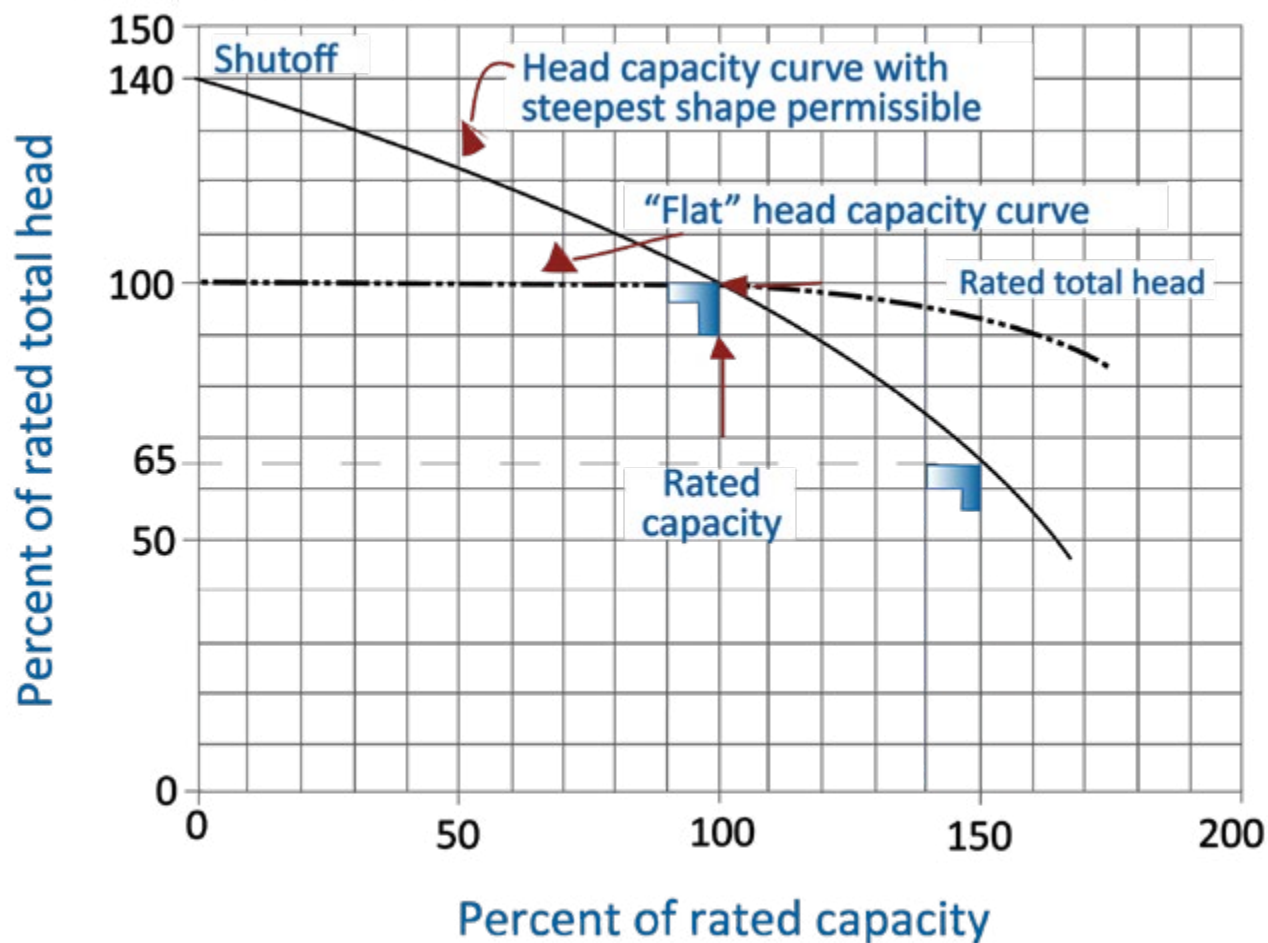
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SECTION E. NFPA-20 SPECIFICATION DRAWINGS

E.1 Fire Pump Characteristic Curve

6.1 Fire Pump Characteristic Curve



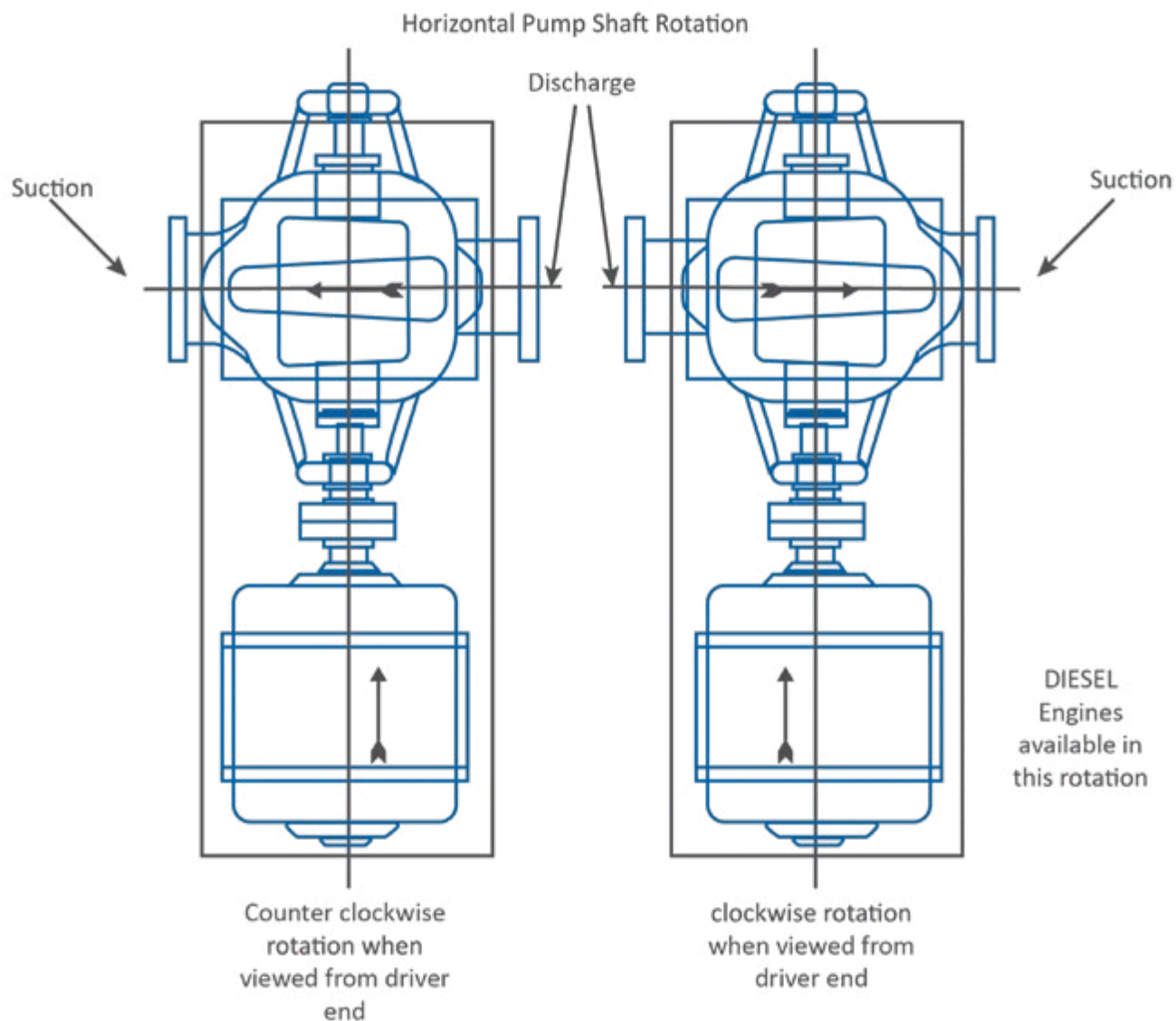
Images are for general arrangement use only, and informational purposes. Not certified for construction.

