

FIRE PUMP SYSTEMS

MOTOR DRIVEN + DIESEL DRIVEN + JOCKEY PUMP

CENTRIFUGAL END SUCTION FIRE PUMP

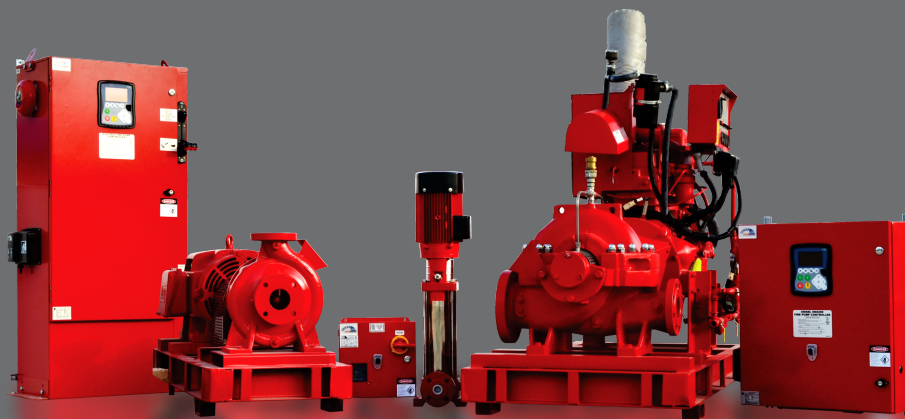
FLOW: 500 USGPM

PRESSURE: 8 BAR



SUBMITTED BY:

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INDEX

NO.	DESCRIPTION
1	CORPORATE LITERATURE
2	ORDER FORM/TECHNICAL INDEX
3	CENTRIFUGAL END SUCTION PUMPS
4	MOTOR DRIVEN SKIDS
5	DIESEL DRIVEN SKIDS
6	JOCKEY PUMPS & CONTROLLERS
7	ACCESSORIES & ARRANGEMENTS
8	CERTIFICATIONS



FIRE PUMPS SYSTEMS

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CORPORATE LITERATURE



FIRE PUMP SYSTEMS

Saudi Factory for Fire Equipment reserves the right to make revisions to its products and their specifications, and to this catalogue and related information, without prior notice. All products must be installed and maintained in accordance with applicable instructions and/or standards.

PRODUCING TRUST IN FIRE AND SAFETY



FIRE PUMP SYSTEMS



www.sffecoglobal.com



SFFECO with its more than 30 years of experience has always been a progressive organization that has remained in the forefront of the fire fighting industry with innovative, re-engineered and unique products.

○ SFFECO in its state-of-the-art manufacturing plants in RIYADH & DUBAI works in close connections with renowned governmental and certification bodies to provide key answers to the challenges faced by the society.

SFFECO brings together over 3-Decades of expertise and experience in form of Design, Consultancy, Testing, Commissioning, Maintenance & Refurbishment of fire protection and fire fighting systems.



SFFECO is proud to be working with International certification bodies. For specific product certifications, please check the respective product page or contact our sales team.



LPCB



SFFECO FIRE PUMPS FACILITY

MANUFACTURING

Each pump undergoes required inspection, tests and production control during the assembly process and records are logged for the same, before being delivered to our customers.

TESTING FACILITY

SFFECO has established a fully equipped state of the art, UL/FM and NFPA 20 compliant Pump Testing facility with advance testing and calibration devices that enable us to accurately inspect and test the operation of each Centrifugal Stationary Fire Pump to the required level of compliance standard.

PERFORMANCE TESTS

Each pump produced, undergoes performance tests as follows

a) OPERATION TEST

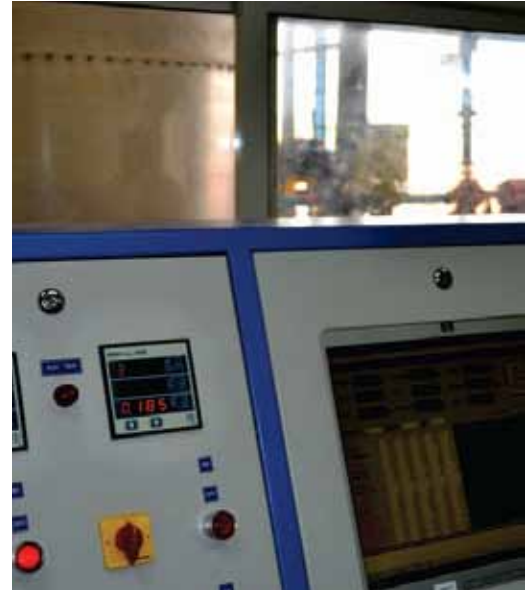
Performance curves are plotted showing the Efficiency, Brake-Horsepower (kW), and Total Head developed at shutoff, at rated capacity, at 150 percent of rated capacity, and at selected intermediate capacities between shutoff and maximum capacities exceeding 150% of rated capacity.

b) HYDROSTATIC TEST

Each pump is tested hydrostatically for not less than 5 minutes. The test pressure is to be upto 2 times the maximum working pressure of the pump, but in no case less than 250 psi (1724 kPa) to ensure no rupture or leakage through the castings at the test pressure.

c) IMPELLER BALANCING

The impellers of each pump are dynamically balanced to the G6.3 balance quality grade in accordance with the requirements for pump impellers in the Standard for Mechanical Vibration – Balance Quality





CENTRIFUGAL FIRE PUMPS END SUCTION 50/60 HZ

Top Centerline Discharge
Foot Supported Casing
Back Pullout Design
Self- Venting Design
Efficiently Designed Shaft
Frame-Mounted Design
Small Footprint Ideal for Retrofit
Dynamically Balanced Impeller
Heavy Duty With Heavy Wall Thickness
100% Hydrostatic & Performance Tested
Back Pump Out Vanes



Model Dsg.	Rated Capacity (GPM)	Size		UL Listed Rated Net Pressure Range (PSI)	FM Approved Rated Net Pressure Range (PSI)	Approx Speed (RPM)	Max Working Pressure (PSI)
		Suction Flange Ø (MM)	Discharge Flange Ø (MM)				
SFP 50-20 EM	50	50	32	68-87	68-88	2900	230
SFP 50-20 EH		50	32	101-129	102-129	3500	230
SFP 50-26 EM		50	32	115-140	115-133	2900	230
SFP 50-26 EH		50	32	163-206	168-195	3500	230
SFP 100-20 EH	100	50	32	119	x	3500	230
SFP 100-26 EH		50	32	159-195	x	3500	230
SFP 100-50 EH		65	50	104-128	106-130	3500	230
SFP 100-26 EM		65	40	109-134	x	2900	230
SFP 100-42 EH		65	40	116-143	x	3000	230
SFP 100-40 EH		65	40	162-198	x	3500	230
SFP 150-26 EM	150	65	40	124	x	2900	230
SFP 150-42 EH		65	40	107-135	x	3000	230
SFP 150-26 EH		65	40	156-191	x	3500	230
SFP 150-20 EH		65	50	102-126	104-129	3500	230
SFP 200-20 EH	200	65	50	96-120	98-124	3500	230
SFP 200-65 EM		80	65	115-136	115-136	2900	230
SFP 250-26 EM	250	80	65	113-134	112-134	2900	230
SFP 250-20 EH		80	65	103-124	105-125	3500	230
SFP 300-26 EM	300	80	65	110-132	108-130	2900	230
SFP 300-20 EH		80	65	101-123	102-123	3500	230
SFP 400-26 EM	400	100	80	110-133	108-133	2900	230
SFP 400-26 EH		100	80	191	165-198	3500	240
SFP 400-32 EM		100	80	158-200	162-197	2900	250
SFP 400-80 EH		100	80	105 - 193	115-195	3500	235
SFP 450-26 EM	450	100	80	109-132	105-132	2900	230
SFP 450-26 EH		100	80	188	162-197	3500	240
SFP 450-32 EM		100	80	154-198	159-195	2900	250
SFP 450-80 EH		100	80	102 - 190	111-195	3500	235
SFP 500-26 EM	500	100	80	108-131	104-131	2900	230
SFP 500-26 EH		100	80	185	161-195	3500	240
SFP 500-32 EM		100	80	149-194	156-194	2900	250
SFP 500-80 EH		100	80	99 - 188	110-194	3500	235
SFP 500-12 EM		125	100	111 - 133	113-139	2900	225
SFP 500-13 EM		125	100	122 - 210	126-216	2900	245
SFP 750-26 EM	750	125	100	102 - 127	108-136	2900	225
SFP 750-32 EM		125	100	122 - 207	117-214	2900	245

CAPACITY : 50 GPM TO 750 GPM
PRESSURES : 68 TO 216 PSI
MAX WORKING
PRESSURE : 225 TO 250 PSI
SPEED : 2900,3000, AND 3500 RPM

UL LISTED & FM APPROVED PUMPS
Compliant to NFPA 20 Design &
Installation Requirements.

