

P E E R L E S S P U M P C O M P A N Y

PES
peerless engineered systems

Unequaled

Unrivaed

Performance



www.peerlesspump.com



www.epumpdoctor.com



Peerless Pump Company
2005 Dr Martin Luther King Jr St.
Indianapolis, IN 46202

P E E R L E S S P U M P C O M P A N Y

PES
peerless engineered systems



Reliability

When it matters

PEERLESS PUMP FIRE PROTECTION

Thousands of Peerless Pump installations (UL, ULC or FM approved) deliver superior fire protection to facilities worldwide. For over eighty years, Peerless Pump has been offering complete service, from engineering assistance to in-house fabrication to field start-up.

Products are designed from a broad selection of pumps, drives, controls, baseplates and accessories. Pump choices include horizontal, in-line and end suction centrifugal fire pumps, as well as vertical turbines.

EQUIPMENT

Peerless Pump can design and build systems ranging from a simple pump-driver arrangement on a skid to a fully enclosed, completely integrated fire protection system. Peerless can provide systems that produce up to 5000 GPM in a diesel engine or electric motor drive. All the required controllers, fittings and ancillary equipment per NFPA 20 can be part of the packaged equipment.

ACCURATE PREDETERMINED COST

With a component system, an accurate estimate of the total cost is not always possible. Availability and interfacing of separately manufactured components can produce serious cost over-runs as well as unforeseen operational problems. A Peerless Pump packaged system will help eliminate these headaches. Total cost and schedule are accurately determined long before installation is completed.

DESIGN

Designed to your specifications or to our standards, Peerless packaged systems are available with or without enclosures. Systems are available with one or more pump/driver combinations, and include controls, inlet/outlet piping, valves, and fittings per NFPA 20.

FEATURES

Complete Unit Responsibility
State of the Art Engineering and Designs
Value Added Services for the End User
Reduced Installation Costs
Worldwide Technical and Service Support
ISO 9001 Manufacturing Facility

FACTORY TESTING

The fire pump, driver, and controller are factory tested. The packaged system piping is hydrostatically tested to ensure piping integrity. An electrical test is performed to verify the function of each component. By taking the system approach to the pump package design, important safety features are integrated into the system. A wide variety of test options are available including complete witnessed factory unit testing.

SINGLE SOURCE SERVICE AND WARRANTY

Peerless Packaged Systems will save you valuable time when servicing is required. Whether it's a relief valve, pump gauge, control circuit, or installation supervision, our worldwide network of certified service engineers can do the job.

Our experienced staff is available to assist you with the entire process: design, manufacture, start-up, and aftermarket service.

DESIGN

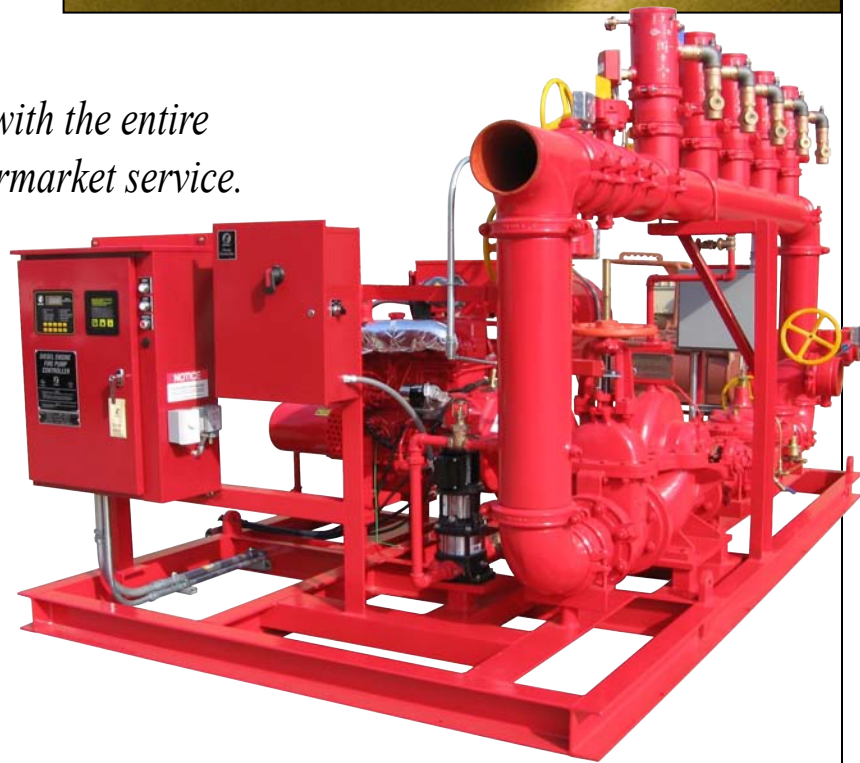
- Specifications – Peerless Pump's dedicated staff will review your specifications or write them for you. As experts in the field, we will provide you the peace of mind of knowing your system will be right for your needs.
- System Sizing – Peerless will develop a system that fits your requirements. We will help you determine the performance characteristics and layout, saving you time and money.
- Compliance – Peerless' experienced staff will ensure your system complies with industry codes (UL, FM, NFPA13, FPA 20, & NFPA 37, IBC, NEC)

PURCHASING

- Detailed Pricing – Peerless will provide a detailed, comprehensive quote, to our specifications or yours. Purchasing a packaged system will eliminate the hidden costs of manpower involved in building the system on site. You will save as much as 28% over a component system assembled on site.
- Single Source - You will only issue one purchase order and Peerless will build all of the major fire protection components into a single packaged system. You will save valuable time by reducing your fire pump system supply base to one vendor.
- Quality - Peerless is an ISO 9001 certified manufacturing facility so you will have the peace of mind that we will get things done right.
- One Contact – Our dedicated project management staff will be available throughout the design, manufacture, and start-up of your unit so you'll only have one contact for the entire project.

CONSTRUCTION

- Packaged System – Because you are buying a packaged system, you will not have to manage multiple crews to build the system on your site, we will send a complete package for installation that can be as simple as three connections.



- Schedule – Peerless manufactures packaged pump systems in a controlled environment ensuring an accurate and reliable shipment schedule. You will avoid the hassles of weather delays and your system can be built at any time throughout the year. This will greatly simplify related project scheduling.
- Documentation – Peerless' professional engineering staff is capable of handling all levels of documentation, including the documentation lists of the most demanding end users.
- Equipment – You are dealing with the pump OEM. Peerless Pump provides packaged equipment constructed by experienced, quality conscious craftsmen working to achieve the highest industry standards. We have the confidence and ability to stand behind our product throughout the world.

INSTALLATION

- Easy – It does not get any easier than this. Because you are buying a Peerless packaged system, installation can be as simple as connecting the suction piping, discharge piping, and the incoming power.
- Instructions – Our project manager will provide detailed installation instructions prior to shipping the unit to your jobsite. You'll know exactly what to expect when the unit arrives so you can plan accordingly.

START-UP

- Acceptance Testing – A Peerless Factory Authorized Representative is available for equipment commissioning and Fire Pump acceptance testing.
- Training – Peerless can provide training for your Operations staff in a classroom setting or at the equipment location.
- Geography – Worldwide OEM start-up capability. Our factory based and trained service engineers can travel throughout the world to your location to provide expert technical assistance for your quality Peerless packaged equipment.

SERVICE

- Warranty – Because you have purchased a Peerless Packaged System, you will have one point of contact for any warranty related issues. Peerless takes Unit Responsibility for all packaged systems. If there is a problem with any component in the system, Peerless is there to solve it, saving you time and money. We eliminate finger pointing between component suppliers.
- Parts – Peerless Pump stocks a huge inventory of spare parts and provides recommended spare parts lists for packaged systems allowing you the option to stock the expendable items you will need for normal operation. This will reduce your downtime and save you money.

installation

PES
peerless engineered systems



FROM OUR PAD...



TO YOURS.



800-879-0182 or visit www.peerlesspump.com

Peerless Engineered Systems (PES) is the packaged system division of Peerless Pump Company. PES has extensive, in-house experience with the design and manufacture of packaged systems for various applications. We have installations in the field for a broad spectrum of end-users including: Commercial Fire Protection, Industrial & Power Generation, Offshore Fire Protection, and many specialty Design and Build projects.

COMMERCIAL FIRE PROTECTION

The Commercial Fire market consists of end-users such as schools, hospitals, churches, office buildings, shopping centers, etc. PES will provide a packaged system including the pump, driver, controls, piping and valves.



The system can be put in place during any construction phase of a project. This can greatly reduce the problems that are common with juggling multiple discipline crews associated with on site erected component systems. We can also design and build a system that will fit into a current installation. If required, the skid can be split so that it fits through existing doorways. Many commercial systems are built with IBC compliant enclosures complete with ventilation and climate control compliant with NFPA 20. The buildings around these systems can be manufactured in a multitude of styles and colors.

INDUSTRIAL AND POWER

The Industrial & Power market is made up of power generating plants, manufacturing facilities, and other heavy industrial end-users requiring fire protection. The Peerless engineering staff can design these systems or we can build the system in accordance with the end-users specifications. PES has worked with many large engineering firms to build packaged systems for new power plants and manufacturing facilities all across the United States. PES Engineers and Project Managers are experts at evaluating specifications and providing valuable input to system design. Our experience in this field is unparalleled and you can be confident the system provided will meet the needs of the end-user.



OFFSHORE FIRE PROTECTION

The Offshore market consists of drilling platforms, production platforms, or onshore storage and distribution terminals. PES has built systems that are installed in the Gulf of Mexico, Indian Ocean, South Pacific, Mediterranean Sea and many coastal regions around the world.



DESIGN AND BUILD

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

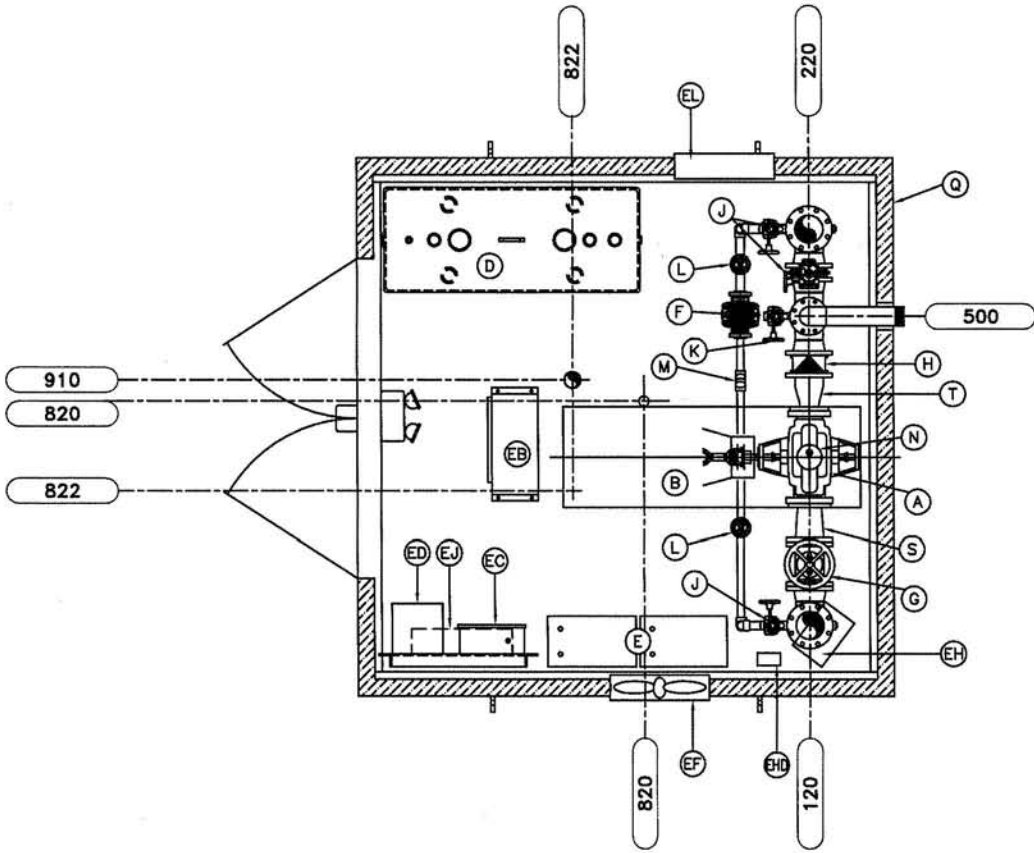


commercial fire

PACKAGE COLOR SCHEME	
ENCLOSURE:	
ROOF:	TBA
EXTERIOR WALL:	TBA
TRIM:	TBA
DOORS:	TBA
INTERIOR:	TBA
PENETRATIONS:	TBA
SKID:	TBA
PIPING:	TBA

JOCKEY PUMP MDL: CR1-10 CONDITIONS:	
GPM:	4.1
TDH:	283.4
PSI:	122.7
REQ'D RPM:	3450
REQ'D HP:	1.0

ENGINE DRIVEN FIREPUMP MDL: 4AEF10G CONDITIONS:	
GPM:	<u>500</u>
TDH:	<u>231</u>
PSI:	<u>100</u>
REQ'D RPM:	<u>3525</u>
REQ'D HP:	<u>41.6</u>