Notes:
 Pump shall furnish not less than 150% of rated capacity at not less than 65% of total rated head.
 Shutoff head will range from a minimum of 101 percent to a maximum of 140 percent of rated head.

E. NFPA-20 SPECIFICATION DRAWINGS

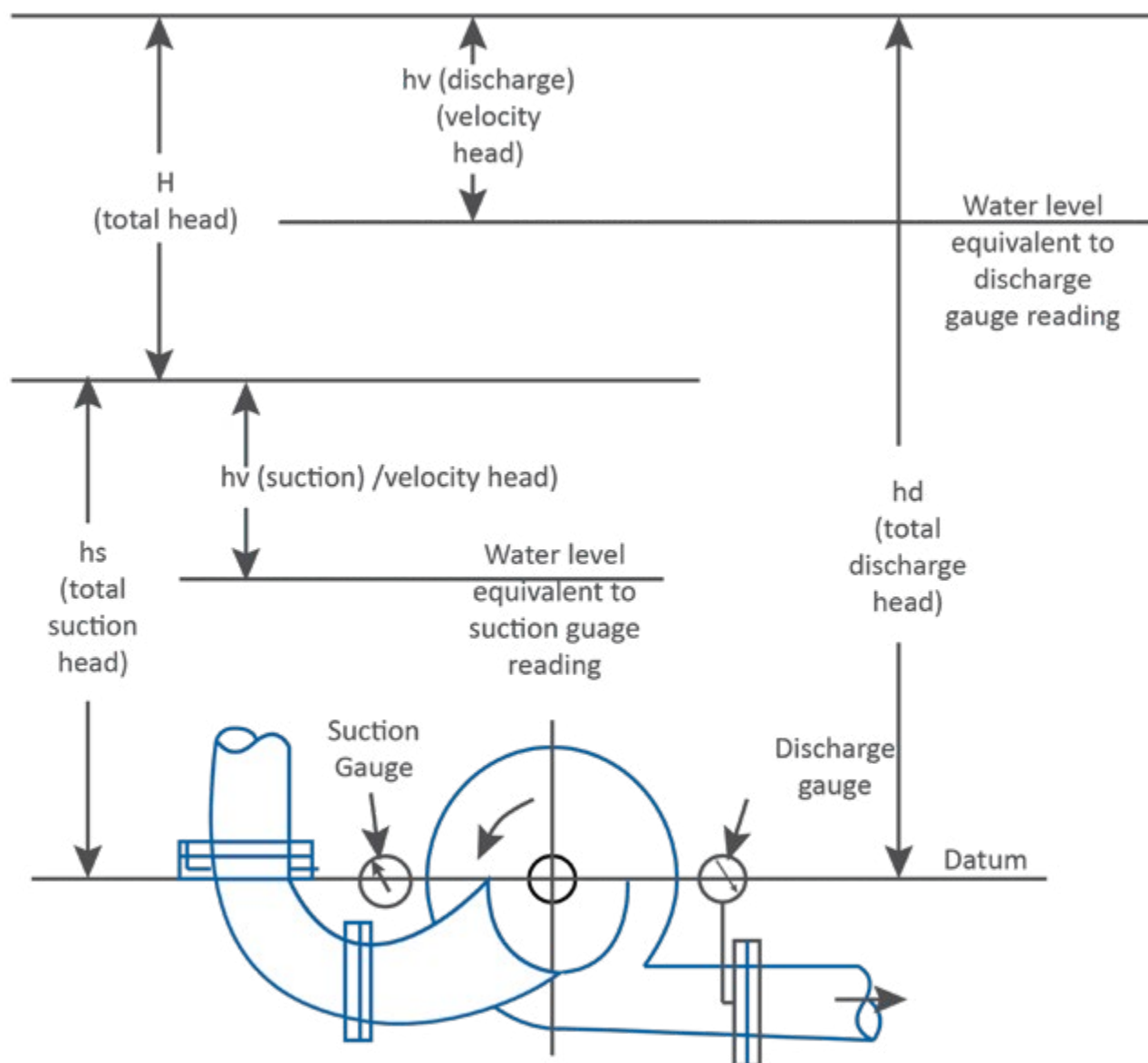
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E.2 Horizontal Shaft Rotation



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EXCLUDING VERTICAL TURBINE PUMPS

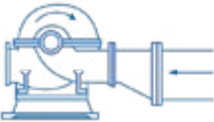
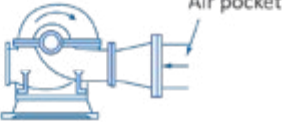
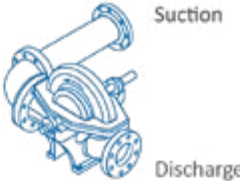
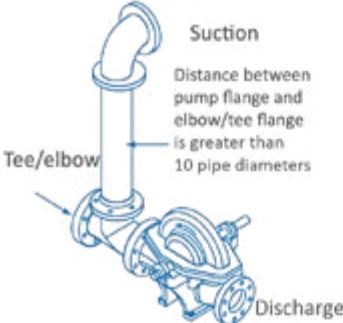
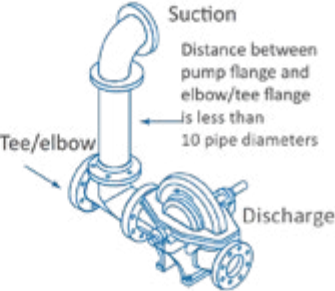
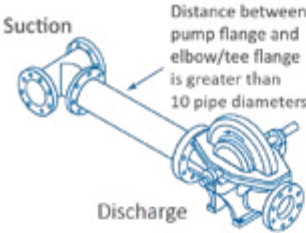
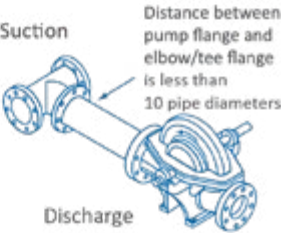
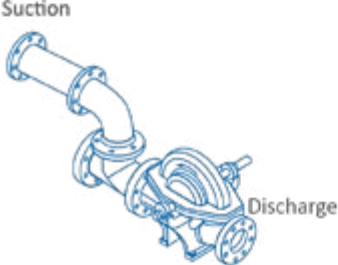
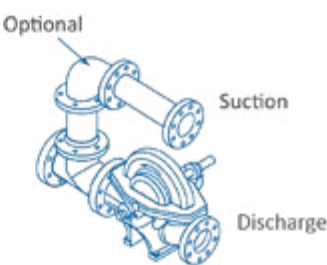


Note: Installation with suction head above atmospheric pressure shown.

