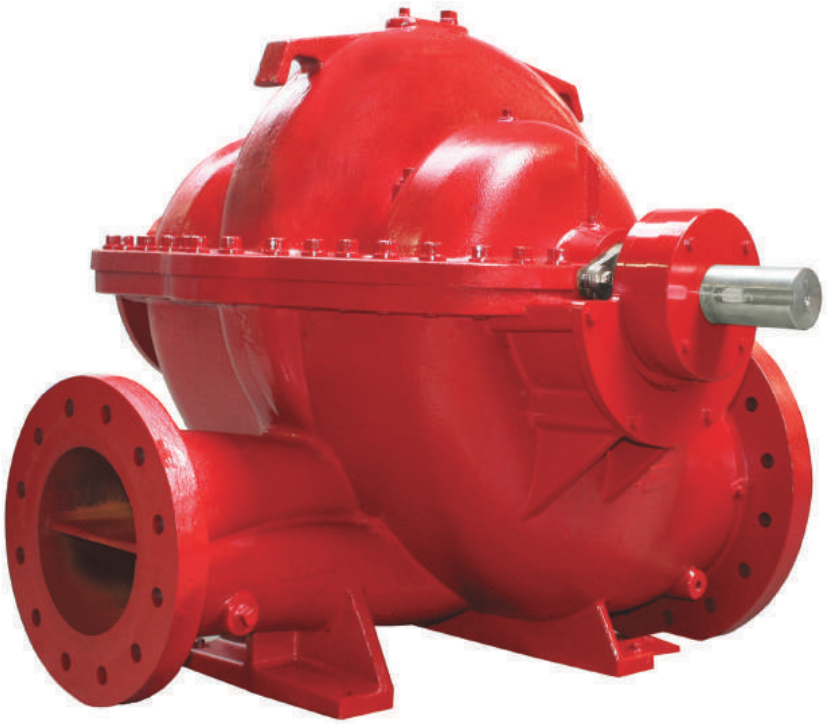
50HZ/60HZ



MENA

MECHANICAL INDUSTRIES CO.

FIRE PUMP

NFPA

UL® LISTED

MENA MECHANICAL INDUSTRIES CO.		
		Vendor Doc. No. **TS-15008.4-SC2611**
Contractor Name: **M/S WATERWAVE**		OTHER Ref. No K25257
Project Name:		Contractor Job No.

TECHNICAL SUBMITTAL

FIRE PUMP SET
(SPLIT CASE)
(E+D+J)

CAPACITY
1500 US GPM @ 8.4 BAR

0	***SUBMITTED FOR APPROVAL***	***KY***	***KY***		***26/03/2026***
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

DOCUMENT INDEX

Part	Seq. No.	Doc. Ref.	Description	Remarks
GENERAL DOCUMENTS	01	GD-SVL	Sub-Vendor List	
	02	GD-STS	Pump curves, GAD & System Technical Specifications	
	03	GD-CE	UL/FM Certificates	
	04	GD-CP	Catalogue and Trade License	
	05	GD-PA	Previous Approvals	
DIESEL DRIVEN PUMP	07	DDP-PSC-1500	Diesel Engine Driven Pump Specifications	
	08	DDP-DES	Diesel Engine Specifications	
	09	DDP-PCS-12V	Diesel Engine driven fire pump controller specifications	
ELECTRIC DRIVEN PUMP	10	EDP-PSC-1500	Electric motor driven pump specifications	
	11	EDP-EMS-125/2	Electric motor specifications	
	12	EDP-PCS	Electric motor driven fire pump controller specifications	
JOCKEY PUMP	13	JP-RV	Jockey Pump Specifications	
	14	JP-PCS-JP3	Jockey Pump Controller	
ACCESSORIES	15	A-CRV-R	Casing Relief Valve	
		A-ARV-VAL	Air Relief Valve	
		A-PG-W	Pressure Guages	
		A-FM-GRND	Flowmeter	
		A-CS-180	Diesel Fuel Tank Drawing	

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

SUB VENDOR LIST

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

SUB VENDOR LIST

EQUIPMENT	BRAND	MAKE	DESCRIPTION
SPLIT CASE FIRE PUMP	MENA	MENA MECHANICAL INDUSTRIES, UAE	RANGE: 300 - 8000 US GPM
DIESEL DRIVER	**TAIDONG**	TAIDONG UL LISTED	RANGE: 24 - 262 HP from 2920-3000 RPM
FIRE PUMP MOTOR	**TECHTOP** marathon Motors A Regal Brand REGAL	TECHTOP MOTORS UL LISTED MARATHON UL LISTED	RANGE: 11kW - 350kW Type: ODP & TEFC, NEMA2 RANGE: 15HP- 400HP Type: ODP & TEFC, NEMA2
FIRE PUMP CONTROLLERS	TORNATECH Fire Pump Controller	TORNATECH, INC UL LISTED & FM APPROVED	RANGE: 11kW to 350KW Type: Diesel, Electric, Jockey
AIR RELIEF VALVE	**CAL-VAL** **OR** FWIC Valves	CAL-VAL, USA UL LISTED & FM APPROVED FWIC FM APPROVED	RANGE: 1/2 inch - 2 inch UP TO 300 PSI RANGE: 1/2 inch - 1 inch UP TO 300 PSI
FLOWMETER	GERAND ENGINEERING	GERAND, USA FM APPROVED	RANGE: 2-1/2 Inch to 8 Inch UP TO 300 PSI

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name	Contractor Job No.

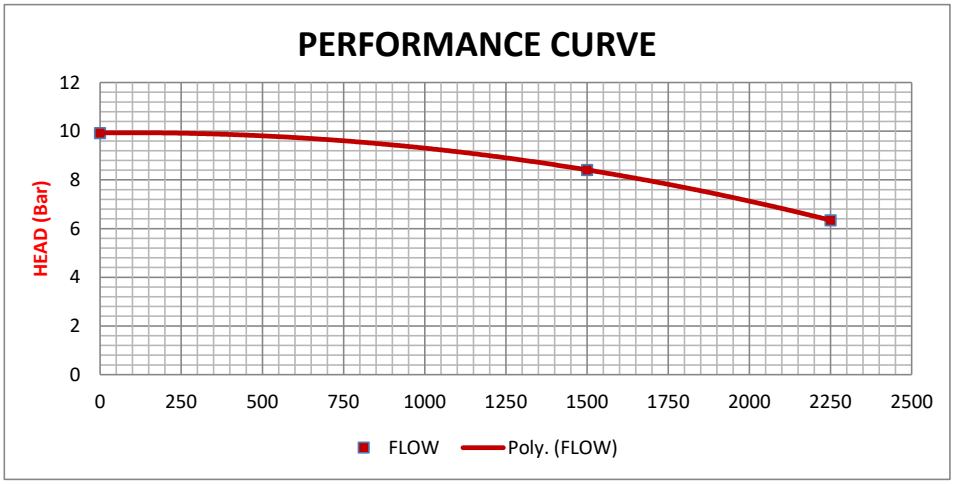
SYSTEM TECHNICAL SUBMITTAL

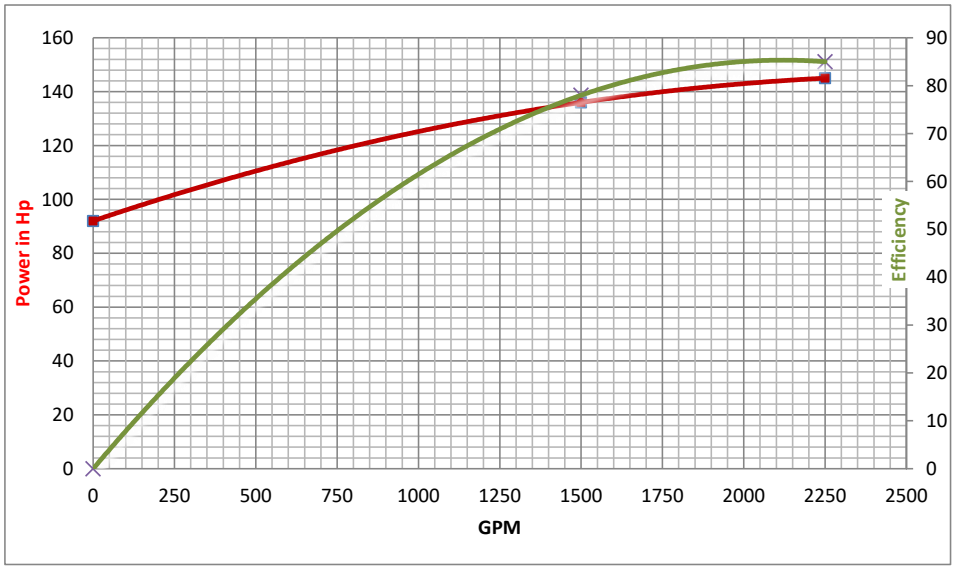
0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

PUMP DATA SHEET

MSC8-150-310

File No DSMSCD-1500-8.34-2980





STANDARD	UL 448

Brand	MENA MECHANICAL INDUSTRIES CO

OPERATING SPECS	
Flow (US GPM):	1500
Pressure (BAR):	8.4
Fluid	Clean Water
Listing Cert No	EX28929
Type of Installation	Fire Fighting Pump

PUMP SPECIFICATION	
Pump Model:	MSC8-150-310
RPM:	2980
Trim	Refer Test Report
Flange Size	8x6
NOL (HP)	145.00
Correction factor	Refer Test Report
Approval:	UL Listed

DIESEL DRIVER SPECIFICATION	
Type	HEAT EXCHANGER
Rated HP	185
Speed (RPM)	2920
Model No	6110THE
Service Factor	UL LISTED
Approval:	TA
Brand:	

MATERIAL SPECIFICATION	
Casing	Ductile iron
Impeller	Bronze
Shaft	SS
Seal	Gland
Flange	ANSI

Selection Ref:-	VT01-Issue 3-rev00

CONTROLLER SPECIFICATION	
Series - Type	GPD-24
Make	Tornatech- UAE
Approval	UL & FM APPROVED
VOLT	24 V

REMARKS
Assembled by Mena Mech Ind Co -UAE

PRESSURE RELIEF VALVE	Type:	
	Brand:	
	Model Number:	

MINIMUM FITTINGS	Battery	200 AMH
	Coupling Guard	MS STEEL
	Diesel Tank	180 USG
	Approval	MENA- Non Listed

FLOW METER	Brand:	GEERAND
	Model Number:	G-1500-8
	Approval	FM APPROVED

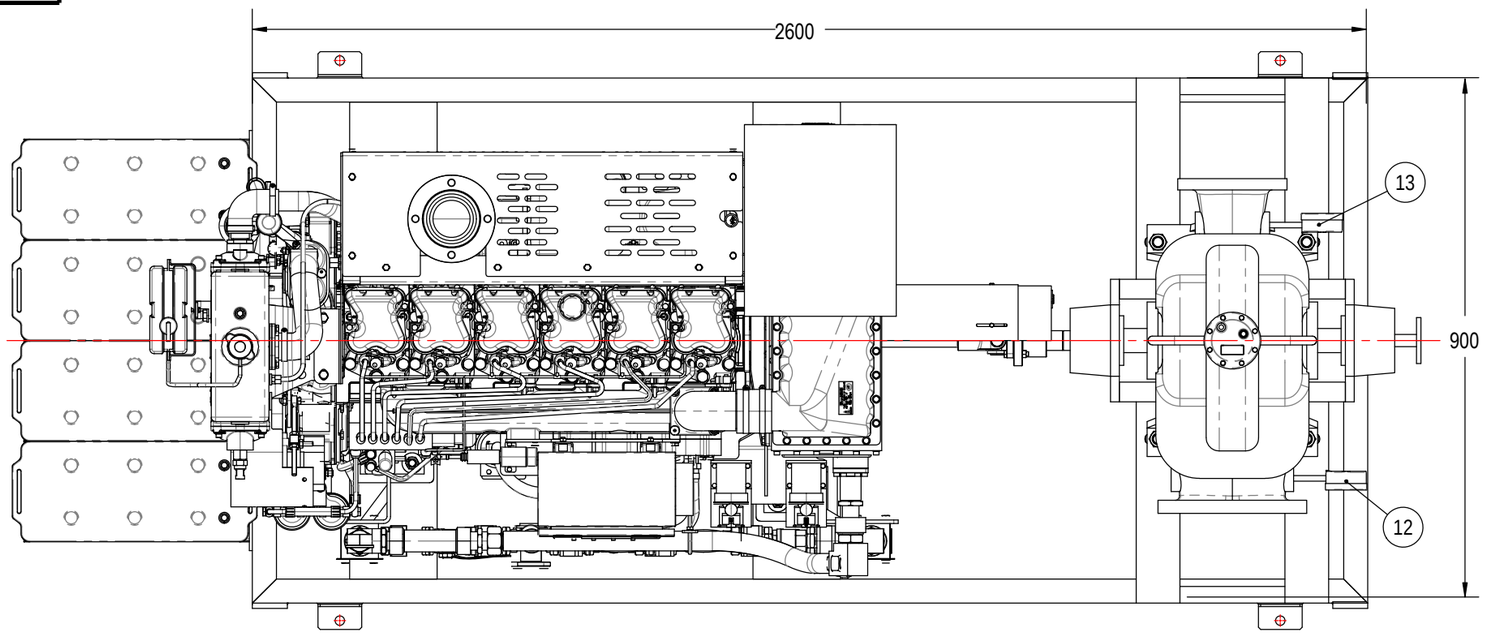
MINIMUM FITTINGS	Level Indicator	H-1.5-27-GLC-GRUGGER/USA
	Approvals	UL Listed

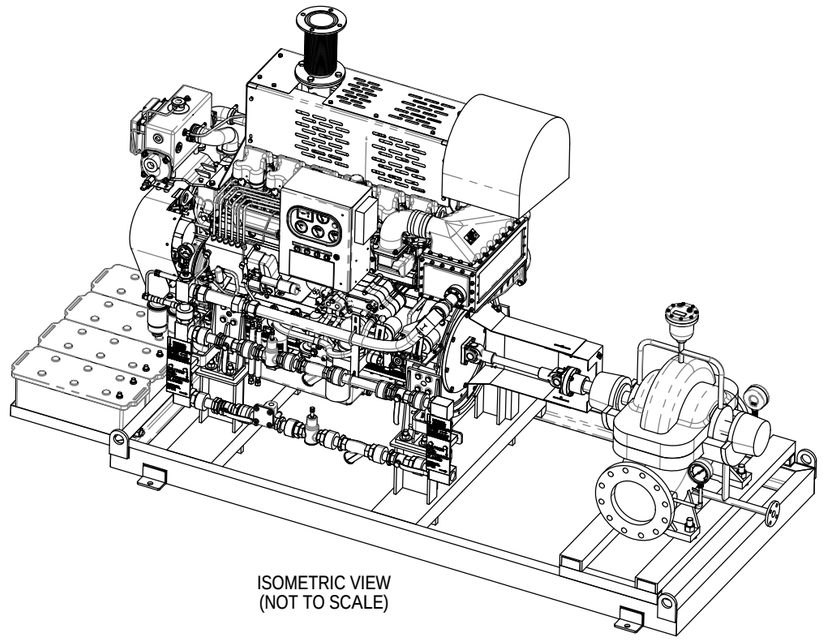
*Manufacturer Reserves Right to Revise the specs and contains without prior notice * Driver Brand Subjected to availability Data Sheet generator V01

DRAWING NO.

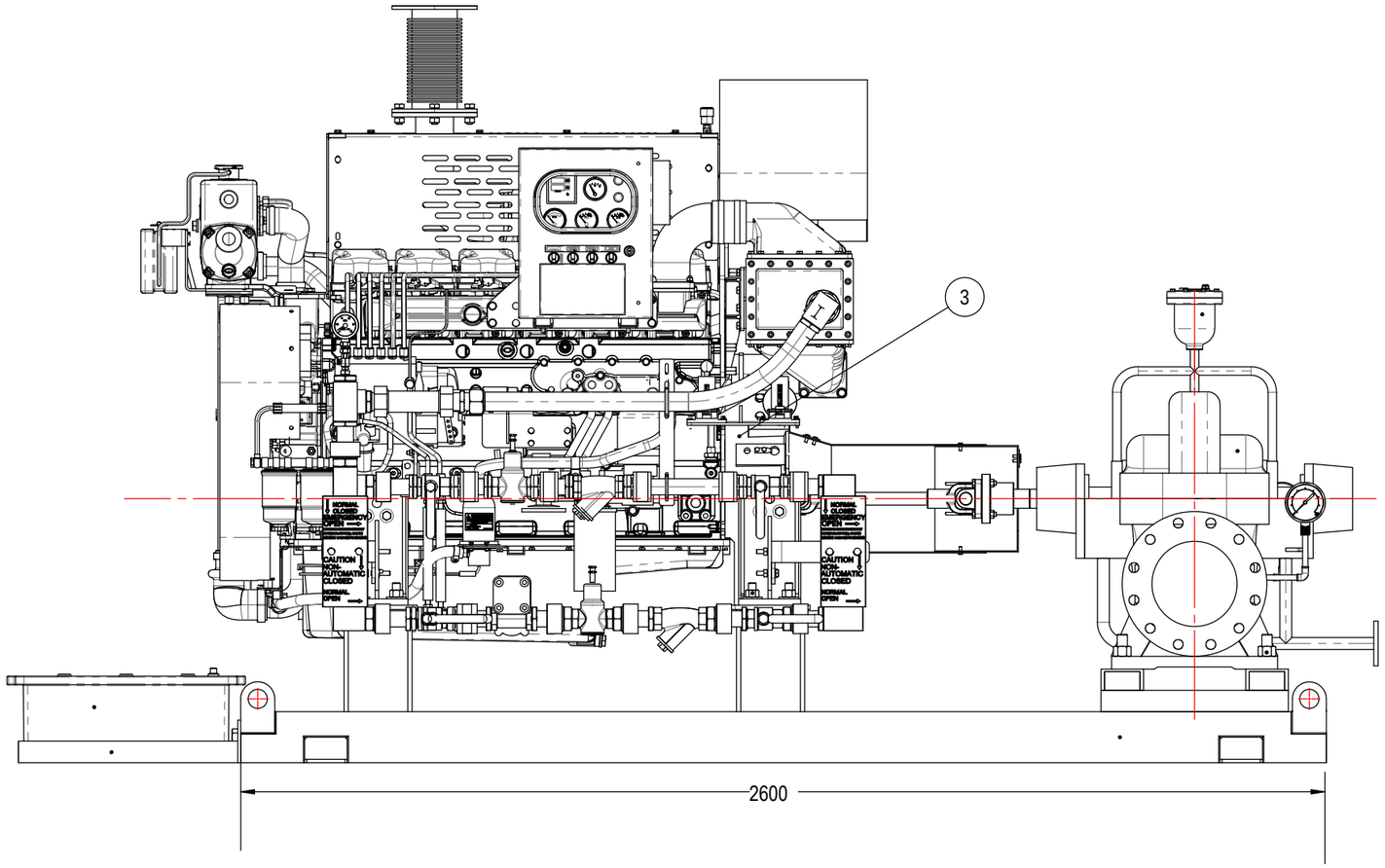
IF IN DOUBT, PLEASE ASK

REVISIONS						
ZONE	LTR.	DESCRIPTION	DATE	BY	CHECKED	APPROVED





ISOMETRIC VIEW
(NOT TO SCALE)



UNLESS OTHERWISE SPECIFIED:
1. REMOVE ALL BURRS AND SHARP EDGES .25 -.50
2. FILLETS .50 R MAX.
3. CUT OR MACHINED SURFACES TO HAVE 1.6µm.
4. DIMENSIONS ARE IN MM.
5. TOLERANCES ARE:
DECIMAL: X ±.50, XX ±.20
ANGLES: ±30'

MATERIAL: SEE PARTS LIST

WEIGHT: ---

MENA MECH IND CO

SHARJAH, UAE

APPROVALS		DATE
DRAWN	OA	02/01/24
CHECKED	OA	02/01/24
APPROVED	OA	02/01/24

DESCRIPTION:
UL SPLIT - CASE PUMP **MSC8-150-310**
DIESEL ENGINE, W/ BASE PLATE
ASSEMBLY (**1500** GPM @ **8.4**BAR)

CROSS REFERENCE

SCALE:

DIMENSION: MM

DRAWING NO.

SHEET: 1of1

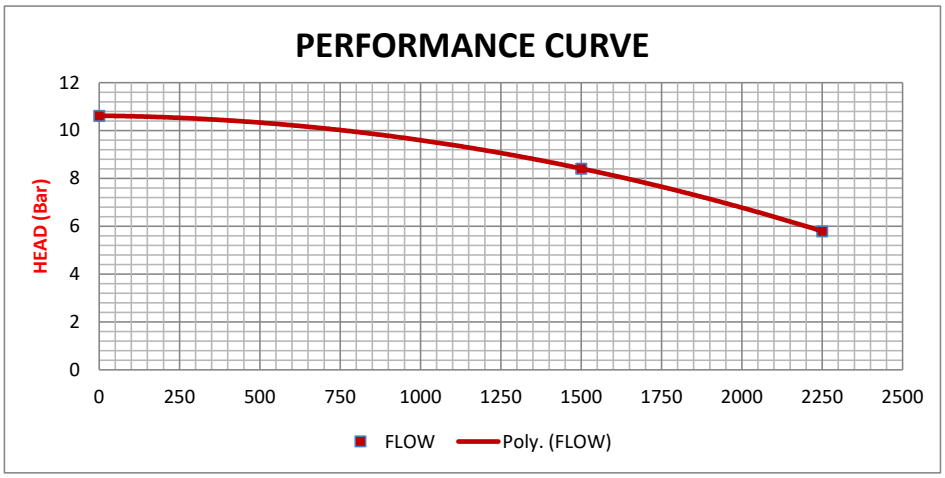
Diesel Fire Pump

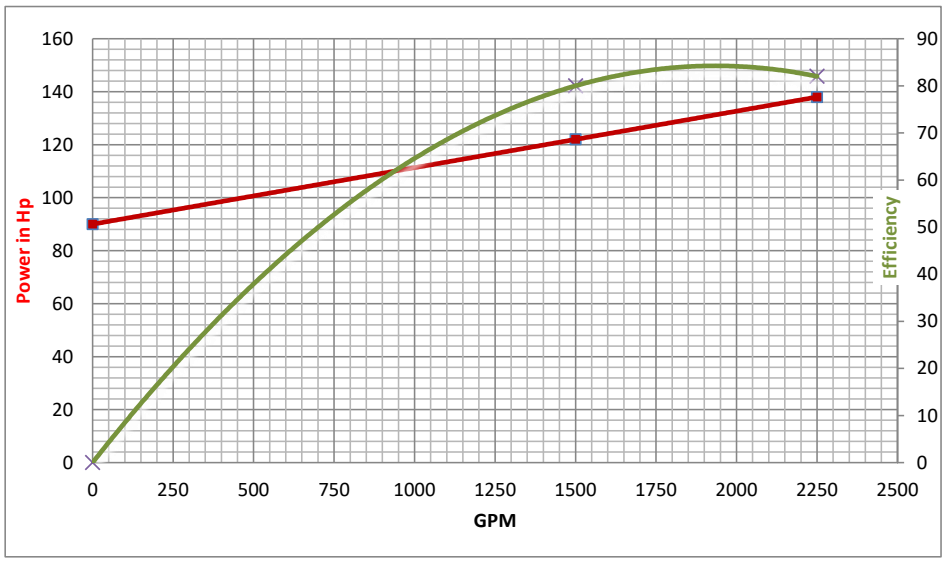
Item Description		Proposed
Diesel Pump:		
Make	:	MENA (MENA Mechanical Industries) UL Listed
Model	:	MSC8-150-310
Type	:	Split Case Fire Pump
Rated Flow	:	1500 USGPM
Rated Head	:	8.4 BAR
Rated Speed	:	2980 RPM
Casing	:	Ductile Iron
Impeller	:	Bronze
Material Shaft	:	Stainless steel
Brand	:	MENA
Pump Approval	:	UL Listed
Diesel Engine:		
Make	:	TAIDONG
Model / Hp	:	6110THE - 185HP
Cooling Method	:	Heat Exchanger
Speed	:	2920 RPM
Engine Approval	:	UL Listed
Diesel Pump Controller		
Make	:	"Tornatech"
Model	:	GPD-24-220
Operation	:	Combined Automatic , Manual Start
Enclosure	:	NEMA 2
Mounting	:	FLOOR / WALL
Method of Start	:	Standard
Operation Interface	:	Standard
Power Supply	:	220V AC, 12/24V DC
Controller Approval	:	UL Listed & FM Approved, Built to NFPA 20 Standards

PUMP DATA SHEET

MSC8-150-250

File No DSMSCE-1500-8.4-3550





STANDARD	UL 448

Brand	MENA MECHANICAL INDUSTRIES CO

OPERATING SPECS	
Flow (US GPM):	1500
Pressure (BAR):	8.40
Fluid	Clean Water
Listing Cert No	EX28929
Type of Installation	Fire Fighting Pump

PUMP SPECIFICATION	
Pump Model:	MSC8-150-250
RPM:	3550
Trim	Refer Test Report
Flange Size	8x6
NOL (HP)	138.02
Correction factor	Refer Test Report
Approval:	UL Listed

ELECTRIC DRIVER SPECIFICATION		
Type	ODP	
Power Supply	380 V- 60 Hz- 3 Ph	
Rated HP:	125	
Poles/RPM	2	3550
Service Factor	1.15	
Approval:	UL Listed	
Brand:	TECHTOP	

MATERIAL SPECIFICATION	
Casing	Ductile iron
Impeller	Bronze
Shaft	SS
Seal	Gland
Flange	ANSI

Selection Ref:-	VT01-Issue 3-rev00

CONTROLLER SPECIFICATION	
Series - Type	GPY-Star - Delta
Make	Tornatech- UAE
Approval	UL & FM APPROVED
Capacity (HP)	125

REMARKS
Assembled by Mena Mech Ind Co -UAE

JOCKEY PUMP			
	Type:	Vertical Multistage	
	Brand:	RV	
	Model Number:	RV15/Equivalent	
	Capacity:	GPM	Bar

MINIMUM FITTINGS		
	CRV Model:	513 -LP - 1/2-15NB-Fluid-India
	Approval:	UL listed
	Pressure Guage:	Model: 111.11-WIKAI-USA
	Approval:	UL Listed & FM Approved

Jockey Pump Controller		
	Brand:	Tornatech- Canada/UAE
	Model Number:	JP3/JPLT
	HP	HP
	Approval	UL Listed

MINIMUM FITTINGS		
	ARV Model:	SBC -STD-CLAVAL-INC-UL/FM APPROVED
	Flow Meter	G-1500-8-Brand-GEERAND-FM APPROVED

*Manufacturer Reserves Right to Revise the specs and contains without prior notice

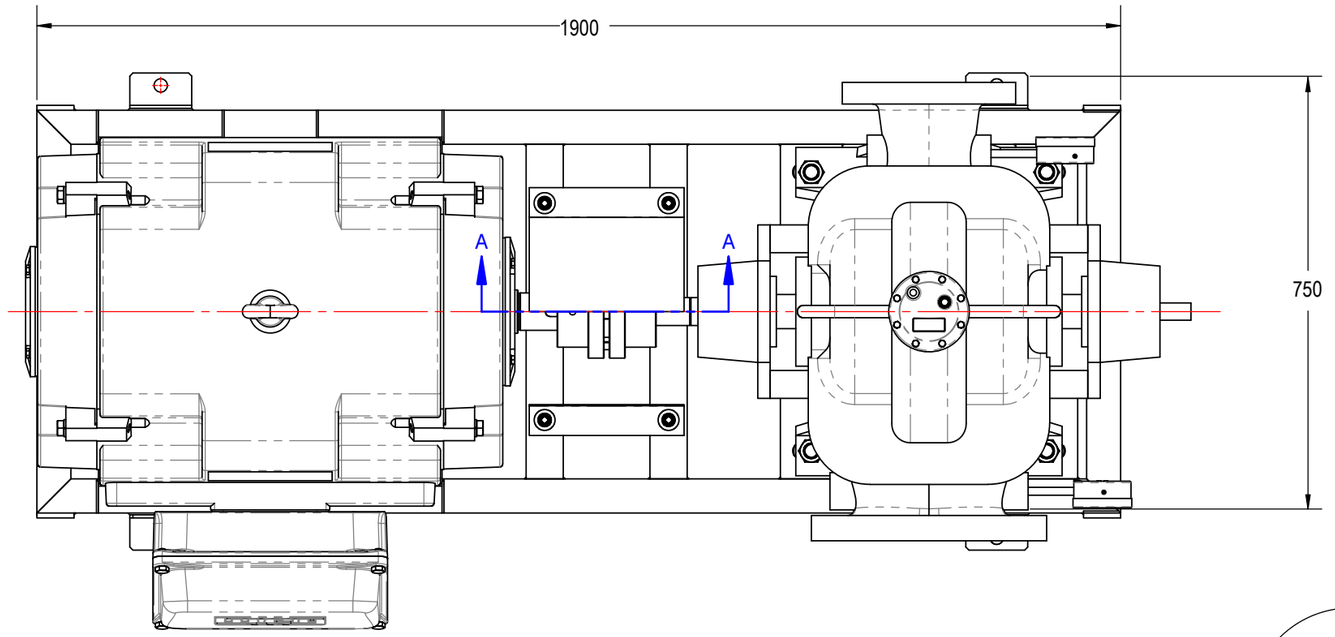
* Driver Brand Subjected to availability

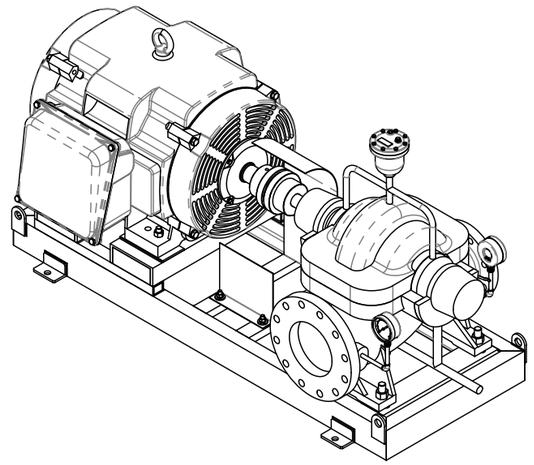
Data Sheet generator V01

DRAWING NO.

IF IN DOUBT, PLEASE ASK

REVISIONS						
ZONE	LTR.	DESCRIPTION	DATE	BY	CHECKED	APPROVED
-						





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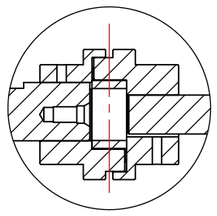
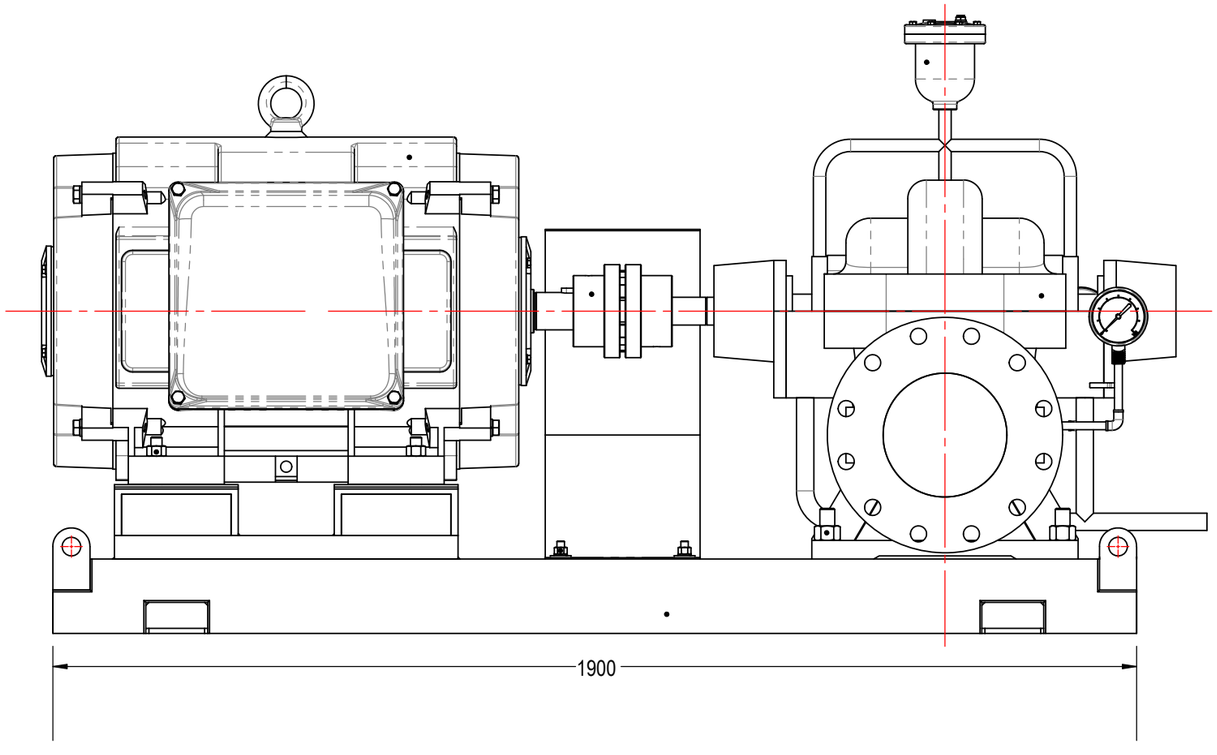
(NOT TO SCALE)



SECTION A-A



UNLESS OTHERWISE SPECIFIED:
1. REMOVE ALL BURRS AND SHARP EDGES .25 - .50
2. FILLETS .50 R MAX
3. CUT OR MACHINED SURFACES TO HAVE 1.6µm.
4. DIMENSIONS ARE IN MM.
5. TOLERANCES ARE:

DECIMAL	ANGLES
.X ± 0.50	± 30
.XX ± .20	

MATERIAL: SEE PARTS LIST

WEIGHT : ---

MENA MECH IND CO
SHARJAH, UAE

APPROVALS		DATE
DRAWN	OA	02/01/24
CHECKED	OA	02/01/24
APPROVED	OA	02/01/24

CROSS REFERENCE

DESCRIPTION:
UL SPLIT - CASE PU**MP MSC8-150-250**
150HP MOTOR, **ODP**W/ BASE PLATE ASSY
(**1500** GPM @ **8.4** BAR)

DRAWING NO.

SHEET: 1of1

SCALE:

DIMENSION: MM

Electric Fire Pump

Item Description		Proposed
Electric Pump:		
Make	:	MENA (MENA Mechanical Industries) UL Listed
Model	:	MSC8-150-250
Type	:	Split Case Fire Pump
Rated Flow	:	1500 USGPM
Rated Head	:	8.4 BAR
Rated Speed	:	3550 RPM
Casing	:	Ductile Iron
Impeller Material	:	Bronze
Shaft	:	Stainless Steel
Brand	:	MENA
Pump Approval	:	UL Listed
Electric Motor:		
Make	:	TECHTOP
Protection	:	Class F
Type	:	ODP
Performance Rating	:	125 HP, 3Ph, 60Hz , 380V, 2 POLES
Speed	:	3550 RPM
Motor Approval	:	UL Listed
Electric Pump Controller		
Make	:	"Tornatech"
Model	:	GPY-380\125\3\60
Operation	:	Combined Automatic , Manual Start & Remote Start
Enclosure	:	NEMA 2
Mounting	:	FLOOR / WALL
Method of Start	:	WYE DELTA (OPEN)
Operation Interface	:	Standard
Power Supply	:	3Ph, 380V, 60Hz
Controller Approval	:	UL Listed & FM Approved, Built to NFPA 20 Standards

UL LISTED FM APPROVED

Jokey Fire Pump

Item Description		Proposed
Electric Pump:		
Make	:	MENA OR PACIFIC
Model	:	RV
Type	:	Vertical Multistage
Rated Flow	:	20 USGPM
Rated Head	:	9.5 BAR
Rated Speed	:	3500 RPM, 60 Hz
Motor:		
Type	:	TEFC Motor
Power Supply	:	3 Ph, 380-400V, 60 Hz
Rated power	:	5.5 Hp
Speed	:	3500 RPM
Jockey Pump Controller		
Make	:	"Tornatech",
Model	:	JPLT-380\5.5\3\60
Operation	:	Combined Automatic , Manual Start
Enclosure	:	NEMA 2
Mounting	:	WALL
Method of Start	:	DOL
Operation Interface	:	Touch Screen
Power Supply	:	3 Phase, 380 V, 60 Hz
Controller Approval	:	UL Listed / Built to NFPA 20 Standards

MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

PREVIOUS APPROVALS

0	***SUBMITTED FOR APPROVAL***				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

التاريخ: 2023/10/19
الرقم: ME/LE/2023/C0106

خطاب

بموجب هذا نحن شركة ميناء للصناعات الميكانيكية (شركة اماراتية بموجب رخصة تجارية رقم 763789) ، نؤكد ان مؤسسة موج الماء المضخات للتجارة (شركة سعودية بموجب رخصة تجارية رقم 43069093569) هي وكيل تجاري / موزع في المملكة العربية السعودية ولديها الصلاحيات بالتقديم للحصول على الاعتمادات من الاستشاريين ، كما انها مسؤولة عن خدمات الفحص وما بعد البيع لمضخات اطفاء الحريق ذات العلامة التجارية – MENA.

المدير العام

شركة ميناء للصناعات الميكانيكية

شركة ميناء للصناعات الميكانيكية
P.O.Box: 430541
Sharjah - U.A.E.
MENA MECH. IND. CO.

Sharjah - Al Sajaa Industrial, Behind Emirates Road - Warehouse No.11
Head Office No. 04-2200255

Material Submittal Form

TRS-CN-FRM-0018

The Red Sea Development Company

General Information			
Contractor	Coastal Contracting Company	Submittal No.	012
Contract No.	CC3O00-CCC	Date	27-Jan-24
To the Engineer	Electrical Engineer	Approved Subcontractor *(as applicable)*	

Material Information			
Material Description *(One item only per Form)*	Fire Fighting Pump Set		
As per Specification	Proposed	Alternative	YES
Drawing Reference		BOQ Ref. No.	NA
Specification Reference	NA	Standards, BS, DIN	-

Manufacturer/Supplier			
Company Name	Mena Mechanical Industries Co.	Locally Manufactured	NA
Address	601-Shaheel 1 - Nahda 1- United Arab Emirates		
Local Agent	Water Wave Pump Trading EST.	Other Details	NA
Program Date *(Material Required on Site)*		Expected Arrival Date *(on Site)*	

Contractor's

Mahmoud Alshebli		31-Jan-24
Name	Signature	Date

Design Consultant - Comments

Comments: Submit:
Test Certificate

Ahmed Senan		
Name	Signature	Date

Engineer Shaher Al-Nahari Consulting Engineering Office
C.R. 4030271720

Engineer's - Comments

Comments:

Name	Signature	Date

Status Code

- ☐ Accepted
- ☒ Accepted with Comments
- ☐ Revise and Resubmit
- ☐ Rejected
- ☐ Review not Required

SUBMITTAL REQUEST طلب اعتماد

PRE. DATE: التقديم السابق:	DATE: 17/05/2023 تاريخ التقديم:	NO. رقم الاعتماد:
CONTRACTOR المقاول: MASADER PLUS LTD. MEP – LC Tabuk, KSA	**CONSALTANT** الاستشاري: MOHAMMED FAHD ALSAUD ARCHITECTURE CONSULTANTS 3690, Jeddah 21481 KSA	**CLIENT** المالك: Saudi Air Navigation Services, Jeddah, KSA

PROJECT: KKIA FIRE PROTECTION (ATCT, ACC & TSC) اسم المشروع:

ARCH	☐	معماري	Design Drwgs. ☐	تصاميم	**CONTRACT NO. #PO5414**
STR	☐	إنشائي	Shop Drwgs. ☐	مخططات تنفيذية	المقاول
ELEC	☐	كهرباء	Materials ☒	مواد	**مدير المشروع :م/ احمد النجار**
MECH	☒	ميكانيكا	Specs/Data ☒	مواصفات/بيانات	التوقيع
Other	☐	أخرى	Other ☒	أخرى	

بند رقم	وصف البند للإعتماد	رقم المبنى	كتالوج الصانع أو مخططات المقاول	رقم المواصفات الفنية	عدد النسخ
ITEM NO.	**DESCRIPTION OF ITEM**	**BLDG. NO.**	**MFG.CAT. OR CONTR. DRAWING NO.**	**SPEC. REF.**	**NO. OF COPIES**
1	FIRE FIGHTING PUMP 1000 gpm & 16 bar	ATCT	**MENA Fire Pumps**		1
2	FIRE FIGHTING PUMP 500 gpm & 8 bar	ACC	**MENA Fire Pumps**		1

SIGNATURE: التوقيع: | **CONSULTANT RECEIVED ON NAME:** تاريخ استلام الاعتماد: الاسم:

REMARKS: الملاحظات:

Control panel for both fire pumps should operate to work on 55 degree tempreture

500 GPM pump should operate delta star not DOL , Jocky pump for ATCT should starting methos (Delta star) not DOL

BATTERIES sholud not less than 2022 production

Contractor should arrange with supplier a bout diesel pump heater and all required wires connection to pump

For ACC building , IP control panels should not less than IP55 beause it is outdoor installation

التاريخ:	مدير المشروع:	المهندس المختص:

COMMENTS: الملاحظات:

Project Engr. (SANS) مهندس المشروع المالك: Hamada

التاريخ: 23.12.2023

Project Manager (SANS) مدير المشروع المالك:

☐	☐	Approved	معتمدة
☐	■	Approved except as noted	معتمدة مع ملاحظات
☐	☐	Resubmit as noted	يعاد التقديم بعد التعديل
☐	☐	Disapproved	مرفوضة
☐	☐	For Information	للعلم

SIGNATURE: التوقيع: | **CONTRACTOR RECEIVED ON NAME:** استلام المقاول بتاريخ: الاسم:

-Diesel tank volume & dimension to be specified in the submittal.
-Selection is based on actual hydraulic calculation , any lack of coordination is the contractor responsibility.
-Refer to Electrical Comments.
-Installation drawing for main and diesel pumps including any missed accessories should have been presented from the supplier
-Capable of furnishing not less than 150 percent of rated capacity at not less than 65 percent of total rated head. Shutoff head is limited to 140 percent of total rated head.
-Flow measurement systems components to be match with project pressure ratings.

شركة مصادر بلس المحدودة MASADER 3550034956 شركة شخص واحد

محمد فهد السعود
للاستشارات الهندسية
MOHAMMED F. ALSAUD CONSULTANT
السجل التجاري: 4030250538
رقم الترخيص: 7110003976

PROJECTS Sector	جامعة الأميرة نورة بنت عبدالرحمن	قطاع المشاريع
Contractor: Arabian Housing and Building Company	Al-Hilal Saudi Club - Projects Sector	Consultant: Arabian Horizon Consulting Engineering

MATERIAL SUBMITTAL FORM	PNU Training Facility Project	طلب اعتماد مواد - رقم العقد (AHB-25002)

Submittal No. / استمارة إرسال رقم	00/00/1446 H	Date (H) / التاريخ (هـ)	☑	New Submittal / تقديم جديد	☑	مشفوعات إضافية Attachment	☐	Civil / مدني	☑	Mech. / ميكانيكي
25002-AHB-MA-CD-MFF-002-00	22/10/2025 G	Date (G) / التاريخ (م)	☐	Resubmitted / إعادة تقديم			☐	Arch. / معماري	☐	Elec. / كهرباء

رمز الإجراء Action Code		B.O.Q	عدد النسخ	الشركة المصنعة Brand	اسم الوكيل المحلي Local Agent Name	Description of item submitted / وصف العنصر المقدم	الرقم المسلسل
Client	Consultant						
			1	Professional Structure Services Co.Ltd	MENA	Fire Pumps	1

☐ specification ☐ Samples ☑ Technical Brochure \ Data Sheet ☐ Manufacturer's Date and Specs ☐ Warranty ☐ Shop Drawings ☐ comparison sheet

This section is to be filled by Contractor — تعبئة الجزء بواسطة المقاول

Contractor Remarks ملاحظات المقاول	Project Manager اسم و توقيع مدير المشروع	Project Engineer اسم و توقيع مهندس المشروع	Tech. Dept القسم الفني
	Eng:Mahmoud Faydi	Eng. ----------	Eng. Amro Elzamly

This section is to be filled by Consultant — تعبئة الجزء بواسطة الإستشاري

Consultant Remarks ملاحظات الإستشاري	Project Manager اسم و توقيع مدير المشروع	Project Engineer اسم و توقيع مهندس المشروع	Tech. Dept القسم الفني
CODE-B The selection shall comply with civil defense design pressure requirements.	Eng. ----------	Eng. ---------- IRFAN ALI 27-10-2025	Eng. ----------

This section is to be filled by authorized engineers — تعبئة الجزء بواسطة المهندسين الموكل لهم صلاحية الاعتماد

Client Remarks ملاحظات المالك	Project Manager اسم و توقيع مدير المشروع	Project Engineer اسم و توقيع مهندس المشروع
	Eng. ----------	Eng. ----------
	Returned Attachment as item no.	
	(A) Approved as submitted. Work may proceed. (B) Approved as noted - Work may proceed as per comments (C) not Approved resubmission required. Work may not proceed. (D) Rejected. Work may not proceed.	(أ) يعتمد كما تم تقديمها و يمكن البدء في العمل . (ب) يعتمد مع تنفيذ الملاحظات و يمكن البدء بالعمل بعد تنفيذ الملاحظات (ج) يعتمد مع مراعاة الملاحظات و يلزم إعادة التقديم قبل البدء في العمل. (د)غير معتمد , لا يمكن البدء في العمل .

ملاحظة : اعتماد العناصر لا يعفي المقاول من المسئولية التامة عن العناصر المقدمة و نحو الوفاء بكل المتطلبات المذكورة في العقد ولايتنج عنه أي أعباء مالية إضافيه

Note : Approval of items does not relieve the contractor from his responsibility and complyig with all the requiremnt of the contract term nor authorize additional compensation .

DUKAN WAREHOUSE
AL KHUMRAH - JEDDAH

S. No.	Materials	Listings	Approved / Acceptable Brands	Remarks
1	Black Steel Sch#40 Pipes	SASO	SSP / Sumitomo / Jazira	require sample for GMC Sch#40, ERW pipes
2	Grooved Fittings	UL / FM	Victaulic / Gruvlok / Shurjoint	require sample for LEDE groove fittings
3	Threaded Fittings	SASO	Gourd Hitachi	
4	Alarm Check Vlaves, OS&Y Gate Valves, Gear Operated Butterfly Valves, Swing Check Valves, Strainer, Zone Drain & Test Valves	UL / FM	Victaulic / Gruvlok / Tyco	
5	Automatic Air Vents	UL / FM	Claval	
6	Sprinklers	UL / FM	Victaulic / Viking / Gem / Tyco	
7	Fire Extinguishers	SASO	Sffeco	
8	Fire Hose Cabinets	SASO	Sffeco	
9	Fire Department Siamese Connection	UL / FM	Potter / Giocomini	
10	Flow Switches	UL / FM	Potter	
11	Aerosol System	UL / FM	STAT-X	
12	Detection / alarm and Agent Release panel for Aerosol System	UL / FM	Potter	
13	Fire & Jockey Pumps	UL / FM	Mena	
14	Fire & Jockey Pump's Panels	UL / FM	TornaTech	
15	Flow Meter	UL / FM	Gerand	
16	Pilot Operated Relief Valve for Diesel Pump	UL / FM	Claval	
17	Emergency Lights (minimum 3 hours backup)	SASO	Vielux	
18	Fire Alarm System	UL / FM	Simples / Context	
19	Fire Doors	SASO	Sffeco	
20	Pressure Gauges	UL / FM	WIKAI	
21	Hangers / Supports / Threaded Rods	UL / FM		require sample for submitted brand
.				

Consultant	Project Management	Contractor

MATERIAL SUBMITTAL FORM

Project Name. : BUTAT RISE TOWER , ALSHUBALY -DAMMAM
Project No. : Date : 06/07/2024

Submittal No. : SH2-MAR-M-005 Specs Ref. No.

Contract Drawing Ref. No. : B.O.Q Ref. No.

DISCIPLINE
Arch. [ ] Civil [ ] Elec. [ ] Mech. [■] HVAC [ ] L.S. [ ] H.S. [ ] Other [ ]

Attachments
) Technical Brochure ( ) Manufacturer Specs ( ) Sample ( ) O & Manual ( ) Others

Material Description
Fire Pump

Item in BOQ	Item	Brand	Model
UL Listed Diesel Pump:	UL Listed Split Case Fire Pump - 1000 gpm@17bar	MENA	MSC5-80-350
UL/FM Diesel Engine		KIRLOSKAR	KFP6R-UF26R1/ 247 HP
UL/FM Diesel Pump Controller		"Tornatech", Canada	GPD-12-220
UL Listed Electrical Pump:	UL Listed Split Case Fire Pump - 1000 gpm@17bar	MENA	MSC6-125-310
UL Listed Electric Motor:		MARATHON	ODP
UL/FM Electric Pump Controller		"Tornatech", Canada	GPY-380\250\3\60
Jokey Pump:	Vertical Multistage - 100 gpm@17bar	PACIFIC	RV32
Electric Motor:		TEFC Motor	Power : 30 HP
UL Listed Jockey Pump Controller		"Tornatech", Canada	JP3-380\30\3\60

Name of Manufacturer :
MINA Mechanical Industries Company
Postal Address Dammam - Saudi Arabia
Tel # Fax #
Web site address : E-mail:

Local Supplier / Agent : Professional Structure Services Co. (PSS)
Postal Address Dammam - Saudi Arabia
Tel # Fax #
Web site address : E-mail:

Contractors Comments

Name: Eng. Riyadh Saif Date: 06/07/2024 Signature:

Management Comments

Name: Date: Signature:

(A) Approved (B) Approved as Noted (C) Revise and re submit (D) Rejected

COMMENTS

Comments
Date :
Signature

FINAL APPROVAL

Consultant	Project Management
Name : Date :	Name : ~~Eng.Ahmed Elghareeb~~ Date 25-08-2024
Signature :	Signature :

CONSULTANT	OWNER	CONTRACTOR
أحمد الراشد الحميد إستشارات هندسية AHMAD AL RASHED AL HUMAID CONSULTING ENGINEERS	مخزن Makhzan	FPC FIRST PERIOD COMPANY

PROJECT NAME: MAKHZAN 3

MATERIAL SUBMITTAL

☐ **New Submittal** Submittal No: **MS- MECH -07** Rev.: 01 Submittal Date: **28/08/2024**

☑ **Resubmittal** Previous Sub No: **MS- MECH -07** Previous Submittal Date: **30/07/2024**

DISCIPLINE ☐ GENERAL ☐ STRUCTURAL ☑ MECHANICAL ☐ ARCHITECTURAL ☐ ELECTRICAL

Drawing Ref. No:00	**B.O.Q Ref. No:12**
Specification Ref.:	**Standards:**

MANUFACTURER	SUPPLIER/LOCAL AGENT	ORIGIN
MENA	MENA	SAUDI

DESCRIPTION

FIREFIGHTING - FIRS PUMP SET 1500 GPM & 10 BAR

APPLICATION

ATTACHEMENTS:

TECH. BROCHURE	☑
CERTIFICATE	☐
MANUFACTURER SPECS/DIR.	☐
METHOD STATEMENT	☐
SAMPLES	☐
O&M MANUALS	☐
SPARE PART LIST	☐
WARRANTY	☐
OTHERS	☐

If any others specify

DETAILS:

Local Manufactured
G.C. Manufactured
Production Period
Overland Freight
Sea Freight
Total Freight
Total Delivery Time
Planned Delivery Date

- As Specification
- Alternative

Required Material Date On Site:	Expected Arrival Date On site:

Contractor's Engineer :

Name:

Signature:

Date:

Contractor's Project Manager:

Name: **AHMED FAIZY**

Signature:

Date:28/08/2024

CONSULTANT'S COMMENTS

☐ **A Approved** ☑ **B Approved as Noted** ☐ **C Revise and Resubmit** ☐ **D Rejected** ☐ **E No Action**

Architect/Engineer's review is aimed at ensuring general compliance with the design intent and contractual documents. Markings or comments do not absolve the Contractor/Subcontractor from adhering to the project plans and specifications, nor from any deviations. The Contractor/Subcontractor retains responsibility for the details and accuracy.

Depending on Last Approved Civil defense Data and Concept design:
1- The Submittal is approved with notes - Contractor has to submit Origin, and Test certificates.
2- Contractor Has to instruct P.O to estimate Manufacturing and Supply Period.
3- Contractor Has to submit S.D with DEEP DETAILS & Sections to every part of PUMP ROOM.

CONSULTANT ENGINEER:

☐ Arch/Civil ☑ Electrical / Mechanical

Name: Ahmad Alsherbiny

Signature:

Date: 14/10/2024

CLIENT REPRESENTATIVE

Name:

Signature:

Date:

REF. IN	Signature: Date:	REF. OUT	Signature: Date:

CLIENT	CONSULTANT	CONTRACTOR
TEJOURY تجوري	CBLOC التجمع الاستشاري	FPiCO

MATERIAL APROVAL REQUEST - MAR

REV 0.0

Project Title	Cubic Project
Client	Tejoury
Consultant	CBLOC Consultancy
Contractor	Fourth Pyramid International Contracting Company

DETAILS OF SCHEDULED MATERIAL'S INSPECTION BY CONTRACTOR

MAR Ref. NO :	FP-CB-TJ-CU-MAR-038	REV. NO :	0	DISCIPLINE:	MEC
ISSUED DATE/TI	2025-11-11	PEL INSPECTION DATE/TIME :		ANNING ACTIVITY ID:	

Item No.	Description of Item (Name, Type, Size, Capacity, Specific Use, etc.)	SAR Document Reference (Brand/Supplier Name)	ATTACHMENTS:	
1	Fire Pump (vertical Turbine Capacity 1000 GPM @10 BAR	MENA Mechanical Industries Co	☐	MATERIALS
			☑	TECH. BROCHURE & Catalogs
			☑	CERTIFICATE
			☑	MANUFACTURER / Supplier file
			☐	METHOD STATEMENT
			☐	SAMPLES
			☐	O&M MANUALS
			☐	SPARE PART LIST
			☐	WARRANTY
			☐	OTHERS

CONTRACTOR CONSTRUCTION ENGINEER

NAME :	SIGNATURE:	DATE:

CONTRACTOR :

NAME : Ahmed Elskhawey	SIGNATURE:	DATE:

CONSULTANT:

NAME : Md Azad Ansari	SIGNATURE:	DATE: 11/16/2025

This is to certify that all items submitted herewith have been checked by Consultant, are in conformance with the requirements of the Contract Documents and are approved for the Works, Except as noted below:

CONSULTANT INSPECTION COMMENTS :

c-bloc Mech Comments:No objection for the submitted material MENA fire pump subjected to approved drawing .
Submit latest Saso and factory acceptance test report or third party and UL/FM certificate before or at the time of delivery.
All pumps and equipment hall be UL&FM certified and imposed on equipment. & submit certificate of origin at the time of delivery
The installation of pumps shall be in accordance to the manufacturer instruction & recommendation and approved shop drawing by approved civil defense contractor with experience team with reference to Civil defense& NFPA code & standard .
Clearances around fire pumps shall be sufficient to allow inspection, service, repair or replacement. - Coordinate with electrical drawings, for power supply, pump's voltage, and phase requirements for fire pumps.
Fire pump installation to be fully compliant with NFPA 20,contractor have to coordinate with pump manufacturer have to provide the PRV valve proposal to buildings which are exceeding 175 psi.
Final approval shall be subjected to testing and commissioning of fire pumps performance during handover stage.

- [A] Work may proceed
- [B] Revise and resubmit work may proceed subject to incorporation of comments ☑
- [C] Revise and resubmit work may not proceed
- [D] Rejicted - Material must be removed from

IF STATUS "C" PLEASE CLASSIFY THE ROOT CAUSE OF REJECTION FI

☐	Lack of communication	☐	Missing of Certificates
☐	Not Following Project Specs	☐	Expiry Date is not Clear
☐	Not Following Project procedures	☐	Others

ALBADEEL CONTRACTING

مجموعة الموسى الصحية
Almoosa Health Group

الموسى الصحية
Almoosa Health
مركز العزيزية
AZIZIYA PRIMARY HEALTH CARE

Material Submittal

OWNER	: **AL MOUSA HEALTH GROUP**		
CONSULTANT	: --	**Document No.**	: **AZ-PHC-MAT-ME-009**
CONTRACTOR	: **AL BADEEL CONTRACTING**	**Date**	: **13-3-2025**
PROJECT	: AZIZIYA PRIMARY HEALTH CARE	**Project No.**	: **PHC**
LOCATION	: **Al Khobar**		

Project	AZIZIYA PRIMARY HEALTH CARE	Submittal No.	REV00	Ref. Spec's	3.3
Ref. Dwg.	----	Date			

Description: (Manufacturer, Model No, Type, Size, Color Etc.)

Fire Pump (MENA)

☑ Catalogue ☐ Drawing ☑ Sample ☐ Certificate ☐ Others

Having Checked this submittal, we certify it conforms to the requirements
Of the contract Documents in all respects, except as otherwise indicated herein

.....

.....

Contractor: Eng. Karim Mahmoud **Signature:** K.M **Date:** 13-3-2025

ACTION

☐ Approved (A)
☑ Approved As Noted (B)
☐ Resubmittal Required (C)
☐ Not Approved (D)

Remarks/Comments

approved subject to : attached calculation for final selection approval
final approval after ceville defence approval

Profession	Name	Signature	Review Date
Site Manager			
Civil/Structural Engineer			
Architect			
Electrical Engineer			
Mechanical Engineer			

13-03-25 Karim

WORKS WITHIN THE PRELIMINARY WORK FOR SITE OFFICES UNDER FIRST RING ROAD	مجموعة بن لادن السعودية SAUDI BINLADIN GROUP قطاع الحرمين الشريفين
CONTRACTOR: SAUDI BINLADIN GROUP	Date: 29 Sept. 2019

☐ NEW SUBMITTAL / ☑ RESUBMITTAL	SUBMITTAL FOR MATERIALS APPROVAL	Submittal Ref. No.	DEPARTMENT
		RRO-M-FF-023-01	AR ☐ SC ☐ SS ☐ MH ☑ EL ☐ LC ☐

TO: DAR AL-HANDASA (Shair and Partners) dar ATTN: ENG. ALI HUZAYYEN

SUBJECT : Fire Pumps UL

MATERIAL DESCRIPTION : Fire Pumps

C&A DEPARTMENT 28 NOV 2019 RECEIVED

RECEIVED 13 NOV 2019 DAR AL-HANDASA, SHAIR & PARTNERS

Area of Application : Fire Fighting Services for DAR Site Offices in First Floor

Drawing Ref. : MSO-01-01-1FL-SD-P-FF-301400-01

ATTACHMENTS	No.
Samples	☐
Catalogue	☑
Product Warranty	☐
Test Report	☐
Tech. Data	☑
Pre-Qualification	☐
Compliance Statement	☐
Supplier Drawings	☐
Supplier Calculations	☐
Reply of Comments	☑
Certificates	☑
Annexure	☐
Others	☐

Note: : ORIGINAL ATTACHED ☑ SOFT COPY ATTACHED ☑

Manufacturer / Supplier : MENA MECHANICAL INDUSTRIES

We certify that the above submitted items have been reviewed in detail and are correct in conformity with the contract drawings and specifications except as otherwise stated; also the Material sources indicated above have been reviewed in detail and they will supply the submitted items to conformity with the above and deliver same timely.

SUBMITTED BY : NAME : Engr. Haitham Qashou
SBG - HARAMAIN ENGINEERING DEPT.
MEP Material Manager
Signature:

This section will be used by Approving Authority only:

Third party (Yasser Bakhit):

A)	Approved	☐
B)	Approved as Noted	☐
C)	Revise & Resubmit	☐
D)	Rejected	☐

Third party Name ..... Title..... Signature..... Date.....

DAR AL-HANDASA (Shair and Partners) :

A)	Approved	☐
B)	Approved as Noted	☑
C)	Revise & Resubmit	☐
D)	Rejected	☐

Osama Mansour O.M.Osama A.Aburahmeh Abu

☐ Sample Required ☐ Additional Information Required
☐ Tests Required ☐ Manufacturer's Guarantee Required

Consultant. Name Ali M. Huzayyen Title R.E. Signature Date 27.11.2019

Approval shall not relieve Contractor of his liabilities under the contract or constitute authorization of any change to contract documents.

القصبي
ALQASABI

تعميد توريد مجموعة مضخات الحريق لمشروع مدارس الفرسان - جدة

المشروع: مدارس الفرسان العالمية جدة الموقع: جدة - حرم جامعة الملك عبد العزيز	رقم التعميد: 04/mech/Forsan/2023 التاريخ: 28-11-2023م
طرف ثاني: مؤسسة الهندسة المائية	طرف اول: شركة القصبي للمقاولات
إسم المندوب المختص: المهندس محمد حميد	المهندس المختص: نصر هنداوي
ج: 0553181836	التسليم: بالتنسيق مع م/ لؤي المحضار جوال رقم: 0566565543
شروط الدفع: حسب الاتفاق	
الموضوع: تعميد توريد مجموعة مضخات الحريق لمشروع مدارس الفرسان العالمية - جدة (عدد 2 مدرسة) (مدرسة بنين + (مدرسة بنات)	

تحية طيبة .....

