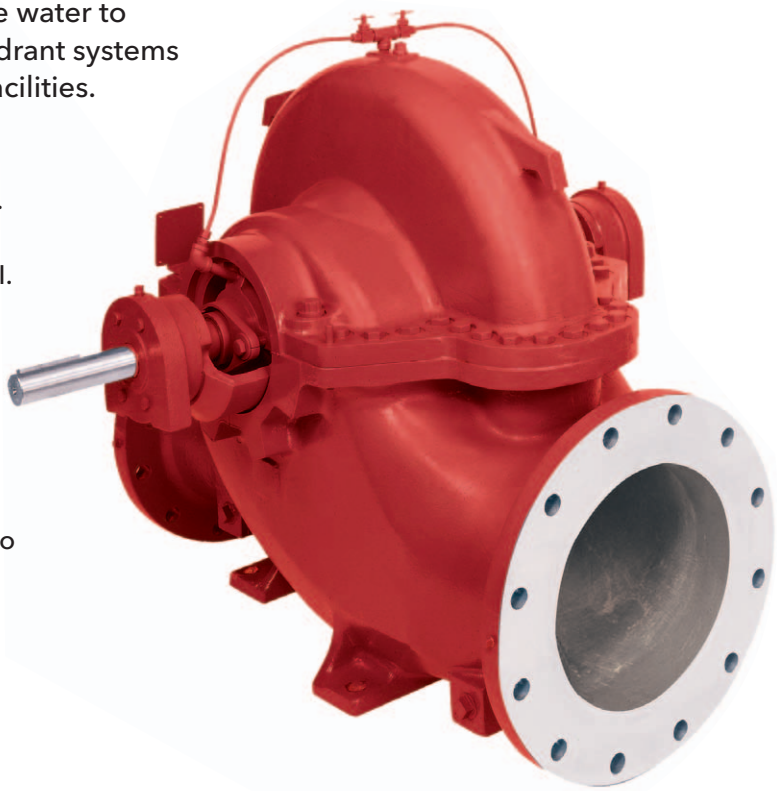
The 8100 Series Fire Pump is designed to provide water to stand pipe, sprinkler, chemical mitigation and hydrant systems for fire supression in industrial and commercial facilities.



Features & Benefits

- Available in capacities up to 3,000 GPM (681 m^3/hr).
- Pressures up to 255 PSI (179 m)
- In compliance with NFPA #20, UL, ULC, FM and ANSI.
- Performance and hydrostatic tests.
- Dynamic balance impellers.
- Space saving design.
- Easy maintenance and upkeep.
- Available in electric or diesel engine driven models.
- Standard construction: cast iron, bronze fitted.
- Clockwise or counterclockwise rotation is available to simplify pump room layout.
- Packed stuff box.
- Grease lubrication.
- Available in 50 or 60 cycle.
- Suction and discharge flanges are on a common centerline.

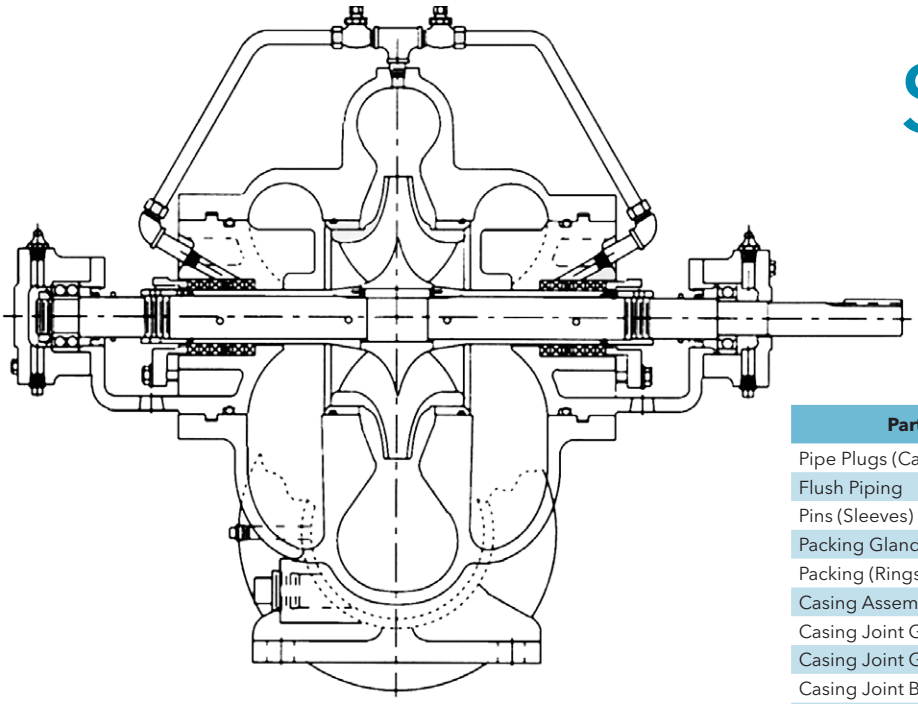
NOTE: This product is not intended for potable water applications

Fire Pumps Series 8100

NORM® TEKNİK
Yangın Korunum Sistemleri

AC FIRE PUMP
a xylem brand

Series 8100



Part Name	Basic Construction Cast Iron, Bronze Fitted
Pipe Plugs (Casing)	Brass
Flush Piping	Copper
Pins (Sleeves)	302 Stainless Steel
Packing Glands	Bronze (ASTM B584-932)
Packing (Rings)	Graphite Impregnated Acrylic Yarn
Casing Assembly	Cast Iron (ASTM a48 Class 35A)*
Casing Joint Gasket (Suction)	Paper (Vellumoid 505)
Casing Joint Gasket (Discharge)	Paper (Vellumoid 505)
Casing Joint Bolts	Steel (Grade 5)
Dowel Pins (Casing)	Steel
Casing rings	Bronze (ASTM B584-932)
Shaft	Steel (SAE 1045)
Shaft Sleeves	Bronze (ASTM B584-932)
Shaft Sleeve Nuts	Bronze (ASTM B584-932)
Bearing Housing (Inboard)	Cast Iron (ASTM a48 Class 25A)
Bearing Housing (Outboard)	Cast Iron (ASTM a48 Class 25A)
Ball Bearing (Inboard)	Steel
Ball Bearing (Outboard)	Steel
Stuffing Boxes (Packing)	Cast Iron (ASTM a48 Class 25A)
Deflectors	Rubber (Buna "N")
Lip Seals (Bearing)	Rubber (Buna "N")
Locknut (Bearing)	Steel
Lockwasher (Bearing)	Steel
Set Screws	316 Stainless Steel
Cap Screw (Bearing Housing)	Steel (Grade 2)
Cap Screw (Gland)	Steel (Grade 2)
Grease Fittings (Bearing)	Steel
Pipe Plugs (Bearing Housing)	Steel
Key (Impeller)	Steel
Key (Coupling)	Steel
O-ring (Stuffing Box)	Rubber (Buna "N")
O-ring (Casing)	Rubber (Buna "N")
O-ring (Shaft Sleeve)	Rubber (Buna "N")
Spirol Pins (Stuffing Box)	304 Stainless Steel
Spirol Pins (Casing Ring)	304 Stainless Steel
Impeller	Bronze (ASTM B584-876)
Seal Cage	PTFE