E. NFPA-20 SPECIFICATION DRAWINGS

→ [Index](#)

E.4 Correct and Incorrect Pump Suction

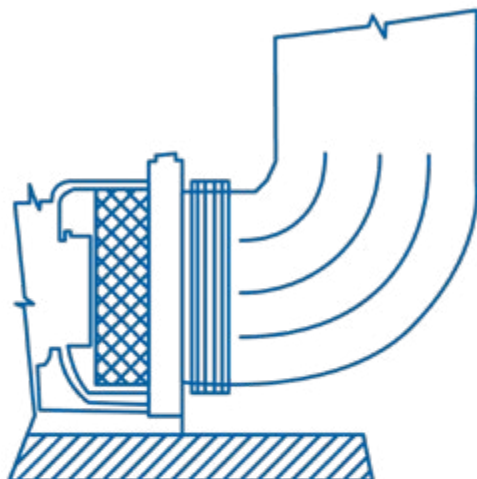
RIGHT AND WRONG PUMP SUCTIONS	
CORRECT	INCORRECT
	
	INCORRECT
	
CORRECT	INCORRECT
	
CORRECT	INCORRECT
	
CORRECT	INCORRECT
	

Images are for general arrangement use only, and informational purposes. Not certified for construction.

Notes:
See Hydraulic Institute Standards for Centrifugal, Rotatory and Reciprocating Pumps for additional Information.

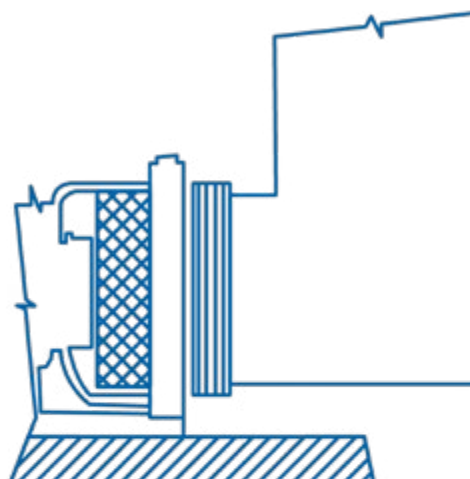
COOLED DIESEL ENGINE

Correct

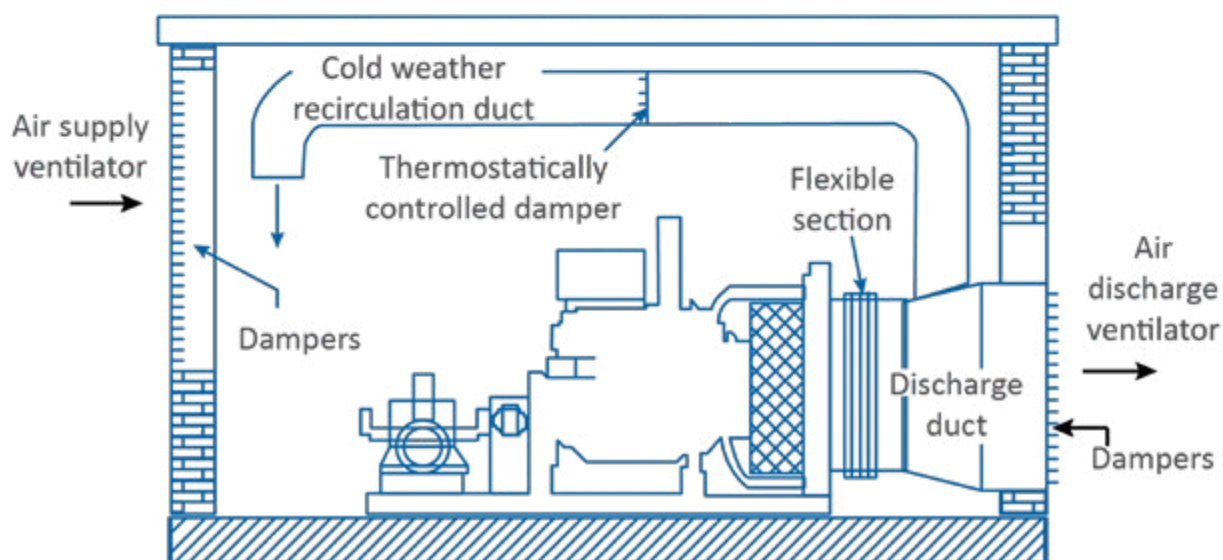


If a bend in the ducting cannot be avoided, it should be rediused and should include turning vanes to prevent turbulence and flow restriction.

Incorrect



This configuration should not be used; turbulence will not allow adequate air flow.



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SECTION F. QUOTATION REQUEST FORM

F.1 Request for Quotation

RFQ Form EU Projects

REQUEST FOR QUOTATION - EU FIRE SYSTEMS



GPS Number

Project Name

End User

SITE AND FLUID CONDITIONS

 Location (City & Country):

 Altitude above sea level: ft.

 Max/Min Temperatures: °F

 Fluid (fresh water, sea water, Brackish, etc):

 Marine Environment: ☐ Yes ☐ No

 Specific Gravity:

 Pump Type:

WATER SUPPLY (check one box)
 Water Tank: ☐
 City Water Main: ☐ Suction Pressure PSI
 Tank Height: ☐
 Sprinkler Height: ☐

Standards / Certifications

 UL Listing: ☐

 FM Approval: ☐

 NFPA-20 only, non-listed: ☐

 CNBOP: ☐

 EN 12259-12 /EN 17451: ☐

FOR VERTICAL PUMPS ONLY

 Sump Depth: ft

 Level from deck to low level: ft

ELECTRIC MOTOR DRIVEN PUMPS

PUMP REQUIREMENTS

 Rated flow: Units:

 Differential pressure: Units:

 Pump Rotation: ☐ CW ☐ CCW

 Quantity:

CONTROL PANEL

 Starting Transfer Switch: ☐

 (Std) Across the line: ☐
 Wye-Delta Open: ☐
 Wye-Delta Closed: ☐
 Soft Start: ☐
 Part Winding: ☐
 Other (specify): ☐