إشارة إلى عرضكم رقم: (وتاريخ 26-11-2023م) (مرفق صورة منه) لتوريد مجموعة مضخات الحريق لمشروع مدارس الفرسان العالمية – الكائن في حرم جامعة الملك عبد العزيز في مدينة جدة والاشراف على التنفيذ واختبار وتشغيل مجموعة المضخات.

عليه نعمدكم في توريد مجموعة مضخات الحريق للمشروع المذكور أعلاه وذلك على النحو التالي.

1- اجمالي قيمة توريد مجموعة مضخات الحريق لكل من (مدرسة البنين +مدرسة البنات) بدون القيمة المضافة هو (210,000.00) ريال.

2- القيمة المضافة = (31,500.00) ريال.

3- اجمالي قيمة توريد مجموعة مجموعة مضخات الحريق شاملا القيمة المضافة = (241,500.00) ريال فقط مائتين وواحد واربعون الفا وخمسمائة ريال لا غير،،،،،

ملاحظة هامة: - هذا التعميد مشروط باعتماد الاستشاري والمالك للتقديم الفني والحسابات الهيدروليكية لمجموعة مضخات الحريق المقدم منكم.

والله الموفق،،،،،،،،،

شركة القصبي للمقاولات

الرئيس التنفيذي

م. خالد بن عثمان القصبي

EN WATER
CR 1010359764
مؤسسة الهندسة المائية
قسم المبيعات

Material Submittal form

Submittal Ref:	MHL-OTCE-MD07-TSL- MEC-32	**Rev:**	00	**Date:**	- -
Program Title:	National ousing Program				
Project Title:	EL-Naqel – Madinah (Contract No.)				
The Employer:	NHC - National Housing Company				
Third party:	Dar Al Riyadh				
Consultant:	O T C E Saudi Engineering Consulting Co.				
Contractor:	Al Masar Al Hadeeth				

Guidance Notes:

The submission should only include materials which are compliant with the SOPR and CODE requirements and have been reviewed and coordinated between the Contractor and Designer (and Engineer if applicable) and should include any authorised variations / changes as instructed.

Review Discipline:

Architectural ☒	**Structural / Civil** ☐	**Mech / Plumb** ☐	**Elec.** ☐	**Others (Specify)** ☐

Material Details

Proposed by:

The Contractor		**The Consultant (Designer & The Engineer)**		**Specialist / Sub-Contractor**	
Sign/ Stamp		**Sign/ Stamp**		**Sign/ Stamp**	

Material Information & Checklist

Location /element Ref:	Water Pumps	Checklist of Attachments:	
Specified Material:		Drawing / Specification	☒
Proposed Material:	Pumps	Product Datasheet	☒
SOPR/CODE Ref(s):		Compliance Certificates / Documents	☒
Manufacturer & Product code ref:	Water Engineering Company	Compliance Statement	☐
Remarks / Notes:	M L-OTCE-MD -SAT-MEC-	Sample (available)	☒

Supplier Approval Request

Submittal Ref:	MHL-AEC-NJ05-SAT-MEC-23	Rev No:	000	Date:	17/10/2023
Program Title:	National Housing Program (NHC)				
Project Title:	A Contract for the Implementation of Developmental housing for Najran housing project Contract No:22000345				
The Employer:	NHC				
Third party:	DAR ALRIYADH				
Consultant:	AL Mnabr				
Contractor:	AL Masar Al Hadeeth				

Guidance notes:

The submission should only include documents which are deemed compliant with the SOPR, Applicable Codes and have been reviewed and coordinated between the Contractor and Designer (and Engineer if applicable) and should include any authorised variations/changes as instructed.

Review Discipline

Architectural ☐	Structural/Civil ☐	Mech/Plumb ☒	Elec. ☐	Others (specify) ☐

Document Details

Notes: PMC review will recommend either Objection or No Objection to each item. Non-Objected shall be issued to the NHC with the recommendation to approve. Objected shall be returned to the Contractor with an Objection report.

The Title : Water Engineering for Water Pumps Supplier

Proposed by: : AL Masar Al Hadeeth		The Consultant (Designer & The Engineer)	
Sign/Stamp		Sign/Stamp	

Ser No:	Document Title/Description:	Reference No:	Rev No:	Remarks
1	Company Profile/ Water Engineering Supplier for Water Pumps			Attached all file

Reviewed for compliance by:

Notes: The Engineer* shall review and approve when the Supervision Consultant differs from the Designer only. PMC shall only issue recommendations based upon 'No Objection' to the Client. Any 'Objections' shall be returned to the Contractor with a review report for action and may be copied to the NHC when necessary.

THE ENGINEER*	Review Date:	18-10-2023	Rejected	Approved	Signed:	
	Print Name:	M.abdelrhman		✓		

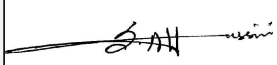
All, Government certificate shall be attached,

PMC	Recommendations to NHC Date:	28/10/2023	Rejected	Approved	Signed:	
	Print Name:	zahir hussain		✓		

NHC	Review Date:	31.10.23	Objection	No Objection	Signed:	
	Print Name:	Sahul		✓		

A.K.S

Dar review comments: 1. No objection for the supplier. 2. submit water demand calculations for the review and approval

THE ENGINEER*	Review Date:	1/28/2024	Rejected	Approved	Signed:	
	Print Name:	Sd.Allauddin Hussaini		✓		
	No objection for submitted material submittal grundfos pump,as per ifc DRAWING Submit the renewed saso certificate for submitted model at the time of delivery Submit third party or factory testing certificate at the time of delivery. Submit warranty letter at the time of delivery as per sopr. pumps shall be approved from NHC and photos shall be attached in MSR Submit certificate of origin at the time of delivery installation of pump shall be as per manufacturer recommendation and master plan coordination					

Dar Al Riyadh	Recommendations to NHC Date:	29-01-2024	Objection	No Objection	Signed:	
	Print Name:	Amanullah khan zahir Hussain		✓		

NHC	Review Date:	05.02.24	Objection	No Objection	Signed:	
	Print Name:	sahul		✓		

Dar Review Comments: 1. No objection for the proposed supplier.
2. Installation of pumps shall be done as per manufacturer recommendation & IFC.
3. Comply Eng. comments.
4. Submit control panel and wiring diagram as a separate submittal to DAR Electrical engineer review and approval and especially to confirm the IP rating of the proposed control panel to withstand heat and moisture and power requirement. 5 Warranty /SASO Certificate to be submitted upon delivery of the pump at site. 6.Approval subject to sample of the proposed control panel. 7.
7.In order for the pump to function properly, the ambient temperature must be at least 55°C.
8.Final approval is subject to the NHC approval.

A.K.S

NHC: Final approval shall be after Mockup installation and approval.

Submittal Ref.	FPC-101-MS-ME-006	Revision	Rev - 00	Date	13/07/2025
Project Title:	Business Park 101				

Material Submittal Form

Client:	ASEEL		
Consultant:	ZENIT	**Contractor**	FPC

Discipline ☐ Civil ☐ Architecture ☑ Mechanical ☐ Electrical ☐ Others .....

Material Details (to be filled by Contractor)			**List of Enclosure**
Specs. / BOQ / Drawings Reference	FIREFIGHTING - FIRE PUMP SET - BRAND : MENA – UL LISTED - (1000 GPM & 10 BAR)		Copy of related spec's
Specified Material			Compliance Statement
Proposed Material			Samples
Manufacturer / Local Supplier			Others (Specify)
Reason for Alternative (if any)			
Remarks			

FPC FIRST PERIOD COMPANY Business Park 101 Project

Submittal Status:

☐ A- Approved ☑ B- Approved with Comments ☐ C- Revise and Resubmit ☐ D- Rejected

Engineer's Comments:

please see the attached sheet for details.

Note: This review does not relieve the contractor of his responsibilities under the terms of the contract nor authorize additional compensation.

	Name	Signature	Date
Submitted By (Contractor)	Adhe Jagadesh		13/07/2025
Received By (Consultant)			
Reviewed By (Consultant)	Taha A. Rasool		19-7-2025
Approved By (Consultant)			
Approved By (Client) *			

Note* : Client Approving the Finishing Materials Only

المركز المعماري
ARCH.CENTRE
CONSULTING ENGINEERS استشارات هندسية
SINCE 1977

التاريخ: 1445/02/10 هـ
الموافق: 2024/08/14 م

السادة شركة أيكة للمقاولات العامة المحترمين

عناية مدير المشروع المقاول م. أحمد برير المحترم

السلام عليكم ورحمة الله وبركاته وبعد،

المشروع: مقر الجمعية السعودية لكتاب الرأي

الموضوع: ملاحظات اعتماد مضخات مكافحة الحريق

بعد مراجعة مستندات التقديم ودراسة الملف الفني المقدم من مؤسسة الهندسة المائية للتجارة تم اعتماد المورد و الموديلات المرفقة لمضخات مكافحة الحريق اعلاه ماركة مينا وذلك بعد تعهد المورد بتنفيذ جميع ما ورد في التقديم المرفق واشتراطات وتعليمات الكود السعودي والدفاع المدني والمواصفات وجدول الكميات مع ضرورة الالتزام بالآتي: -

1-الالتزام التام بالمواصفات الفنية للمشروع وجدول الكميات والمخططات وأصول الصناعة وتعليمات المصنع والكود السعودي.
2- تقديم شهادات الاختبار والجودة وشهادة الضمان لا تقل عن عامين معتمدة وموثقة من الجهات المختصة.
3- يجب الالتزام التام بتوصيات المصنع من حيث النقل والتخزين والتركيب.
4- توفير كافة الحماية ووسائل الامان الكهربائية والميكانيكية اللازمة عند التركيب والاختبار والتشغيل.
5- يتم التركيب والاختبار والتسليم بالموقع من قبل الشركة المصنعة أو الوكيل المعتمد.
6- تقديم كتالوجات الصيانة والتشغيل مختومة من المورد والمقاول نسخ اصلية (ثلاث مجموعات اصلية كاملة).
7- تقديم برنامج الصيانة يوضح برنامج الزيارات الدورية لاستبدال او اصلاح قطع الغيار التي تحتاج صيانة بصفة دورية بدون اي تكلفة إضافية خلال فترة الضمان، وتقديم بيانات التكلفة السنوية للصيانة بعد انتهاء فترة الضمان.
8- على المورد برمجة المضخات للعمل وفقا للكود السعودي وتعليمات واشتراطات الدفاع المدني.
9 - جميع الاجزاء يجب ان تكون UL/FM.
10-علي المورد عمل الاختبارات اللازمة للمضخات وفقا للكود السعودي.

ولكم خالص تحياتي،

مهندس الميكانيكا الاستشاري

14-08-2024

م. خالد علي حسين

Mohamed Sayed

From: sherif.azab@madar-eng.com
Sent: Monday, August 21, 2023 11:54 AM
To: 'nbajudah@mina.com.sa'
Cc: ahaddad@mina.com.sa; dr.ahmed@madar-eng.com; mohamed.sayed@madar-eng.com
Subject: اعتماد طلمبة الحريق الرئسية -أبراج مني

السادة / شركة منى العقارية المحترمين
عناية / المهندس نبيل باجودة المحترم
تحية طيبة وبعد .....

بمراجعة الكتالوج المرسل من طرفكم الخاص بطلمبة الحريق الرئسية ماركة MENA نفيدكم بالاتي:

- تم اعتماد المضخات موديل VT150-265 قدرة 750 جالون / دقيقة ومعدل ضغط 17 بار.
- الاعتماد شامل المضخات والمحركات ولوحات التحكم والمحابس.
- الاعتماد طبقا للشهادت المقدمة من ال UL وال FM.
- يلزم على المصنع تقديم شهادة الانشاء للمضخة وكذالك شهادة الاستيراد كون بلد المنشأ غير المملكة العربية السعودية.
- يرجي التنبيه على المصنع ان يكون طول الغاطس (ال SUMP DEPTH) مطابق لعمق الخزان.
- تركيب الغرفة يكون طبقا للمخططات المعتمدة و NFPA.

Technical Submittal
https://drive.google.com/file/d/100nDm2AvDh-R3Ov8AfbCJIRMFaLkklCx/view?usp=sharing

Kind regards.

Sherif Azab,CFPS
Team Leader
+966563692585 | www.madar-eng.com | sherif.azab@madar-eng.com
7th floor-Msharek tower-3rd ring road-Makkah

القصبي
ALQASABI

تعميد توريد مجموعة مضخات الحريق لمشروع مدارس الفرسان - جدة

المشروع: مدارس الفرسان العالمية جدة الموقع: جدة - حرم جامعة الملك عبد العزيز	رقم التعميد: 04/mech/Forsan/2023 التاريخ: 28-11-2023م
طرف ثاني: مؤسسة الهندسة المائية	طرف اول: شركة القصبي للمقاولات
إسم المندوب المختص: المهندس محمد حميد	المهندس المختص: نصر هنداوي
ج: 0553181836	التسليم: بالتنسيق مع م/ لؤي المحضار جوال رقم: 0566565543
شروط الدفع: حسب الاتفاق	
الموضوع: تعميد توريد مجموعة مضخات الحريق لمشروع مدارس الفرسان العالمية - جدة (عدد 2 مدرسة) (مدرسة بنين + (مدرسة بنات)	

تحية طيبة .....

إشارة إلى عرضكم رقم: (وتاريخ 26-11-2023م) (مرفق صورة منه) لتوريد مجموعة مضخات الحريق لمشروع مدارس الفرسان العالمية – الكائن في حرم جامعة الملك عبد العزيز في مدينة جدة والاشراف على التنفيذ واختبار وتشغيل مجموعة المضخات.

عليه نعمدكم في توريد مجموعة مضخات الحريق للمشروع المذكور أعلاه وذلك على النحو التالي.

1- اجمالي قيمة توريد مجموعة مضخات الحريق لكل من (مدرسة البنين +مدرسة البنات) بدون القيمة المضافة هو (210,000.00) ريال.

2- القيمة المضافة = (31,500.00) ريال.

3- اجمالي قيمة توريد مجموعة مجموعة مضخات الحريق شاملا القيمة المضافة = (241,500.00) ريال فقط مائتين وواحد واربعون الفا وخمسمائة ريال لا غير،،،،،

ملاحظة هامة: - هذا التعميد مشروط باعتماد الاستشاري والمالك للتقديم الفني والحسابات الهيدروليكية لمجموعة مضخات الحريق المقدم منكم.

والله الموفق،،،،،،،،،

شركة القصبي للمقاولات

الرئيس التنفيذي

م. خالد بن عثمان القصبي

EN WATER
CR 1010359764
مؤسسة الهندسة المائية
قسم المبيعات

OWNER:	CONSULTANT:	CONTRACTOR:
	SINCE 1977	AIKA

SUBMITTAL FOR APPROVAL

Project: Saudi Society for Writers opinion Building
Location: Riyadh

Doc No.: SWO-MEC-MAR-0
Edition No.: E01
Date: 12/Aug/24

☐ Architectual ☐ Structral ☐ Electrical ■ Mechanical ☐ SURVEY ☐ G.SITE

Attachments:
☐ Technical Brochure ☐ Certificates ☐ Manufacturer's Data & Specs
■ Samples ☐ Report ☐ Others ☐ DWG

Description :

مضخات الحريق - مؤسسة الهندسة المانية للتجارة

Contractor QA/QC Engineer Sign:		Date:	12/Aug/24
Contractor PM Sign:		Date:	12/Aug/24
Recived Sign:		Date:	13-08-2024

Consultant Comments:

يجب الالتزام بالملاحظات المرفقة

This approval shall not relieve the Contractor of his obligation to perform the work in accordance with the Contract Documents, Requirements of Safety, and Local Authorities regulations.

☐ Code A - Approved ☑ Code B - Approved As Noted
☐ Code C - Not Approved-Resubmitted ☐ Code D - Rejected

Consultant Sign:	Date:	14-08-2024
Consultant PM Sign: 2024 14 08	Date:	

waterwave
Pumping Solutions

مؤسسة
موج الماء
المضخات للتجارة

Checklist for Testing Fire Set-Pump Name / Electric – Diesel - Jockey

Project:	Bandar Hamadeh for Contracting
Installation site:	Makkah Aziziya
Date of Start-Up	17/12/2023

KSB/Duplex Submersible Pump Set

Performance data:	
Pump Brand and Manufacture:	Pump Name/Origin
Pump Set Type:	Fire Fighting Pumps Set
Number of Pumps:	Electric – Diesel - Jockey
Set Location:	Fire Set Room

Condition inspection:	
Visual inspection of condition, impermeability and pressure gauge levels	Checked
Inspection of any leak in the fire set	Checked
inspection of control efficiency and smooth operation of pumps	Checked
Inspection / access to the installation room	Checked
Inspection of condition of installation area	Checked

Operating mode:	
Pump One (Electric)	AUTO
Pump Two (Diesel)	AUTO
Pump Three (Jockey)	AUTO

Fire set activation / Pressure Set point	
Electric Pump	Cut in: 160 Psi/ Cut out: 232 Psi
Diesel Pump	Cut in: 150 Psi/ Cut out: 232 Psi
Jockey Pump	Cut in: 190 Psi/ Cut out: 290 Psi
Voltage(V)	385 – 390 VOLT

Pumps testing	
Operating pump 1	Done
Operating pump 2	Done
Operating pump 3	Done
Dry running protection	-
Peak load pump 1	Checked
Peak load pump 2	Checked
Peak load pump 3	Checked
Back up pump 1	Checked
Back up pump 2	Checked
Back up pump 3	Checked
Direction of rotation	Checked

Visual check	
Check the function of the ball valve	Checked
Check pressure gauges operation	Checked
Check electrical connections	Checked
Check for any leakage in the pumps	Checked

Remarks:

Firefighting Pump Set have been tested and is functioning at full capacity with all accessories. It was handed over to the project manager and is in outstanding performance.

Imad Al Halabi
Waterwave Est
0553004066
imad@waterwave.site
www.waterwave.site

waterwave
Pumping Solutions

مؤسسة
موج الماء
المضخات للتجارة

Successful Handling Over Certificate
شهادة إنجاز و تسليم نهائي

شركة بندر حميدة للمقاولات مكة المكرمة

تشهد .....بأن
مجموعه الحريق يو إل ماركة مينا الإماراتية قد تم استلامها من قبل إستشاري الأمن و السلامة في الموقع و هي تعمل بصورة جيدة و بكفاؤة 150% و حسب التقرير المرفق

We the undersigned , Bandar Hmeida Contracting Co ....., we confirm that above MENA UL Listed Fire Fighting Pump Set we handled over successfully to safety consultant and as per above parameters and 150% efficiency .

The Employer المالك | The Engineer الاستشاري | The Employer المالك

الشؤون الخاصة لخادم الحرمين الشريفين

Project: المشروع — مشروع الخزان الاستراتيجي

Material Approval Request طلب إعتماد مواد

Contract:
Contractor Name: نهر الفكر للمقاولات

Submittal : RPA-C-RFS7-MSC4-CWT-MAR-MEC-0001
Rev: 0

Date: 19/2/2026
Package:

To: شركة جسارة لإدارة المشاريع

For Contractor: Signature:

FOR SUPERVISION USE ONLY:

Received from Contr.: / /

Sign :

DELIVERY

- Courier
- Recipient Messenger
- Other

Civ. Arch Str. Elec. Mech. Other

Out to Engrs: / /

In from Engrs: / /

REMARKS

- [x] Supplier/Vendor مورد
- [ ] SAMPLE عينات مواد
- [x] Technical Data Sheet مواصفات وخصائص المواد
- [x] MANUFACTURER'S DATA بيانات الشركة المصنعة
- [ ] GUARANTEES/Certificates شهادات وضمانات
- [ ] OTHER أخرى

Rec.	Qty	Dwg. / Spec. Reference	Description الوصف	Remark	Code Submittal	Code Action
		BOQ: 3-1-	طلب إعتماد شركة هندسة المياه لتوريد مضخات المياه:			
		BOQ: 3-1-1	Electric Pump (MSC10-200-500S)(GPV-380/350/3/60)			
		BOQ: 3-2-1	Diesel Pump Model (MSC8-150-330)			
		BOQ: 3-2-1	Diesel Engine (NM6-108E/335HP) - (GPD-24-220)			
		BOQ: 3-3-1	Jockey Pump RV (JPLT-380/30/3/60)			

Contractor Comments تعليقات المقاول

Contractor

Project Manager Name: إسم مدير المشروع: عتيق السلمي

Signature التوقيع: 19/2/2026

Remarks: ملاحظات

The **Engineer** representative "**JASARA**": ممثل الإستشاري شركة جسارة لإدارة المشاريع

In principle the proposal for WATER ENGINEERING CO as supplier of Pumps is accepted subject to comply with the following comments:
Resubmit technical data sheets for the pumps, after providing shop drawings for the firefighting pumps and firefighting Aerosol system approved by a consulting office approved by a Civil.

The **Engineer** representative (CMT) Signature

Engineer Name: Khalil Abaker — المهندس المختص:
Signature: التوقيع:

24/02/2026

Project Manager: مدير المشروع:
Signature: التوقيع:

[A] Approved [B] Approved As Noted [C] Resubmit As Noted [D] For Information [E] Rejected

Remarks by the Employer "**RPA**" : ملاحظات صاحب العمل "الشؤون الخاصة"

The **Employer** representative Signature (RPA) توقيع ممثل صاحب العمل (الشؤون الخاصة)

إسم ممثل صاحب العمل :

التوقيع:

[A] Approved [B] Approved As Noted [C] Resubmit As Noted [D] For Information [E] Rejected

Approval, corrections or comments made relative to submittals during this review do not relieve the Contractor from compliance with the requirements of the contract, drawings or specifications.

تُعتبر أي موافقات أو تصحيحات أو ملاحظات تتعلق بالتقديمات خلال هذه المراجعة لا تعفي المقاول بأي حال من الأحوال من الالتزام بمتطلبات العقد والمخططات التصميمية المعتمدة أو المواصفات الفنية

This check is only for review of general performance with the design concept of the project and general compliance with the information given in the Contract documents.

تهدف هذه المراجعة فقط إلى تقييم الأداء العام وفقاً لمفهوم التصميم للمشروع وضمان التوافق مع المعلومات الواردة في مستندات العقد.

The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of other trades, and performing his work in a safe, timely, and satisfactory manner.

يتحمل المقاول مسؤولية التأكد من دقة جميع الكميات والأبعاد، واختيار عمليات التصنيع وتقنيات البناء المناسبة، وتنسيق عمله مع الموردين والتخصصات المختلفة الأخرى. كما يجب عليه تنفيذ عمله بشكل آمن وفي الوقت المحدد وبطريقة مرضية.

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

UL/FM CERTIFICATES

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

CERTIFICATE OF COMPLIANCE

Certificate Number	EX28977
Report Reference	EX28977-2023-04-05
Issue Date	2023-APRIL-18
Issued to:	MENA MECH IND CO. Sharjah Al Sajaa Industrial Shed 6 Victory Warehouse, Sajja New Industrial Area Sharjah, United Arab Emirates
This certificate confirms that representative samples of	Centrifugal Fire Pumps, Split Case See Addendum for Models
	Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/CAN/UL 448 – Centrifugal Stationary Pumps for Fire-Protection Service
Additional Information:	See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
Report Reference EX28977-2023-04-05
Issue Date 2023-APRIL-18

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
MSC10-200-350	2,000 (7,570)	10	8	123 (848)	239 (1,647)	2980	362 (2,495)
	2,500 (9,462)	10	8	114 (786)	227 (1,565)	2980	362 (2,495)
MSC10-200-430	2,500 (9,462)	10	8	138 (951)	138 (951)	1800	275 (1,896)
	2,500 (9,462)	10	8	125 (861)	190 (1,310)	2100	275 (1,896)
	3,000 (11,355)	10	8	144 (992)	187 (1,289)	2100	275 (1,896)
MSC10-200-450	2,500 (9,462)	10	8	124 (854)	155 (1,068)	1760	333 (2,295)
	2,500 (9,462)	10	8	165 (1,137)	203 (1,399)	2000	333 (2,295)
	3,000 (11,355)	10	8	115 (792)	147 (1,013)	1760	333 (2,295)
	3,000 (11,355)	10	8	158 (1,089)	197 (1,358)	2000	333 (2,295)
MSC10-200-500	3,000 (11,355)	10	8	121 (834)	179 (1,234)	1760	340 (2,344)
	3,000 (11,355)	10	8	162 (1,116)	238 (1,640)	2000	340 (2,344)
	3,500 (13,247)	10	8	136 (937)	170 (1,172)	1760	340 (2,344)
	3,500 (13,247)	10	8	154 (1,061)	229 (1,578)	2000	340 (2,344)
MSC10-200-500S	2,000 (7,570)	10	8	118 (813)	186 (1,282)	1800	320 (2,206)
	2,000 (7,570)	10	8	149 (1,027)	234 (1,613)	2000	320 (2,206)
	2,500 (9,462)	10	8	110 (758)	176 (1,213)	1800	320 (2,206)
	2,500 (9,462)	10	8	141 (972)	225 (1,551)	2000	320 (2,206)
MSC10-200-600	3,000 (11,355)	10	8	114 (786)	188 (1,296)	1480	275 (1,896)
	3,000 (11,355)	10	8	166 (1,144)	246 (1,696)	1760	330 (2,275)
	3,500 (13,247)	10	8	107 (737)	184 (1,268)	1480	275 (1,896)
	3,500 (13,247)	10	8	160 (1,103)	241 (1,661)	1760	330 (2,275)
	4,000 (15,140)	10	8	142 (979)	176 (1,213)	1480	275 (1,896)
	4,000 (15,140)	10	8	152 (1,048)	234 (1,613)	1760	330 (2,275)
	4,500 (17,032)	10	8	175 (1,206)	226 (1,558)	1760	330 (2,275)
MSC12-250-490	3,500 (13,247)	12	10	119 (820)	189 (1,303)	1800	290 (1,999)
	4,000 (15,140)	12	10	114 (786)	185 (1,275)	1800	290 (1,999)
	4,500 (17,032)	12	10	153 (1,054)	181 (1,247)	1800	290 (1,999)
MSC12-250-500	3,000 (11,355)	12	10	120 (827)	154 (1,061)	1480	330 (2,275)
	3,500 (13,247)	12	10	117 (806)	152 (1,048)	1480	330 (2,275)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
Report Reference EX28977-2023-04-05
Issue Date 2023-APRIL-18

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
	4,000 (15,140)	12	10	114 (786)	148 (1,020)	1480	330 (2,275)
	4,000 (15,140)	12	10	125 (861)	225 (1,551)	1800	330 (2,275)
	4,500 (17,032)	12	10	109 (751)	145 (999)	1480	330 (2,275)
	4,500 (17,032)	12	10	121 (834)	222 (1,530)	1800	330 (2,275)
	5,000 (18,925)	12	10	134 (923)	218 (1,503)	1800	330 (2,275)
MSC12-250-600	4,500 (17,032)	12	10	143 (985)	207 (1,427)	1450	303 (2,089)
	5,000 (18,925)	12	10	139 (958)	206 (1,420)	1450	303 (2,089)
MSC12-250-600L	4,000 (15,140)	12	10	203 (1,399)	246 (1,696)	1760	350 (2,413)
	4,500 (17,032)	12	10	200 (1,378)	244 (1,682)	1760	350 (2,413)
	5,000 (18,925)	12	10	197 (1,358)	240 (1,654)	1760	350 (2,413)
	5,500 (20,818)	12	10	192 (1,323)	237 (1,634)	1760	350 (2,413)
	6,000 (22,710)	12	10	186 (1,282)	232 (1,599)	1760	350 (2,413)
MSC12-250-640	3,000 (11,355)	12	10	176 (1,213)	249 (1,716)	1480	330 (2,275)
	3,500 (13,247)	12	10	169 (1,165)	242 (1,668)	1480	330 (2,275)
	4,000 (15,140)	12	10	162 (1,116)	233 (1,606)	1480	330 (2,275)
MSC12-250-640G	3,500 (13,247)	12	10	196 (1,351)	290 (1,999)	1480	377 (2,599)
	4,000 (15,140)	12	10	191 (1,316)	288 (1,985)	1480	377 (2,599)
	4,500 (17,032)	12	10	184 (1,268)	284 (1,958)	1480	377 (2,599)
	5,000 (18,925)	12	10	211 (1,454)	277 (1,909)	1480	377 (2,599)
MSC14-250-640	4,000 (15,140)	14	10	138 (951)	217 (1,496)	1480	300 (2,068)
	4,500 (17,032)	14	10	136 (937)	216 (1,489)	1480	300 (2,068)
	5,000 (18,925)	14	10	134 (923)	214 (1,475)	1480	300 (2,068)
	6,000 (22,710)	14	10	127 (875)	209 (1,441)	1480	300 (2,068)
	6,000 (22,710)	14	10	220 (1,516)	280 (1,930)	1760	370 (2,551)
	6,500 (24,603)	14	10	205 (1,413)	205 (1,413)	1480	300 (2,068)
	6,500 (24,603)	14	10	216 (1,489)	276 (1,902)	1760	370 (2,551)
	7,000 (26,495)	14	10	201 (1,385)	201 (1,385)	1480	300 (2,068)
	7,000 (26,495)	14	10	211 (1,454)	271 (1,868)	1760	370 (2,551)
	7,500 (28,388)	14	10	195 (1,344)	195 (1,344)	1480	300 (2,068)
	7,500 (28,388)	14	10	205 (1,413)	267 (1,840)	1760	370 (2,551)
	8,000 (30,280)	14	10	239 (1,647)	261 (1,799)	1760	370 (2,551)
MSC16-300-750	5,500 (20,818)	16	12	205 (1,413)	278 (1,916)	1480	370 (2,551)
	6,000 (22,710)	16	12	204 (1,406)	277 (1,909)	1480	370 (2,551)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
Report Reference EX28977-2023-04-05
Issue Date 2023-APRIL-18

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
	6,500 (24,603)	16	12	203 (1,399)	276 (1,902)	1480	370 (2,551)
	7,000 (26,495)	16	12	200 (1,378)	274 (1,889)	1480	370 (2,551)
	7,500 (28,388)	16	12	197 (1,358)	272 (1,875)	1480	370 (2,551)
	8,000 (30,280)	16	12	223 (1,537)	269 (1,854)	1480	370 (2,551)
MSC16-350-640	4,500 (17,032)	16	14	129 (889)	196 (1,351)	1480	315 (2,171)
	5,000 (18,925)	16	14	127 (875)	194 (1,337)	1480	315 (2,171)
	5,500 (20,818)	16	14	124 (854)	192 (1,323)	1480	315 (2,171)
	6,000 (22,710)	16	14	120 (827)	190 (1,310)	1480	315 (2,171)
	6,500 (24,603)	16	14	116 (799)	186 (1,282)	1480	315 (2,171)
	7,000 (26,495)	16	14	113 (779)	182 (1,254)	1480	315 (2,171)
	7,500 (28,388)	16	14	109 (751)	179 (1,234)	1480	315 (2,171)
	8,000 (30,280)	16	14	117 (806)	192 (1,323)	1540	315 (2,171)
MSC4-80-200	300 (1,136)	4	3	103 (710)	133 (917)	3550	220 (1,516)
	400 (1,514)	4	3	99 (682)	131 (903)	3550	220 (1,516)
	450 (1,703)	4	3	95 (655)	129 (889)	3550	220 (1,516)
	500 (1,892)	4	3	91 (627)	127 (875)	3550	220 (1,516)
MSC4-80-250	300 (1,136)	4	3	87 (599)	152 (1,048)	2980	305 (2,102)
	300 (1,136)	4	3	122 (841)	217 (1,496)	3550	305 (2,102)
	400 (1,514)	4	3	84 (579)	150 (1,034)	2980	305 (2,102)
	400 (1,514)	4	3	123 (848)	215 (1,482)	3550	305 (2,102)
	450 (1,703)	4	3	82 (565)	147 (1,013)	2980	305 (2,102)
	450 (1,703)	4	3	121 (834)	213 (1,468)	3550	305 (2,102)
	500 (1,892)	4	3	79 (544)	144 (992)	2980	305 (2,102)
	500 (1,892)	4	3	118 (813)	210 (1,447)	3550	305 (2,102)
MSC5-100-300	300 (1,136)	5	4	176 (1,213)	279 (1,923)	3550	400 (2,757)
	300 (1,136)	5	4	98 (675)	124 (854)	2350	206 (1,420)
	300 (1,136)	5	4	120 (827)	153 (1,054)	2600	236 (1,627)
	300 (1,136)	5	4	123 (848)	195 (1,344)	2980	400 (2,757)
	400 (1,514)	5	4	94 (648)	119 (820)	2350	206 (1,420)
	400 (1,514)	5	4	117 (806)	149 (1,027)	2600	236 (1,627)
	400 (1,514)	5	4	120 (827)	189 (1,303)	2980	400 (2,757)
	400 (1,514)	5	4	173 (1,192)	274 (1,889)	3550	400 (2,757)
	450 (1,703)	5	4	93 (641)	117 (806)	2350	206 (1,420)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
Report Reference EX28977-2023-04-05
Issue Date 2023-APRIL-18

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
	450 (1,703)	5	4	116 (799)	146 (1,006)	2600	236 (1,627)
	450 (1,703)	5	4	119 (820)	187 (1,289)	2980	400 (2,757)
	450 (1,703)	5	4	172 (1,185)	272 (1,875)	3550	400 (2,757)
	500 (1,892)	5	4	90 (620)	114 (786)	2350	206 (1,420)
	500 (1,892)	5	4	113 (779)	143 (985)	2600	236 (1,627)
	500 (1,892)	5	4	117 (806)	184 (1,268)	2980	400 (2,757)
	500 (1,892)	5	4	170 (1,172)	269 (1,854)	3550	400 (2,757)
	750 (2,839)	5	4	104 (717)	163 (1,123)	2980	400 (2,757)
	750 (2,839)	5	4	157 (1,082)	247 (1,703)	3550	400 (2,757)
MSC5-80-200	300 (1,136)	5	3	54 (372)	81 (558)	2980	161 (1,110)
	300 (1,136)	5	3	78 (537)	115 (792)	3550	200 (1,378)
	400 (1,514)	5	3	53 (365)	79 (544)	2980	161 (1,110)
	400 (1,514)	5	3	76 (524)	113 (779)	3550	200 (1,378)
	450 (1,703)	5	3	52 (358)	78 (537)	2980	161 (1,110)
	450 (1,703)	5	3	75 (517)	112 (772)	3550	200 (1,378)
	500 (1,892)	5	3	51 (351)	77 (530)	2980	161 (1,110)
	500 (1,892)	5	3	74 (510)	111 (765)	3550	200 (1,378)
	750 (2,839)	5	3	68 (468)	68 (468)	2980	161 (1,110)
	750 (2,839)	5	3	66 (455)	103 (710)	3550	200 (1,378)
MSC5-80-250	300 (1,136)	5	3	55 (379)	87 (599)	2350	163 (1,123)
	300 (1,136)	5	3	68 (468)	107 (737)	2600	183 (1,261)
	300 (1,136)	5	3	83 (572)	136 (937)	2950	280 (1,930)
	300 (1,136)	5	3	120 (827)	196 (1,351)	3550	280 (1,930)
	400 (1,514)	5	3	51 (351)	84 (579)	2350	163 (1,123)
	400 (1,514)	5	3	64 (441)	105 (723)	2600	183 (1,261)
	400 (1,514)	5	3	82 (565)	135 (930)	2950	280 (1,930)
	400 (1,514)	5	3	120 (827)	196 (1,351)	3550	280 (1,930)
	450 (1,703)	5	3	49 (337)	83 (572)	2350	163 (1,123)
	450 (1,703)	5	3	63 (434)	103 (710)	2600	183 (1,261)
	450 (1,703)	5	3	80 (551)	134 (923)	2950	280 (1,930)
	450 (1,703)	5	3	119 (820)	196 (1,351)	3550	280 (1,930)
	500 (1,892)	5	3	47 (324)	80 (551)	2350	163 (1,123)
	500 (1,892)	5	3	60 (413)	101 (696)	2600	183 (1,261)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

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CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
Report Reference EX28977-2023-04-05
Issue Date 2023-APRIL-18

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
	500 (1,892)	5	3	79 (544)	133 (917)	2950	280 (1,930)
	500 (1,892)	5	3	118 (813)	195 (1,344)	3550	280 (1,930)
	750 (2,839)	5	3	108 (744)	120 (827)	2950	280 (1,930)
	750 (2,839)	5	3	105 (723)	185 (1,275)	3550	280 (1,930)
MSC5-80-350	500 (1,892)	5	3	184 (1,268)	295 (2,033)	2950	380 (2,620)
	500 (1,892)	5	3	112 (772)	184 (1,268)	2350	266 (1,834)
	500 (1,892)	5	3	140 (965)	227 (1,565)	2600	308 (2,123)
	500 (1,892)	5	3	269 (1,854)	308 (2,123)	3550	388 (2,675)
	750 (2,839)	5	3	131 (903)	172 (1,185)	2350	266 (1,834)
	750 (2,839)	5	3	145 (999)	217 (1,496)	2600	308 (2,123)
	750 (2,839)	5	3	167 (1,151)	286 (1,971)	2950	380 (2,620)
	750 (2,839)	5	3	254 (1,751)	292 (2,013)	3550	388 (2,675)
	1,000 (3,785)	5	3	220 (1,516)	270 (1,861)	2950	380 (2,620)
MSC5-80-350G	500 (1,892)	5	3	172 (1,185)	257 (1,771)	2980	261 (1,799)
	750 (2,839)	5	3	169 (1,165)	251 (1,730)	2980	261 (1,799)
MSC6-100-320	750 (2,839)	6	4	138 (951)	198 (1,365)	2980	202 (1,392)
	1,000 (3,785)	6	4	130 (896)	191 (1,316)	2980	202 (1,392)
MSC6-125-200	1,000 (3,785)	6	5	79 (544)	145 (999)	3550	246 (1,696)
MSC6-125-250	500 (1,892)	6	5	76 (524)	101 (696)	2350	178 (1,227)
	500 (1,892)	6	5	92 (634)	124 (854)	2600	201 (1,385)
	500 (1,892)	6	5	117 (806)	162 (1,116)	2980	310 (2,137)
	500 (1,892)	6	5	137 (944)	230 (1,585)	3550	310 (2,137)
	750 (2,839)	6	5	71 (489)	97 (668)	2350	178 (1,227)
	750 (2,839)	6	5	89 (613)	121 (834)	2600	201 (1,385)
	750 (2,839)	6	5	114 (786)	160 (1,103)	2980	310 (2,137)
	750 (2,839)	6	5	138 (951)	230 (1,585)	3550	310 (2,137)
	1,000 (3,785)	6	5	103 (710)	151 (1,041)	2980	310 (2,137)
	1,000 (3,785)	6	5	130 (896)	225 (1,551)	3550	310 (2,137)
MSC6-125-250S	500 (1,892)	6	5	130 (896)	185 (1,275)	3550	290 (1,999)
MSC6-125-310	500 (1,892)	6	5	111 (765)	128 (882)	2350	205 (1,413)
	500 (1,892)	6	5	136 (937)	158 (1,089)	2600	233 (1,606)
	500 (1,892)	6	5	137 (944)	207 (1,427)	2980	370 (2,551)
	500 (1,892)	6	5	196 (1,351)	294 (2,027)	3550	370 (2,551)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
Report Reference EX28977-2023-04-05
Issue Date 2023-APRIL-18

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
	750 (2,839)	6	5	105 (723)	123 (848)	2350	205 (1,413)
	750 (2,839)	6	5	130 (896)	153 (1,054)	2600	233 (1,606)
	750 (2,839)	6	5	132 (910)	203 (1,399)	2980	370 (2,551)
	750 (2,839)	6	5	191 (1,316)	291 (2,006)	3550	370 (2,551)
	1,000 (3,785)	6	5	121 (834)	192 (1,323)	2980	370 (2,551)
	1,000 (3,785)	6	5	182 (1,254)	283 (1,951)	3550	370 (2,551)
MSC6-125-400	500 (1,892)	6	5	208 (1,434)	283 (1,951)	2980	370 (2,551)
	750 (2,839)	6	5	203 (1,399)	277 (1,909)	2980	370 (2,551)
	1,000 (3,785)	6	5	192 (1,323)	265 (1,827)	2980	370 (2,551)
MSC8-125-300	1,250 (4,731)	8	5	116 (799)	190 (1,310)	2980	187 (1,289)
MSC8-125-380	1,250 (4,731)	8	5	118 (813)	177 (1,220)	2200	261 (1,799)
MSC8-150-250	1,250 (4,731)	8	6	83 (572)	149 (1,027)	2950	330 (2,275)
	1,250 (4,731)	8	6	133 (917)	225 (1,551)	3550	330 (2,275)
	1,500 (5,677)	8	6	122 (841)	216 (1,489)	3550	330 (2,275)
MSC8-150-250G	1,250 (4,731)	8	6	97 (668)	146 (1,006)	2950	290 (1,999)
	1,500 (5,677)	8	6	91 (627)	140 (965)	2950	290 (1,999)
MSC8-150-310	1,000 (3,785)	8	6	58 (399)	147 (1,013)	2350	229 (1,578)
	1,000 (3,785)	8	6	73 (503)	181 (1,247)	2600	263 (1,813)
	1,000 (3,785)	8	6	119 (820)	237 (1,634)	2980	350 (2,413)
	1,000 (3,785)	8	6	175 (1,206)	286 (1,971)	3550	370 (2,551)
	1,250 (4,731)	8	6	76 (524)	141 (972)	2350	229 (1,578)
	1,250 (4,731)	8	6	96 (661)	177 (1,220)	2600	263 (1,813)
	1,250 (4,731)	8	6	112 (772)	230 (1,585)	2980	350 (2,413)
	1,250 (4,731)	8	6	168 (1,158)	281 (1,937)	3550	370 (2,551)
	1,500 (5,677)	8	6	109 (751)	221 (1,523)	2980	350 (2,413)
	1,500 (5,677)	8	6	158 (1,089)	269 (1,854)	3550	370 (2,551)
MSC8-150-330	750 (2,839)	8	6	40 (275)	77 (530)	1760	310 (2,137)
	1,000 (3,785)	8	6	40 (275)	74 (510)	1760	310 (2,137)
	1,250 (4,731)	8	6	76 (524)	135 (930)	2350	229 (1,578)
	1,250 (4,731)	8	6	95 (655)	167 (1,151)	2600	263 (1,813)
	1,500 (5,677)	8	6	71 (489)	131 (903)	2350	229 (1,578)
	1,500 (5,677)	8	6	90 (620)	163 (1,123)	2600	263 (1,813)
	2,000 (7,570)	8	6	107 (737)	190 (1,310)	2950	310 (2,137)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number EX28977
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Issue Date 2023-APRIL-18

Model	Rated Capacity, GPM (L/Min)	Inlet Size, in.	Outlet Size, in.	Minimum Net Pressure Range, psig (kPa)	Maximum Net Pressure Range, psig (kPa)	Approx Speed, RPM	Max Working Pressure, psig (kPa)
MSC8-150-350	1,250 (4,731)	8	6	74 (510)	101 (696)	1760	220 (1,516)
	1,500 (5,677)	8	6	69 (475)	97 (668)	1760	220 (1,516)
MSC8-150-375	1,250 (4,731)	8	6	70 (482)	131 (903)	1760	270 (1,861)
	1,250 (4,731)	8	6	106 (730)	188 (1,296)	2100	270 (1,861)
	1,500 (5,677)	8	6	88 (606)	128 (882)	1760	270 (1,861)
	1,500 (5,677)	8	6	100 (689)	187 (1,289)	2100	270 (1,861)
MSC8-150-400	1,500 (5,677)	8	6	121 (834)	181 (1,247)	2100	275 (1,896)
	2,000 (7,570)	8	6	111 (765)	174 (1,199)	2100	275 (1,896)
	2,500 (9,462)	8	6	160 (1,103)	160 (1,103)	2100	275 (1,896)
MSC8-150-400G	2,000 (7,570)	8	6	64 (441)	104 (717)	1760	270 (1,861)
	2,500 (9,462)	8	6	96 (661)	96 (661)	1760	270 (1,861)
MSC8-150-420	750 (2,839)	8	6	272 (1,875)	367 (2,530)	2950	460 (3,171)
	1,000 (3,785)	8	6	260 (1,792)	359 (2,475)	2950	460 (3,171)
	1,250 (4,731)	8	6	241 (1,661)	346 (2,385)	2950	460 (3,171)
MSC8-150-420G	1,500 (5,677)	8	6	245 (1,689)	305 (2,102)	2950	435 (2,999)
MSC8-150-460	1,500 (5,677)	8	6	115 (792)	181 (1,247)	1800	275 (1,896)
	2,000 (7,570)	8	6	118 (813)	175 (1,206)	1800	275 (1,896)
MSC8-150-480	1,500 (5,677)	8	6	120 (827)	171 (1,179)	1760	275 (1,896)
	2,000 (7,570)	8	6	109 (751)	165 (1,137)	1760	275 (1,896)
	2,500 (9,462)	8	6	96 (661)	155 (1,068)	1760	275 (1,896)
MSC8-150-480GL	2,000 (7,570)	8	6	122 (841)	188 (1,296)	1760	270 (1,861)
	2,500 (9,462)	8	6	111 (765)	181 (1,247)	1760	270 (1,861)
MSC8-150-600	1,250 (4,731)	8	6	113 (779)	192 (1,323)	1480	290 (1,999)
	1,500 (5,677)	8	6	110 (758)	191 (1,316)	1480	290 (1,999)
	2,000 (7,570)	8	6	101 (696)	185 (1,275)	1480	290 (1,999)
	2,500 (9,462)	8	6	126 (868)	175 (1,206)	1480	290 (1,999)
MSC8-150-640	1,500 (5,677)	8	6	124 (854)	220 (1,516)	1480	300 (2,068)
	2,000 (7,570)	8	6	117 (806)	216 (1,489)	1480	300 (2,068)
	2,500 (9,462)	8	6	107 (737)	206 (1,420)	1480	300 (2,068)
	3,000 (11,355)	8	6	162 (1,116)	194 (1,337)	1480	300 (2,068)

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2245391-0
Report Reference EX26402-20221129
Date 1-Dec-2022

Issued to: TAIZHOU TAIDONG FIRE & MARINE POWER LTD
NO 51 XINGJIANG ROAD, PRIVATE ECONOMIC INDUSTRIAL CENTER
JIANGYAN DISTRICT TAIZHOU, JIANGSU 225500
China

This is to certify that representative samples of QYLU - Internal-combustion Engines for Driving Stationary Fire Pumps

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1247 , Edition: 5, Issue Date: 2007-5-31 , Revision Date: 2020-8-12

Additional Information: See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2245391-0
Report Reference EX26402-20221129
Date 1-Dec-2022

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
4108HE	DIESEL ENGINES RATED AT SPECIFIC SPEEDS
6110THE	DIESEL ENGINES RATED AT SPECIFIC SPEEDS
6D250HE	DIESEL ENGINES RATED AT SPECIFIC SPEEDS
6D300HE	DIESEL ENGINES RATED AT SPECIFIC SPEEDS

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	EX26635
Report Reference	EX26635-20200127
Issue Date	2020-FEBRUARY-14

Issued to: SHANGHAI TOP MOTOR CO LTD

303 KANGLIU RD
KANGQIAO TOWN
NANHUI
SHANGHAI
201315 CHINA

This certificate confirms that representative samples of FIRE PUMP MOTORS

See Addendum page

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1004-1, Rotating Electrical Machines – General Requirements
UL 1004-5, Fire Pump Motors
CSA C22.2 No. 100-14, Motors and Generators

Additional Information: See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	EX26635
Report Reference	EX26635-20200127
Issue Date	2020-FEBRUARY-14

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Models/Product

Model Number,F-TXC143T1U2B,F-TXC143T1U2B,F-TXC143T1U2B,F-TXC143T1U2B,F-TXC143T1.5U2B,F-TXC143T1.5U2B,F-TXC143T1.5U2B,F-TXC143T1.5U2B,F-TXC145T2U2B,F-TXC145T2U2B,F-TXC145T2U2B,F-TXC145T2U2B,F-TXC182T3U2B,F-TXC182T3U2B,F-TXC182T3U2B,F-TXC182T3U2B,F-TXC184T5U2B,F-TXC184T5U2B,F-TXC184T5U2B,F-TXC184T5U2B,F-TXC213T7.5U2B,F-TXC213T7.5U2B,F-TXC213T7.5U2B,F-TXC213T7.5U2B,F-TXC215T10U2B,F-TXC215T10U2B,F-TXC215T10U2B,F-TXC215T10U2B,F-TXC254T15U2B,F-TXC254T15U2B,F-TXC254T15U2B,F-TXC254T15U2B,F-TXC256T20U2B,F-TXC256T20U2B,F-TXC256T20U2B,F-TXC256T20U2B,F-TXC284TS25U2B,F-TXC284TS25U2B,F-TXC284TS25U2B,F-TXC284TS25U2B,F-TXC286TS30U2B,F-TXC286TS30U2B,F-TXC286TS30U2B,F-TXC286TS30U2B,F-TXC324TS40U2B,F-TXC324TS40U2B,F-TXC324TS40U2B,F-TXC324TS40U2B,F-TXC326TS50U2B,F-TXC326TS50U2B,F-TXC326TS50U2B,F-TXC326TS50U2B,F-TXC364TS60U2B,F-TXC364TS60U2B,F-TXC364TS60U2B,F-TXC364TS60U2B,F-TXC365TS75U2B,F-TXC365TS75U2B,F-TXC365TS75U2B,F-TXC365TS75U2B,F-TXC405TS100U2B,F-TXC405TS100U2B,F-TXC405TS100U2B,F-TXC405TS100U2B,F-TXC444TS125U2B,F-TXC444TS125U2B,F-TXC444TS125U2B,F-TXC444TS125U2B,F-TXC445TS150U2B,F-TXC445TS150U2B,F-TXC445TS150U2B,F-TXC445TS150U2B,F-TXC447TS200U2B,F-TXC447TS200U2B,F-TXC447TS200U2B,F-TXC447TS200U2B,F-TXC449TS250U2B,F-TXC449TS250U2B,F-TXC449TS250U2B,F-TXC449TS250U2B,F-TXC449TS300U2B,F-TXC449TS300U2B,F-TXC449TS300U2B,F-TXC449TS300U2B,F-TXC586/7TS350U2B,F-TXC586/7TS350U2B,F-TXC586/7TS350U2B,F-TXC586/7TS350U2B,F-TXC586/7TS400U2B,F-TXC586/7TS400U2B,F-TXC586/7TS400U2B,F-TXC586/7TS400U2B,F-TXC586/7TS450U2B,F-TXC586/7TS450U2B,F-TXC586/7TS450U2B,F-TXC586/7TS450U2B,F-TXC143T1U4B,F-TXC143T1U4B,F-TXC143T1U4B,F-TXC143T1U4B,F-TXC145T1.5U4B,F-TXC145T1.5U4B,F-TXC145T1.5U4B,F-TXC145T1.5U4B,F-TXC145T2U4B,F-TXC145T2U4B,F-TXC145T2U4B,F-TXC145T2U4B,F-TXC182T3U4B,F-TXC182T3U4B,F-TXC182T3U4B,F-TXC182T3U4B,F-TXC184T5U4B,F-TXC184T5U4B,F-TXC184T5U4B,F-TXC184T5U4B,F-TXC213T7.5U4B,F-TXC213T7.5U4B,F-TXC213T7.5U4B,F-TXC213T7.5U4B,F-TXC215T10U4B,F-TXC215T10U4B,F-TXC215T10U4B,F-TXC215T10U4B,F-TXC254T15U4B,F-TXC254T15U4B,F-TXC254T15U4B,F-TXC254T15U4B,F-TXC256T20U4B,F-TXC256T20U4B,F-TXC256T20U4B,F-TXC256T20U4B,F-TXC284T25U4B,F-TXC284T25U4B,F-TXC284T25U4B,F-TXC284T25U4B,F-TXC286T30U4B,F-TXC286T30U4B,F-TXC286T30U4B,F-TXC286T30U4B,F-TXC324T40U4B,F-TXC324T40U4B,F-TXC324T40U4B,F-TXC324T40U4B,F-TXC326T50U4B,F-TXC326T50U4B,F-TXC326T50U4B,F-TXC326T50U4B,F-TXC364T60U4B,F-TXC364T60U4B,F-TXC364T60U4B,F-TXC364T60U4B,F-TXC365T75U4B,F-TXC365T75U4B,F-TXC365T75U4B,F-TXC365T75U4B,F-TXC405T100U4B,F-TXC405T100U4B,F-TXC405T100U4B,F-TXC405T100U4B,F-TXC444T125U4B,F-TXC444T125U4B,F-TXC444T125U4B,F-TXC444T125U4B,F-TXC445T150U4B,F-TXC445T150U4B,F-TXC445T150U4B,F-TXC445T150U4B,F-TXC447T200U4B,F-TXC447T200U4B,F-TXC447T200U4B,F-TXC447T200U4B,F-TXC449T250U4B,F-TXC449T250U4B,F-TXC449T250U4B,F-

Bruce Mahrenholz, Director North American Certification Program

UL LLC

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TXC449T250U4B,F-TXC449TS300U4B,F-TXC449TS300U4B,F-TXC449TS300U4B,F-TXC449TS300U4B,F-TXC586/7T350U4B,F-TXC586/7T350U4B,F-TXC586/7T350U4B,F-TXC586/7T350U4B,F-TXC586/7T400U4B,F-TXC586/7T400U4B,F-TXC586/7T400U4B,F-TXC586/7T400U4B,F-TXC586/7T450U4B,F-TXC586/7T450U4B,F-TXC586/7T450U4B,F-TXC586/7T450U4B,F-TXC145T1U6B,F-TXC145T1U6B,F-TXC145T1U6B,F-TXC145T1U6B,F-TXC182T1.5U6B,F-TXC182T1.5U6B,F-TXC182T1.5U6B,F-TXC182T1.5U6B,F-TXC184T2U6B,F-TXC184T2U6B,F-TXC184T2U6B,F-TXC184T2U6B,F-TXC213T3U6B,F-TXC213T3U6B,F-TXC213T3U6B,F-TXC213T3U6B,F-TXC215T5U6B,F-TXC215T5U6B,F-TXC215T5U6B,F-TXC215T5U6B,F-TXC254T7.5U6B,F-TXC254T7.5U6B,F-TXC254T7.5U6B,F-TXC254T7.5U6B,F-TXC256T10U6B,F-TXC256T10U6B,F-TXC256T10U6B,F-TXC256T10U6B,F-TXC284T15U6B,F-TXC284T15U6B,F-TXC284T15U6B,F-TXC284T15U6B,F-TXC286T20U6B,F-TXC286T20U6B,F-TXC286T20U6B,F-TXC286T20U6B,F-TXC324T25U6B,F-TXC324T25U6B,F-TXC324T25U6B,F-TXC324T25U6B,F-TXC326T30U6B,F-TXC326T30U6B,F-TXC326T30U6B,F-TXC326T30U6B,F-TXC364T40U6B,F-TXC364T40U6B,F-TXC364T40U6B,F-TXC364T40U6B,F-TXC365T50U6B,F-TXC365T50U6B,F-TXC365T50U6B,F-TXC365T50U6B,F-TXC404T60U6B,F-TXC404T60U6B,F-TXC404T60U6B,F-TXC404T60U6B,F-TXC405T75U6B,F-TXC405T75U6B,F-TXC405T75U6B,F-TXC405T75U6B,F-TXC444T100U6B,F-TXC444T100U6B,F-TXC444T100U6B,F-TXC444T100U6B,F-TXC445T125U6B,F-TXC445T125U6B,F-TXC445T125U6B,F-TXC445T125U6B,F-TXC447T150U6B,F-TXC447T150U6B,F-TXC447T150U6B,F-TXC447T150U6B,F-TXC449T200U6B,F-TXC449T200U6B,F-TXC449T200U6B,F-TXC449T200U6B,F-TXC586/7T250U6B,F-TXC586/7T250U6B,F-TXC586/7T250U6B,F-TXC586/7T250U6B,F-TXC586/7T300U6B,F-TXC586/7T300U6B,F-TXC586/7T300U6B,F-TXC586/7T300U6B,F-TXC586/7T350U6B,F-TXC586/7T350U6B,F-TXC586/7T350U6B,F-TXC586/7T350U6B,F-TXC586/7T400U6B,F-TXC586/7T400U6B,F-TXC586/7T400U6B,F-TXC586/7T400U6B,

Bruce Mahrenholz, Director North American Certification Program

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F-TDC254T15U2B,F-TDC254T15U2B,F-TDC254T15U2B,F-TDC254T15U2B,F-TDC256T20U2B,F-TDC256T20U2B,F-TDC256T20U2B,F-TDC256T20U2B,F-TDC284TS25U2B,F-TDC284TS25U2B,F-TDC284TS25U2B,F-TDC284TS25U2B,F-TDC286TS30U2B,F-TDC286TS30U2B,F-TDC286TS30U2B,F-TDC286TS30U2B,F-TDC286TS40U2B,F-TDC286TS40U2B,F-TDC286TS40U2B,F-TDC286TS40U2B,F-TDC324TS40U2B,F-TDC324TS40U2B,F-TDC324TS40U2B,F-TDC324TS40U2B,F-TDC324TS50U2B,F-TDC324TS50U2B,F-TDC324TS50U2B,F-TDC324TS50U2B,F-TDC326TS50U2B,F-TDC326TS50U2B,F-TDC326TS50U2B,F-TDC326TS50U2B,F-TDC326TS60U2B,F-TDC326TS60U2B,F-TDC326TS60U2B,F-TDC326TS60U2B,F-TDC364TS60U2B,F-TDC364TS60U2B,F-TDC364TS60U2B,F-TDC364TS60U2B,F-TDC364TS75U2B,F-TDC364TS75U2B,F-TDC364TS75U2B,F-TDC364TS75U2B,F-TDC365TS75U2B,F-TDC365TS75U2B,F-TDC365TS75U2B,F-TDC365TS75U2B,F-TDC365TS100U2B,F-TDC365TS100U2B,F-TDC365TS100U2B,F-TDC365TS100U2B,F-TDC405TS100U2B,F-TDC405TS100U2B,F-TDC405TS100U2B,F-TDC405TS100U2B,F-TDC404TS125U2B,F-TDC404TS125U2B,F-TDC404TS125U2B,F-TDC404TS125U2B,F-TDC444TS125U2B,F-TDC444TS125U2B,F-TDC444TS125U2B,F-TDC444TS125U2B,F-TDC405TS150U2B,F-TDC405TS150U2B,F-TDC405TS150U2B,F-TDC405TS150U2B,F-TDC445TS150U2B,F-TDC445TS150U2B,F-TDC445TS150U2B,F-TDC445TS150U2B,F-TDC444TS200U2B,F-TDC444TS200U2B,F-TDC444TS200U2B,F-TDC444TS200U2B,F-TDC447TS200U2B,F-TDC447TS200U2B,F-TDC447TS200U2B,F-TDC447TS200U2B,F-TDC449TS250U2B,F-TDC449TS250U2B,F-TDC449TS250U2B,F-TDC449TS250U2B,F-TDC447TS300U2B,F-TDC447TS300U2B,F-TDC447TS300U2B,F-TDC447TS300U2B,F-TDC449TS300U2B,F-TDC449TS300U2B,F-TDC449TS300U2B,F-TDC449TS300U2B,F-TDC447TS350U2B,F-TDC447TS350U2B,F-TDC447TS350U2B,F-TDC447TS350U2B,F-TDC449TS350U2B,F-TDC449TS350U2B,F-TDC449TS350U2B,F-TDC449TS350U2B,F-TDC449TS400U2B,F-TDC449TS400U2B,F-TDC449TS400U2B,F-TDC449TS400U2B,F-TDC449TS450U2B,F-TDC449TS450U2B,F-TDC449TS450U2B,F-TDC449TS450U2B,F-TDC449TS500U2B,F-TDC449TS500U2B,F-TDC449TS500U2B,F-TDC254T15U4B,F-TDC254T15U4B,F-TDC254T15U4B,F-TDC254T15U4B,F-TDC256T20U4B,F-TDC256T20U4B,F-TDC256T20U4B,F-TDC256T20U4B,F-TDC284T25U4B,F-TDC284T25U4B,F-TDC284T25U4B,F-TDC284T25U4B,F-TDC286T30U4B,F-TDC286T30U4B,F-TDC286T30U4B,F-TDC286T30U4B,F-TDC324T40U4B,F-TDC324T40U4B,F-TDC324T40U4B,F-TDC324T40U4B,F-TDC326T50U4B,F-TDC326T50U4B,F-TDC326T50U4B,F-TDC326T50U4B,F-TDC364T60U4B,F-TDC364T60U4B,F-TDC364T60U4B,F-TDC364T60U4B,F-TDC365T75U4B,F-TDC365T75U4B,F-TDC365T75U4B,F-TDC365T75U4B,F-TDC405T100U4B,F-TDC405T100U4B,F-TDC405T100U4B,F-TDC405T100U4B,F-TDC405T125U4B,F-TDC405T125U4B,F-TDC405T125U4B,F-TDC405T125U4B,F-TDC444T125U4B,F-TDC444T125U4B,F-TDC444T125U4B,F-TDC444T125U4B,F-TDC444T150U4B,F-TDC444T150U4B,F-TDC444T150U4B,F-TDC444T150U4B,F-TDC445T150U4B,F-TDC445T150U4B,F-TDC445T150U4B,F-TDC445T150U4B,F-TDC445T200U4B,F-TDC445T200U4B,F-TDC445T200U4B,F-TDC445T200U4B,F-TDC447T200U4B,F-TDC447T200U4B,F-TDC447T200U4B,F-TDC447T200U4B,F-TDC447T250U4B,F-TDC447T250U4B,F-TDC447T250U4B,F-TDC447T250U4B,F-TDC449T250U4B,F-TDC449T250U4B,F-TDC449T250U4B,F-TDC449T250U4B,F-TDC449T300U4B,F-TDC449T300U4B,F-TDC449T300U4B,F-TDC449T300U4B,F-TDC449T350U4B,F-TDC449T350U4B,F-

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	EX26635
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TDC449T350U4B,F-TDC449T350U4B,F-TDC449T400U4B,F-TDC449T400U4B,F-TDC449T400U4B,F-TDC449T400U4B,F-TDC449T450U4B,F-TDC449T450U4B,F-TDC449T450U4B,

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ONLINE CERTIFICATIONS DIRECTORY

QYZS.EX3971
Pump Controllers, Fire

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Pump Controllers, Fire

See General Information for Pump Controllers, Fire

TORNATECH INC EX3971
#132
7075 PLACE ROBERT-JONCAS
ST LAURENT, QC H4M 2Z2 CANADA

Fire Pump Controllers: Models AF, AFP, AFR, AFY, ATF, ATR, ATP or ATY followed by C or N, followed by additional suffixes. All of the above controllers are suitable for use on circuits capable of delivering high fault currents. The withstand ratings are as follows:

Circuit Breaker	Max V AC	Max Short Circuit Current RMS Symmetrical Amps
MZMH6-63, MZMH6-100,	208; 240	25000; 42,000
MZMH6-160, MZMH6-250		
MZMH6-63, MZMH6-100,	480	65,000
MZMH6-160, MZMH6-250		

The controllers provided with Automatic Transfer Switches are suitable for use on circuits capable of delivering high fault currents. The withstand rating of the normal power source side is determined by the transfer switch as indicated below:

ASCO Transfer Switch	Max Controller Short Circuit Withstand Rating
9403704	22KA, 480 VAC Max
94031004	22KA, 480 VAC Max
94032604	35KA, 480 VAC Max

The withstand ratings for the alternate power source side will be dependent upon the ratings of the external circuit breaker provided. But in no case will they exceed those of the normal power source side.