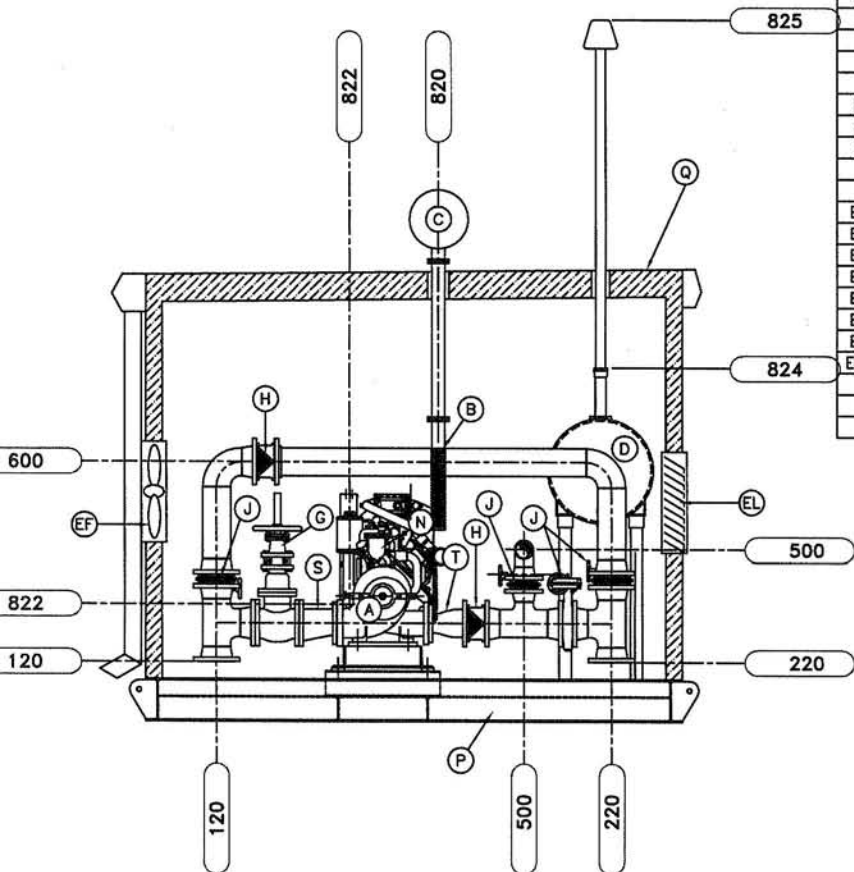
PLAN VIEW

USER CONNECTION LEGEND					
CUST REF	T.P.-NO.	SIZE	TYPE	RATING	DESCRIPTION
	120	6'	RF FLG	150#	SUCTION, ENGINE DRIVEN PUMP
	220	6'	RF FLG	150#	DISCHARGE, ENGINE DRIVEN PUMP
	500	4'	NPT		DISCHARGE, HOSE HEADER

LINE IDENTIFICATION LEGEND					
CUST REF	T.P.-NO.	SIZE	TYPE	RATING	DESCRIPTION
	600	6'		150#	BY PASS LINE
	824	2'			FILL FUEL
	825	2'			FUEL TANK VENT
	820	3'	NPT		DISCHARGE, ENGINE EXHAUST
	822	1'	NPT		DISCHARGE, ENGINE COOLING WATER
	901	1'			SPRINKLER TEST VALVE DRAIN DISCHARGE (NOT SHOWN)
	910	4'			DRAIN (BY OTHERS)

CHK'D	BY	DATE	NO.	

- NOTES**
1. ALL DIMENSIONS ARE IN INCHES.
 2. SKID IS TO BE OPEN STYLE FOR CONCRETE FILL BY OTHERS. COATING OF SKID TO FACILITATE A GROUT SURFACE.
 3. ALL MAIN SKID BEAMS AT THE PERIMETER OF THE SKID SHALL BE ANCHOR BOLTED TO THE FOUNDATION. REFER DWG No. 622556-02AB FOR LOCATIONS. (ANCHOR BOLTS BY OTHERS)
 4. ENGINE COOLING WATER TO FLOW UNRESTRICTED BACK TO OPEN DRAIN. DO NOT PIPE INTO OTHER PIPING SYSTEM, WHICH MAY CAUSE BACK PRESSURE.
 5. 1/2"-13UNC GROUNDING LUGS TO BE PROVIDED AT OPPOSITE CORNERS. (PL1" x 2" SQ. w/1/2"-13UNC TAPPED HOLE)
 6. SOME ITEMS NOT SHOWN FOR CLARITY. (PLUGS, GAUGES, PRESSURE LINES, STRAINERS, ETC.)
 7. TAMPER SWITCHES ARE PROVIDED ON ALL BUTTERFLY VALVES. SWITCH WIRING TO FIRE ALARM SYSTEM BY OTHERS.



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	SUPPLIER	MODEL No.	WEIGHT
A	ONE	PUMPS: HORIZONTAL SPLITCASE, BRONZE FITTED, UL/FM	PEERLESS	4AEF10G	330
B	ONE	DIESEL ENGINE: 58 BHP @ 3525 RPM, 12V NG, 115VOLT 50/60HZ HEATER, UL/FM/ULC, DRIVESHAFT W/ENGINE	CLARKE	VMFP-04HN	1317
C	ONE	SILENCER: 2.5" RESIDENTIAL GRADE SPARK ARRESTOR (SHIPPED LOOSE)	GT EXHST	202-41025	50
D	ONE	FUEL TANK: 115 DOUBLE WALL WITH FUEL SYSTEM PER NFPA20			530
E	2	BATTERIES: 12VLT, DUAL LEAD ACID W/RACK	PES		200
F	ONE	JOCKEY PUMP: 1.0 HP, 3PH, 460V, W/ODP MOTOR	GRUNDFOS	CRI-10	61
G	ONE	GATE VALVE: 6" 175 PSI, OS&Y, FF, UL/FM W/TAMPER SWITCH	STOCKHAM	G-634	186
H	2	CHECK VALVE: 6" 250PSI, WAFER STYLE, UL/FM	STOCKHAM	VG-990	50
J	3	BUTTERFLY VALVE: 6" WAFER STYLE, UL/FM	GRINNELL	8806941	120
K	ONE	BUTTERFLY VALVE: 4" WAFER STYLE, UL/FM	GRINNELL	8804941	27
L	2	GATE VALVE: 1" 175 PSI, OS&Y, FF, UL/FM	STOCKHAM	B-133	10
M	ONE	CHECK VALVE: 1" 200PSI, WAFER STYLE, UL/FM	NIBCO	KT-403-W	3
N	ONE	AUTO AIR RELEASE VALVE: 3/4" 75-300 PSI, UL/FM	APCO	MdLS0	5
P	ONE	SKID: W10 x 22, 128" WIDTH x 128" LENGTH			3000
Q	ONE	BUILDING: STEEL SELF FRAMING CONSTRUCTION WITH FORMED METAL LINING, 3" INSULATION IN WALL & 6" CEILING BUILDING INCLUDES, (1) 6070 DOOR, (1) HEATER (1) EXHAUST FAN, (1) POWER LOUVER, (1) EMG. LIGHT, (1) OUTSIDE LIGHT, LIGHTS			4600
R	2	GAUGES: SUCT. & DISCH, 3 1/2" W/VALVE (NOT SHOWN)	WILKERSON		6
S	ONE	CAST IRON: 6" x 5" ECCENTRIC REDUCER	GRINNELL	CLASS 125	51
T	ONE	CAST IRON: 6" x 4" CONCENTRIC REDUCER	GRINNELL	CLASS 125	50
ELECTRICAL COMPONENTS					
EB	ONE	CONTROLLER: DIESEL	MASTER	DCFRA12V	290
EC	ONE	CONTROLLER: Jockey	MASTER	JPC	40
ED	ONE	MINI POWER ZONE 7.55KVA	SQUARE D	MPZ7S40F	175
EF	ONE	EXHAUST FAN WITH GRAVITY LOUVER	QMARK	LPE12S	40
EH	ONE	BUILDING HEATER (5KW)	QMARK	MUHOS-41	40
EJ	ONE	POWER JUNCTION BOX (GUTTER)	MILBANKS	MB6624	7
EL	ONE	POWER LOUVER 16" X 16"	NCA	XABD-2	35
EHD	ONE	BUILDING HEATER DISCONNECT	SQD	H361RB	25
TOTAL LBS					11248

MANUFACTURERS SUBJECT TO CHANGE BASED UPON AVAILABILITY

BUYER:
PROJECT:
P.O. No.:
ITEM No.:
LOCATION: PRINCE GEORGE COUNTY, MD

**PEERLESS
ENGINEERED SYSTEMS**

11995 FM 529
HOUSTON, TEXAS 77041
PHONE: 713-896-0220
FAX: 713-896-0250
A DIVISION OF STERLING FLUID SYSTEMS

ISO 9001 Certified

TOLERANCES	PROPRIETARY DATA
UNLESS OTHERWISE SPECIFIED	THIS DRAWING IS THE PROPERTY OF PEERLESS ENGINEERED SYSTEMS INC., & IS NOT TO BE REPRODUCED OR EMPLOYED FOR ANY MANUFACTURING PURPOSES EXCEPT UPON THE EXPLICIT INSTRUCTION OF PEERLESS ENGINEERED SYSTEMS INC., OR AT THE COMPLETION OF THE JOB, IT IS TO BE RETURNED TO PEERLESS ENGINEERED SYSTEMS INC., HOUSTON, TEXAS.
FRACTIONAL +/- 1/4"	
DECIMAL X.X +/- 0.1 X.XX +/- 0.03 X.XXX +/- 0.005	
ANGLE +/- 1°	

VERTICAL AND HORIZONTAL FIRE PUMP PACKAGES,
SERVICE AND REPAIR OF PEERLESS, SPP AND LABOUR PUMPS

COMMERCIAL FIRE
GENERAL ARRANGEMENT
SIMPLEX FIREWATER PUMP HOUSE PACKAGE

SHEET No: 1 of 1
SFS REF: FILE NAME:

DATE: 01/03/05	BY: CCR	CHECKED: JC	APPROVED: RPB	SCALE: NTS	0
----------------	---------	-------------	---------------	------------	---

REVISION - DESCRIPTION

unequalled

PES
peerless engineered systems



PEERLESS
FIRE PUMP
UNITS,
SYSTEMS,
AND HOUSED
PACKAGED
SYSTEMS
PROVIDE
UNEQUALLED
RELIABILITY
WORLDWIDE.

800-879-0182 or visit www.peerlesspump.com

Peerless designs tough, versatile products to meet your pumping needs. The fire pump units, systems and housed packaged systems offer variety, durability, standardized options and configurations unequalled in the industry.

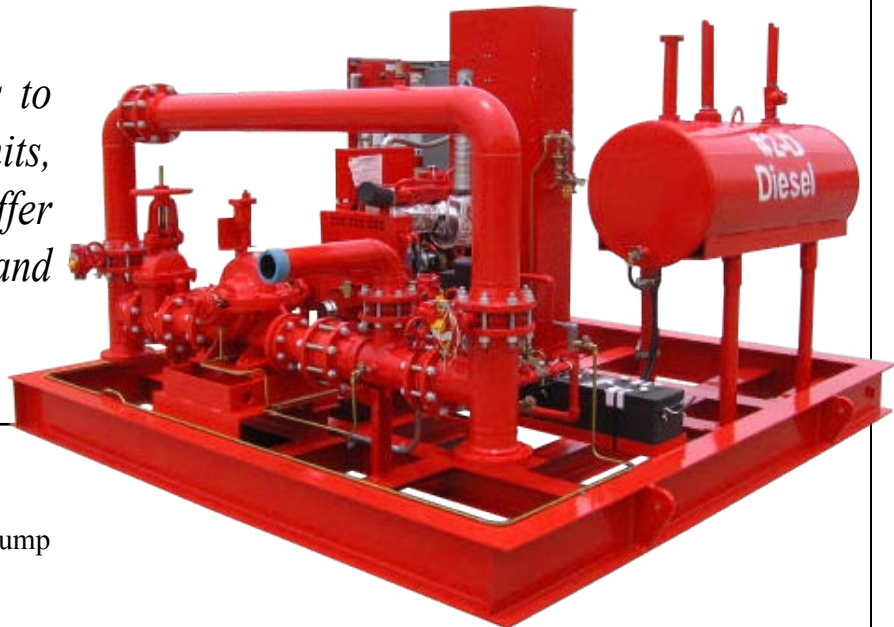
COMMERCIAL BUILDING FIRE PACKAGES

Description: Simplex Horizontal Skid Mounted

Purpose: Fire Protection for Commercial Building

Pump: 4AEF10G, Horizontal, Double Volute, Centrifugal Pump

Driver: 58HP Clarke Diesel Engine



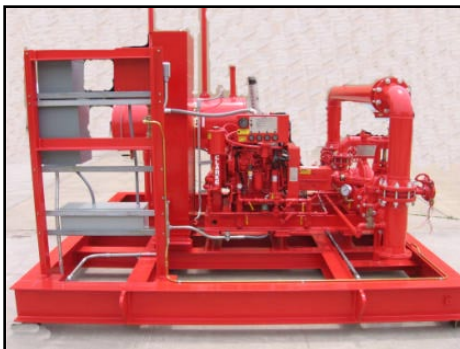
PUMP END VIEW

Pump end view of suction and discharge piping assembly. Package constructed with city-by-pass and hose valve header piping.