Wide Range of Flows and Pressures
Available in ELECTRIC MOTOR and
DIESEL ENGINE Driven Configuration
Suitable for Commercial, Industrial and
Buildings Applications.

Notes:

1. All Pumps are Hydrostatically Tested to minimum of 150% of its Maximum Working Pressure and can with stand Double the Max.Working Pressure.
2. All Pumps have Clock-Wise Rotation when viewed from the Driver Side.
3. All Pumps are horizontal single stage Pumps.
4. "The rated speed marked on the pump can vary within +/-4% of the listed/ approved rated speed example : 3000 RPM pump can be driven with 2900 RPM Drivers."

CENTRIFUGAL FIRE PUMPS SPLIT CASE 50/60 HZ



Volute Type Thru-Bore Casing

Frame-Mounted Design

Small Footprint Ideal for Retrofit

Dynamically Balanced Double Suction Impeller

Heavy Duty With Heavy Wall Thickness

100% Hydrostatic & performance Tested

CAPACITY : 150 GPM TO 2000 GPM

PRESSURES : 88 TO 335 PSI

MAX WORKING

PRESSURE : 220 TO 405 PSI

SPEED : 2900, 3000, 3500 AND 3600 RPM

Available in ELECTRIC MOTOR and DIESEL
ENGINE Driven Configuration

Suitable for Commercial, Industrial and
Buildings applications.

UL LISTED & FM APPROVED PUMPS

Compliance to NFPA 20 Design & Installation
Requirements.

Wide Range of Flows and Pressures

Model Dsg	Flow (GPM)	Approx Speed (RPM)	Head Bar - (PSI) UL Listing	Head Bar - (PSI) FM Approved	Size (in.)	Max Working Pressure (PSI)
SFP150-25SH	150 GPM	3500	114-208	114-208	6x4	300
SFP150-40SM		121 - 220	121 - 220	121 - 220	6x4	
		2900	206 - 289	206 - 289	6x4	
		3000	221 - 310	221 - 310	6x4	
SFP150-SN31SH		3500	226 - 316	226 - 316	6x4	405
		3600	239 - 334	239 - 327	6x4	
SFP150-28SM		2900	101 - 158	101 - 158	5X3	
		3000	108 - 167	108 - 167	5X3	
		2900	125 - 224	125 - 224	5X3	318
SFP150-35SM		3000	133 - 240	133 - 240	5X3	
SFP200-25SH	200 GPM	3500	114 - 207	114 - 207	6x4	300
		3600	121 - 219	121 - 219	6x4	
		2900	206 - 289	206 - 289	6x4	
		3000	220 - 309	220 - 309	6x4	
SFP200-40SM		3500	226 - 317	226 - 317	6x4	405
		3600	239 - 335	239 - 329	6x4	
SFP200-SN31SH		2900	101 - 156	101 - 156	5X3	
		3000	108 - 167	108 - 167	5X3	
SFP200-28SM		2900	124 - 224	124 - 224	5X3	318
SFP200-35SM		3000	133 - 240	133 - 240	5X3	
SFP250-25SH	250 GPM	3500	114 - 207	114 - 207	6x4	300
		3600	121 - 219	121 - 219	6x4	
		2900	206 - 288	206 - 288	6x4	
		3000	220 - 308	220 - 308	6x4	
SFP250-40SM		3500	226 - 317	226 - 317	6x4	405
		3600	239 - 335	239 - 329	6x4	
SFP250-SN31SH		2900	101 - 156	101 - 156	5X3	
		3000	108 - 167	108 - 167	5X3	
SFP250-28SM		2900	123 - 223	123 - 223	5X3	318
SFP250-35SM		3000	132 - 239	132 - 239	5X3	
SFP300-35SM	300 GPM	2900	122-222	122-222	5X3	319
		3000	131-237	131-237	5X3	
		3500	114-206	114-206	6x4	
		3600	121 - 219	121 - 219	6x4	
SFP300-40SM		2900	206 - 286	206 - 286	6x4	385
		3000	220 - 307	220 - 307	6x4	
		3500	226 - 316	226 - 316	6x4	
		3600	239 - 334	239 - 328	6x4	
SFP300-SN31SH		2900	100 - 156	100 - 156	5X3	239
SFP300-28SM		3000	107 - 167	107 - 167	5X3	
SFP400-35SM	400 GPM	2900	120-219	120-219	5X3	319
		3000	129-234	129-234	5X3	
		2900	96-155	96-155	5X3	
		3000	105-165	105-166	5X3	
SFP400-28SM		3500	114-206	113-206	6x4	239
		3600	120 - 218	120 - 218	6x4	
SFP400-25SH		2900	206 - 285	206 - 285	6x4	
		3000	221 - 305	221 - 305	6x4	
SFP400-40SM		3500	225 - 314	225 - 314	6x4	405
		3600	238 - 332	238 - 326	6x4	
SFP450-SN31SH	450 GPM	2900	96-155	96-155	5X3	
		3000	104-166	104-166	5X3	
SFP450-28SM		3500	113-206	113-206	6x4	239
		3600	120 - 218	120 - 218	6x4	
SFP450-25SH		2900	205 - 284	205 - 284	6x4	
		3000	220 - 304	220 - 304	6x4	
SFP450-40SM		3500	224 - 313	224 - 313	6x4	385
		3600	237 - 331	237 - 331	6x4	
SFP500-31SM		2900	134 - 233	134 - 233	6x4	
SFP500-37SM		2900	137 - 203	137 - 203	6x4	220
		2900	94-154	94-154	5X3	
SFP500-28SM	500 GPM	3000	102-165	102-165	5X3	
		3500	113-205	113-205	6x4	
SFP500-25SH		3600	120-217	120-217	6x4	300
		2900	119-198	119-198	6x4	
SFP500-32SM		3000	128-212	128-212	6x4	
		2900	204 - 284	204 - 284	6x4	385
SFP500-40SM		3000	219 - 304	219 - 304	6x4	
		3500	224 - 312	224 - 312	6x4	
SFP500-SN31SH		3600	237 - 330	237 - 324	6x4	
SFP500-31SM		2900	137 - 203	130 - 197	6x4	220
		3000	-	139 - 212	6x4	
SFP750-31SM	750 GPM	2900	131 - 201	131 - 201	6X4	220
		3500	106-199	106-199	6x4	
		3600	113-211	113-211	6x4	
		2900	111-194	111-194	6x4	
SFP750-32SM		3000	120-208	120-208	6x4	290
		2900	148-182	148-182	8X5	
SFP750-29SM		3000	159-196	159-196	8X5	
		2900	199 - 281	199 - 281	6x4	
SFP750-40SM		3000	214 - 301	214 - 301	6x4	385
		3500	218 - 309	218 - 309	6x4	
SFP750-SN31SH		3600	231 - 327	231 - 327	6x4	
		3500	148 - 266	148 - 265	8x5	
SFP750-12SH	1000 GPM	3600	157 - 281	157 - 281	8x5	362
		3500	190 - 290	190 - 290	8x4	
		3600	201 - 306	201 - 299	8x4	
		3600	134 - 195	134 - 204	6X4	
SFP1000-31SM		2900	143-181	143-181	8X5	220
		3000	154-194	154-194	8X5	
SFP1000-29SM		2900	98-172	98-172	8X5	
		3000	106-185	106-185	8X5	
SFP1000-30SM		2900	191 - 272	191 - 272	6x4	385
		3000	206 - 292	206 - 292	6x4	
SFP1000-40SM		3500	146 - 264	146 - 264	8x5	
		3600	155 - 280	155 - 280	8x5	
SFP1000-12SH	1250 GPM	3500	152 - 205	152 - 205	8x5	300
		3600	160 - 217	160 - 217	8x5	
SFP1000-15SH		2900	163 - 278	163 - 278	8x5	
		3000	175 - 298	175 - 285	8x5	
SFP1000-36SM		3500	187 - 289	187 - 289	8x4	377
		3600	199 - 306	199 - 306	8x4	
SFP1000-EL31SH		2900	137-177	137-177	8X5	
		3000	148-191	148-191	8X5	
SFP1250-29SM		2900	94-170	94-170	8X5	275
		3000	101-182	101-177	8X5	
SFP1250-30SM		3500	207 - 264	207 - 264	8x5	
		3600	219 - 279	219 - 279	8x5	
SFP1250-12SH	1500 GPM	3500	150 - 205	150 - 205	8x6	300
		3600	159 - 217	159 - 217	8x6	
SFP1250-15SH		2900	155 - 278	155 - 278	8x5	
		3000	168 - 298	168 - 280	8x5	
SFP1250-36SM		3500	178 - 287	178 - 287	6x4	377
		3600	190 - 304	190 - 296	6x4	
SFP1500-30SM		2900	88-167	88-167	8X5	
		3000	95-179	95-174	8X5	
SFP1500-15SH		3500	149 - 207	149 - 207	8x6	300
		3600	158 - 218	158 - 218	8x6	
SFP1500-36SM		2900	153 - 275	153 - 275	8x5	
		3000	164 - 295	164 - 295	8x5	
SFP2000-15SH	2000 GPM	3500	145-203	145-203	8X6	300
SFP2000-15SH		3600	154 - 215	154 - 215	8x6	