Models AL or AL1 followed by additional suffixes.

All of the above controllers are suitable for use on circuits capable of delivering high fault currents. The withstand ratings are as follows:

Circuit Breaker	Max V AC	Max Short Circuit Current RMS Symmetrical Amps
NZM6B-63,	480	25,000
NZM6B-100, NZM6B-160		

The controllers provided with automatic Transfer Switches are suitable for use on circuits capable of delivering high fault currents. The withstand rating of the entire controller is determined by the transfer switch as indicated below:

ASCO Transfer Switch	Max Controller S. C. Withstand Rating
9403704	22KA, 480 VAC Max
94031004	22KA, 480 VAC Max
94032604	25KA, 480 VAC Max

The withstand ratings for the alternate power source side will be dependent upon the ratings of the external circuit breaker provided. But in no case will they exceed those of the normal power source side.

Authorities having jurisdiction should be consulted in all cases.

Model FPD Series controller for engine-driven centrifugal fire pumps.

Models FPA, FPP, FPR, FPS, FPV, FPW, FPY, VPA, VPR, and VPS may be followed by additional suffixes. The withstand ratings are as follows:

Withstand Ratings of Controllers Without Transfer Switch:

Short Circuit Withstand Ratings (Ampere Symmetrical)		
VOLTAGE	**STANDARD**	**OPTIONAL HIGH**
200 to 480 V	100,000A RMS	150,000A RMS
575 to 600 V	50,000A RMS	100,000A RMS

Models ATG , ATU, VPG or VPU. The controllers provided with Automatic Transfer Switches are suitable for use on circuits capable of delivering high fault currents. The withstand rating of the normal power side is the same as the withstand ratings of controllers without transfer switches. The withstand rating of the alternate power side is determined by the transfer switch as indicated by the following tables:

Withstand ratings of controllers with 120 A Tornatech Inc. Transfer Switch

200-208V 50/60 Hz MAX HP	230-240V 50/60 Hz MAX HP	380-416V 50/60 Hz MAX HP	440-480V 50/60 Hz MAX HP	600V 60Hz MAX HP	Withstand Rating (A)
40	40	—	—	—	65,000
—	—	60	75	—	25,000
—	—	—	—	100	18,000

Withstand Ratings For Controllers with Ascolectric Transfer Switches

Transfer Switch (A)	200-208V 50/60 Hz Max HP	230-240V 50/60 Hz Max HP	Withstand Rating		Specific** Withstand Rating (A)
			(A)	Time (Cycles)	
100	30	30	10000	1.5	22000
150	50	50	1000	1.5	22000
400	150	150	35000	3	42000
600	N/A	N/A	50000	3	65000

** Tested and found suitable for 100kA

Withstand Ratings for Controllers with Ascolectric Transfer Switches, Continued

Transfer Switch (A)	600V 60 Hz Max HP	Withstand Rating		Specific Withstand Rating (A)
		(A)	Time (Cycles)	
100	75	10000	1.5	N/A
150	150	1000	1.5	N/A
400	400	22000	3	N/A
600	N/A	N/A	N/A	N/A

Model ATU or VPU:	Normal Power Side:	Same as withstand rating of controller without transfer switch.
	Alternate Power Side:	Same as withstand rating of controller without transfer switch.

Model FPL:	Limited Service controllers with withstand ratings as follows:

Short Circuit Withstand Ratings of Limited Service Controllers Without Transfer Switches		
VOLTAGE	**STANDARD**	**OPTIONAL HIGH**
200 to 480 V	25,000 A RMS	65,000 A RMS
575 to 600 V	18,000 A RMS	25,000 A RMS

Model LTG, GLG:	Automatic transfer switch for connection to a generator set.
Model LTU:	Automatic transfer switch for connection to a 2nd utility.

Withstand ratings of Controller with transfer switch Model FPAT (Tornatech):

Model LTG:	Normal Power Side:	Same as withstand rating of controller without transfer switch.
	Alternate Power Side:	Withstand rating only applies when the generator set is protected by a molded case circuit breaker

TRANSFER SWITCH AMPERES	200-480 V H.P.	WITHSTAND RATING AMPERES
120	30	25,000

TRANSFER SWITCH AMPERES	600 V H.P.	WITHSTAND RATING AMPERES
120	30	18,000

Model LTU:	Normal Power Side:	Same as withstand rating of controller without transfer switch.
	Alternate Power Side:	Same as withstand rating of controller without transfer switch.

Withstand ratings of controller with transfer switch Model 940 (Ascolectric):

Model LTG:	Normal Power Side:	Same as withstand rating of controller without transfer switch.
	Alternate Power Side:	Withstand rating only applies when the generator set is protected by a molded case circuit breaker not exceeding the ampere rating of the transfer switch.

Transfer Switch A	200-480 V Max HP	Withstand Rating		Specific Withstand Rating A
		A	Time	
120	30	10,000	1.5	22,000

Transfer Switch A	600 V Max HP	Withstand Rating		Specific Withstand Rating A
		A	Time	
120	30	10,000	1.5	N/A

Model LTU:	Normal Power Side:	Same as withstand rating of controller without transfer switch.
	Alternate Power Side:	Same as withstand rating of controller without transfer switch.

Models CPA, CPP, CPR, CPS, CPV, CPW, CPY, may be followed by additional suffixes. The withstand ratings are as follows:

Withstand ratings of controllers without transfer switch:

Short circuit withstand ratings (ampere symmetrical)		
voltage	**standard**	**optional**
200 to 480 V	100 kA	150 kA
575 to 600 V	50 kA	100 kA

Model CPU - The controllers provided with automatic transfer switches are suitable for use on circuits capable of delivering high fault currents. The withstand rating of the normal power side and the alternate power side is the same as the withstand ratings of controllers without transfer switches.

Model CPU

Short circuit withstand rating for alternate power circuit with transfer switch (RMS Symmetrical)		
V	**Standard**	**High (optional)**
200 to 480 V	100 kA	150 kA
575 to 600 V	50 kA	100 kA

Model GPD Series controller for engine-driven centrifugal fire pumps.

Overcurrent Protection Panels, Model OPD; may be followed by a number 200 through 575 with - or /; followed by a number 200 through 600 with /; followed by a number 10 through 500 with /; followed by 1 or 3 with /; followed by 50 or 60 or 50/60. - These panels provide separate overcurrent protection and disconnect to comply with NFPA 70 Article 695.4(B)(2)(a) and 695.4(B)(3) and NFPA 20 Article 9.2.3.1, 9.2.3.4, and 9.2.3.4.1.

Short Circuit Withstand Ratings, A Symmetrical			
V	**Standard**	**High (Optional)**	**High Capacity**
200-480	25,000	35,000 to 65,000	150,000

575-600	18,000	20,000 to 25,000	50,000 to 100,00

Battery chargers, BCE10, followed by 12 or 24, followed by 120 or 220.

Fire pump controllers, horsepower rated, Models GPA, GPAe, GPP, GPR, GPS, GPV, GPY, GPYe or GPW; may be followed by a number 110 through 575 with - or /; followed by a number 200 through 600 with /; followed by a number 1 through 500 with /; followed by 1 or 3 with /; followed by 50 or 60 or 50/60.

Fire pump controllers, kilowatt rated, Models GPA, GPAe, GPP, GPR, GPS, GPV, GPY, GPYe or GPW; followed by -400/; followed by a number 0.75 through 315 with kW/; followed by 3 with /; followed by 50 or 60 or 50/60.

Transfer switch, horsepower rated, Model GPU; may be followed by a number 110 through 575 with - or /; followed by a number 200 through 600 with /; followed by a number 1 through 500 with /; followed by 1 or 3 with /; followed by 50 or 60 or 50/60.

Transfer switch, kilowatt rated, Model GPU; followed by -400/; followed by a number 0.75 through 315 with kW/; followed by 3 with /; followed by 50 or 60 or 50/60.

Withstand ratings of normal power circuit for GPA, GPAe, GPP, GPR, GPS, GPV, GPY, GPYe and GPW controllers with or without gpu transfer switch.

Short Circuit Withstand Ratings for normal power circuit with or without transfer switch, A Symmetrical		
V	Standard	High (Optional) +
200-480	100,000	150,000
575-600 +	50,000	100,000
+ - Not applicable to controllers that use NOARK Power Components.		

Limited service fire pump controllers, kilowatt rated, Models GPL; followed by -400/; followed by a number 0.75 through 315 with kW/; followed by 3 with /; followed by 50 or 60 or 50/60.

Limited service fire pump controllers, , kilowatt rated, Models GPL; followed by -400/; followed by a number 0.75 through 315 with kW/; followed by 3 with /; followed by 50 or 60 or 50/60.

Limited service transfer switch, for connection to a second utility, horsepower rated, Model GLU; may be followed by a number 110 through 575 with - or /; followed by a number 200 through 600 with /; followed by a number 1 through 500 with /; followed by 1 or 3 with /; followed by 50 or 60 or 50/60.

Limited service transfer switch, for connection to a second utility, kilowatt rated, Model GLU; followed by -400/; followed by a number 0.75 through 315 with kW/; followed by 3 with /; followed by 50 or 60 or 50/60.

Withstand ratings of normal power circuit for GPL controller with or without GLU transfer switch.

Short Circuit Withstand Ratings for normal power circuit with or without transfer switch, A Symmetrical		
V	Standard	High (Optional)
200-240	65,000	-
380-480	25,000	65,000
575-600	18,000	25,000

Click here to view the Colombia Market Access Certification

Last Updated on 2017-02-09

Certificate of Compliance

This certificate is issued for the following:

Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps

Model GPx Series electric motor driven and Model GPD diesel engine driven fire pump controllers manufactured at Tornatech FZE in Dubai, UAE

Prepared for:

TornaTech Inc.
7075 Pl Robert-Joncas, #132
St Laurent, QC H4M 2Z2
Canada

Manufactured at:

TornaTech FZE
Warehouse CC-4 near R/A 08
P.O. Box 18435, Jebel Ali
Dubai, United Arab Emirates

FM Approvals Class: 1321/1323

Approval Identification: 0003052698

Approval Granted: June 24, 2014

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

Richard B. Dunne
Manager, Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062

Member of the FM Global Group

FM Approvals
1151 Boston-Providence Turnpike, PO Box 9102
Norwood, MA 02062 USA
Tel: +1 (781) 255-4000
Fax: +1 (781) 762-9375
Email: certificates@fmapprovals.com
Website: www.fmapprovals.com

Member of the FM Global Group

CERTIFICATE OF COMPLIANCE

This certificate of compliance validates the following

TEST REPORT NUMBER:	3052698	TEST CERTIFICATE NUMBER:	3052698
DATE OF ISSUE:	24 June, 2014	DATE OF ISSUE:	24 June, 2014
DATE OF EXPIRY:	NONE	DATE OF EXPIRY:	NONE

NAME OF FACTORY/ MANUFACTURER: TORNATECH INC.

ADDRESS/REGION: 7075 PLACE ROBERT-JONCAS, #132
SAINT LAURENT, QUEBEC
H4M 2Z2 CANADA

NAME OF THE BRAND(S): TORNATECH FZE
Warehouse CC-4 near R/A 08
P.O. Box 18435, Jebel Ali
Dubai, United Arab Emirates

MODEL/NO: GPx series
GPD series

CERTIFICATION MARK: FM APPROVED

LOGO ON THE PRODUCT: TORNA TECH

DESCRIPTION OF THE PRODUCT: Samples of the GPx series and GPD series were submitted for examination and testing. All testing and analysis was conducted and verified to be in compliance with the Standards listed in the Test Standards section below

TEST STANDARD: FM Approvals, Approval Standard for Controllers for Electric Motor and Diesel Engine Driven Fire Pumps, Class 1321/1323, dated November 2007

TEST DESCRIPTION: All testing and analysis considered appropriate was conducted and verified to be in compliance with the Standards listed in the Test Standards section. All data is on file at FM Approvals along with other documentation and correspondence applicable to this program.

SPECIFICATION OF TEST SPECIMEN: The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings.

TEST RESULTS: Pass

NAME OF TEST FACILITY:	FM Approvals
TEST FACILITY ADDRESS/REGION:	
LABORATORY CONTACT:	Mr. Richard Dunne
CONTACT PHONE:	1-401-567-5701
CONTACT EMAIL:	Richard.Dunne@fmapprovals.com
PRODUCT APPLICATION GUIDELINE (END USE):	Installations shall comply with the manufacturer's instructions.

SIGNED BY:

The above certificate is valid only when installed in accordance with the "Product Application Guideline (End Use)" as stated above. To verify the validity of the product please log into our website, www.approvalguide.com.

FM APPROVED

Certificate of Compliance

This certificate is issued for the following:

Fire Pump Flowmeter Systems
(See complete listing details below)

Prepared for:

Quest Engineering dba Gerand Engineering
2300 Edgewood Avenue South
St. Louis Park, MN 55426

FM Approvals Class: 1046

Approval Identification: 3058542 Approval Granted: April 26, 2016

To verify the product continues to be Approved please refer to www.approvalguide.com.

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

David B. Fuller
AVP, Manager of Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062 USA

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Certificate of Compliance

Pump Rating, gal/min (dm³/min)	Nominal Meter Line Size in.	Model Designation	
		Venturi (1)	Orifice (2)
25 (95)	1 1/4	GV-25-1 1/4	-
50 (190)	2	GV-50-2	-
100 (380)	2 1/2	GV-100-2 1/2	GO-100-2 1/2
150 (570)	3	GV-150-3	GO-150-3
200 (755)	3, 4	GV-200-3, 4	GO-200-3, 4
250 (945)	4, 5	GV-250-4, 5	GO-250-4, 5
300 (1135)	4	GV-300-4	GO-300-4
400 (1515)	4, 5	GV-400-4, 5	GO-400-4, 5
450 (1705)	4, 5	GV-450-4, 5	GO-450-4, 5
500 (1895)	5, 6	GV-500-5, 6	GO-500-5, 6
750 (2840)	5, 6	GV-750-5, 6	GO-750-5, 6
1000 (3785)	6, 8	GV-1000-6, 8	GO-1000-6, 8
1250 (4730)	6, 8	GV-1250-6, 8	GO-1250-6, 8
1500 (5680)	8, 10	GV-1500-8, 10	GO-1500-8, 10
2000 (7570)	8, 10	GV-2000-8, 10	GO-2000-8, 10
2500 (9465)	8, 10	GV-2500-8, 10	GO-2500-8, 10
3000 (11 355)	8, 10	GV-3000-8, 10	GO-3000-8, 10

FM Approvals®

Member of the FM Global Group

FM APPROVED

Certificate of Compliance

Pump Rating, gal/min (dm³/min)	*Nominal Meter Line Size in.*	*Model Designation*	
		Venturi (1)	*Orifice (2)*
3500 (13 245)	10, 12	GV-3500-10, 12	GO-3500-10, 12
4000 (15 140)	10, 12	GV-4000-10, 12	GO-4000-10, 12
4500 (17 035)	10, 12	GV-4500-10, 12	GO-4500-10, 12
5000 (18 925)	10, 12	GV-5000-10, 12	GO-5000-10, 12

Each system consists of a Gerand Venturi (GV) or a Gerand Orifice (GO), a differential meter reading in gpm or dm³/min and associated fittings.

GV systems can be equipped with either a 4 1⁄2 in. dial meter (Gerand Model K) or a 6 in. dial meter (Gerand Model M). GO systems are only available with a 4 1⁄2 in. dial meter (Gerand Model I). Permanent installations (wall or panel mount) or portable installations are available on all systems. Rated working pressure is 500 psi (3445 kPa) except that:

GV systems with Model M dial meter have a rated working pressure of 175 psi (1205 kPa).

GV systems with Model K dial meter and Class 150 flanges have a rated working pressure of 275 psi (1905 kPa).

The following end-connection styles are available:

Venturi (1)/VS. Brass screw ends, 1 1⁄4 through 2 1⁄2 in.

Venturi (1)/VW-B. Steel butt-welded ends, 2 1⁄2 through 12 in.

Venturi (1)/V-GE. Steel grooved ends, 2 1⁄2 through 12 in.

Venturi (1)/VW-F. Steel flanged ends, 2 1⁄2 through 12 in. Class 150 flanges rated at 275 psi (1905 kPa). Class 300 flanges rated at 500 psi (3445 kPa).

Orifice (2). Steel socket-welded ends with adaptability for flanging, 2 1⁄2 through 12 in.

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FM APPROVED

Certificate of Compliance

This certificate is issued for the following:

Model ST0712, ST0713, ST0714 OS&Y Gate Valves
Model ST1312, ST1313, ST1314 NRS Gate Valves
Model ST0155, ST0166, ST0177 Indicator Posts
Model ST7011-300, ST7022-300 Indicating Butterfly Valves
Model ST0222 Check Valves
Model ST9011-200 Air Release Valves

Prepared for:

Sensor Tech Fire Fighting and Safety Equipment Trading
Office No 506, Al Saoud Building, Al Qusais-4
Dubai 231728
United Arab Emirates

FM Approvals Class: 1120/1130, 1110, 1112, 1210, 1344

Approval Identification: PR450489 Approval Granted: June 18, 2018

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

David B. Fuller
VP, Manager - Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062 USA

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Air Release Valves

An air release valve is designed to vent automatically the air from a horizontal split-case pump which is automatically controlled. Unless otherwise noted in the listing, these valves have 175 psi (1205 kPa) rated working pressure.

Air Release Valves

Product Designation	*Size, in. (mm)*	*Orifice Diameter, In. (mm)*	*Pressure Rating psi (kPa)*
3450AR-116 3475AR-116	3⁄4 (19)	1⁄16 (1.6)	175 (1207)
3410AR-116	1 (25)	1⁄16 (1.6)	175 (1207)
3450AR-332	1⁄2 (13)	3⁄32 (2.4)	175 (1207)
3475AR-332	3⁄4 (19)	3⁄32 (2.4)	175 (1207)
3410AR-332	1 (25)	3⁄32 (2.4)	175 (1207)
3450AR-16.3	1⁄2 (13)	1⁄16 (1.6)	300 (2069)
3475AR-16.3	3⁄4 (19)	1⁄16 (1.6)	300 (2069)
3410AR-116.3	1 (25)	1⁄16 (1.6)	300 (2069)

Company Name:	Cla-Val Co
Company Address:	Box 1325, Newport Beach, California 92659, USA
Company Website:	http://www.cla-val.com
New/Updated Product Listing:	No
Listing Country:	United States of America
Certification Type:	FM Approved

UL Product iQ™

QWBS.EX27022 - Air-release Valves for Fire Pumps

Air-release Valves for Fire Pumps

See General Information for Air-release Valves for Fire Pumps

GRISWOLD INDUSTRIES, DBA CLA-VAL CO EX27022
1701 PLACENTIA AVE
COSTA MESA, CA 92627-4416 USA
Air-release valves for use with split-case fire pumps.

Model	Inlet Size NPT In.	Orifice Size In.	Outlet Size NPT In.	Rated Pressure psig
3410-AR332	1/2, 3/4 and 1	3/32	1/2	175
3410-AR116.3	1	1/16	1/2	300
3410-AR332KX	1/2, 3/4 and 1	3/32	1/2	175

Last Updated on 2019-04-29

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

COMPANY PROFILE
&
TRADE LICENSE

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

MENA
MECHANICAL INDUSTRIES CO.

COMPANY PROFILE

CEO MESSAGE

Mena Mech Ind co has undergone a remarkable evolution in the past six years in the UAE. In the last 37 years in the Middle East, we've pursued our vision to become the leading fire pump systems provider in the Middle East and north Africa. But one of the most profound changes that have taken place over time is that we have a deeper and richer understanding, commitment and sustainability that has come into focus as we have refined our views of what it means to be a leader.

Today, as a result, we are increasingly adapting Mena strategies, operations and culture to drive positive results across our experience and provide a superior quality product to serve the commitments.

Our commitment in MENA is much stronger than ever. Indeed, one of the most important aspects of growth, opportunities for our company depends on solving engineering challenges a reality that is making sustainability a competitive imperative in the industry.

We also know our Customer's expectations from a leading company like Mena.

Our Company Profile will provide multiple examples of our commitment for supply, operation and after sales service, across wide range of products, from Fire Pump Solutions to pumps of the water sector, along with engineering Solutions etc.

MENA branches expands in all UAE emirates, Egypt, Palestine, Sudan, GCC Countries, and North Africa to serve our client.

With your continuous support and trust, Mena now poised to further grow its Middle east and north Africa network. In the end, I appreciate your business commitment.

Eng. Mamoun A. Al-Burieni
Chief Executive Officer

VISION

MENA MECH aspires to be among the leading companies of the field in the MENA region, renowned and recognized around the globe for offering comprehensive, professional services & products of the highest quality for its distinctive clients.

MISSION

MENA is committed to providing its clients with service and products of the highest quality; offering a comprehensive platform of services and products. Promoting the personal, and social career growth of all employees, adding to the human knowledge of contributing to culture, social and economic progress of society preserving and promoting the Arab, Islamic culture, heritage and history; and contributing to the advancement of firefighting and security of lives of people living in the middle east and north Africa.

VALUES

- Commitment to our clients.
- Be reliable and add value to our customers.
- Empowerment, Intergrity, Excellence and Collaboration.
- Trust our employees to make the right decisions.
- Show transparency in everything we do.
- Operate professionally, safely & effectively.
- Cooperation; work as one team to deliver value.

MENA MECHANICAL INDUSTRIES CO.

OUR **STRATEGY**

GUIDING PRIORITIES

A major and comprehensive company:
Mena Fire Fighting offers varieties of Pumping Solutions, in the field of firefighting and Water Applications.

• Client Success:
The company is committed to enriching its client's success within an economy rich environment.

• Emphasis on Quality:
The standard of our company enhances us to practice a diversity of designs that allow and evaluates the client's request. Our effectiveness and practicality of all the services and products offered by the company are to provide the best result for our clients.

• Supportive:
Our company emphasizes the importance of our services and products by providing the required training to operate the product and maintenance period to ensure that the client receives the maximum benefit of our services and products supplied.

• Global Vision:
Our Company takes pride in being a part of an international Supply chain with partner companies around the globe.

• Research Intensive:
Our company is continuously making strident moves to establish itself nationally and internationally through extensively researching the latest technologies in the field.

• Engagement With The Community:
Our company plays a vital role in the social and economic development and safety of UAE and middle east by introducing the most advanced technologies with affordable and competitive prices.

GUIDING PRIORITIES

A major and comprehensive company:
MENA MECH IND CO offers varieties of Pumping Solutions, in the field of firefighting and Water Applications.

• Client Success:
The company is committed to enriching its client's success within an economy rich environment.

• Emphasis on Quality:
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• Engagement With The Community:
Our company plays a vital role in the social and economic development and safety of UAE and middle east by introducing the most advanced technologies with affordable and competitive prices.

SAFETY POLICY

MENA MECH IND CO is committed to emphasize on the education, interest and awareness of new employees in safety concepts in a safe environment before the assumption of duty.

Ensure that the organization's environment, facilities, equipment and substances are subject to safe systems of work to prevent risks to health or safety.

Just as we are keen for our client's safety, our employees have to be provided by the safest working environment including a spacious atmosphere, excellent ventilation, pest control, etc.

VENDORS

END SUCTION & SPLIT CASE PUMPS
VERTICAL TURBINE FIRE PUMP
MENA MECHANICAL INDUSTRIES- UAE

DIESEL DRIVER
KIRLOSKAR, INDIA
UL LISTED & FM APPROVED

DIESEL DRIVER
NM FIRE, CHINA
UL LISTED & FM APPROVED

DIESEL DRIVER
GREAVES COTTON
UL LISTED & FM APPROVED

DIESEL DRIVER
TAIDONG, CHINA
UL LISTED LISTED

DIESEL DRIVER
CLARKE, UK /USA
UL LISTED & FM APPROVED

FIRE PUMP MOTOR
WEG, BRAZIL
UL LISTED APPROVED

FIRE PUMP MOTOR
MARATHON, USA
UL LISTED

FIRE PUMP CONTROLLERS
TORNATECH, CANADA UL LISTED & FM APPROVED

PRESSURE RELIEF VALVE
SINGER VALVE, CANADA UL LISTED & FM APPROVED

FIRE PUMP MOTOR
TECHTOP, INC
UL LISTED APPROVED

FLOWMETER
GERAND, USA FM APPROVED

AMERILLO GEARS - USA

THE COMPANY

Since 2017, our Headquarters has been located in the Emirate of Dubai. MENA MECH IND CO is charged with an ambitious growth with the mission to protect people of the United Arab Emirates, and middle east Countries by providing world-class fire pump solutions manufacture by MENA MECH IND CO.

Mena is efficiently covering its Services by having a regional office in Egypt, Sudan and various other locations in the Middle East.

Mena Mech IND CO is the sole distributor throughout the Gulf Countries for its products, which are approved from Civil defense in many countries including UAE.

This company profile includes a complete illustration and real pictures of production process, starting from engineering, casting, machining, manufacturing, and ending with assembly.

The experts of MENA MECH IND CO are well managed, dedicated and well-versed with knowledge research and development in all aspects of Pumping Solutions. They are also supported with a qualified team of engineers and technicians with years of experiences to provide the best quality service to clients. and has an outstanding track record of delivering products on time and are punctual in providing services at regular intervals; this has been the bases of establishing a strong relationship with the clients.

MENA MECH IND CO has a well-equipped workshop for maintenance service as per International standards.

MENA MECH IND CO commits to consistently demonstrate the highest ethical standards in our actions through innovative solutions, honoring our agreements and being transparent in our communications.

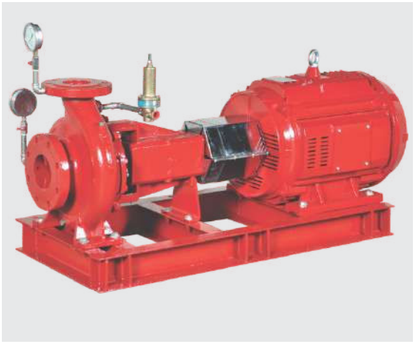
Our value and service meets our customer expectations because we build and maintain a good relationship with them to ensure long-term satisfaction.

PRODUCTS RANGE

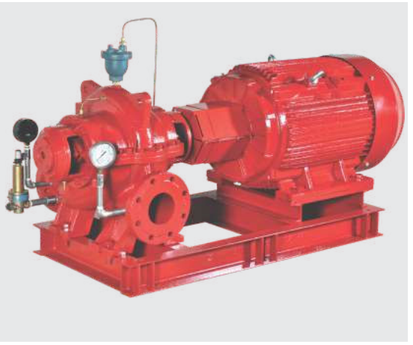
MENA MECHANICAL INDUSTRIES CO.

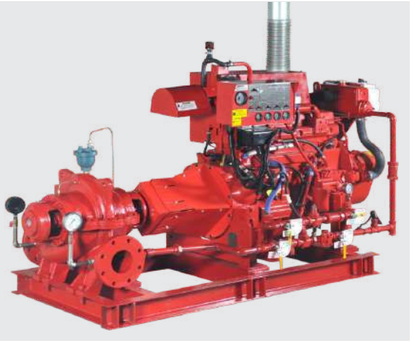
Vertical Turbine Fire Pumps

Horizontal End Suction



Horizontal Split Case





Product Range Overview

- UL Listed Horizontal End Suction Fire Pumps
- UL Listed Horizontal Split Case Fire Pumps
- UL Listed Vertical Turbine Fire Pumps
- UL/FM Industrial Packaged Fire Pump Set
- Diesel Engine Driven Pump Set
- Electric Motor Driven Pump Set
- Jockey Pump
- Fire Pump Packaged as per NFPA

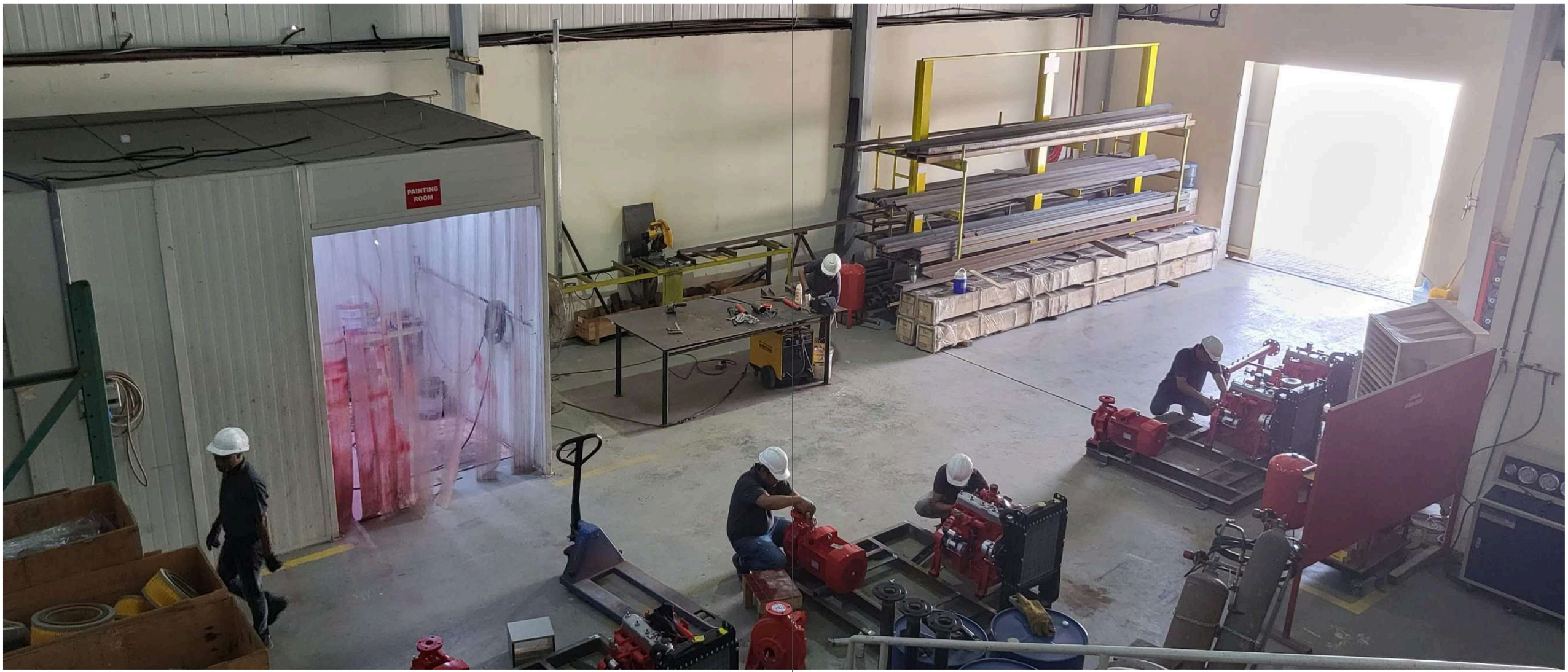
MENA MECHANICAL INDUSTRIES CO.

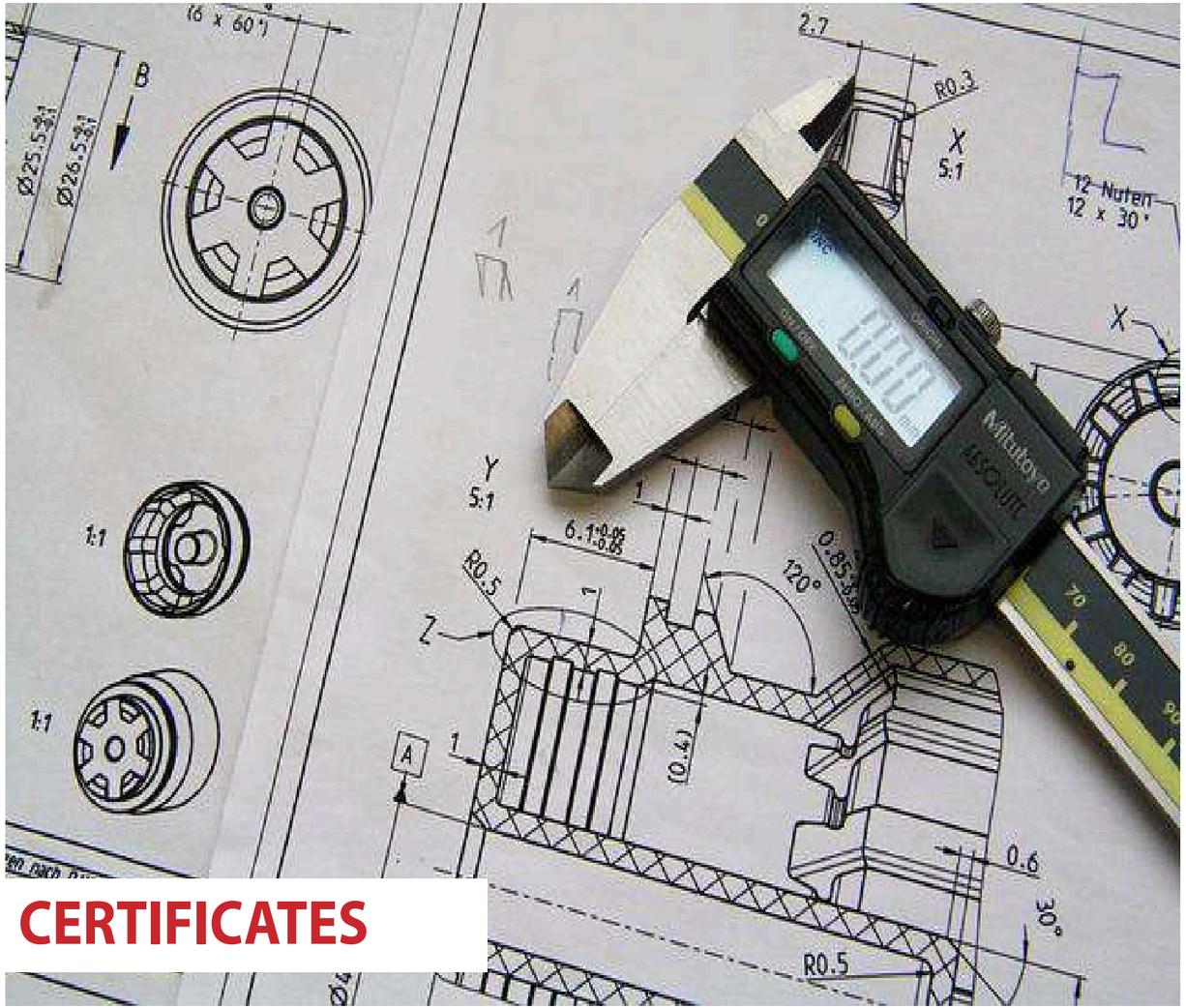
PRODUCTION CAPABALITIES









PAINTING
ROOM



CERTIFICATES

CERTIFICATE OF COMPLIANCE

Certificate Number	EX28929
Report Reference	EX28929
Issue Date	2023-JANUARY-04
Issued to:	MENA MECH IND CO. Sharjah Al Sajaa Industrial Shed 6 Victory Warehouse, Sajja New Industrial Area Sharjah, United Arab Emirates
This certificate confirms that representative samples of	Centrifugal Fire Pumps, End Suction See Addendum for Models Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/CAN/UL 448 – Centrifugal Stationary Pumps for Fire-Protection Service
Additional Information:	See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Deborah Jennings-Gower

Deborah Jennings-Gower, VP Regulatory Services

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Customer Service at http://ul.com/aboutul/locations/

MENA
MECHANICAL INDUSTRIES CO.

CERTIFICATE OF COMPLIANCE

Certificate Number	EX28977
Report Reference	EX28977-2023-04-05
Issue Date	2023-APRIL-18
Issued to:	MENA MECH IND CO. Sharjah Al Sajaa Industrial Shed 6 Victory Warehouse, Sajja New Industrial Area Sharjah, United Arab Emirates
This certificate confirms that representative samples of	Centrifugal Fire Pumps, Split Case See Addendum for Models Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/CAN/UL 448 – Centrifugal Stationary Pumps for Fire-Protection Service
Additional Information:	See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

UL Product iQ®

UL Solutions

Centrifugal Fire Pumps, Vertical Turbine

COMPANY

Volute Engineering Pvt Ltd

No. 37, Muthiya Mudali Second Street
Royapettah
Chennai, Tamil Nadu 600014 India

EX28924

Trademark and/or Tradename: "VOLUTE" , , MENA MECHANICAL INDUSTRIES CO

Note: For additional marking information, refer to the Guide Information Page.

View model for additional information

Centrifugal Fire Pumps, Vertical Turbine, Model(s): VT100-155, VT125-180, VT145-270, VT150-265, VT170-304, VT185-335, VT200-350, VT225-400, VT250-400, VT275-430, VT80-145

Last Updated on 2023-01-03

PROJECTS REFERENCE

Sr No.	Project Details (2022)					Capacity	
	Client	Main Contractor	Consultant	Project Name	Location	Flow (US GPM)	Head (Bar)
1	Sheikh Mohamed Zayed Al Nehyan	Miami Contracting Company	Development Engineering Consultant	G+M+4 Commercial Office Building	Dubai	500	10
2	Ismail Abdullah Al - Gergawi	Talai Contracting	Fourth Dimension Engineering Consultant	Commercial Building	Dubai	500	9
3	Al Bahidh General Trading LLC	Quick Steel Building Contracting LLC	Capital Engineering Consultant	G+M Cold Storage Building	Dubai	750	7
4	Mrs. Hawa Abdullah	Abdullah Bin Dasmal Contracting	Circle Engineering Consultant	G+3+R Residential Building, Muhaisnah	Dubai	750	8
5	Mr. Hassan Arab Darwish	Remal Al Sahra Building Contracting Company LLC	Sharjah Engineering Consultant	G+1 Commercial Building	Sharjah	300	9
6	Mr. Hassan Arab Darwish	Remal Al Sahra Building Contracting Company LLC	Sharjah Engineering Consultant	G+3 Commercial Builidng	Sharjah	300	9
7	Mr. Essa Abdulla Buhumaid	Solid Building Contracting LLC	Retaj Engineering Consultancy	G+M Warehouse & G+M Office	Dubai	500	9
8	Mr. Younis Abdelaziz Al Nimr	Ideal Building Contracting	Emirates Engineer Consultant	G+5 Residential Building	Sharjah	500	10
9	H.H Saud bin Rashid Al Mualla	Zamalek Contracting	ATI Engineer Consultant	Commercial Building / School	Umm Al Quain	1500	9
10	Mr. Mohammed Abdulazez Ahmad	Hilal Al Emarate Contracting	High Arc Engineering Consultants	G+5 Residential Building	Sharjah	500	10
11	Shaikha Moudi Hamad Al Shami	Remal Al Sahra Contracting	Al Bait Engineering Consultants	G+2 building	Sharjah	500	9
12	Al Fahim Group	Hamed El Sayah Contracting	MAZ Engineering Consultant	Industrial Garage	Dubai	300	9
13	Ms. Metha Ahmed Ali Al Weis	Al Muntaser Building Contracting	Arabic Architechture Engineering Consultant	Commercal Building G+4 TYP	Dubai	750	10

MENA MECHANICAL INDUSTRIES CO.

CONSULTANTS

OUR CLIENTS

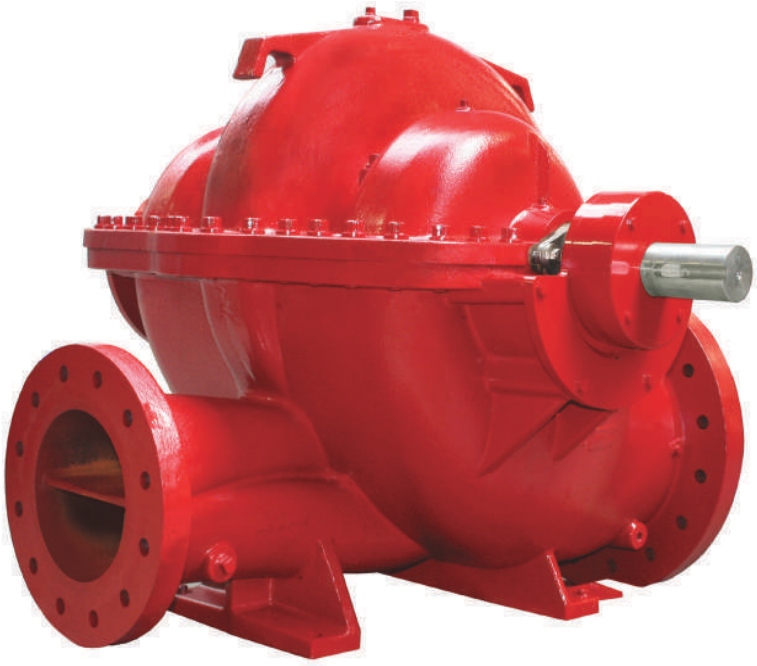
MENA MECHANICAL INDUSTRIES CO.

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

DIESEL ENGINE DRIVEN PUMP
SPECIFICATIONS

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

SPLIT CASE FIRE PUMP



Technical Specifcations	
Suction fange	125-400 MM
Discharge fange	75-355MM
Flow	**300-8000 GPM**
Discharge pressure	82-275PSI

Material Specifcations	
Casing	Ductile Iron
Impeller	Bronze or stainless steel
Shaft	40Cr / Stainless Steel
Sealing	Gland packing
Bearing Housing	Rolling bearing
Suction/discharge fanges	ANSI

Pump Naming

MSCx 100-250

- Nominal impeller diameter (mm)
- Discharge fange DN (mm)
- Pump type

Product Standard

UL 448, NFPA

Product Approvals

Flange Standards

Pump Installing Dimensions are confirming to ISO2858 Standard, and Tested according to with UL 448 -2013

Driver Options

Electrical Diesel

Application Areas

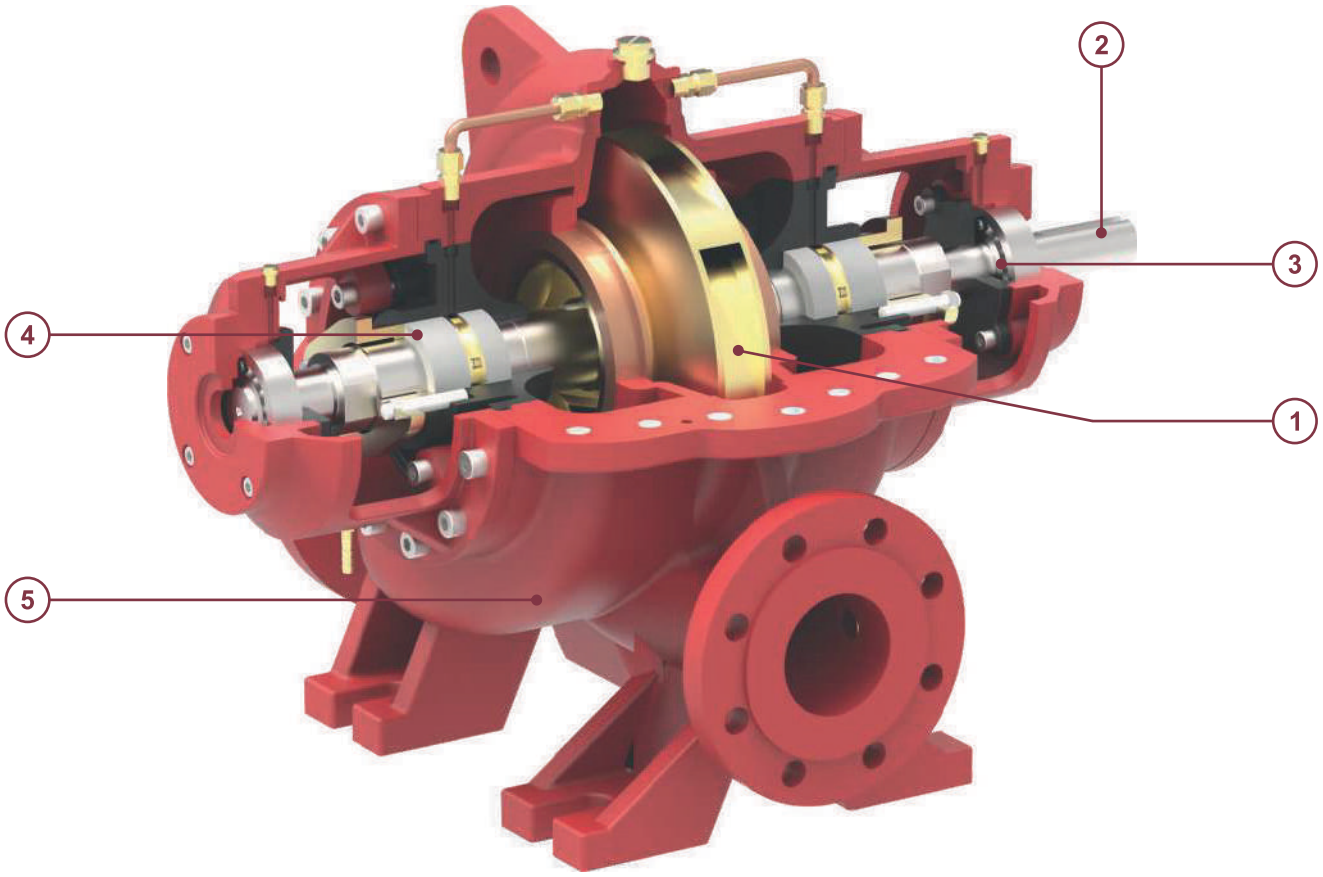
Hydrant Sprinkler

Overflow Foam

Risk Class

Ordinary High

SPLIT CASE FIRE PUMP



1 - Impeller & Casing

- Minimal axial thrust due to double-entry impeller.
- Impeller is dynamically balanced to G6.3 balance quality Grade in accordance to ISO 1940-1.
- Impeller & Casing are designed using state of are CFD tools to ensure optional performance.

2 - Shaft

- Heavy duty shaft completely sealed and dry of zero corrosion.
- Short and rigid with negligible vibrations.
- Replaceable shaft protecting sleeves.
- No threads exposed to pump medium, long operating life and no corrosion.
- Adjustment-free assembly.

3 - Bearing

- Heavy duty and grease lubricated antifriction Bearings for long service life.
- Open gland, enough space for service activities.

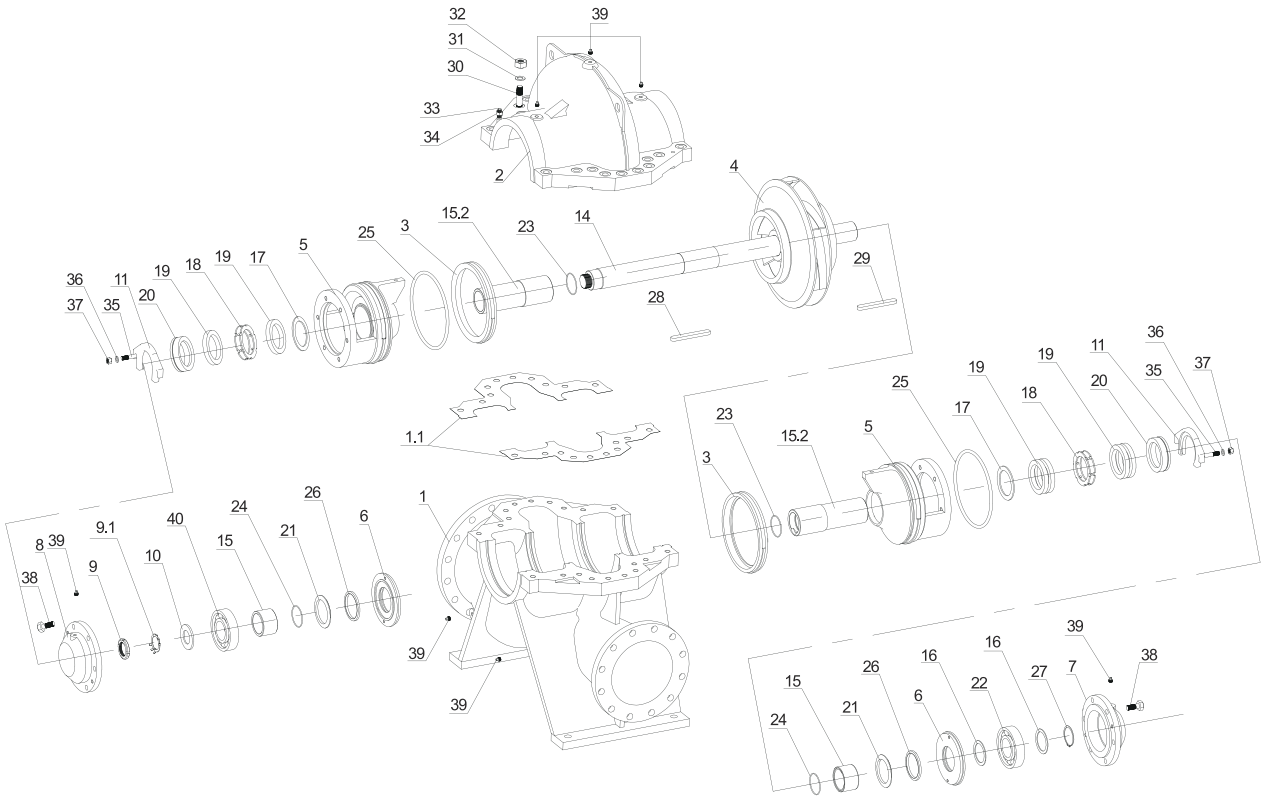
4 - Seal

- Asbestos - free, potable water quality soft packed stuffing boxes.

5 - Casing

- In-line axially split design which permits removal of the complete rotor without removing the pipe & motor.
- Short distance between bearings.
- Leak-tight due to compact joint flange with long Pre-stessed bolts.
- Counter-rotation possible with similar parts.
- Easy mounting self-aligning upper casing.
- Flange drilled as per ANSI B16.1 class 250.
- Smooth surface inside CED coated for superior corrosion protection.
- Replaceable ware ring protect the casing and the impeller running clearances.
- Heavy duty casing design for high working pressure.