SUCTION SIDE VIEW

Suction side view showing engine, piping, lifting provisions, grounding provisions, and auxiliary electrical panel mounting.



Peerless Pumps' extensive distribution system provides worldwide technical and commercial support with qualified personnel in most major U.S. and international cities.

HORIZONTAL SKID MOUNTED

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

Applications

Applications vary from small, basic electric motor units to diesel engine driven, housed, packaged systems. Standard units are designed to handle fresh water, but special materials are available for sea water applications. The Peerless Pump Fire Pumps give superior performance in Agriculture, General Industry, Building Trade, Power Industry, Fire Protection, Municipal, and Process applications.

Features

State of the art engineered systems arrive ready to install. Pump, driver and controller are mounted on a common base. All engineered systems have complete, interconnected wiring. Preconstruction eliminates costly, complex installation problems. In-house fabrication gives Peerless Pump the ability to customize a system and assume complete unit responsibility, which means the customer has only one supplier to contact if there are questions. All pump houses meet the requirements of UL, ULC, FM,

NFPA13, NFPA20, and MBMA. Both horizontal and vertical models provide capabilities to 5,000 gpm. End suction models deliver capacities to 1,500 gpm. In-line units can produce 500 gpm. Head ranges from 92 feet to 1,176 feet with as much as 640 psi. Pumps are powered with electric motors, diesel engines or steam turbines. Standard fire pumps are cast iron with bronze fittings. Peerless Pump furnishes fittings and accessories recommended by the NFPA as published in their current edition pamphlet 20.

Quality Engineering

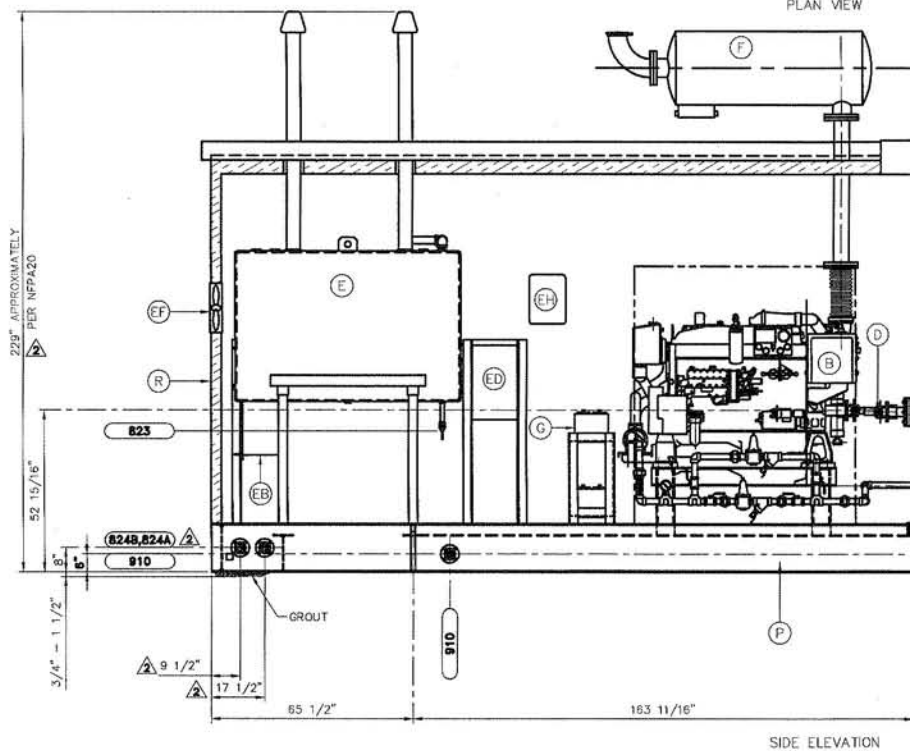
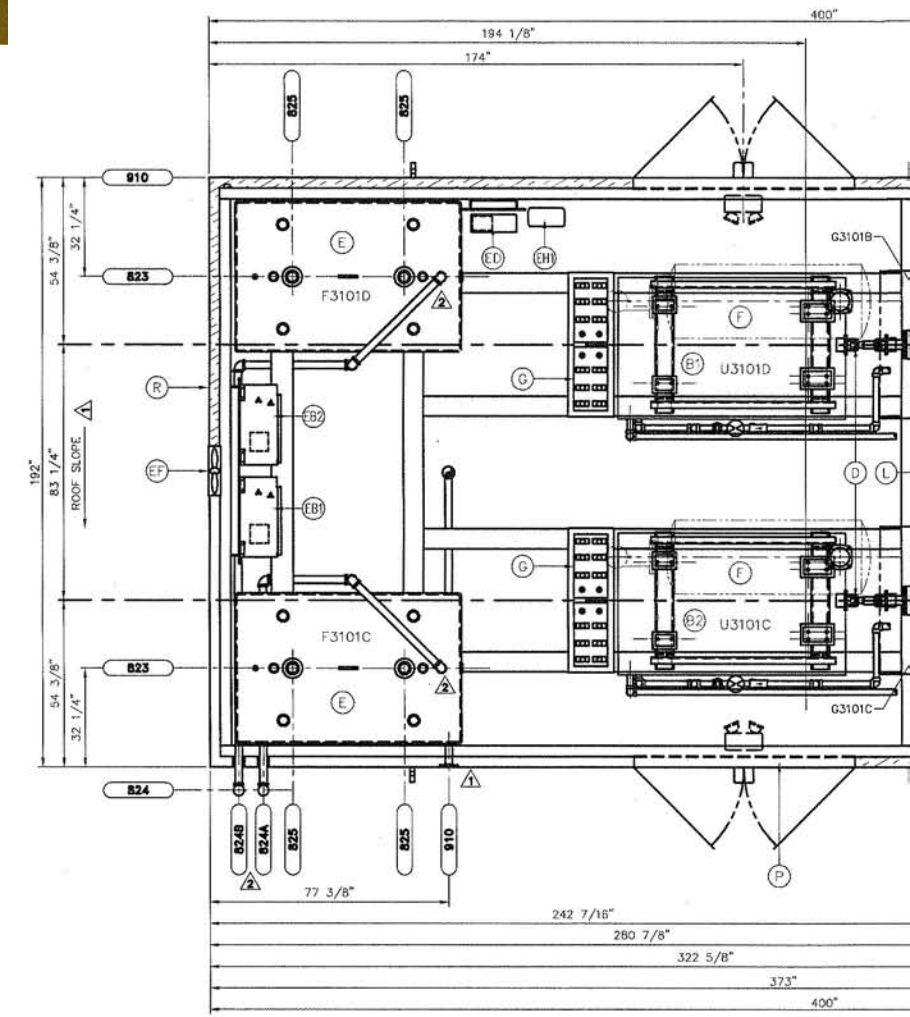
Peerless Pump designs tough, versatile products to meet your pumping needs. The fire pump units, systems, and housed packaged systems offer variety, durability, standardized options and configurations unequalled in the industry.

Specifications

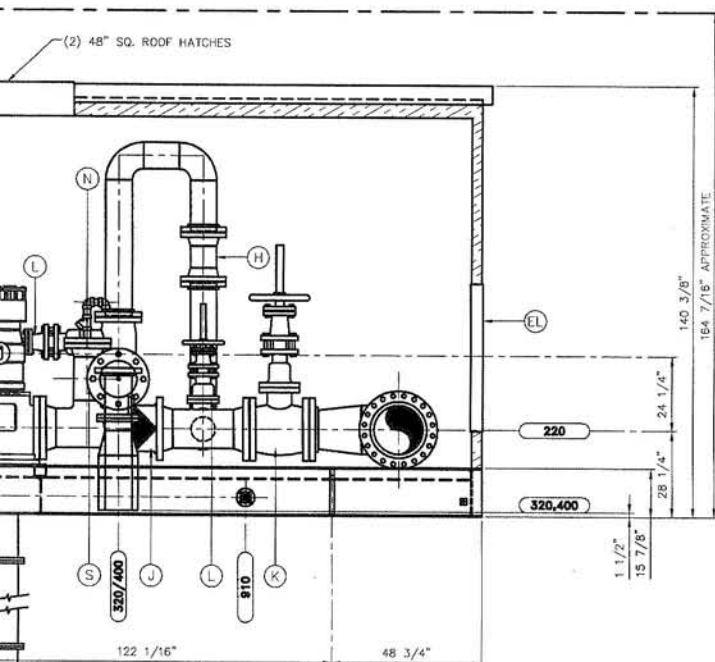
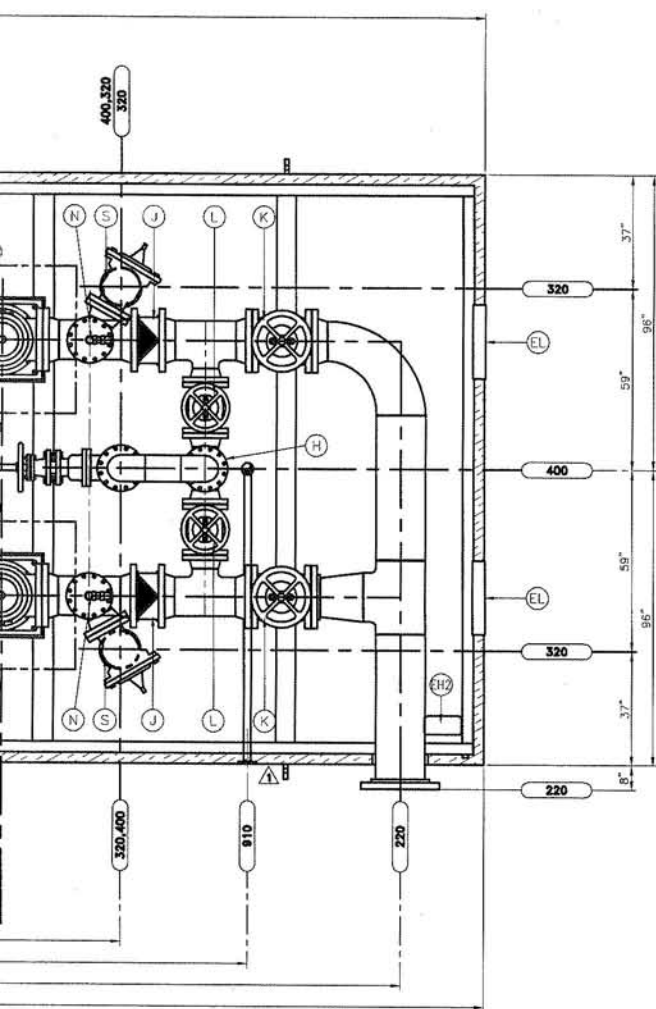
Capacities:Up to 5,000 gpm
(1,136 m³/hr)
Head:Up to 1,176 feet
(359 meters)
Pressure:Up to 640 psi
(45 kg/cm², 4,414 kPa)
Horsepower:Up to 800 hp (597 kW)
Temperature:Up to 115° F (46° C)
Drives:Motors, engines, steam turbines, combinations.
Liquids:Water
Materials:Cast iron, bronze fitted as standard. Other materials available.

industrial power

	220	16"	RF FLG	300#	DISCHARGE, DIESEL DRIVEN PUMP
	910	2"	RF FLG	150#	DRAIN, FLOOR (DILY DRAIN)
LINE IDENTIFICATION LEGEND					
CUST REF	TP. NO.	SIZE	TYPE	RATING	DESCRIPTION
	320	12"	OPEN	150#	DISCHARGE, MAIN RELIEF VALVE
	400	8"	OPEN	150#	DISCHARGE, FLOWMETER
	720	1/2"		1800#	SENSING LINE, ENGINE CONTROLLER
	820	6"	FLG	150#	EXHAUST, ENGINE
	822	2"		150#	DISCHARGE, COOLING WATER
	823	1"	150#	FNPT	DRAIN, FUEL TANK
	824A	2"	150#	RF FLG	FLL, FUEL TANK (F301C)
	824B	2"	150#	RF FLG	FILL, FUEL TANK (F301D)
	825	4"		VENT	VENT, FUEL TANK
	901	1"		150#	SPRINKLER, TEST CONNECTION DRAIN



TAG No.: G3101 C/D
 ENGINE DRIVEN
 FIREPUMP
 MDL: 16HXB-4STG
 CONDITIONS:
 GPM: 3000
 TDH: 347
 PSI: 150
 REQ'D RPM: 1760
 REQ'D HP: 363.5



DATE	BY	CHK'D	NO.	REVISION - DESCRIPTION
05/10/05	CCR		2	REVISED FUEL FILL LOCATIONS
01/11/05	HFR		1	REVISED PER COMMENTS (DRAINS & ROOF SLOPE)

BUYER: HOUSTON CHEMICAL PLANT
P.O. No.:
ITEM No.: X-0005
LOCATION: HOUSTON, TEXAS

TOLERANCES
UNLESS OTHERWISE SPECIFIED
FRACTIONAL
+/- 1/4"
DECIMAL
X.XX +/- 0.1
X.XX +/- 0.005
ANGLE
+/- 1°

DATE: 09/07/04 BY: HFR CHECKED: RPB APPROVED: SCALE: NTS

ISO 9001 Certified
PEERLESS ENGINEERED SYSTEMS
11995 FM 529
HOUSTON, TEXAS 77041
PHONE: 713-896-0220
FAX: 713-896-0220
A DIVISION OF STERLING FLUID SYSTEMS