Notes:

1. All Pumps are Hydrostatically Tested to minimum of 150% of its Maximum Working Pressure and can with stand Double the Max.Working Pressure.
2. All Pumps have Clock-Wise Rotation when viewed from the Driver Side.
3. All Pumps are horizontal single stage Pumps.
4. "The rated speed marked on the pump can vary within +/-4% of the listed/ approved rated speed example : 3000 RPM pump can be driven with 2900 RPM Drivers."

CENTRIFUGAL FIRE PUMPS VERTICAL TURBINE

50/60 HZ



Designed and built as per UL 448 AND NFPA20
Dynamically Balanced Impeller
Constructed in variety of metallurgies
Available in 50 Hz and 60 Hz
Drivers with gear boxes at electrical and diesel speed
Designed for easy maintenance
Open line shaft
Packaged systems available
Self-Venting Design eliminates vapor lock
Efficiently Designed Shaft
Heavy wall thickness
Sealing arrangement is packing design
Modular Construction
Space-saver design



Model No.	Rated Capacity (GPM)	Rated Net Pressure Range (PSI)	Approx Speed (RPM)
SFP-750-70-VT	200	40 - 248	1480
SFP-750-70-VT	250	40 - 248	1480
SFP-750-70-VT		48 - 351	1760
SFP-750-70-VT	300	40 - 247	1480
SFP-750-70-VT		48 - 351	1760
SFP-750-70-VT	400	40 - 244	1480
SFP-750-70-VT		46 - 349	1760
SFP-750-70-VT	450	40 - 241	1480
SFP-750-70-VT		44 - 347	1760
SFP-750-70-VT	500	40 - 236	1480
SFP-750-70-VT		44 - 343	1760
SFP-750-70-VT	750	40 - 320	1760
SFP-1500-80-VT		42 - 254	1480
SFP-1500-80-VT	1000	40 - 244	1480
SFP-1500-80-VT		58 - 355	1760
SFP-2000-90-VT		58 - 239	1480
SFP-1500-80-VT	1250	40 - 225	1480
SFP-1500-80-VT		54 - 341	1760
SFP-2000-90-VT		56 - 230	1480
SFP-2000-90-VT		80 - 335	1760
SFP-1500-80-VT	1500	58 - 317	1760
SFP-2000-90-VT		52 - 225	1480
SFP-2000-90-VT		78 - 325	1760
SFP-2000-90-VT	2000	72 - 312	1760

FLOW CAPACITY
200 GPM - 2000 GPM

PRESSURE RANGE
40 - 355 PSI

MAX WORKING PRESSURE
290 PSI - 395 PSI

SPEED
1480 & 1760 RPM

Notes:

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3. All Pumps are horizontal single stage Pumps.
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FIRE PUMP SYSTEM COMPONENTS

DIESEL TANKS

All Sffeco Steel Above ground Tanks for flammable and combustible Liquid are assembled and tested to all requirements as follows

- * ANSI/UL-142 – Compliant.
- * Installation standard compliance to NFPA 30, NFPA 30A and NFPA 31



NOTE : UL LISTED TANKS ARE AVAILABLE UP ON CLIENT REQUEST.

PRIMARY CONTAINMENT TANKS

1. Horizontal Cylindrical Construction (Capacity Upto 75000 Gallon)
2. Vertical Cylindrical Construction (Capacity Upto 60000 Gallon)
3. Rectangular Construction (Capacity Upto 550 Gallon)

SECONDARY CONTAINMENT TANKS

1. Horizontal Cylindrical Construction (Capacity Upto 75000 Gallon)
2. Vertical Cylindrical Construction (Capacity Upto 60000 Gallon)

FIRE PUMP CONTROLLERS

- ELECTRIC PUMP CONTROL
- DIESEL PUMP CONTROL
- JOCKEY PUMP CONTROL
- ALARM PANEL

All Fire Pump Controllers are factory assembled, wired, tested as a unit and comply to all requirements of the latest edition of NFPA-20 (Centrifugal Fire Pumps) and NFPA-70 (National Electrical Code). Controllers are listed

by Underwriters Laboratories, Inc., in accordance with UL218, Standard for Fire Pump Controllers, CSA, and Standard for Industrial Control Equipment (CUL) and approved by Factory Mutual (FM). All controllers are Y2K compliant.

This component plays a vital role in fire pumps as it controls the entire system. It is selected as per customer choice if any, otherwise it can be either TORNATECH, FIRETROL, HUBBLE LEXINGTON OR JOSLYN CLARKE.



JOCKEY PUMP

Jockey pumps are small, motor driven pumps used in conjunction with main fire pumps to compensate for minor leaks in the fire protection system and automatically maintain stand-by pressure. This reduces wear on the main pump and controller caused by unnecessary, frequent operation. Jockey Pump controllers are available for across the-line starting.



FIRE PUMP SKID

DIESEL DRIVEN



SFFECO is an established well reputed manufacturer of Premium Custom Engine Driven Centrifugal Fire Pump Skids. We specialized in designing and developing packages in accordance to NFPA 20 requirements with Listed & Approved Drivers.

SFFECO offers listed Centrifugal Fire Pump Skids that meet every fire protection need.

- Driven by Listed & Approved Diesel Engines.
- Well aligned and Coupled for Direct Operation.
- Skid Packages are Pre-Tested and Inspected thoroughly before release to customers.
- One piece base plate with Anchor Bolt holes.
- Engineered, coated, hot rolled mild steel to resist corrosion and abrasion.
- Heavy Fabricated C-Channel Structure constructed to provide proper alignment of Pump with Diesel Engine or Pump.
- Compact skid Design with Small Foot-Print for Retrofit.
- High standard of Quality in material Construction finish and Workmanship.