MSCx Series - Exploded View & Part list

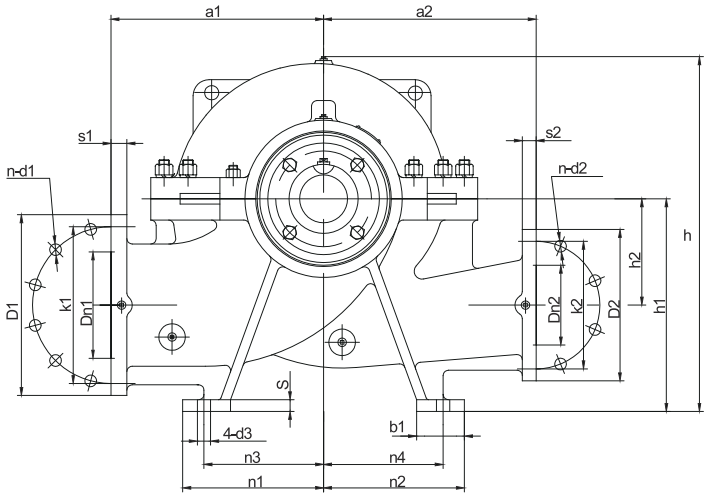


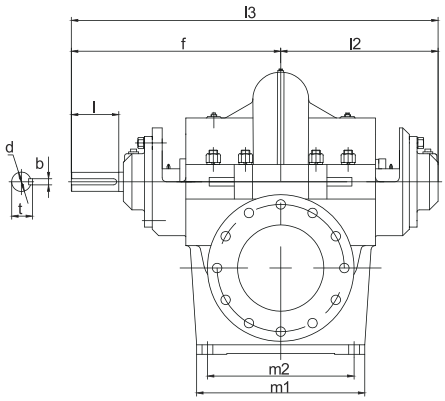
Code	Part Name
01	Casing-Bottom
01.1	Casing Gasket
02	Casing-Top
03	Wear Ring
04	Impeller
05	Seal Housing
06	Bearing Cover
07	Bearing Housing-Driver End
08	Bearing Housing-Non-Driver End
09	Screw Nut
09.1	Lock Washer for Nut
10	Bearing Slinger
11	Seal Plate
14	Shaft

Code	Part Name
15	Shaft Sleeve-Short
15.2	Packing Shaft Sleeve
16	Bearing Seal Plate
17	Packing Seal Plate
18	Lantern Ring
19	Gland
20	Packing Cover
21	Slinger
22	Bearing
23	O-ring
24	O-ring
25	O-ring
26	Felting
27	External Circlips

Code	Part Name
28	Key
29	Key
30	Screw Bolt
31	Spring Washer
32	Screw Nut
33	Pin
34	Screw Nut
35	Screw Bolt
36	Flat Gasket
37	Screw Nut
38	Screw Bolt
39	Plug
40	Bearing

MSCx SERIES INSTALLATION DIMENSION





ASME16.42-1998 CLASS300,ASME16.42-1998 CLASS250					
DN	80	100	125	150	200
D	209.6	254	279.4	317.5	381
K	168.1	200.2	235	269.7	330.2
n	8	8	8	12	12
d	22.4	22.4	22.4	22.4	25.4

Model	DN1	DN2	a1	a2	f	l2	l3	h	h1	h2	m1	m2	n1	n2	n3	n4	b1	d3	s	d	b	l	t	Weight (kg)
100-250	150	100	342	339	385	300	685	570	355	170	320	270	235	235	200	200	80	φ25	22	φ34	10	80	37.3	230
100-310						320	705	605																283
100-375								620									75			φ39	12		42.3	270
125-290	200	125	382	380	485	365	850	635	400	200	390	340	265	265	225	225	90			φ44		110	47.3	322
125-365						390	875	665																342
150-290		150	412	412				660		210														355
150-360								670		200										φ49	14		52.8	385

UPCOMMING SPLIT CASE LISTING RANGE

Rated Capacity (gpm)	Size (in.)	Model Dsg	Rated Net Pressure Range (psi)	Approx Speed (rpm)	Max Working Pressure (psi)
300	5x3	MSC5-80-200	54 - 81	2980	161
300	5x3	MSC5-80-200	78 - 115	3550	200
300	5x3	MSC5-80-250	55 - 87	2350	163
300	5x3	MSC5-80-250	68 - 107	2600	183
300	5x3	MSC5-80-250	83-136	2950	280
300	5x3	MSC5-80-250	120-196	3550	280
300	5x4	MSC5-100-300	98 - 124	2350	206
300	5x4	MSC5-100-300	120 - 153	2600	236
300	5x4	MSC5-100-300	123-195	2980	400
300	5x4	MSC5-100-300	176-279	3550	400
400	5x3	MSC5-80-200	53 - 79	2980	161
400	5x3	MSC5-80-200	76 - 113	3550	200
400	5x3	MSC5-80-250	51 - 84	2350	163
400	5x3	MSC5-80-250	64 - 105	2600	183
400	5x3	MSC5-80-250	82-135	2950	280
400	5x3	MSC5-80-250	120-196	3550	280
400	5x4	MSC5-100-300	94 - 119	2350	206
400	5x4	MSC5-100-300	117 - 149	2600	236
400	5x4	MSC5-100-300	120-189	2980	400
400	5x4	MSC5-100-300	173-274	3550	400
450	5x3	MSC5-80-200	52 - 78	2980	161
450	5x3	MSC5-80-200	75 - 112	3550	200
450	5x3	MSC5-80-250	49 - 83	2350	163
450	5x3	MSC5-80-250	63 - 103	2600	183
450	5x3	MSC5-80-250	80-134	2950	280
450	5x3	MSC5-80-250	119-196	3550	280
450	5x4	MSC5-100-300	93 - 117	2350	206
450	5x4	MSC5-100-300	116 - 146	2600	236
450	5x4	MSC5-100-300	119-187	2980	400
450	5x4	MSC5-100-300	172-272	3550	400
500	5x3	MSC5-80-200	51 - 77	2980	161
500	5x3	MSC5-80-200	74 - 111	3550	200
500	5x3	MSC5-80-250	47 - 80	2350	163
500	5x3	MSC5-80-250	60 - 101	2600	183
500	5x3	MSC5-80-250	79-133	2950	280
500	5x3	MSC5-80-350	184-295	2950	380
500	5x3	MSC5-80-350G	172-257	2980	261
500	5x3	MSC5-80-250	118 - 195	3550	280
500	5x4	MSC5-100-300	90 - 114	2350	206
500	5x4	MSC5-100-300	113 - 143	2600	236
500	5x4	MSC5-100-300	117-184	2980	400
500	5x4	MSC5-100-300	170-269	3550	400
500	6x5	MSC6-125-250	76 - 101	2350	178
500	6x5	MSC6-125-250	92 - 124	2600	201
500	6x5	MSC6-125-250	117-162	2980	310
500	6x5	MSC6-125-250	137-230	3550	310
500	6x5	MSC6-125-310	111 - 128	2350	205
500	6x5	MSC6-125-310	136 - 158	2600	233
500	6x5	MSC6-125-310	137-207	2980	370
500	6x5	MSC6-125-310	196-294	3550	370
500	6x5	MSC6-125-400	208-283	2980	370
500	6x5	MSC6-125-250S	130-185	3550	290
750	5x3	MSC5-80-200	68	2980	161
750	5x3	MSC5-80-200	66 - 103	3550	200
750	5x3	MSC5-80-250	108 - 120	2950	280
500	5x3	MSC5-80-350	112 - 184	2350	266
500	5x3	MSC5-80-350	140 - 227	2600	308
500	5x3	MSC5-80-350	269 - 308	3550	388
750	5x3	MSC5-80-350	131 - 172	2350	266
750	5x3	MSC5-80-350	145 - 217	2600	308
750	5x3	MSC5-80-350	167-286	2950	380
750	5x3	MSC5-80-350	254 - 292	3550	388
750	5x3	MSC5-80-350G	169-251	2980	261
750	5x3	MSC5-80-250	105-185	3550	280
750	6x4	MSC6-100 -320	138-198	2980	202
750	5x4	MSC5-100-300	104-163	2980	400
750	5x4	MSC5-100-300	157-247	3550	400
750	6x5	MSC6-125-250	71 – 97	2350	178
750	6x5	MSC6-125-250	89 - 121	2600	201
750	6x5	MSC6-125-250	114-160	2980	310
750	6x5	MSC6-125-250	138-230	3550	310
750	6x5	MSC6-125-310	105 - 123	2350	205
750	6x5	MSC6-125-310	130 - 153	2600	233
750	6x5	MSC6-125-310	132-203	2980	370
750	6x5	MSC6-125-310	191-291	3550	370
750	6x5	MSC6-125-400	203-277	2980	370
750	8x6	MSC8-150-330	40 - 77	1760	310
750	8x6	MSC8-150-420	272-367	2950	460
1000	5x3	MSC5-80-350	220-270	2950	380
1000	6x4	MSC6-100 -320	130-191	2980	202
1000	8x6	MSC8-150-310	58 - 147	2350	229
1000	8x6	MSC8-150-310	73 - 181	2600	263
1000	8x6	MSC8-150-310	119-237	2980	350
1000	8x6	MSC8-150-310	175-286	3550	370
1000	6x5	MSC8-125-200	79-145	3550	246
1000	6x5	MSC6-125-250	103-151	2980	310
1000	6x5	MSC6-125-310	121-192	2980	370
1000	6x5	MSC6-125-400	192-265	2980	370
1000	6x5	MSC6-125-250	130-225	3550	310
1000	6x5	MSC6-125-310	182-283	3550	370
1000	8x6	MSC8-150-330	40-74	1760	310
1000	8x6	MSC8-150-420	260-359	2950	460
1250	8x5	MSC8-125-300	116-190	2980	187
1250	8x5	MSC8-125-380	118-177	2200	261
1250	8x6	MSC8-150-310	76 - 141	2350	229
1250	8x6	MSC8-150-310	96 - 177	2600	263
1250	8x6	MSC8-150-310	112-230	2980	350
1250	8x6	MSC8-150-310	168-281	3550	370
1250	8x6	MSC8-150-250	83-149	2950	330

SPLIT CASE RANGE

1250	8x6	MSC8-150-250	133-225	3550	330
1250	8x6	MSC8-150-330	76 - 135	2350	229
1250	8x6	MSC8-150-330	95 - 167	2600	263
1250	8x6	MSC8-150-375	70 - 131	1760	270
1250	8x6	MSC8-150-375	106 - 188	2100	270
1250	8x6	MSC8-150-400	85 - 126	1760	270
1250	8x6	MSC8-150-420	241-346	2950	460
1500	8x6	MSC8-150-640	124-220	1480	300
1500	8x6	MSC8-150-460	115-181	1800	275
1500	8x6	MSC8-150-375	88 – 128	1760	270
1500	8x6	MSC8-150-375	100 – 187	2100	270
1500	8x6	MSC8-150-310	109-221	2980	350
1500	8x6	MSC8-150-310	158-269	3550	370
1500	8x6	MSC8-150-330	71 - 131	2350	229
1500	8x6	MSC8-150-330	90 - 163	2600	263
1500	8x6	MSC8-150-250	122-216	3550	330
1500	8x6	MSC8-150-480	120-171	1760	275
1500	8x6	MSC8-150-400	82 - 124	1760	270
1500	8x6	MSC8-150-400	121-181	2100	275
2000	8x6	MSC8-150-400	94 - 115	1760	270
2000	8x6	MSC8-150-640	117-216	1480	300
2000	8x6	MSC8-150-480	109-165	1760	275
2000	8x6	MSC8-150-480GL	122-188	1760	270
2000	8x6	MSC8-150-460	118-175	1800	275
2000	8x6	MSC8-150-400	111-174	2100	275
2000	8x6	MSC8-150-330	107-190	2950	310
2000	10x8	MSC10-200-500	118-186	1800	320
2000	10x8	MSC10-200-500	149-234	2000	320
2000	10x8	MSC10-200-350	123-239	2980	362
2500	8x6	MSC8-150-640	107-206	1480	300
2500	8x6	MSC8-150-480	96-155	1760	275
2500	8x6	MSC8-150-480GL	111-181	1760	270
2500	8x6	MSC8-150-400	160	2100	275
2500	10x8	MSC10-200-350	114-227	2980	362
2500	10x8	MSC10-200-430	138	1800	275
2500	10x8	MSC10-200-450	124-155	1760	333
2500	10x8	MSC10-200-450	165-203	2000	333
2500	10x8	MSC10-200-500	110-176	1800	320
2500	10x8	MSC10-200-500	141-225	2000	320
2500	10x8	MSC10-200-430	125-190	2100	275
3000	8x6	MSC8-150-640	162-194	1480	300
3000	10x8	MSC10-200-450	115-147	1760	333
3000	10x8	MSC10-200-450	158-197	2000	333
3000	12x10	MSC12-250-640	176-249	1480	330
3000	12x10	MSC12-250-500	120-154	1480	330
3000	10x8	MSC10-200-500	121-179	1760	340
3000	10x8	MSC10-200-500	162-238	2000	340

3000	10x8	MSC10-200-430	144-187	2100	275
3000	10x8	MSC10-200-600	114-188	1480	275
3000	10x8	MSC10-200-600	166-246	1760	330
3500	12x10	MSC12-250-640G	196-290	1480	377
3500	12x10	MSC12-250-640	169-242	1480	330
3500	12x10	MSC12-250-500	117-152	1480	330
3500	10x8	MSC10-200-500	136-170	1760	340
3500	10x8	MSC10-200-600	107-184	1480	275
3500	10x8	MSC10-200-600	160-241	1760	330
3500	12x10	MSC12-250-490	119-189	1800	290
3500	10x8	MSC10-200-500	154-229	2000	340
4000	10x8	MSC10-200-600	142-176	1480	275
4000	10x8	MSC10-200-600	152-234	1760	330
4000	12x10	MSC12-250-500	114-148	1480	330
4000	12x10	MSC12-250-640	162-233	1480	330
4000	12x10	MSC12-250-640G	191-288	1480	377
4000	14x10	MSC14-250-640	138-217	1480	300
4000	12x10	MSC12-250-490	114-185	1800	290
4000	12x10	MSC12-250-500	125-225	1800	330
4500	10x8	MSC10-200-600	175-226	1760	330
4500	12x10	MSC12-250-500	109-145	1480	330
4500	12x10	MSC12-250-600	143-207	1450	303
4500	12x10	MSC12-250-640G	184-284	1480	377
4500	14x10	MSC14-250-640	136-216	1480	300
4500	16x14	MSC16-350-640	129-196	1480	315
4500	12x10	MSC12-250-490	153-181	1800	290
4500	12x10	MSC12-250-500	121-222	1800	330
5000	12x10	MSC12-250-600	139-206	1450	303
5000	12x10	MSC12-250-640G	211-277	1480	377
5000	14x10	MSC14-250-640	134-214	1480	300
5000	16x14	MSC16-350-640	127-194	1480	315
5000	12x10	MSC12-250-500	134-218	1800	330
5500	16x12	MSC16-300-750	205-278	1480	370
5500	16x14	MSC16-350-640	124-192	1480	315
6000	14x10	MSC14-250-640	127-209	1480	300
6000	14x10	MSC14-250-640	220-280	1760	370
6000	16x12	MSC16-300-750	204-277	1480	370
6000	16x14	MSC16-350-640	120-190	1480	315
6500	14x10	MSC14-250-640	205	1480	300
6500	14x10	MSC14-250-640	216-276	1760	370
6500	16x12	MSC16-300-750	203-276	1480	370
6500	16x14	MSC16-350-640	116-186	1480	315
7000	14x10	MSC14-250-640	201	1480	300
7000	14x10	MSC14-250-640	211-271	1760	370
7000	16x12	MSC16-300-750	200-274	1480	370
7000	16x14	MSC16-350-640	113-182	1480	315
7500	14x10	MSC14-250-640	195	1480	300
7500	14x10	MSC14-250-640	205-267	1760	370
7500	16x12	MSC16-300-750	197-272	1480	370
7500	16x14	MSC16-350-640	109-179	1480	315
8000	14x10	MSC14-250-640	239-261	1760	370
8000	16x12	MSC16-300-750	223-269	1480	370
8000	16x14	MSC16-350-640	117-192	1540	315

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

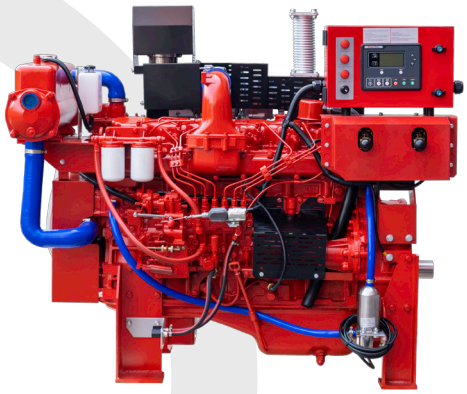
DIESEL ENGINE SPECIFICATIONS

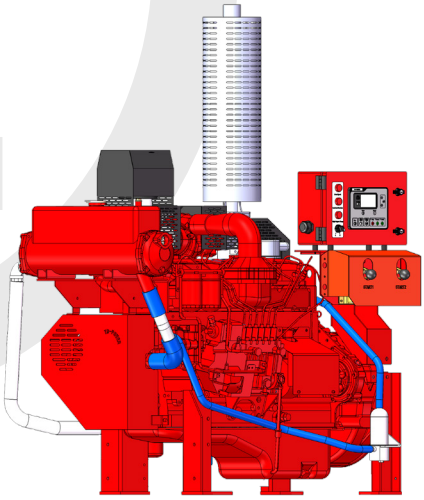
0	***SUBMITTED FOR APPROVAL***				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

TAIDONG

UL Listed Fire Pump Engines 24HP-262HP

Engine Model		6110THE
Engine Type		Vertical, Water-cooling 4-stroke, direct-injection
Cooling Method		Heat Exchanger
Aspiration		Turbo-Charged
Number of Cylinders		6
Bore x Stroke (mm)		110*125
Compression Ratio		17.5:1
Total Displacement(L)		7.12
Net Power	KW/HP	136/185
Rated Speed	r/min	2920
Rated Torque	N.m	507
Fuel Consumption	g/kW.h	< 238
Rotating Direction at Output End		Counter-clockwise
Lubrication Oil Standard		CD15W40
Lubrication Oil Content	L	14
Lubrication Method		Pressure and Splash
Starting Method		Electric 24V
PTO Type		Stub Shaft
Net Weight	kgs	880

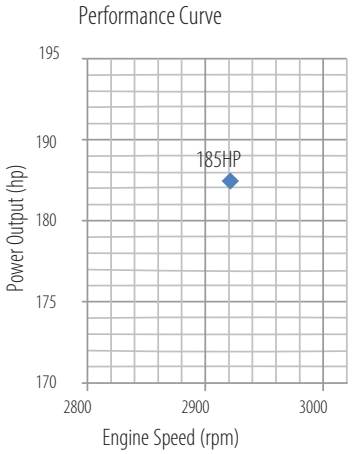


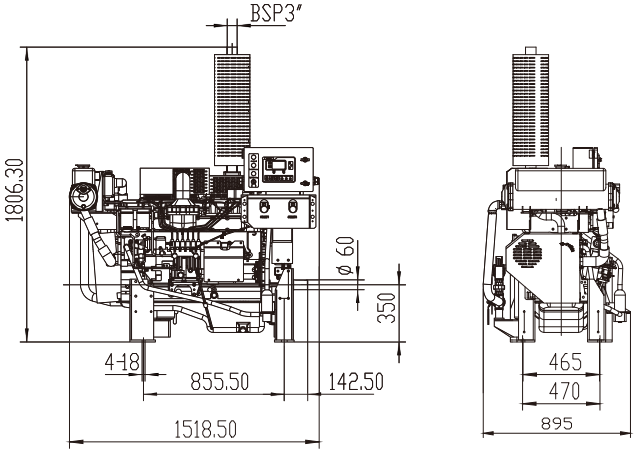


Engine Ratings Baselines

Engines are not to be used for continuous duty. Engines are to be used only for stationary emergency standby fire pump.

Engines are rated at standard SAE conditions of 29.61 in. (7,521 mm) Hg barometer and 77°F (25°C) inlet temperature (approximates 300ft. (91.4m) above sea level)





MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

DIESEL DRIVEN PUMP CONTROLLER SPECS

Rev	Description	Prepared	Checked	Approved	Date
0	SUBMITTED FOR APPROVAL				

TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data
Submittal Document

Model GPD

Diesel Engine Driven Fire Pump Controller

Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

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

March 2024

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

Ambient Temperature Rating	**Standard** ☐ 4°C to 40°C / 39°F to 104°F **Optional** ☐ 4°C to 55°C / 39°F to 131°F Controllers built in Dubai, UAE (Tornatech FZE) are supplied standard with 55°C rating.

Technical Data

Model GPD Diesel Fire Pump Controller

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

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

*Except if option C13 is ordered. Tornatech reserves the right to use any of these four alarm points for special specific application requirements
**Applicable to electronic engines only.
*** Applicable to electronic engines only. Alarms when ECM selector switch on the engine is in alternate mode.

Terminals for Field Connections for External Devices	• Low fuel level • Remote AUTOMATIC start • Water reservoir low (re-assignable) • Fuel tank leak (re-assignable) • High fuel level (re-assignable)		
ViZiTouch V2.1 Operator Interface	• Embedded microcomputer with software PLC logic • 7.0” color touch screen (HMI technology) • Upgradable software • Multi-language		
Operation	**Selector Switch**	• Hand-Off-Auto • Behind lockable and breakable cover	
	Automatic Start	• Start on pressure drop • Remote start signal from automatic device	
	Manual Start	• Crank 1 and Crank 2 start pushbuttons • Run test pushbutton	

	Crank Cycle	• 6 consecutive cycle attempts
		  • 3 X 15s crank from battery 1 or 2 alternatively
		  • 15s rest in between each crank attempt	

	Stopping	• Manual with Stop pushbutton • Automatic after expiration of minimum run timer ****	
	Timers	**Field Adjustable & Visual Countdown**	• Minimum run timer ****(off delay) • Sequential start timer (on delay) • Periodic test timer
	Actuation	**Visual Indication**	• Pressure • Non-pressure
	Mode		• Automatic • Non-automatic
Communication Protocol Capability	• Protocol: Modbus • Connection type: Shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See bulletin MOD-GPD		

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

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

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

☐ A1	Periodic test alarm contact (DPDT)
☐ A2	Overspeed alarm contact (DPDT)
☐ A3	Low oil pressure alarm contact (DPDT)
☐ A4	High coolant temperature alarm contact (DPDT)
☐ A5	Failure to start alarm contacts alarm contact (DPDT)
☐ A6	Battery 1 & 2 failure alarm contact (2 x DPDT)
☐ A7	Charger 1 & 2 failure alarm contact (2 x DPDT)
☐ A8	AC failure alarm contact (DPDT)
☐ A9	System overpressure alarm contact (For engines with PLD) (DPDT)
☐ A11	Extra controller trouble alarm contact (DPDT)
☐ A12	Extra engine trouble alarm contact (DPDT)
☐ Ax	Additional engine alarm contact (DPDT) (specify function)
☐ B1	Low fuel level alarm contact (DPDT)
☐ B2	Water reservoir level low alarm contact (DPDT)
☐ B3	Water reservoir empty alarm contact (DPDT)
☐ B4	Low pump room temperature alarm contact (DPDT)
☐ B5	High fuel level alarm contact (DPDT)
☐ B6	Low system (discharge) pressure alarm contact (DPDT)
☐ B7	Low suction pressure alarm contact (DPDT)
☐ B8	Pump on demand alarm contact (DPDT)
☐ B9	Fuel tank leak alarm contact (DPDT)
☐ B10	Main relief valve open alarm contact (DPDT)
☐ B11	Flow meter loop valve open alarm contact (DPDT)
☐ B12	Water reservoir level high alarm contact (DPDT)
☐ B13	High pump room temperature alarm contact (DPDT)
☐ Bx	Additional pump room alarm contact (DPDT) (specify function)
☐ C5	CE Mark with factory certificate
☐ C6	Nickel – cadmium battery chargers (Battery data sheet required)
☐ C7	Engine block heater circuit - 3KW max (same voltage as battery charger primary)
☐ C7A	Engine block heater circuit - 6KW max (same voltage as battery charger primary) Confirm power rating of block heater
☐ C9	Non pressure actuated controller w/o pressure transducer and run test solenoid valve
☐ C13	Louver activation circuit (battery power specific)
☐ C14	Delayed automatic start on AC power failure (factory set at 15 minutes)
☐ C15	Low zone pump control function
☐ C16	Middle zone pump control function
☐ C17	High zone pump control function
☐ C19	Lockout/interlock circuit from equipment installed inside the pump room
☐ D4	Pressure transducer and run test solenoid valve for fresh water rated for 0-500psi (for factory calibration purposes only)
☐ D6	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
☐ D7A	Low fuel level float switch supplied as separate item (1-1/4”)
☐ D7B	Low fuel level float switch supplied as separate item (1-1/2”)
☐ D8A	High fuel level float switch supplied as separate item (1-1/4”)
☐ D8B	High fuel level float switch supplied as separate item (1-1/2”)
☐ D9A	Anti-condensation heater & thermostat
☐ D9B	Anti-condensation heater & humidistat
☐ D9C	Anti-condensation heater & thermostat & humidistat
☐ D11	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
☐ D11A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
☐ D12	Tropicalization
☐ D25	Mounting stand
☐ D25A	Mounting stand SST- 304 painted
☐ D25B	Mounting stand SST- 304 brushed finish
☐ D25C	Mounting stand SST- 316 painted
☐ D25D	Mounting stand SST- 316 brushed finish
☐ D26	Combined low and high fuel level float switch (1-1/4”)

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

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

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

Additional Options:

☐ _____

☐ _____

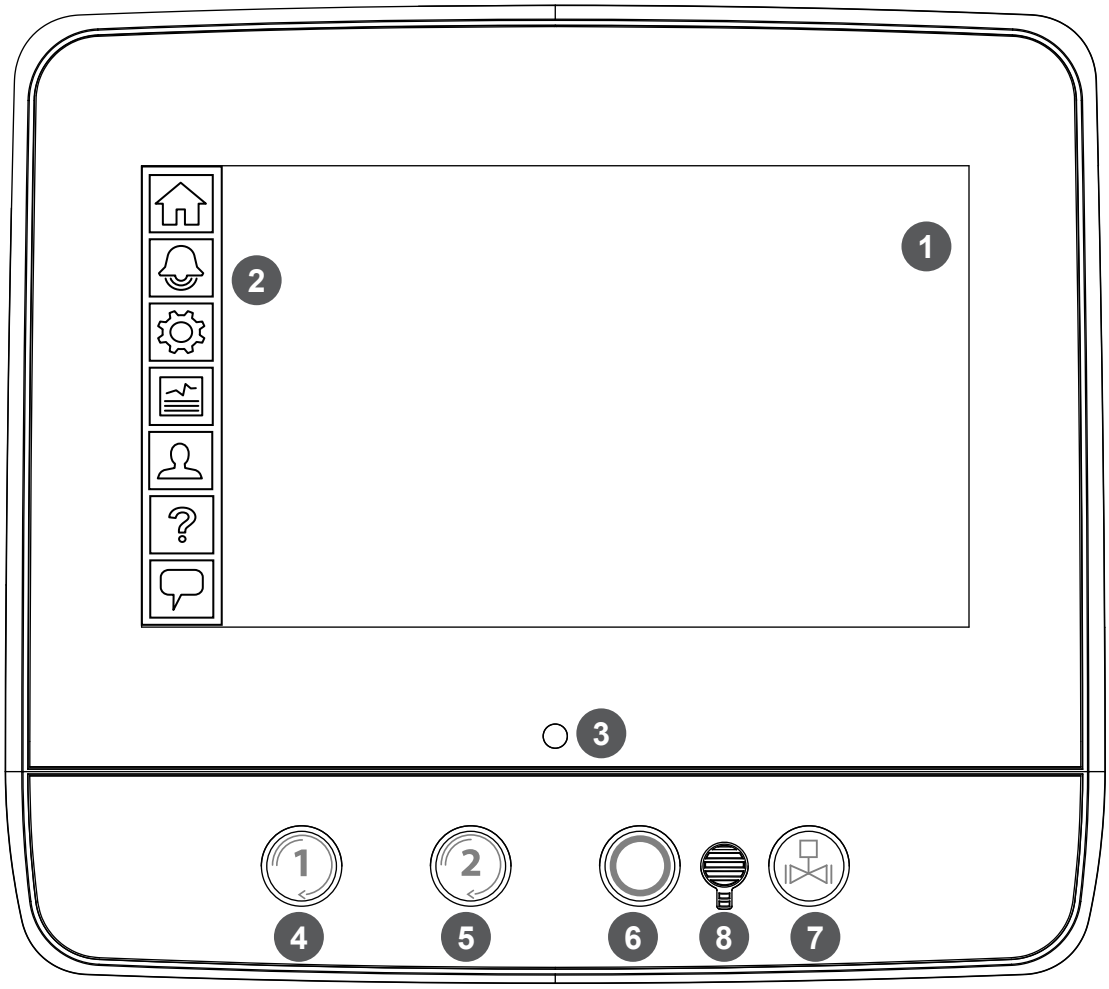
☐ _____

☐ _____

☐ _____

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

ViZiTouch V2.1 Operator Interface



1 - Color touch screen
2 - Onscreen menu
- HOME page
- ALARM page
- CONFIGURATION page
- HISTORY page
- SERVICE page
- MANUAL page
- LANGUAGES page

3 - Power LED (3 colors)
4 - CRANK 1 button
5 - CRANK 2 button
6 - STOP button
7 - RUN TEST button
8 - Alarm buzzer

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

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

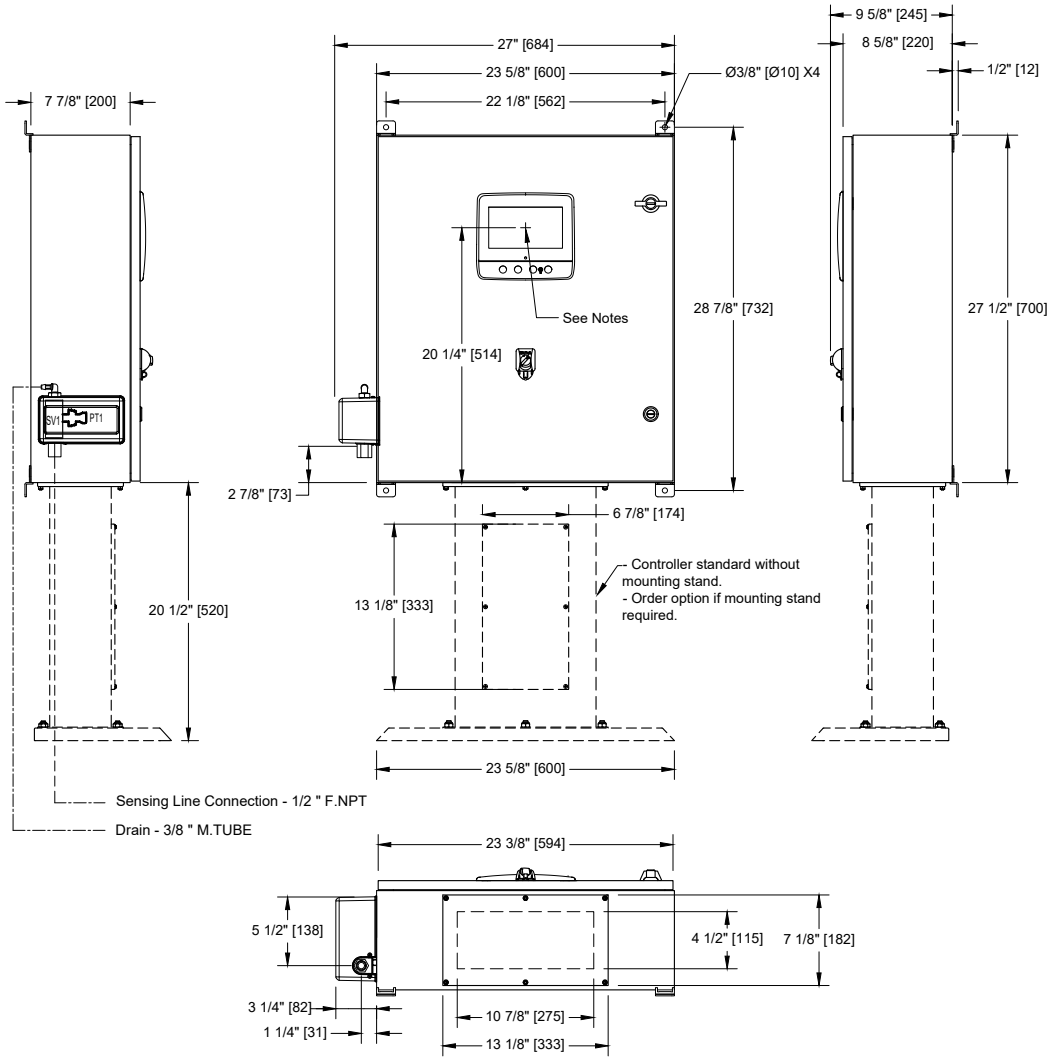
MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

THIRD ANGLE PROJECTION

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



Notes:

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

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

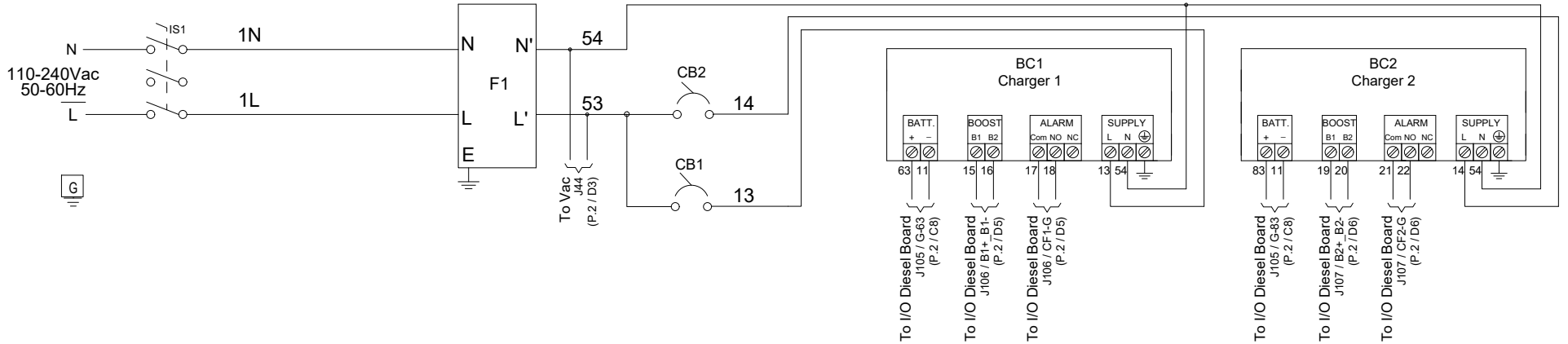
DIESEL ENGINE FIRE PUMP CONTROLLER
12VDC OR 24VDC NEGATIVE GROUND

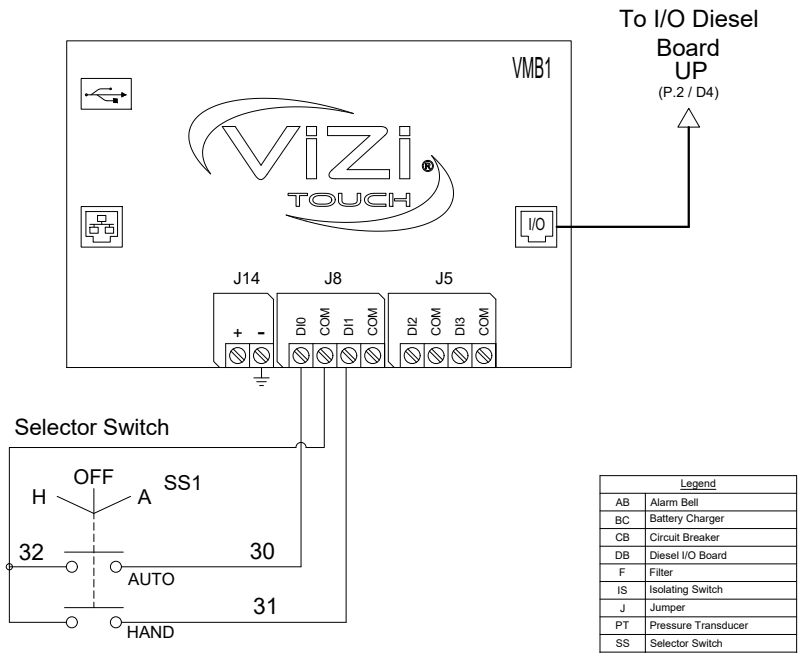
MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

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





Legend	
AB	Alarm Bell
BC	Battery Charger
CB	Circuit Breaker
DB	Diesel I/O Board
F	Filter
IS	Isolating Switch
J	Jumper
PT	Pressure Transducer
SS	Selector Switch
SV	Solenoid Valve
VMB	Main Board

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

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

MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

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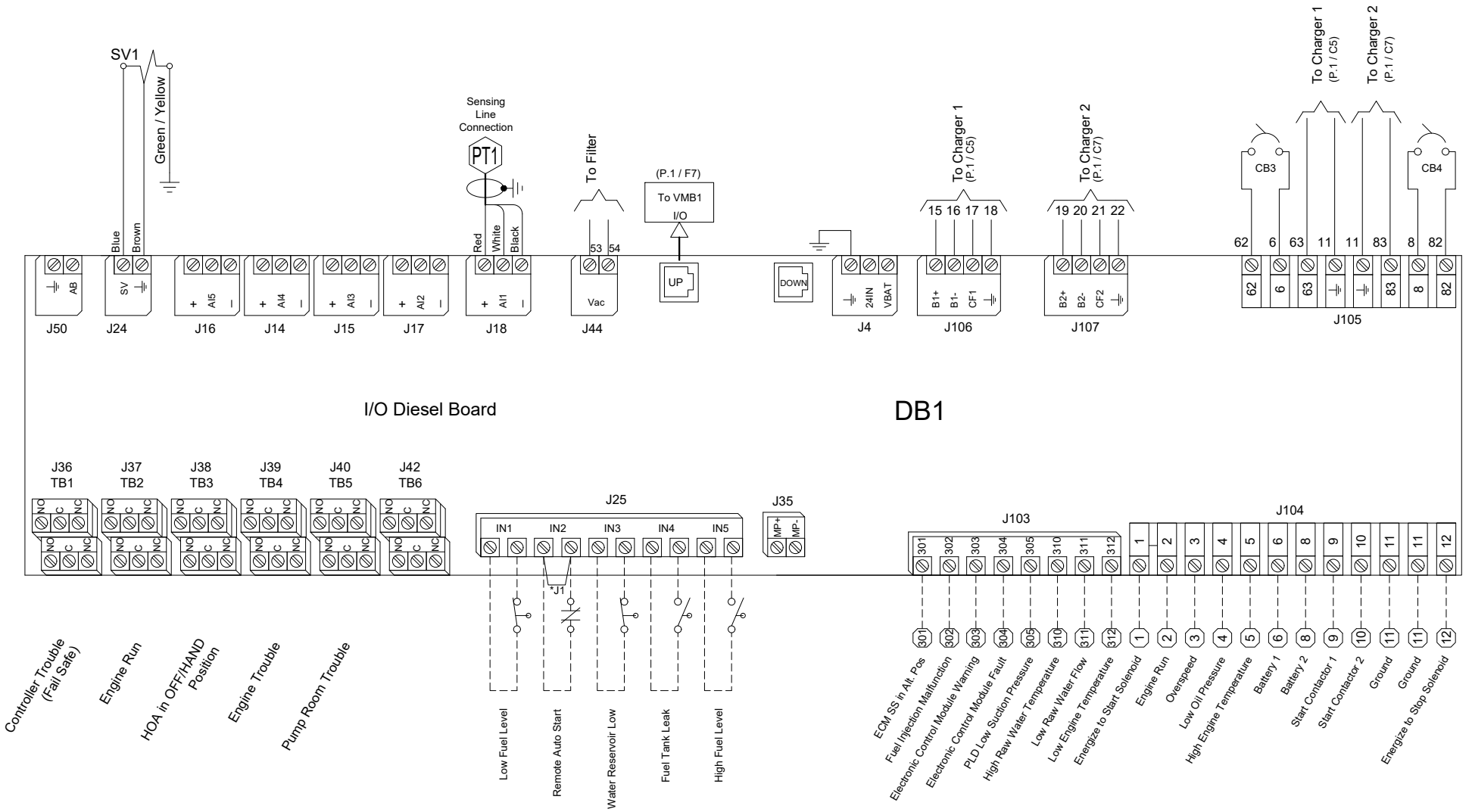
DRAWING NUMBER GPD-WS800/E
DWG REV. 0
SHEET 2 OF 2



* Remove this jumper to use this feature

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

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

MODEL: GPD

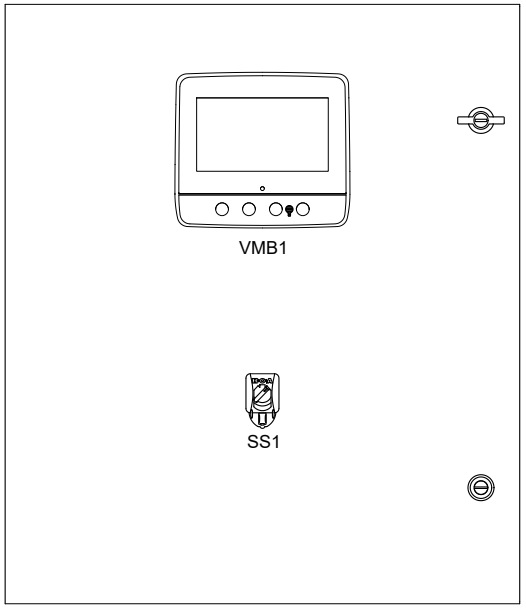
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

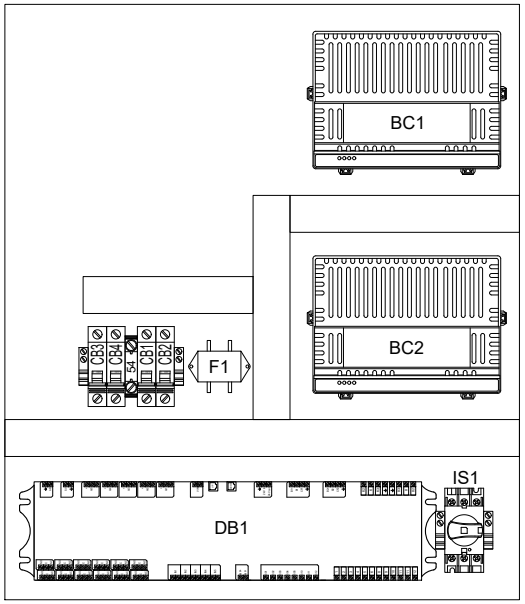
THIRD ANGLE PROJECTION

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

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



Front Door Layout



Internal Layout

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

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

MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

DRAWING NUMBER GPD-TD800/E

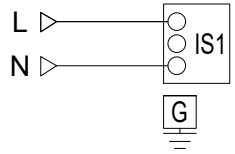
DWG REV. 0

SHEET 1 OF 1

Power Supply

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

110-240Vac
50-60Hz



Engine Connections

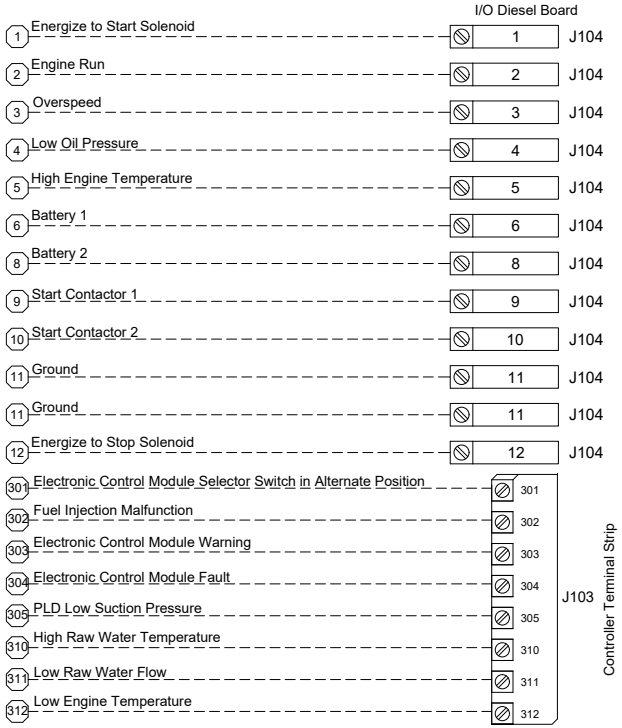
All wiring between the controller and diesel engine shall be stranded (NFPA20)

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

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

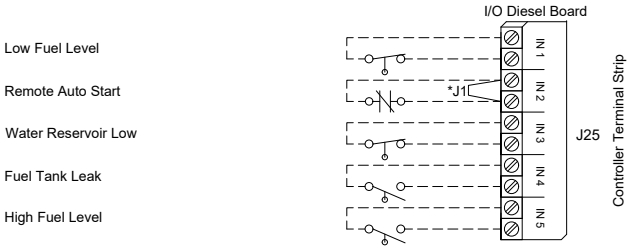
Wiring between controller and engine (terminals 6, 8, 11 [rated at 30A]) must be stranded and sized according to distance.

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



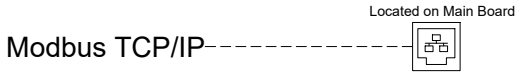
Field Connections

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Network Connections

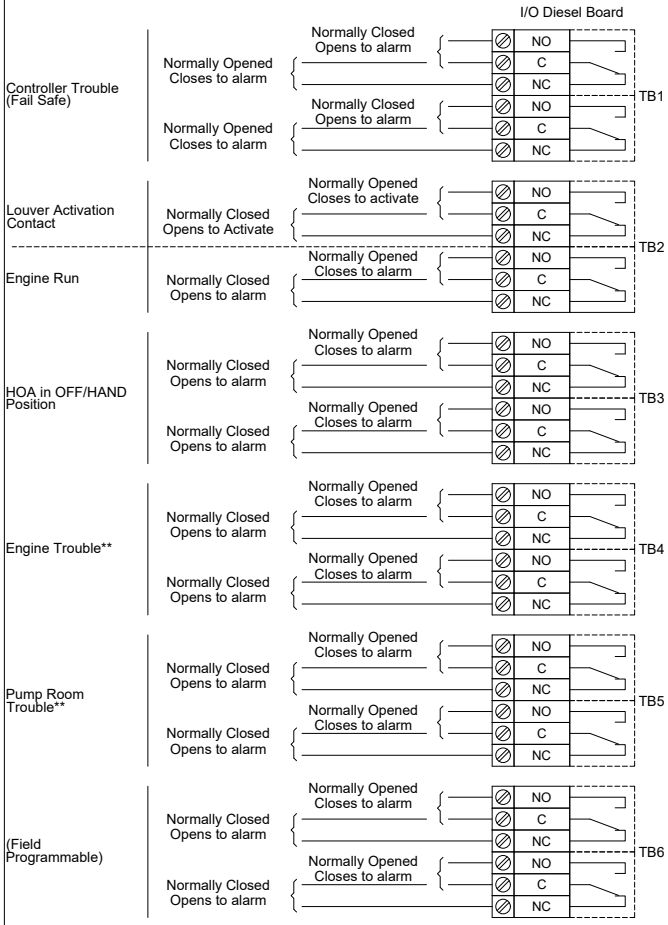
Terminals Wire Size:
Shielded Female Connector RJ45



* Remove this jumper to use this feature

Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



** Re-assignable

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

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

MODEL: GPD

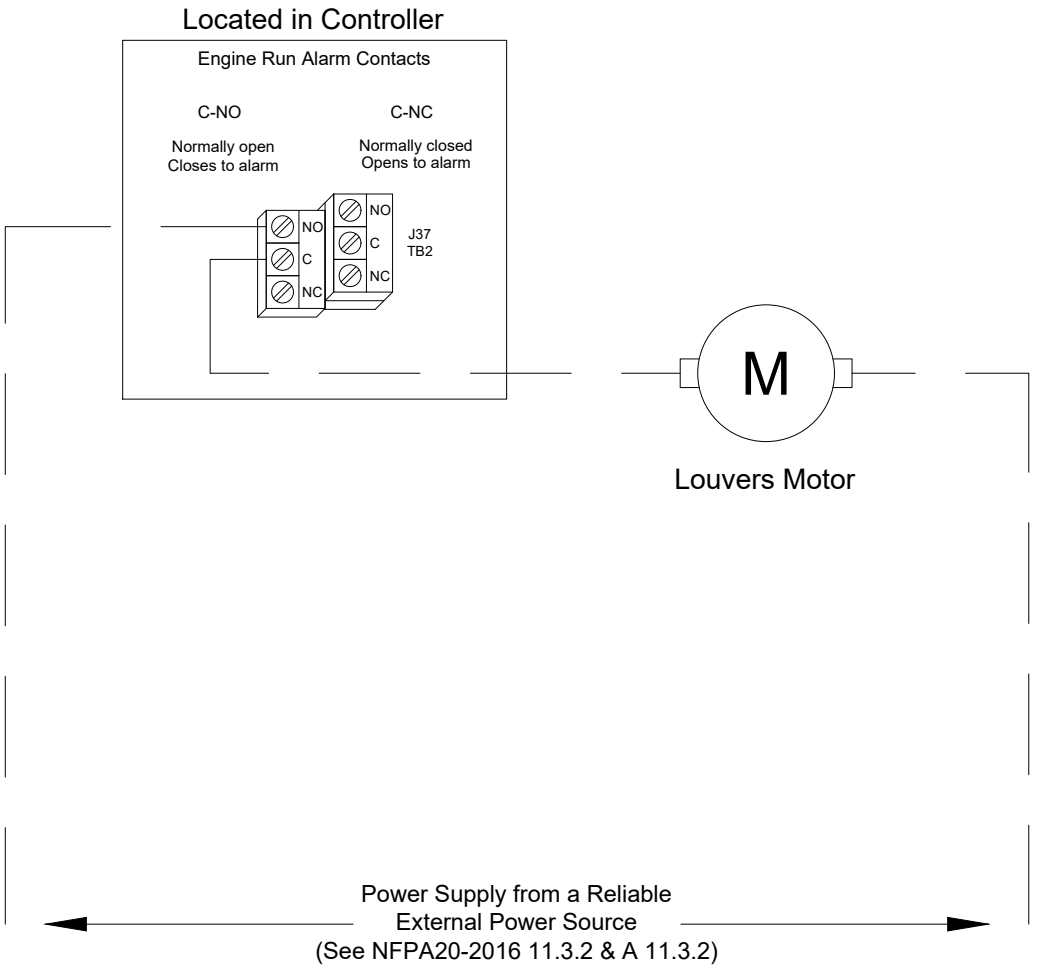
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

DRAWING NUMBER GPD-TD801/E

DWG REV. 0

SHEET 1 OF 1

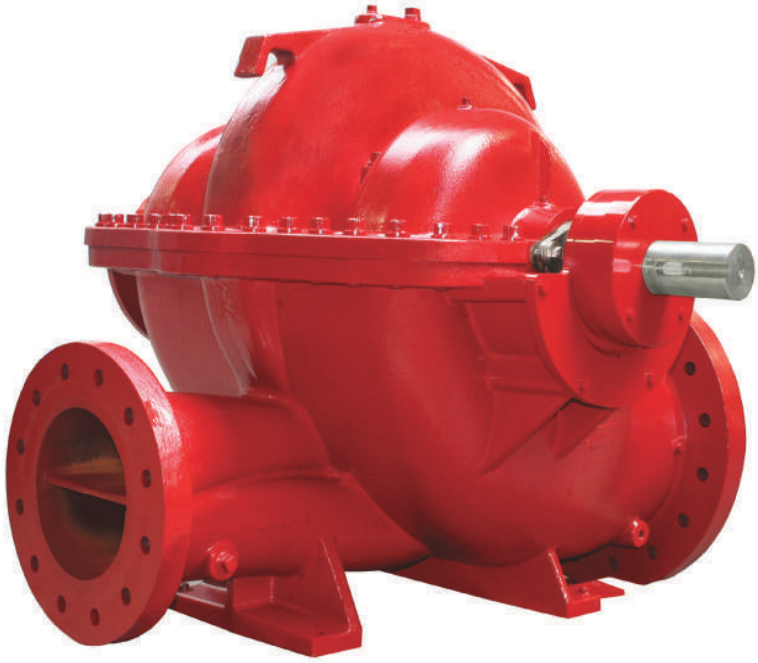


MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

ELECTRIC MOTOR DRIVEN PUMP SPECIFICATIONS

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

SPLIT CASE FIRE PUMP



Technical Specifcations	
Suction fange	125-400 MM
Discharge fange	75-355MM
Flow	**300-8000 GPM**
Discharge pressure	82-275PSI

Material Specifcations	
Casing	Ductile Iron
Impeller	Bronze or stainless steel
Shaft	40Cr / Stainless Steel
Sealing	Gland packing
Bearing Housing	Rolling bearing
Suction/discharge fanges	ANSI

Pump Naming

MSCx 100-250

- Nominal impeller diameter (mm)
- Discharge fange DN (mm)
- Pump type

Product Standard

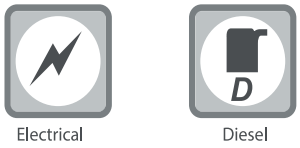
UL 448, NFPA

Product Approvals

Flange Standards

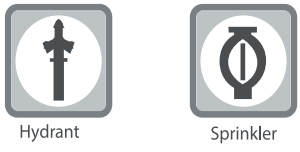
Pump Installing Dimensions are confirming to ISO2858 Standard, and Tested according to with UL 448 -2013

Driver Options



Electrical Diesel

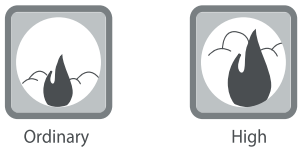
Application Areas



Hydrant Sprinkler

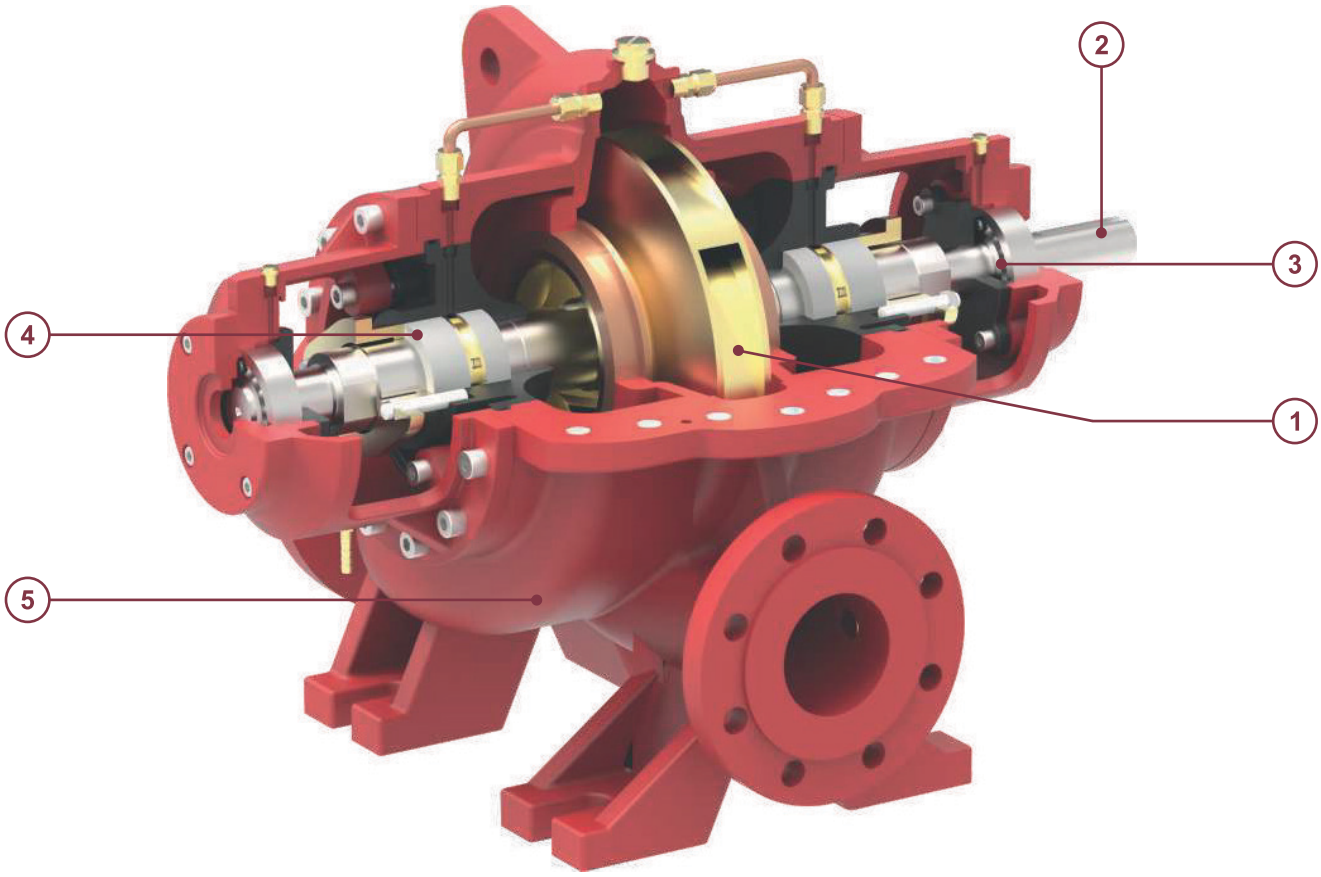
Overflow Foam

Risk Class



Ordinary High

SPLIT CASE FIRE PUMP



1 - Impeller & Casing

- Minimal axial thrust due to double-entry impeller.
- Impeller is dynamically balanced to G6.3 balance quality Grade in accordance to ISO 1940-1.
- Impeller & Casing are designed using state of are CFD tools to ensure optional performance.

2 - Shaft

- Heavy duty shaft completely sealed and dry of zero corrosion.
- Short and rigid with negligible vibrations.
- Replaceable shaft protecting sleeves.
- No threads exposed to pump medium, long operating life and no corrosion.
- Adjustment-free assembly.

3 - Bearing

- Heavy duty and grease lubricated antifriction Bearings for long service life.
- Open gland, enough space for service activities.

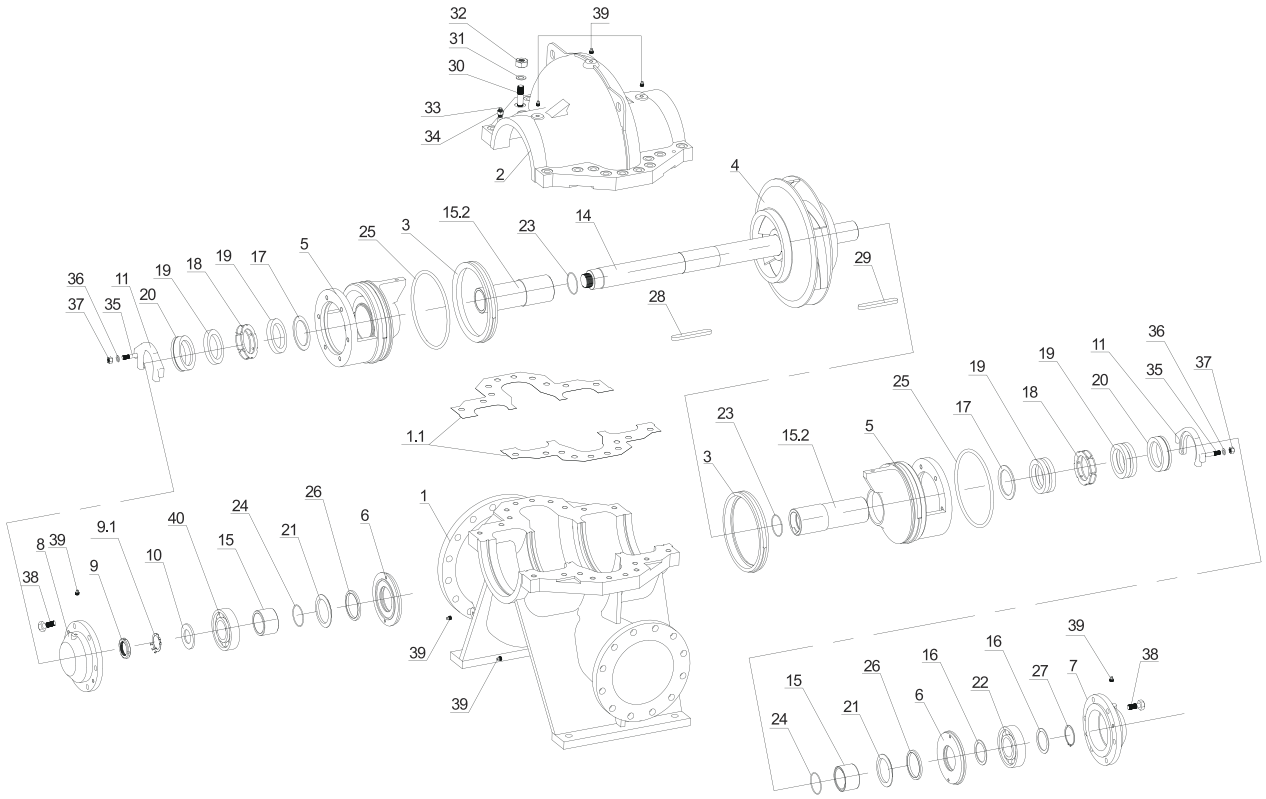
4 - Seal

- Asbestos - free, potable water quality soft packed stuffing boxes.

5 - Casing

- In-line axially split design which permits removal of the complete rotor without removing the pipe & motor.
- Short distance between bearings.
- Leak-tight due to compact joint flange with long Pre-stessed bolts.
- Counter-rotation possible with similar parts.
- Easy mounting self-aligning upper casing.
- Flange drilled as per ANSI B16.1 class 250.
- Smooth surface inside CED coated for superior corrosion protection.
- Replaceable ware ring protect the casing and the impeller running clearances.
- Heavy duty casing design for high working pressure.

VSP Series - Exploded View & Part list

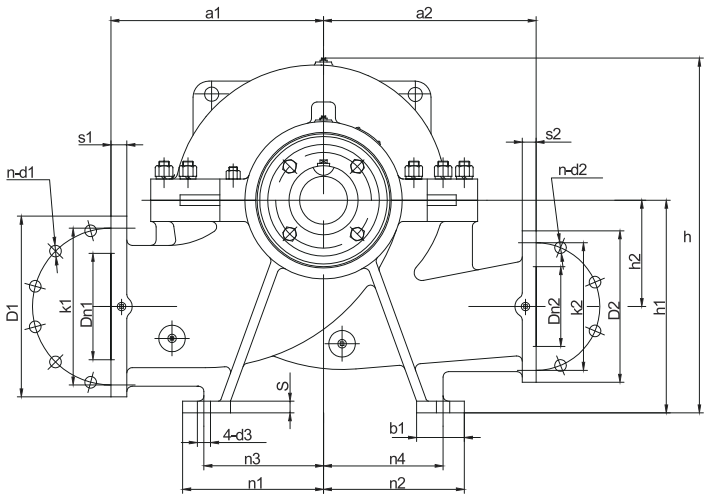


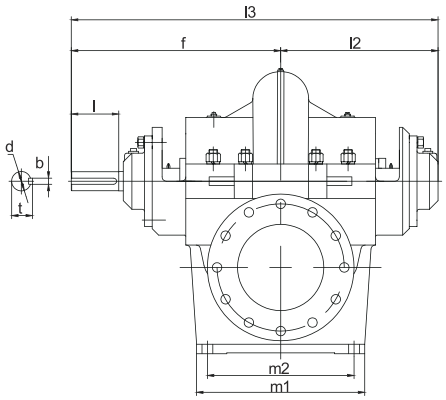
Code	Part Name
01	Casing-Bottom
01.1	Casing Gasket
02	Casing-Top
03	Wear Ring
04	Impeller
05	Seal Housing
06	Bearing Cover
07	Bearing Housing-Driver End
08	Bearing Housing-Non-Driver End
09	Screw Nut
09.1	Lock Washer for Nut
10	Bearing Slinger
11	Seal Plate
14	Shaft

Code	Part Name
15	Shaft Sleeve-Short
15.2	Packing Shaft Sleeve
16	Bearing Seal Plate
17	Packing Seal Plate
18	Lantern Ring
19	Gland
20	Packing Cover
21	Slinger
22	Bearing
23	O-ring
24	O-ring
25	O-ring
26	Felting
27	External Circlips

Code	Part Name
28	Key
29	Key
30	Screw Bolt
31	Spring Washer
32	Screw Nut
33	Pin
34	Screw Nut
35	Screw Bolt
36	Flat Gasket
37	Screw Nut
38	Screw Bolt
39	Plug
40	Bearing

VSP SERIES INSTALLATION DIMENSION





ASME16.42-1998 CLASS300,ASME16.42-1998 CLASS250					
DN	80	100	125	150	200
D	209.6	254	279.4	317.5	381
K	168.1	200.2	235	269.7	330.2
n	8	8	8	12	12
d	22.4	22.4	22.4	22.4	25.4

Model	DN1	DN2	a1	a2	f	l2	l3	h	h1	h2	m1	m2	n1	n2	n3	n4	b1	d3	s	d	b	l	t	Weight (kg)
VSP 100-250	150	100	342	339	385	300	685	570	355	170	320	270	235	235	200	200	80	φ25	22	φ34	10	80	37.3	230
VSP 100-310						320	705	605																283
VSP 100-375								620									75			φ39	12		42.3	270
VSP 125-290	200	125	382	380	485	365	850	635	400	200	390	340	265	265	225	225	90			φ44		110	47.3	322
VSP 125-365						390	875	665																342
VSP 150-290		150	412	412				660		210														355
VSP 150-360								670		200										φ49	14		52.8	385

UPCOMMING SPLIT CASE LISTING RANGE

Rated Capacity (gpm)	Size (in.)	Model Dsg	Rated Net Pressure Range (psi)	Approx Speed (rpm)	Max Working Pressure (psi)
300	5x3	MSC5-80-200	54 - 81	2980	161
300	5x3	MSC5-80-200	78 - 115	3550	200
300	5x3	MSC5-80-250	55 - 87	2350	163
300	5x3	MSC5-80-250	68 - 107	2600	183
300	5x3	MSC5-80-250	83-136	2950	280
300	5x3	MSC5-80-250	120-196	3550	280
300	5x4	MSC5-100-300	98 - 124	2350	206
300	5x4	MSC5-100-300	120 - 153	2600	236
300	5x4	MSC5-100-300	123-195	2980	400
300	5x4	MSC5-100-300	176-279	3550	400
400	5x3	MSC5-80-200	53 - 79	2980	161
400	5x3	MSC5-80-200	76 - 113	3550	200
400	5x3	MSC5-80-250	51 - 84	2350	163
400	5x3	MSC5-80-250	64 - 105	2600	183
400	5x3	MSC5-80-250	82-135	2950	280
400	5x3	MSC5-80-250	120-196	3550	280
400	5x4	MSC5-100-300	94 - 119	2350	206
400	5x4	MSC5-100-300	117 - 149	2600	236
400	5x4	MSC5-100-300	120-189	2980	400
400	5x4	MSC5-100-300	173-274	3550	400
450	5x3	MSC5-80-200	52 - 78	2980	161
450	5x3	MSC5-80-200	75 - 112	3550	200
450	5x3	MSC5-80-250	49 - 83	2350	163
450	5x3	MSC5-80-250	63 - 103	2600	183
450	5x3	MSC5-80-250	80-134	2950	280
450	5x3	MSC5-80-250	119-196	3550	280
450	5x4	MSC5-100-300	93 - 117	2350	206
450	5x4	MSC5-100-300	116 - 146	2600	236
450	5x4	MSC5-100-300	119-187	2980	400
450	5x4	MSC5-100-300	172-272	3550	400
500	5x3	MSC5-80-200	51 - 77	2980	161
500	5x3	MSC5-80-200	74 - 111	3550	200
500	5x3	MSC5-80-250	47 - 80	2350	163
500	5x3	MSC5-80-250	60 - 101	2600	183
500	5x3	MSC5-80-250	79-133	2950	280
500	5x3	MSC5-80-350	184-295	2950	380
500	5x3	MSC5-80-350G	172-257	2980	261
500	5x3	MSC5-80-250	118 - 195	3550	280
500	5x4	MSC5-100-300	90 - 114	2350	206
500	5x4	MSC5-100-300	113 - 143	2600	236
500	5x4	MSC5-100-300	117-184	2980	400
500	5x4	MSC5-100-300	170-269	3550	400
500	6x5	MSC6-125-250	76 - 101	2350	178
500	6x5	MSC6-125-250	92 - 124	2600	201
500	6x5	MSC6-125-250	117-162	2980	310
500	6x5	MSC6-125-250	137-230	3550	310
500	6x5	MSC6-125-310	111 - 128	2350	205
500	6x5	MSC6-125-310	136 - 158	2600	233
500	6x5	MSC6-125-310	137-207	2980	370
500	6x5	MSC6-125-310	196-294	3550	370
500	6x5	MSC6-125-400	208-283	2980	370
500	6x5	MSC6-125-250S	130-185	3550	290
750	5x3	MSC5-80-200	68	2980	161
750	5x3	MSC5-80-200	66 - 103	3550	200
750	5x3	MSC5-80-250	108 - 120	2950	280
500	5x3	MSC5-80-350	112 - 184	2350	266
500	5x3	MSC5-80-350	140 - 227	2600	308
500	5x3	MSC5-80-350	269 - 308	3550	388
750	5x3	MSC5-80-350	131 - 172	2350	266
750	5x3	MSC5-80-350	145 - 217	2600	308
750	5x3	MSC5-80-350	167-286	2950	380
750	5x3	MSC5-80-350	254 - 292	3550	388
750	5x3	MSC5-80-350G	169-251	2980	261
750	5x3	MSC5-80-250	105-185	3550	280
750	6x4	MSC6-100 -320	138-198	2980	202
750	5x4	MSC5-100-300	104-163	2980	400
750	5x4	MSC5-100-300	157-247	3550	400
750	6x5	MSC6-125-250	71 – 97	2350	178
750	6x5	MSC6-125-250	89 - 121	2600	201
750	6x5	MSC6-125-250	114-160	2980	310
750	6x5	MSC6-125-250	138-230	3550	310
750	6x5	MSC6-125-310	105 - 123	2350	205
750	6x5	MSC6-125-310	130 - 153	2600	233
750	6x5	MSC6-125-310	132-203	2980	370
750	6x5	MSC6-125-310	191-291	3550	370
750	6x5	MSC6-125-400	203-277	2980	370
750	8x6	MSC8-150-330	40 - 77	1760	310
750	8x6	MSC8-150-420	272-367	2950	460
1000	5x3	MSC5-80-350	220-270	2950	380
1000	6x4	MSC6-100 -320	130-191	2980	202
1000	8x6	MSC8-150-310	58 - 147	2350	229
1000	8x6	MSC8-150-310	73 - 181	2600	263
1000	8x6	MSC8-150-310	119-237	2980	350
1000	8x6	MSC8-150-310	175-286	3550	370
1000	6x5	MSC8-125-200	79-145	3550	246
1000	6x5	MSC6-125-250	103-151	2980	310
1000	6x5	MSC6-125-310	121-192	2980	370
1000	6x5	MSC6-125-400	192-265	2980	370
1000	6x5	MSC6-125-250	130-225	3550	310
1000	6x5	MSC6-125-310	182-283	3550	370
1000	8x6	MSC8-150-330	40-74	1760	310
1000	8x6	MSC8-150-420	260-359	2950	460
1250	8x5	MSC8-125-300	116-190	2980	187
1250	8x5	MSC8-125-380	118-177	2200	261
1250	8x6	MSC8-150-310	76 - 141	2350	229
1250	8x6	MSC8-150-310	96 - 177	2600	263
1250	8x6	MSC8-150-310	112-230	2980	350
1250	8x6	MSC8-150-310	168-281	3550	370
1250	8x6	MSC8-150-250	83-149	2950	330

SPLIT CASE RANGE

1250	8x6	MSC8-150-250	133-225	3550	330
1250	8x6	MSC8-150-330	76 - 135	2350	229
1250	8x6	MSC8-150-330	95 - 167	2600	263
1250	8x6	MSC8-150-375	70 - 131	1760	270
1250	8x6	MSC8-150-375	106 - 188	2100	270
1250	8x6	MSC8-150-400	85 - 126	1760	270
1250	8x6	MSC8-150-420	241-346	2950	460
1500	8x6	MSC8-150-640	124-220	1480	300
1500	8x6	MSC8-150-460	115-181	1800	275
1500	8x6	MSC8-150-375	88 – 128	1760	270
1500	8x6	MSC8-150-375	100 – 187	2100	270
1500	8x6	MSC8-150-310	109-221	2980	350
1500	8x6	MSC8-150-310	158-269	3550	370
1500	8x6	MSC8-150-330	71 - 131	2350	229
1500	8x6	MSC8-150-330	90 - 163	2600	263
1500	8x6	MSC8-150-250	122-216	3550	330
1500	8x6	MSC8-150-480	120-171	1760	275
1500	8x6	MSC8-150-400	82 - 124	1760	270
1500	8x6	MSC8-150-400	121-181	2100	275
2000	8x6	MSC8-150-400	94 - 115	1760	270
2000	8x6	MSC8-150-640	117-216	1480	300
2000	8x6	MSC8-150-480	109-165	1760	275
2000	8x6	MSC8-150-480GL	122-188	1760	270
2000	8x6	MSC8-150-460	118-175	1800	275
2000	8x6	MSC8-150-400	111-174	2100	275
2000	8x6	MSC8-150-330	107-190	2950	310
2000	10x8	MSC10-200-500	118-186	1800	320
2000	10x8	MSC10-200-500	149-234	2000	320
2000	10x8	MSC10-200-350	123-239	2980	362
2500	8x6	MSC8-150-640	107-206	1480	300
2500	8x6	MSC8-150-480	96-155	1760	275
2500	8x6	MSC8-150-480GL	111-181	1760	270
2500	8x6	MSC8-150-400	160	2100	275
2500	10x8	MSC10-200-350	114-227	2980	362
2500	10x8	MSC10-200-430	138	1800	275
2500	10x8	MSC10-200-450	124-155	1760	333
2500	10x8	MSC10-200-450	165-203	2000	333
2500	10x8	MSC10-200-500	110-176	1800	320
2500	10x8	MSC10-200-500	141-225	2000	320
2500	10x8	MSC10-200-430	125-190	2100	275
3000	8x6	MSC8-150-640	162-194	1480	300
3000	10x8	MSC10-200-450	115-147	1760	333
3000	10x8	MSC10-200-450	158-197	2000	333
3000	12x10	MSC12-250-640	176-249	1480	330
3000	12x10	MSC12-250-500	120-154	1480	330
3000	10x8	MSC10-200-500	121-179	1760	340
3000	10x8	MSC10-200-500	162-238	2000	340

3000	10x8	MSC10-200-430	144-187	2100	275
3000	10x8	MSC10-200-600	114-188	1480	275
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3500	12x10	MSC12-250-640G	196-290	1480	377
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3500	10x8	MSC10-200-500	136-170	1760	340
3500	10x8	MSC10-200-600	107-184	1480	275
3500	10x8	MSC10-200-600	160-241	1760	330
3500	12x10	MSC12-250-490	119-189	1800	290
3500	10x8	MSC10-200-500	154-229	2000	340
4000	10x8	MSC10-200-600	142-176	1480	275
4000	10x8	MSC10-200-600	152-234	1760	330
4000	12x10	MSC12-250-500	114-148	1480	330
4000	12x10	MSC12-250-640	162-233	1480	330
4000	12x10	MSC12-250-640G	191-288	1480	377
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4000	12x10	MSC12-250-490	114-185	1800	290
4000	12x10	MSC12-250-500	125-225	1800	330
4500	10x8	MSC10-200-600	175-226	1760	330
4500	12x10	MSC12-250-500	109-145	1480	330
4500	12x10	MSC12-250-600	143-207	1450	303
4500	12x10	MSC12-250-640G	184-284	1480	377
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5000	12x10	MSC12-250-640G	211-277	1480	377
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5500	16x14	MSC16-350-640	124-192	1480	315
6000	14x10	MSC14-250-640	127-209	1480	300
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6000	16x12	MSC16-300-750	204-277	1480	370
6000	16x14	MSC16-350-640	120-190	1480	315
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6500	16x12	MSC16-300-750	203-276	1480	370
6500	16x14	MSC16-350-640	116-186	1480	315
7000	14x10	MSC14-250-640	201	1480	300
7000	14x10	MSC14-250-640	211-271	1760	370
7000	16x12	MSC16-300-750	200-274	1480	370
7000	16x14	MSC16-350-640	113-182	1480	315
7500	14x10	MSC14-250-640	195	1480	300
7500	14x10	MSC14-250-640	205-267	1760	370
7500	16x12	MSC16-300-750	197-272	1480	370
7500	16x14	MSC16-350-640	109-179	1480	315
8000	14x10	MSC14-250-640	239-261	1760	370
8000	16x12	MSC16-300-750	223-269	1480	370
8000	16x14	MSC16-350-640	117-192	1540	315

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

ELECTRIC MOTOR SPECIFICATIONS

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

TECHTOP®

MOTOR

New! Fire Pump Motor Ready

SHANGHAI TOP MOTOR CO.,LTD.