Pump Size
6x4x10F-M ■
● ■
6x4x12F-M
■
● ■
●
●

● = Pumps that use Steel (SAE 4140) shafts.
■ = Pumps that use TFE Impregnated Acrylic Yarn
* = Casings for pump sizes with "H" prefix will be made from Ductile Iron (ASTM A536 Grade 65-45-12) & Casing Joint Bolts will be Steel (Grade 8).

xylem
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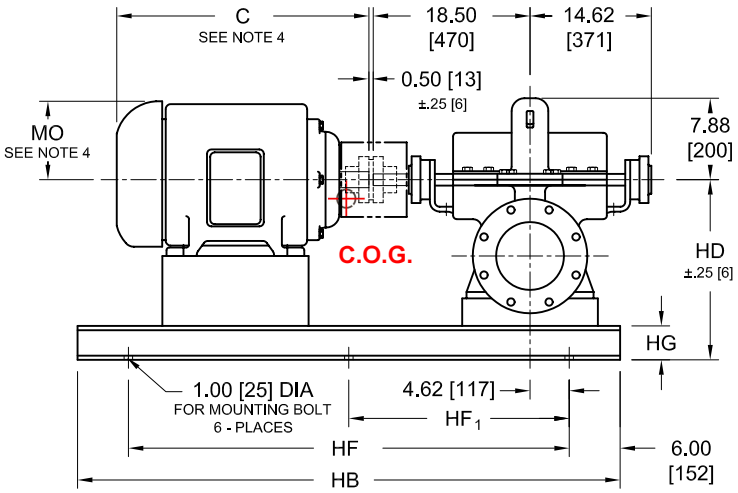
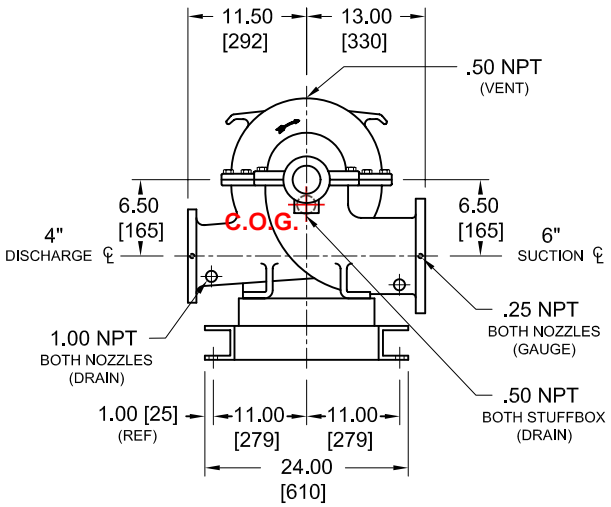
A-C FIRE PUMP SYSTEMS
Dimensions – Horizontal Electric
Motor Driven Fire Pumps

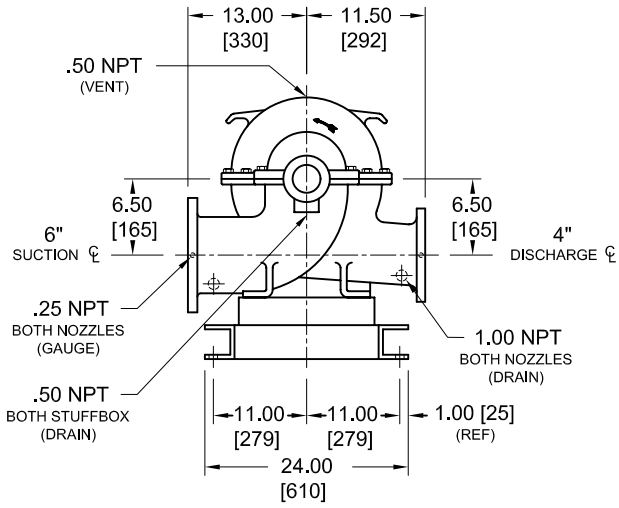
(H)6x4x10F-M – *8100 SERIES*





CW ROTATION VIEWED FROM COUPLING END

MOTOR FRAME	C	MO	HB	HF	HF_1	HD	HG
		9.20 [234]	64.00 [1626]	52.00 [1321]	26.00 [661]	18.25 [464]	4.00 [102]
404	36.40 [925]	10.40 [265]					



CCW ROTATION VIEWED FROM COUPLING END

NOTES:
1. ALL DIMENSIONS ARE INCHES [mm].
2. SUCTION AND DISCHARGE CONNECTIONS ARE DRILLED PER 125# ANSI B16.1. PUMPS WITH "H" PREFIX HAVE DISCHARGE CONNECTION DRILLED PER 250# ANSI B16.1. FLANGE HOLES STRADDLE CENTERLINE.
3. BASE PLATE SETTING (BEFORE PIPING), GROUTING PROCEDURES, AND FINAL ALIGNMENT MUST BE IN ACCORDANCE WITH A-C FIRE PUMPS SYSTEMS RECOMMENDED PROCEDURES OUTLINED IN THE INSTRUCTION MANUAL ASSOCIATED WITH THIS PUMP TYPE.
4. MOTOR DIMENSIONS ARE APPROXIMATE FOR A GIVEN NEMA FRAME. CONSULT FACTORY IF SPACE IS LIMITED.
5. BOTH SUCTION AND DISCHARGE PIPES MUST BE SUPPORTED INDEPENDENTLY NEAR THE PUMP TO REDUCE STRAIN ON THE PUMP CASING. ALSO EXPANSION JOINTS, IF USED, MUST NOT EXERT FORCE ON CASING.
6. COUPLING GUARD MEETS ANSI/OSHA REQUIREMENTS.
7. CONSULT FACTORY FOR BASE MOUNTED CONTROLLER.

NOT FOR CONSTRUCTION, INSTALLATION OR APPLICATION PURPOSES UNLESS CERTIFIED

CERTIFIED FOR: **NORM TEKNİK A.Ş.** APPROVAL UL [X] FM [X] ULC [ ]

CUSTOMER ORDER NO.: **DAC02510789** TAG NO. FLANGES

	SIZE	MODEL	CURVE NO.	GPM	HEAD	ROTATION	SUCTION	DISCH.
PUMP DATA	6x4x10F-M	8100		750	145PSI	CW/CCW	6"	4"
	HP	RPM	VOLTS	PHASE	HERTZ	FRAME SIZE	TOT. WEIGHT	ENCLOSURE
MOTOR DATA	100	2960	380	3	50	40404	499kg	ODP