SFFECO maintains its standard with using it's proudly own listed & approved Black Stallion Diesel Engines and Centrifugal Fire Pumps to package Heavy Duty and High Quality Compact Skids.

Our Listed and Approved Fire Pumps can also be coupled with any other Listed Diesel Engine of any specific brand as per customers requirement.

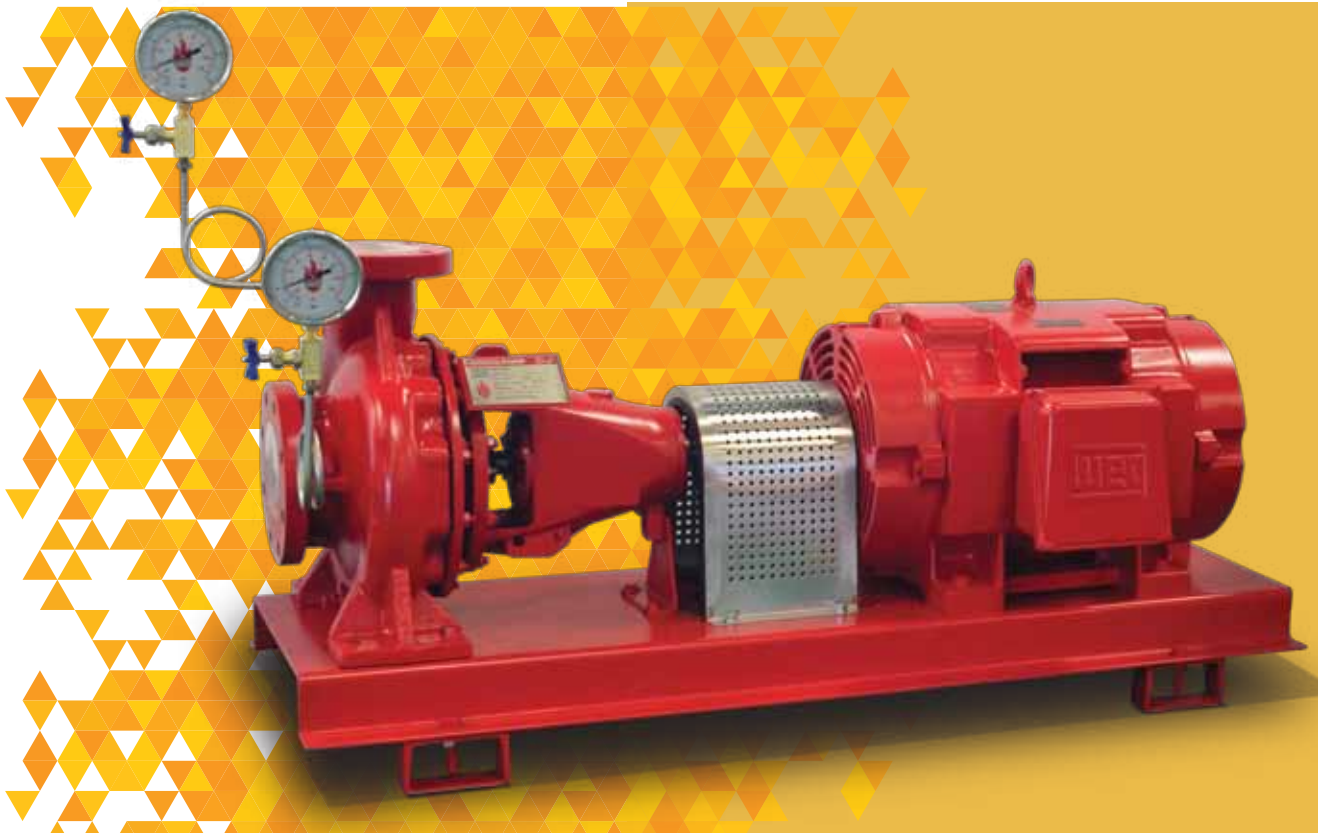
FIRE PUMP SKID ELECTRICAL MOTOR



SFFECO is an established well reputed manufacturer of Premium Custom Motor Driven Centrifugal Fire Pump Skids. We specialized in designing and developing packages in accordance to NFPA 20 requirements with Listed & Approved Drivers.

SFFECO offers listed Centrifugal Fire Pump Skids that meet every fire protection need.

- Driven by Listed & Approved Fire Pump Electric Motors.
- Well aligned and Coupled for Direct Operation.
- Skid Packages are Pre-Tested and Inspected thoroughly before release to customers.
- One piece base plate with Anchor Bolt holes.
- Engineered, coated, hot rolled mild steel to resist corrosion and abrasion.
- Heavy Fabricated Steel base plate rigidly constructed to provide proper alignment of pump & motor.
- Compact skid Design with Small Foot-Print for Retrofit.
- High standard of Quality in material Construction finish and Workmanship.



SFFECO maintains its standard with using it's proudly own listed & approved WEG High Efficiency Fire Pump Motors and Centrifugal Fire Pumps to package Heavy Duty and High Quality Compact Skids.

Our Listed and Approved Fire Pumps can also be coupled with any other Listed Diesel Engine of any specific brand as per customers requirement.

Follow us on Social Media



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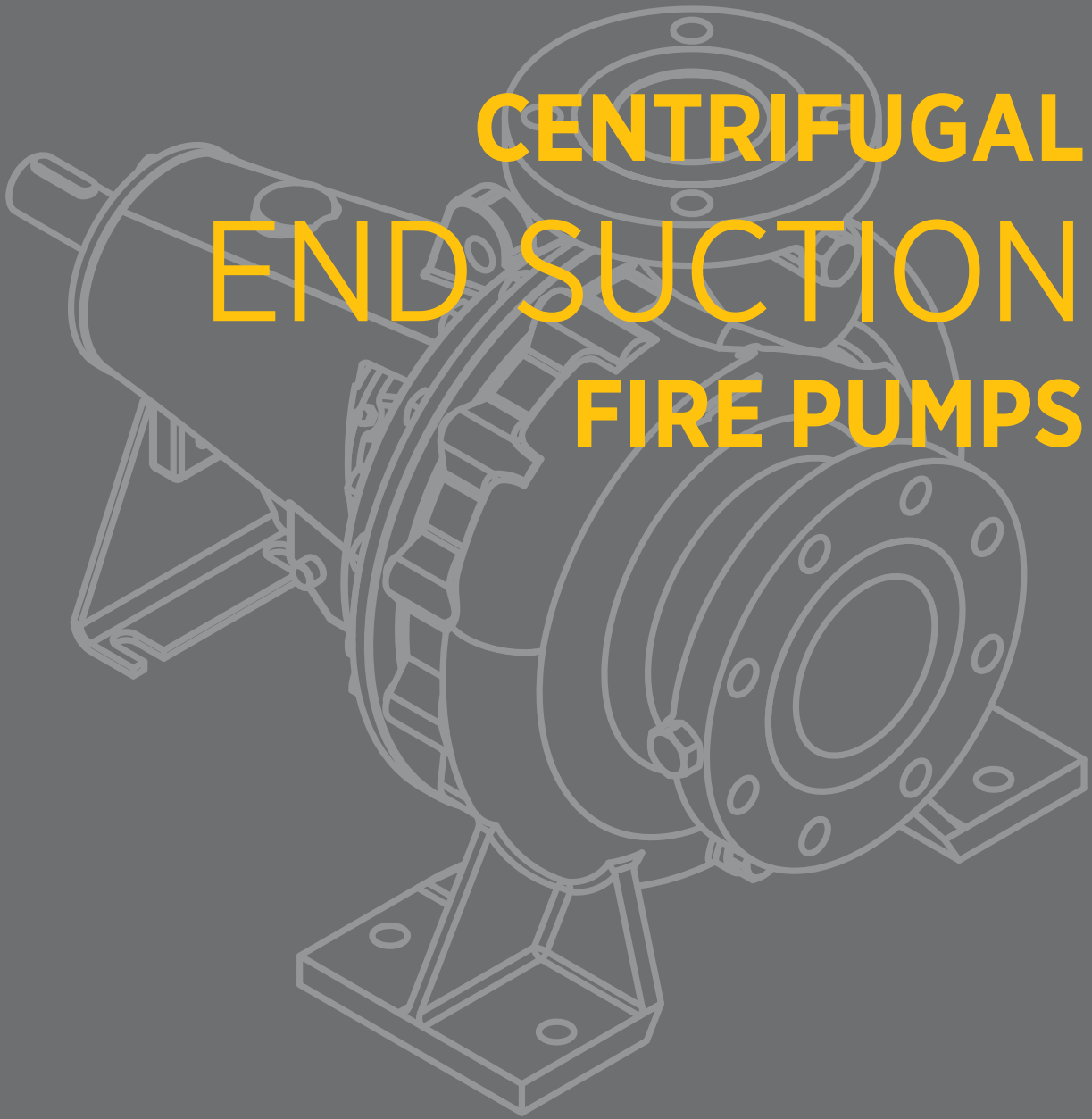
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CENTRIFUGAL END SUCTION FIRE PUMPS