ENCLOSURE (Pick one)
 NEMA 2: ☐
 NEMA 4: ☐
 NEMA 4X, Painted Steel: ☐
 NEMA 3R: ☐
 IP55: ☐
 Other (specify): ☐

BASEPLATE (Check one box)
 (Std) Standard baseplate for pump and motor only (Only for Horizontal Pumps): ☐
 Baseplate for pump, motor, and controller only (Only for Horizontal Pumps): ☐
 Special baseplate for electric motor only (Only for Vertical Turbine Pumps): ☐

ACCESSORIES, SIZED PER NFPA-20, ED. 2025 TABLE 4.28 (a)

 (Std) Compound gauge on suction: ☐
 (Std) Pressure gauge on discharge: ☐
 (Std) Air Relief Valve: ☐
 (Std) Pressure Relief Valve: ☐
 Flow meter: ☐
 Hose Valve Header w/ valves: ☐
 Suction eccentric reducer: ☐
 Discharge concentric increaser: ☐

ELECTRIC MOTOR

 Voltage Supply:

 Frequency: ☐ 50 hz ☐ 60 hz

 Phases: 3 ph

 Enclosure: ☐ ODP ☐ (Std) TEFC

COMMENTS

www.ruhrpumpen.com

F. QUOTATION REQUEST FORM

→ Index

DIESEL ENGINE DRIVEN PUMPS

PUMP REQUIREMENTS

Rated flow: Units:
Differential pressure: Units:
Quantity:
Voltage Supply: Select the voltage
Frequency: ☐ 50 hz ☐ 60 hz
Phase: 1

CONTROLLER ENCLOSURE (Check one box)

NEMA 2 ☐
NEMA 4 ☐
NEMA 4X Painted Steel ☐
NEMA 3R ☐
IP55 ☐
Other (specify) ☐

BASEPLATE (Check one box)

(Std) Baseplate for pump, engine, controller and batteries: ☐
Short baseplate for pump and engine only: ☐
Module base plate pump, engine, controller, fuel tank & batteries: ☐
(Std) Standard baseplate from manufacturer only for diesel engines (Vertical Turbine pumps only): ☐

DIESEL ENGINE

Voltage Supply: Select the voltage
Frequency: ☐ 50 hz ☐ 60 hz
Phase: 1

DIESEL TANK

Single Wall: ☐ Double Wall: ☐
Diesel Tank Mounting Stand: ☐ Yes ☐ No

ACCESSORIES, SIZED PER NFPA-20. ED. 2025 TABLE 4.28 (a)

(Std) Compound gauge on suction: ☐
(Std) Pressure gauge on discharge nozzle: ☐
(Std) Air Relief Valve: ☐
(Std) Main Relief Valve: ☐
Waste Cone: ☐
Flow meter: ☐
Hose Valve Header w/ valves: ☐
Suction eccentric reducer: ☐
Discharge concentric increaser: ☐

COMMENTS

JOCKEY PUMP

PUMP REQUIREMENTS

Rated flow: Units:
Differential pressure: Units:
Quantity:
Voltage Supply: Select the voltage
Frequency: ☐ 50 hz ☐ 60 hz
Phase: ☐ 3 ☐ 1

TYPE (Check one box)

Horizontal in line multistage: ☐ Yes ☐ No
End suction: ☐ Yes ☐ No
Submersible: ☐ Yes ☐ No

ENCLOSURE (Check one box)

NEMA 2: ☐
NEMA 4: ☐
NEMA 4X, Painted steel: ☐
IP55 ☐
Other (specify): ☐

ACCESSORIES, SIZED PER NFPA-20. ED. 2025 TABLE 4.28 (a)

Compound gauge on suction: ☐
Pressure gauge on discharge nozzle: ☐
Air Relief Valve: ☐
Pressure Relief Valve: ☐

COMMENTS

GENERAL COMMENTS

Our standard scope of supply is to provide only:

-For Horizontal Pumps: Pump and Electric Motor/Diesel Engine over a common baseplate, all other items supplied loose.

-For Vertical Turbine Pumps: Only Diesel Engine over a baseplate, all other items supplied loose.

* If a Different Scope is required please choose the scope needed in each section. This request will cause extra charges.

* If this form is not filled with all information requested, a standard package is going to be considered for the quotation (see Std features).

Indicate other requirements such as: Commissioning & Test, Delivery, Hi-ab offloading, Remote Alarm Panels (RAP), Louvers, Extra exhaust parts.

RFQ Form MX Projects



REQUEST FOR QUOTATION

SITE AND FLUID CONDITIONS

Location (City & Country):

Altitude above sea level: ft

Max/Min Temperatures: °F

Fluid (fresh water, sea water, Brackish, etc):

Marine Environment: ☐ Yes ☐ No

Specific Gravity:

Pump Type:

GPS Number

Project Name

End User

WATER SUPPLY (check one box)

Water Tank ☐

City Water Main ☐ Suction Pressure psi

Standards / Certifications

UL Listing: ☐

FM Approval: ☐

NFPA-20 only, non-listed: ☐

FOR VERTICAL PUMPS ONLY

Sump Depth: ft

Level from deck to low level: ft

ELECTRIC MOTOR DRIVEN PUMPS

PUMP REQUIREMENTS

Rated flow: USgpm

Differential pressure: psi

Pump Rotation: ☐ CW ☐ CCW

Quantity:

ELECTRIC MOTOR

Voltage Supply:

Frequency: ☐ 50 hz ☐ 60 hz

Phases: 3 ph

Enclosure: ☐ ODP ☐ TEFC

CONTROL PANEL

Starting ☐ Transfer Switch: ☐

(Std) Across the line: ☐

Wye-Delta Open: ☐

Wye-Delta Closed: ☐

Soft Start: ☐

Part Winding: ☐

Other (specify): ☐

ENCLOSURE (Pick one)

NEMA 2: ☐

NEMA 4: ☐

NEMA 4X, Painted Steel: ☐

NEMA 3R: ☐

IP55: ☐

Other (specify): ☐

BASEPLATE (Check one box)

(Std) Standard baseplate for pump and motor only (Only for Horizontal Pumps): ☐

Special baseplate for electric motor only (Only for Vertical Turbine Pumps): ☐

ACCESSORIES, SIZED PER NFPA-20, ED. 2025 TABLE 4.28 (a)

(Std) Compound gauge on suction: ☐

(Std) Pressure gauge on discharge: ☐

(Std) Air Relief Valve: ☐

(Std) Pressure Relief Valve: ☐

Flow meter: ☐

Hose Valve Header w/ valves: ☐

Suction eccentric reducer: ☐

Discharge concentric increaser: ☐

COMMENTS

DIESEL ENGINE DRIVEN PUMPS

PUMP REQUIREMENTS

Rated flow: USgpm
 Differential pressure: psi
 Quantity:
 Voltage Supply: **Select Voltage**
 Frequency: ☐ 50 hz ☐ 60 hz
 Phase: 1