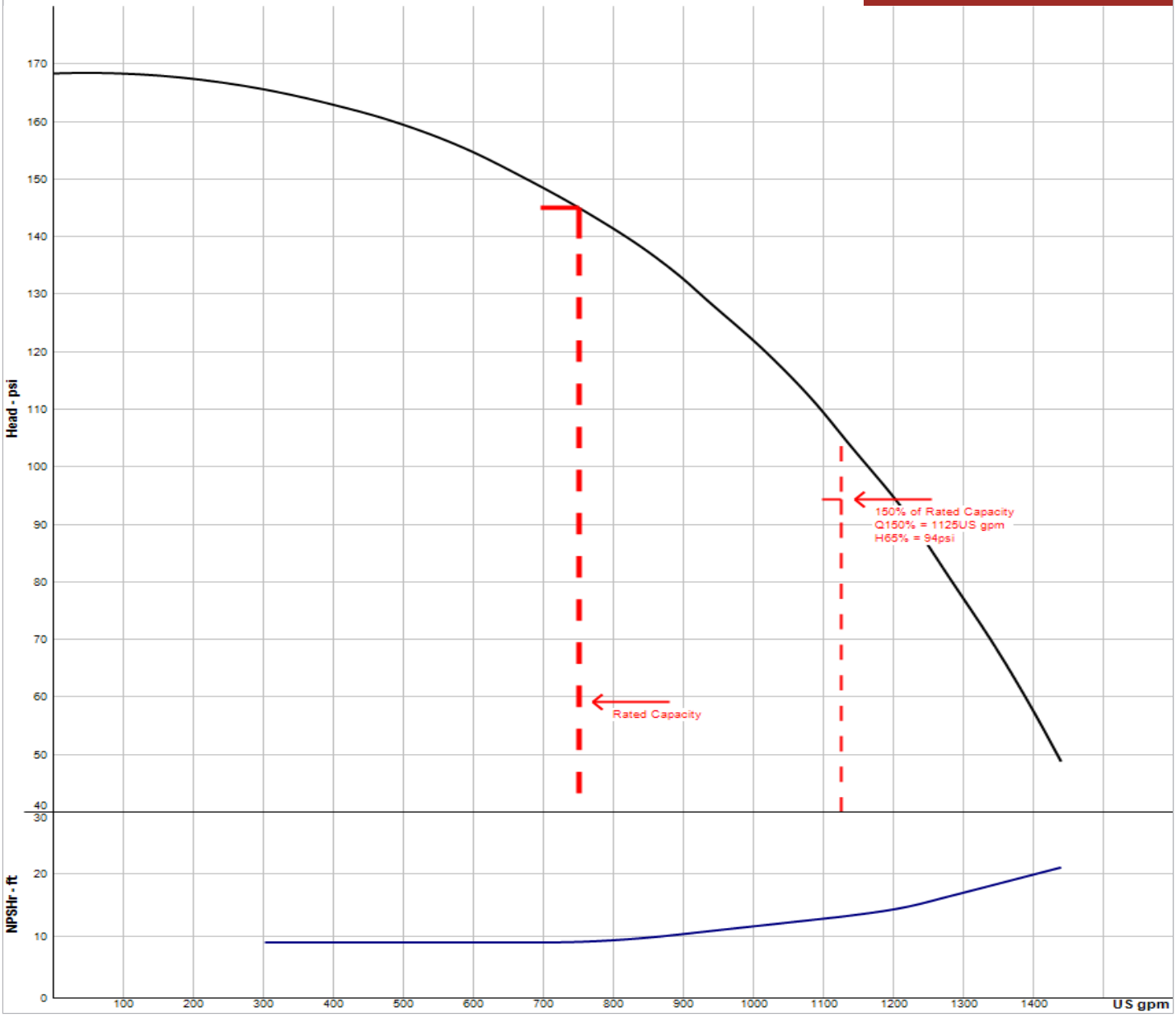
SHOP ORDER: CERTIFIED BY: DATE:

Job/Project:		Representative: Norm Teknik A.S.	
ESP-Systemwize: A77454	Created On:	Phone: +902163114041	
Location/Tag:		Email: norm@normteknik.com.tr	Revision:
Engineer:		Submitted By:	Date:
Contractor:		Approved By:	Date:

Performance Curve

140% Head of Rated Head 203PSI

8100
6x4x10F-M



Typical Performance Curve is shown. Fire Pumps are tested to ANSI/HI 14.6 acceptance grade 1U.
Rated Duty Point is guaranteed within the following tolerances: Flow 0% to + 10%, Head 0% to + 6%.
NO OTHER POINTS ARE GUARANTEED. PLEASE CONSULT FACTORY IF NEEDED.

Pump Selection Summary

Pump Capacity	750 US gpm	RPM	2960
Pump Head	145 psi	Impeller Diameter	11.545 in
Duty point Power	83.5 bhp	Motor HP	
Fluid Type	Water	Fluid Temperature	85 °F
Max BHP	104 hp		

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

NORM TEKNİK
Yangın Korunum Sistemleri

Technical Data
Submittal Documents

Model GPY

Full Service Reduced Voltage
Wye-delta Open
Electric Fire Pump Controller

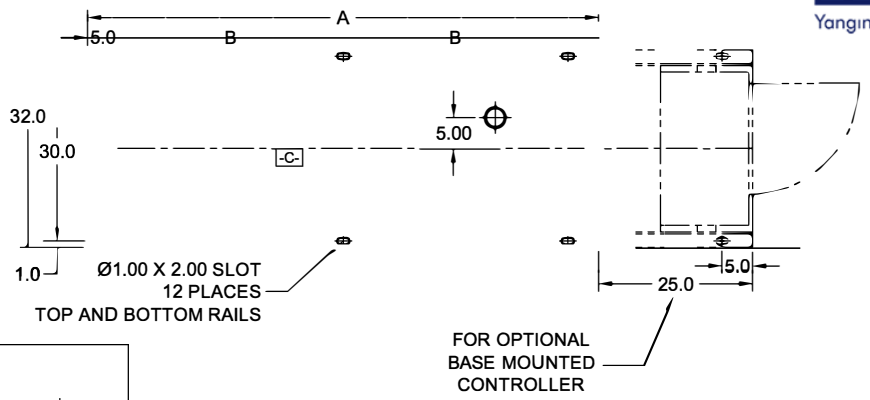
c UL us FM APPROVED N.Y.C. APPROVED CE OPTIONAL SEISMIC COMPLIANT