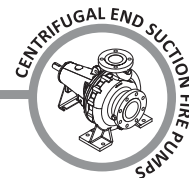


FIRE PUMP SYSTEMS

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UL LISTED CENTRIFUGAL FIRE PUMPS

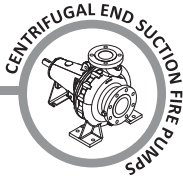
CENTRIFUGAL END SUCTION FIRE PUMPS



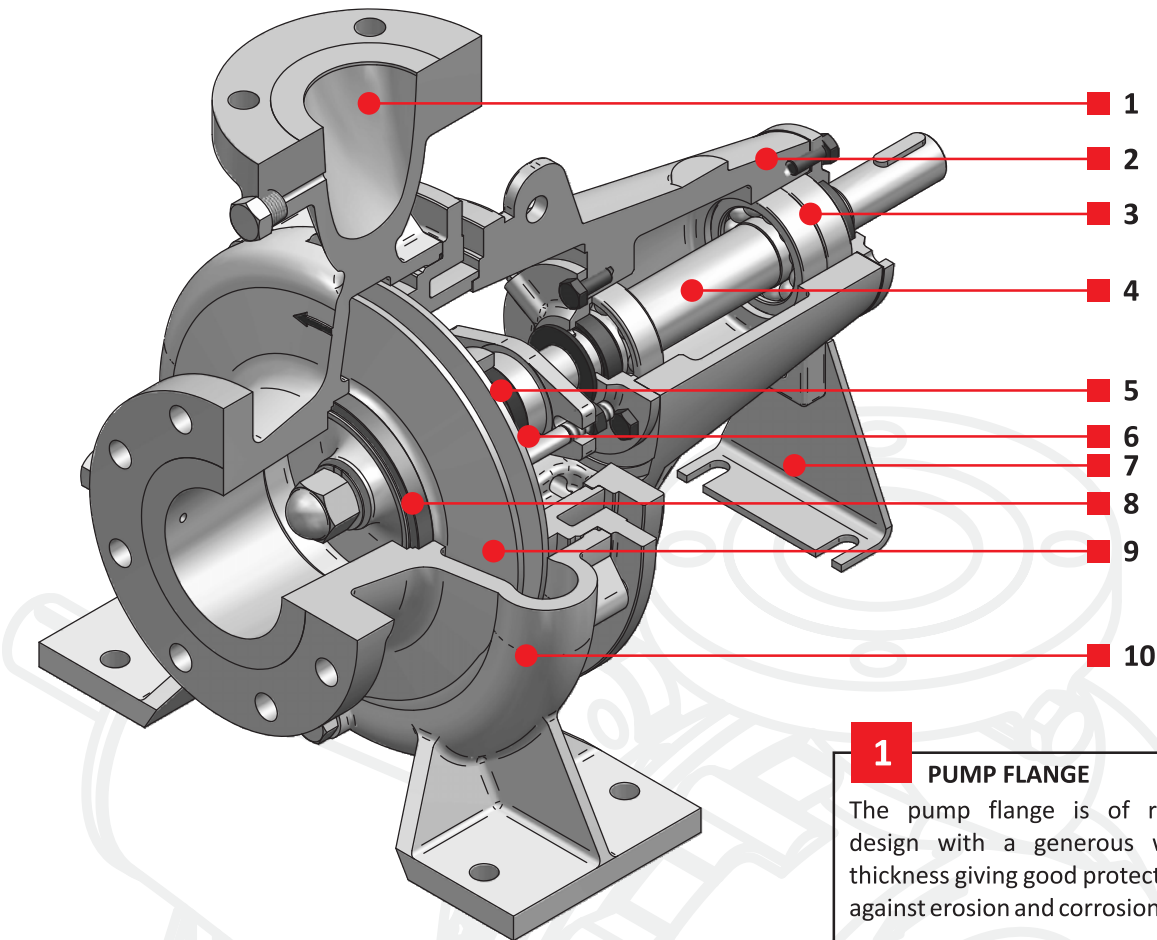
OVERVIEW

- **Capacity:** 50 GPM to 750 GPM
- **Pressures:** 68 to 210 PSI (4.69 to 14.48 bar)
- **Maximum Working Pressures:** 200 to 250 PSI
- **UL Listed** Certified & Approved Pumps
- **Compliance** to NFPA 20 Design Requirements
- **Match FM** Approval requirements.
- **Wide Range** of Flows and Pressures
- **Available in** Electric Motor and Diesel Engine driven configuration
- **Suitable for** Commercial, Industrial and Buildings.
- **Dynamically Balanced** Impeller extends bearing life and ensures smoother operation
- **Foot Supported Casing** eliminates need to support casing when bearing assembly is removed
- **Top Centerline Discharge** transmits residual pipe strain to feet of casing and eliminates the need for left-handed or right-handed casings and impellers
- **Simpler Installation & Piping Layout** via top centerline discharge with base supported casing
- **Back Pullout Design** supplied with spacer coupling ensures easy pump maintenance without Dismantling.
- **Self-Venting Design** eliminates vapor lock and the need for automatic air release valve
- **Efficiently Designed Shaft** to minimize shaft deflection at the stuffing box
- **Frame-mounted design**
- **Small Footprint** ideal for retrofit
- **Heavy Wall Thickness** to provide for generous corrosion allowance
- **Heavy Duty** with integral flush line for packing lubrication
- **Lip Seals** on each bearing housing cap to keep out contaminants
- **Back Pump Out Vanes** prohibiting material from building up behind impeller





GENERAL PUMP FEATURES



1 PUMP FLANGE
The pump flange is of rigid design with a generous wall thickness giving good protection against erosion and corrosion.

2 BEARING HOUSING
The heavy duty console with incorporated lantern assures silent and reliable operation.

3 BEARINGS
Ample dimensioned single and double row ball bearing improve the stiffness and minimize shaft deflection and design to handle radial and axial loads.

4 SHAFT
Shaft is protected by a replaceable shaft sleeve in stainless steel.

5 SHAFT SEALING
SFP pumps is fitted with soft packing glands and lantern ring to ensure cooling and lubrication on shaft.

6 IMPELLER BACK VANES
For hydraulic balancing extending bearing life, keep solid parts away from shaft sealing.

7 FOOT
Machined foot assure exact on baseplate and in pipework.

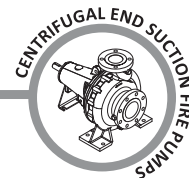
8 WEAR RINGS
Front and back (in case of impeller $\varnothing > 500\text{mm}$) renewable wear rings are furnished in order to achieve the best pump performance and ease the maintenance.