VERTICAL AND HORIZONTAL FIRE PUMP PACKAGES,
SERVICE AND REPAIR OF PEERLESS, SFF AND LABOUR PUMPS
**INDUSTRIAL & POWER
DUPLIX DRIVEN FIREPUMP HOUSE PACKAGE
GENERAL ARRANGEMENT**

SHEET No: 1 of 1 SFS REF: FILE NAME: 2

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	SUPPLIER	MODEL No.	WEIGHT
DS	2	DISCHARGE HEADS: CAST IRON, 250 ANSI, FT FLANGE	PEERLESS	17x12x20S	1350
PS	2	PUMP: VERTICAL TURBINE TYPE, 16HHP, 4 STAGE WITH BRONZE IMPELLER, OLS LINE SHAFT WITH COLUMN PIPE (SHIPPED LOOSE)	PEERLESS	16HHP	5412
B	2	ENGINE: CAT RATED FOR 420 BHP @ 1760 RPM, JACKET	CAT	3406B07A	6480
T & Z		WATER HEATER: 120V/3PH/60HZ, JACKET WATER COOLED, 24VDC ELECTRICS, CLOCKWISE ROTATION ONLY WITH COOLING LOOP			
C	2	RIGHT ANGLE GEAR: RATIO 1:1	DEPAN	C400A-FW	1450
D	2	DRIVESHAFT	ALL POWER	SC21	80
E	2	FUEL TANK: 550 DOUBLE WALL GALLON WITH FUEL SYSTEM		80	1284
F	2	BLENDER: RESIDENTIAL WITH FLY AND WEATHER CAP	GT EXHAUST	201-4120	160
G	8	BATTERIES: 12VLT, LEAD ACID WITH RACK	DEBRAND	B-3000-B	1550
H	ONE	FLOWMETER: 8" VENTURI TYPE, 300# FLANGED	NBCO	KN-300-W	280
J	2	CHECK VALVE: 12" 250 PSL, WATER STYLE, UL/FM	NBCO	F-667-D	1064
K	2	GATE VALVE: 12" 250 ANSI FLANGED, RESILIENT WEDGE	NBCO	F-667-D	867
L	3	GATE VALVE: 8" 250 ANSI FLANGED, RESILIENT WEDGE	NBCO	F-667-D	8
M	2	GAUGES: DISCHARGE, WITH ISOLATION VALVE (NOT SHOWN)			12
N	2	AUTO AIR RELEASE VALVE ASSEMBLY: 1 1/2" 175 PSI	PES		11371
P	ONE	SKID: 16'-0" WIDE X 33'-4" HIG X 36" EXTERNAL W/2x254 INTERNAL	WARWICK		5700
R	ONE	BUILDING: SELF FRAMING TYPE, 1 1/2" SINGLE SLOPE ROOF, 3" WALL & 6" ROOF INSULATION, FORMED METAL LINING, (2) 6070 DOORS WITH HARDWARE, INCLUDING INTERIOR, EMERGENCY & EXTERIOR LIGHTING, BUILDING TO BE DESIGNED TO LOCAL & STATE REQUIREMENTS, SIZE 152' WIDE X 450' LONG, 10'-0" EAVE			
S	2	RELIEF VALVE: 8" 100-300 PSL, 250 X 125, UL/FM	CLA-VAL	2050B-4KG-V	680
ELECTRICAL COMPONENTS					
CB	2	CONTROLLER: FTA1100, NEMA 4X 304SS, MARK 2 STYLE, UL/FM LISTED	FIRETROL	FTA1100	400
ED	ONE	DISRUPTION PANEL, NEMA 3R ENCLOSURE	SQD		35
EF	ONE	EXHAUST FAN WITH GRAVITY LOUVER	QMARK	PLU16S	35
BN 180	2	HEATER: SKW WITH THERMOSTAT	QMARK		70
EL	2	LOUVER: POWER CLOSED/FAILED TO OPEN LOUVER	NCA	24"x48"	80
ESTIMATED WEIGHT OF PIPING					5000
TOTAL (lbs)					43408

NOTES:

- ALL DIMENSIONS ARE IN INCHES. DIMENSIONS IN () ARE IN MILLIMETERS.
- PUMP PACKAGE SHALL BE INSTALLED AND ANCHORED ON A SUITABLE FOUNDATION PROVIDED BY OTHERS. IT IS RECOMMENDED THAT THE PUMP PACKAGE BE INSTALLED ALLOWING FOR A 3/4" TO 1 1/2" GROUT THICKNESS. PUMP PACKAGE SHALL BE LEVELED AND PIPING CONNECTIONS VERIFIED.
- SKID IS TO BE OPEN STYLE. COATING OF SKID TO FACILITATE A GROUT SURFACE.
- PERIMETER BEAMS AND CROSSMEMBERS AT LIFTING POINTS SHALL BE SUPPORTED. (ANCHOR BOLTS BY OTHERS)
- 1/2"-13UNC GROUNDING LUGS TO BE PROVIDED AT OPPOSITE CORNERS. (PL1" X 2" SQ. W/1/2"-13UNC TAPPED HOLE)
- SOME ITEMS NOT SHOWN FOR CLARITY. (PLUGS, GAUGES, PRESSURE LINES, ETC.)

SYMBOLS

ITEMS PREINSTALLED & SHIPPED
LOOSE FOR INSTALLATION BY OTHERS
CUSTOMER DCS
CONTACTS TO SIS SYTEM
OR FIRE ALARM PANEL (SEE NOTE 1)
PANEL MOUNTED

INSIDE LOCAL PANEL
ENGINE MOUNTED DEVICES

GATE VALVE
BALL OR
GLOBE VALVE
CHECK VALVE
BUTTERFLY VALVE

SOLENOID VALVE
PRESSURE REGULATOR
(SELF CONTAINED)
CONTROL VALVE

RELIEF VALVE
W/SIGHT GLASS
ADJUSTABLE CHOKE
VALVE (MANUAL)
STRAINER Y TYPE
W/VALVE AND PLUG
GAUGE

FLOW METER
AUTOMATIC AIR
RELEASE VALVE
RELIEF VALVE
BALL VALVE
LOCKED OPEN

CONCENTRIC REDUCER
ECCENTRIC REDUCER

FLOW SWITCH
TAMPER SWITCH
SCREWED PLUG

OPEN DRAIN
SIGHT GLASS
WATER SEPARATOR

AIR INTAKE FILTER

FLAME ARRESTOR

HEAT EXCHANGER

FLEXIBLE HOSE

LEGEND

AA: AUDIBLE ALARM
ARV: AIR RELEASE VALVE
DS: DISCONNECT SWITCH
EI: VOLTAGE INDICATOR
ETL: ENGINE TROUBLE LIGHT
ESS: ELECTRONIC SPEED SWITCH
FE: FLOW ELEMENT
FG: FLOW SIGHT GLASS
FGL: FLOW TOTALIZING INDICATOR
FV: FLOW VALVE
G: GAUGE
HL: HAND SWITCH INDICATOR
HS: HAND SWITCH (SELECTOR)
HWT: HIGH WATER TEMPERATURE SWITCH
IL: CURRENT INDICATOR
IL: INDICATING LIGHT
RM: ENGINE HOUR METER
LAH: LEVEL ALARM HIGH
LAL: LEVEL ALARM LOW
LC: LOCKED CLOSE
LD: LEAK DETECTOR
LG: LEVEL GAUGE WITH GUARD
LI: LEVEL INDICATOR
LIT: LEVEL INDICATOR TRANSMITTER
LO: LOCKED OPEN
LSP: LOW OIL PRESSURE SWITCH
LSH: LEVEL SWITCH - HIGH
LSHH: LEVEL SWITCH - HIGH, HIGH
LSL: LEVEL SWITCH - LOW
MPU: MAGNETIC PICK-UP (SPEED)
MS: REMOTE START
NC: NORMALLY CLOSED
NO: NORMALLY OPEN
PAL: PRESSURE ALARM LOW
PB: PUSH BUTTON
PCV: PRESSURE CONTROL VALVE
PI: PRESSURE INDICATOR
PIT: PRESSURE INDICATOR TRANSMITTER
PR: PRESSURE RECORDER
PS: PRESSURE SWITCH
PSL: PRESSURE SWITCH LOW
PT: PRESSURE TRANSDUCER
RO: RESTRICTION ORIFICE
SAH: OVERSPEED ALARM
SDV: SHUT DOWN VALVE
SP: TACHOMETER
SS: OVERSPEED SWITCH
SV: SOLENOID VALVE
TAM: TEMPERATURE ALARM HIGH
TH: TEMPERATURE INDICATOR
TSH: HIGH TEMPERATURE SWITCH
TSL: LOW TEMPERATURE SWITCH
UA: MULTIFUNCTIONAL ALARM
VME: VOLTMETER
VAH: VIBRATION ALARM HIGH
VSH: HIGH VIBRATION SWITCH
XA: UNCLASSIFIED ALARMS

LINE IDENTIFICATION LIST

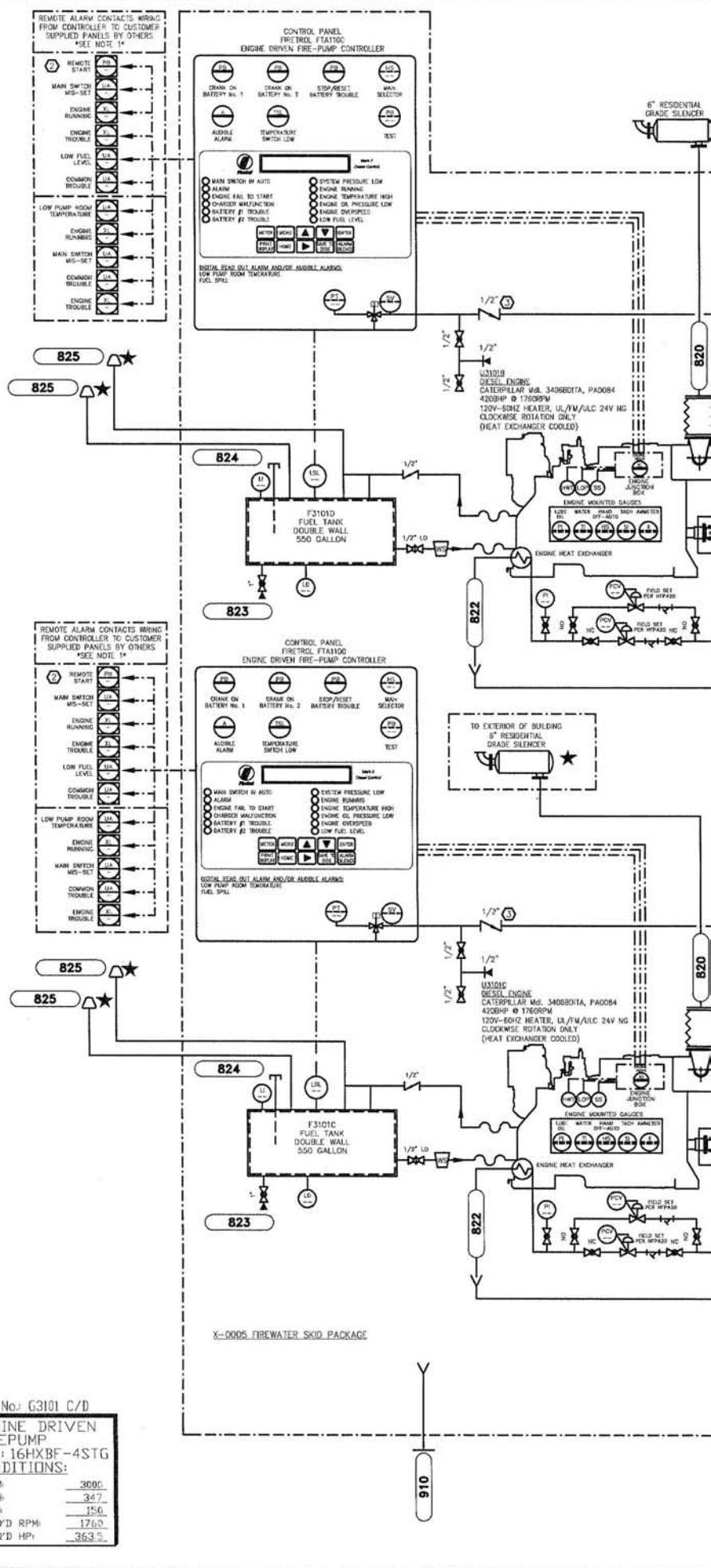
--- SKID LIMITS
--- ELECTRICAL SIGNAL
--- PROCESS & UTILITY PIPING
--- PIPING FURNISHED BY OTHERS
--- PNEUMATIC SIGNAL BY OTHERS
--- FLOOR DRAIN AND
--- STUFFING BOX DRAIN PIPING

NOTES:

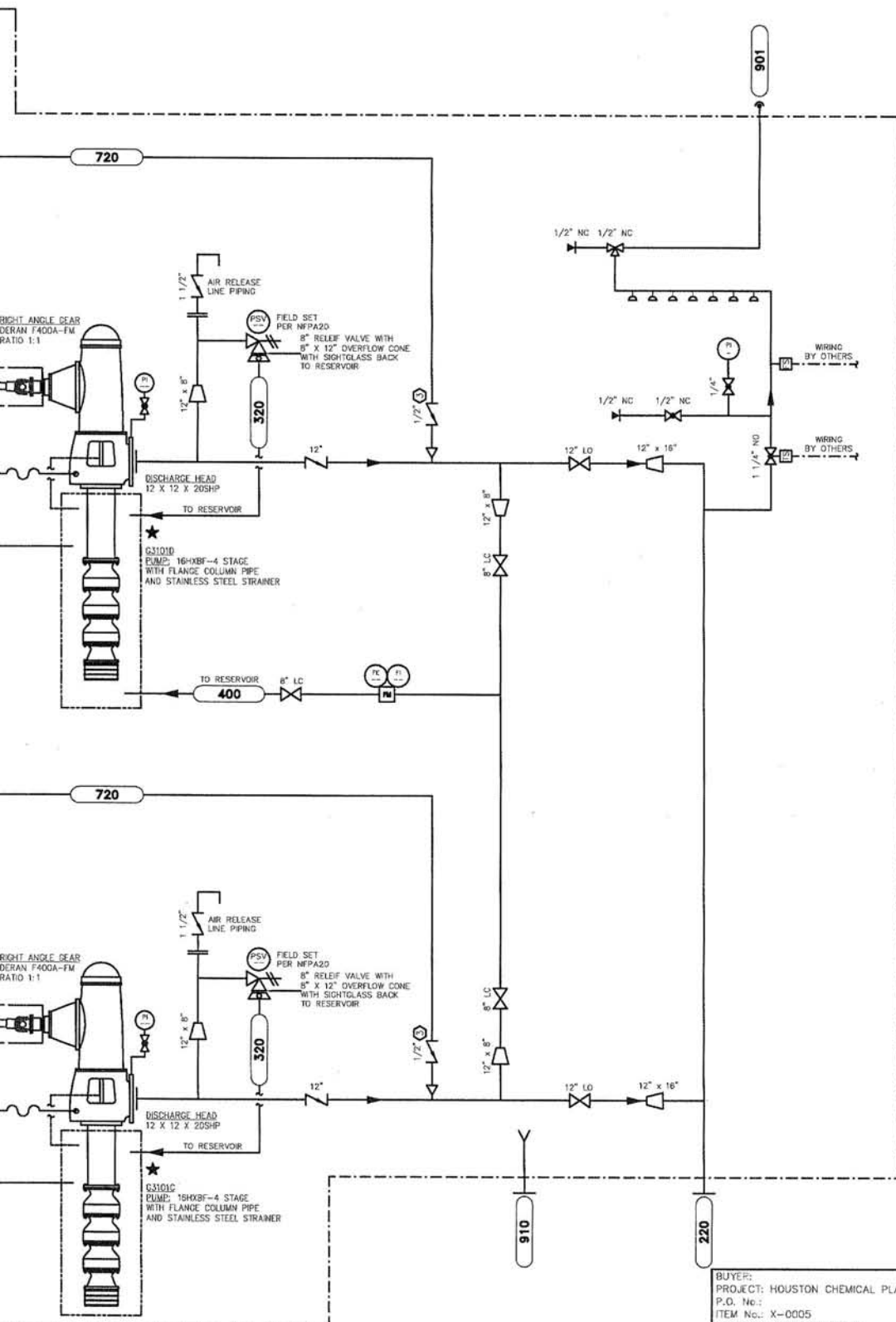
- CONTROL PANEL TERMINAL BLOCKS FOR REMOTE ALARM INDICATION TO FIRE ALARM PANEL OR DCS ALARM PANEL WIRING BY OTHERS.
[(1) N.C. & N.C. DRY CONTACT BLOCKS FOR EACH REMOTE ALARM SIGNAL.]
- REMOTE START IF USED, IS A INPUT SIGNAL FROM CUSTOMER SUPPLIED PANEL.
(SEE CONTROL PANEL FIELD CONNECTION DRAWING)
- CHECK VALVES IN PRESSURE SENSING LINES TO BE PLACED MINIMUM 5'-0" APART, IN OPPOSITE DIRECTION OF FLOW WITH A 3/32" ORIFICE IN CLAPPER. (PER NFPA 20, FIG. A-7-5.2.1)
- ENGINE COOLING WATER SHALL FLOW UNRESTRICTED BACK TO RESERVOIR DO NOT PIPE INTO OTHER PIPING SYSTEM, WHICH MAY CAUSE BACK PRESSURE.
- ALL PIPE SIZES HAVE BEEN SIZED IN ACCORDANCE WITH NFPA20, TABLE 2-20, 99 EDITION.
- ESS LOCATED IN ENGINE TERMINAL BOX, WORKS WITH 'MPU' AT ENGINE FLYWHEEL TO PERFORM THE FOLLOWING FUNCTIONS - TACHOMETER, OVERSPEED, FAIL TO START & CRANK TERMINATION.
- DRAIN CONNECTION '910' TO HAZARDOUS WASTE.

USER CONNECTION LEGEND					
CUST REF	TP. NO.	SIZE	TYPE	RATING	DESCRIPTION
	220	16"	RF FLG	300#	DISCHARGE, DIESEL DRIVEN PUMP
	910	2"	RF FLG	150#	DRAIN, FLOOR (OILY DRAIN)
LINE IDENTIFICATION LEGEND					
CUST REF	TP. NO.	SIZE	TYPE	RATING	DESCRIPTION
	320	12"	OPEN	150#	DISCHARGE, MAIN RELIEF VALVE
	400	8"	OPEN	150#	DISCHARGE, FLOWMETER
	720	1/2"		1800#	SENSING LINE, ENGINE CONTROLLER
	820	6"	FLG	150#	EXHAUST, ENGINE
	822	2"		150#	DISCHARGE, COOLING WATER
	823	1"		150#	FNPT, DRAIN, FUEL TANK
	824	2"			CAP, FUEL TANK
	825	4"			VENT, FUEL TANK
	901	1"		150#	SPRINKLER, TEST CONNECTION DRAIN

TAG No. G3101 C/D
ENGINE DRIVEN
FIREPUMP
MDL: 16HXBF-4STG
CONDITIONS:
GPM: 3000
TDH: 347
PSI: 150
REQ'D RPM: 1760
REQ'D HP: 363.5



POWER CIRCUIT REQUIREMENTS (BY OTHERS)									
CIRCUIT NO.	ITEM	TAG	DESCRIPTION	VOLT	PHASE	HERTZ	AMPS		
CKT 1	EB		POWER PANEL (NOT SHOWN)	240	1	60			
REMOTE ALARM OUTPUTS (WIRING FROM PACKAGE BY OTHERS)									
CIRCUIT NO.	ITEM	TAG	DESCRIPTION	VOLT	PHASE	HERTZ	AMPS		
EB-R 1	EB	U301C	ENGINE CONTROLLER REMOTE CONTACTS						
EB-R 2	EB	U301D	ENGINE CONTROLLER REMOTE CONTACTS						



CHK'D BY	DATE	NO.	REVISION - DESCRIPTION

BUYER:		PROJECT: HOUSTON CHEMICAL PLANT	
P.O. No.:			
ITEM No.:		X-0005	
LOCATION:		HOUSTON, TEXAS	
TOLERANCES		UNLESS OTHERWISE SPECIFIED	
FRACTIONAL		+/- 1/4"	
DECIMAL		+/- 0.1	
X.XX		+/- 0.03	
X.XXX		+/- 0.005	
ANGLE		+/- 1°	
DATE:	09/07/04	BY:	HR
CHECKED:	---	APPROVED:	---

		19995 FM 529 HOUSTON, TEXAS 77041 PHONE: 713-886-2220 FAX: 713-886-2220 A DIVISION OF STERLING FLUID SYSTEMS	
		VERTICAL AND HORIZONTAL FIRE PUMP PACKAGES, SERVICE AND REPAIR OF PEERLESS, SP® AND LABOUR PUMPS	
INDUSTRIAL & POWER		DUPLIX DRIVEN FIREPUMP HOUSE PACKAGE	
PIPING AND INSTRUMENTATION DIAGRAM			
SHEET No.:	1 of 1	SFS REF:	FILE NAME:
SCALE:	NTS		

unrivaled

PES
peerless engineered systems

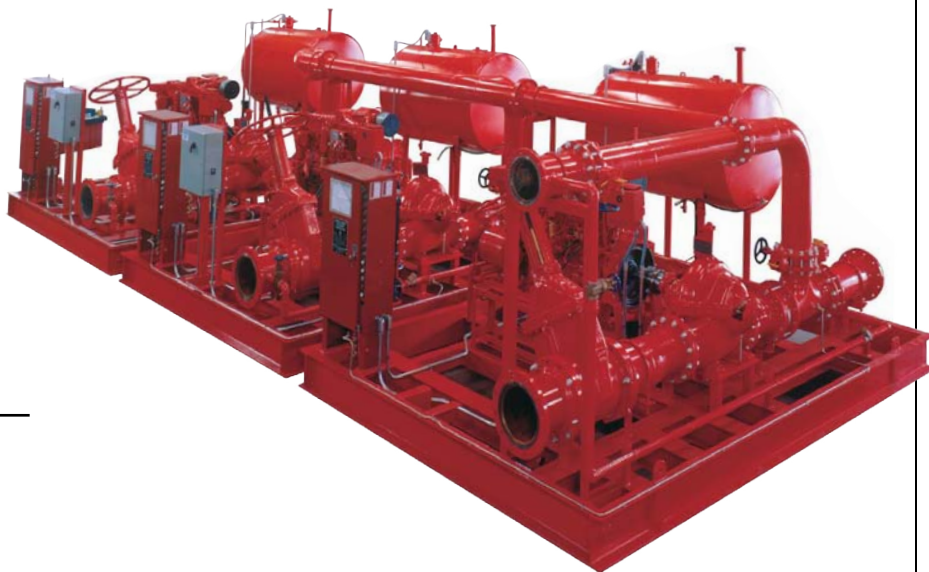


PEERLESS CAN
MANUFACTURE
FROM IT'S
EXTENSIVE
RANGE OF
PRE-ENGINEERED
MODULES TO
GET IT'S
CUSTOMERS
EXACTLY WHAT
THEY WANT.

Complete Unit Responsibility
State of the Art Engineering Designs
Value Added Services for Customer
Reduced Installation Costs
ASME Certified Welders
Worldwide Technical and Commercial Support
ISO 9001 Manufacturing Facility
ETL Thrid Party Listing

800-879-0182 or visit www.peerlesspump.com

When you require complete unit responsibility and service from engineering assistance to field start-up, you want an unrivaled Peerless Pump solution.



INDUSTRIAL & POWER PLANT FIRE PUMP SYSTEM

Description: Duplex Vertical Turbine House Packages

Purpose: Fire Protection for Chemical Plants

Pump: (2) 16HXB-4 Stage Vertical Turbine

Driver: Caterpillar 3406BDITA

SUCTION END VIEW

Suction side view showing engine, piping, lifting provisions, grounding provisions, and auxiliary electrical panel mounting.



INTERIOR VIEW



EXTERNAL HATCH ACCESS



Peerless Pumps' extensive distribution system provides worldwide technical and commercial support with qualified personnel in most major U.S. and international cities.

CHEMICAL PLANT FIRE PACKAGES

Peerless Pump means OVER 80 years of experience in evaluating actual operating conditions to anticipate problems, needs and future requirements. Peerless Pump means field-proven experience in translating that information into a truly integrated custom-built Fire Pump Package that's as individual as the application demands.

Applications

In packaged Fire Pump Systems, Peerless can design and build engineered systems from a simple pump and driver arrangement on a skid to a fully-enclosed, completely-integrated pump and control center, with a diesel engine, and all the required controllers, fittings and ancillary equipment per NFPA 20.

Features

State of the art engineered systems arrive ready to install. Pump, driver and controller are mounted on a common base. All engineered systems have complete, interconnected wiring. Preconstruction eliminates costly, complex installation problems. In-house fabrication gives Peerless Pump the ability to customize a system and assume complete unit responsibility, which means the customer has only one supplier to contact if there are questions. All pump houses meet the requirements of UL, ULC, FM, NFPA13, NFPA20, and MBMA. Both horizontal and vertical models provide capabilities to 5,000 gpm. End suction models deliver capacities to 1,500 gpm. In-line units can produce 500 gpm. Head ranges from 92 feet to 1,176 feet with as much as 640 psi. Pumps are powered with electric motors, diesel engines or steam turbines.

Standard fire pumps are cast iron with bronze fittings. Peerless Pump furnishes fittings and accessories recommended by the NFPA as published in their current edition pamphlet 20. The Peerless UL/FM Power Plant Fire Pump System Designed to your specifications, Peerless Packaged U.L./FM Power Plant Fire Pumps come with or without enclosures, with one or more pump/driver combinations, and include controls with inlet/outlet piping/valves and fittings per NFPA 20.