CLARKE FIRE PUMP DRIVERS
EPA NSPS TIER 1 ENGINE MODELS
HSC 8100 SERIES PUMPS

NORM TEKNİK Yangın Korunum Sistemleri

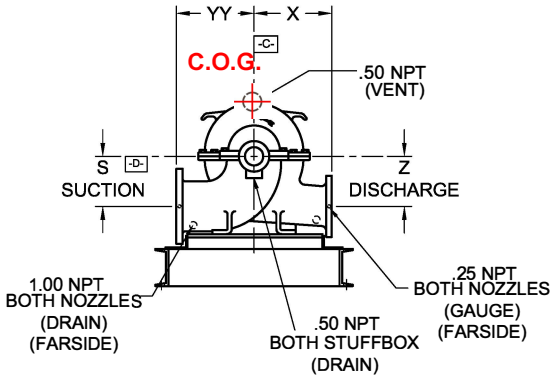
AC FIRE PUMP a xylem brand

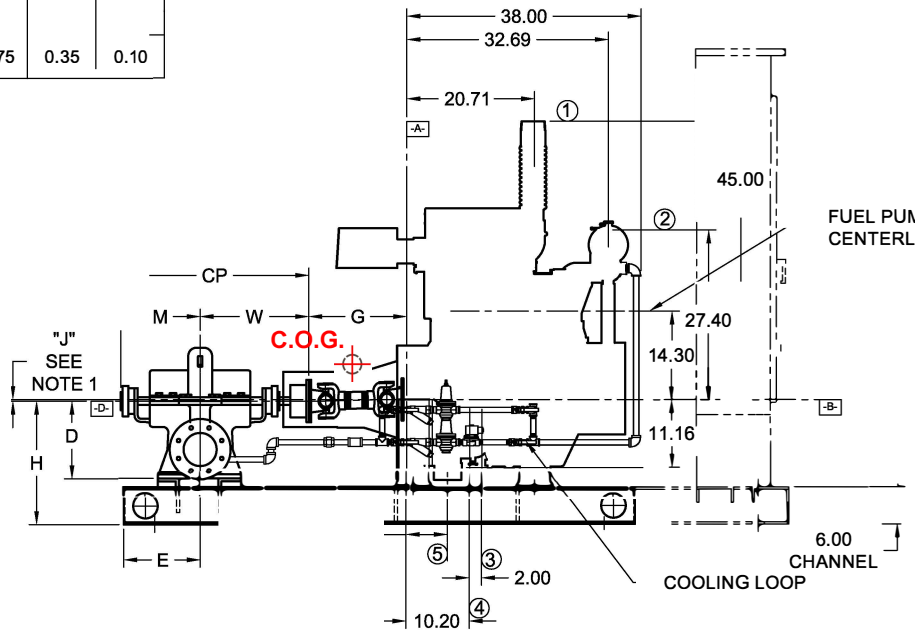
-A- - MOUNTING FACE OF FLYWHEEL
-B- - ENGINE CRANKSHAFT HORIZONTAL CENTERLINE
-C- - ENGINE CRANKSHAFT VERTICAL CENTERLINE
-D- - PUMP SHAFT HORIZONTAL CENTERLINE



LISTED DRIVESHAFT				
ENGINE MODEL	DRIVESHAFT MODEL	DIM: G	DIM: J	DIM: K
JU4H-UF 54	CDS30-S1	15.75	0.35	0.10

ITEM NO.	DESCRIPTION	CONNECTION SIZE
1	EXHAUST OUTLET CONNECTION	4" NPT EXHAUST
2	RAW WATER OUTLET	SEE NOTE 6.
3	FUEL SUPPLY CONNECTION (FARSIDE)	1/2" NPTF
4	FUEL RETURN CONNECTION (FARSIDE)	3/8" NPTF
5	HEATER JUNCTION BOX	VOLTAGE REQUIREMENTS: AC CONNECTION HEATER 1000 WATTS STD- 115 VAC ±5%-10% OPT- 230 VAC ±5%-10%





NOTES:
1. THE DRIVE SHAFT IS DESIGNED TO OPERATE AT A 2° ANGLE WITH THE INPUT AND OUTPUT SHAFTS IN PARALLEL. THE ENGINE CRANKSHAFT IS TO BE SET WITH A PARALLEL OFFSET OF "J" ± "K" INCHES VERTICALLY ABOVE THE PUMP SHAFT AND 0.00" ± "K" INCH PARALLEL OFFSET HORIZONTALLY RIGHT OR LEFT OF THE PUMP SHAFT. REFER TO THE CERTIFIED DRIVESHAFT INSTRUCTIONS MANUAL FOR ALIGNMENT INSTRUCTIONS.
2. BASE MUST BE COMPLETELY FILLED WITH GROUT PER NFPA 20.
3. PUMP IS CW (CLOCKWISE) ROTATION WHEN VIEWED FROM THE COUPLING END.
4. ALL DIMENSIONS ARE IN INCHES.
5. SUCTION AND DISCHARGE FLANGES DRILLED PER ANSI B16.1 (IF APPLICABLE).
6. RAW WATER DRAIN PIPING SIZE VARIES BASED UPON SITE CONDITIONS. ENGINE CONN. SIZE: 1" NPT

PUMP MODEL	PUMP SIZE		DIMENSIONS											
	SUCT.	DISCH.	A	B	H	E	M	W	CP	D	YY	X	S	Z
6x4x12F	6	4	78	34	21	12.50	13.25	17.50	30.75	12.00	13.00	11.50	7.75	7.75

NOT FOR CONSTRUCTION, INSTALLATION OR APPLICATION PURPOSES UNLESS CERTIFIED.

CERTIFIED FOR: NORM TEKNİK A.Ş. APPROVAL UL [X] FM [X] ULC [ ]

CUSTOMER ORDER NO: DAC02X12292 IDENTIFICATION NO:

	SIZE	MODEL	CURVE NO.	GPM	HEAD (FT.)	ROTATION	FLANGES SUCTION	FLANGES DISCHARGE
PUMP DATA	6x4x12F-M	8100		750	145PSI	CW	6"	4"

	MAKE	MODEL	HP	RPM	VOLTAGE	POLARITY	MAX ALTITUDE
ENGINE DATA	CLARKE	JU4H-UF54	145	3000	12	NEG.	1000m

SHOP ORDER: CERTIFIED BY: TOTAL WEIGHT 654kg DATE:

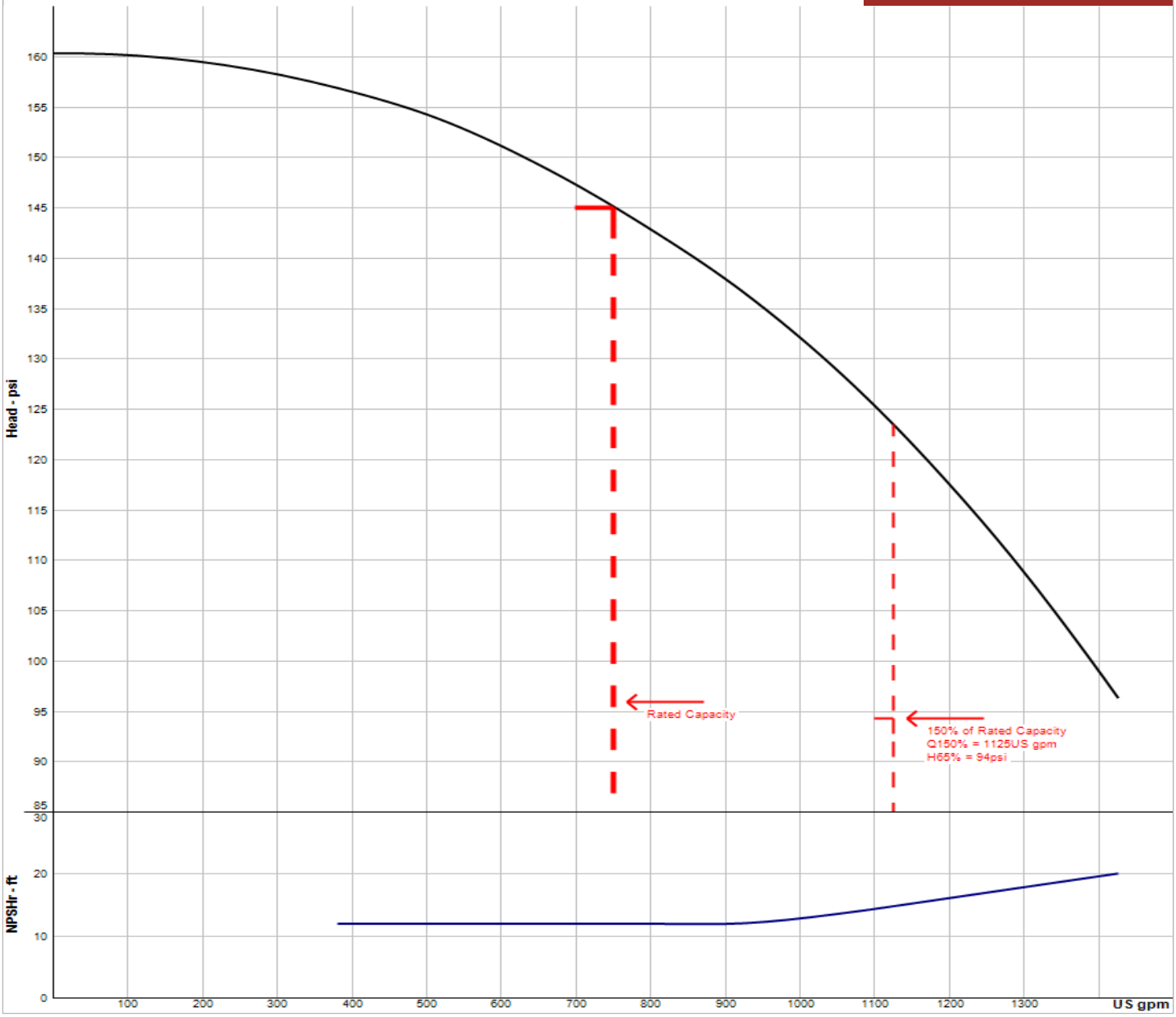
ALL VIEWS 3rd ANGLE PROJECTION

Job/Project:		Representative: Norm Teknik A.S.	
ESP-Systemwize: 3D96FC	Created On: 2021-04-09	Phone: +902163114041	
Location/Tag:		Email: norm@normteknik.com.tr	Revision:
Engineer:		Submitted By:	Date:
Contractor:		Approved By:	Date:

Performance Curve

140% Head of Rated Head 203PSI

8100
6x4x12F-M



Typical Performance Curve is shown. Fire Pumps are tested to ANSI/HI 14.6 acceptance grade 1U.
Rated Duty Point is guaranteed within the following tolerances: Flow 0% to + 10%, Head 0% to + 6%.
NO OTHER POINTS ARE GUARANTEED. PLEASE CONSULT FACTORY IF NEEDED.

Pump Selection Summary

Pump Capacity	750 US gpm	RPM	3000
Pump Head	145 psi	Impeller Diameter	11.141 in
Duty point Power	88.1 bhp	Motor HP	
Fluid Type	Water	Fluid Temperature	85 °F
Max BHP	118 hp		

FM-UL-cUL APPROVED RATINGS BHP/*KW*

JU4H MODEL ♦	RATED SPEED 1470	1760	2100	2350	2600	2800	3000	US-EPA (NSPS) Available Until ●
								12/31/10
								12/31/10
								12/31/13 +
								12/31/10
								12/31/10
								12/31/13 +
								12/31/12 +
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								12/31/09
								12/31/09
								12/31/09
				127 *95*	127 *95*			12/31/09
UF54						145 *108*	145 108	12/31/12 +

Picture shown represents a JU4H-NA low speed engine model

● USA EPA (NSPS) Emissions Compliant. Applies to John Deere model year per Table 4 of 40 CFR Part 60 Sub Part IIII.

♦ All Models are available for Export

+ Not Available in California

▼ Less than 100HP

▲ Greater than 99HP

SPECIFICATIONS

ITEM	JU4H MODELS UF54	UF54
Number of Cylinders	4	
Aspiration	T	
Rotation*	CW	
Overall Dimensions – in. (mm)	59.9 (1522) H x 51.6 (1310) L x 36.6 (930) W	
Crankshaft Centerline Height – in. (mm)	14 (356)	
Weight – lb (kg)	935 (424)	
Compression Ratio	17.0:1	
Displacement – cu. in. (L)	275 (4.5)	
Engine Type	4 Stroke Cycle – Inline Construction	
Bore & Stroke – in. (mm)	4.19 x 5.00 (106 x 127)	
Installation Drawing	D534	
Wiring Diagram AC	C07651	
Wiring Diagram DC	C072145	
Engine Series	John Deere 4045 Series	
Speed Interpolation	Optional	

Abbreviations: CW – Clockwise NA – Naturally Aspirated T – Turbocharged L – Length W – Width H - Height
*Rotation viewed from Heat Exchanger / Front of engine

CERTIFIED POWER RATING

- Each engine is factory tested to verify power and performance.
- Although FM-UL ratings are shown at specific speeds, Clarke engines with optional speed interpolation can be applied at any intermediate speed. To determine the intermediate speed power; make a linear interpolation from the Clarke FM-UL power curve. Contact Clarke or your Pump OEM Representative to obtain details.

c UL us

Meets NFPA 20 Requirements

FM C US APPROVED

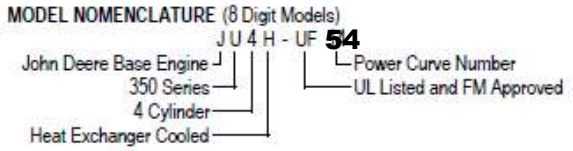
ENGINE RATINGS BASELINES

- Engines are to be used for stationary emergency standby fire pump service only. Engines are to be tested in accordance with NFPA 25.
- Engines are rated at standard SAE conditions of 29.61 in. (752.1 mm) Hg barometer and 77°F (25°C) inlet air temperature [approximates 300 ft. (91.4 m) above sea level] by the testing laboratory (see SAE Standard J 1349).
- A deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000 ft. (305 m) altitude above 300 ft. (91.4 m)
- A deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.