9 IMPELLER
Fully enclosed single piece casting gives reliability, long trouble-free operation and high efficiency.

10 PUMP CASING
Optimized volute design high efficiency smooth surfaces, minimal internal losses.

UL LISTED CENTRIFUGAL FIRE PUMPS

CENTRIFUGAL END SUCTION FIRE PUMPS



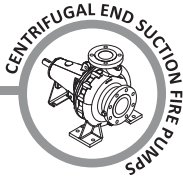
MATERIAL CONSTRUCTION DETAILS

NO.	PART	MATERIAL	STANDARD
1	HEX PLUG	Stainless	AISI 304
2	CASING	Cast Iron	ASTM A-48
3	IMPELLER NUT	Stainless	AISI 304
4	LOCK WASHER	Stainless	AISI 304
5	WEARING RING	Brass	ASTM B-176
6	IMPELLER	Bronze	ASTM B-145
7	O-RING	Nitrile Butadiene Rubber	ASTM D3187-6
8	STUFFING BOX	Cast Iron	ASTM A-48
9	HEX BOLT	Steel	ASTM F568M
10	O-RING	Nitrile Butadiene Rubber	ASTM D3187-6
11	SHAFT SLEEVE	Stainless	AISI 420
12	LANTERN RING	Brass	ASTM B-176
13	SOFT GLAND *	Impragnated Graphite	-----
14	GLAND PUSHER	Brass	ASTM B-176
15	STUD BOLT	Stainless	AISI 304
16	GLAND NUT	Stainless	AISI 304
17	RUBBER SLINGER	Nitrile Butadiene Rubber	ASTM D3187-6
18	HEX BOLT	Steel	ASTM F568M
19	BEARING COVER	Cast Iron	ASTM A-48
20	GREASE NIPPLE	Brass	ASTM B-176
21	OIL SEAL	Nitrile Butadiene Rubber	ASTM D3187-6
22	INBOUND BEARING	SKF Explorer	ASTM A756
23	SHAFT KEY	Stainless	AISI 304
24	SHAFT	Stainless	AISI 420
25	SHAFT KEY	Stainless	AISI 420
26	Bearing housing	Cast Iron	ASTM A-48
27	HEX BOLT	Steel	ASTM F568M
28	HEX PLUG	Steel	ASTM F568M
29	SUPPORT FOOT	Steel	ASTM A794
30	HEX BOLT	Steel	ASTM F568M
31	OUTBOUND BEARING	SKF Explorer	ASTM A756
32	OIL SEAL	Nitrile Butadiene Rubber	ASTM D3187-6
33	GASKET *	Paper Gasket	-----
34	BEARING COVER	Cast Iron	ASTM A-48
35	GREASE NIPPLE	Brass	ASTM B-176
36	HEX BOLT	Steel	ASTM F568M

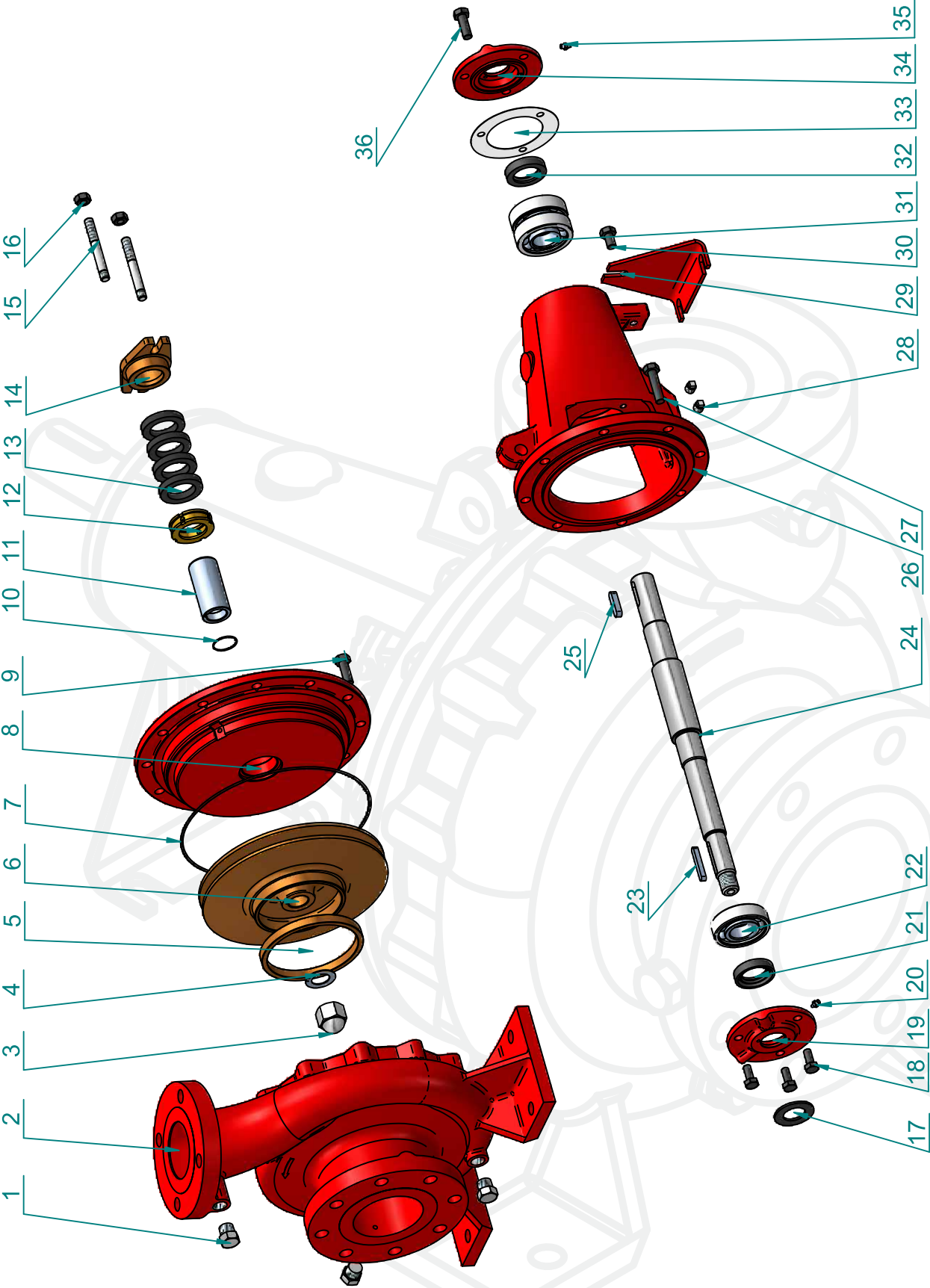
Notes:

- The Casing and Stuffing box below pump models are constructed using Ductile Iron
 - SFP 400-80 EH
 - SFP 450-80 EH
 - SFP 500-80 EH
 - SFP 500-12 EM
 - SFP 500-13 EM
 - SFP 750-26 EM
 - SFP 750-32 EM
- Brass Impeller will be available upon request.
- * - No Specific Standard.