SHANGHAI HALOTOP IMPORT & EXPORT CO., LTD.

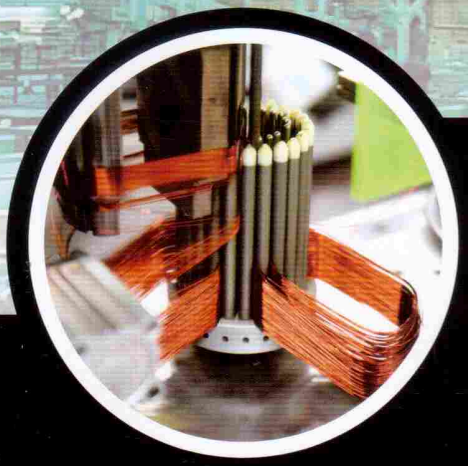
GLOBAL POWER ENGINEERING CO. LTD.

E323353 CC096A the standard in safety

WORKSHOP & TECHNOLOGY

TECHTOP adopts computerized machine tools for metal parts; four cylinder oil hydraulic presses for stator stacking; vacuum high-pressure varnishing units for stator varnishing; clean-dry and auto-phosphorescing machines for motor housing, end shield, fan cover and other parts; electrostatic spraying-water screen-suspending line complexes for product surface painting.

TECHTOP®



Various Certificates

QUALITY MANAGEMENT SYSTEM
CERTIFICATE

Certificate No.: 00110Q22322R0M/3100

We hereby certify that
Shanghai Top Motor Co., Ltd.

No.303, Kangliu Road, Kangqiao Town, Pudong New District, Shanghai, China

by reason of its
Quality Management System
has been awarded this certificate for compliance with the standard
ISO9001: 2008
GB/T 19001-2008
The Quality Management System Applies in the following area:
Design, Production and Service of 0.04-50kw of Three-phase Asynchronous Motors, Single-phase Asynchronous Motors

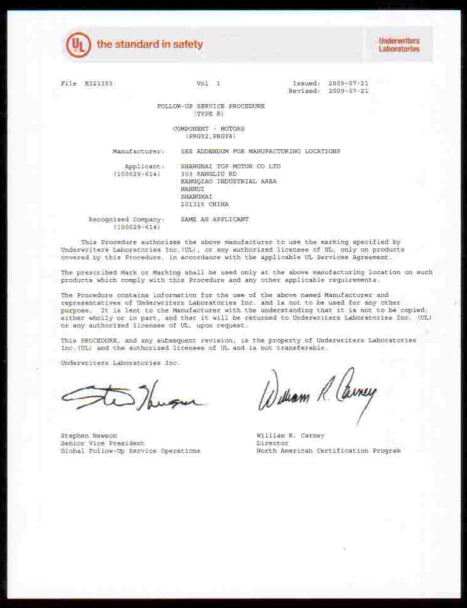
Certified since: Dec. 29, 2003 Valid from: Mar. 08, 2010 Valid until: Mar. 07, 2013

Signed by: Wang Kejiao

CHINA QUALITY CERTIFICATION CENTRE

Q 0004274

ISO9001



the standard in safety — Underwriters Laboratories

File E121353 Vol 1 Issued: 2003-07-21
Revised: 2009-07-21

FOLLOW-UP SERVICE PROCEDURE
(TYPE 8)

COMPONENT - MOTORS
(PRGY2.PRGY8)

Manufacturer: SEE ADDENDUM FOR MANUFACTURING LOCATIONS

Applicant: (100029-614) SHANGHAI TOP MOTOR CO LTD
303 KANGLIU RD
KANGQIAO INDUSTRIAL AREA
HAIHUI
SHANGHAI
201315 CHINA

Recognized Company: (100029-614) SAME AS APPLICANT

This Procedure authorizes the above manufacturer to use the marking specified by Underwriters Laboratories Inc.(UL), or any authorized licensee of UL, only on products covered by this Procedure, in accordance with the applicable UL Services Agreement.

The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

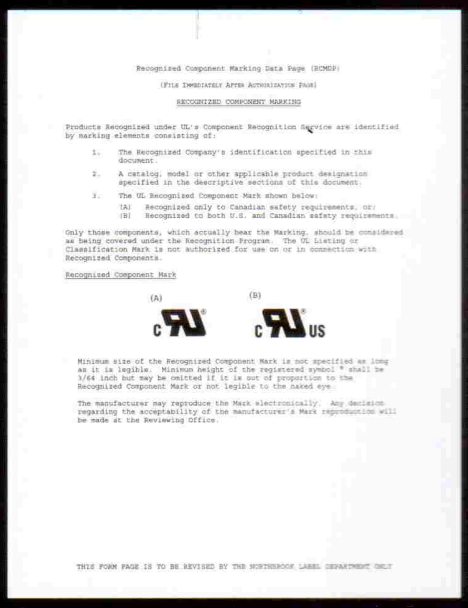
The Procedure contains information for the use of the above named Manufacturer and representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. (UL) or any authorized licensee of UL, upon request.

This PROCEDURE, and any subsequent revision, is the property of Underwriters Laboratories Inc.(UL) and the authorized licensee of UL and is not transferable.

Underwriters Laboratories Inc.

Stephen Newson
Senior Vice President
Global Follow-Up Service Operations

William R. Carney
Director
North American Certification Program



Recognized Component Marking Data Page (RCMDP)

(File Immediately After Authorization Page)

RECOGNIZED COMPONENT MARKING

Products Recognized under UL's Component Recognition Service are identified by marking elements consisting of:

1. The Recognized Company's identification specified in this document.
2. A catalog, model or other applicable product designation specified in the descriptive sections of this document.
3. The UL Recognized Component Mark shown below:
   (A) Recognized only to Canadian safety requirements, or;
   (B) Recognized to both U.S. and Canadian safety requirements.

Only those components, which actually bear the Marking, should be considered as being covered under the Recognition Program. The UL Listing or Classification Mark is not authorized for use on or in connection with Recognized Components.

Recognized Component Mark

(A) (B)

Minimum size of the Recognized Component Mark is not specified as long as it is legible. Minimum height of the registered symbol ® shall be 1/64 inch but may be omitted if it is out of proportion to the Recognized Component Mark or not legible to the naked eye.

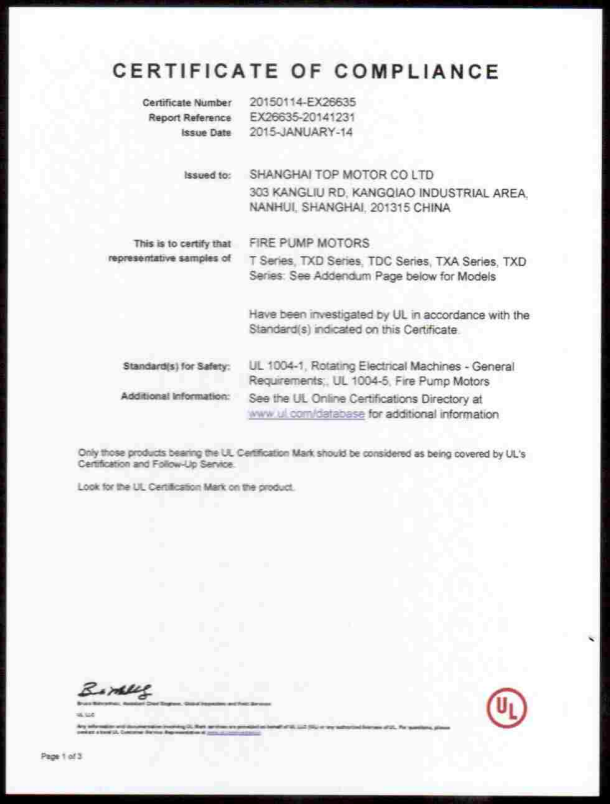
The manufacturer may reproduce the Mark electronically. Any decision regarding the acceptability of the manufacturer's Mark reproduction will be made at the Reviewing Office.

THIS FORM PAGE IS TO BE REVISED BY THE NORTHBROOK LABEL DEPARTMENT ONLY

UL

ECHTOP®

Various Certificates



CERTIFICATE OF COMPLIANCE

Certificate Number	20150114-EX26635
Report Reference	EX26635-20141231
Issue Date	2015-JANUARY-14
Issued to:	SHANGHAI TOP MOTOR CO LTD 303 KANGLIU RD, KANGQIAO INDUSTRIAL AREA, NANHUI, SHANGHAI, 201315 CHINA
This is to certify that representative samples of	FIRE PUMP MOTORS T Series, TXD Series, TDC Series, TXA Series, TXD Series: See Addendum Page below for Models
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 1004-1, Rotating Electrical Machines - General Requirements;, UL 1004-5, Fire Pump Motors
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services

UL LLC

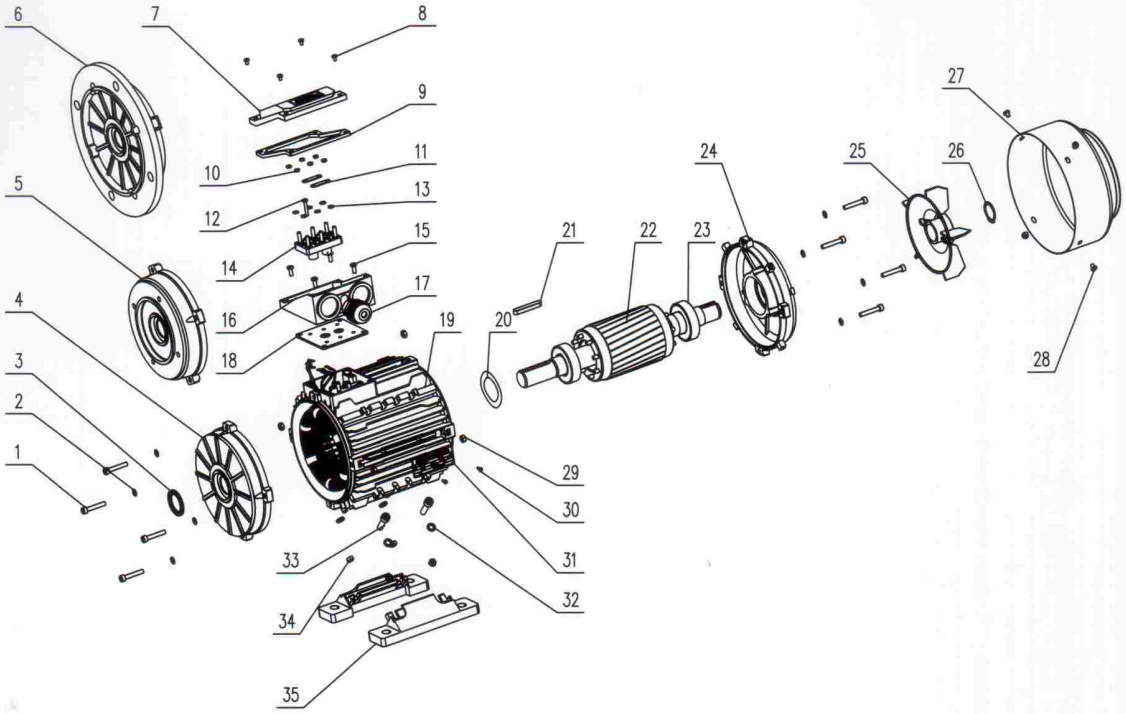
Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contact

Page 1 of 3

UL

www.techtop.com

Motor Spare Part List "Exploded Drawing"



1.screw
2.Gasket
3.V-ring
4.Front endshield
5.B14 flange
6.B5 flange
7.TB cover
8.TB fixing screws
9.TB upper gasket
10.Terminal board fixing nut
11.Terminal bridge
12.Terminal pin
13.Terminal shim
14.Terminal board
15.TB fixing screws
16.TB base
17.Cable gland
18.TB bottomgasket
19.Frame
20.Preload washer
21.Key
22.Rotor
23.Bearing
24.NDE endshield
25.Cooling fan
26.Fan circlip
27.Fan cover
28.Fan cover fixing screws
29.Endshield fixing nut
30.Rivet
31.Rivet
32.Foot fixing gasket
33.Foot fixing screws
34.Foot fixing nut
35.Foot

Serie Fire Pump Motors' Main Performance Parameters (IEC)

Serial NO.	Model NO.	Volts	Output (KW)	Output (HP)	Hz /DC	Locked current A(standard) 400V	Locked torque multiple (standard)	Maximum torque multiple (standard)	Minimum torque multiple (standard)	INS class	RPM	The test environment temperature
1	T 801-2	380-415V	0.75	1.0	50	19.0	175	250	120	F	2848	50℃
2	T 802-2	380-415V	1.1	1.5	50	25.7	175	250	120	F	2846	50℃
3	T 803-2	380-415V	1.5	2.0	50	32.3	170	240	120	F	2852	50℃
4	T 90S-2	380-415V	1.5	2.0	50	32.3	170	240	120	F	2852	50℃
5	T 90L1-2	380-415V	2.2	3.0	50	40.9	160	230	110	F	2845	50℃
6	T 90L2-2	380-415V	3	4.0	50	49.4	155	220	105	F	2851	50℃
7	T 100L-2	380-415V	3	4.0	50	49.4	155	220	105	F	2851	50℃
8	T 100L2-2	380-415V	4	5.5	50	61.8	145	215	105	F	2910	50℃
9	T 112M-2	380-415V	4	5.5	50	61.8	145	215	105	F	2910	50℃
10	T 112L-2	380-415V	5.5	7.5	50	79.8	140	200	100	F	2905	50℃
11	T 132S1-2	380-415V	5.5	7.5	50	79.8	140	200	100	F	2905	50℃
12	T 132S2-2	380-415V	7.5	10.0	50	101.7	135	200	100	F	2910	50℃
13	T 132M1-2	380-415V	9.2	12.0	50	118.8	130	200	100	F	2910	50℃
14	T 132M2-2	380-415V	11	15.0	50	146.3	130	200	100	F	2920	50℃
15	T 160M1-2	380-415V	11	15.0	50	146.3	130	200	100	F	2920	50℃
16	T 160M2-2	380-415V	15	20.0	50	184.3	130	200	100	F	2918	50℃
17	T 160L-2	380-415V	18.5	25.0	50	230.9	130	200	100	F	2922	50℃
18	T 180M-2	380-415V	22	30.0	50	274.6	130	200	100	F	2930	50℃
19	T 200L1-2	380-415V	30	40.0	50	367.7	125	200	100	F	2925	50℃
20	T 200L2-2	380-415V	37	50.0	50	457.9	120	200	100	F	2930	50℃
21	T 225M-2	380-415V	45	60.0	50	549.1	120	200	100	F	2930	50℃
22	T 250M-2	380-415V	55	75.0	50	685.9	105	200	95	F	2940	50℃
23	T 280S-2	380-415V	75	100.0	50	916.8	105	200	95	F	2940	50℃
24	T 280M-2	380-415V	90	125.0	50	1146.7	100	200	90	F	2940	50℃
25	T 315S-2	380-415V	110	150.0	50	1369.0	100	200	90	F	2940	50℃
26	T 315M-2	380-415V	132	175.0	50	1599.8	100	200	90	F	2940	50℃
27	T 315L1 -2	380-415V	160	215.0	50	1900.0	90	175	65	F	2945	50℃
28	T 315L2 -2	380-415V	200	270.0	50	2636.3	70	175	65	F	2945	50℃
29	T 355M-2	380-415V	250	330.0	50	3125.5	70	175	65	F	2945	50℃
30	T 355L-2	380-415V	315	420.0	50	4075.5	70	175	65	F	2945	50℃
31	T 802-4	380-415V	0.75	1.0	50	19.0	275	300	190	F	1420	50℃
32	T 803-4	380-415V	1.1	1.5	50	25.7	250	280	175	F	1425	50℃
33	T 90S-4	380-415V	1.1	1.5	50	25.7	250	280	175	F	1425	50℃
34	T 90L-4	380-415V	1.5	2.0	50	32.3	235	270	165	F	1420	50℃
35	T 90L2-4	380-415V	2.2	3.0	50	40.9	215	250	150	F	1430	50℃
36	T 100L1-4	380-415V	2.2	3.0	50	40.9	215	250	150	F	1430	50℃
37	T 100L2-4	380-415V	3	4.0	50	49.4	200	230	140	F	1430	50℃
38	T 100L3-4	380-415V	4	5.5	50	61.8	180	225	130	F	1435	50℃
39	T 112M-4	380-415V	4	5.5	50	61.8	180	225	130	F	1435	50℃
40	T 112L-4	380-415V	5.5	7.5	50	79.8	175	215	120	F	1430	50℃
41	T 132S-4	380-415V	5.5	7.5	50	79.8	175	215	120	F	1430	50℃
42	T 132M-4	380-415V	7.5	10.0	50	101.7	165	200	115	F	1430	50℃
43	T 132L1-4	380-415V	9.2	12.0	50	118.8	160	200	115	F	1430	50℃
44	T 132L2-4	380-415V	11	15.0	50	146.3	160	200	110	F	1440	50℃
45	T 160M-4	380-415V	11	15.0	50	146.3	160	200	110	F	1440	50℃
46	T 160L-4	380-415V	15	20.0	50	184.3	150	200	105	F	1445	50℃
47	T 180M-4	380-415V	18.5	25.0	50	230.9	150	200	105	F	1445	50℃
48	T 180L-4	380-415V	22	30.0	50	274.6	150	200	105	F	1460	50℃
49	T 200L-4	380-415V	30	40.0	50	367.7	140	200	100	F	1460	50℃
50	T 225S-4	380-415V	37	50.0	50	457.9	140	200	100	F	1470	50℃

Serie Fire Pump Motors' Main Performance Parameters (IEC)

Serial NO.	Model NO.	Volts	Output (KW)	Output (HP)	Hz /DC	Locked current A(standard) 400V	Locked torque multiple (standard)	Maximum torque multiple (standard)	Minimum torque multiple (standard)	INS class	RPM	The test environment temperature
51	T 225M-4	380-415V	45	60.0	50	549.1	140	200	100	F	1480	50℃
52	T 250M-4	380-415V	55	75.0	50	685.9	140	200	100	F	1480	50℃
53	T 280S-4	380-415V	75	100.0	50	916.8	125	200	100	F	1480	50℃
54	T 280M-4	380-415V	90	125.0	50	1146.7	110	200	100	F	1480	50℃
55	T 315S-4	380-415V	110	150.0	50	1369.0	110	200	100	F	1480	50℃
56	T 315M-4	380-415V	132	175.0	50	1599.8	100	200	90	F	1480	50℃
57	T 315L1-4	380-415V	160	215.0	50	1900.0	90	175	75	F	1480	50℃
58	T 315L2-4	380-415V	200	270.0	50	2636.3	80	175	75	F	1480	50℃
59	T 355M1-4	380-415V	220	300.0	50	2874.7	80	175	75	F	1480	50℃
60	T 355M2-4	380-415V	250	330.0	50	3125.5	80	175	75	F	1480	50℃
61	T 355L1-4	380-415V	280	375.0	50	3604.3	80	175	75	F	1480	50℃
62	T 355L2-4	380-415V	315	420.0	50	4075.5	80	175	75	F	1480	50℃
63	T 355L3-4	380-415V	355	475.0	50	4563.8	80	175	75	F	1480	50℃
64	T 803-6	380-415V	0.75	1.0	50	19.0	170	265	120	F	935	50℃
65	T 90S-6	380-415V	0.75	1.0	50	19.0	170	265	120	F	935	50℃
66	T 90L-6	380-415V	1.1	1.5	50	25.7	165	250	115	F	935	50℃
67	T 100L-6	380-415V	1.5	2.0	50	32.3	160	240	110	F	940	50℃
68	T 112M-6	380-415V	2.2	3.0	50	40.9	155	230	110	F	940	50℃
69	T 112M1-6	380-415V	3	4.0	50	49.4	150	220	105	F	940	50℃
70	T 112M2-6	380-415V	4	5.5	50	61.8	150	215	105	F	940	50℃
71	T 132S-6	380-415V	3	4.0	50	49.4	150	220	105	F	940	50℃
72	T 132M1-6	380-415V	4	5.5	50	61.8	150	215	105	F	945	50℃
73	T 132M2-6	380-415V	5.5	7.5	50	79.8	150	205	105	F	945	50℃
74	T 132M3-6	380-415V	7.5	10.0	50	101.7	150	200	105	F	945	50℃
75	T 160M-6	380-415V	7.5	10.0	50	101.7	150	200	105	F	955	50℃
76	T 160L-6	380-415V	11	15.0	50	146.3	140	200	100	F	960	50℃
77	T 180L-6	380-415V	15	20.0	50	184.3	135	200	100	F	960	50℃
78	T 200L1-6	380-415V	18.5	25.0	50	230.9	135	200	100	F	965	50℃
79	T 200L2-6	380-415V	22	30.0	50	274.6	135	200	100	F	965	50℃
80	T 225M-6	380-415V	30	40.0	50	367.7	135	200	100	F	975	50℃
81	T 250M-6	380-415V	37	50.0	50	457.9	135	200	100	F	975	50℃
82	T 280S-6	380-415V	45	60.0	50	549.1	135	200	100	F	980	50℃
83	T 280M-6	380-415V	55	75.0	50	685.9	135	200	100	F	980	50℃
84	T 315S-6	380-415V	75	100.0	50	916.8	125	200	100	F	980	50℃
85	T 315M-6	380-415V	90	125.0	50	1146.7	125	200	100	F	980	50℃
86	T 315L1-6	380-415V	110	150.0	50	1369.0	120	200	100	F	980	50℃
87	T 315L2-6	380-415V	132	175.0	50	1599.8	120	200	100	F	980	50℃
88	T 355M1-6	380-415V	160	215.0	50	1900.0	100	175	90	F	980	50℃
89	T 355M2-6	380-415V	200	270.0	50	2636.3	100	175	90	F	980	50℃
90	T 355L1-6	380-415V	220	300.0	50	2874.7	100	175	90	F	980	50℃
91	T 355L2-6	380-415V	250	330.0	50	3125.5	100	175	90	F	980	50℃

DC Serie Fire Pump Motors' Main Performance Parameters(NEMA 415V 50HZ)

Serial NO.	Model NO.	Volts	Output (HP)	Hz /DC	Locked current A(standard) 415V	Locked torque multiple (standard)	Maximum torque multiple (standard)	Minimum torque multiple (standard)	Service factor	INS class	RPM	The test environment temperature
1	TDC254T15U2B	380-415V	15	50	141	130	200	100	1.15	F	2920	50℃
2	TDC256T20U2B	380-415V	20	50	177	130	200	100	1.15	F	2920	50℃
3	TDC284TS25U2B	380-415V	25	50	222	130	200	100	1.15	F	2930	50℃
4	TDC286TS30U2B	380-415V	30	50	264	130	200	100	1.15	F	2930	50℃
5	TDC324TS40U2B	380-415V	40	50	354	125	200	100	1.15	F	2930	50℃
6	TDC326TS50U2B	380-415V	50	50	441	120	200	100	1.15	F	2930	50℃
7	TDC364TS60U2B	380-415V	60	50	529	120	200	100	1.15	F	2930	50℃
8	TDC365TS75U2B	380-415V	75	50	661	105	200	95	1.15	F	2940	50℃
9	TDC405TS100U2B	380-415V	100	50	883	105	200	95	1.15	F	2940	50℃
10	TDC444TS125U2B	380-415V	125	50	1105	100	200	90	1.15	F	2940	50℃
11	TDC445TS150U2B	380-415V	150	50	1319	100	200	90	1.15	F	2940	50℃
12	TDC 254T15U4B	380-415V	15	50	141	160	200	110	1.15	F	1440	50℃
13	TDC 256T20U4B	380-415V	20	50	177	150	200	105	1.15	F	1445	50℃
14	TDC 284T25U4B	380-415V	25	50	222	150	200	105	1.15	F	1450	50℃
15	TDC 286T30U4B	380-415V	30	50	264	150	200	105	1.15	F	1460	50℃
16	TDC 324T40U4B	380-415V	40	50	354	140	200	100	1.15	F	1460	50℃
17	TDC 326T50U4B	380-415V	50	50	441	140	200	100	1.15	F	1470	50℃
18	TDC364T60U4B	380-415V	60	50	529	140	200	100	1.15	F	1480	50℃
19	TDC365T75U4B	380-415V	75	50	661	140	200	100	1.15	F	1480	50℃
20	TDC405T100U4B	380-415V	100	50	883	125	200	100	1.15	F	1480	50℃
21	TDC444T125U4B	380-415V	125	50	1105	110	200	100	1.15	F	1480	50℃
22	TDC445T150U4B	380-415V	150	50	1319	110	200	100	1.15	F	1480	50℃
23	TDC 254T7.5U6B	380-415V	7.5	50	77	150	200	105	1.15	F	955	50℃
24	TDC 256T10U6B	380-415V	10	50	98	150	200	105	1.15	F	960	50℃
25	TDC 284T15U6B	380-415V	15	50	141	140	200	100	1.15	F	960	50℃
26	TDC 286T20U6B	380-415V	20	50	177	135	200	100	1.15	F	965	50℃
27	TDC 324T25U6B	380-415V	25	50	222	135	200	100	1.15	F	965	50℃
28	TDC 326T30U6B	380-415V	30	50	264	135	200	100	1.15	F	975	50℃
29	TDC364T40U6B	380-415V	40	50	354	135	200	100	1.15	F	975	50℃
30	TDC365T50U6B	380-415V	50	50	441	135	200	100	1.15	F	980	50℃
31	TDC404T60U6B	380-415V	60	50	529	135	200	100	1.15	F	980	50℃
32	TDC405T75U6B	380-415V	75	50	661	135	200	100	1.15	F	980	50℃
33	TDC444T100U6B	380-415V	100	50	883	125	200	100	1.15	F	980	50℃
34	TDC445T125U6B	380-415V	125	50	1105	125	200	100	1.15	F	980	50℃

DC Serie Fire Pump Motors' Main Performance Parameters(NEMA ODP 208~230/460V 60HZ)

Serial NO.	Model NO.	Volts	Output (HP)	Hz /DC	Locked current A(standard) 460V	Locked torque multiple (standard)	Maximum torque multiple (standard)	Minimum torque multiple (standard)	Service factor	INS class	RPM	The test environment temperature
1	TDC254T15U2B	208~230/460V	15	60	116.0	130	200	100	1.15	F	3504	50℃
2	TDC256T20U2B	208~230/460V	20	60	145.0	130	200	100	1.15	F	3504	50℃
3	TDC284TS25U2B	208~230/460V	25	60	182.5	130	200	100	1.15	F	3516	50℃
4	TDC286TS30U2B	208~230/460V	30	60	217.5	130	200	100	1.15	F	3516	50℃
5	TDC324TS40U2B	208~230/460V	40	60	290.0	125	200	100	1.15	F	3516	50℃
6	TDC326TS50U2B	208~230/460V	50	60	362.5	120	200	100	1.15	F	3516	50℃
7	TDC364TS60U2B	208~230/460V	60	60	435.0	120	200	100	1.15	F	3516	50℃
8	TDC365TS75U2B	208~230/460V	75	60	542.5	105	200	95	1.15	F	3528	50℃
9	TDC405TS100U2B	208~230/460V	100	60	725.0	105	200	95	1.15	F	3528	50℃
10	TDC444TS125U2B	460V	125	60	907.5	100	200	90	1.15	F	3528	50℃
11	TDC445TS150U2B	460V	150	60	1085.0	100	200	90	1.15	F	3528	50℃
12	TDC 254T15U4B	208~230/460V	15	60	116.0	160	200	110	1.15	F	1728	50℃
13	TDC 256T20U4B	208~230/460V	20	60	145.0	150	200	105	1.15	F	1734	50℃
14	TDC 284T25U4B	208~230/460V	25	60	182.5	150	200	105	1.15	F	1740	50℃
15	TDC 286T30U4B	208~230/460V	30	60	217.5	150	200	105	1.15	F	1752	50℃
16	TDC 324T40U4B	208~230/460V	40	60	290.0	140	200	100	1.15	F	1752	50℃
17	TDC 326T50U4B	208~230/460V	50	60	362.5	140	200	100	1.15	F	1764	50℃
18	TDC364T60U4B	208~230/460V	60	60	435.0	140	200	100	1.15	F	1776	50℃
19	TDC365T75U4B	208~230/460V	75	60	542.5	140	200	100	1.15	F	1776	50℃
20	TDC405T100U4B	208~230/460V	100	60	725.0	125	200	100	1.15	F	1776	50℃
21	TDC444T125U4B	460V	125	60	907.5	110	200	100	1.15	F	1776	50℃
22	TDC445T150U4B	460V	150	60	1085.0	110	200	100	1.15	F	1776	50℃
23	TDC 254T7.5U6B	208~230/460V	7.5	60	63.5	150	200	105	1.15	F	1146	50℃
24	TDC 256T10U6B	208~230/460V	10	60	81.0	150	200	105	1.15	F	1152	50℃
25	TDC 284T15U6B	208~230/460V	15	60	116.0	140	200	100	1.15	F	1152	50℃
26	TDC 286T20U6B	208~230/460V	20	60	145.0	135	200	100	1.15	F	1158	50℃
27	TDC 324T25U6B	208~230/460V	25	60	182.5	135	200	100	1.15	F	1158	50℃
28	TDC 326T30U6B	208~230/460V	30	60	217.5	135	200	100	1.15	F	1170	50℃
29	TDC364T40U6B	208~230/460V	40	60	290.0	135	200	100	1.15	F	1170	50℃
30	TDC365T50U6B	208~230/460V	50	60	362.5	135	200	100	1.15	F	1176	50℃
31	TDC404T60U6B	208~230/460V	60	60	435.0	135	200	100	1.15	F	1176	50℃
32	TDC405T75U6B	208~230/460V	75	60	542.5	135	200	100	1.15	F	1176	50℃
33	TDC444T100U6B	208~230/460V	100	60	725.0	125	200	100	1.15	F	1176	50℃
34	TDC445T125U6B	460V	125	60	907.5	125	200	100	1.15	F	1176	50℃

XC Serie Fire Pump Motors' Main Performance Parameters (NEMA ODP 208~230/460V 60HZ)

Serial NO.	Model NO.	Volts	Output (HP)	Hz /DC	Locked current A(standard) 460V	Locked torque multiple (standard)	Maximum torque multiple (standard)	Minimum torque multiple (standard)	Service factor	INS class	RPM	The test environment temperature
1	TXC 143T1U2B	208~230/460V	1	60	15	175	250	120	1.15	F	3450	50℃
2	TXC 143T1.5U2B	208~230/460V	1.5	60	20	175	250	120	1.15	F	3450	50℃
3	TXC 145T2U2B	208~230/460V	2	60	25	170	240	120	1.15	F	3450	50℃
4	TXC 182T3U2B	208~230/460V	3	60	32	160	230	110	1.15	F	3510	50℃
5	TXC 184T5U2B	208~230/460V	5	60	46	150	215	105	1.15	F	3510	50℃
6	TXC 213T7.5U2B	208~230/460V	7.5	60	63.5	140	200	100	1.15	F	3520	50℃
7	TXC 215T10U2B	208~230/460V	10	60	81	135	200	100	1.15	F	3520	50℃
8	TXC 254T15U2B	208~230/460V	15	60	116	130	200	100	1.15	F	3540	50℃
9	TXC 256T20U2B	208~230/460V	20	60	145	130	200	100	1.15	F	3540	50℃
10	TXC 284TS25U2B	208~230/460V	25	60	182.5	130	200	100	1.15	F	3550	50℃
11	TXC 286TS30U2B	208~230/460V	30	60	217.5	130	200	100	1.15	F	3550	50℃
12	TXC 324TS40U2B	208~230/460V	40	60	290	125	200	100	1.15	F	3560	50℃
13	TXC 326TS50U2B	208~230/460V	50	60	362.5	120	200	100	1.15	F	3560	50℃
14	TXC364TS60U2B	208~230/460V	60	60	435	120	200	100	1.15	F	3560	50℃
15	TXC365TS75U2B	208~230/460V	75	60	542.5	105	200	95	1.15	F	3560	50℃
16	TXC405TS100U2B	208~230/460V	100	60	725	105	200	95	1.15	F	3570	50℃
17	TXC444TS125U2B	460	125	60	907.5	100	200	90	1.15	F	3575	50℃
18	TXC445TS150U2B	460	150	60	1085	100	200	90	1.15	F	3575	50℃
19	TXC447TS200U2B	460	200	60	1450	100	200	90	1.15	F	3575	50℃
20	TXC449TS250U2B	460	250	60	1825	70	175	65	1.15	F	3575	50℃
21	TXC 143T1U4B	208~230/460V	1	60	15	275	300	190	1.15	F	1730	50℃
22	TXC 145T1.5U4B	208~230/460V	1.5	60	20	250	280	175	1.15	F	1730	50℃
23	TXC 145T2U4B	208~230/460V	2	60	25	235	270	165	1.15	F	1730	50℃
24	TXC 182T3U4B	208~230/460V	3	60	32	215	250	150	1.15	F	1735	50℃
25	TXC 184T5U4B	208~230/460V	5	60	46	185	225	130	1.15	F	1735	50℃
26	TXC 213T7.5U4B	208~230/460V	7.5	60	63.5	175	215	120	1.15	F	1740	50℃
27	TXC 215T10U4B	208~230/460V	10	60	81	165	200	115	1.15	F	1740	50℃
28	TXC 254T15U4B	208~230/460V	15	60	116	160	200	110	1.15	F	1750	50℃
29	TXC 256T20U4B	208~230/460V	20	60	145	150	200	105	1.15	F	1750	50℃
30	TXC 284T25U4B	208~230/460V	25	60	182.5	150	200	105	1.15	F	1760	50℃
31	TXC 286T30U4B	208~230/460V	30	60	217.5	150	200	105	1.15	F	1760	50℃
32	TXC 324T40U4B	208~230/460V	40	60	290	140	200	100	1.15	F	1770	50℃
33	TXC 326T50U4B	208~230/460V	50	60	362.5	140	200	100	1.15	F	1770	50℃
34	TXC364T60U4B	208~230/460V	60	60	435	140	200	100	1.15	F	1775	50℃
35	TXC365T75U4B	208~230/460V	75	60	542.5	140	200	100	1.15	F	1775	50℃
36	TXC405T100U4B	208~230/460V	100	60	725	125	200	100	1.15	F	1780	50℃
37	TXC444T125U4B	460	125	60	907.5	110	200	100	1.15	F	1780	50℃
38	TXC445T150U4B	460	150	60	1085	110	200	100	1.15	F	1780	50℃
39	TXC447T200U4B	460	200	60	1450	100	200	90	1.15	F	1780	50℃
40	TXC449T250U4B	460	250	60	1825	80	175	75	1.15	F	1780	50℃
41	TXC 145T1U6B	208~230/460V	1	60	15	170	265	120	1.15	F	1150	50℃
42	TXC 182T1.5U6B	208~230/460V	1.5	60	20	165	250	115	1.15	F	1150	50℃
43	TXC 184T2U6B	208~230/460V	2	60	25	160	240	110	1.15	F	1150	50℃
44	TXC 213T3U6B	208~230/460V	3	60	32	155	230	110	1.15	F	1150	50℃
45	TXC 215T5U6B	208~230/460V	5	60	46	150	215	105	1.15	F	1160	50℃
46	TXC 254T7.5U6B	208~230/460V	7.5	60	63.5	150	200	105	1.15	F	1160	50℃
47	TXC 256T10U6B	208~230/460V	10	60	81	150	200	105	1.15	F	1165	50℃
48	TXC 284T15U6B	208~230/460V	15	60	116	140	200	100	1.15	F	1165	50℃
49	TXC 286T20U6B	208~230/460V	20	60	145	135	200	100	1.15	F	1170	50℃
50	TXC 324T25U6B	208~230/460V	25	60	182.5	135	200	100	1.15	F	1170	50℃
51	TXC 326T30U6B	208~230/460V	30	60	217.5	135	200	100	1.15	F	1175	50℃
52	TXC364T40U6B	208~230/460V	40	60	290	135	200	100	1.15	F	1175	50℃
53	TXC365T50U6B	208~230/460V	50	60	362.5	135	200	100	1.15	F	1180	50℃
54	TXC404T60U6B	208~230/460V	60	60	435	135	200	100	1.15	F	1180	50℃
55	TXC405T75U6B	208~230/460V	75	60	542.5	135	200	100	1.15	F	1180	50℃
56	TXC444T100U6B	208~230/460V	100	60	725	125	200	100	1.15	F	1180	50℃
57	TXC445T125U6B	460	125	60	907.5	125	200	100	1.15	F	1180	50℃
58	TXC447T150U6B	460	150	60	1085	120	200	100	1.15	F	1180	50℃
59	TXC449T200U6B	460	200	60	1450	120	200	100	1.15	F	1180	50℃

TECHNICAL DATA

PRODUCT FEATURES			
Model	F-TDC444TS125U2B		
Standard	**NEMA MG-1**	Output rating	**125 HP**
Frequency	**60 Hz**	Mounting	**Foot-mounted**
Voltage	**380-400 V**	Flange	**Without**
Number of poles	**2**	Mounting	**F-1**
Degree of Protection	**IP23**	Terminal box[1]	**Left position**
Synchronous speed	**3600 rpm**	Enclosure	**IC01 - ODP**

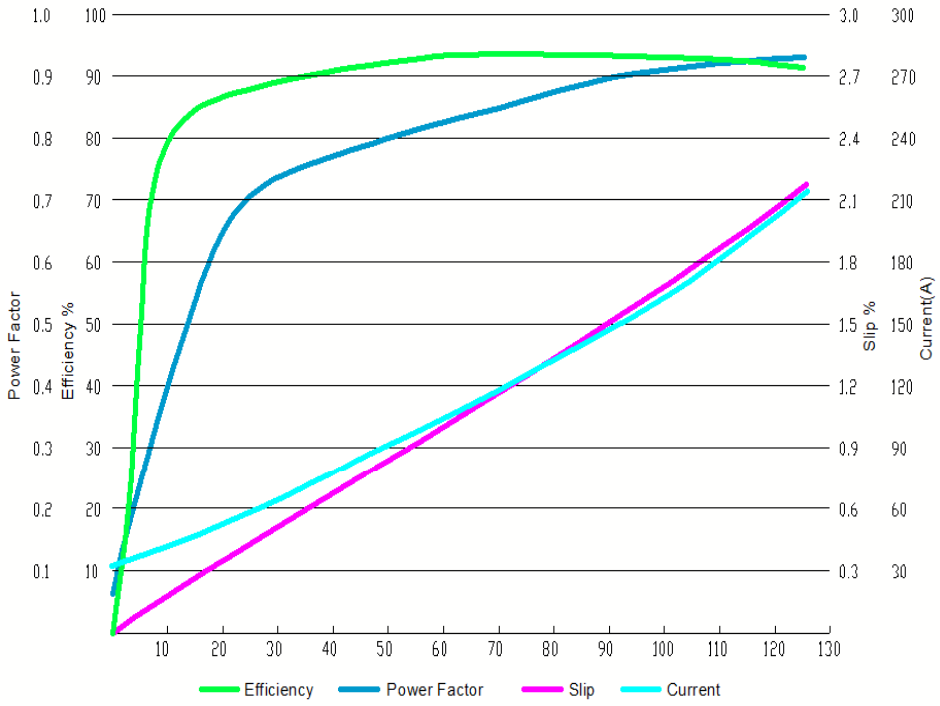
PRODUCT DETAILS			
Frame	**444TS**	Frequency	**60 Hz**
Output	**125 HP (93 kW)**	Number of Poles	**2**
Slip	**0.01667**	Rated speed	**3540 rpm**
Rated voltage	**380-400 V**	Temperature rise	**80 K**
Rated current	**167.4-159 A**	Duty Cycle	**Cont.(S1)**
L. R. Amperes	**1092-1035 A**	Starting Method	**Wye-Delta**
LRC	**6.5x(Code G)**	Ambient temperature	**50°C**
No load current	**35-32 A**	Altitude	**1000 m.a.s.l.**
Rated torque	**185.53 ft.lb**	Noise level	**98.0 dB(A)**
Locked rotor torque	**100%**	Approx. weight	**1130 lb**
Breakdown torque	**200%**	Service factor	**1.15**
Locked rotor time	**30s (cold) 15s (hot)**	Design	**B**
Moment of inertia	**14.16 ft.lb^2**	Insulation Class	**F**
Efficiency/Power factor	Load	Efficiency	Power factor
	100%	**93**	**0.91**
	75%	**93.4**	**0.86**
	50%	**92.3**	**0.8**
Bearing	Drive-end	**6316C3**	
	Opposite drive-end	**6316C3**	

LISTED
FIRE PUMP MOTOR
EX26635

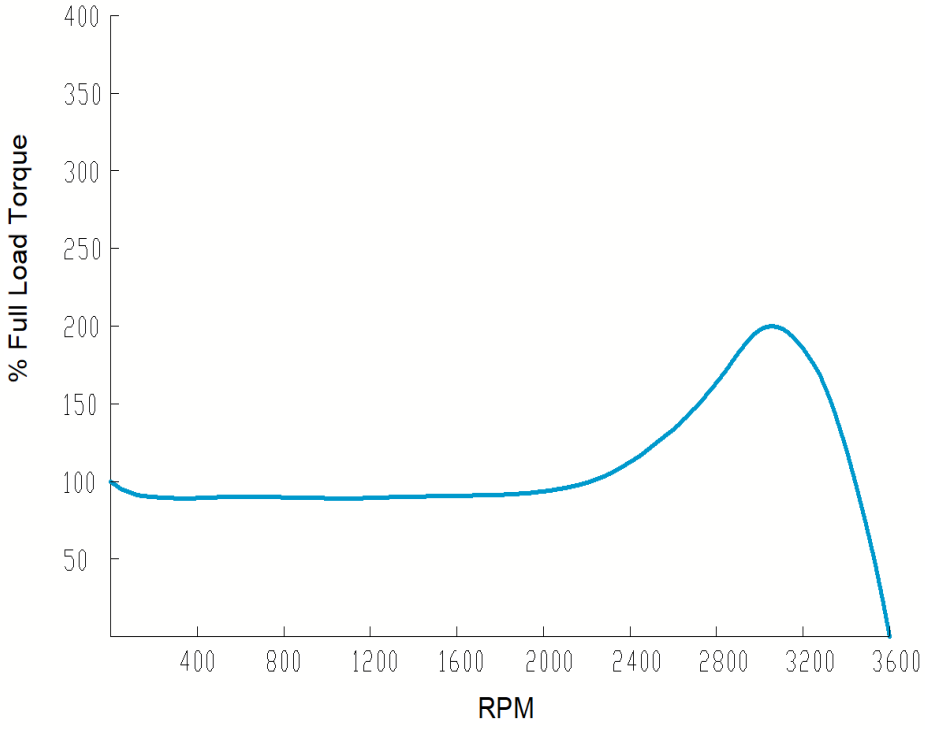
PERFORMANCE CURVES

Torque Values	Torque (lb-ft)	Torque Values	Torque (lb-ft)
Locked Rotor Torque	**185.53**	Breakdown Torque	**371.06**
Pull-Up Torque	**166.98**	Full Load Torque	**185.53**

Load Performance Curve

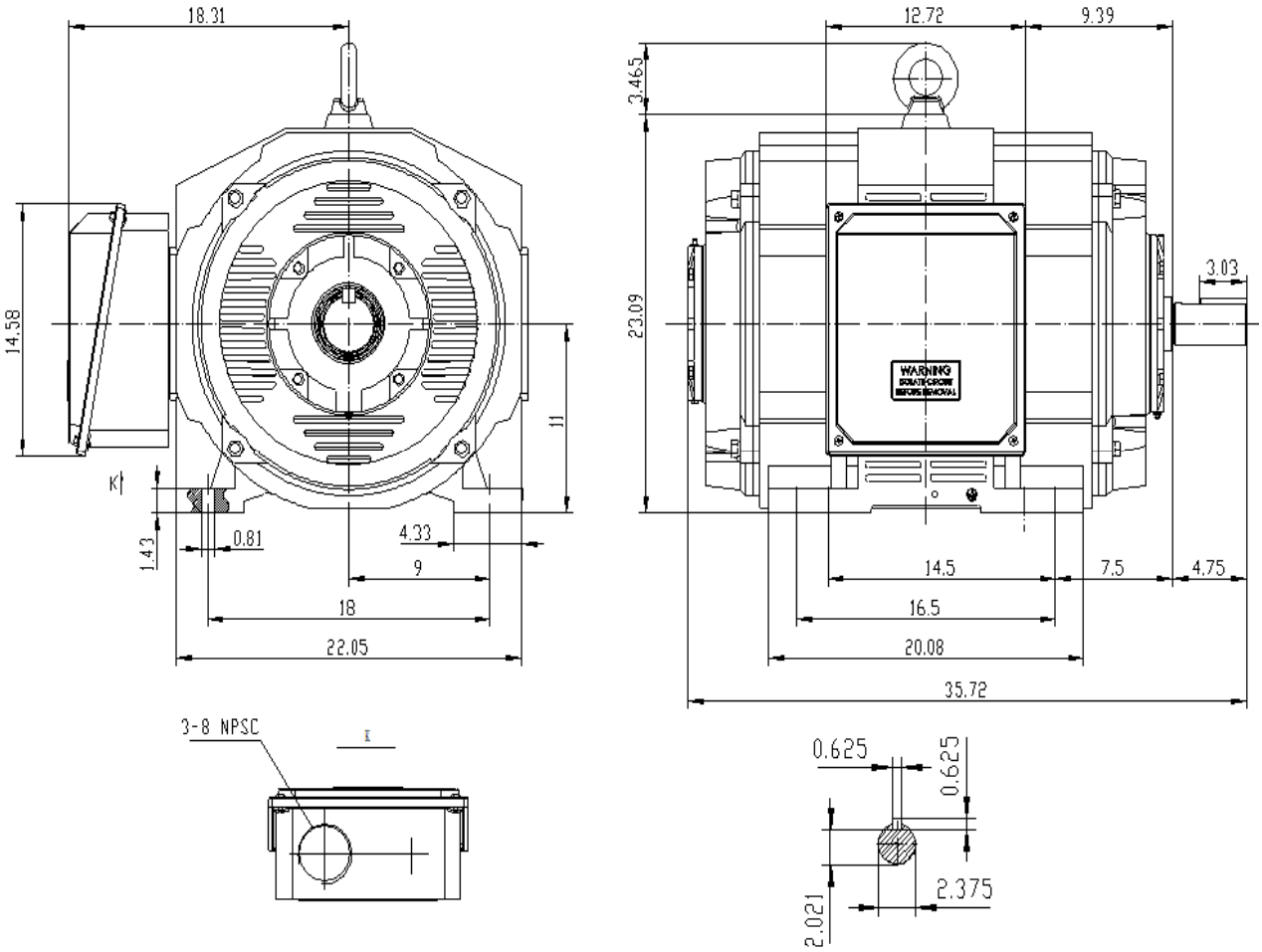


Torque Speed(T-n)Curve



DRAWINGS

Frame size	**444TS**	Frame Material	**Cast iron**
Poles	**2**	DWG NO	**CY232.A16.001**
Units	**Inch**		



MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

ELECTRIC PUMP
CONTROLLER SPECIFICATIONS

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

GPx Series

Full Service Electric Fire Pump Controller

Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

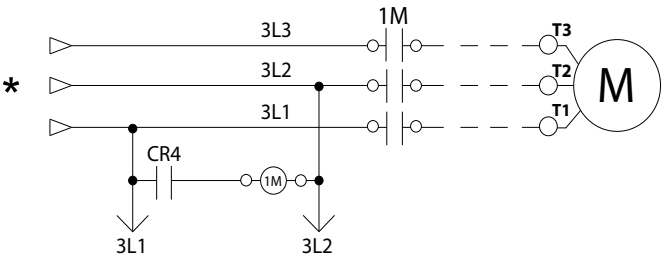
Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.

c UL us FM APPROVED N.Y.C. APPROVED CE

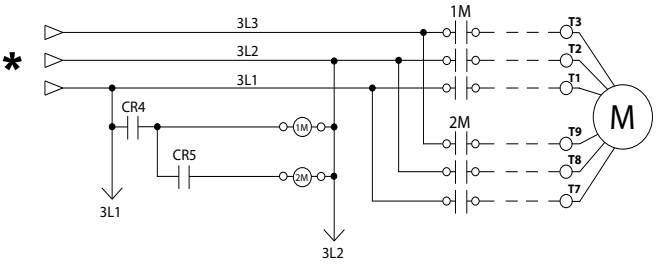
June 2022

Select starting method

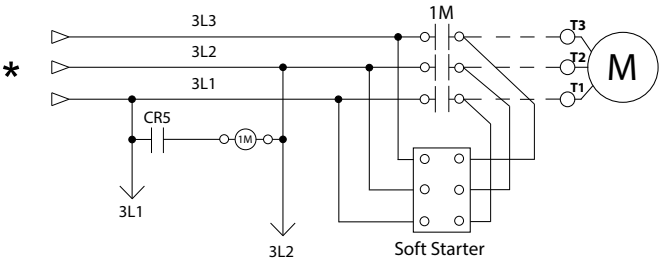
☐ **Model GPA**
Across the line



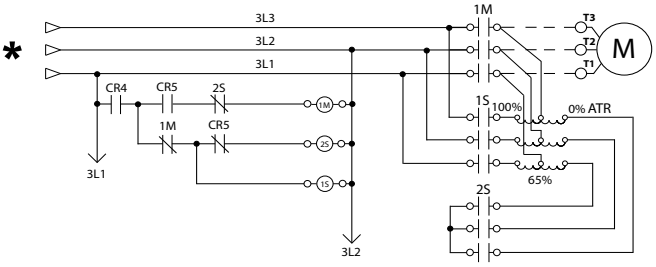
☐ **Model GPP**
Partwinding



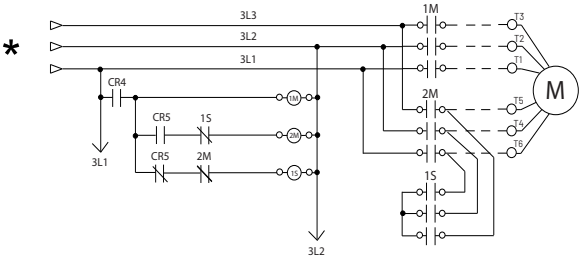
☐ **Model GPS**
Soft Start Soft Stop



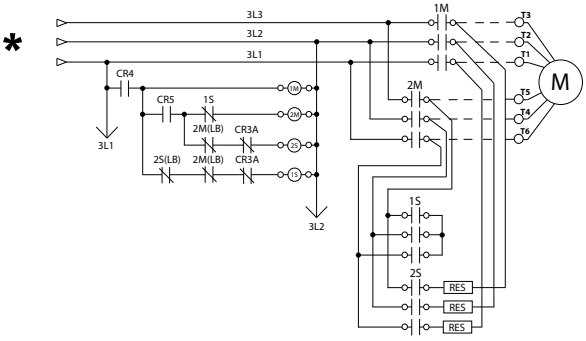
☐ **Model GPR**
Autotransformer



☑ **Model GPY**
Wye-Delta Open



☐ **Model GPW**
Wye-Delta Closed



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

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

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

*Please see Disconnecting Means details on page 4

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

Audible Alarm	6” alarm bell - 85 dB at 10ft. (3m)
Visual Indications	• Power available • Motor run • Periodic test • Manual start • Deluge valve start • Remote automatic start • Remote manual start • Emergency start • Pump on demand/Automatic start • Pump room temperature (ºF or ºC) • Lockout
Visual & Audible Alarms	Visual • Control voltage not healthy • Invalid cut-in • Lock rotor current • Loss of power • Low ambient temperature • Low water level • Motor trouble • Phase reversal (normal power) • Overcurrent • Overvoltage • Phase loss L1 • Phase loss L2 • Phase loss L3 • Phase unbalanced • Pressure transducer fault detected • Pump on demand • Pump room alarm • Service required • Undercurrent • Undervoltage • Check weekly test solenoid • Weekly test cut-in reached Visual and audible • Fail to start
Remote Alarm Contacts	DPDT-8A-250V.AC • Power available • Phase reversal • Motor run • Common pump room alarm (field re-assignable)** • Overvoltage • Undervoltage • Phase unbalance • Low pump room temperature • High Pump room temperature • Common motor trouble (field re-assignable)** • Overcurrent • Fail to start • Undercurrent • Ground fault • Free (field programmable)**

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

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

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

☐	A4	Flow switch provision
☐	A8	Foam pump application w/o pressure transducer and run test solenoid valve.
☐	A9	Low zone pump control function
☐	A10	Middle zone pump control function
☐	A11	High zone pump control function
☐	A13	Non-pressure actuated controller w/o pressure transducer and run test solenoid valve
☐	A16	Lockout/interlock circuit from equipment installed inside the pump room
☐	B11	Built in alarm panel (120V.AC supervisory power) providing indication for: • Audible alarm & silence pushbutton for motor run, phase reversal, loss of phase. • Pilot lights for loss of phase & supervisory power available
☐	B11B	Built in alarm panel same as B11 but 220-240VAC supervisory power
☐	B19A	High motor temperature c/w thermoster relay and alarm contacts (DPDT)
☐	B19B	High motor temperature c/w PT100 relay and alarm contacts (DPDT)
☐	B21	Ground fault alarm detection c/w visual indication and alarm contact (DPDT)
☐	C1	Extra motor run alarm contact (DPDT)
☐	C4	Periodic test alarm contact (DPDT)
☐	C6	Low discharge pressure alarm contact (DPDT)
☐	C7	Low pump room temperature alarm contact (DPDT)
☐	C10	Low water reservoir level alarm contact (DPDT)
☐	C11	High electric motor temperature alarm contact (DPDT)
☐	C12	High electric motor vibration c/w visual indication and alarm contact (DPDT)
☐	C14	Pump on demand / automatic start alarm contact (DPDT)
☐	C15	Pump fail to start alarm contact (DPDT)
☐	C16	Control voltage healthy alarm contact (DPDT)
☐	C17	Flow meter valve loop open c/w visual indication and alarm contact (DPDT)
☐	C18	High water reservoir level c/w visual indication and alarm contact (DPDT)