ENGINE EQUIPMENT

EQUIPMENT	STANDARD	OPTIONAL
Air Cleaner	Direct Mounted, Washable, Indoor Service with Drip Shield	Disposable, Drip Proof, Indoor Service Outdoor Type, Single or Two Stage (Cyclonic)
Alarms	Overspeed Alarm & Shutdown, Low Oil Pressure, Low & High Coolant Temperature, High Raw Water Flow, High Raw Water Temperature	Low Coolant Level, Low Oil Level, Oil Filter Differential Pressure, Fuel Filter Differential Pressure, Air Filter Restriction
Alternator	12V-DC, 42 Amps with Poly-Vee Belt and Guard	24V-DC, 40 Amps with Poly-Vee Belt and Guard
Coupling	Bare Flywheel	Listed Driveshaft and Guard, UF10/12/14, UF20/22/24 – CDS10-SC; UF34, UFH0/H2, UF40/42 – CDS20-SC; UF58/50/52/54 – CDS30-S1
Engine Heater	115V-AC, 1000 Watt	230V-AC, 1000 Watt
Exhaust Flex Connection	For NA Engines - SS Flex, NPT(M) Connection, 3” For T Engines - SS Flex, 150# ANSI Flanged Connection, 4”	For NA Engines – SS Flex, 150# ANSI Flanged Connection, 4” For T Engines - SS Flex, 150# ANSI Flanged Connection, 5”
Exhaust Protection	Blankets on UF10/12/14/20/22/24; Metal Guards on Manifolds and Turbocharger on UF34/H0/H2/40/42/58/50/52/54	
Flywheel Housing	SAE #3	
Flywheel Power Take Off	11.5” SAE Industrial Flywheel Connection	
Fuel Connections	Fire Resistant, Flexible, USA Coast Guard Approved, Supply and Return Lines	SS, Braided, cUL Listed, Supply and Return Lines
Fuel Filter	Primary Filter with Priming Pump	
Fuel Injection System	Stanadyne, Direct Injection	
Fuel Solenoid	12V-DC Energized to Stop (ETS)	12V-DC Energized to Run (ETR); 24V-DC Energized to Run (ETR); 24V-DC Energized to Stop (ETS)
Governor, Speed	Constant Speed, Mechanical	
Heat Exchanger	Tube and Shell Type, 60 PSI (4 BAR), NPT(F) Connections – Sea Water Compatible	
Instrument Panel	English and Metric, Tachometer, Hourmeter, Water Temperature, Oil Pressure and Two (2) Voltmeters	
Junction Box	Integral with Instrument Panel; For DC Wiring Interconnection to Engine Controller	
Lube Oil Cooler	Engine Water Cooled, Plate Type	
Lube Oil Filter	Full Flow with By-Pass Valve	
Lube Oil Pump	Gear Driven, Gear Type	
Manual Start Control	On Instrument Panel with Control Position Warning Light	
Overspeed Control	Electronic with Reset and Test on Instrument Panel	
Raw Water Cooling Loop – w\Alarms	Galvanized	Seawater, All 316SS, High Pressure
Raw Water Cooling Loop – Solenoid Operation	Automatic from Fire Pump Controller and from Engine Instrument Panel (for Horizontal Fire Pump Applications)	Not Supplied (for Vertical Turbine Fire Pump Applications)
Run – Stop Control	On Instrument Panel with Control Position Warning Light	
Starters	Two (2) 12V-DC	Two (2) 24V-DC
Throttle Control	Adjustable Speed Control, Tamper Proof	
Water Pump	Centrifugal Type, Poly-Vee Belt Drive with Guard	

Abbreviations: DC –Direct Current, AC – Alternating Current, SAE – Society of Automotive Engineers, NPT(F) – National Pipe Tapered Thread (Female), NPT(M) – National Pipe Tapered Thread (Male), NA – Naturally Aspirated, T- Turbocharged, ANSI – American National Standards Institute, SS – Stainless Steel



TORNA TECH

NORM TEKNİK
Yangın Korunum Sistemleri

GPD Model

Diesel Engine Fire Pump Controllers

Standard Features

- ViZiTouch operator interface
- NEMA 2 assembly
- Pressure and event recorder
- Battery voltage and amperage display
- Run Test push button
- HAND - OFF - AUTO selector switch
- Manual crank pushbuttons (2)
- Stop pushbutton
- Remote start / deluge valve start provision
- Pressure transducer and run test solenoid valve externally mounted
- Gland plate
- Audible alarm
- Alarm contacts for remote indication
- Weekly exercise programmable time clock
- Crank cycle
- Programmable automatic shutdown (minimum run timer)
- Programmable sequential start timer (delay start timer)

NFPA MEMBER 12-13

FM APPROVED

c UL us

Engine Selection | De-rate Calculator | Speed Interpolator

USA Purchased, Heat Exchanger Cooled, Export

Date	4/9/2021	Log Number	61783
Type	**Clarke Engine Enclosure:** None		
Pump Requirements	**Pump Max Power:** 118 BHP **RPM(s):** 3000		
Derate Parameters	**Altitude:** 1000 meters **Ambient Temperature:** 38° C **Right Angle Gear Loss:** 0% **Derate Percent:** 11.3%		
Application Information	**Customer:** NORM TEKNİK A.S. **Job Name:** **Job Number:** **Run By:**		

NFPA20- 2019

11.2.2.4* A deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for each 1000 ft (300 m) of altitude above 300 ft (91 m).

11.2.2.5* A deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.

Results:

Model	RPM	Rated BHP (kW)	Ventilation Fan Loss BHP (kW)	Available BHP (kW)	Derate BHP (kW)	Interpolation Data (RPM, BHP)	EPA Emission Tier	Emission Data Available
JU4H-UF54	3000	145 (108)	-	-	128.6 (95.8)	Not Used	NSPS Tier 1-Compliant	Yes

Note: Derated BHP takes into account all the input derates for altitude, temperature and right angle gearbox. When no derates are input, this column will be blank and engine selection(s) will be based upon rated BHP. When the Derated BHP column is filled in, then the engine selection(s) are based upon this value. These derates are based on NFPA 20 standard.

Definitions: **UL/FM** - Engine that is Underwriters Laboratories Listed and Factory Mutual Approved.

LPCB - Engine that is Loss Prevention Council Board Approved

NL - Non-Listed Engine has no private agency certification, like UL, or insurance company certification, like FM. It applies to any engine that is not UL Listed or FM Approved, and is built to meet individual European country specifications.

FUEL TANK - RESULTS

Customer: Norm Teknik A.S. | **Job Name:** | **Job Number:**

TANK INFORMATION

ENGINE DATA

Engine Model: JU4H-UF54
Engine Speed: 3000
Rated Power: 145 HP

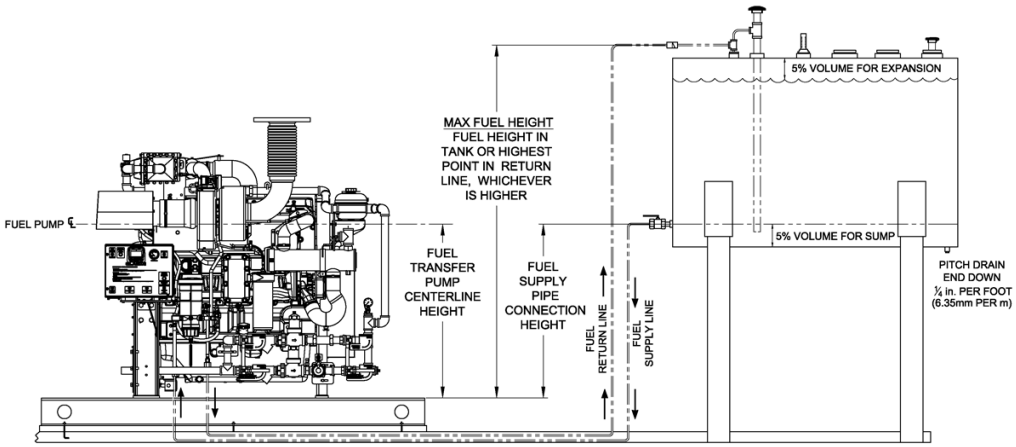
NFPA SIZES

Fuel Consumption: 11.4 Gallons/Hour
NFPA Min. Tank Size: 159.5 Gallons
NFPA Min. Run Time: 12.7 Hours
Size for 8 Hour Run Time: 100.3 Gallons