CONTROLLER ENCLOSURE (Check one box)

NEMA 2 ☐
 NEMA 4 ☐
 NEMA 4X Painted Steel ☐
 NEMA 3R ☐
 IP55 ☐
 Other (specify) ☐

BASEPLATE (Check one box)

(Std) Standard baseplate for pump and motor only (HSC pumps only): ☐
 (Std) Standard baseplate from manufacturer only for diesel engine (Vertical Turbine pumps only): ☐

DIESEL ENGINE

Voltage Supply: **Select Voltage**
 Frequency: ☐ 50 hz ☐ 60 hz
 Phase: 1 ☐

DIESEL TANK

Single Wall: ☐ Double Wall: ☐
 Diesel Tank Mounting Stand: ☐ Yes ☐ No
 Red Paint: ☐ Yes ☐ No
 (If this box is not checked Red Primer will be considered)

ACCESSORIES, SIZED PER NFPA-20. ED. 2025 TABLE 4.28 (a)

(Std) Compound gauge on suction: ☐
 (Std) Pressure gauge on discharge nozzle: ☐
 (Std) Air Relief Valve: ☐
 (Std) Main Relief Valve: ☐
 Waste Cone: ☐
 Flow meter: ☐
 Hose Valve Header w/ valves: ☐
 Suction eccentric reducer: ☐
 Discharge concentric increaser: ☐

COMMENTS

JOCKEY PUMP

PUMP REQUIREMENTS

Rated flow: USgpm
 Differential pressure: psi
 Quantity:
 Voltage Supply: **Select Voltage**
 Frequency: ☐ 50 hz ☐ 60 hz
 Phase: 1 ☐ 3 ☐

TYPE (Check one box)

Vertical in line multistage: ☐ Yes ☐ No
 End suction: ☐ Yes ☐ No
 Submersible: ☐ Yes ☐ No

ENCLOSURE (Check one box)

NEMA 2: ☐
 NEMA 4: ☐
 NEMA 4X, Painted steel: ☐
 IPP55 ☐
 Other (specify): ☐

ACCESSORIES, SIZED PER NFPA-20. ED. 2025 TABLE 4.28 (a)

Compound gauge on suction: ☐
 Pressure gauge on discharge nozzle: ☐
 Air Relief Valve: ☐
 Pressure Relief Valve: ☐

COMMENTS

Our standard scope of supply is to provide only:

-For Horizontal Pumps: Pump and Electric Motor/Diesel Engine over a common baseplate, all other items supplied loose.

-For Vertical Turbine Pumps: Only Diesel Engine over a baseplate, all other items supplied loose.

* If a Different Scope is required please choose the scope needed in each section. This request will cause extra charges.

*If this form is not filled with all information requested, a standard package is going to be considered for the quotation (see Std features).

SECTION G. LEGAL AGREEMENTS

G.1 General Purchase Agreements

(Continues on next page(s))

The following terms and conditions must be accepted as an integral part of any overall quotation/agreement/contract.

1) Definitions

- a) **"Equipment"** means all pumps, operational spare parts, renewal parts or any other material (including tooling) offered by Ruhrpumpen under a Quote or contract of Purchase.
- b) **"Purchaser"** is the entity requesting the Equipment and/or Services via a Purchase Order.
- c) **"Seller"** means the Ruhrpumpen (RP) entity within RP Group that accepts a purchase order for Equipment and Services. RP Group is a global group of companies consisting of Ruhrpumpen GmbH, Ruhrpumpen, Inc., Ruhrpumpen S.A. de C.V., among others.
- d) **"Services"** means work, direction of work, technical information or technical consulting/advice or other services furnished by Seller. Such services may also include, but are not limited to, installation, testing, alignment, startup, operation, repair and maintenance of Equipment. Services will be subject to the most recent version of Seller's separate (i) Terms and Conditions for Service & Technical Support, and (ii) Rates for Services & Technical Support.

2) Quotes / Acceptance of Terms

- a) The most recent quote issued by Seller shall supersede and replace all previous quotations and agreements.
- b) Any quote issued by Seller shall be valid for 30 days unless otherwise stated. Prior to final acceptance, Seller reserves the right to notify Purchaser and without penalty adjust the quoted price and/or delivery schedule or, when Seller deems appropriate withdraw quotation made for Purchaser with no responsibility and do not accept any further orders related to the quote.
 - 1. Seller's quotations rely on the accuracy of Purchaser's descriptions of operating conditions. If actual conditions prove to be different than those specified in Purchaser's description and the Equipment or Services suffer or are not adequate as a result, Purchaser shall be responsible for the cost of all changes in the Equipment or additional Service required to accommodate the actual conditions. Alternatively, Seller reserves the right to cancel Purchaser's order, in which case Purchaser shall reimburse Seller for documented costs, expenses incurred and performance executed prior to the date of cancellation.
- c) When the Seller's quotation is accepted by Purchaser, all the terms and conditions in this document shall become a part of the contract to purchase. Any conflicting or additional terms contained in any document submitted by Purchaser shall have no effect unless agreed to, in writing, by Seller. Anything to the contrary notwithstanding, these terms and conditions shall take precedence over any inconsistent provisions of Purchaser's Purchase Order and any other contract documents. Purchaser's acceptance shall be evidenced by Purchaser's signature, by reference in the Purchase Order, or by Seller commencing work under its quotation or the Purchaser's resulting Purchase Order.
- d) No changes in terms or conditions in any contract or agreement shall be effective without a written change order, agreed to and signed by both Seller and Purchaser.
- e) All Purchase Orders are subject to written acceptance by Seller.

3) Prices / Terms of Payment

- a) Regardless of any delivery date in any contract or purchase order, Seller's quoted prices remain firm for twelve (12) months from the date of the order. For shipments made more than twelve months from the date of the order, the price shall be increased at the time of shipment by 1.5% for each full month or fraction thereof in excess of twelve months. Seller's quoted prices do not include sales, use, excise or similar taxes.
 - 1. The amount of any present or future sales, use, excise or other similar tax applicable to the sale or use of Equipment or Services related to a Purchase Order shall be paid by Purchaser, or in lieu thereof, Purchaser shall provide Seller with a tax-exemption certificate acceptable to the taxing authorities.
- b) For Purchase Order below \$80,000 USD or its equivalent in a different currency, Purchaser shall pay Seller at readiness to ship.
- c) For Purchase Orders in excess of \$80,000 USD, Purchaser shall pay Seller by bank wire transfer, as follows:

(Continues from previous page)

SCHEDULE	PURCHASE ORDER AMOUNT PAYABLE TO SELLER
With acceptance of purchase order	20% of the total Order value
At 15% of the contractual delivery time	30% of the total Order value
At 60% of the contractual delivery time	35% of the total Order value
At notification of readiness to ship	15% of the total Order value

- d) Any unpaid amounts shall be subject to interest at the rate of two percent (2%) per month or the highest percentage allowed by law.
- e) If after three months after any agreed payment milestone time between the parties any amount of the order price remains unpaid; Seller, at its sole discretion, may choose to cancel the order and Purchaser shall be entitled to pay cancellation charges as stated in Clause 7 herein.
- f) If any payment milestone is delayed due delay by Purchaser in accepting / delivering any kind of documentation; Seller, at its sole discretion, may choose to apply interest at the rate of two percent (2%) per week of delay of pending payment or to cancel the order and Purchaser shall be entitled to pay cancellation charges as stated in Clause 7 herein.
- g) If a local or international tax, tariff, or similar duty ("Duty") comes into force after quotation, but before the goods are delivered in the Purchaser's market, Seller will review the new Duty, and have the right to modify the Order price to reflect the Duty. Seller will immediately notify Purchaser if a change to the Order price will be necessary.