☐	C19	Emergency start alarm contact (DPDT)
☐	C20	Manual start alarm contact (DPDT)
☐	C21	Deluge valve start alarm contact (DPDT)
☐	C22	Remote automatic start alarm contact (DPDT)
☐	C23	Remote manual start alarm contact (DPDT)
☐	C24	High pump room temperature alarm contact (DPDT)
☐	C25	Second set of standard alarm contacts (DPDT) (Typical for city of Los Angeles and Denver)
☐	Cx	Additional visual and alarm contact (Specify function) (DPDT)
☐	D1	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
☐	D1A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
☐	D5	Pressure transducer and run test solenoid valve for fresh water rated for 0-500PSI (for factory calibration purposes only)
☐	D5D	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
☐	D10	Omit mounting feet (when applicable)
☐	D13	High withstand rating for: • 200V to 208V @ 150HP max. = 150kA* • 200V to 208V @ 200HP = 100kA* • 220V to 240V @ 200HP max. = 150kA* • 220V to 240V @ 250HP = 100kA* • 380V to 415V @ 300HP max. = 150kA* • 380V to 415V @ 350HP to 450HP = 100kA* • 440V to 480V @ 400HP max. = 150kA* • 440V to 480V @ 450HP to 500HP = 100kA* • 600V @ 500HP max. = 100kA*
☐	D13A	High withstand rating for: • 380V to 480V = 65kA* • 600V = 25kA*
☐	D13B	High withstand rating for: • 200V to 208V @ 150HP max. = 200kA* • 220V to 240V @ 200HP max. = 200kA* • 380V to 415V @ 300HP max. = 200kA* • 440V to 480V @ 400HP max. = 200kA*
☐	D14	Anti-condensation heater & thermostat
☐	D14A	Anti-condensation heater & humidistat
☐	D14B	Anti-condensation heater & thermostat & humidistat

*For fire pump controller section only.
Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

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

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

Additional Options:

☐ _____

☐ _____

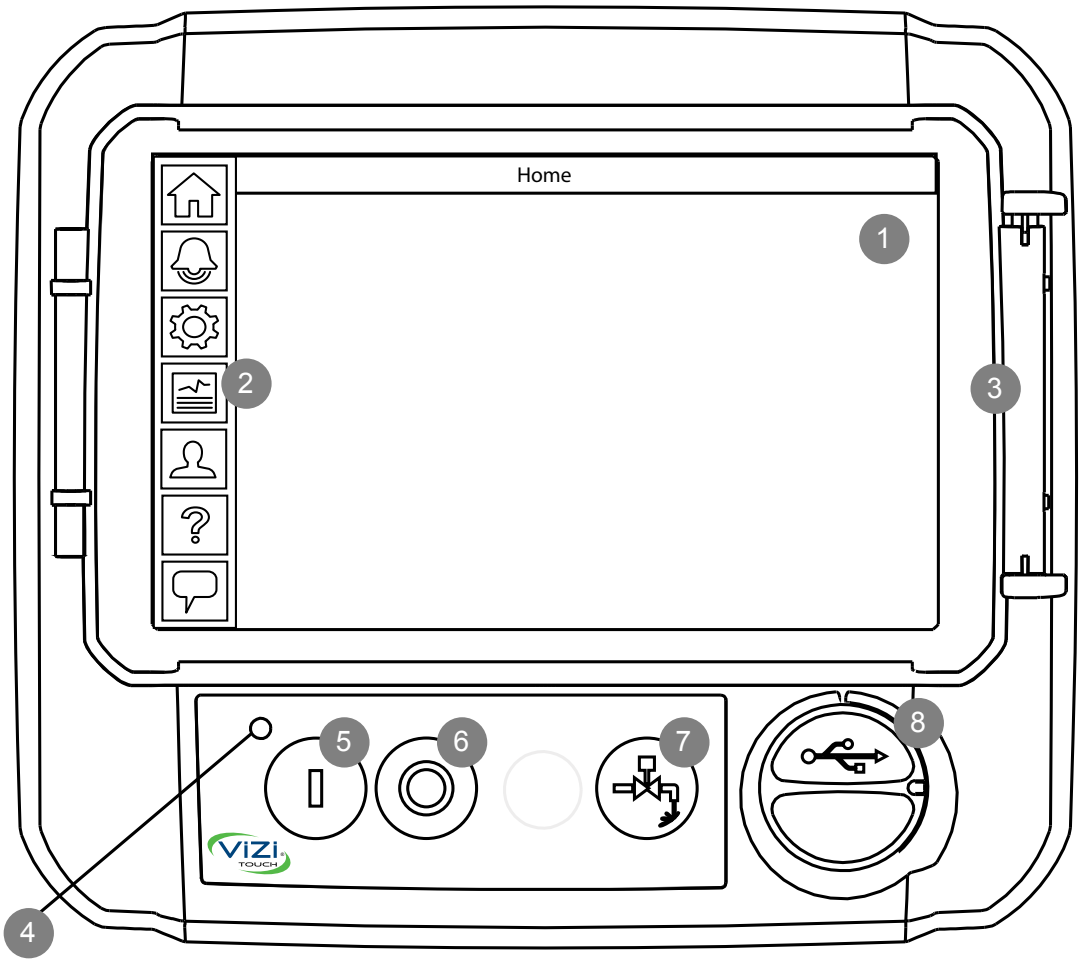
☐ _____

☐ _____

☐ _____

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

ViZiTouch V2 Operator Interface



1 - Color touch screen
2 - Onscreen menu
- HOME page
- ALARM page
- CONFIGURATION page
- HISTORY page
- SERVICE page
- MANUAL page
- LANGUAGES page

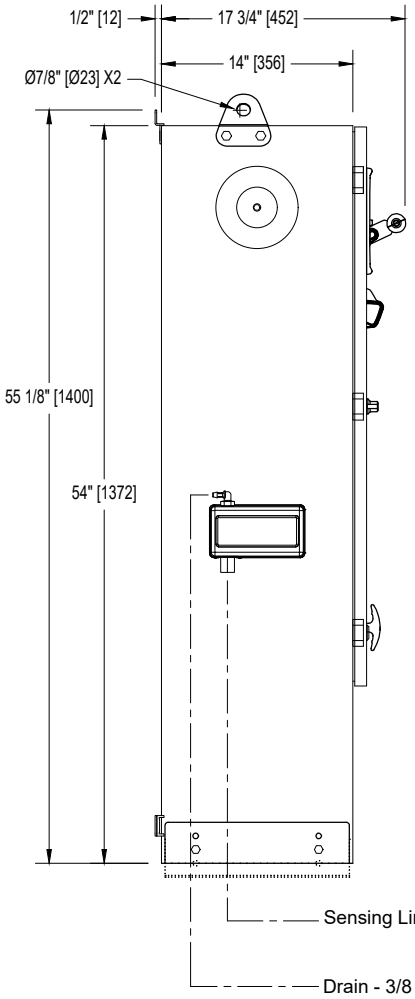
3 - Screen protector
4 - Power LED (3 colors)
5 - START button
6 - STOP button
7 - RUN TEST button
8 - USB port

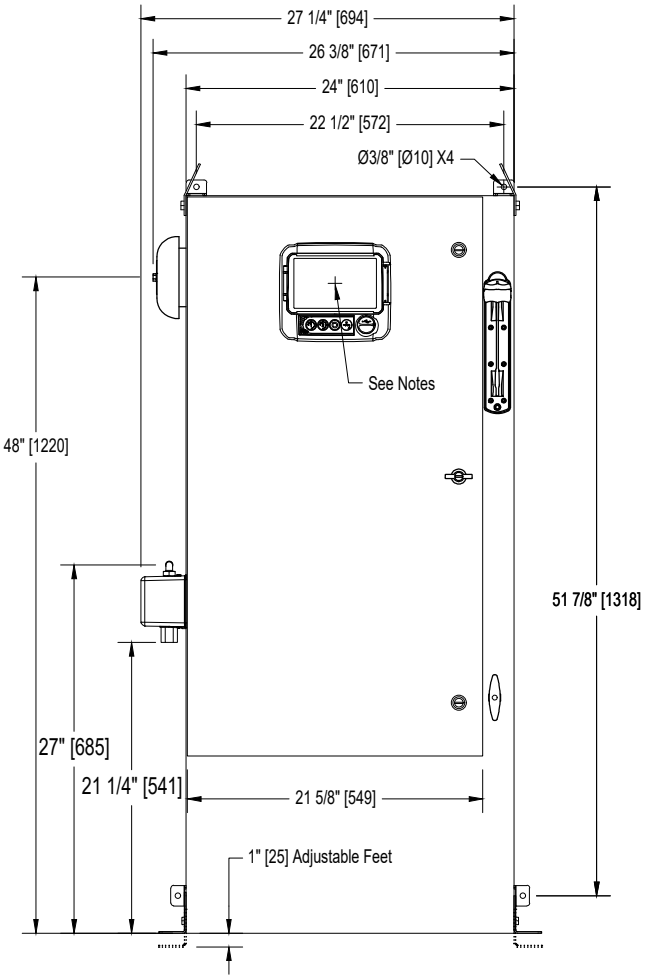
Electric Fire Pump Controller

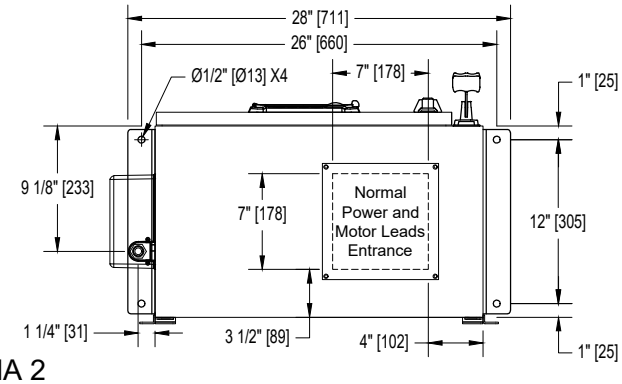
Model: GPA/GPP/GPY

Dimensions

Built to the latest edition of the NFPA 20 standard







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

Notes:

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

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

Projection

TORNATECH

NYC Dpt of Building Approved

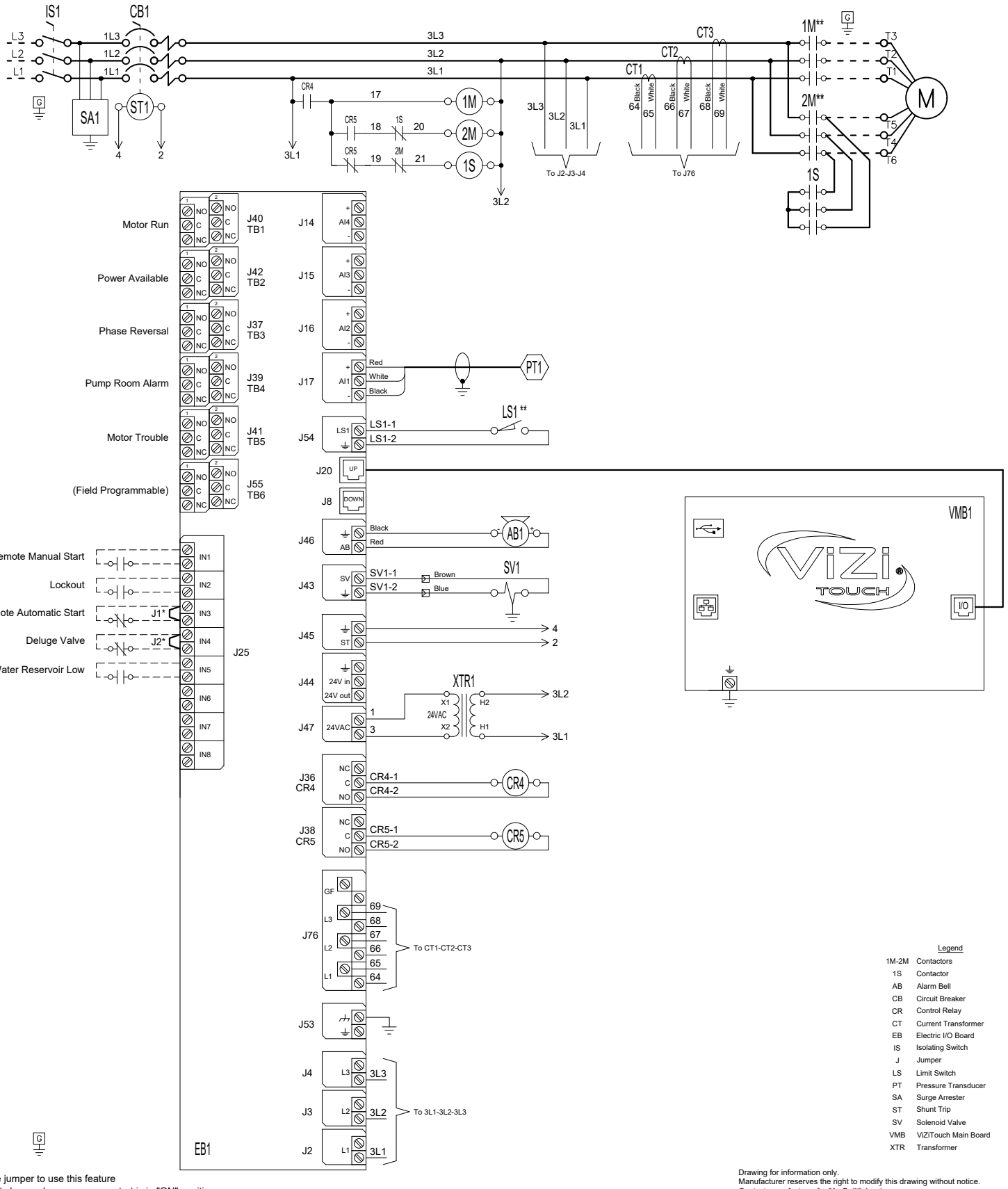
REV.	DESCRIPTION	DD/MM/YY	Drawing number
4.	Removed Seismic logo (optional)	18/05/22	GPX-DI261 /E
3.	HP Table Modified	22/12/20	
2.	New Logo	10/05/18	CDL

Electric Fire Pump Controller
Reduced Voltage / Wye-Delta (Open Transition)

Model: GPY

Wiring schematic

Built to the latest edition of the NFPA 20 standard



Legend

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

* Remove jumper to use this feature

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

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

NYC Dpt of Building Approved

REV.	DESCRIPTION	DD/MM/YY	Drawing number
3	Removed Seismic logo (optional)	18/05/22	GPY-WS600 /E
2	Update Logo	23/04/18	
1	Removed (fail safe) text from Power Available relay	20/02/17	CDL

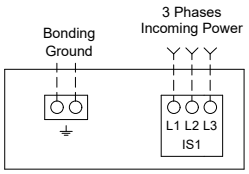
Electric Fire Pump Controller

Model: GPX

Terminal Diagram and Sizing for Isolating Switch

Built to the latest edition of the NFPA 20 standard

Power Terminals



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

COPPER CONDUCTORS for Isolating Switch (IS1).
Field Wiring According to Bending Space (AWG or MCM). Terminals L1 - L2 - L3

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

Bending Space	12 " (305 mm)				16 " (406 mm)						
HP / Voltage	75	100	125	150	200	250	300	350	400	450	500
208	2x (1/0 to 500)	2x (2/0 to 500)	2x (4/0 to 500)	2x (250 to 500)	3x (4/0 to 500)	--------	--------	--------	--------	--------	--------
220 to 240	1x (250)	2x (2/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (350 to 500)	3x (250 to 500)	--------	--------	--------	--------	--------
380 to 416	1x (1/0 to 3/0)	1x (3/0 to 250)	1x (250)	2x (1/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (400 to 500)	3x (250 to 500)	3x (300 to 500)	--------
440 to 480	1x (1 to 3/0)	1x (2/0 to 3/0)	1x (3/0 to 250)	1x (4/0 to 250)	2x (1/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (350 to 500)	2x (400 to 500)	3x (250 to 500)
600	1x (3 to 1/0)	1x (1 to 3/0)	1x (2/0 to 3/0)	1x (3/0 to 250)	1x (250)	2x (2/0 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (250 to 500)	2x (300 to 500)	2x (350 to 500)
Bending Space	5 " (127 mm)	8 " (203 mm)			12 " (305 mm)						

ALUMINUM CONDUCTORS for Isolating Switch (IS1).
Field Wiring According to Bending Space (AWG or MCM). Terminals L1 - L2 - L3

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

Bending Space	12 " (305 mm)				16 " (406 mm)						
HP / Voltage	75	100	125	150	200	250	300	350	400	450	500
208	2x (2/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (350 to 500)	3x (300 to 500)	--------	--------	--------	--------	--------	--------
220 to 240	1x (350) ** N/A	2x (3/0 to 500)	2x (250 to 500)	2x (300 to 500)	2x (500)	3x (400 to 500)	--------	--------	--------	--------	--------
380 to 416	1x (3/0)	1x (250 to 350)	1x (350) ** N/A	2x (3/0 to 500)	2x (4/0 to 500)	2x (300 to 500)	2x (500)	3x (300 to 500)** 2x (500) 90°C *	3x (350 to 500)	3x (400 to 500)	--------
440 to 480	1x (1/0 to 3/0)	1x (3/0)	1x (250)	1x (300 to 350)** 1x (250) 90°C *	2x (3/0 to 500)	2x (250 to 500)	2x (300 to 500)	2x (400 to 500)	2x (500)	2x (500) 90°C *	3x (350 to 500)
600	1x (1 to 1/0)	1x (2/0 to 3/0)	1x (3/0) 90°C *	1x (4/0 to 250)	1x (350 to 500)	2x (3/0 to 500)	2x (4/0 to 250)	2x (300 to 500)	2x (350 to 500)	2x (400 to 500)	2x (500)
Bending Space	5 " (127 mm)	8 " (203 mm)			12 " (305 mm)						

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

Drawing for information only.
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Contact manufacturer for "As Built" drawing.

NYC Dpt of Building Approved

REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Removed Seismic logo (optional)	18/05/22	GPX-TD612 1/2 /E
0	First issue	22/12/20	CDL

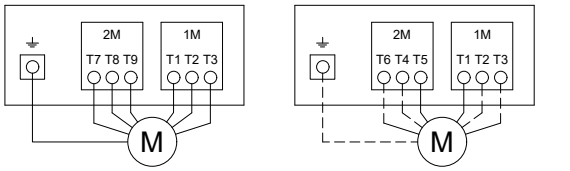
Electric Fire Pump Controller

Model: GPX

Terminal Diagram and Sizing For GPP,GPY & GPW

Built to the latest edition of the NFPA 20 standard

Motor Terminals



Model : GPP Models : GPW & GPY

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

COPPER CONDUCTORS for Motor Connection (1M-2M).
Field Wiring According to Bending Space (AWG or MCM). Terminals T1-T2-T3-T4-T5-T6-T7-T8-T9

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

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

ALUMINUM CONDUCTORS for Contactor (1M-2M).
Field Wiring According to Bending Space (AWG or MCM). Terminals T1-T2-T3-T4-T5-T6-T7-T8-T9

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

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

*For standard enclosure, use 90°C aluminium wire. Consult Factory for Use of Conductors Rated Lower than 90°C.
**Option V659 required.

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

TORNATECH

NYC Dpt of Building Approved

REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Removed Seismic logo (optional)	18/05/22	GPX-TD612 2/2 /E
0	First issue	22/12/20	CDL

Electric Fire Pump Controller

Model: GPX

Terminal Diagram and Sizing

Built to the latest edition of the NFPA 20 standard

Control Terminals (EB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

Remote Manual Start	Close to start pump	IN1	J25
Lockout	Close to block start	IN2	J25
Remote Automatic Start	Open to start pump	J1* IN3	J25
Deluge Valve	Open to start pump	J2* IN4	J25

Alarm Inputs (EB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

Water Reservoir Low	Close to signal alarm	IN5	J25

Network Connection (VMB1)

Shielded Female Connector RJ45

Modbus TCP/IP — I/O

Remote Alarm Terminals (EB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

Motor Run	Normally open Closes to alarm / Normally closed Opens to alarm	J40 TB1
	Normally open Closes to alarm / Normally closed Opens to alarm	
Power Available	Normally open Closes to alarm / Normally closed Opens to alarm	J42 TB2
	Normally open Closes to alarm / Normally closed Opens to alarm	
Phase Reversal	Normally open Closes to alarm / Normally closed Opens to alarm	J37 TB3
	Normally open Closes to alarm / Normally closed Opens to alarm	
Pump Room Alarm **	Normally open Closes to alarm / Normally closed Opens to alarm	J39 TB4
	Normally open Closes to alarm / Normally closed Opens to alarm	
Motor Trouble **	Normally open Closes to alarm / Normally closed Opens to alarm	J41 TB5
	Normally open Closes to alarm / Normally closed Opens to alarm	
(Field Programmable ***)	Normally open Closes to alarm / Normally closed Opens to alarm	J55 TB6
	Normally open Closes to alarm / Normally closed Opens to alarm	

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

Drawing for information only.
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Contact manufacturer for "As Built" drawing.

NYC Dpt of Building Approved

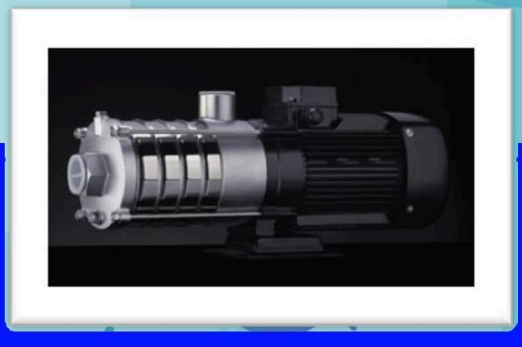
REV.	DESCRIPTION	DD/MM/YY	Drawing number
3	Removed Seismic logo (optional)	18/05/22	GPX-TD603 /E
2	Revised logo	18/06/18	
1	General Revision (added AL coverage)	10/07/17	CDL

MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

JOCKEY PUMP

0	***SUBMITTED FOR APPROVAL***				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

PACIFIC STAINLESS STEEL WATER PUMP

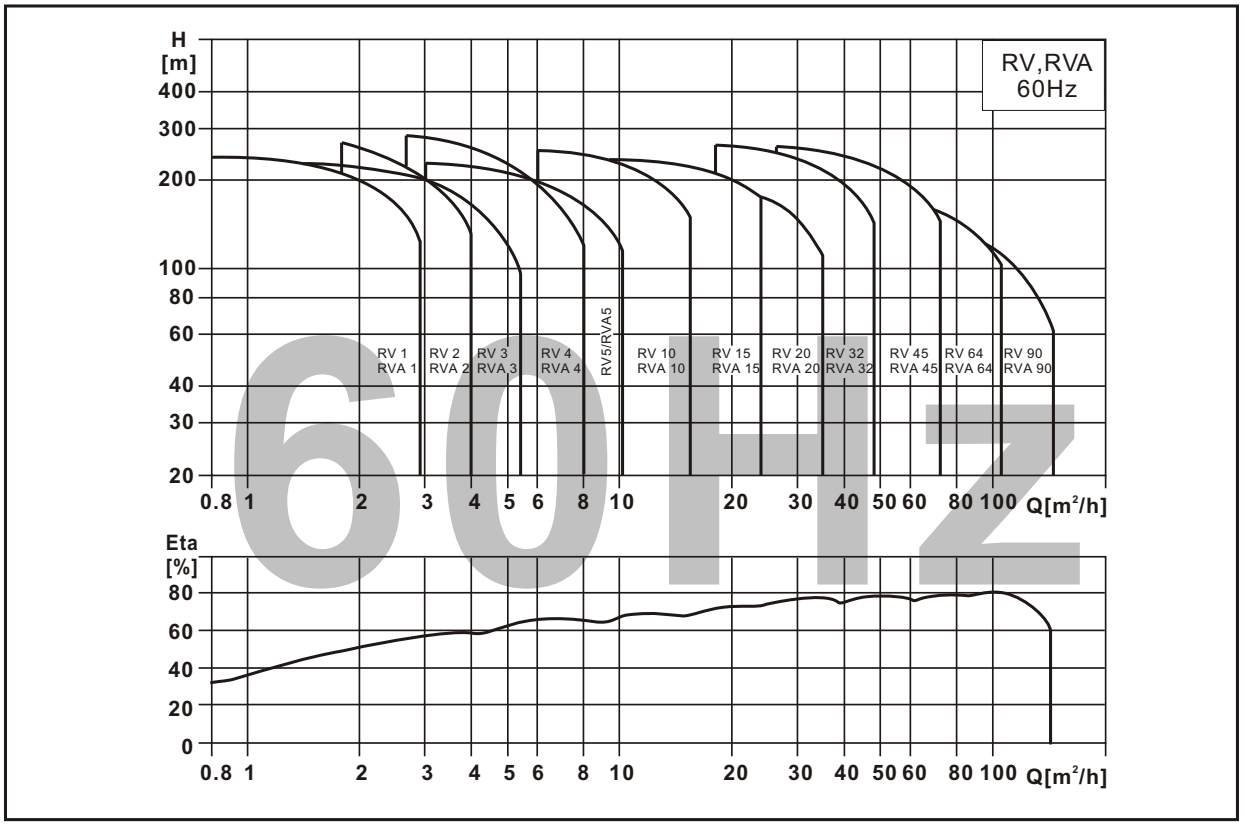


HIGH PERFORMANCE PUMPS FOR ALL WATER APPLICATIONS

Content

Product introduction

Performance range



Applications

Application	RVA	RV
Water supply		
Filtration and transfer at waterworks	●	●
Distribution from waterworks	●	●
Pressure boosting in mains	●	●
Pressure boosting in high-rise buildings,hotels,etc.	●	●
Pressure boosting for industrial water supply	●	●
Industry		
Pressure boosting		
Process water systems	●	●
Washing and cleaning systems	●	●
Vehicle washing tunnels	●	●
Fire fighting systems	●	●
Liquid transfer		
Cooling and air-conditioning systems(refrigerants)	●	●
Boiler feed and condensate systems	●	●
Machine tools (cooling lubricants)	●	●
Aquafarming	●	●
Transfer		
Oil and alcohol	●	●
Glycol and coolants	●	●
Water treatment		
Ultra-filtration systems	●	○
Reverse osmosis systems	●	○
Softening, ionising, demineralizing systems	●	○
Distillation systems	●	○
Separators	●	○
Swimming baths	●	●
Irrigation		
Field irrigation(flooding)	●	●
Sprinkler irrigation	●	●
Drip-feed irrigation	●	●

● Recommended pump model
○ Option pump model

Product range

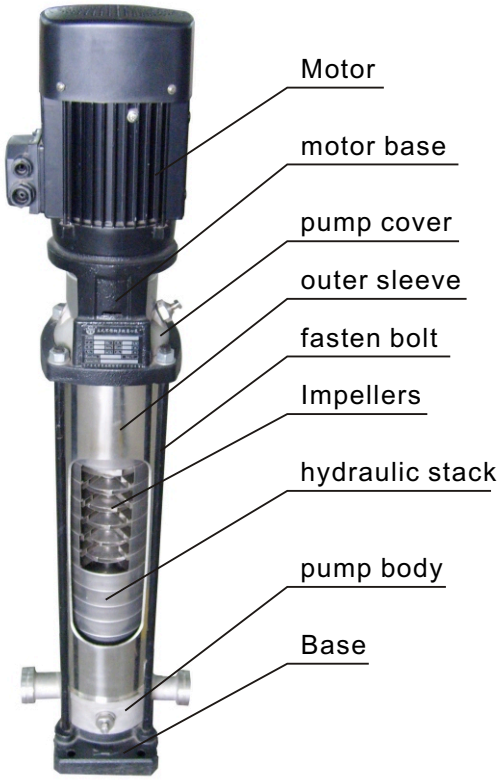
Range	RV1 RVA1	RV2 RVA2	RV3 RVA3	RV4 RVA4	RV5 RVA5	RV10 RVA10	RV15 RVA15	RV20 RVA20	RV32 RVA32	RV45 RVA45	RV64 RVA64	RV90 RVA90
Nominal rated [m^3/h]	1	2	3	4	5	10	15	20	32	45	64	90
Temperature range [℃]	-20~+104											
Temperature on range [℃]	-40~+180								-40~+180			
Max Efficiency [%]	44	45	56	58	65	66	68	69	77	78	80	81
RV pump												
Flow range [m^3/h]	0.7-2.4	1-3.2	1.2-4.5	2-4.8	2.5-8	5-13	9-24	10-29	14-40	20-56	30-85	40-120
Max Pressure [bar]	22	25	24	25	24	22	23	25	28	26	20	20
High Pressure on request [bar]	47	47	47	47	47	47	47	47	39	40	39	39
Motor power [kW]	0.37-2.2	0.37-3	0.37-3	0.37-4	0.37-5.5	0.37-7.5	1.1-15	1.1-18.5	1.5-30	3-45	4-45	5.5-45
Material type												
RV cast iron, S.S EN1.4301/AISI 304	●	●	●	●	●	●	●	●	●	●	●	●
RVA S.S EN1.4301/AISI 304	●	●	●	●	●	●	●	●	●	●	●	●
RVN S.S EN1.4401/AISI 316	●	●	●	●	●	●	●	●	●	●	●	●
RV pump pipe connection												
Flange	DN25 DN32	DN25 DN32	DN25 DN32	DN25 DN32	DN25 DN32	DN40	DN50	DN50	DN65	DN80	DN100	DN100
Flange on request	–	–	–	–	–	DN50	DN65	DN65	DN80	DN100	DN125	DN125
RVA/RV pump pipe connection												
colomn pipe thread★	G1 G1¼	G1 G1¼	G1 G1¼	G1 G1¼	G1 G1¼	G1½ G2	G2½	G2½	–	–	–	–
colomn pipe thread on request★	G1½	G1½	G1½	G1½	G1½	–	G2	G2	–	–	–	–
Flange	DN25 DN32	DN25 DN32	DN25 DN32	DN25 DN32	DN25 DN32	DN40	DN50	DN50	DN65	DN80	DN100	DN100
Flange on request	–	–	–	–	–	DN50	DN65	DN65	DN80	DN100	DN125	DN125
Cuttingferrule joint [PJE] ★	G1¼ DN32	G1¼ DN32	G1¼ DN32	G1¼ DN32	G1¼ DN32	G2 DN50	G2 DN50	G2 DN50	–	–	–	–

★NPT thread are on request

Pump

RVA and RV are non-self priming vertical multistage centrifugal pump, the pumps are available with standard motor, the inlet and outlet are located at the pump bottom at the same plane (inline type).
All pumps are equipped with a maintenance-free mechanical seal set of the cartridge type.

Fig.1 RVA



Motor

RVA and RV are fitted with a totally enclosed、fan-cooled、2-pole、three-phase standard motor. From 0.37kW to 2.2kW, are also available with single-phase motor.(1*220-230V/240V).

Motor Protection

Single-phase motor have a built-in thermal overload switch.
Three-phase motors must be connected to a motor protective circuit breaker according to local regulations.

Ambient temperature

Ambient temperature: maximum+40℃, if the ambient temperature exceeds +40℃, or the pump is installed at an altitude exceeding 1000 meters, the motor must not be fully loaded due to the risk of overheating.
Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.
In such cases ,it may be necessary to use a motor with a higher rated output.

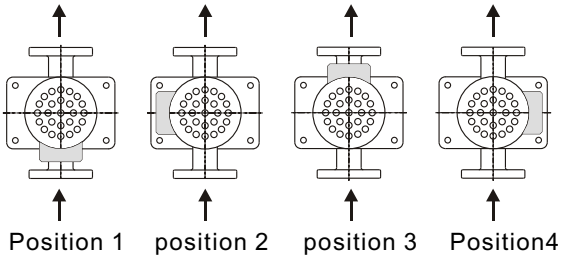
Terminal box positions

As standard the terminal box is mounted on the suction side of the pump, meanwhile, 0°,90°,180°,270° could be adjusted according to the following proceeding:

1. If necessary, disassembling the protective cover of the shaft connector, but did not disassembling the shaft connector.
2. Disassembling the motor fixation screws.
3. Turn the motor to the required direction.
4. Fasten the motor screws.
5. Install the shaft connector's protective cover.

The voltage and frequency are marked on the label, the correct power should be confirm with the label before usage.
To ensure the electric connection is conformity to the drawing marked on the label inside the terminal box.

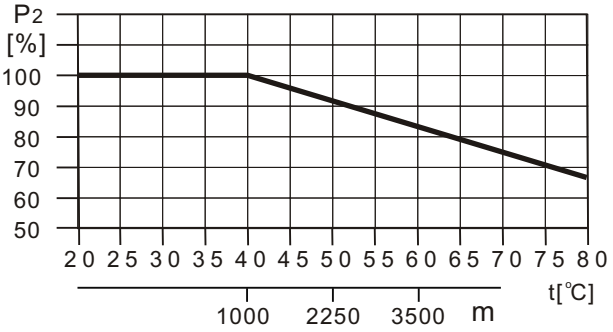
Fig2. Terminal box positions



Viscosity

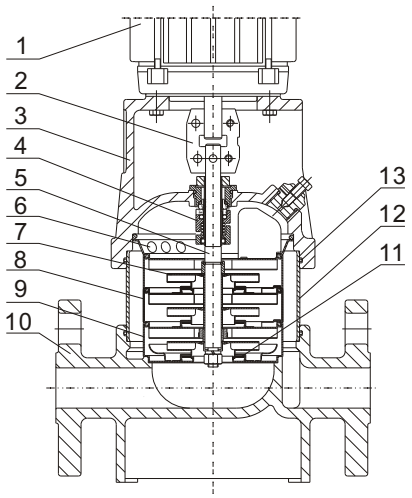
The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.
In such situations the pump should be fitted with a larger motor, if in doubt.

Fig.3 Relationship between motor output (P2) and temperature

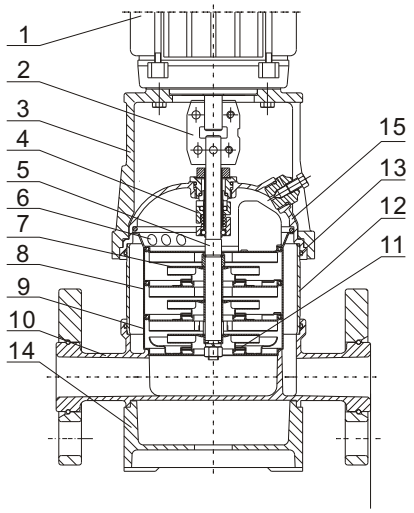


Example:
From the Fig.3, the pump is installed at an altitude exceeding altitude 3500 meters, P2 will decrease to 88%, if the ambient temperature is up to 70℃,P2 will decrease to 78%.

RV1,2,3,4,5
Sectional drawing



RVA1,2,3,4,5
Sectional drawing



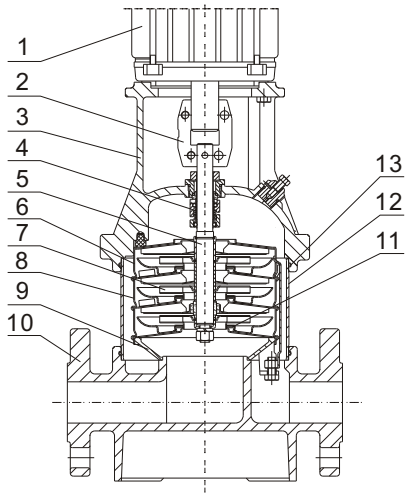
Material RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Castiron	EN-JL1030	ASTM25B
4	Mechanical seal			
5	Shaft	S.S		AISI420
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	Castiron	EN-JL1030	ASTM25B
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		

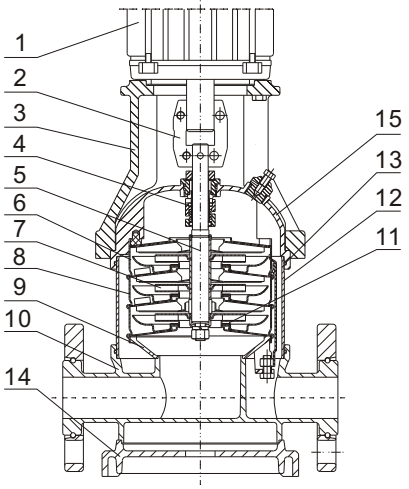
Material RVA

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Castiron	EN-JL1030	ASTM25B
4	Mechanical seal			
5	Shaft	S.S	1.4057	AISI431
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	S.S	1.4301	AISI304
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EDM/FKM		
14	Bottom base	Castiron	EN-JL1030	ASTM25B
15	Pump cover	S.S	1.4301	AISI304

RV10,15,20
Sectional drawing



RVA10,15,20
Sectional drawing



Material RV

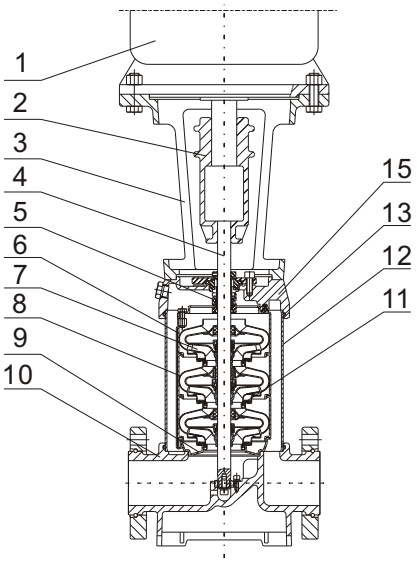
No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Mechanical seal			
5	Shaft	S.S		AISI420
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Settled cover	S.S	1.4301	AISI304
10	Pump body	Cast iron	EN-JL1030	ASTM25B
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		

Material RVA

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Mechanical seal			
5	Shaft	S.S	1.4057	AISI431
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Settled cover	S.S	1.4301	AISI304
10	Pump body	S.S	1.4301	AISI304
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		
14	Bottom base	Cast iron	EN-JL1030	ASTM25B
15	Pump cover	S.S	1.4301	AISI304

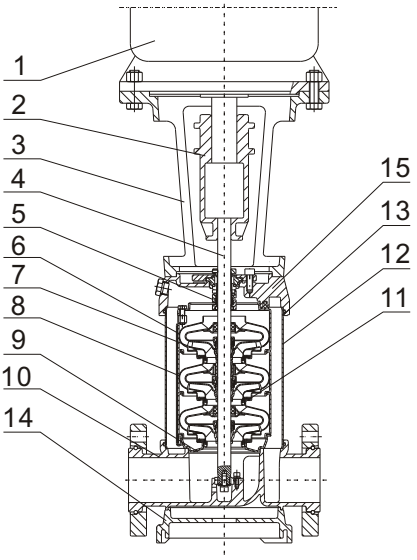
RV32,45,64,90

Sectional drawing



RVA32,45,64,90

Sectional drawing



Material RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Shaft	S.S		AISI420
5	Mechanical sea			
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	Cast iron	EN-JL1030	ASTM25B
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		
14	Pump cover	Cast iron	EN-JL1030	ASTM25B

Material RVA

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Shaft	S.S	1.4057	AISI431
5	Mechanical seal			
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	S.S	1.4301	AISI304
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		
14	Bottom base	Cast iron	EN-JL1030	ASTM25B
15	Pump cover	S.S	1.4301	AISI304

Model instruction

RV/RVA1,2,3,4,5,10,15 and 20……

RV 32 -10 -1-F-J1-A-A01-I-E-HURV-C

- Model
- Nominal flow(m^3/h)
- Number of impellers
- small impeller (0 means no)
- Pump body
- Pump cover / mechanical
- shaft material
- Mechanical seal
- Plastic parts
- Outer sleeve, Hydraulic stack , impeller
- Motor
- Frame

Codes

F-B2-A-A01-I-E-BUCE-C

Pump body code
RV1,2,3,4,5,10,15,20 serises
F: cast iron pump body +cast iron fixed flange
RV32,45,64,90,120,150,200 serises
F: cast iron pump body +cast iron ativity flange
RVA1,2,3,4,5,10,15,20 serises
F: canst stainless steel pump body + cast iron flange
G: cast stainless steel pump body + cast xtainless steel flange
H: cast stainless steel pump body +fixed welding stainless steel flange
K: cast stainless steel pump body+ fixed welding punching flange
P: cast stailess steel(PJE)
S: cast stailess steel (union): cylinder thread
Z: cast stailess steel (union): cone thread
B: cast stailess steel (union): NPT thread
RVA32,45,64,90,120,150,200 serises
F: cast stainless steel pump body +cast iron atifivty flange
G: cast stainless steel pumpb body +cast stailess steel atifivty flange
H: cast stainless steel pumpb body +cast stailess steel fixed flange

Pump cover / sealing machine code
RV1,2,3,4,5,10,15,20 serises
H1: cartridge type mechanical seal +cast iron pump cover
H2: seperate type mechanical seal +cast iron pump cover
RV32,45,64,90,120,150,200 serises
H1: cartridge type mechanical seal + cast iron pump cover
RVA1,2,3,4,5,10,15,20 serises
J1: cartridge type mechanical seal +cast stainless steel pump cover
J2: seperate type mechanical seal + cast stainless steel pump cover
B1: cartridge type mechanical seal + punching pump cover
B2: seperate type mechanical seal + punching pumpcover
RVA32,45,64,90,120,150,200 serises
J1: cartridge type mechanical seal + cast stainless steel pump cover
F1: cartridge type mechanical seal + cast stainless steel pump cover

Pump shaft material code
A:SUS304
B:SUS316
C:SUS431
D:2Cr13

Mechanical seal
H :type mechanical
B: separate type mechanical
Q: Silicon carbide
U:Tungsten carbide
C: graphite
E:EPDM
V:Viton

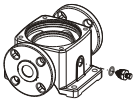
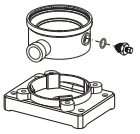
The connection model of pipeline
E : EPDM
V: Viton
N: NBR

Outer sleeve, Hydraulic stack, impeller
I :SUS304
G: SUS316

Motor

Frame
A:Small flange frame
(Pump head for V18 type motor)
B:The large flange frame
(pump head for V1 type motor)

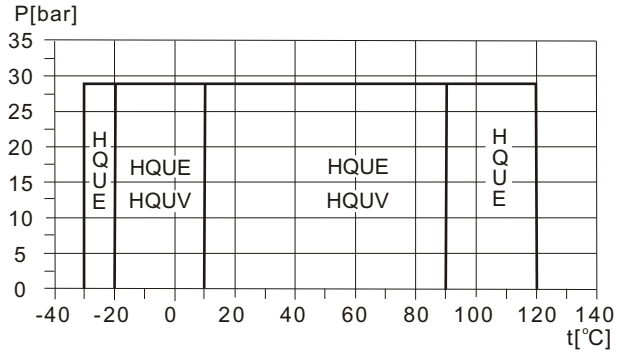
Maximum operating pressure and temperature range

	DIN-FGJ	UNION	PJE
			
	Max. permissible operating pressure		Liquid temperature range
RV,RVA1	25bar		-20℃ to +104℃
RV,RVA2	25bar		-20℃ to +104℃
RV,RVA3	25bar		-20℃ to +104℃
RV,RVA4	25bar		-20℃ to +104℃
RV,RVA5	25bar		-20℃ to +104℃
RV,RVA10-1→RV,RVA10-10	16bar		-20℃ to +104℃
RV,RVA10-12→RV,RVA10-17	25bar		-20℃ to +104℃
RV,RVA15-1→RV,RVA15-8	16bar		-20℃ to +104℃
RV,RVA15-9→RV,RVA15-12	25bar		-20℃ to +104℃
RV,RVA20-1→RV,RVA20-7	16bar		-20℃ to +104℃
RV,RVA20-8→RV,RVA20-10	25bar		-20℃ to +104℃
RV,RVA32-1-1→RV,RVA32-5	16bar		-20℃ to +104℃
RV,RVA32-6-2→RV,RVA32-8	25bar		-20℃ to +104℃
RV,RVA32-9-2→RV,RVA32-10-2	30bar		-20℃ to +104℃
RV,RVA45-1-1→RV,RVA45-4	16bar		-20℃ to +104℃
RV,RVA45-5-2→RV,RVA45-6-1	25bar		-20℃ to +104℃
RV,RVA45-6→RV,RVA45-7	30bar		-20℃ to +104℃
RV,RVA64-1-1→RV,RVA64-3	16bar		-20℃ to +104℃
RV,RVA64-4-2→RV,RVA64-5-2	25bar		-20℃ to +104℃
RV,RVA90-1-1→RV,RVA90-3	16bar		-20℃ to +104℃
RV,RVA90-4-2	25bar		-20℃ to +104℃

Operating range of the shaft seal

The operating range of the shaft seal depends on operating pressure, pump type, type of shaft seal and liquid temperature. The range shown in fig 4. Applies to clean water and water with glycol liquids.

Fig.4 Operating range of standard shaft seals



maximum inlet pressure

The following table shows the maximum permissible inlet pressure. However, the actual inlet pressure the pressure against a closed valve must always be lower than the maximum permissible operating pressure.
If the maximum permissible operating pressure is exceeded , the bearing in the motor may be damaged and the life of the s haft seal reduced.

RV,RVA 1	
RV,RVA1-2 → RV,RVA1-25	10bar
RV,RVA1-27	15bar
RV,RVA 2	
RV,RVA2-2 → RV,RVA2-26	10bar
RV,RVA 3	
RV,RVA3-2 → RV,RVA3-15	10bar
RV,RVA3-17 → RV,RVA3-25	15bar
RV,RVA 4	
RV,RVA4-2 → RV,RVA4-22	15bar
RV,RVA 5	
RV,RVA5-2 → RV,RVA5-9	10bar
RV,RVA5-10 → RV,RVA5-24	15bar
RV,RVA 10	
RV,RVA10-1 → RV,RVA10-5	8bar
RV,RVA10-6 → RV,RVA10-17	10bar
RV,RVA 15	
RV,RVA 15-1 → RV,RVA 15-2	8bar
RV,RVA 15-3 → RV,RVA 15-12	10bar
RV,RVA20	
RV,RVA20-1	8bar
RV,RVA20-2 → RV,RVA20-10	10bar
RV,RVA 32	
RV,RVA32-1-1 → RV,RVA32-2	4bar
RV,RVA32-3-2 → RV,RVA32-6	10bar
RV,RVA32-7-2 → RV,RVA32-10-2	15bar
RV,RVA 45	
RV,RVA45-1-1 → RV,RVA45-1	4bar
RV,RVA45-2-2 → RV,RVA45-3	10bar
RV,RVA45-4-2 → RV,RVA45-7	15bar
RV,RVA 64	
RV,RVA64-1-1	4bar
RV,RVA64-1 → RV,RVA64-2-1	10bar
RV,RVA64-2 → RV,RVA64-5-2	15bar
RV,RVA 90	
RV,RVA90-1-1 → RV,RVA90-2-2	10bar
RV,RVA90-2-1 → RV,RVA90-4-2	15bar

Example of operating and inlet pressures :

The values for operating and inlet pressures shown in the table must not be considered in dividually but must always be compared,see the following examples.

Example 1:
pump model:RVA-5-20-A-FGJ-E-HQUE
Max.operating pressure:25bar
Max.inlet pressure:15bar
discharge pressure against a closed valve: 13.7bar,see page31.
the pump is not allowed to start at an inlet pressure of 15 bar, but at an inlet pressure of 25-13.7=11.3bar.

Example 2:
MODEL:RVA15-3-A-P-E-HQUE
Max.operating pressure:16bar
Max.inlet pressure:8bar
discharge pressure against a closed valve: 4.2bar,see page39 curves chart.

This pump is allowed to start at an inlet pressure of 6bar, as the discharge pressure against a closed valve is only 4.2bar,which results in an operating pressure of 6+4.2=10.2bar. On the contrary , the max. Operating pressure of this pump limited to 12.2bar, as a higher operating pressure bigger than 8bar will require on the Inlet.

selection of pumps

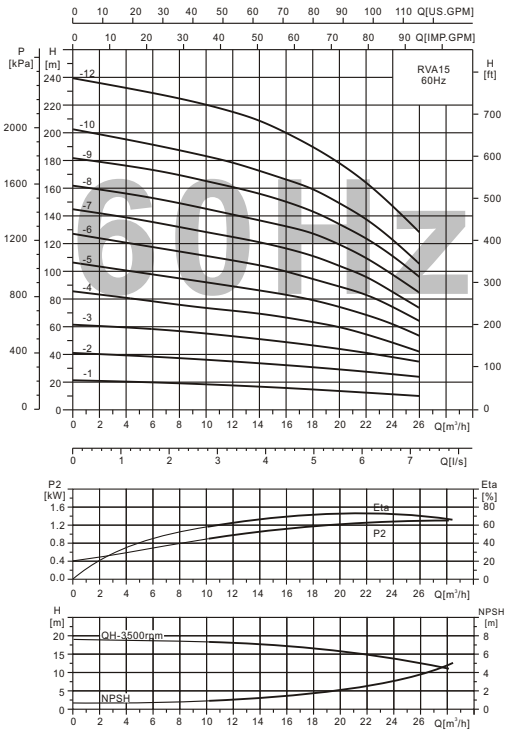
selection of pumps should be based on:

- the duty point of the pump(see page12).
- dimensional data such as pressure loss as a
- result of height differences,friction loss in the pipework,pump efficiency etc.(see page12).
- pump materials(see page6,7,8)
- pump connections(see page13)
- shaft seal(see page13)

1. Duty point of the pump

From a duty point it is possible to select a pump on the basis of the curve charts shown in "performance curves/technical" data.

Fig.5 example of curve chart



2.dimensional data

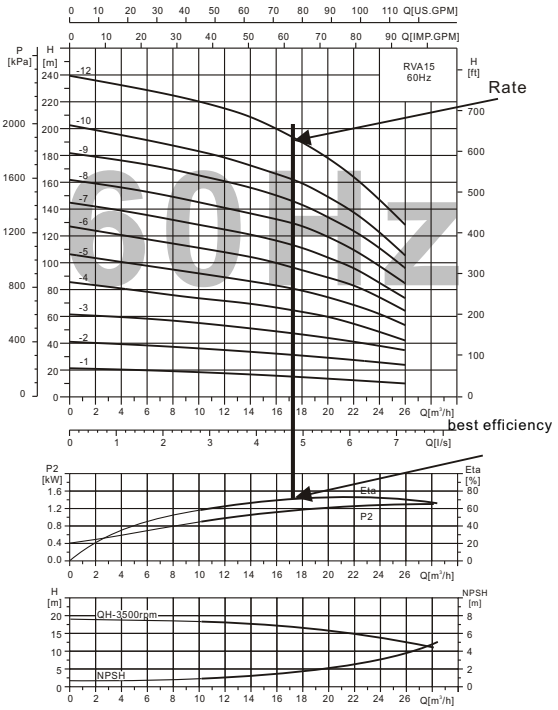
When sizing a pump the following must be taken into accounting:

- Required flow and pressure at the draw-off point.
- Pressure loss as a result of height differences(H_{geo}).
- Friction loss in the pipework(H_f) It may.
- Best efficiency at the estimated duty point.
- NPSH value.
- For calculation of the NPSH value, see corresponding curves chart.

pump efficiency

Before determining the best efficiency point, the operation pattern of the pump needs to be identified. If the pump expected to operate as the same duty point, then select a RVA pump which is ope-ratingat a duty point corresponding with the best efficiency of the pump.

Fig.6 example of duty point



As the pump is sized on the basis of the highest possible flow, it is important always to have the duty point to the right on the efficiency curve(eta) in order to keep efficiency high when the flow drops.

Fig.7best efficiency

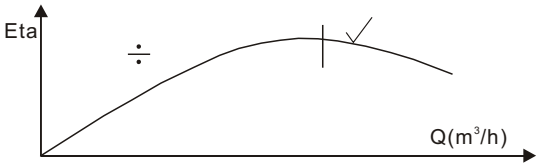
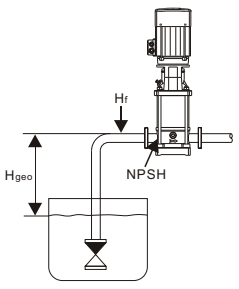


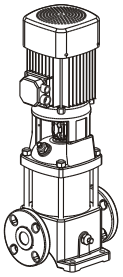
Fig.8 dimensional data



3. pump material

The material variant(RV,RVA)should be selected based of the liquid to be pump.
RVA wetted parts are made of AISI304.
RV pump body is made of cast-iron and .
Wetted parts are made of AISI304.

Fig. 9 RV pump

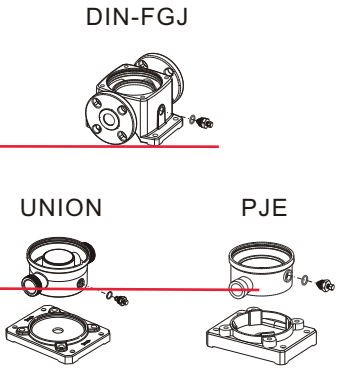


4. Pump connections

selection of pump connection depend on the rated pressure and pipework. To meet any requirement the RV, RVA pump offer a wide range of flexible connection such as:

- DIN frange.
- PJE coupling.
- union connection.
- Other connections on request.

Fig. 10 pump connections

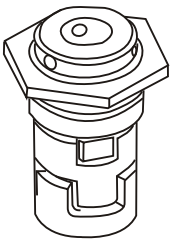


5.shaft seal

As standard, the RV AND RVA range is fitted with a cartridge type suitable for themost common applications. The following key parameters must be taken into account , when selecting the shaft seal:

- type of pumped liquid.
- liquid temperature and
- maximum pressure.

Fig.11 Shaft seal (cartridge type)

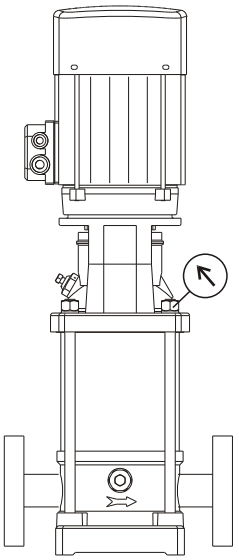


Inlet pressure and operating pressure

The limit values stated on page 10 and page 11 must not be exceeded as regards

- maximum inlet pressure and
- maximum operating pressure.

Fig.12 Inlet pressure and operating pressure



Minimum inlet pressure-NPSH

Calculation of the inlet pressure "H" is recommended in these situations :

- the liquid temperature is high.
- the flow is significantly higher than the rated flow.
- water is drawn from depths.
- water is drawn through long pipes.

inlet conditions are poor. to avoid cavitation, make sure that there is a minimum pressure on the suction side of the pump.

The maximum suction lift "H" in metres head can be calculated as follows:

$H=P_b*10.2-NPSH-Hf-Hv-Hs$

P_b = Barometric pressure in bar.
(Barometric pressure can be set to 1 bar).
in closed systems,P_b indicates the system pressure in bar.

NPSH = Net positive suction Head in metres head.
(To be read from the NPSH curve at the highest flow the pump will be deivering).

Hf = Friction loss in suction pipe(unit:m).
(At the highest flow the pump will be delivering.)

Hv = Vapour pressure (unit:m).
(To be read from the vapour pressure scale).

Hs = safty margin=minimum 0.5 metres head.

If the "H" calculted is positive,the pump can operate at a suction lift of maximum "H" metres head. If the "H" calculted is negative,
an inlet pressure of minimum "H" metres head is required.

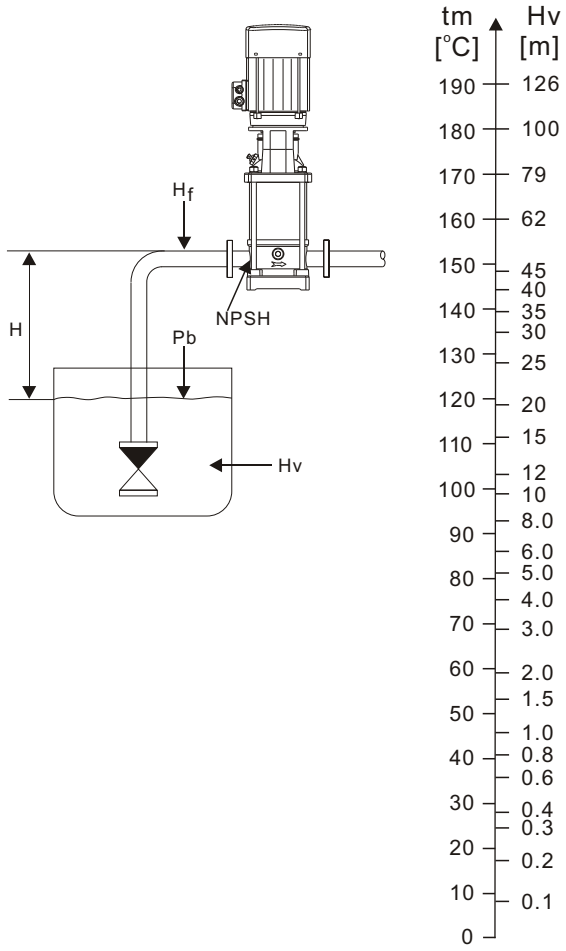
Example:

P_b=1bar
pump model:RVA10,50Hz
flow: 10m^3/h
NPSH(P36 reference:2.1 metres head.
liquid temperature:+50C
Hv(reference picture4):1.3metres head.
$H=P_b*10.2-NPSH-Hf-Hv-Hs$
$H=1*10.2-2.1-3.0-1.3-0.5=3.3$(metres)

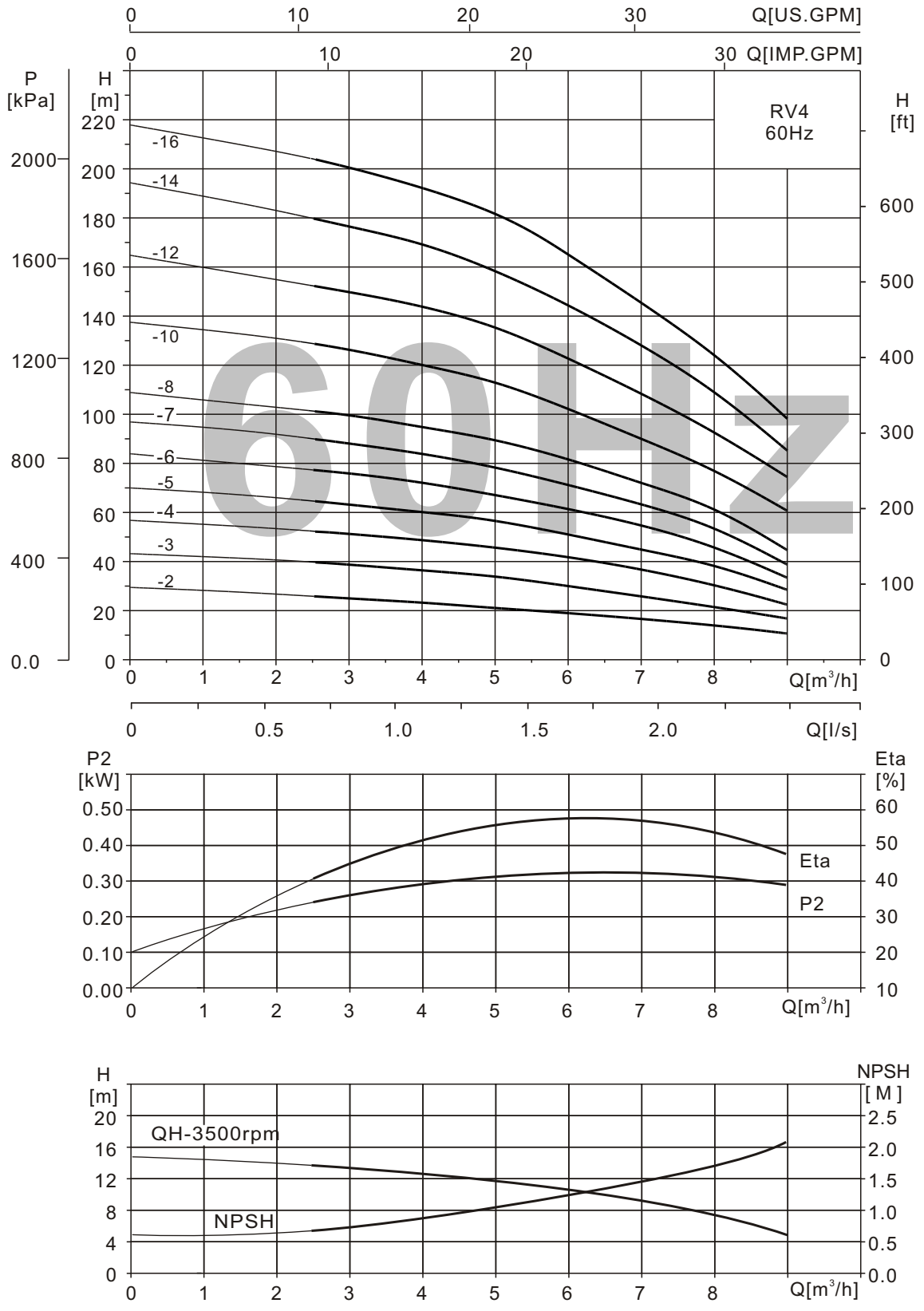
It means the pump can operate at a suction lift of maximum 3.3 metres head.

exchaged meter head to bar:
1 metre head=1*0.0981=0.0981bar
exchaged metre head to kpa:
1 metre head=1*9.81=9.81kpa.