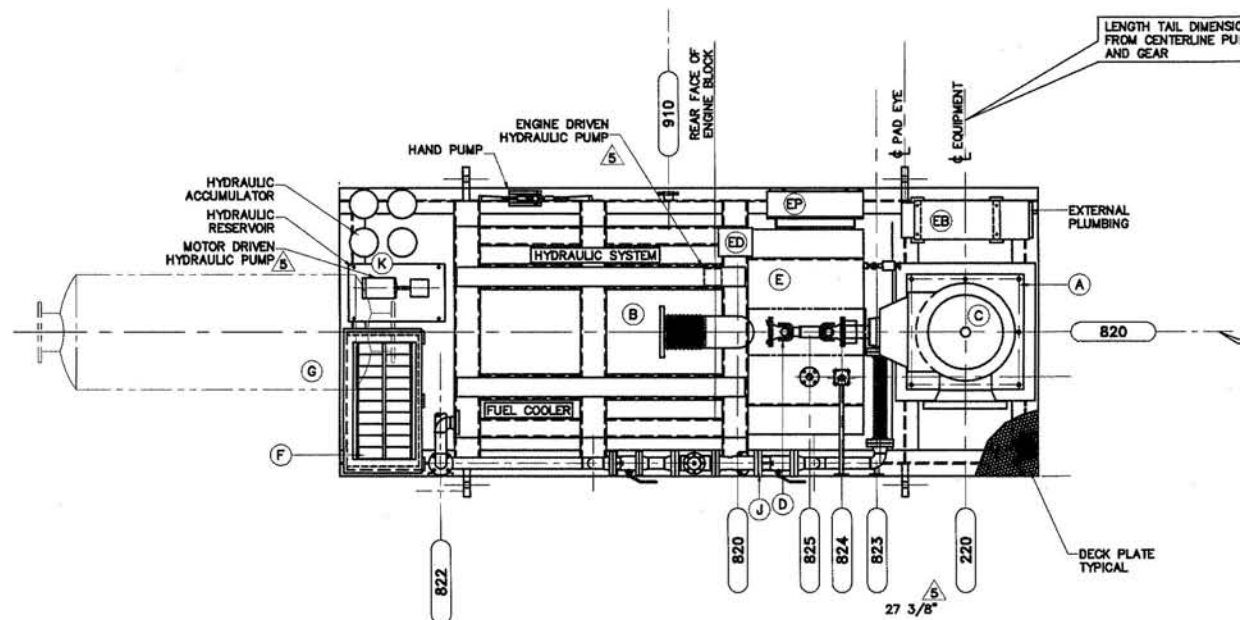
Quality Engineering

Peerless Pump designs tough, versatile products to meet your pumping needs. A complete line of Fire Pumps that are listed by U.L. (Underwriters Laboratories) and approved by FM (Factory Mutual). The industry's most comprehensive product line includes inline, end suction horizontal split case and vertical turbine models.

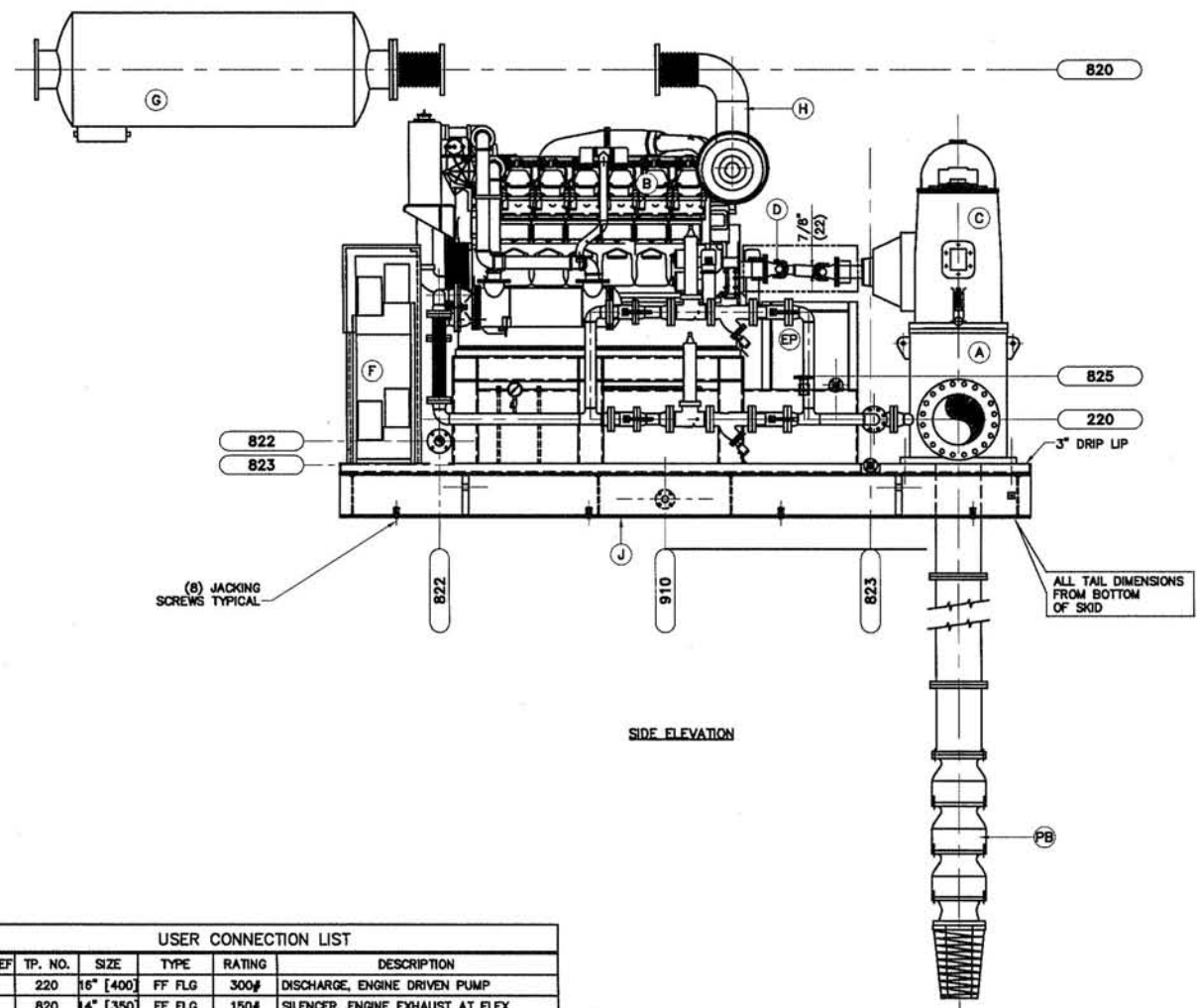
Specifications

Capacities:Up to 5,000 gpm
(1,136 m³/hr)
Head:Up to 1,176 feet
(359 meters)
Pressure:To fit the application
Horsepower:Up to 600 hp (448 kW)
Temperature:Up to 115° F (46° C)
Drives:Vertical electric motors and diesel engines with right angle gears, and steam turbines.
Liquids:Water
Materials:Cast iron, bronze fitted as standard. Optional materials available for sea water applications.

15



PLAN VIEW

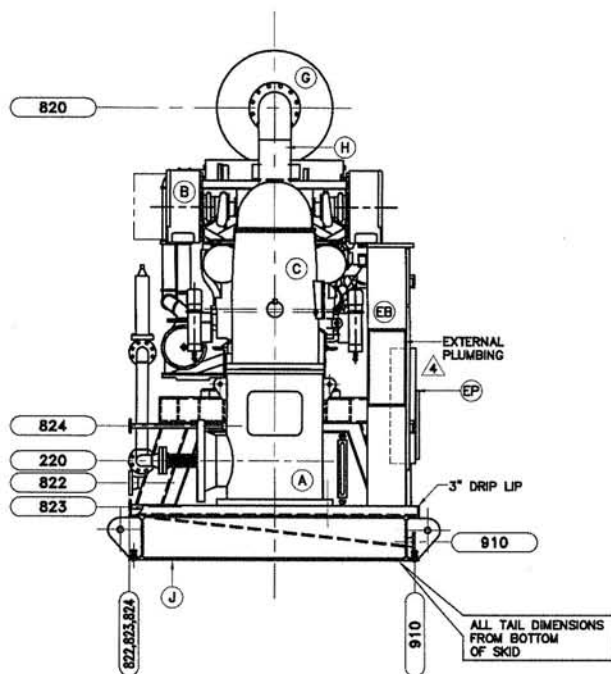


SIDE ELEVATION

USER CONNECTION LIST					
CUST REF	TP. NO.	SIZE	TYPE	RATING	DESCRIPTION
	220	16" [400]	FF FLG	300#	DISCHARGE, ENGINE DRIVEN PUMP
	820	4" [350]	FF FLG	150#	SILENCER, ENGINE EXHAUST AT FLEX
	822	3" [76]	FF FLG	150#	DISCHARGE, ENGINE COOLING WATER
	823	1 1/2" [40]	RF FLG	150#	DRAIN, FUEL TANK
	824	1 1/2" [40]	RF FLG	150#	FUEL FILL, GARZO MODEL 132
	825	1 1/2" [40]	RF FLG	150#	VENT, FUEL TANK - FLAME ARRESTOR
	910	3" [80]	RF FLG	150#	SKID DRAIN

- NOTES:
1. ALL DIMENSIONS ARE IN INCHES. DIMENSIONS IN () ARE MILLIMETERS.
 2. ENGINE COOLING WATER SHALL FLOW UNRESTRICTED OVER BOARD. DO NOT PIPE INTO OTHER PIPING SYSTEM WHICH MAY CAUSE BACK PRESSURE.
 3. SOME ITEMS NOT SHOWN FOR CLARITY. (PIPE SUPPORTS, SENSING LINES, ETC.)
 4. ITEMS WITH THIS STAR ★, ARE SHIPPED LOOSE.
 5. 1/2"-13UNC GROUNDING LUGS TO BE PROVIDED AT OPPOSITE CORNERS. (EARTHING BOSSES) (PL1" x 2" SQ. w/1/2"-13UNC TAPPED HOLE)
 6. STEPS FOR EASY ACCESS TO ENGINE TO BE PROVIDED. (NOT SHOWN)
 7. LARGE SIZE SHIMS WILL BE PROVIDED WITH PACKAGE. (NOT SHOWN)

WIDTH TAIL DIMENSIONS
FROM CENTERLINE PUMP,
GEAR AND ENGINE



PUMP END ELEVATION

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	SUPPLIER	MODEL No.	WEIGHT
A	ONE	DISCHARGE HEAD FACED STEEL, 300# ANGL. FT FLANGE	PEERLESS	16X14X3/4	3000
★ PB	ONE	PUMP 20HXB-3 STAGE VERTICAL TURBINE TYPE WITH 1500 MODEL & NIA BRONZE INTERNALS	PEERLESS	20 HX	11660
		63'-0" OF 14" SUPER DUPLEX STAINLESS STEEL COLUMN PIPE CS32760			
B	ONE	ENGINE CATERPILLAR RATED FOR 1600 HP @ 1750 RPM, HEAT EXCHANGER COOLED, JACKET WATER HEATER, 24V-50/60HZ, 24 VAC, CLASS 1 DIVISION 2 GROUP D, 3" FLANGED COOLING LOOP SUPPLIED IN PACKAGING	CATERPILLAR	3512 BITA	14000
C	ONE	RIGHT ANGLE GEAR RATIO 16 WITH MARINE TREN	AMARILLO	S2500	2145
D	ONE	DRIVESHAFT SHORT COUPLED WATSON TYPE WITH NAVAL BRASS GUARD	ALL POWER	2255C	250
E	ONE	FUEL TANK 750 US GAL SINGLE WALL UL-VN WITH GARZO MODEL 132	PES	STAINLESS STEEL	2700
F	1 SET	BATTERIES DUAL 24VDC, NICAD, C40 FMC-1859 EX-30 SUPPLIED WITH FIBERGLASS BATTERY BOX AND RACK	ROLLO & ASSOCIATES	FMC-1859 EX-30	1100
G	ONE	SILENCER 14" CRITICAL GRADE, ARRESTOR TYPE, 316 STAINLESS STEEL, 10" 150# FLANGED ELBOW, SILENCER TO SHIP LOOSE FOR FIELD INSTALLATION BY OTHERS.	GT EXL	28-504-1	990
H	ONE	FLEX CONNECTOR 8" CAT X 10" 150# FLG/D ELBOW, 316 STAINLESS STEEL	GT EXL		50
J	ONE	SKID 7'-6" x 18'-0" V/3" DRIP LIP, 1/4" DECK PLATE AND 10" 150# FLANGE BRAIN CONNECTIONS	PES		8500
K	ONE	HYDRAULIC STARTING SYSTEM ELECTRIC PUMP, HAND PUMP, RESERVOIR AND ACCUMULATORS WITH NEMA 7 START/STOP BOX	PSI/ HYDROQUIP		1000
		CONTROLLERS			
EB	ONE	CONTROLLER NEMA 4X 316SS 12 GAUGE ENCLOSURE WITH PURGE SYSTEM NOL8 F12-NEHLRPSUN	METRON	F12	400
ED	ONE	DISCONNECT 30AMP FUSED, EXPLOSIONPROOF, NEMA7, ALUMINUM	APPLETON	AEAR306FDS	38
EP	ONE	ENGINE TERMINAL BOX PANEL WITH GAUGES, NEMA 4X 316 STAINLESS STEEL	PEERLESS		177
		TOTAL LB			46410
		TOTAL KG			21051

OPERATING WEIGHT FLUIDS
SKID OIL & WATER: 1547
FUEL: 5560
COLUMN WATER: 3847
FLUIDS TOTAL: 10954
OPERATING TOTAL (LB): 57364
OPERATING TOTAL (KG): (26020)

ENGINE DRIVEN FIREPUMP MDL: 20HXB-3 STAGE CONDITIONS:

GPM: 5250
L/M: 19873.4
TDH: 477
PSI: 206.6
REQ'D RPM: 1770
REQ'D HP: 864.35

AS-BUILT DRAWING

BUYER:
PROJECT:
P.O. No.:
ITEM No.:
LOCATION: MALAYSIA

TOLERANCES

UNLESS OTHERWISE SPECIFIED
FRACTIONAL
+/- 1/4"
DECIMAL
X.X +/- 0.1
X.XX +/- 0.03
X.XXX +/- 0.005
ANGLE
+/- 1°

DATE: 04/28/04 BY: HFR

PROPRIETARY DATA
THIS DRAWING IS THE PROPERTY OF
PEERLESS ENGINEERED SYSTEMS INC.
IT IS NOT TO BE REPRODUCED OR
COPIED FOR ANY MANUFACTURING
PURPOSES EXCEPT UPON THE EXPRESS
INSTRUCTION OF PEERLESS ENGINEERED
SYSTEMS INC. OR AT THE
COMPLETION OF THE JOB, IT IS TO BE
RETURNED TO PEERLESS ENGINEERED
SYSTEMS INC., HOUSTON, TEXAS.