ACTUAL SIZES

Actual Tank Size: Unknown
Actual Run Time: Unknown

FUEL TANK LAYOUT



NOTES:

- Per NFPA 20 11.4.1.3.1 Fuel supply tank(s) shall have a capacity at least equal to 1 Gal/HP (5.07L/kW), plus 5% volume for expansion and 5% volume for sump.
- NFPA Tank Run Time = Listed Power ÷ Fuel Consumption
- Min. Size for 8 Hour Run Time = Fuel Consumption x 8 hours x 1.1
- Actual Tank Runtime = Actual Tank Size x 0.9 ÷ Fuel Consumption
- The fuel tank outlet shall not be lower than the fuel transfer pump
- Refer to the latest edition of NFPA 20 for all fuel tank and fuel line requirements

Pump Room Ventilation Calculator - Results

Calculations made 04/09/2021

Application Data

Customer: NORM TEKNİK A.S.

Job Name:

Job Number:

Input By:

Input Data

Engine Model: JU4H-UF54

Rated HP: 145

Rated Speed (RPM): 3000

Combustion air flow (M³/Min): 11.7 [2]

ΔT - Maximum design temperature rise inside pump room (°C): 20 [3]

Engine radiated heat (kW): 13.4 [2]

Pump Room Calculations [1]

	11.7	Combustion air flow (M³/Min)
+	33.3	Flow for engine radiated heat (M³/Min)
	45.0	Total (M³/Min)

[1] The formula used in this calculation provides a general guideline for ventilation air flow required in the pump room to carry away the Engine Radiated Heat load at Rated HP. This recommended air flow may not be appropriate for every installation and all environmental conditions.

[2] You will find Engine Combustion Air Flow and Radiated Heat on the Clarke model specific Installation & Operation (I&O) datasheet. I&O datasheets can be downloaded from www.clarkefire.com.

[3] ΔT is the design temperature rise you will allow in the pump room to carry away the Engine Radiated Heat. Typically 8°C - 11°C is used for this value but a higher value can be used. Note that the pump room temperature should not exceed 49°C. Also, for pump room temperatures over 25°C you must also apply the appropriate NFPA 20 BHP Derate for ambient temperature.

[4] NFPA 20 requires that the pressure drop across air inlet and outlet louvers not exceed 5mm of water while flowing this total air flow. Consult a louver manufacturer to obtain pressure drop versus flow curves on specific louvers to select one that satisfies this requirement.

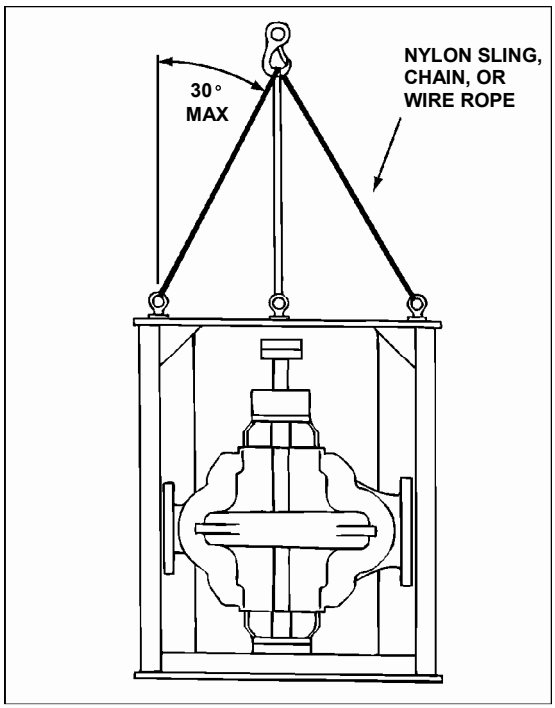


FIGURE 7 – MODEL 300

STORAGE

The following storage procedures apply to the Series 8100 pump only. Other accessories such as motors, steam turbines, gears, etc., must be handled per the respective manufacturer's recommendations.

Temporary

Temporary storage is considered one month or less. If the pump is not installed and operated soon after arrival, store it in a clean, dry place that has slow, moderate changes in ambient temperature. Rotate the shaft periodically to coat the bearings with lubricant and to retard oxidation, corrosion, and to reduce the possibility of false brinelling of the bearings. Shaft extensions and other exposed machine surfaces should be coated with an easily removable rust preventative such as Ashland Oil Tectyl No. 502C.

For oil lubricated bearings, fill the frame completely with oil. Before putting equipment into operation, drain the oil and refill to proper level.

Long Term

Storage longer than one month is considered long term storage. Follow the same procedure for temporary storage with the following addition. Add one half ounce of a corrosion inhibiting concentrated oil such as Cortec Corp. VCI-329 (for both grease and oil lubricated bearings). Seal all vents and apply a water proof tape around the oil seals in the bearing frame. Remember for pumps with oil lubricated bearings to drain the oil from the frame and refill to the proper level before running the pump.

LOCATION

The pump should be installed as near to the suction supply as possible, with the shortest and most direct suction pipe practical. The total dynamic suction lift (static lift plus friction losses in suction line) should not exceed the limits for which the pump was sold.

When installing the pump, consider its location in relation to the system to assure that sufficient Net Positive Suction Head (NPSHA) is available at the pump inlet connection. Available NPSH (NPSHA) must always equal or exceed the required NPSH (NPSHR) of the pump.

The pump must be primed before starting. Whenever possible, the pump should be located below the fluid level to assure priming. This condition provides a positive suction head on the pump. It is also possible to prime the pump by pressurizing the suction vessel.

The pump should be installed with sufficient accessibility for inspection and maintenance. A clear space with ample head room should be allowed for the use of an overhead crane or hoist to lift the unit.

NOTE: Allow a sufficient amount of space to dismantle pump without disturbing the pump suction and discharge piping.

Select a dry place above the floor level wherever possible. Take care to prevent pump from freezing during cold weather when not in operation. Should the possibility of freezing exist during a shut-down period, the pump should be completely drained, and all passages and pockets where liquid might collect should be blown out with compressed air.

Make sure there is a suitable power source available for the pump driver. If motor driven, the electrical characteristics of the power source should be identical to those shown on motor data plate.

FOUNDATION

The pump is built to provide years of service if installed properly and attached to a suitable foundation. A base of concrete weighing 2 ½ to 5 times the weight of the pump is recommended.

The foundation should be poured without interruption to within 1/2 to 1 ½ inches of the finished height. The top surface of the foundation should be well scored and grooved before the concrete sets; this provides a bonding surface for the grout.

Foundation bolts should be set in concrete as shown in Figure 8. An optional 4-inch long tube around the bolts at the top of the concrete will allow some flexibility in bolt alignment to match the holes in the base plate. Allow enough bolt length for grout, shims, lower base plate flange, nuts and washers. The foundation should be allowed to cure for several days before the base plate is shimmed and grouted.