Fig.13 Mimimum inlet pressure-NPSH



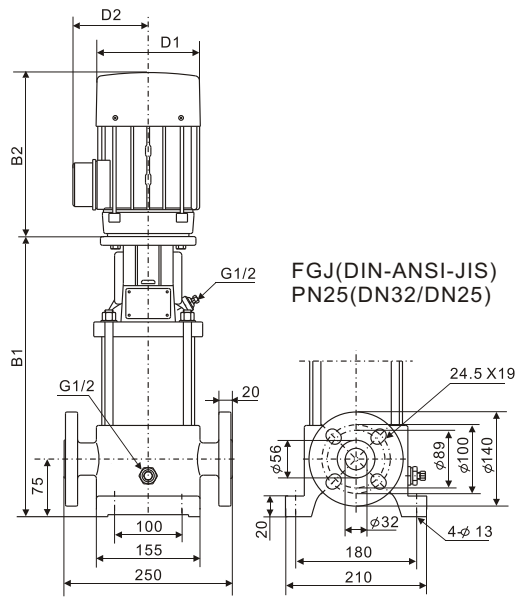
Performance Curve



Performance Table

Model	Power P_2(kW)	Q (m^3/h)	2.5	3.0	4.0	5.0	6.0	7.0	8.0	9.0
RV4-2	0.75		26	25	23	21	19	16	14	11
RV4-3	1.1		39	38	36	32	28	24	21	18
RV4-4	1.5		52	50	48	44	38	35	31	22
RV4-5	2.2		65	62	60	55	49	44	39	27
RV4-6	2.2		78	75	72	67	59	54	47	33
RV4-7	3.0		92	88	84	78	69	62	55	38
RV4-8	3.0	H (m)	104	100	95	90	79	72	63	44
RV4-10	4.0		130	125	120	113	102	90	80	61
RV4-12	4.0		156	150	145	136	122	109	96	74
RV4-14	5.5		182	176	170	159	145	129	112	86
RV4-16	5.5		207	201	196	183	165	146	128	98

Installation sketches



Dimensions and weights

Model	Dimensions(mm)						Weight (kg)
	B1	B2	B1+B2	D	D1	D2	
RV4-2	262	205	467	-	133	102	25
RV4-3	286	241	527	-	154	111	28
RV4-4	304	241/293	545	-	151	111	30
RV4-5	330	275/293	605	-	177	116	38
RV4-6	348	275/293	623	-	177	116	39
RV4-7	366	293	641	-	177	116	43
RV4-8	384	293	659	-	177	116	44
RV4-10	440	305	745	-	197	148	45
RV4-12	476	305	781	-	197	148	46
RV4-14	517	390	907	300	275	210	74
RV4-16	553	390	943	300	275	210	75

Technical Data

Standard motor

Power P_2（kW）	Voltage（V）	Current I_N（A）	Power factor cos φ	EFFiciency（%）	I_{st}/I_N
0.37	△220/Y380	△1.8/Y1.0	0.78	70.0	6.2
0.55	△220/Y380	△2.5/Y1.5	0.81	71.0	6.4
0.75	△220/Y380	△3.3/Y1.9	0.82	72.0	6.5
1.1	△220/Y380	△4.6/Y2.7	0.82	76.5	7.2
1.5	△220/Y380	△6.2/Y3.6	0.83	76.8	7.3
2.2	△220/Y380	△8.5/Y4.9	0.84	81.1	7.5
3.0	△220/Y380	△11.5/Y6.7	0.84	81.5	7.5
4.0	△380/Y660	△8.2/Y4.7	0.88	84.2	7.5
5.5	△380/Y660	△11.1/Y6.4	0.88	85.7	8.1
7.5	△380/Y660	△14.9/Y8.6	0.88	87.0	8.3
11	△380/Y660	△21.2/Y12.2	0.89	88.4	8.4
15	△380/Y660	△28.6/Y16.5	0.89	89.4	8.5
18.5	△380/Y660	△34.7/Y20.0	0.90	90.0	8.5
22	△380/Y660	△41.0/Y23.6	0.90	90.5	8.4
30	△380/Y660	△55.4/Y31.9	0.90	91.4	7.5
37	△380/Y660	△67.9/Y39.1	0.90	92.0	7.5
45	△380/Y660	△82.1/Y47.3	0.90	92.5	7.5

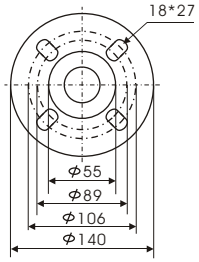
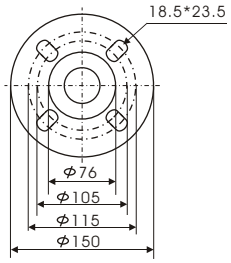
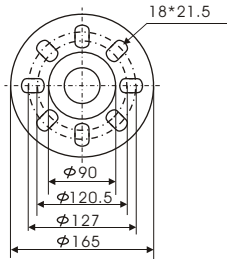
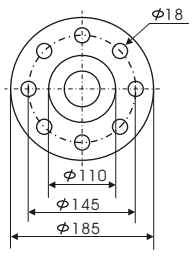
High efficiency motor

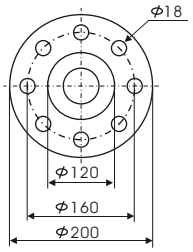
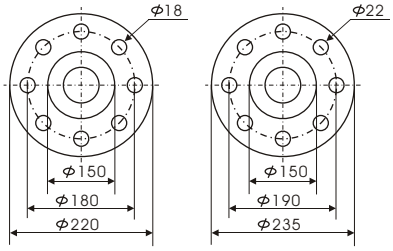
Power P_2（kW）	Voltage（V）	Current I_N（A）	Power factor cos φ	EFFiciency（%）	I_{st}/I_N
0.75	△220/Y380	△3.1/Y1.8	0.83	77.6	6.7
1.1	△220/Y380	△4.2/Y2.4	0.83	82.9	7.4
1.5	△220/Y380	△5.6/Y3.2	0.84	84.2	7.7
2.2	△220/Y380	△7.9/Y4.6	0.85	85.7	7.6
3.0	△220/Y380	△10.4/Y6.0	0.87	86.8	7.6
4.0	△380/Y660	△7.9/Y4.5	0.88	87.7	7.6
5.5	△380/Y660	△10.7/Y6.2	0.88	88.7	7.6
7.5	△380/Y660	△14.5/Y8.3	0.88	89.6	7.3
11	△380/Y660	△21.0/Y12.1	0.88	90.6	7.4
15	△380/Y660	△28.3/Y16.3	0.88	91.4	7.6
18.5	△380/Y660	△34.8/Y20.0	0.88	91.9	7.7
22	△380/Y660	△41.2/Y23.7	0.88	92.3	7.6
30	△380/Y660	△55.8/Y32.1	0.88	92.9	7.1
37	△380/Y660	△68.4/Y39.4	0.88	93.4	7.1
45	△380/Y660	△83.0/Y47.8	0.88	93.6	7.1

Remark：Special motor is available on request.

Pipe connection

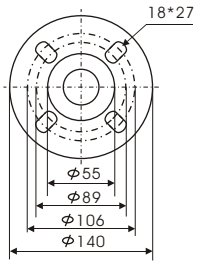
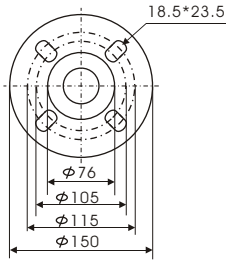
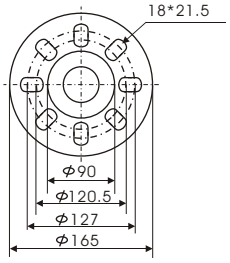
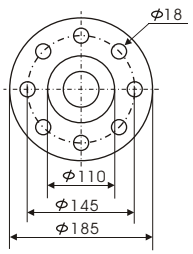
Various sets of counter flanges and couplings are available.
Counter flange for RV series
A set consists of one counter flange, one gasket, bolts and nuts.
(Remarks: The above accessories are not necessary for pumps,
there will be extra charge for them if needed)

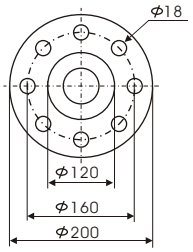
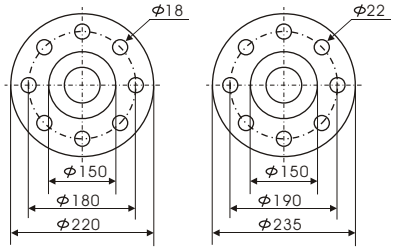
counter flange	pump type	description	rated pressure	pipe work Connection	product Number
	RV1 RV2 RV3 RV4 RV5	Threaded	16 bar,EN 1092-2	G1	
		For welding	25 bar,EN 1092-2	25mm,nominal	
		Threaded	16 bar,EN 1092-2	G1 1/4	
		For welding	25 bar,EN 1092-2	32mm,nominal	
	RV10	Threaded	16 bar,EN 1092-2	G1 1/2	
			16 bar,EN 1092-2	G2	
		For welding	25 bar,EN 1092-2	40mm,nominal	
		For welding	40bar,special flange	50mm,nominal	
	RV15 RV20	Threaded	16 bar,EN 1092-2	G2	
		Threaded	16bar,special flange	G2 1/2	
		Threaded	16bar,special flange	G2 1/2	
		For welding	25 bar,EN 1092-2	50mm,nominal	
		For welding	40bar,special flange	65mm,nominal	
	RV32	Threaded	16 bar,EN 1092-2	G2 1/2	
		Threaded	16bar,special flange	G3	
		For welding	16 bar,EN 1092-2	65mm,nominal	
		For welding	40 bar,DIN 2635	65mm,nominal	
		For welding	16bar,special flange	80mm,nominal	

counter flange	pump type	description	rated pressure	pipe work Connection	product Number
	RV45	Threaded	16 bar	G3	
		For welding	16 bar	80mm,nominal	
		For welding	40 bar	80mm,nominal	
	RV64 RV90	Threaded	16 bar	G4	
		For welding	16 bar	100mm,nominal	
		For welding	25 bar	100mm,nominal	

Counter flange for RVA series

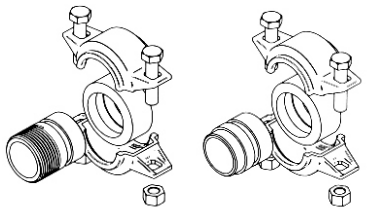
they are made of stainless steel EN1.4403(AISI304)
A set consists of one counter flange, one gasket, bolts and nuts.
(Remarks: The above accessories are not necessary for pumps,
there will be extra charge for them if needed)

counter flange	pump type	description	rated pressure	pipe work Connection	product Number
	RVA1 RVA2 RVA3 RVA4 RVA5	Threaded	16 bar,EN 1092-2	G1	
		For welding	25 bar,EN 1092-2	25mm, nominal	
		Threaded	16 bar,EN 1092-2	G1 1/4	
		For welding	25 bar,EN 1092-2	32mm,nominal	
	RVA10	Threaded	16 bar,EN 1092-2	G1 1/2	
		Threaded	16 bar,EN 1092-2	G2	
		For welding	25 bar,EN 1092-2	40mm,nominal	
		For welding	25 bar,special flange	50mm,nominal	
	RVA15 RVA20	Threaded	16 bar,EN 1092-2	G2	
		Threaded	16 bar,special flange	G2 1/2	
		Threaded	16 bar,special flange	G2 1/2	
		For welding	25 bar,EN 1092-2	50mm,nominal	
		For welding	25 bar,special flange	65mm,nominal	
	RVA32	Threaded	16 bar	G2 1/2	
		Threaded	16 bar,special flange	G3	
		For welding	16 bar	65mm,nominal	
		For welding	40 bar	65mm,nominal	
		For welding	16 bar,special flange	80mm,nominal	
		For welding	25 bar,special flange	80mm,nominal	

counter flange	pump type	description	rated pressure	pipe work Connection	product Number
	RVA45	Threaded	16 bar	G3	
		For welding	16 bar	80mm,nominal	
		For welding	40 bar	80mm,nominal	
	RVA64 RVA90	Threaded	16 bar	G4	
		For welding	16 bar	100mm,nominal	
		For welding	40 bar	100mm,nominal	

PJE Couplings for RVA series

they are made of stainless steel EN1.4403(AISI304)
A set consists of one clamp, one gasket, bolts and nuts.
(Remarks: The above accessories are not necessary for pumps,
there will be extra charge for them if needed)

counter flange	pump type	description	PN	pipe work Connection	rubber parts	Number of coupling sets needed
	RVA1 RVA2 RVA3 RVA4 RVA5	Threaded	80bar	$G1^{1}/_{4}$	EPDM	2
					FKM	2
		For welding	80bar	DN32	EPDM	2
					FKM	2
	RVA10 RVA15 RVA20	Threaded	70bar	G2	EPDM	2
					FKM	2
		For welding	70bar	DN50	EPDM	2
					FKM	2

Edition:2013.08

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

JOCKEY PUMP CONTROLLER

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data
Submittal Document

Model JPLT

Across the Line Start
Jockey Pump Controller

Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

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

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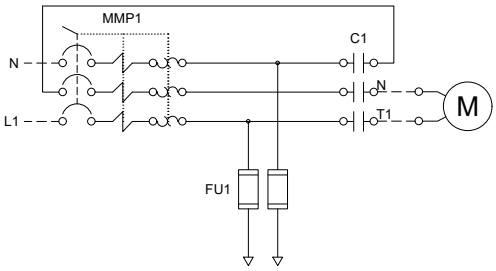
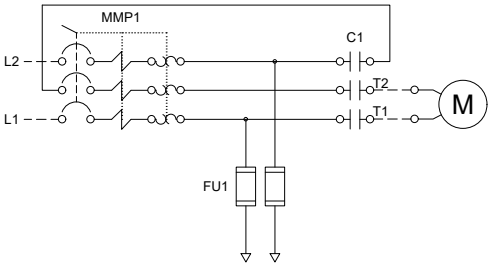
October 2025

Select Incoming Voltage

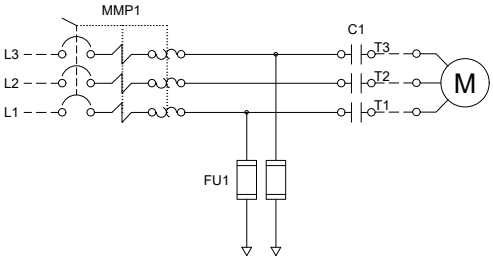
☐ **110-120V/1Phase**



☐ **200-240V/1Phase**



☑ **200-600V/3Phase**



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CE OPTIONAL

Select voltage and power rating

Voltage	Select Voltage	HP	Select HP
120V/1ph/60Hz[1]	☐	0.25	☐
200V/1ph/60Hz[2]	☐	0.33	☐
208V/1ph/60Hz[2]	☐	0.5	☐
220V/1ph/60Hz[2]	☐	0.75	☐
230V/1ph/60Hz[2]	☐	1	☐
240V/1ph/60Hz[2]	☐	1.5	☐
200V/3ph/50-60Hz[3]	☐	2	☐
208V/3ph/50-60Hz[3]	☐	3	☐
220V/3ph/50-60Hz[4]	☐	5	☐
230V/3ph/50-60Hz[4]	☐	7.5	☐
240V/3ph/50-60Hz[4]	☐	10	☐
380V/3ph/50-60Hz[5]	☐	15	☐
400V/3ph/50-60Hz[5]	☐	20	☐
415V/3ph/50-60Hz[5]	☑	25	☐
440V/3ph/50-60Hz[6]	☐		
460V/3ph/50-60Hz[6]	☐		
480V/3ph/50-60Hz[6]	☐		
575V/3ph/60Hz[7]	☐		
600V/3ph/60Hz[7]	☐		

Notes: [1] Maximum power rating is 5HP.
[2] Maximum power rating is 10HP.
[3] Maximum power rating is 7.5HP.
[4] Maximum power rating is 10HP.
[5] Maximum power rating is 15HP.
[6] Maximum power rating is 20HP.
[7] Maximum power rating is 25HP.

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

Short circuit current rating

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

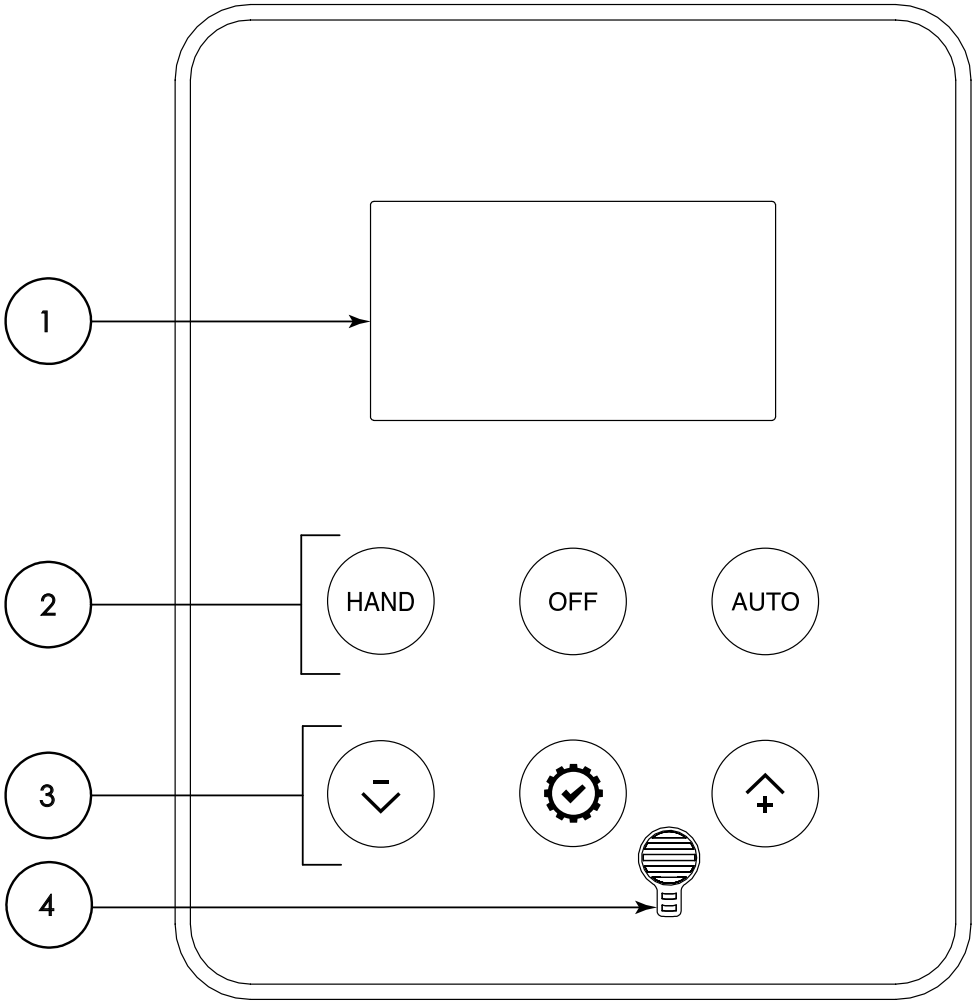
Fuseless Motor Starter	• Type -F fuse-less magnetic motor starter • Rotary handle, padlockable • Door interlocked		
Control Circuit	• 24V.AC		
ViZiLT Operator Interface	• High luminosity alphanumeric digital display • HAND-OFF-AUTO pushbuttons • MENU navigation pushbuttons		
Pressure Sensing	• Pressure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

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

☐ L01	Other language and English (bilingual)
☐ L02	French
☐ L03	Spanish
☐ L04	German
☐ L05	Italian
☐ L06	Polish
☐ L07	Romanian
☐ L08	Hungarian
☐ L09	Slovakian
☐ L10	Croatian
☐ L11	Czech
☐ L12	Portuguese
☐ L13	Dutch
☐ L15	Turkish
☐ L16	Swedish
☐ L21	Danish
☐ L28	Finnish
☐ L29	Norwegian

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

ViZiLT Operator Interface



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

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	15/05/23
FINAL APPROVAL	FC	15/05/23

JOCKEY PUMP CONTROLLER

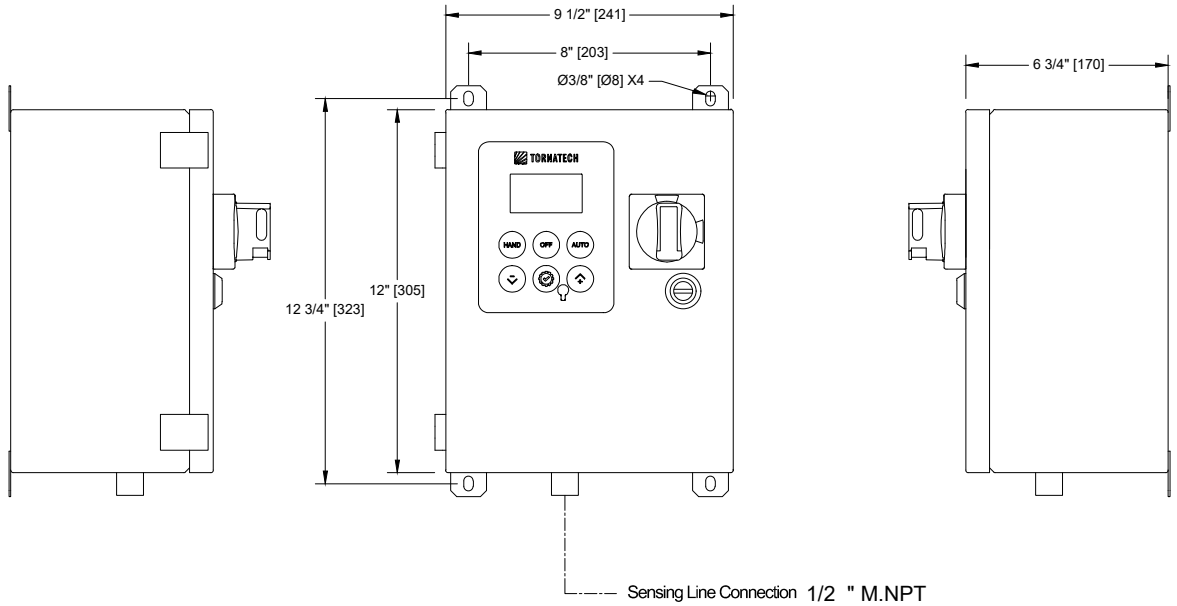
MODEL: JPLT

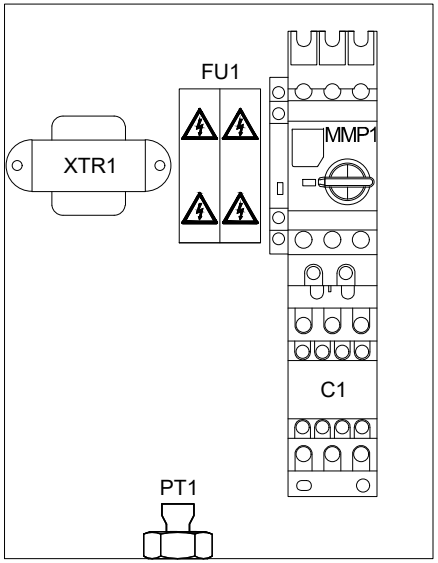
BUILT TO THE LATEST EDITION OF THE UL 508A

NYC Dpt of Building Approved

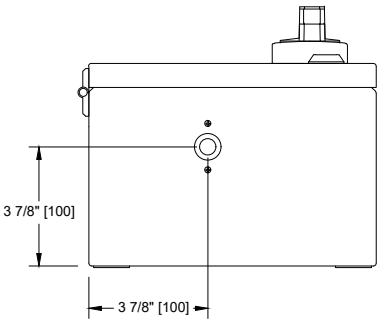
THIRD ANGLE PROJECTION

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





Standard Internal Layout



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

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

Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.
*Dimensions may change depending on option required. Consult Factory for exact dimensions.

TORNATECH

	BY	DD/MM/YY
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FINAL APPROVAL	FC	15/05/23

JOCKEY PUMP CONTROLLER ACROSS THE LINE / 3 PHASES

MODEL: JPLT

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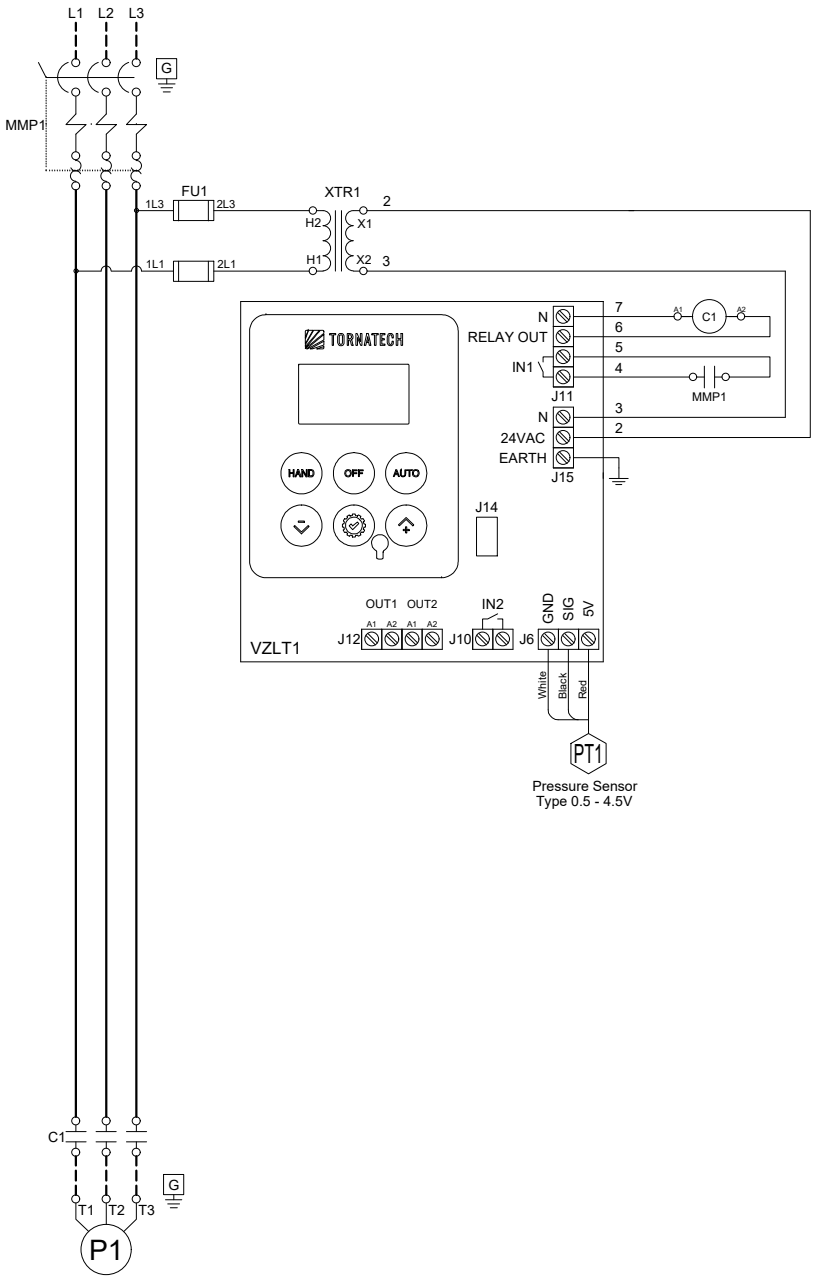
DRAWING NUMBER JPLT-WS003/E

DWG REV. 0

SHEET 1 OF 1



	BY	DD/MM/YY
DRAWN BY	ACD	15/05/23
FINAL APPROVAL	FC	15/05/23

JOCKEY PUMP CONTROLLER ACROSS THE LINE / 3 PHASES

MODEL: JPLT

BUILT TO THE LATEST EDITION OF THE UL 508A

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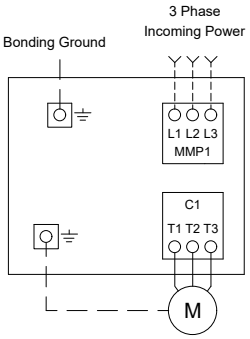
DRAWING NUMBER JPLT-TD003/E

DWG REV. 0

SHEET 1 OF 1

Power Connections and Motor Connections



Line Terminals (L1,L2,L3,GND)							
Maximum Motor Horsepower					Wire Size Copper Only	Torque	Wire Size Ground Copper Only
200-208V	220-240V	380-416V	440-480V	575-600V			
7.5HP	10HP	15HP	20HP	25HP	#14 AWG - #8 AWG	2.5 Nm	#14 AWG - #2 AWG

Motor Terminals (T1,T2,T3,GND)							
Maximum Motor Horsepower					Wire Size Copper Only	Torque	Wire Size Ground Copper Only
200-208V	220-240V	380-416V	440-480V	575-600V			
3HP	4HP	5.5HP	7.5HP	10HP	#14 AWG - #10 AWG	1.7 Nm	#14 AWG - #2 AWG
7.5HP	10HP	15HP	20HP	25HP	#14 AWG - #8 AWG	2.5 Nm	#12 AWG - #2 AWG

MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

ACCESSORIES

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MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

Flow Meter

0	*SUBMITTED FOR APPROVAL*				
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GERAND ENGINEERING

"MODEL G" FIRE PUMP TEST METERS

Accurate Pump Performance and Quality Service for 50 Years

NEW

BEST VALUE IN THE INDUSTRY

5 YEAR WARRANTY

MANUFACTURED IN THE USA

HIGH GRADE MATERIALS:

CARBON STEEL, STAINLESS STEEL, EPOXY AND MONEL

FM APPROVED

MODEL-G METERS

-- RATING 500 PSI --
(Buttweld, Grooved, 300# Flanged)

-- RATING 275 PSI --
(150# Flanged)

CALIBRATED VENTURI & ATTACHED GPM METER

4½" DIAL METER MOUNTS ON VENTURI BRACKET

FM APPROVED

ADDITIONAL SIZES LISTED AT WWW.GERAND.COM

PUMP GPM	PIPE SIZE	VENTURI STYLE	METER RANGE (GPM)	VENTURI LENGTH (BUTTWELD OR GROOVED)	VENTURI LENGTH (150# FLANGED)	VENTURI LENGTH (300# FLANGED)
50	2"	685	25-100	4¼" THREADED	–	–
100	2 1/2"	746	50-200	3" BUTTWELD 4" GROOVED	9½"	10"
250	4"	744	125-500	3½" BUTTWELD 3¾" GROOVED	9½"	10¾"
300	4"	744	150-600			
450	4"	744	225-900			
500	5"	715	250-1000	5"	12"	13¾"
500	6"	743	250-1000	6"	13"	14¼"
750	6"	743	375-1500			
1000	6"	743	500-2000			
1250	6"	743	625-2500			
1500	8"	750	750-3000	7"	15'	16¼"
2000	8"	750	1000-4000			
2500	8"	750	1250-5000			

WWW.GERAND.COM FOR MORE INFORMATION

*Venturi available in Raised or Flat Face; Steel, Stainless Steel or Monel
**Dual LPM/GPM Scales Available

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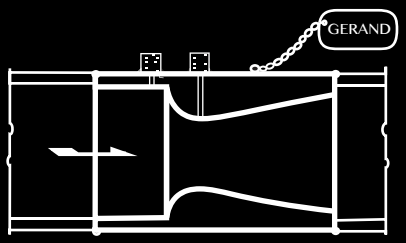
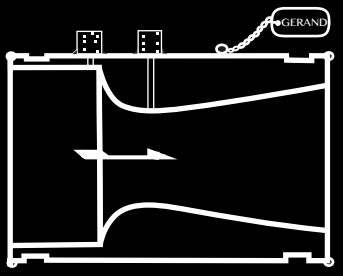
VENTURI STYLES

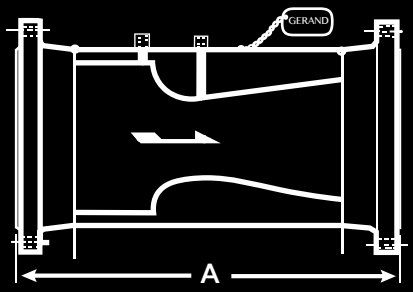
BUTTWELD



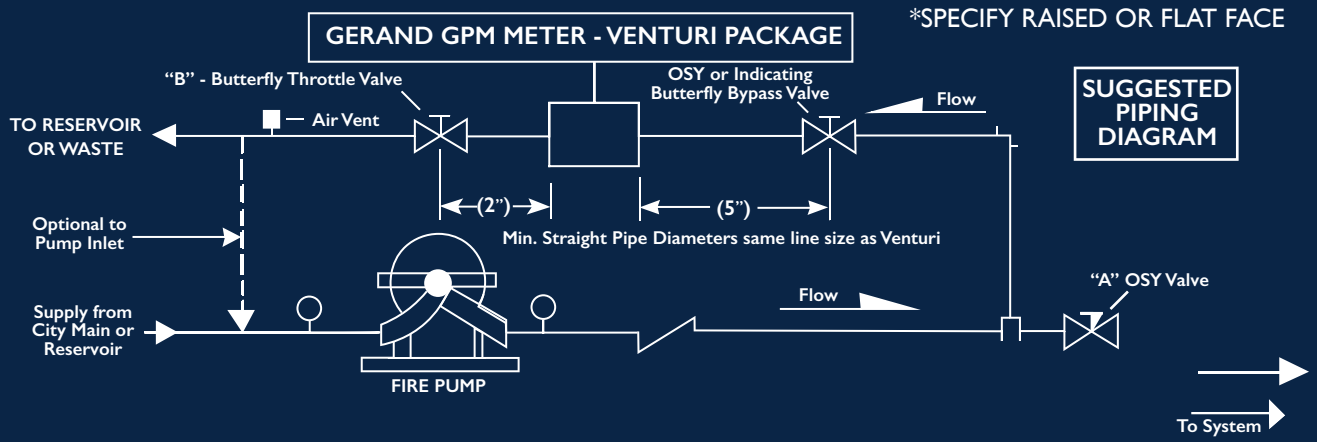
GROOVED



FLANGED



OPERATING INSTRUCTIONS



1. Close system OSY valve "A"
2. Open by-pass valve and "B" butterfly throttle valve
3. Purge meter, located on venturi, as follows:
   a) Open station shut-off valves on venturi & vent valves attached to meter. When a steady stream of water passes through hose, meter is purged of air.
   b) Close the vent valves after purging.
4. Start the fire pump, and read meter in GPM.
5. Refer to pump GPM requirement and adjust throttle valve to meet the requirement.
6. After the test, open valve "A" and close the by-pass and "B" valves.

MANUFACTURED IN U.S.A.

CERTIFIED ISO 9001:2008 COMPANY

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MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
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Project Name:	Contractor Job No.

Air Release Valve

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

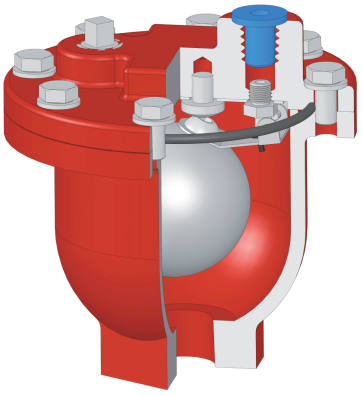
Air Release Valve

FIG. 9701

Specifications

- Small orifice release air under pressure during normal pipeline operation.
- The float is connected to the vent via a linkage mechanism which is capable of operating the vent under full pipeline pressure.
- Rated Working Pressure 300 psi.
- FM 1344 Approved.

Schematic

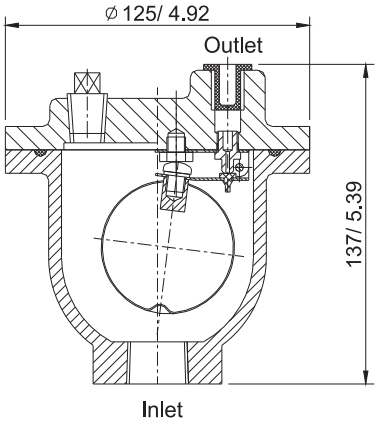


Corrosion Protection

- Fusion Bonded Coating Interior and Exterior meet or exceed all applicable of AWWA C550 Standard.

Main Dimensions

Size	Inlet Size	Outlet Size
1/2"	1/2"	1/2"
3/4"	3/4"	1/2"
1"	1"	1/2"



Material Specifications

Part	Material	EN Specification	ASTM Specification
Body	Ductile Iron	EN 1563 EN-GJS-450-10	A536 Grade 65-45-12
Cover	Ductile Iron	EN 1563 EN-GJS-450-10	A536 Grade 65-45-12
Lever Frame	Stainless Steel	EN 10088 X5CrNi18-10	A276 Type 304
Exhaust Nozzle	Stainless Steel	EN 10088 X5CrNi18-10	A276 Type 304
Exhaust Nozzle Seat	Rubber	EN 681 EPDM	D2000 EPDM
Float Ball	Stainless Steel	EN 10088 X5CrNi18-10	A276 Type 304
Ball Locator	Stainless Steel	EN 10088 X5CrNi18-10	A276 Type 304
Float Arm	Stainless Steel	EN 10088 X5CrNi18-10	A276 Type 304
Pivot Pin	Stainless Steel	EN 10088 X5CrNi18-10	A276 Type 304
Body/Cover Gasket	Rubber	EN 681 EPDM	D2000 EPDM

Notes

• Designs, materials and specifications shown are subject to change without notice due to the continuous development of our products.

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Europe, Middle East, Africa: WEFLO VALVE Ltd(EU) Web: www.weflovalve.com E-mail: info@weflovalve.com Tel:+352 621 353 588
Asia, Pacific: WEFLO VALVE Ltd(China) Web: www.weflovalve.com E-mail: info@weflovalve.com Tel:+ 86 532-87905016

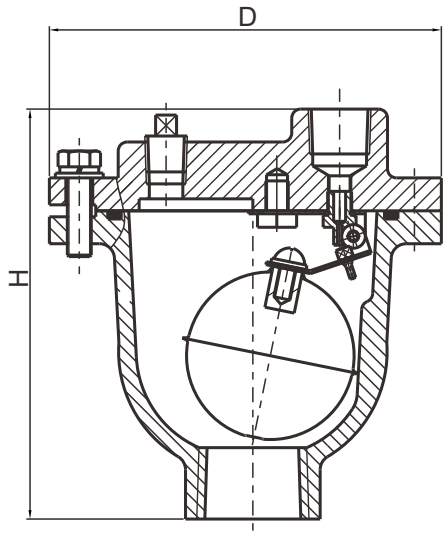
FWIC Valves

FM APPROVED

Air Release Valve

Screwed Ends

Model No: ST9011-200



Working pressure
200PSI

Connection Ends
NPT/BSPT/BSPP

Materials List

Part	Material	ASTM Spec.
Body	Ductile Iron	A536 65-45-12
Cover	Ductile Iron	A536 65-45-12
Level	Stainless Steel	AISI 304
Seat Ring	Stainless Steel	AISI 304
Float	Stainless Steel	AISI 304
Float Arm	Stainless Steel	AISI 304
Orifice Button	Viton	Commercial

Dimensions

DN		Inlet	Outle	Orifice	D	H
mm	inch					
15	1/2	15	15	1.6	125	137
20	3/4	20	15	1.6	125	137
25	1	25	15	1.6	125	137

CLA-VAL Series 34

Fire Protection System
Air Release Valve

Simple, Reliable and Accurate

Figure A

- **Ductile Iron Body**
- **Stainless Steel Trim and Float**
- **Easily serviced without removal from pipeline**
- **Available Pressure Ratings: 175 and 300**
- **Engineered for drip tight seal at low pressures**

CLA-VAL Series 34 Fire Protection System Air Release Valves are designed to vent entrained air that collects at high points in a pipeline. This valve continuously eliminates air from a system by releasing small quantities of air before large air pockets can occur. In many installations, continuing accumulations of air in the pipeline (lacking air release valves); cause flow capacity to slowly decrease; power consumption slowly increases; un-noticeable at first, until flow drops dramatically, even stopping due to air blocks in the piping.

Another problem resulting from excessive air accumulation is unexplained pipeline rupture. These ruptures are passed off as the result of ground settling or defective pipe, where as in reality its large air pockets that greatly increase pressure surges (normally occurring) when flow stops and starts causing the rupture. During normal pipeline operation, air accumulation at the high point will displace the liquid within the air valve and lower the water level in relation to the float. As level of the liquid lowers, where the float is no longer buoyant, the float drops and opens the valve orifice seat and permitting accumulated air to be exhausted to atmosphere. After air is released, the liquid level in the air valve rises and closes the valve orifice seat. This cycle automatically repeats as air accumulates inside the air release valve, thereby preventing the formation of air pockets.

INSTALLATION

Series 34 Fire Protection System Air Release Valves are typically installed at high-points in pipelines and at regular intervals, of approximate 1/2 mile, along uniform grade line pipe.

Mount the unit in the vertical position on top of the pipeline with an isolation valve installed below each valve in the event servicing is required. A vault with adequate air venting anddrainage is recommended.

Note:

Vacuum check valves can be supplied on the discharge of all size air release valves to prevent air re-entering the system; during negative pressure conditions.

PURCHASE SPECIFICATIONS

The fire protection system air release valve shall be of the float operated, simple lever or compound lever design, and capable of automatically releasing accumulated air from a fluid system while the system is pressurized and operating.

An adjustable designed orifice button shall be used to seal the valve discharge port with drip-tight shut-off. The orifice diameter must be sized for use within a given operating pressure range to insure maximum air venting capacity.

The float shall be of all stainless steel construction and guaranteed to withstand the designed system surge pressure without failure. The body and the cover shall be ductile iron and valve internal parts shall be stainless steel and Viton TM or Buna-N ® (standard) for water tight shut-off.

The air release valve shall be manufactured per ANSI/AWWA C512-04 Series 34 from CLA-VAL.

PRODUCT SPECIFICATIONS

Sizes:

1/2", 3/4", 1"

Pressure Ratings: (see note)

175 UL/FM

300 UL

Note: Specify when operating pressure below 7 mhd (10 psi)

Temperature Range:

Water to 180°F

Materials:

Body and Cover: Ductile Iron ASTM 536 65-45-12

Float:

Stainless Steel

Internal Parts:

Stainless Steel

Seal:

Viton™ or Buna-N® (Standard)

CLA-VAL Series 34

Fire Protection System
Air Release Valve

AIR RELEASE VALVE SIZING

Air release valve sizing requires determining the volume of air that must be released from pipeline high points during normal operation and the diameter of the pipeline. Series 34 Fire Protection System Air Release Valves are primarily used to continuously release pockets of air (as they develop) from high point, hence it is not critical to determine exact volume of air to be released.

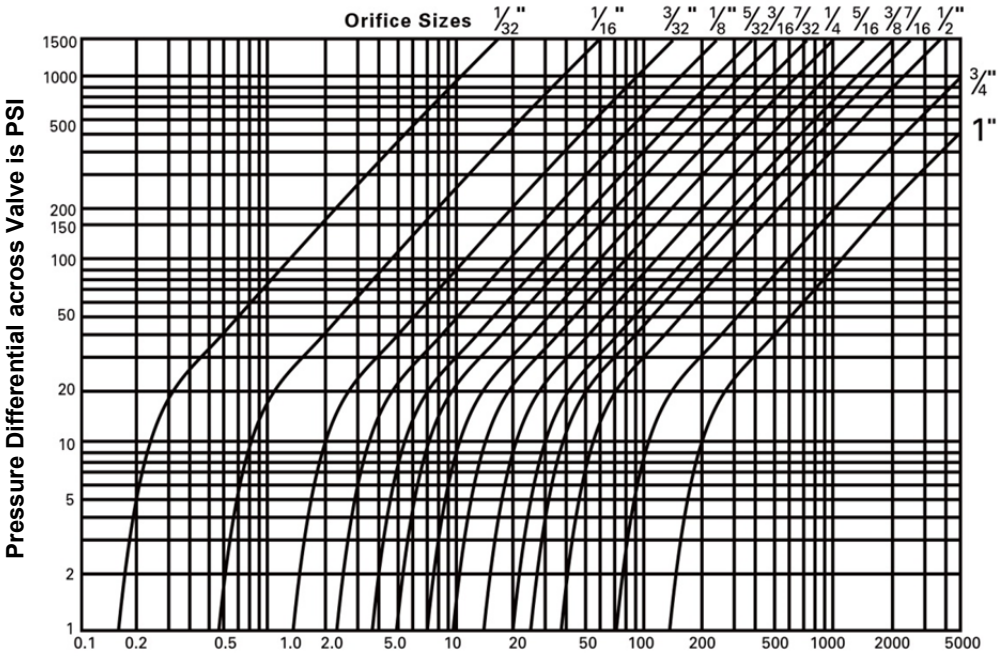
See chart on page 3 for sizing based on venting capacity.

Air Release Valve Sizing Chart For Water Pipelines

Figure A	Model No.	Inlet Size	Outlet Size	Orifice Size	GPM	MWP	Height	Width	Wt. (lbs.)
	**UL Listed • FM Approved** 3450-AR332 3475-AR332 3410-AR332	1/2", 3/4", 1"	1/2"	3/32"	200 -2200	175	5-7/8"	3-3/4"	6
	FM Approved 3450-AR116.3 3475-AR116.3 3410-AR116.3	1/2", 3/4", 1"	1/2"	1/16"	200 -2200	300	5-7/8"	3-3/4"	6

Figure A

VENTING CAPACITY GRAPH FOR AIR RELEASE VALVES



Venting capacity in Cubic Feet of Free Air per Minute

VALVE SELECTION BASED ON VENTING CAPACITY

Follow these steps to select and size an air release valves when a specific venting capacity is required:

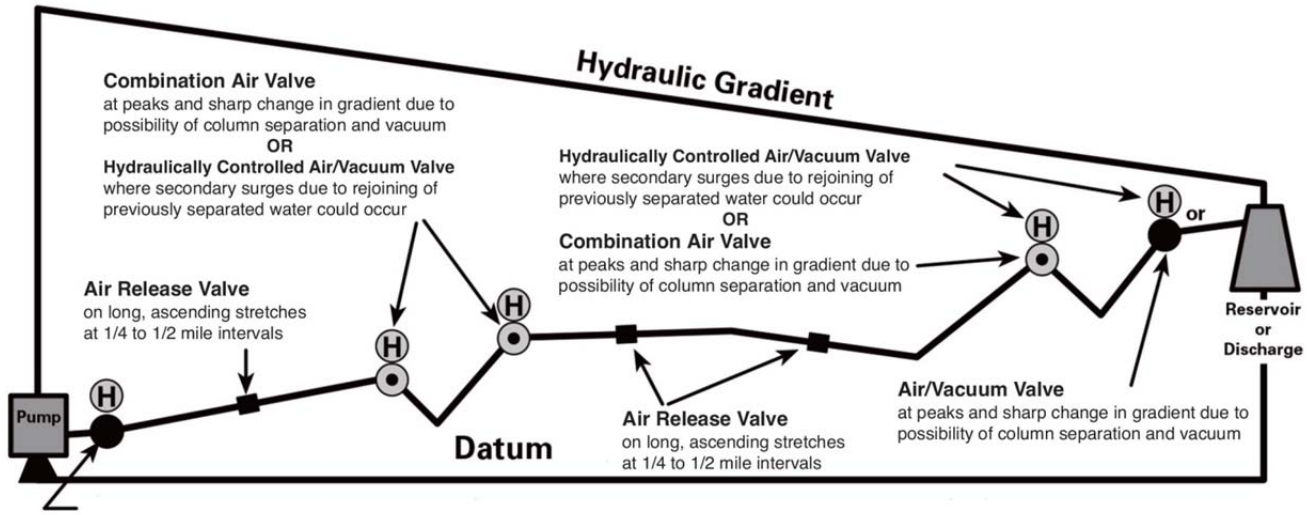
A. Enter graph with required system pressure and venting capacity
B. Read off nearest orifice diameter to intersection of pressure and capacity lines on graph
C. Enter table above with orifice diameter and select valve that can use this orifice diameter with the corresponding pressure

Figure A

CLA-VAL Series 34

Fire Protection System
Air Release Valve

SERIES 34 FIRE PROTECTION SYSTEM AIR RELEASE VALVE TECHNICAL DATA



Air/Vacuum Valve

Air Release Valve

Combination Air Valve

Hydraulically Controlled Air/Vacuum Valve

Figure A

INSTALLATION TIPS

1. The effectiveness of Series 34 Fire Protection System Air Release Valve is dependent upon it being located at appropriate highpoints in a pipeline and at uniform intervals of approximately 2500 feet on horizontal pipelines.
2. There are four variables that can cause an air pocket to form slightly downstream of the true high point in a piping system:
   a. Severity of the slope adjacent to the high point or change of gradient
   b. Velocity of the liquid
   c. Texture of the inside surface of the pipe being used
   d. Viscosity of the fluid

   It is recommended where an air pocket can form slightly downstream of the high point, to install additional Series 34 Fire Protection System Air Release Valves at this point.
3. CLA-VAL has available, upon request, a Slide Rule Air Valve Calculator. It will greatly reduce the amount of time to size valves for pipeline service.

OTHER TYPICAL APPLICATIONS INCLUDE:

1. Centrifugal pumps
2. Hydropneumatic tanks
3. Enclosed systems
4. Sewage lines

WHEN ORDERING, PLESASE SPECIFY:

1. Model number
2. Inlet size (NPT)
3. Inlet pressure rating
4. Orifice size

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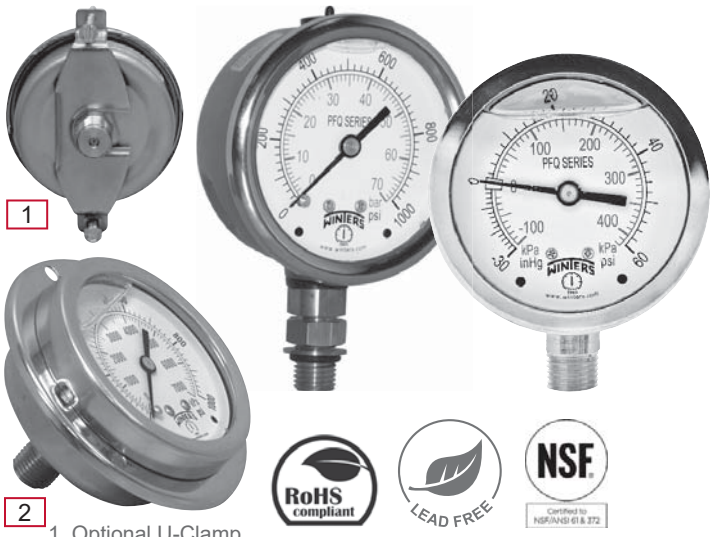
	Vendor Doc. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

Pressure Gauge

0	***SUBMITTED FOR APPROVAL***				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

Stainless Steel Liquid Filled Gauge, Lead Free Stainless Steel Liquid Filled Gauge

PFQ, PFQ-LF



1. Optional U-Clamp
2. Optional Front Flange

Note; RoHS applies SS internals only

Description & Features:

- Pulsation resistant, liquid filled stainless steel case
- Glycerin filled standard
- Brass, lead free brass or stainless steel internals
- Restricted orifice
- Ventable plug on 2.5" (63mm) and 4" (100mm) bottom mount (excluding SAE connection)
- Crimp-On bezel
- Dual scale (psi/kPa)/(psi/bar)
- Optional U-Clamps and front flanges
- Dry case available
- ASME B40.100 compliant (EN837-1 available on 2" (50mm) dial and up)
- CRN registered
- Lead free version NSF-61-372 certified
- 5 year warranty

Applications:

- Ideal for pumps, compressors, hydraulic presses, machinery, pneumatic equipment and motors in harsh environments

Specifications	Stainless Steel Internals	Brass/Lead Free Brass Internals
Dial	1.5" (40mm), 2" (50mm), 2.5" (63mm), 4" (100mm), white aluminum with black and red markings	1.5" (40mm), 2" (50mm), 2.5" (63mm), 4" (100mm), white aluminum with black and red markings
Case	AISI 304 SS	AISI 304 SS
Lens	Polycarbonate	Polycarbonate
Ring	AISI 304 SS, Crimp-On	AISI 304 SS, Crimp-On
Socket	AISI 316 SS with restrictor screw (dual scale only)	OT 58 brass with restricted orifice or lead free brass with restricted orifice, NSF-61-372 certified
Connection	1/8", 1/4" or 1/2" NPT	1/8", 1/4" or 1/2" NPT or 7/16-20 SAE standard with restricted orifice
Fill Liquid	Glycerin	Glycerin
Bourdon Tube	1.5" (40mm), 2" (50mm): SS C or coil shaped 2.5" (63mm), 4" (100mm): AISI 316 SS C or coil shaped	Phosphor bronze C or coil shaped
Movement	SS	PFQ: OT 59 brass PFQ-LF (1.5", 2", 2.5"): SS, PFQ-LF (4"): Lead free brass, NSF-61-372 certified
Pointer	Aluminum, anodized black	Aluminum, anodized black
Welding	TIG	Silver alloy
Over-pressure Limit	25% for pressures up to 1,450 psi (9,998 kPa), 15% for pressures over 1,450 psi (9,998 kPa)	25% for pressures up to 1,450 psi (9,998 kPa), 15% for pressures over 1,450 psi (9,998 kPa)
Socket Gasket	Buna N for two-piece internal socket seal	Buna N for two-piece internal socket seal
Fill Plug	Buna N	Buna N
Lens Ring Gasket	Silicone rubber	Silicone rubber
Working Pressure	Maximum 75% of full scale value	Maximum 75% of full scale value
Ambient/Process Temperature	Dry: -40°F to 200°F (-40°C to 93°C) Glycerin Filled: -4°F to 150°F (-20°C to 65°C)	Dry: -40°F to 200°F (-40°C to 93°C) Glycerin Filled: -4°F to 150°F (-20°C to 65°C)
Accuracy	1.5" (40mm), 2" (50mm): ±2.5% of full scale value 2.5" (63mm), 4" (100mm): ±1.5% of full scale value	1.5" (40mm), 2" (50mm): ±2.5% of full scale value 2.5" (63mm), 4" (100mm): ±1.5% of full scale value
Enclosure Rating	IP65	IP65
Warning (brass and lead free brass internals only)	N/A	**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Order Codes

Dial Size	1.5" (40mm)				2" (50mm)	
Connection	1/8" NPT Bottom	1/8" NPT Back (CB)	1/8" NPT Bottom	1/8" NPT Back (CB)	1/8" NPT Bottom	1/8" NPT Back (CB)
Movement, Socket, Tube	Brass		SS		Brass	
30" Hg Vac / -1/0 bar	PFQ4746R1R11	PFQ4760R1R11	PFQ1200R1R11	PFQ1220R1R11	PFQ2400R1R11	PFQ2426R1R11
30"/0/15 psi / -1/1 bar	PFQ4747R1R11	PFQ4761R1R11	PFQ4774R1R11	PFQ4786R1R11	PFQ2401R1R11	PFQ2427R1R11
30"/0/30 psi / -1/2 bar	PFQ4748R1R11	PFQ4762R1R11	PFQ4775R1R11	PFQ4787R1R11	PFQ2402R1R11	PFQ2428R1R11
30"/0/60 psi / -1/4 bar	PFQ4749R1R11	PFQ4763R1R11	PFQ4776R1R11	PFQ4788R1R11	PFQ2403R1R11	PFQ2429R1R11
30"/0/100 psi / -1/7 bar	PFQ4750R1R11	PFQ4764R1R11	PFQ4777R1R11	PFQ4789R1R11	PFQ2404R1R11	PFQ2430R1R11
30"/0/150 psi / -1/10 bar	PFQ4751R1R11	PFQ4765R1R11	PFQ4778R1R11	PFQ4790R1R11	PFQ2405R1R11	PFQ2431R1R11
30"/0/200 psi / -1/14 bar	PFQ4752R1R11	PFQ4766R1R11	PFQ4779R1R11	PFQ4791R1R11	PFQ2406R1R11	PFQ2432R1R11
30"/0/300 psi / -1/20 bar	PFQ4753R1R11	PFQ4767R1R11	PFQ4780R1R11	PFQ4792R1R11	PFQ2407R1R11	PFQ2433R1R11
0/15 psi / 0/1 bar	PFQ4754R1R11	PFQ4768R1R11	PFQ1201R1R11	PFQ1221R1R11	PFQ2408R1R11	PFQ2434R1R11
0/30 psi / 0/2 bar	PFQ1102R1R11	PFQ1122R1R11	PFQ1202R1R11	PFQ1222R1R11	PFQ2409R1R11	PFQ2435R1R11
0/60 psi / 0/4 bar	PFQ1103R1R11	PFQ1123R1R11	PFQ1203R1R11	PFQ1223R1R11	PFQ2410R1R11	PFQ2436R1R11
0/100 psi / 0/7 bar	PFQ1104R1R11	PFQ1124R1R11	PFQ1204R1R11	PFQ1224R1R11	PFQ2411R1R11	PFQ2437R1R11
0/160 psi / 0/11 bar	PFQ1105R1R11	PFQ1125R1R11	PFQ1205R1R11	PFQ1225R1R11	PFQ2412R1R11	PFQ2438R1R11
0/200 psi / 0/14 bar	PFQ1106R1R11	PFQ1126R1R11	PFQ1206R1R11	PFQ1226R1R11	PFQ2413R1R11	PFQ2439R1R11
0/300 psi / 0/20 bar	PFQ1107R1R11	PFQ1127R1R11	PFQ1207R1R11	PFQ1227R1R11	PFQ2414R1R11	PFQ2440R1R11
0/400 psi / 0/28 bar	PFQ4755R1R11	PFQ4769R1R11	PFQ4781R1R11	PFQ4793R1R11	PFQ2415R1R11	PFQ2441R1R11
0/600 psi / 0/40 bar	PFQ1108R1R11	PFQ1128R1R11	PFQ1208R1R11	PFQ1228R1R11	PFQ2416R1R11	PFQ2442R1R11
0/1,000 psi / 0/70 bar	PFQ1109R1R11	PFQ1129R1R11	PFQ1209R1R11	PFQ1229R1R11	PFQ2417R1R11	PFQ2443R1R11
0/1,500 psi / 0/100 bar	PFQ1110R1R11	PFQ1130R1R11	PFQ1210R1R11	PFQ1230R1R11	PFQ2418R1R11	PFQ2444R1R11
0/2,000 psi / 0/140 bar	PFQ1111R1R11	PFQ1131R1R11	PFQ1211R1R11	PFQ1231R1R11	PFQ2419R1R11	PFQ2445R1R11
0/3,000 psi / 0/200 bar	PFQ1112R1R11	PFQ1132R1R11	PFQ1212R1R11	PFQ1232R1R11	PFQ2420R1R11	PFQ2446R1R11
0/5,000 psi / 0/350 bar	PFQ1113R1R11	PFQ1133R1R11	PFQ1213R1R11	PFQ1233R1R11	PFQ2421R1R11	PFQ2447R1R11
0/6,000 psi / 0/400 bar	PFQ4756R1R11	PFQ4770R1R11	PFQ4782R1R11	PFQ4794R1R11	PFQ2422R1R11	PFQ2448R1R11
0/7,500 psi / 0/500 bar	PFQ4757R1R11	PFQ4771R1R11	PFQ4783R1R11	PFQ4795R1R11	PFQ2423R1R11	PFQ2449R1R11
0/10,000 psi / 0/700 bar	PFQ4758R1R11	PFQ4772R1R11	PFQ4784R1R11	PFQ4796R1R11	PFQ2424R1R11	PFQ2450R1R11
0/15,000 psi / 0/1,000 bar	PFQ4759R1R11	PFQ4773R1R11	PFQ4785R1R11	PFQ4797R1R11	PFQ2425R1R11	PFQ2451R1R11

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes. 1.5" (40mm) gauges are available dry (non-liquid filled) only on a special order basis. **For options, attach suffix to end of order code: i.e. PFQ1102R1R11-15DRY for DRY CASE**

Option suffix:

15DRY = Supply 1.5" (40mm) gauge dry
15FF = 1.5" (40mm) Front flange
15UC = 1.5" (40mm) U-Clamp
2FF = 2" (50mm) Front flange
2UC = 2" (50mm) U-Clamp
20DRY = Supply 2" gauge dry
EN = EN837-1 compliant