UL LISTED CENTRIFUGAL FIRE PUMPS
CENTRIFUGAL END SUCTION FIRE PUMPS

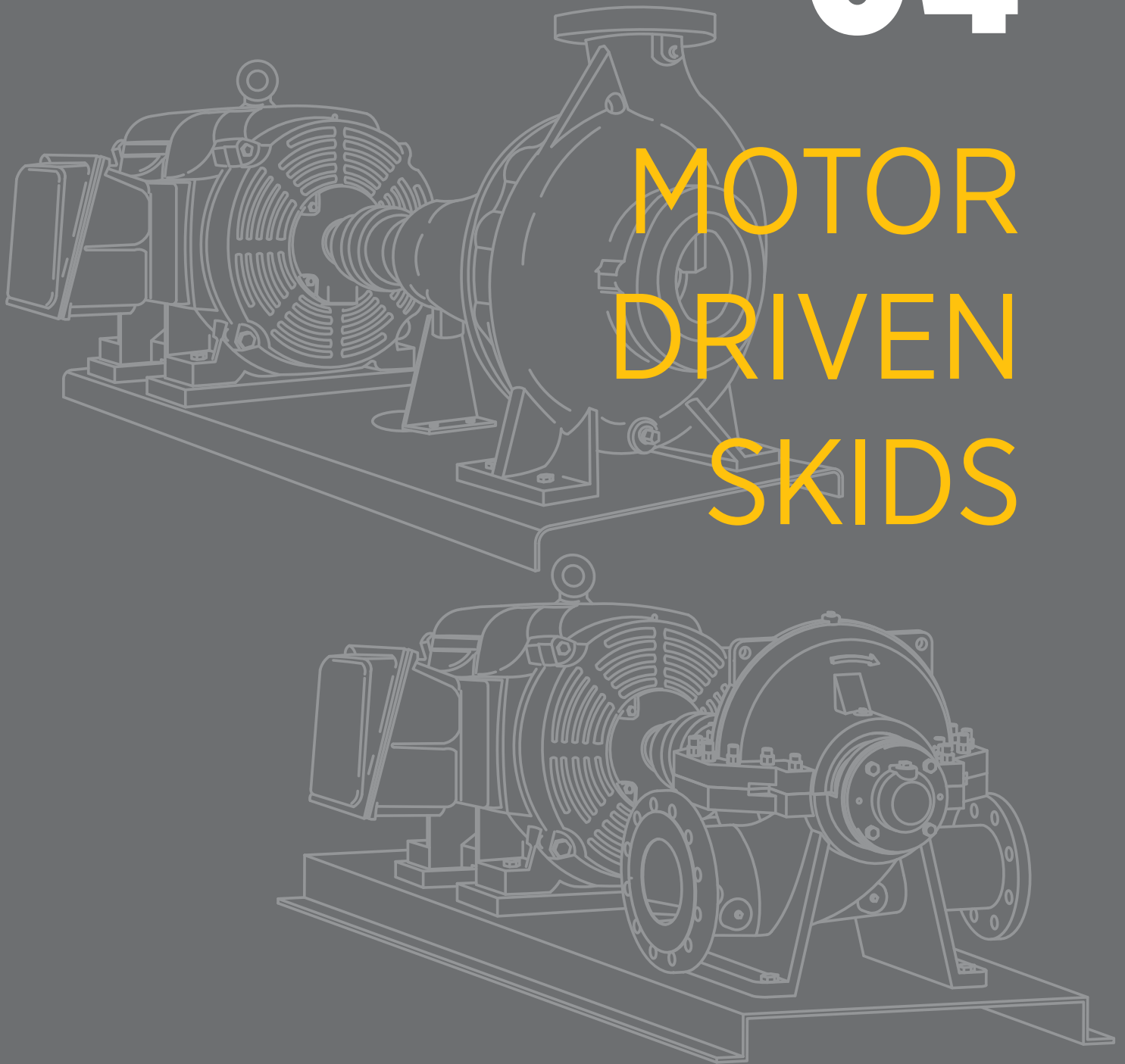


EXPLODED VIEW



04

MOTOR DRIVEN SKIDS



FIRE PUMP SYSTEMS

Saudi Factory for Fire Equipment reserves the right to make revisions to its products and their specifications, and to this catalogue and related information, without prior notice. All products must be installed and maintained in accordance with applicable instructions and/or standards.



Electric Fire Pump

Item Description

Proposed

<u>Electric Pump:</u>	
Model	SFP 500-25 EM-2G
Type	: Horizontal End Suction
Rated Flow	: 500 USGPM
Rated Head	: 8 Bar
Impeller Size*	: Ø252
Suction / Discharge	: Ø100 / ø80
Rated Speed	: 2900 RPM
Casing	: Cast Iron
Impeller Material	: Ductile Iron
Shaft	: Stainless Steel
Pump Approval	: UL/FM Approved
<u>Electric Motor:</u>	
Make	: Factory Choice
Model / Series	: 60HP/02P
Type	: ODP
Performance Rating	: 60 HP, 3Ph, 50Hz , 380V, 2900 RPM
Motor Approval	: UL Listed
<u>Electric Pump Controller</u>	
Make	: "Tornatech", Canada
Model	: GPA
Operation	: Combined Automatic , Manual Start & Remote Start
Enclosure	: Standard NEMA-UL-CSA Type 2 – IP31
Mounting	: Self Standing
Method of Start	: Y-Delta
Operation Interface	: VIZI Touch Screen
Power Supply	: 3Ph, 380V, 50Hz
Controller Approval	: UL Listed / FM Approved, Built to NFPA 20 Standards