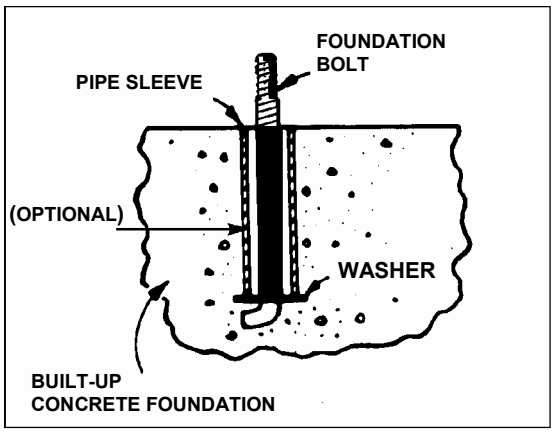


FIGURE 8 – FOUNDATION

BASE PLATE SETTING (BEFORE PIPING)

NOTE: This procedure assumes that a concrete foundation has been prepared with anchor or hold down bolts extending up ready to receive unit. It must be understood that pump and motor have been mounted and rough aligned at the factory. If motor is to be field mounted, consult factory for recommendations. AC Fire Pump CANNOT assume responsibility for final alignment.

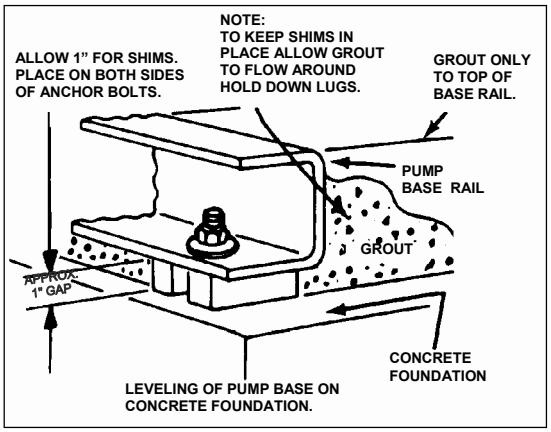


FIGURE 9A – SETTING BASE PLATE AND GROUTING YEAR 2000 STYLE BASE FOR BOTH MOTOR AND ENGINE DRIVEN UNITS

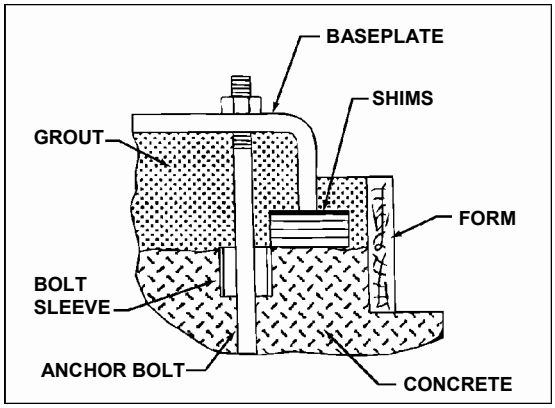


FIGURE 9B – GROUTING PRE-YEAR 2000 STYLE BASE FOR MOTOR DRIVEN UNITS

a. Use blocks and shims under base for support at anchor bolts and midway between bolts, to position base approximately 1" above the concrete foundation, with studs extending through holes in the base plate.

b. By adding or removing shims under the base, level and plumb the pump shaft and flanges. The base plate does not have to be level.

c. Draw anchor nuts tight against base, and observe pump and motor shafts or coupling hubs for alignment. (Temporarily remove coupling guard for checking alignment.)

d. If alignment needs improvement, add shims or wedges at appropriate positions under base, so that retightening of anchor nuts will shift shafts into closer alignment. Repeat this procedure until a reasonable alignment is reached.

NOTE: Reasonable alignment is defined as that which is mutually agree upon by pump contractor and the accepting facility (final operator). Final alignment procedures are covered under "Alignment Procedures."

e. Check to make sure the piping can be aligned to the pump flanges without placing pipe strain on either flange.

f. Pour grout in the base plate completely (See "Grouting Procedure") and allow grout to dry thoroughly before attaching

piping to pump. (24 hours is sufficient time with approved grouting procedure.)

GROUTING PROCEDURE

Grout compensates for uneven foundation, distributes weight of unit, and prevents shifting. Use an approved, non-shrinking grout, after setting and leveling unit (See Figure 9).

a. Build strong form around the foundation to contain grout.

b. Soak top of concrete foundation thoroughly, then remove surface water.

c. Base plate should be completely filled with grout.

d. After the grout has thoroughly hardened, check the foundation bolts and tighten if necessary.

e. Check the alignment after the foundation bolts are tightened.

f. Approximately 14 days after the grout has been poured or when the grout has thoroughly dried, apply an oil base paint to the exposed edges of the grout to prevent air and moisture from coming in contact with the grout.

ALIGNMENT PROCEDURE

NOTE: A flexible coupling will only compensate for small amounts of misalignment. Permissible misalignment will vary with the make of coupling. Consult coupling manufacturer's data when in doubt.

Allowances are to be made for thermal expansion during cold alignment, so that the coupling will be aligned at operating temperature. In all cases, a coupling must be in alignment for continuous operation. Even though the coupling may be lubricated, misalignment causes excessive wear, vibration, and bearing loads that result in premature bearing failure and ultimate seizing of the pump. Misalignment can be angular, parallel, or a combination of these, and in the horizontal and vertical planes. Final alignment should be made by moving and shimming the motor on the base plate, until the coupling hubs are within the recommended tolerances measured in total run-out. All measurements should be taken with the pump and motor foot bolts tightened. The shaft of sleeve bearing motors should be in the center of its mechanical float.

NOTE: Proper alignment is essential for correct pump operation. This should be performed after base plate has been properly set and grout has dried thoroughly according to instructions. Final alignment should be made by shimming driver only. Alignment should be made at operating temperatures.

> ⚠ **WARNING: Unexpected Start-up Hazard**
> Disconnect and lock out power before servicing. Failure to follow these instructions could result in serious personal injury or death and property damage.

ANSI/OSHA COUPLER GUARD REMOVAL/INSTALLATION

> ⚠ **WARNING: Unexpected Start-up Hazard**
> Disconnect and lock out power before servicing. Failure to follow these instructions could result in serious personal injury or death and property damage.

NOTE: Do not spread the inner and outer guards more than necessary for guard removal or installation. Over spreading the guards may alter their fit and appearance.

Removal

a. Remove the two capscrews that hold the outer (motor side) coupler guard to the support bracket(s).

b. Spread the outer guard and pull it off the inner guard.

c. Remove the capscrew that holds the inner guard to the support bracket.

d. Spread the inner guard and pull it over the coupler.

Installation

a. Check coupler alignment before proceeding. Correct if necessary.

b. Spread the inner guard and place it over the coupler.

c. With the inner guard straddling the support bracket, install a capscrew through the hole (or slot) in the support bracket and guard located closest to the pump. Do not tighten the capscrew.

d. Spread the outer guard and place it over the inner guard.

e. Install the outer guard capscrews by following the step stated below which pertains to your particular pump:

   i. *For pumps with a motor saddle support bracket:* Ensure the outer guard is

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Submittal Document

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