Order Codes

Dial Size	2" (50mm)					
Connection	1/8" NPT Bottom	1/8" NPT Back (CB)	1/4" NPT Bottom	1/4" NPT Back (CB)	1/4" NPT Bottom	1/4" NPT Back (CB)
Movement, Socket, Tube	SS		Brass		SS	
30" Hg Vac / -1/0 bar	PFQ2248R1R11	PFQ2309R1R11	PFQ2452R1R11	PFQ2478R1R11	PFQ2247R1R11	PFQ2246R1R11
30"/0/15 psi / -1/1 bar	PFQ2295R1R11	PFQ2310R1R11	PFQ2453R1R11	PFQ2479R1R11	PFQ2271R1R11	PFQ2282R1R11
30"/0/30 psi / -1/2 bar	PFQ2241R1R11	PFQ2311R1R11	PFQ2454R1R11	PFQ2480R1R11	PFQ2272R1R11	PFQ2283R1R11
30"/0/60 psi / -1/4 bar	PFQ2296R1R11	PFQ2312R1R11	PFQ2455R1R11	PFQ2481R1R11	PFQ2273R1R11	PFQ2242R1R11
30"/0/100 psi / -1/7 bar	PFQ2297R1R11	PFQ2313R1R11	PFQ2456R1R11	PFQ2482R1R11	PFQ2274R1R11	PFQ2284R1R11
30"/0/150 psi / -1/10 bar	PFQ2298R1R11	PFQ2314R1R11	PFQ2457R1R11	PFQ2483R1R11	PFQ2275R1R11	PFQ2285R1R11
30"/0/200 psi / -1/14 bar	PFQ2299R1R11	PFQ2315R1R11	PFQ2458R1R11	PFQ2484R1R11	PFQ2276R1R11	PFQ2286R1R11
30"/0/300 psi / -1/20 bar	PFQ2300R1R11	PFQ2316R1R11	PFQ2459R1R11	PFQ2485R1R11	PFQ2277R1R11	PFQ2287R1R11
0/15 psi / 0/1 bar	PFQ2218R1R11	PFQ2217R1R11	PFQ2460R1R11	PFQ2486R1R11	PFQ2215R1R11	PFQ2214R1R11
0/30 psi / 0/2 bar	PFQ2253R1R11	PFQ2252R1R11	PFQ2461R1R11	PFQ2487R1R11	PFQ2250R1R11	PFQ2249R1R11
0/60 psi / 0/4 bar	PFQ2270R1R11	PFQ2269R1R11	PFQ2462R1R11	PFQ2488R1R11	PFQ2266R1R11	PFQ2265R1R11
0/100 psi / 0/7 bar	PFQ2209R1R11	PFQ2208R1R11	PFQ2463R1R11	PFQ2489R1R11	PFQ2205R1R11	PFQ2204R1R11
0/160 psi / 0/11 bar	PFQ2206R1R11	PFQ2207R1R11	PFQ2464R1R11	PFQ2490R1R11	PFQ2220R1R11	PFQ2219R1R11
0/200 psi / 0/14 bar	PFQ2301R1R11	PFQ2951R1R11	PFQ2465R1R11	PFQ2491R1R11	PFQ2267R1R11	PFQ2268R1R11
0/300 psi / 0/20 bar	PFQ2245R1R11	PFQ2318R1R11	PFQ2466R1R11	PFQ2492R1R11	PFQ2244R1R11	PFQ2243R1R11
0/400 psi / 0/28 bar	PFQ2302R1R11	PFQ2319R1R11	PFQ2467R1R11	PFQ2493R1R11	PFQ2254R1R11	PFQ2288R1R11
0/600 psi / 0/40 bar	PFQ2264R1R11	PFQ2320R1R11	PFQ2468R1R11	PFQ2494R1R11	PFQ2278R1R11	PFQ2289R1R11
0/1,000 psi / 0/70 bar	PFQ2203R1R11	PFQ2321R1R11	PFQ2469R1R11	PFQ2495R1R11	PFQ2202R1R11	PFQ2201R1R11
0/1,500 psi / 0/100 bar	PFQ2213R1R11	PFQ2322R1R11	PFQ2470R1R11	PFQ2496R1R11	PFQ2212R1R11	PFQ2211R1R11
0/2,000 psi / 0/140 bar	PFQ2304R1R11	PFQ2323R1R11	PFQ2471R1R11	PFQ2497R1R11	PFQ2279R1R11	PFQ2290R1R11
0/3,000 psi / 0/200 bar	PFQ2305R1R11	PFQ2324R1R11	PFQ2472R1R11	PFQ2498R1R11	PFQ2280R1R11	PFQ2291R1R11
0/5,000 psi / 0/350 bar	PFQ2258R1R11	PFQ2257R1R11	PFQ2473R1R11	PFQ2499R1R11	PFQ2256R1R11	PFQ2255R1R11
0/6,000 psi / 0/400 bar	PFQ2262R1R11	PFQ2261R1R11	PFQ2474R1R11	PFQ2500R1R11	PFQ2260R1R11	PFQ2259R1R11
0/7,500 psi / 0/500 bar	PFQ2306R1R11	PFQ2325R1R11	PFQ2475R1R11	PFQ2501R1R11	PFQ2281R1R11	PFQ2292R1R11
0/10,000 psi / 0/700 bar	PFQ2307R1R11	PFQ2326R1R11	PFQ2476R1R11	PFQ2502R1R11	PFQ2200R1R11	PFQ2293R1R11
0/15,000 psi / 0/1,000 bar	PFQ2308R1R11	PFQ2327R1R11	PFQ2477R1R11	PFQ2503R1R11	PFQ2210R1R11	PFQ2294R1R11

PFQ-LF Order Codes

Dial Size	2" (50mm)			
Connection	1/8" Bottom	1/8" Back (CB)	1/4" Bottom	1/4" Back (CB)
Movement, Socket, Tube	Lead Free Brass			
30" Hg Vac/kPa	PFQ2400LF	PFQ2426LF	PFQ2452LF	PFQ2478LF
30"/0/15 psi/kPa	PFQ2401LF	PFQ2427LF	PFQ2453LF	PFQ2479LF
30"/0/30 psi/kPa	PFQ2402LF	PFQ2428LF	PFQ2454LF	PFQ2480LF
30"/0/60 psi/kPa	PFQ2403LF	PFQ2429LF	PFQ2455LF	PFQ2481LF
30"/0/100 psi/kPa	PFQ2404LF	PFQ2430LF	PFQ2456LF	PFQ2482LF
30"/0/160 psi/kPa	PFQ2405LF	PFQ2431LF	PFQ2457LF	PFQ2483LF
30"/0/200 psi/kPa	PFQ2406LF	PFQ2432LF	PFQ2458LF	PFQ2484LF
30"/0/300 psi/kPa	PFQ2407LF	PFQ2433LF	PFQ2459LF	PFQ2485LF
0/15 psi/kPa	PFQ2408LF	PFQ2434LF	PFQ2460LF	PFQ2486LF
0/30 psi/kPa	PFQ2409LF	PFQ2435LF	PFQ2461LF	PFQ2487LF
0/60 psi/kPa	PFQ2410LF	PFQ2436LF	PFQ2462LF	PFQ2488LF
0/100 psi/kPa	PFQ2411LF	PFQ2437LF	PFQ2463LF	PFQ2489LF
0/160 psi/kPa	PFQ2412LF	PFQ2438LF	PFQ2464LF	PFQ2490LF
0/200 psi/kPa	PFQ2413LF	PFQ2439LF	PFQ2465LF	PFQ2491LF
0/300 psi/kPa	PFQ2414LF	PFQ2440LF	PFQ2466LF	PFQ2492LF
0/400 psi/kPa	PFQ2415LF	PFQ2441LF	PFQ2467LF	PFQ2493LF
0/600 psi/kPa	PFQ2416LF	PFQ2442LF	PFQ2468LF	PFQ2494LF
0/1,000 psi/kPa	PFQ2417LF	PFQ2443LF	PFQ2469LF	PFQ2495LF
0/1,500 psi/kPa	PFQ2418LF	PFQ2444LF	PFQ2470LF	PFQ2496LF
0/2,000 psi/kPa	PFQ2419LF	PFQ2445LF	PFQ2471LF	PFQ2497LF
0/3,000 psi/kPa	PFQ2420LF	PFQ2446LF	PFQ2472LF	PFQ2498LF
0/5,000 psi/kPa	PFQ2421LF	PFQ2447LF	PFQ2473LF	PFQ2499LF
0/6,000 psi/kPa	PFQ2422LF	PFQ2448LF	PFQ2474LF	PFQ2500LF
0/7,500 psi/kPa	PFQ2423LF	PFQ2449LF	PFQ2475LF	PFQ2501LF
0/10,000 psi/kPa	PFQ2424LF	PFQ2450LF	PFQ2476LF	PFQ2502LF
0/15,000 psi/kPa	PFQ2425LF	PFQ2451LF	PFQ2477LF	PFQ2503LF

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes. Front flange for 2" (50mm) gauge is available. **For options, attach suffix to end of order code: i.e. PFQ2218R1R11-20DRY for DRY CASE**

Option suffix:
2FF = 2" (50mm) Front flange
2UC = 2" (50mm) U-Clamp
20DRY = Supply 2" gauge dry
EN = EN837-1 compliant

Order Codes

Dial Size	2.5" (63mm)				
Connection	1/4" NPT Bottom	1/4" NPT Back (CB)	1/4" NPT Bottom	1/4" NPT Back (CB)	7/16"-20 SAE Bottom
Movement, Socket, Tube	Brass		SS		Brass
30" Hg Vac / -1/0 bar	PFQ801R1R11	PFQ900R1R11	PFQ106R1R11	PFQ147R1R11	PFQ3643
30"/0/15 psi / -1/1 bar	PFQ790R1R11	PFQ890R1R11	PFQ107R1R11	PFQ148R1R11	PFQ3644
30"/0/30 psi / -1/2 bar	PFQ798R1R11	PFQ898R1R11	PFQ108R1R11	PFQ149R1R11	PFQ3645
30"/0/60 psi / -1/4 bar	PFQ799R1R11	PFQ899R1R11	PFQ109R1R11	PFQ151R1R11	PFQ3646
30"/0/100 psi / -1/7 bar	PFQ791R1R11	PFQ891R1R11	PFQ110R1R11	PFQ156R1R11	PFQ3647
30"/0/150 psi / -1/10 bar	PFQ792R1R11	PFQ892R1R11	PFQ111R1R11	PFQ157R1R11	PFQ3648
30"/0/200 psi / -1/14 bar	PFQ794R1R11	PFQ894R1R11	PFQ112R1R11	PFQ158R1R11	PFQ3649
30"/0/300 psi / -1/20 bar	PFQ795R1R11	PFQ895R1R11	PFQ113R1R11	PFQ159R1R11	PFQ3650
0/15 psi / 0/1 bar	PFQ800R1R11	PFQ901R1R11	PFQ118R1R11	PFQ162R1R11	PFQ3651
0/30 psi / 0/2 bar	PFQ802R1R11	PFQ902R1R11	PFQ119R1R11	PFQ163R1R11	PFQ3652
0/60 psi / 0/4 bar	PFQ803R1R11	PFQ903R1R11	PFQ120R1R11	PFQ164R1R11	PFQ3653
0/100 psi / 0/7 bar	PFQ804R1R11	PFQ904R1R11	PFQ121R1R11	PFQ169R1R11	PFQ3654
0/160 psi / 0/11 bar	PFQ805R1R11	PFQ905R1R11	PFQ122R1R11	PFQ170R1R11	PFQ3655
0/200 psi / 0/14 bar	PFQ806R1R11	PFQ906R1R11	PFQ123R1R11	PFQ171R1R11	PFQ3656
0/300 psi / 0/20 bar	PFQ807R1R11	PFQ907R1R11	PFQ124R1R11	PFQ175R1R11	PFQ3657
0/400 psi / 0/28 bar	PFQ817R1R11	PFQ917R1R11	PFQ125R1R11	PFQ177R1R11	PFQ3658
0/600 psi / 0/40 bar	PFQ808R1R11	PFQ908R1R11	PFQ126R1R11	PFQ178R1R11	PFQ3659
0/1,000 psi / 0/70 bar	PFQ809R1R11	PFQ909R1R11	PFQ127R1R11	PFQ179R1R11	PFQ3660
0/1,500 psi / 0/100 bar	PFQ816R1R11	PFQ914R1R11	PFQ128R1R11	PFQ180R1R11	PFQ3661
0/2,000 psi / 0/140 bar	PFQ810R1R11	PFQ910R1R11	PFQ129R1R11	PFQ181R1R11	PFQ3662
0/3,000 psi / 0/200 bar	PFQ811R1R11	PFQ911R1R11	PFQ137R1R11	PFQ182R1R11	PFQ3663
0/5,000 psi / 0/350 bar	PFQ812R1R11	PFQ912R1R11	PFQ138R1R11	PFQ183R1R11	PFQ3664
0/6,000 psi / 0/400 bar	PFQ814R1R11	PFQ915R1R11	PFQ139R1R11	PFQ184R1R11	PFQ3665
0/7,500 psi / 0/500 bar	PFQ818R1R11	PFQ918R1R11	PFQ144R1R11	PFQ186R1R11	PFQ3666
0/10,000 psi / 0/700 bar	PFQ813R1R11	PFQ913R1R11	PFQ145R1R11	PFQ190R1R11	PFQ3667
0/15,000 psi / 0/1,000 bar	-	-	PFQ146R1R11	PFQ191R1R11	PFQ3668

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes. **For options, attach suffix to end of order code: i.e. PFQ801R1R11-25DRY for DRY CASE**

Option suffix:
25BF = 2.5" (63mm) Back flange
25DRY = Supply 2.5" (63mm) gauge dry
25FF = 2.5" (63mm) Front flange
25UC = 2.5" (63mm) U-Clamp
EN = EN837-1 compliant
SF25 = 2.5" (63mm) Silicone filled

PFQ-LF Order Codes

Dial Size	2.5" (63mm)	
Connection	1/4" NPT Bottom	1/4" NPT Back (CB)
Socket, Tube	Lead Free Brass	
30" Hg Vac/kPa	PFQ801LF	PFQ900LF
30"/0/15 psi/kPa	PFQ790LF	PFQ890LF
30"/0/30 psi/kPa	PFQ798LF	PFQ898LF
30"/0/60 psi/kPa	PFQ799LF	PFQ899LF
30"/0/100 psi/kPa	PFQ791LF	PFQ891LF
30"/0/150 psi/kPa	PFQ792LF	PFQ892LF
30"/0/200 psi/kPa	PFQ794LF	PFQ894LF
30"/0/300 psi/kPa	PFQ795LF	PFQ895LF
0/15 psi/kPa	PFQ800LF	PFQ901LF
0/30 psi/kPa	PFQ802LF	PFQ902LF
0/60 psi/kPa	PFQ803LF	PFQ903LF
0/100 psi/kPa	PFQ804LF	PFQ904LF
0/160 psi/kPa	PFQ805LF	PFQ905LF
0/200 psi/kPa	PFQ806LF	PFQ906LF
0/300 psi/kPa	PFQ807LF	PFQ907LF
0/400 psi/kPa	PFQ817LF	PFQ917LF
0/600 psi/kPa	PFQ808LF	PFQ908LF
0/1,000 psi/kPa	PFQ809LF	PFQ909LF
0/1,500 psi/kPa	PFQ816LF	PFQ914LF
0/2,000 psi/kPa	PFQ810LF	PFQ910LF
0/3,000 psi/kPa	PFQ811LF	PFQ911LF
0/5,000 psi/kPa	PFQ812LF	PFQ912LF
0/6,000 psi/kPa	PFQ814LF	PFQ915LF
0/7,500 psi/kPa	PFQ818LF	PFQ918LF
0/10,000 psi/kPa	PFQ813LF	PFQ913LF
0/15,000 psi/kPa	-	-

PFQ Order Codes

Dial Size	4" (100mm)			
Connection	1/4" NPT Bottom	1/4" NPT Back (CB)	1/4" NPT Bottom	1/4" NPT Back (CB)
Movement, Socket, Tube	Brass		SS	
30" Hg Vac / -1/0 bar	PFQ700R1R11	PFQ730R1R11	PFQ760R1R11	PFQ1260R1R11
30"/0/15 psi / -1/1 bar	PFQ701R1R11	PFQ731R1R11	PFQ761R1R11	PFQ1261R1R11
30"/0/30 psi / -1/2 bar	PFQ702R1R11	PFQ732R1R11	PFQ762R1R11	PFQ1262R1R11
30"/0/60 psi / -1/4 bar	PFQ703R1R11	PFQ733R1R11	PFQ763R1R11	PFQ1263R1R11
30"/0/100 psi / -1/7 bar	PFQ704R1R11	PFQ734R1R11	PFQ764R1R11	PFQ1264R1R11
30"/0/150 psi / -1/10 bar	PFQ705R1R11	PFQ735R1R11	PFQ765R1R11	PFQ1265R1R11
30"/0/200 psi / -1/14 bar	PFQ706R1R11	PFQ736R1R11	PFQ766R1R11	PFQ1266R1R11
30"/0/300 psi / -1/20 bar	PFQ707R1R11	PFQ737R1R11	PFQ767R1R11	PFQ1267R1R11
0/15 psi / 0/1 bar	PFQ708R1R11	PFQ738R1R11	PFQ768R1R11	PFQ1268R1R11
0/30 psi / 0/2 bar	PFQ709R1R11	PFQ739R1R11	PFQ769R1R11	PFQ1269R1R11
0/60 psi / 0/4 bar	PFQ710R1R11	PFQ740R1R11	PFQ770R1R11	PFQ1270R1R11
0/100 psi / 0/7 bar	PFQ711R1R11	PFQ741R1R11	PFQ771R1R11	PFQ1271R1R11
0/160 psi / 0/11 bar	PFQ712R1R11	PFQ742R1R11	PFQ772R1R11	PFQ1272R1R11
0/200 psi / 0/14 bar	PFQ713R1R11	PFQ743R1R11	PFQ773R1R11	PFQ1273R1R11
0/300 psi / 0/20 bar	PFQ714R1R11	PFQ744R1R11	PFQ774R1R11	PFQ1274R1R11
0/400 psi / 0/28 bar	PFQ715R1R11	PFQ745R1R11	PFQ775R1R11	PFQ1275R1R11
0/600 psi / 0/40 bar	PFQ716R1R11	PFQ746R1R11	PFQ776R1R11	PFQ1276R1R11
0/1,000 psi / 0/70 bar	PFQ724R1R11	PFQ192R1R11	PFQ1528R1R11	PFQ1552R1R11
0/1,500 psi / 0/100 bar	PFQ725R1R11	PFQ241R1R11	PFQ1529R1R11	PFQ1553R1R11
0/2,000 psi / 0/140 bar	PFQ726R1R11	PFQ242R1R11	PFQ1530R1R11	PFQ1554R1R11
0/3,000 psi / 0/200 bar	PFQ727R1R11	PFQ243R1R11	PFQ1531R1R11	PFQ1555R1R11
0/5,000 psi / 0/350 bar	PFQ728R1R11	PFQ244R1R11	PFQ1532R1R11	PFQ1556R1R11
0/6,000 psi / 0/400 bar	PFQ346R1R11	PFQ246R1R11	PFQ4801R1R11	PFQ4803R1R11
0/7,500 psi / 0/500 bar	PFQ347R1R11	PFQ247R1R11	PFQ4802R1R11	PFQ4804R1R11
0/10,000 psi / 0/700 bar	PFQ729R1R11	PFQ360R1R11	PFQ1533R1R11	PFQ1557R1R11
0/15,000 psi / 0/1,000 bar	PFQ261R1R11	PFQ361R1R11	PFQ1534R1R11	PFQ1558R1R11

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes.

For options, attach suffix to end of order code: i.e. PFQ707R1R11-DRY for DRY CASE

Option suffix:

25BF = 2.5" (63mm) Back flange
25DRY = Supply 2.5" (63mm) gauge dry
25FF = 2.5" (63mm) Front flange
25UC = 2.5" (63mm) U-Clamp
4BF = 4" (100mm) Back flange
4FF = 4" (100mm) Front flange
4UC-P = 4" (100mm) U-Clamp (for SS movement)
4UC-Q = 4" (100mm) U-Clamp (for brass movement)
DRY = Supply gauge dry
EN = EN837-1 compliant
SF25 = 2.5" (63mm) Silicone filled
SF4 = 4" (100mm) Silicone filled

Order Codes

Dial Size	4" (100mm)			
Connection	1/2" NPT Bottom	1/2" NPT Back (CB)	1/2" NPT Bottom	1/2" NPT Back (CB)
Movement, Socket, Tube	Brass		SS	
30" Hg Vac / -1/0 bar	PFQ1234R1R11	PFQ1285R1R11	PFQ1535R1R11	PFQ1559R1R11
30"/0/15 psi / -1/1 bar	PFQ1235R1R11	PFQ1286R1R11	PFQ1536R1R11	PFQ1560R1R11
30"/0/30 psi / -1/2 bar	PFQ1236R1R11	PFQ1287R1R11	PFQ1537R1R11	PFQ1561R1R11
30"/0/60 psi / -1/4 bar	PFQ1237R1R11	PFQ1288R1R11	PFQ1538R1R11	PFQ1562R1R11
30"/0/100 psi / -1/7 bar	PFQ1238R1R11	PFQ1289R1R11	PFQ1539R1R11	PFQ1563R1R11
30"/0/150 psi / -1/10 bar	PFQ1239R1R11	PFQ1290R1R11	PFQ1540R1R11	PFQ1564R1R11
30"/0/200 psi / -1/14 bar	PFQ1240R1R11	PFQ1291R1R11	PFQ1541R1R11	PFQ1565R1R11
30"/0/300 psi / -1/20 bar	PFQ1241R1R11	PFQ1292R1R11	PFQ1542R1R11	PFQ1566R1R11
0/15 psi / 0/1 bar	PFQ1242R1R11	PFQ1293R1R11	PFQ1543R1R11	PFQ1567R1R11
0/30 psi / 0/2 bar	PFQ1243R1R11	PFQ1294R1R11	PFQ1544R1R11	PFQ1568R1R11
0/60 psi / 0/4 bar	PFQ1244R1R11	PFQ1295R1R11	PFQ1545R1R11	PFQ1569R1R11
0/100 psi / 0/7 bar	PFQ1245R1R11	PFQ1296R1R11	PFQ1546R1R11	PFQ1570R1R11
0/160 psi / 0/11 bar	PFQ1246R1R11	PFQ1298R1R11	PFQ1547R1R11	PFQ1571R1R11
0/200 psi / 0/14 bar	PFQ1247R1R11	PFQ1524R1R11	PFQ1548R1R11	PFQ1572R1R11
0/300 psi / 0/20 bar	PFQ1248R1R11	PFQ1525R1R11	PFQ1549R1R11	PFQ1573R1R11
0/400 psi / 0/28 bar	PFQ1249R1R11	PFQ1526R1R11	PFQ1550R1R11	PFQ1574R1R11
0/600 psi / 0/40 bar	PFQ1250R1R11	PFQ1527R1R11	PFQ1551R1R11	PFQ1575R1R11
0/1,000 psi / 0/70 bar	PFQ717R1R11	PFQ747R1R11	PFQ777R1R11	PFQ1277R1R11
0/1,500 psi / 0/100 bar	PFQ718R1R11	PFQ748R1R11	PFQ778R1R11	PFQ1278R1R11
0/2,000 psi / 0/140 bar	PFQ719R1R11	PFQ749R1R11	PFQ779R1R11	PFQ1279R1R11
0/3,000 psi / 0/200 bar	PFQ720R1R11	PFQ750R1R11	PFQ780R1R11	PFQ1280R1R11
0/5,000 psi / 0/350 bar	PFQ721R1R11	PFQ751R1R11	PFQ781R1R11	PFQ1281R1R11
0/6,000 psi / 0/400 bar	PFQ784R1R11	PFQ785R1R11	PFQ789R1R11	PFQ1284R1R11
0/7,500 psi / 0/500 bar	PFQ4805R1R11	PFQ4806R1R11	PFQ4807R1R11	PFQ4808R1R11
0/10,000 psi / 0/700 bar	PFQ722R1R11	PFQ752R1R11	PFQ782R1R11	PFQ1282R1R11
00/15,000 psi / 0/1,000 bar	PFQ723R1R11	PFQ753R1R11	PFQ783R1R11	PFQ1283R1R11

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes. **For options, attach suffix to end of order code: i.e. PFQ721-DRY for DRY CASE**

Option suffix:

4BF = 4" (100mm) Back flange
4FF = 4" (100mm) Front flange
4UC-P = 4" (100mm) U-Clamp (for SS movement)
4UC-Q = 4" (100mm) U-Clamp (for brass movement)
DRY = Supply gauge dry
EN = EN837-1 compliant
SF4 = 4" (100mm) Silicone filled

PFQ-LF Order Codes

Dial Size	4" (100mm)			
Connection	1/4" NPT Bottom	1/4" NPT Back (CB)	1/2" NPT Bottom	1/2" NPT Back (CB)
Socket, Tube	Lead Free Brass			
30" Hg Vac/kPa	PFQ700LF	PFQ730LF	PFQ1234LF	PFQ1285LF
30"/0/15 psi/kPa	PFQ701LF	PFQ731LF	PFQ1235LF	PFQ1286LF
30"/0/30 psi/kPa	PFQ702LF	PFQ732LF	PFQ1236LF	PFQ1287LF
30"/0/60 psi/kPa	PFQ703LF	PFQ733LF	PFQ1237LF	PFQ1288LF
30"/0/100 psi/kPa	PFQ704LF	PFQ734LF	PFQ1238LF	PFQ1289LF
30"/0/150 psi/kPa	PFQ705LF	PFQ735LF	PFQ1239LF	PFQ1290LF
30"/0/200 psi/kPa	PFQ706LF	PFQ736LF	PFQ1240LF	PFQ1291LF
30"/0/300 psi/kPa	PFQ707LF	PFQ737LF	PFQ1241LF	PFQ1292LF
0/15 psi/kPa	PFQ708LF	PFQ738LF	PFQ1242LF	PFQ1293LF
0/30 psi/kPa	PFQ709LF	PFQ739LF	PFQ1243LF	PFQ1294LF
0/60 psi/kPa	PFQ710LF	PFQ740LF	PFQ1244LF	PFQ1295LF
0/100 psi/kPa	PFQ711LF	PFQ741LF	PFQ1245LF	PFQ1296LF
0/160 psi/kPa	PFQ712LF	PFQ742LF	PFQ1246LF	PFQ1298LF
0/200 psi/kPa	PFQ713LF	PFQ743LF	PFQ1247LF	PFQ1524LF
0/300 psi/kPa	PFQ714LF	PFQ744LF	PFQ1248LF	PFQ1525LF
0/400 psi/kPa	PFQ715LF	PFQ745LF	PFQ1249LF	PFQ1526LF
0/600 psi/kPa	PFQ716LF	PFQ746LF	PFQ1250LF	PFQ1527LF
0/1,000 psi/kPa	PFQ724LF	PFQ192LF	PFQ717LF	PFQ747LF
0/1,500 psi/kPa	PFQ725LF	PFQ241LF	PFQ718LF	PFQ748LF
0/2,000 psi/kPa	PFQ726LF	PFQ242LF	PFQ719LF	PFQ749LF
0/3,000 psi/kPa	PFQ727LF	PFQ243LF	PFQ720LF	PFQ750LF
0/5,000 psi/kPa	PFQ728LF	PFQ244LF	PFQ721LF	PFQ751LF
0/6,000 psi/kPa	PFQ346LF	PFQ246LF	PFQ784LF	PFQ785LF
0/7,500 psi/kPa	PFQ347LF	PFQ247LF	PFQ786LF	PFQ886LF
0/10,000 psi/kPa	PFQ729LF	PFQ360LF	PFQ722LF	PFQ752LF
0/15,000 psi/kPa	PFQ261LF	PFQ361LF	PFQ723LF	PFQ753LF

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes. **For options, attach suffix to end of order code: i.e. PFQ728LF-DRY for DRY CASE**

Option suffix:

4BF = 4" (100mm) Back flange
4FF = 4" (100mm) Front flange
4UC-P = 4" (100mm) U-Clamp (for SS movement)
4UC-Q = 4" (100mm) U-Clamp (for brass movement)
DRY = Supply gauge dry
EN = EN837-1 compliant
SF4 = 4" (100mm) Silicone filled

Order Codes

Dial Size	2.5" (63mm)				4" (100mm)	
Connection	1/4" BSP(G) Bottom	1/4" BSP(G) Back (CB)	1/4" BSP(G) Bottom	1/4" BSP(G) Back (CB)	1/4" BSP(G) Bottom	1/4" BSP(G) Back (CB)
Movement, Socket, Tube	Brass		SS		Brass	
30" Hg Vac / -1/0 bar	PFQ801R1R11T1	PFQ900R1R11T1	PFQ106R1R11T1	PFQ147R1R11T1	PFQ700R1R11T1	PFQ730R1R11T1
30"/0/15 psi / -1/1 bar	PFQ790R1R11T1	PFQ890R1R11T1	PFQ107R1R11T1	PFQ148R1R11T1	PFQ701R1R11T1	PFQ731R1R11T1
30"/0/30 psi / -1/2 bar	PFQ798R1R11T1	PFQ898R1R11T1	PFQ108R1R11T1	PFQ149R1R11T1	PFQ702R1R11T1	PFQ732R1R11T1
30"/0/60 psi / -1/4 bar	PFQ799R1R11T1	PFQ899R1R11T1	PFQ109R1R11T1	PFQ151R1R11T1	PFQ703R1R11T1	PFQ733R1R11T1
30"/0/100 psi / -1/7 bar	PFQ791R1R11T1	PFQ891R1R11T1	PFQ110R1R11T1	PFQ156R1R11T1	PFQ704R1R11T1	PFQ734R1R11T1
30"/0/150 psi / -1/10 bar	PFQ792R1R11T1	PFQ892R1R11T1	PFQ111R1R11T1	PFQ157R1R11T1	PFQ705R1R11T1	PFQ735R1R11T1
30"/0/200 psi / -1/14 bar	PFQ794R1R11T1	PFQ894R1R11T1	PFQ112R1R11T1	PFQ158R1R11T1	PFQ706R1R11T1	PFQ736R1R11T1
30"/0/300 psi / -1/20 bar	PFQ795R1R11T1	PFQ895R1R11T1	PFQ113R1R11T1	PFQ159R1R11T1	PFQ707R1R11T1	PFQ737R1R11T1
0/15 psi / 0/1 bar	PFQ800R1R11T1	PFQ901R1R11T1	PFQ118R1R11T1	PFQ162R1R11T1	PFQ708R1R11T1	PFQ738R1R11T1
0/30 psi / 0/2 bar	PFQ802R1R11T1	PFQ902R1R11T1	PFQ119R1R11T1	PFQ163R1R11T1	PFQ709R1R11T1	PFQ739R1R11T1
0/60 psi / 0/4 bar	PFQ803R1R11T1	PFQ903R1R11T1	PFQ120R1R11T1	PFQ164R1R11T1	PFQ710R1R11T1	PFQ740R1R11T1
0/100 psi / 0/7 bar	PFQ804R1R11T1	PFQ904R1R11T1	PFQ121R1R11T1	PFQ169R1R11T1	PFQ711R1R11T1	PFQ741R1R11T1
0/160 psi / 0/11 bar	PFQ805R1R11T1	PFQ905R1R11T1	PFQ122R1R11T1	PFQ170R1R11T1	PFQ712R1R11T1	PFQ742R1R11T1
0/200 psi / 0/14 bar	PFQ806R1R11T1	PFQ906R1R11T1	PFQ123R1R11T1	PFQ171R1R11T1	PFQ713R1R11T1	PFQ743R1R11T1
0/300 psi / 0/20 bar	PFQ807R1R11T1	PFQ907R1R11T1	PFQ124R1R11T1	PFQ175R1R11T1	PFQ714R1R11T1	PFQ744R1R11T1
0/400 psi / 0/28 bar	PFQ817R1R11T1	PFQ917R1R11T1	PFQ125R1R11T1	PFQ177R1R11T1	PFQ715R1R11T1	PFQ745R1R11T1
0/600 psi / 0/40 bar	PFQ808R1R11T1	PFQ908R1R11T1	PFQ126R1R11T1	PFQ178R1R11T1	PFQ716R1R11T1	PFQ746R1R11T1
0/1,000 psi / 0/70 bar	PFQ809R1R11T1	PFQ909R1R11T1	PFQ127R1R11T1	PFQ179R1R11T1	PFQ724R1R11T1	PFQ192R1R11T1
0/1,500 psi / 0/100 bar	PFQ816R1R11T1	PFQ914R1R11T1	PFQ128R1R11T1	PFQ180R1R11T1	PFQ725R1R11T1	PFQ241R1R11T1
0/2,000 psi / 0/140 bar	PFQ810R1R11T1	PFQ910R1R11T1	PFQ129R1R11T1	PFQ181R1R11T1	PFQ726R1R11T1	PFQ242R1R11T1
0/3,000 psi / 0/200 bar	PFQ811R1R11T1	PFQ911R1R11T1	PFQ137R1R11T1	PFQ182R1R11T1	PFQ727R1R11T1	PFQ243R1R11T1
0/5,000 psi / 0/350 bar	PFQ812R1R11T1	PFQ912R1R11T1	PFQ138R1R11T1	PFQ183R1R11T1	PFQ728R1R11T1	PFQ244R1R11T1
0/6,000 psi / 0/400 bar	PFQ814R1R11T1	PFQ915R1R11T1	PFQ139R1R11T1	PFQ184R1R11T1	PFQ346R1R11T1	PFQ246R1R11T1
0/7,500 psi / 0/500 bar	PFQ818R1R11T1	PFQ918R1R11T1	PFQ144R1R11T1	PFQ186R1R11T1	PFQ347R1R11T1	PFQ247R1R11T1
0/10,000 psi / 0/700 bar	PFQ813R1R11T1	PFQ913R1R11T1	PFQ145R1R11T1	PFQ190R1R11T1	PFQ729R1R11T1	PFQ360R1R11T1
0/15,000 psi / 0/1,000 bar	PFQ4809R1R11T1	PFQ4810R1R11T1	PFQ146R1R11T1	PFQ191R1R11T1	PFQ261R1R11T1	PFQ361R1R11T1

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes.
For options, attach suffix to end of order code: i.e. PFQ707R1R11T1-25DRY for DRY CASE

Option suffix:

25BF = 2.5" (63mm) Back flange
25DRY = Supply 2.5" (63mm) gauge dry
25FF = 2.5" (63mm) Front flange
25UC = 2.5" (63mm) U-Clamp
4BF = 4" (100mm) Back flange
4FF = 4" (100mm) Front flange
4UC-P = 4" (100mm) U-Clamp (for SS movement)
4UC-Q = 4" (100mm) U-Clamp (for brass movement)
DRY = Supply gauge dry
EN = EN837-1 compliant
SF25 = 2.5" (63mm) Silicone filled
SF4 = 4" (100mm) Silicone filled

Order Codes

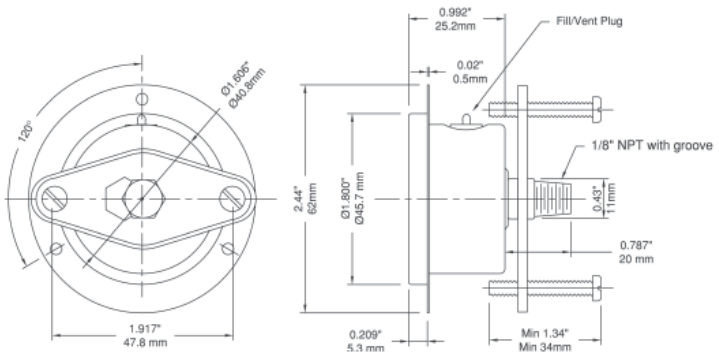
Dial Size	4" (100mm)					
Connection	1/4" BSP(G) Bottom	1/4" BSP(G) Back (CB)	1/2" BSP(G) Bottom	1/2" BSP(G) Back (CB)	1/2" BSP(G) Bottom	1/2" BSP(G) Back (CB)
Movement, Socket, Tube	SS		Brass		SS	
30" Hg Vac / -1/0 bar	PFQ760R1R11T1	PFQ1260R1R11T1	PFQ1234R1R11T1	PFQ1285R1R11T1	PFQ1535R1R11T1	PFQ1559R1R11T1
30"/0/15 psi / -1/1 bar	PFQ761R1R11T1	PFQ1261R1R11T1	PFQ1235R1R11T1	PFQ1286R1R11T1	PFQ1536R1R11T1	PFQ1560R1R11T1
30"/0/30 psi / -1/2 bar	PFQ762R1R11T1	PFQ1262R1R11T1	PFQ1236R1R11T1	PFQ1287R1R11T1	PFQ1537R1R11T1	PFQ1561R1R11T1
30"/0/60 psi / -1/4 bar	PFQ763R1R11T1	PFQ1263R1R11T1	PFQ1237R1R11T1	PFQ1288R1R11T1	PFQ1538R1R11T1	PFQ1562R1R11T1
30"/0/100 psi / -1/7 bar	PFQ764R1R11T1	PFQ1264R1R11T1	PFQ1238R1R11T1	PFQ1289R1R11T1	PFQ1539R1R11T1	PFQ1563R1R11T1
30"/0/150 psi / -1/10 bar	PFQ765R1R11T1	PFQ1265R1R11T1	PFQ1239R1R11T1	PFQ1290R1R11T1	PFQ1540R1R11T1	PFQ1564R1R11T1
30"/0/200 psi / -1/14 bar	PFQ766R1R11T1	PFQ1266R1R11T1	PFQ1240R1R11T1	PFQ1291R1R11T1	PFQ1541R1R11T1	PFQ1565R1R11T1
30"/0/300 psi / -1/20 bar	PFQ767R1R11T1	PFQ1267R1R11T1	PFQ1241R1R11T1	PFQ1292R1R11T1	PFQ1542R1R11T1	PFQ1566R1R11T1
0/15 psi / 0/1 bar	PFQ768R1R11T1	PFQ1268R1R11T1	PFQ1242R1R11T1	PFQ1293R1R11T1	PFQ1543R1R11T1	PFQ1567R1R11T1
0/30 psi / 0/2 bar	PFQ769R1R11T1	PFQ1269R1R11T1	PFQ1243R1R11T1	PFQ1294R1R11T1	PFQ1544R1R11T1	PFQ1568R1R11T1
0/60 psi / 0/4 bar	PFQ770R1R11T1	PFQ1270R1R11T1	PFQ1244R1R11T1	PFQ1295R1R11T1	PFQ1545R1R11T1	PFQ1569R1R11T1
0/100 psi / 0/7 bar	PFQ771R1R11T1	PFQ1271R1R11T1	PFQ1245R1R11T1	PFQ1296R1R11T1	PFQ1546R1R11T1	PFQ1570R1R11T1
0/160 psi / 0/11 bar	PFQ772R1R11T1	PFQ1272R1R11T1	PFQ1246R1R11T1	PFQ1298R1R11T1	PFQ1547R1R11T1	PFQ1571R1R11T1
0/200 psi / 0/14 bar	PFQ773R1R11T1	PFQ1273R1R11T1	PFQ1247R1R11T1	PFQ1524R1R11T1	PFQ1548R1R11T1	PFQ1572R1R11T1
0/300 psi / 0/20 bar	PFQ774R1R11T1	PFQ1274R1R11T1	PFQ1248R1R11T1	PFQ1525R1R11T1	PFQ1549R1R11T1	PFQ1573R1R11T1
0/400 psi / 0/28 bar	PFQ775R1R11T1	PFQ1275R1R11T1	PFQ1249R1R11T1	PFQ1526R1R11T1	PFQ1550R1R11T1	PFQ1574R1R11T1
0/600 psi / 0/40 bar	PFQ776R1R11T1	PFQ1276R1R11T1	PFQ1250R1R11T1	PFQ1527R1R11T1	PFQ1551R1R11T1	PFQ1575R1R11T1
0/1,000 psi / 0/70 bar	PFQ1528R1R11T1	PFQ1552R1R11T1	PFQ717R1R11T1	PFQ747R1R11T1	PFQ777R1R11T1	PFQ1277R1R11T1
0/1,500 psi / 0/100 bar	PFQ1529R1R11T1	PFQ1553R1R11T1	PFQ718R1R11T1	PFQ748R1R11T1	PFQ778R1R11T1	PFQ1278R1R11T1
0/2,000 psi / 0/140 bar	PFQ1530R1R11T1	PFQ1554R1R11T1	PFQ719R1R11T1	PFQ749R1R11T1	PFQ779R1R11T1	PFQ1279R1R11T1
0/3,000 psi / 0/200 bar	PFQ1531R1R11T1	PFQ1555R1R11T1	PFQ720R1R11T1	PFQ750R1R11T1	PFQ780R1R11T1	PFQ1280R1R11T1
0/5,000 psi / 0/350 bar	PFQ1532R1R11T1	PFQ1556R1R11T1	PFQ721R1R11T1	PFQ751R1R11T1	PFQ781R1R11T1	PFQ1281R1R11T1
0/6,000 psi / 0/400 bar	PFQ4801R1R11T1	PFQ4803R1R11T1	PFQ784R1R11T1	PFQ785R1R11T1	PFQ789R1R11T1	PFQ1284R1R11T1
0/7,500 psi / 0/500 bar	PFQ4802R1R11T1	PFQ4804R1R11T1	PFQ4805R1R11T1	PFQ4806R1R11T1	PFQ4807R1R11T1	PFQ4808R1R11T1
0/10,000 psi / 0/700 bar	PFQ1533R1R11T1	PFQ1557R1R11T1	PFQ722R1R11T1	PFQ752R1R11T1	PFQ782R1R11T1	PFQ1282R1R11T1
0/15,000 psi / 0/1,000 bar	PFQ1534R1R11T1	PFQ1558R1R11T1	PFQ723R1R11T1	PFQ753R1R11T1	PFQ783R1R11T1	PFQ1283R1R11T1

Other ranges, connection sizes and thread types are available upon request. For scale change, refer to How to Order Guide for scale codes.
For options, attach suffix to end of order code: i.e. PFQ775R1R11T1-DRY for DRY CASE

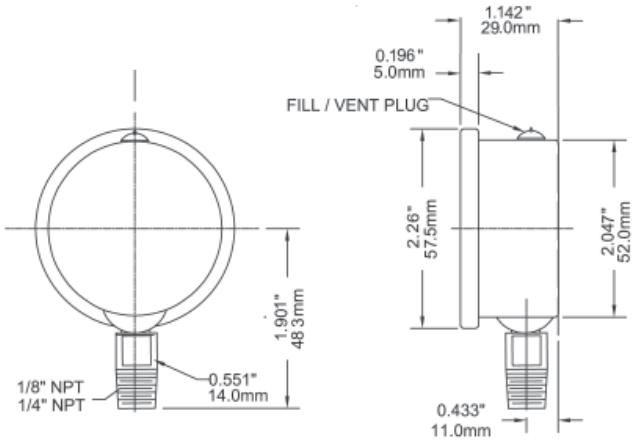
Option suffix:

4BF = 4" (100mm) Back flange
4FF = 4" (100mm) Front flange
4UC-P = 4" (100mm) U-Clamp (for SS movement)
4UC-Q = 4" (100mm) U-Clamp (for brass movement)
DRY = Supply gauge dry
EN = EN837-1 compliant
SF4 = 4" (100mm) Silicone filled

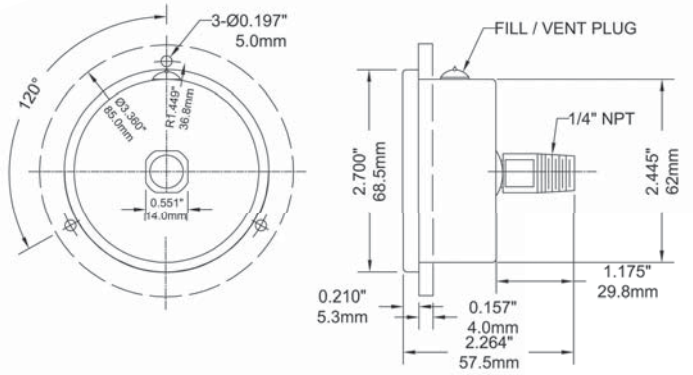
1.5” Back Connection with Front Flange and U-Clamp



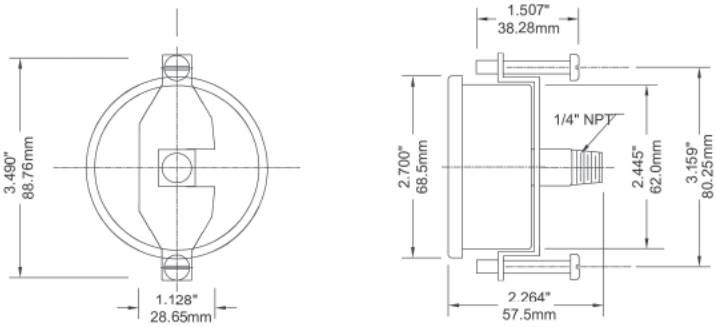
2” Bottom Connection



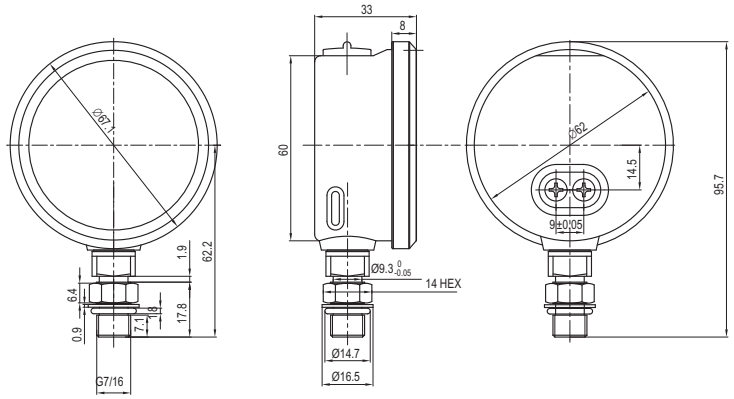
2.5” Back Connection with Front Flange



2.5” Back Connection with U-Clamp

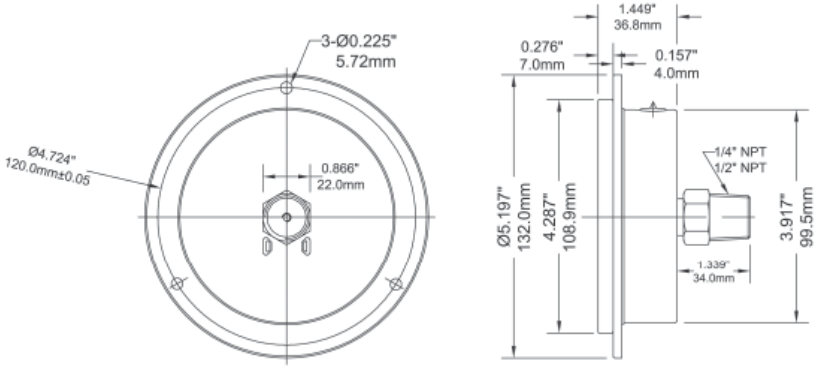


2.5” Bottom Connection SAE



Dimensions in mm

4” Back Connection with Front Flange



Series Number (for custom, non-standard product)

P F Q - _ _ - _ - _ - _ - _ - _ - _ - _ _ - _ - _ _

SERIES	PFQ
DIAL SIZE	
1.5" (40mm)	1 5
2.5" (63mm)	2 5
4.0" (100mm)	4 0
6.0" (150mm)	6 0
CASE MATERIALS	
304SS	T
WETTED PARTS	
Brass	B
316SS	S
Special	Z
CONFIGURATION	
Bottom Connection, Stem Mounting	A
Bottom Connection, Back Flange, Surface Mounting	B
Bottom Connection, Front Flange, Surface Mounting	C
Back Connection, Stem Mounting	D
Back Connection, Back Flange, Surface Mounting	E
Back Connection, Wide Front Flange, (Drilled) Panel Mounting	F
Back Connection, Narrow Front Ring, Panel Mounting (Yoke)	V
Special	Z
CONNECTION SIZE	
1/8"	8
1/4"	4
1/2"	2
Special	Z
THREAD	
NPT	N
BSP (G)	B
BSPT (R)	T
M14 x 1.5	F
M20 x 1.5	M
Special	Z
PRIMARY SCALE	
UNITS - See Page 8	
RANGE - See Page 8	
SECONDARY SCALE	
UNITS - See Page 8	
OPTIONS	
Back Flange + U-Clamp	D G
Black Rubber Boot	S Z
Fluorolube Filled	S R
Front Flange + U-Clamp	D H
Glycerin Filled	S E
Halocarbon Filled	S Q
Lead Free Wetted Parts	L F
Maximum Adjustable Pointer	S J
Oxygen Cleaning	S L
Silicone Filled	S D
Stainless Steel Tag Plate	S M
Test Certificate	S O
U-Clamp	S H
No Options	X X

Bourdon Tube Pressure Gauges
Standard Series
Type 111.10SP

Applications

- Fire sprinkler systems
- Suitable for all media that will not obstruct the pressure system or attack copper alloy parts

Product Features

- UL-listed (UL-393), United States and Canada
- Factory Mutual (FM) approved
- Reliable and economical

Bourdon Tube Pressure Gauge Type 111.10SP

Specifications

Design
EN 837-1 & ASME B40.100

Sizes
4” (100 mm)

Accuracy class
± 3/2/3% of span (ASME B40.100 Grade B)

Ranges
0/80 psi (5,5 bar), retard to 250 psi (17 bar), air
0/300 psi (20 bar), water
0/400 psi (28 bar), water
0/600 psi (40 bar), water

Working pressure
Steady: 3/4 of full scale value
Fluctuating: 2/3 of full scale value
Short time: full scale value

Operating temperature
Ambient: -40°F to 140°F (-40°C to 60°C)
Media: 140°F (+60°C) maximum

Temperature error
Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% of span for every 18°F (10°K) rising or falling.

Bourdon tube
Material: copper alloy
C-shape

Pressure connection
Material: copper alloy
1/4“ NPT lower mount (LM)

Movement
Copper alloy

Dial
White aluminum with stop pin; black and red lettering

Pointer
Black aluminum

Case
Black polycarbonate

Window
Snap-in clear polycarbonate

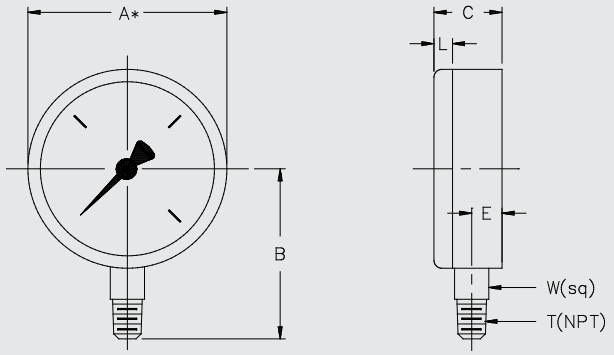
Approvals
UL listed (UL-393)
Factory Mutual

Optional Extras

(not all options are UL or FM approved)

- Brass restrictor
- Black-painted steel case
- Custom dial layout
- Other dual scales in combination with psi are available: bar, kPa, MPa, kg/cm²

Dimensions



Size		A	B	C	E	L	T	W	Weight
4”	mm	100	71	30	11.5	3.75		14	
	in	4.0	2.79	1.18	0.45	0.15	1/4”	0.55	0.35 lb.

Ordering information
Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.
Modifications may take place and materials specified may be replaced by others without prior notice.

WIKA Instrument Corporation
1000 Wiegand Boulevard
Lawrenceville, GA 30043-5868
Tel: 888-WIKA-USA • 770-513-8200
Fax: 770-338-5118
E-Mail: info@wika.com
www.wika.com

Bourdon tube pressure gauge
Model 111.11, welding gauge to ISO 5171

for further approvals
see page 2

Applications

- For equipment and plants for welding, cutting and allied processes

Special features

- Design per ISO 5171
- Pressure relief in case back
- Reliable and cost-effective

Bourdon tube pressure gauge model 111.11

Description

Design
ISO 5171

Nominal size in mm
40, 50, 63

Accuracy class
2.5

Scale ranges
Welding engineering standard ranges for oxygen and acetylene to ISO 5171, as well as 0 ... 1 to 0 ... 400 bar to EN 837-1

Pressure limitation
Steady: 3/4 x full scale value
Fluctuating: 2/3 x full scale value
Short time: Full scale value

Permissible temperature
Ambient: -20 ... +60 °C
Medium: +60 °C maximum

Temperature effect
When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. ±0.4 %/10 K of the span

Standard version

Process connection
Copper alloy, lower mount (LM), with restrictor
NS 40: G 1/8 B (male), 14 mm flats
NS 50,63: G 1/4 B (male), 14 mm flats

Pressure element
Copper alloy (with acetylene, max. 70 % copper content), C-type or helical type

Movement
Copper alloy

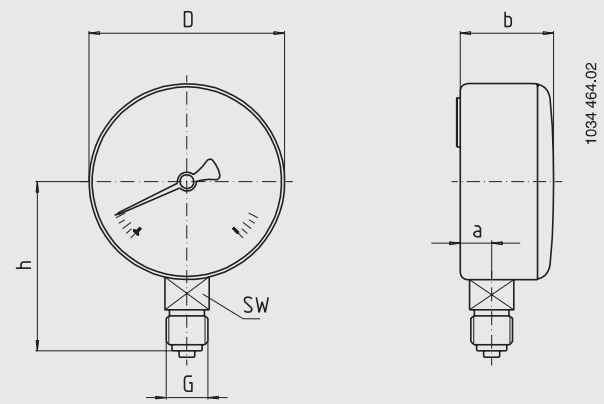
Dial
Plastic, white, with pointer stop pin
Black lettering

Pointer
Plastic, black

Dimensions in mm

Standard version

Lower mount (LM)



NS	Dimensions in mm						Weight in kg
	a	b	D	G	h ±1	SW	
40	9.5	26	39	G ⅛ B	36	14	0.09
50	9.5	28	49	G ¼ B	45	14	0.11
63	9.5	28	62	G ¼ B	53.5	14	0.15

Process connection per EN 837-1 / 7.3

Ordering information
Model / Nominal size / Scale range / Connection size / Options

Case
Steel, brass-coloured,
with pressure relief in case back

Window
Polycarbonate, snap-fitted in case

Options

- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Case brass or stainless steel
- Slip-on bezel
- Back mount (BM)
- Acetylene pressure gauge for pressure regulators for manifold systems per ISO 7291 (BAM tested)

CE conformity

Pressure equipment directive
97/23/EC, PS > 200 bar, module A, pressure accessory

Approvals

- **GOST**, metrology/measurement technology, Russia
- **GOST-R**, import certificate, Russia
- **CRN**, safety (e.g. electr. safety, overpressure, ...), Canada

Certificates [1)]

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)

1) Option

Approvals and certificates, see website

WIKA Alexander Wiegand SE & Co. KG
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63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de

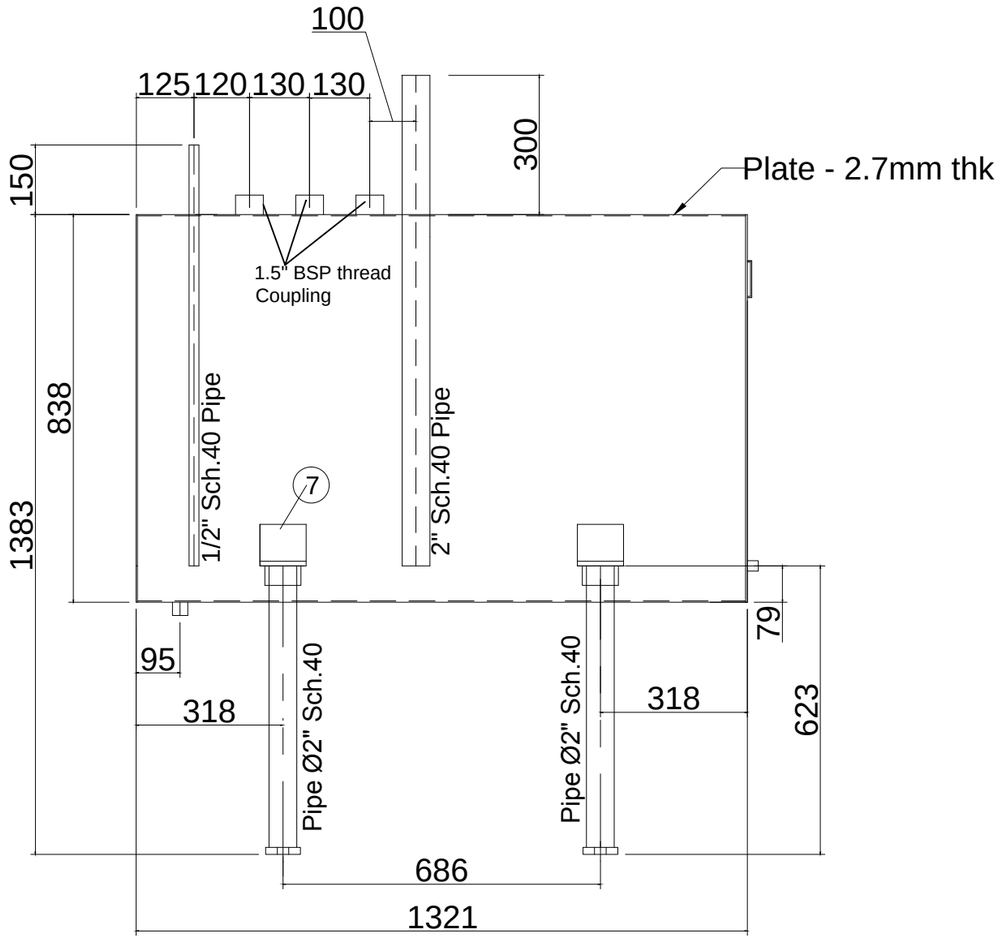
08/2014 GB

MENA MECHANICAL INDUSTRIES CO.	Vendor Ref. No.
	Vendor Doc. No.
	Contractor Ref. No
Project Name:	Contractor Job No.

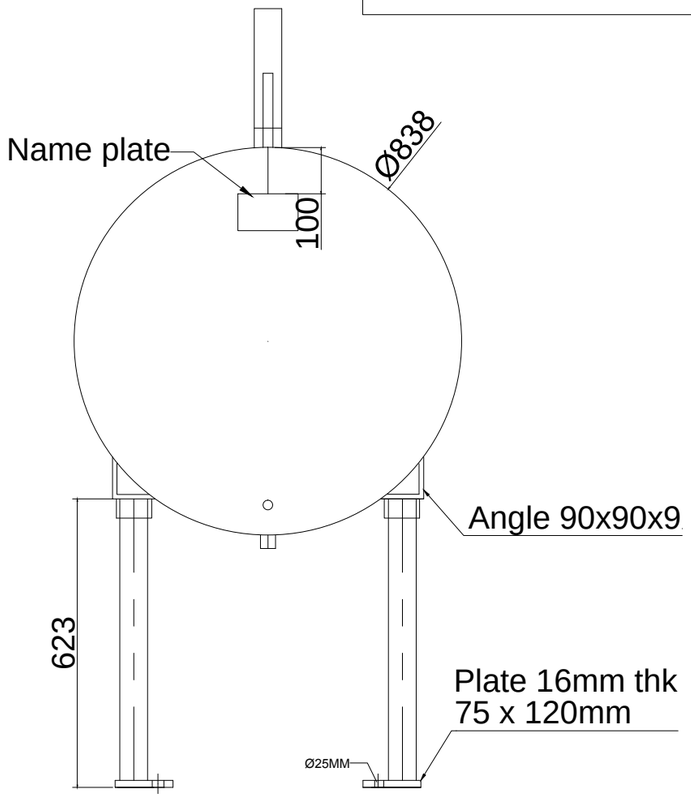
DIESEL TANK DRAWING

0	*SUBMITTED FOR APPROVAL*				
Rev	***Description***	***Prepared***	***Checked***	***Approved***	***Date***

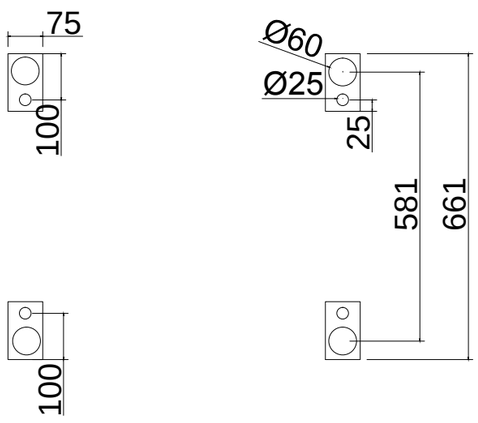
Shell Size	:- 1315 x 2623 mm
End Plate size	:- Ø 832mm



tank front view



tank side view



180 US GLN Tank

1. ALL DIMENSION ARE IN MILLIMETERS AND ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS.
3. ANY DISCREPANCY IN THE DRAWING SHALL BE BRING INTO NOTICE OF THE ENGINEER PRIOR TO THE EXECUTION OF WORK.
4. DO NOT COMMENCE THE WORK UNLESS THE DRAWING IS ISSUED FOR CONSTRUCTION.
5. PROJECT ENGINEERS SHALL CHECK ALL DIMENSIONS, SIZE ETC. BEFORE COMMENCING ANY WORK AT SITE.

NO.	DATE	DESCRIPTION
00	03-07-2021	ISSUED FOR FABRICATION

REVISIONS

DO NOT SCALE DRAWINGS, FOLLOW WRITTEN DIMENSIONS

PROJECT :-

CLIENT:-

BURIEN FIRE FIGHTING SYSTEMS CO.LLC

CONSULTANT:-

CONTRCTOR:-

DRAWING TITLE

180 US GLN TANK

SUB CONTRACTOR:-

DRAWN	SPS	DATE	03-JuL-2021
CHECKED	BSM	PROJECT NO.	
DESIGNED		SCALE	1:1
APPROVED		REVISION.	00
DWG.NO.	MSF-BURIEN-180-001		