4) Delivery

- a) Delivery shall be FCA or EXW (Incoterms 2020) determined at sole discretion of Seller, at Seller's facility where the Equipment is shipped, unless otherwise mutually agreed between Seller and Purchaser. Any alternate terms of delivery mutually agreed between the Parties shall be controlled by the associated Incoterms 2020 definitions.
- b) Shipping dates are based on Seller's providing facility promptly receiving all necessary information from Purchaser. Delays in furnishing complete information may result in dates of shipment being extended for a reasonable time and price increase based on conditions at Seller's plant. Failure by Purchaser to provide approvals of drawings (or similar requirements) within any contractually stated period shall automatically extend Seller's delivery date by at least a reasonable amount of time determined at the full discretion of Seller and also may result in a price increase. Any delay by Purchaser in making any payment will delay the shipping date by a reasonable period of time determined at the full discretion of Seller. Such delays will be considered excused delays and no penalties nor liquidated damages for delayed delivery will be assessed as a result.
- c) Any delay by Purchaser in accepting / delivering any kind of documentation will delay the shipping date by a like period of time. Such delays will be considered excused delays and no penalties nor will liquidated damages for delayed delivery be assessed as a result. In such cases that progress payments are agreed between the parties and the acceptance of documents has to be made after shipment, Purchaser has to accept or reject documentation during the two weeks after shipment date. If Purchaser fails to accept or reject documentation in such period of time, it is understood that documentation is accepted by Purchaser.
- d) Seller shall not be liable for delivery delays due to causes beyond its reasonable control or due to acts of God. These causes include acts of Purchaser, fires, labor disputes, boycotts, floods, epidemics, quarantine restrictions, war, insurrection, riots, civil or military authority, freight embargoes, transportation shortages or delays, unusually severe weather or inability to obtain necessary labor, materials or manufacturing facilities due to such causes. In the event of any such delay, the Seller shall provide timely notice of the delay to Purchaser and the date of delivery shall be extended for a length of a reasonable period of time at the full discretion of Seller.
- e) Delivery term established in Seller's quotation shall commence the day after Seller has received and accepted Purchase Order from Purchaser stating his acceptance to Seller's terms and conditions.
- f) In the event that Seller is delayed in performing any of its obligations under the Purchase Order and such

(Continues from previous page)

- delay is caused by acts of force majeure, such delay will be excused and the period of such delay will be added to the time of delivery. Force majeure means any unforeseen occurrence that is beyond the reasonable control of the Seller and which adversely affects the performance of its obligations under the Purchase Order and which is unavoidable notwithstanding the reasonable care of the Seller, such as: acts of God, war, riots, civil insurrection, acts of the public enemy, fires, floods, or earthquakes and acts of civil or military authority.
- g) In the event that Seller, at its sole discretion, determines that payment from Purchaser is not certain; Seller may ask Purchaser for reasonable security that in the opinion of Seller is necessary to insure payment. In the event that Purchaser does not provide such security, Seller may cancel the contract of Purchase/Purchase Order without penalty and require the return of any Equipment or goods that have been delivered.
 - h) In the event the equipment is completed and ready for shipment and by Purchaser’s reasons the Equipment can’t be delivered, Seller, at its sole discretion, may charge Purchaser for all storage costs caused from the notification of readiness to ship until the time Equipment is delivered. If after three months after notification of readiness to ship equipment cannot be delivered, Seller, at its sole discretion, may cancel the order and Purchaser shall be entitled to pay cancellation charges as stated in Clause 7 herein.

5) Liquidated Damages for Delayed Delivery

- a) In the event of Seller’s unexcused, delayed delivery, Seller will pay Purchaser liquidated damages at a rate of 0.5% of the value of the as yet undelivered Equipment, per week, up to a maximum of 1% of the value of the as yet undelivered Equipment. The agreed value of these liquidated damages shall be Purchaser’s sole remedy for delayed delivery. Seller’s liability for, and Purchaser’s further claims for any other damages or costs relating to delayed delivery are hereby excluded.

6) Title and Risk of Loss to Equipment

- a) Title to Equipment shall remain with Seller until final payment is received by Seller. Risk of loss to the Equipment shall remain with Seller until the notification from Seller to Purchaser stating the Equipment is ready for shipment.

7) Cancellation Charge

- a) The Purchaser may, at its absolute discretion and without having any reason, terminate the contract of Purchase/Purchase Order
- b) In whole or in part by giving written notice to the Seller. In the event of such termination, the Purchaser shall pay the Seller a Cancellation Charge based on the schedule below:

SCHEDULE	CANCELLATION CHARGE PAYABLE TO SELLER
After Order entry	10% of the total Order value
At 20% of the contractual delivery time	35% of the total Order value
At 40% of the contractual delivery time	60% of the total Order value
At 60% of the contractual delivery time	70% of the total Order value
At 80% of the contractual delivery time	85% of the total Order value
At 90% of the contractual delivery time	95% of the total Order value
At 100% of the contractual delivery time	100% of the total Order value

- c) In the event of a cancellation for Purchaser’s convenience it is expressly stated that the goods shall remain in full property of the Seller and no delivery shall be furnished.
- d) If Purchaser elects to temporarily suspend work under the contract of Purchase/Purchase Order, Purchaser shall notify Seller one week in advance of the suspension date. The required notice must be in writing and include the anticipated suspension period.
 - 1. If the suspension period is 120 days or less, Seller shall advise Purchaser of the required price and schedule adjustment. Such adjustments shall be based on Seller’s reasonable efforts to reallocate

(Continues from previous page)

manpower, material and equipment during the suspension period.

2. If the suspension period is 121 days or more, the suspension may, at Seller's option, be treated as a Cancellation and Purchaser shall pay Cancellation Charges.