CHECKED: RPB APPROVED: AJW

CUSTOMER: BAYU PURNAMA SDN BHD
P.O. No.: BP/KAG/0414111
PROJECT: GUNTING E/DOONMOBIL
LOCATION: MALAYSIA
TAG No.: 4P-874FP#1, 4P-875FP#2, 4P-876FP#3

**PEERLESS
ENGINEERED SYSTEMS**

11805 FM 520
HOUSTON, TEXAS 77041
PHONE: 713-886-2220
FAX: 713-886-0220
A DIVISION OF STERLING FLUID SYSTEMS

VERTICAL AND HORIZONTAL FIRE PUMP PACKAGES,
SERVICE AND REPAIR OF PEERLESS, SFP AND LABOUR PUMPS

BOFSORE FIRE PROTECTION
VERTICAL FIREWATER PUMPS OFFSHORE PLATFORM
GENERAL ARRANGEMENT

SHEET No: 1 of 1 SFS REF: FILE NAME:

SCALE: NTS

5

offshore platform

SYMBOLS

- ★ ITEMS PREINSTALLED & SHIPPED
- LOOSE FOR INSTALLATION BY OTHERS
- CUSTOMER DCS
- CONTACTS TO SIS SYSTEM
- OR FIRE ALARM PANEL (SEE NOTE 1)
- PANEL MOUNTED
- INSIDE LOCAL PANEL
- ENGINE MOUNTED DEVICES
- GATE VALVE
- BALL OR
- GLOBE VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- SOLENOID VALVE
- PRESSURE REGULATOR
- (SELF CONTAINED)
- CONTROL VALVE
- RELIEF VALVE
- W/SIGHT GLASS
- ADJUSTABLE CHOKE
- VALVE (MANUAL)
- STRAINER Y TYPE
- W/VALVE AND PLUG
- GAUGE
- FLOW METER
- AUTOMATIC AIR
- RELEASE VALVE
- RELIEF VALVE
- BALL VALVE
- LOCKED OPEN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- FLOW SWITCH
- TAMPER SWITCH
- SCREWED PLUG
- OPEN DRAIN
- SIGHT GLASS
- WATER SEPARATOR
- AIR INTAKE FILTER
- FLAME ARRESTOR
- HEAT EXCHANGER
- FLEXIBLE HOSE

LINE IDENTIFICATION LIST

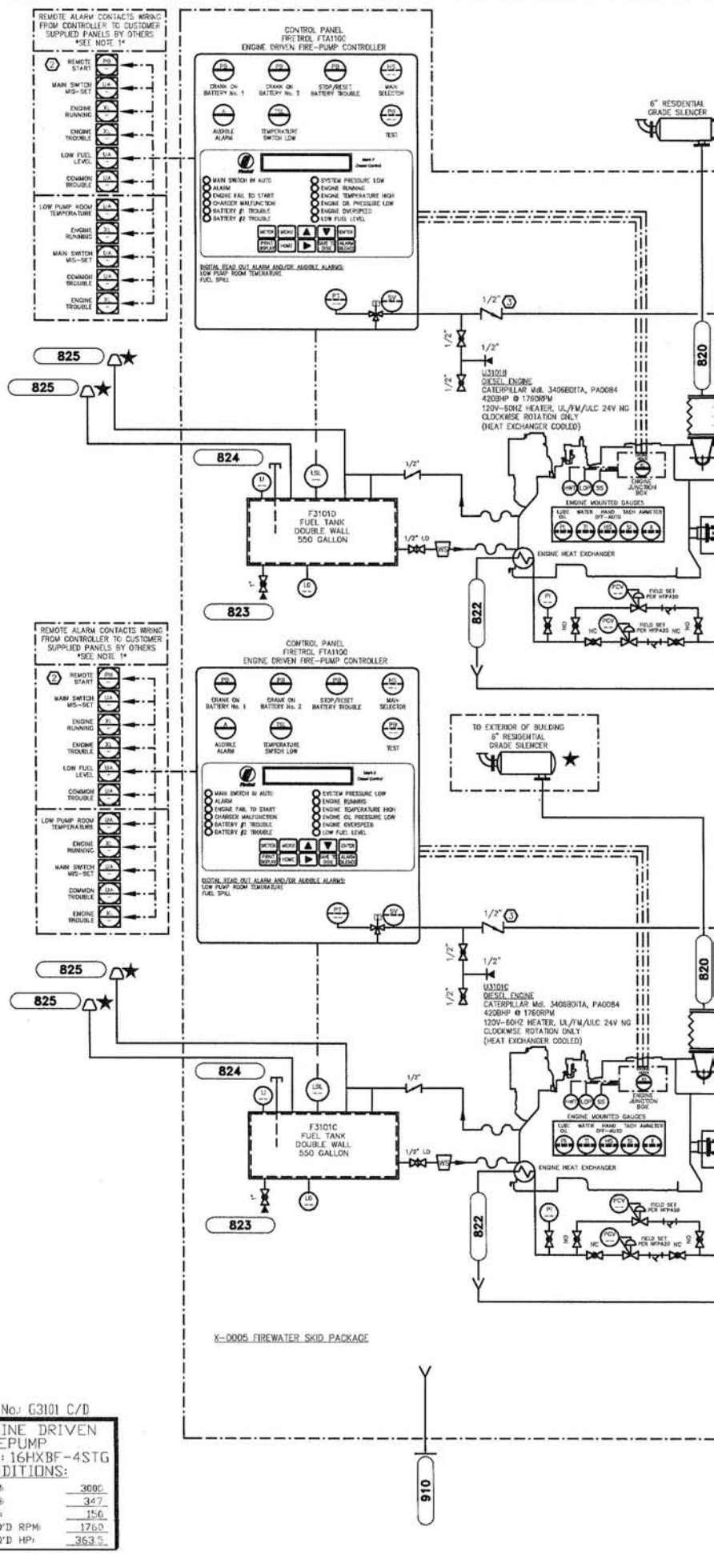
- SKID LIMITS
- ELECTRICAL SIGNAL
- PROCESS & UTILITY PIPING
- PIPING FURNISHED BY OTHERS
- PNEUMATIC SIGNAL BY OTHERS
- FLOOR DRAIN AND STUFFING BOX DRAIN PIPING

NOTES:

- CONTROL PANEL TERMINAL BLOCKS FOR REMOTE ALARM INDICATION TO FIRE ALARM PANEL OR DCS ALARM PANEL WIRING BY OTHERS.
- [(1) N.C. & N.O. DRY CONTACT BLOCKS FOR EACH REMOTE ALARM SIGNAL.]
- REMOTE START IF USED, IS A INPUT SIGNAL FROM CUSTOMER SUPPLIED PANEL.
- (SEE CONTROL PANEL FIELD CONNECTION DRAWING)
- CHECK VALVES IN PRESSURE SENSING LINES TO BE PLACED MINIMUM 5'-0" APART, IN OPPOSITE DIRECTION OF FLOW WITH A 3/32" ORIFICE IN CLAPPER. (PER NFPA 20, FIG. A-7-5.2.1)
- ENGINE COOLING WATER SHALL FLOW UNRESTRICTED BACK TO RESERVOIR DO NOT PIPE INTO OTHER PIPING SYSTEM, WHICH MAY CAUSE BACK PRESSURE.
- ALL PIPE SIZES HAVE BEEN SIZED IN ACCORDANCE WITH NFPA20, TABLE 2-20, 99 EDITION.
- 'ESS' LOCATED IN ENGINE TERMINAL BOX, WORKS WITH 'MPU' AT ENGINE FLYWHEEL TO PERFORM THE FOLLOWING FUNCTIONS - TACHOMETER, OVERSPEED, FAIL TO START & CRANK TERMINATION.
- DRAIN CONNECTION '910' TO HAZARDOUS WASTE.

LEGEND

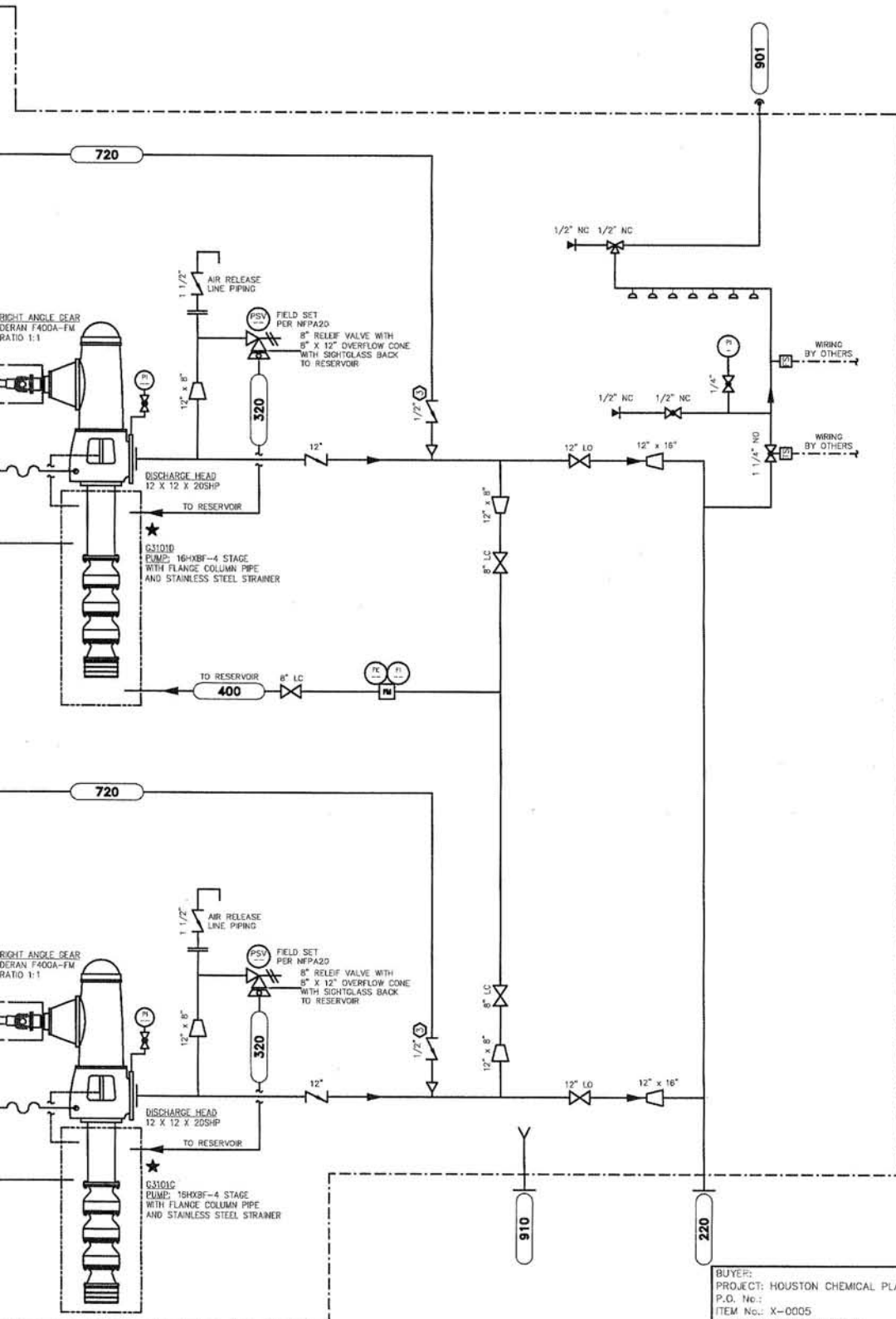
- AA: AUDIBLE ALARM
- ARV: AIR RELEASE VALVE
- DS: DISCONNECT SWITCH
- EL: VOLTAGE INDICATOR
- ETL: ENGINE TROUBLE LIGHT
- ESS: ELECTRONIC SPEED SWITCH
- FE: FLOW ELEMENT
- FG: FLOW SIGHT GLASS
- FGI: FLOW TOTALIZING INDICATOR
- FV: FLOW VALVE
- G: GAUGE
- HL: HAND SWITCH INDICATOR
- HS: HAND SWITCH (SELECTOR)
- HWT: HIGH WATER TEMPERATURE SWITCH
- IL: CURRENT INDICATOR
- IL: INDICATING LIGHT
- KL: ENGINE HOUR METER
- LAH: LEVEL ALARM HIGH
- LALH: LEVEL ALARM HIGH HIGH
- LAL: LEVEL ALARM LOW
- LC: LOCKED CLOSE
- LD: LEAK DETECTOR
- LG: LEVEL GAUGE WITH GUARD
- LI: LEVEL INDICATOR
- LIT: LEVEL INDICATOR TRANSMITTER
- LO: LOCKED OPEN
- LSP: LOW OIL PRESSURE SWITCH
- LSH: LEVEL SWITCH - HIGH
- LSHH: LEVEL SWITCH - HIGH, HIGH
- LSL: LEVEL SWITCH - LOW
- MPU: MAGNETIC PICK-UP (SPEED)
- MS: REMOTE START
- NC: NORMALLY CLOSED
- NO: NORMALLY OPEN
- PAL: PRESSURE ALARM LOW
- PB: PUSH BUTTON
- PCV: PRESSURE CONTROL VALVE
- PI: PRESSURE INDICATOR
- PIT: PRESSURE INDICATOR TRANSMITTER
- PR: PRESSURE RECORDER
- PS: PRESSURE SWITCH
- PSL: PRESSURE SWITCH LOW
- PT: PRESSURE TRANSDUCER
- RO: RESTRICTION ORIFICE
- SAH: OVERSPEED ALARM
- SDV: SHUT DOWN VALVE
- SP: TACHOMETER
- SS: OVERSPEED SWITCH
- SV: SOLENOID VALVE
- TAH: TEMPERATURE ALARM HIGH
- TI: TEMPERATURE INDICATOR
- TB: TEMPERATURE INDICATOR
- TSH: HIGH TEMPERATURE SWITCH
- TSL: LOW TEMPERATURE SWITCH
- UA: MULTIFUNCTIONAL ALARM
- VA: VOLTMETER
- VAH: VIBRATION ALARM HIGH
- VSH: HIGH VIBRATION SWITCH
- XA: UNCLASSIFIED ALARMS