- d) If the Seller finds that the financial condition of the Purchaser does not justify continuance of the Purchase Order, Seller may require full or partial payment in advance or shall receive reimbursement per the schedule for Cancellation Charges.
- e) In the event of bankruptcy or insolvency of Purchaser or in the event any such proceedings are voluntarily or involuntarily brought against the Purchaser, Seller shall be entitled to cancel the Purchase Order at any time during the period allowed for filing claims against the estate and shall be entitled to receive reimbursement per the schedule for Cancellation Charges.

8) Warranty

- a) Seller warrants that the Equipment will be free of defects in material, workmanship and title, and that Services will be performed in a good and workmanlike manner. The warranty period shall be twelve (12) months from date of installation or eighteen (18) months from the date of the notification from Seller to Purchaser stating the Equipment is ready for shipment, whichever comes first. This warranty for Equipment is conditioned upon the Equipment being received, unloaded, stored, handled, installed, tested and used in a proper manner. The warranty shall not apply in the event the buyer partially or totally disassembles the Goods.
- b) If any portion of the Equipment or Services fails to conform to the warranty during the warranty period, Seller shall be responsible for the repair or replacement of Equipment at Seller's plant, and for the returning transport of repaired or replacement Equipment only. Purchaser is responsible for costs or damages which may be related to repair and replacement, such as, but not limited to, the costs of removal, lifting, moving, disassembly or reassembly of (i) the products provided by Purchaser or (ii) any other goods, structures or Equipment at Purchaser's site and for transportation to Seller's plant for repair.
- c) The duties, liabilities and obligations of Seller do not extend to any repairs, adjustments, alterations, replacements or maintenance which may be required as a result of normal wear and tear in the operation of the Equipment, or erosion or corrosion, or normal degradation in the performance of the Equipment, or as a result of Purchaser's failure to operate or maintain the Equipment in accordance with Seller's recommendations or Seller's manuals and instructions or the failure to operate the Equipment within the operating specifications (including, but not limited to, type and identity of fluid, temperature, and pressure) provided to Seller in the Purchase Order, or by reason of any cause outside the scope of Seller.
- d) Where any Equipment has been repaired or replaced, the warranty period shall restart on any repair and/or replacement as if they were brand new Equipment (maximum 12 months after restart). Where there has been inspection, removal, transport, dismantling and/or disassembly, re-installation
- e) and re-testing of the Equipment, the warranty period shall be extended by any period(s) equal to the period(s) during which the Equipment have been out of operation or their putting into operation has been delayed as a result of a defect to which this warranty applies.
- f) Seller makes no other warranty or representation of any kind whatsoever, whether statutory, written, oral, express or implied and no other warranties (including warranties for a particular purpose or merchantability or any implied warranties or any warranties of custom and usage) shall apply.
- g) Seller reserves the right to withhold all warranty remedies for Equipment and Services until all payments have been made in accordance with the contract terms of payment.
- h) This warranty shall be invalidated if the Equipment is modified, repaired, or otherwise interfered with, without the Seller's prior written consent.
- i) Warranty for peripheral equipment is limited to the manufacturer's warranty policy.

9) Limitations of Liability

- a) Seller's total liability to Purchaser for all claims of any kind, whether based on contract, tort (including negligence), strict liability, or any loss or damage arising out of, connected with, or resulting from the performance or breach of the Purchase Order shall in no event exceed one times (1x) the total price of

(Continues from previous page)

the Equipment and/or Services associated with the claim.. Seller's obligation to indemnify and reimburse Purchaser shall be proportionately reduced to the extent any such claims, damages and liabilities are the result of the joint or concurrent gross negligence of Purchaser or Purchaser's employees or agents

- b) In no event, whether based on contract, tort (including negligence or gross negligence), strict liability, or any loss or damage arising out of, connected with, or resulting from the performance or breach of the Purchase Order, whether arising before or after completion of Seller's or Purchaser's obligations under the Purchase Order, shall Seller or Purchaser be liable to the other for losses or damages caused by reason of loss of use, revenue or profits or cost of capital or special, incidental, consequential or penal damages of any nature.
- c) In all cases where Purchaser's claim, whether based upon contract, tort (including negligence), strict liability or otherwise, involves nonconforming Equipment or Services or damage resulting there from, Purchaser's exclusive remedies and Seller's sole liabilities shall be those specifically provided by Seller's warranty. Any claims by Purchaser must be submitted to Seller in writing during the warranty period.
- d) The statute of limitations for purposes of bringing any actions under the contract of Purchase shall be one (1) year from the date the cause of action accrued.

10) Intellectual Property

- a) All documentation belonging to Seller's offer, including drawings, sketches, weights, dimensions and pricing, are preliminary and are not binding until marked as final by Seller. Seller reserves full ownership and copyrights for all information, drawings and other documentation sent with any correspondence, offer or agreement.
- b) Drawings, plans, illustrations, manuals and specifications shall only be required to be furnished as specifically identified and required in writing in the Purchase Order. It is understood and agreed that Seller's obligation to provide any drawings or calculations pursuant to a Purchase Order will mean only outline and general configuration drawings as needed for system design and installation, unless the requirement for supply of a particular drawing is specified and agreed to in the Purchase Order. Further, it is expressly agreed that no detailed engineering, manufacturing or assembly drawings of any equipment designed manufactured and or supplied pursuant to this contract, and no design, manufacturing or assembly calculations or software or processes that are created or revised pursuant to Seller's performance of the Purchase Order, will become the property of, or ever be required to be delivered to Purchaser or any subsequent titleholder, and any or same are ever submitted or transmitted by Seller, they shall be immediately returned by Purchaser or subsequent titleholder without duplication or other inspection.
- c) Notwithstanding anything to the contrary, Seller will retain ownership to its own pre-existing intellectual property rights, and Seller hereby grants Purchaser the royalty free right and license to import, use and sell the Equipment purchased. No work performed by Seller shall be considered work for hire for invention or copyright purposes.

11) Confidential Information

- a) Purchaser agrees and acknowledges that the transaction that he is entering along with Seller is completely confidential and Purchaser shall not disclose any information or details regarding to this Order. As well, Purchaser agrees that he (a) will keep the all information regarding to the Order as confidential and (b) without limiting the foregoing, will not disclose said information to any person (including current or prospective financing sources) except with the specific prior written consent of Seller. It is understood that Purchaser may disclose the information received only to its representatives, who are informed by Purchaser of the confidential nature of the information regarding to the Order and the obligations of this Purchase Order. Purchaser and its Representatives will not use any of the said information for any reason or purpose other than to evaluate, negotiate and, effect and conclude the Order. Purchaser will enforce the terms of this Agreement as to its Representatives and will take such action, legal or otherwise, necessary to cause them to comply with this Agreement and thereby prevent their disclosure of the information received (including all action PURCHASER would take to protect its own trade secrets and confidential information), except as permitted by this Agreement.
- b) The Purchaser will protect the information related to the Order, including the Order itself, from unauthorized

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- use or disclosure to third parties with at least the same degree of care (but no less than a reasonable degree of care) as it applies to its own confidential information.
- c) Purchaser will not reverse engineer, analyze, decompile, disassemble or otherwise attempt to derive the source code, techniques, processes, algorithms, know-how or other information from the delivered equipment of the Seller or permit or induce the foregoing or cause a third party to analyze, decompile or reverse engineer any confidential information for any purpose (collectively, "Reverse Engineering"). Any information supplied to or obtained by Purchaser under this section is confidential information of the Seller and may only be used by Purchaser for the purpose described in the order documents and will not be disclosed to any third party or used to create anything which is substantially similar to the expression of the Seller's Equipment.
 - d) Notwithstanding anything to the contrary, Seller shall be permitted to disclose the existence of this Purchase Order and other necessary pertinent details, as Seller deems fit, to third-parties for the purpose of securing future work without obtaining Purchaser's consent.

12) Assignment, Subcontractors & Affiliates

Seller may complete the Equipment through any parent, subsidiary or wholly owned affiliate companies of the Seller, at any location, without the necessity of prior permission or consent. Unless mutually agreed otherwise in advance, Purchaser accepts Seller's scope of supply, including country of origin and manufacture, including any RP Group plants.

- a) Except as provided above, neither Purchaser nor Seller may assign, subcontract or transfer any rights under this quotation or resulting Purchase Order without a prior, written authorization signed by both Purchaser and Seller.

13) Severability

- a) If any provision, phrase or clause within the contract of Purchase is deemed to be void, invalid or inoperative for any reason, that provision, phrase or clause shall be deemed modified to the extent necessary to make it valid and operative. If such provision, phrase or clause cannot be so modified, it shall be deemed severed from the contract of Purchase and the remaining provisions, phrases and clauses shall remain in full force and effect as if the agreement had been signed with the void, invalid or inoperative portions so modified or eliminated.

14) Arbitration

- a) Any dispute, controversy, or difference arising from or in relation to this contract or performance thereof, shall be litigated in the court of law in the jurisdiction where Seller is located. Purchaser hereby agrees that such court has competent jurisdiction over it and hereby waives its right to subsequently contest or object to said court's jurisdiction. Parties agree that, where permitted by law, such dispute shall be decided by a judge.
- b) Notwithstanding subpart 14(A) above, if both Parties agree in writing, then all disputes, controversies or differences which may arise between the Seller and Purchaser, out of or in relation to or in connection with the contract of Purchase or Purchase Order, shall be finally settled by binding arbitration. If the Seller is Ruhrpumpen, Inc., the arbitration will be held in Tulsa, Oklahoma. If the Seller is Ruhrpumpen GmbH, the site of the arbitration will be in Dortmund, Germany. In either location if the seller is Ruhrpumpen, S.A. de C.V. or Ruhrpumpen Argentina, S.A. the site of the arbitration will be Monterrey, Mexico. If the Seller is Ruhrpumpen do Brasil Industria e Comercio de Bombas Hidraulicas Ltda., arbitration will be held in Sao Paulo, Brazil. If Seller is any other company of the Ruhrpumpen Group, arbitration shall be held in Tulsa, Oklahoma, the arbitration proceedings shall be conducted in English and in accordance with the commercial Arbitration Rules of the International Chamber of Commerce ("ICC").
- c) The arbitration shall be conducted by a panel of three (3) arbitrators, with one (1) arbitrator being selected by the Purchaser, one (1) arbitrator being selected by the Seller and the third being selected by the other two arbitrators. Responsibility for payment of the costs of arbitration, excepting counsel fees, shall be included in the arbitration award.

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- d) Neither Seller nor Purchaser shall take any action nor steps which will hinder, delay or otherwise interfere with the commencement of, or proceedings in arbitration.
- e) Notwithstanding the foregoing or anything to the contrary, in the event of any litigation arising from breach of this agreement, or the services or goods provided under this agreement, the prevailing party shall be entitled to recover from the non-prevailing party all reasonable costs incurred including staff time, court costs, attorney's fees, and all other related expenses incurred in such litigation.

15) Governing Law

- a) Except as specifically noted otherwise in these terms and conditions, the applicable laws concerning the contract of Purchase shall be determined as follows:
 - 1. If Seller's point of FCA or EXW delivery (per INCOTERMS 2020) and Purchaser's installation location are in the same country, the laws of that country shall apply.
 - 2. If Seller's point of FCA or EXW delivery (per INCOTERMS 2020) and Purchaser's installation location are in different countries, the laws of the local arbitration or litigation stated in 14, shall apply.

16) Miscellaneous

- a) RUHRPUMPEN's obligation to fulfill this Agreement is subject to the provision that the fulfillment is not prevented by any impediments arising out of national and international foreign trade and customs requirements or any embargos or other sanctions.
- b) Parties warrants that it will comply with all applicable laws in respect of the activities contemplated by this Purchase Order, including, without limitation, laws and regulations relating to taxation, exchange controls, and customs requirements, as well as with any anti-corruption, antitrust, antimoney laundering or other criminal law, rule or regulation applicable to the Parties.

17) Entire Agreement

- a) The contract of Purchase, consisting of these global purchase terms and conditions, Seller's quotation and Purchaser's Order, if accepted in writing by Seller, constitutes the entire agreement between Purchaser and Seller. All other provisions and collateral agreements (including letters of intent or Purchase Orders or Terms and Conditions issued by Purchaser), representations, warranties and promises are superseded by the contract of Purchase.
- b) Any understanding, promise, representation, warranty or condition not incorporated into the contract of Purchase shall not be binding on either party.
- c) The conclusion of a contract by accepting this offer is subject to the condition precedent that all necessary approvals and licenses will be granted by the competent authorities.
- d) If after the acceptance of the Purchase Order by Seller, the Buyer is for any reason included on a sanctions list by competent authorities, Seller at its sole discretion could terminate the Purchase Order and Buyer shall pay cancellation charges as set herein.

SECTION H. MISCELLANEOUS

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→ **Index**

H.1 Acronyms

ANSI: American National Standard Institute
ASL: Above Sea Level
ASME: American Society of Mechanical Engineering
FM: Factory Mutual Research Corporation Approved
FT: Feet
GPM: Gallons per Minute
HOA: Hand –Off-Auto Selector Switch
HP: Horse Power
HZ: Hertz
ISE: Inside Sales Engineering
NEMA: National Electrical Manufacturers Association
NFPA-20: Standard for the Installation of Stationary

Pumps for Fire Protection Code

NFPA: National Fire Protection Association
ODP: Open Drip Proof
PLD: Pressure Limiting Driver
PSI: Pressure per Square Inch
PSIG: Pressure per Square Inch Gauge
RFQ: Request For Quote
RMS: Root Mean Square
RPM: Revolutions per Minute
STD: Standard
TEFC: Totally Enclosed Fan Cooled
ULC: Underwriters Laboratories of Canada
UL: Underwriters Laboratories

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