USER CONNECTION LEGEND					
CUST REF	TP. NO.	SIZE	TYPE	RATING	DESCRIPTION
	220	16"	RF FLG	300#	DISCHARGE, DIESEL DRIVEN PUMP
	910	2"	RF FLG	150#	DRAIN, FLOOR (OILY DRAIN)
LINE IDENTIFICATION LEGEND					
CUST REF	TP. NO.	SIZE	TYPE	RATING	DESCRIPTION
	320	12"	OPEN	150#	DISCHARGE, MAIN RELIEF VALVE
	400	8"	OPEN	150#	DISCHARGE, FLOWMETER
	720	1/2"		1800#	SENSING LINE, ENGINE CONTROLLER
	820	6"	FLG	150#	EXHAUST, ENGINE
	822	2"		150#	DISCHARGE, COOLING WATER
	823	1"		150#	FNPT, DRAIN, FUEL TANK
	824	2"			CAP, FILL, FUEL TANK
	825	4"			VENT, FUEL TANK
	901	1"		150#	SPRINKLER, TEST CONNECTION DRAIN

TAG No: G3101 C/D
 ENGINE DRIVEN
 FIREPUMP
 MDL: 16HXBF-4STG
 CONDITIONS:
 GPM: 3600
 TDH: 347
 PSI: 150
 REQ'D RPM: 1760
 REQ'D HP: 363

POWER CIRCUIT REQUIREMENTS (BY OTHERS)						
CIRCUIT NO.	ITEM	TAG	DESCRIPTION	VOLT	PHASE	HERTZ
CKT 1	EB		POWER PANEL (NOT SHOWN)	240	1	60
REMOTE ALARM OUTPUTS (WIRING FROM PACKAGE BY OTHERS)						
CIRCUIT NO.	ITEM	TAG	DESCRIPTION	VOLT	PHASE	HERTZ
EB-R 1	EB	U301C	ENGINE CONTROLLER REMOTE CONTACTS			
EB-R 2	EB	U301D	ENGINE CONTROLLER REMOTE CONTACTS			



CHK'D BY	DATE	NO.	REVISION - DESCRIPTION

BUYER:		PROJECT: HOUSTON CHEMICAL PLANT	
P.O. No.:		ITEM No.: X-0005	
LOCATION: HOUSTON, TEXAS		TOLERANCES	
UNLESS OTHERWISE SPECIFIED		FRACTIONAL	
+/- 1/4"		DECIMAL	
X.X +/- 0.1		X.XX +/- 0.03	
X.XX +/- 0.005		ANGLE	
+/- 1°		DATE: 09/07/04	
BY: HFR		CHECKED: ---	
APPROVED: ---		FILE NAME: ---	

		11995 FM 529 HOUSTON, TEXAS 77041 PHONE: 713-886-2020 FAX: 713-886-2020 A DIVISION OF STERLING FLUID SYSTEMS	
		VERTICAL AND HORIZONTAL FIRE PUMP PACKAGES, SERVICE AND REPAIR OF PEERLESS, SPH AND LABOUR PUMPS	
INDUSTRIAL & POWER		SHEET No. 1 of 1	
DUPLX DRIVEN FIREPUMP HOUSE PACKAGE		SFS REF: ---	
PIPING AND INSTRUMENTATION DIAGRAM		FILE NAME: ---	
SCALE: NTS		0	

innovative

PES

peerless engineered systems



**PEERLESS PUMP
FIRE PROTECTION
FOR OFFSHORE
OIL PLATFORM
APPLICATIONS
IS DESIGNED
TO MEET YOUR
SPECIFICATIONS
AND VERSATILE
PERFORMANCE
DEMANDS.**

Factory Testing

The fire pump diesel engine and controllers are tested by their respective factories. The packaged systems are hydrostatically tested to ensure piping integrity. An electrical test is performed to verify the function of each component. By taking the system approach to a pump package design, important safety features are integrated into the system.

- Hydrostatic Testing
- String Testing
- Mag Testing

Single Source Service and Warranty

Peerless Fire Pump Packages will save you valuable time when servicing is required - Whether it's a relief valve, pump gauge, a control circuit, or installation supervision/start-up, our worldwide network of certified service engineers can do the job.

800-879-0182 or visit www.peerlesspump.com

Engineered and built to meet the harsh environments of offshore platforms, Peerless Fire Pump Systems offer compact designs that can be supplied in special metallurgies to meet a range of requirements.



INDUSTRIAL & POWER PLANT FIRE PUMP SYSTEM

Description: Simplex or Duplex, Diesel Engine VTP Package

Purpose: Fire Protection for Offshore Oil Platform

Pump: 20HXB-3 Stage Ni-Al Bronze

Driver: 1600 HP Caterpillar 3512DITA

HEAVILY ENGINEERED

Built for dependability, Peerless Fire Pump Systems offer special fabrication techniques and protective coatings, as well as meticulous standards of construction. This ensures long life and exceptional reliability.



THREE ENGINE DRIVEN VTP UNITS



Integral drip-rim base with drain system. Removable 316 SS diesel fuel day tank. Cooling loop with 90-10 copper nickel piping, NiAlBrz body ball valves and regulators. Fiberglass battery boxes with dual Ni-Cad battery banks. Purged NEMA 4X fire pump control panel and engine instrumentation panel. Hydraulic manual secondary engine starting system

CHEMICAL PLANT FIRE PACKAGES

Peerless Pump has over 30 years of experience furnishing fire pumps for offshore fire protection. A world leader in fire pump systems, Peerless has installed thousands of reliable fire pumps world-wide.

When purchasing an offshore fire pump system, Peerless Pump provides you with a single point of contact and single source responsibility. The reliability of Peerless "Offshore Fire Pumps" is second to none.

Applications

Peerless Pump offshore packages will be designed and built to **NFPA 20** standards, as well as incorporating customer specifications, including hazardous and non-hazardous area classifications. These diesel driven engineered fire pump systems can be furnished as simplex or duplex units that can include sound attenuation enclosures, skid mounted, flow meter loops, unlimited discharge piping, and valves and fittings as required. The pumps can be provided in various materials of construction: Ni-Resist, Nickel Aluminum Bronze, 316 Stainless Steel and/or Duplex Stainless Steel.

Features

State of the art engineered systems arrive ready to install. Pump, driver and controller are mounted on a common base. All engineered systems have complete, interconnected wiring. Preconstruction eliminates costly, complex installation problems. In-house fabrication gives Peerless Pump the ability to customize a system and assume complete unit responsibility, which means the customer has only one supplier to contact if there are questions. All PES fire packages meet the requirements of UL,

ULC, FM, NFPA13, NFPA20, and MBMA.

The offshore vertical models provide capabilities to 5,000 gpm. Pumps are powered with diesel engines. Customer specific paint application with zinc primer, epoxy intermediate coat, and polyurethane top coat.

- ISO 9001 Fabrication Facility
- ISO 9001 Manufacturing Facility
- Underwriters Laboratories (UL)
- State of the Art Engineering Designs
- NFPA-70 and NEC
- ABS Certification
- Worldwide Technical Support

Quality Engineering

The Peerless engineering staff can design a versatile system to meet your pumping requirements. The same-quality and versatility that goes into all Peerless standard fire pumps, can be found in a Peerless Offshore Fire Pump System.

The Peerless UL/FM Offshore Platform Fire Pump System Designed to your specifications, Peerless Packaged UL/FM Offshore Platform Fire Pumps come with or without enclosures, with one or more pump/driver combinations, and include controls with inlet/outlet piping/valves and fittings per NFPA 20.

ABS Certified for Offshore Fire Pump Systems

Peerless Pump can design an offshore fire pump system with ABS certification for floating offshore facilities. These systems can also be built to Underwriters Laboratories standard for non-hazardous area classifications.

we're committed



PEERLESS

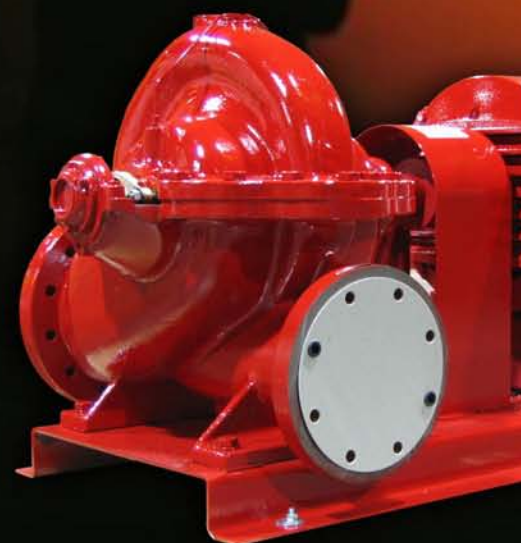
Definition: \peerless\, adj. Having no peer or equal; matchless; superlative.

OIL / INDUSTRIAL / POWER CLIENT LIST

Bechtel	Calpine Energy
Black and Veatch	Duke Energy North America
Enercon Engineering	E.I. Dupont
Fluor Daniel	F.E. Moran
GDS Engineers	Goodyear Tire and Rubber
Kellogg, Brown, and Root	J.A. Jones Construction
Mustang Engineering	Parsons Energy
Paragon Engineering	Procter & Gamble
PSEG Power New York	Sargent & Lundy
Repsol, YPF	Stone and Webster
Simplex Grinnell	Technip
Zachary Construction	Utility Engineering Corporation
Washington Group	Worley

OFFSHORE OIL AND GAS USERS LIST

BHP Billiton
China National Offshore Oil Company
China Petroleum Engineering and Construction
Conoco-Phillips
Energy Development Corporation China
Exxon Mobile
Japan Vietnam Petroleum Company
Marathon Oil
Samedan Oil Corporation
Shell Oil Company
Tractebel
Unocal





Unrivald Reliability

- Horizontal splitcase fire pumps
- Plumbing and HVAC pumps
- Vertical turbine fire pumps and hydronics
- Vertical in-line fire pumps
- End suction pumps
- Fire pump packaged systems
- Sump pumps
- Multistage pumps
- Domestic water booster systems

PES

sales contacts

PEERLESS ENGINEERED SYSTEMS - SALES CONTACT INFORMATION

Please contact your local authorized Peerless Pump sales office to find out more about our fire pump options and prices.

PEERLESS ENGINEERED SYSTEMS - ENGINEERING & MANUFACTURING LOCATIONS

Houston, TX

11995 FM 529
Houston, TX 77041
U.S.A.
(713) 896-0220

Indianapolis, IN

2005 Dr. Martin Luther King Jr St.
Indianapolis, IN 46202
U.S.A.
(317) 925-9661

Lubbock, TX

1802 East 50th Street
Lubbock, TX 79404
U.S.A.
(806) 747-0002

Selma, AL

901 Ravenwood Drive
Selma, AL 36701
U.S.A.
(334) 875-4100

Fresno, CA

1755 Broadway
Fresno, CA 93721
U.S.A.
(559) 233-1241

Cincinnati, OH

1375 Kemper Meadow Dr., Suite 7
Cincinnati, OH 45240
U.S.A.
(513) 851-8200

Singapore

16 Jalan Kilang Timor #06-08
Redhill Forum
Singapore 159308
+65-6725-8124

Europe - France

79 Place de la Mairie
01630 Sergy France
France
+33-(0)450-406424

Europe - Italy

C.So Romania, 501/18
10156 Torino Italia
Italy
39-011-381-9266

Mexico

Av. Milimex 115
Parque Inds. Milinex
Apodaca Nuevo Leon, Mexico 66600
(52) 81-8625-9900