*ACTUAL IMPELLER SIZE WILL APPEAR ON THE NAMEPLATE

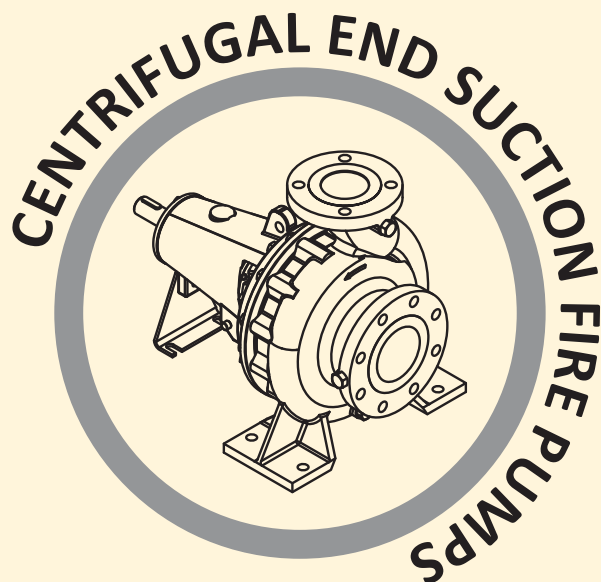
TECHNICAL DATA SHEETS

- *PERFORMANCE CURVES*

FLOW

500

GPM





Performance Chart

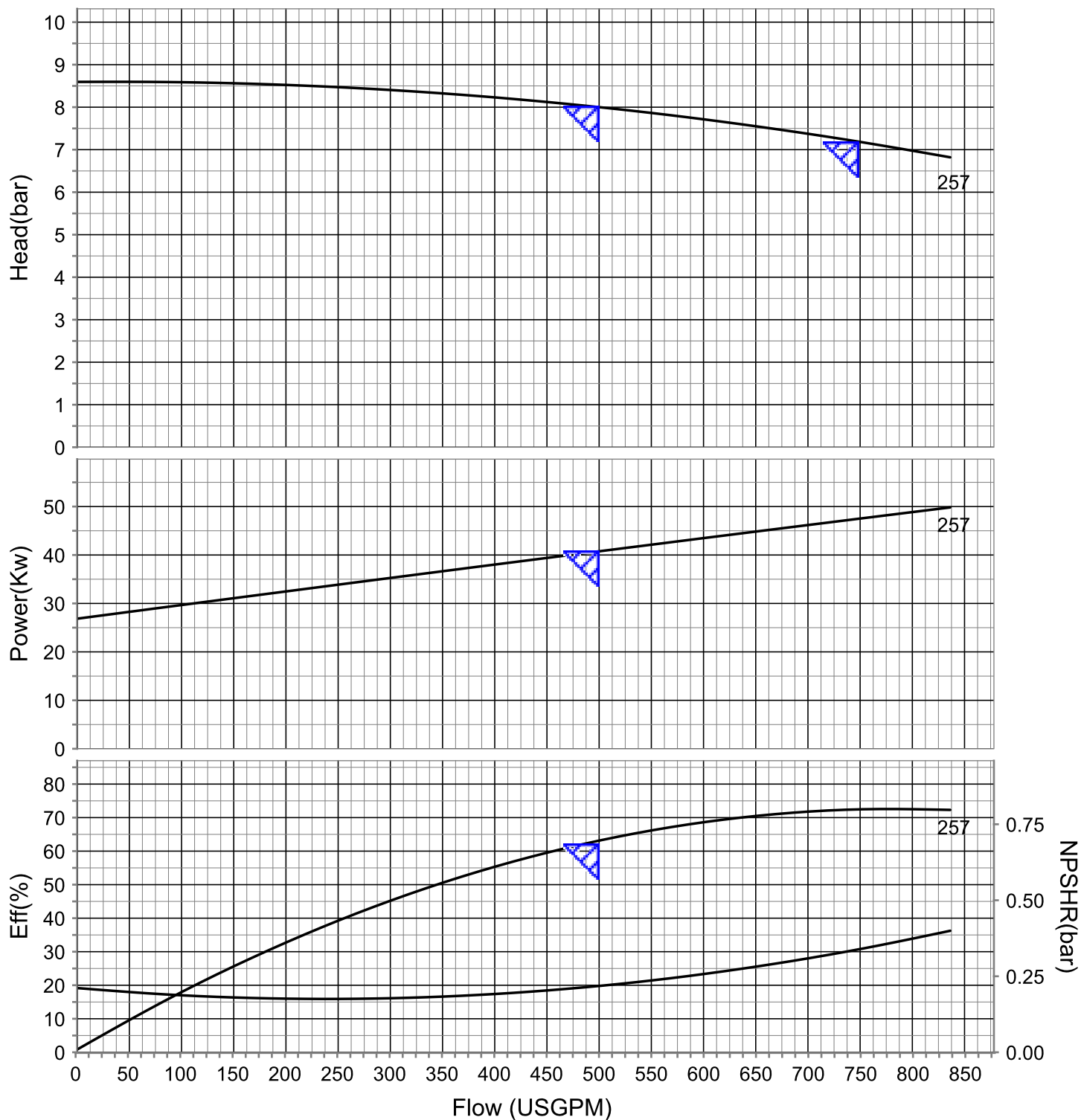
Pump	SFP-500-25 EM- 2G	Tag Number	-
Quote #	-	Date	18 September 2021
Project	-		

General Data

Impeller type	Selected Ø	Speed	Stage
Closed	257.0 mm	2900	1

Operating Data

Duty flow	Duty Head	Efficiency	Power on shaft	NPSHr	
500.0 USGPM	8.0 bar	61.85 %	40.76 Kw 54.64 HP	0.22	
Density	Kinematic viscosity	Viscosity coeff. Cq	Viscosity coeff. Ch	Viscosity coeff. C	Fluid
1000.0 kg/dm3	-	1	1	1	Water



SPECIFICATION OF 3-PHASE SQUIRREL CAGE INDUCTION MOTOR		CUSTOMER	FZE		USER	
		INQ..NO			PART NO.	
		JOB..NO			MACHINE	
		TOTAL SETS			ITEM NO..	
Item	Terms	Description				
1	Model	326TSTD4009				
2	Code or Standard	Dimension	Performance		Test	
		NEMA	NEMA		NEMA	
3	Rating	60 HP	2 Pole	415 Volt	3 Phase 50 Hz	
4	Service Duty	Continuous Rating	S1	S.F.	1.15	
5	Starting Method	PWS & YD				
6	Rotation	Facing The Drive End :				CW
7	Drive Method	Direct Coupling				
8	Environment	Amb. Temp.: -20 ~ 50 °C				
		Humidity : Less 95 % RH				
		Altitude : Up To 1000 m				
9	Enclosure & Protection	IP23 Indoor				
10	Cooling	IC01				
11	Mounting	F1				
12	Dimensions	Dr#	SS620243	Frame No :	326TS	
13	Frame & Bracket	Frame :	Cast Iron	Bracket :	Cast Iron	
14	Fan & Fan Cover	Fan :	/	Fan Cover :	/	
15	Terminal Box	Steel				
16	Bearing Type	DE:	6212C3	NDE:	6212C3	
17	Lubricant					
18	Painting	Color :	RAL3002	Paintin	2 times	
19	Stator Winding	Ins. Class	F	Connection:	△	
20	Rotor Conductor	Aluminium				
21	Starting Performance	I _{max} ≤	526	A	Tst/Tn 120 %	
22	Operating Performance At Rated 415 V	%Load	100		Break Down Torque	
		Amp.	76		200 %	
		Eff.%	93		Temp. Rise Limit. (R)	
		P.F.	0.88		Stator 80 K	
		R.P.M.	2962			
23	Note	1 Fire pump motor. 2 Suitable for: 380-400V 60Hz; 440-460V 60Hz; 380-440-415V 50Hz.				
APPD	ZYH	04-09-18				
CHKD	ZXW	04-09-18				
DWN	WY	04-09-18				



DATA SHEET

Nr.: 040343/2014-B

Date: 07-MAR-2014

Three-phase Induction Motor - Squirrel Cage

FOR APPROVAL

- ☐ Approved
☐ Approved with comments
☐ Not approved

Customer : WEG MIDDLE EAST FZE
Product code :
Product line : Special Motor

Frame : 364/5TS
Output : 60 HP (45 kW)
Frequency : 50 Hz
Poles : 2
Rated speed : 2950-2955-2960 rpm
Slip : 1.67-1.50-1.33 %
Rated voltage : 380-400-415V
Rated current : 83.5-79.4-77.4 A
L. R. Amperes : 401-413-426 A
II/In : 4.8-5.2-5.5 Code G
No load current : 20.5-22.0-23.0 A
Rated torque : 145-145-144 Nm
Locked rotor torque : 140-160-170 %
Breakdown torque : 210-240-260 %
Design : B
Insulation class : F
Temperature rise : 70 K
Locked rotor time : 28-25-22 s (hot)
Service factor : 1.15
Duty cycle : S1
Ambient temperature : 50°C
Altitude : 1000 m.a.s.l

Enclosure : IP23 (ODP)
Mounting : B3R(D)/F1
Rotation : Both
Aprox. weight* : 331 kg
Moment of inertia : 0.2687 kgm²

Load	Power factor	Efficiency (%)
100%	0.88-0.88-0.87	93.0-93.0-93.0
75%	0.87-0.86-0.85	93.0-93.0-93.0
50%	0.82-0.80-0.78	92.4-92.4-92.4

	Bearing	Quantity (lubricant)
Front	6314-C3	27 g
Rear	6314-C3	27 g

Lubrication interval: 9083 h
Grease - MOBIL POLYREX EM

Notes:

ODP - High Efficiency

380-400(YY) / 440-460(D) // 380-400-415(D) V

This is an updated revision. The previous one must be disregarded. The figures given herewith are regarded as estimated values based on calculation and applied to sinusoidal power supplied motors, within permissible tolerances under NEMA MG 1-12. (*) Weight value can be changed without previous notification.

Performed
grossi

Checked
barbarav

Revision
Nr.: 4 Date: 08-AUG-2014

Approved

TECHNICAL DATA SHEET

for use by Architects & Engineers

Hitec Fire Pump

Model No: LF15250C322



Features

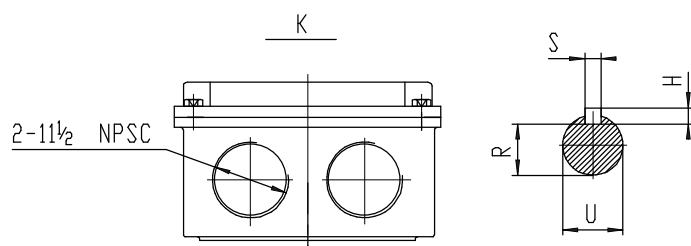
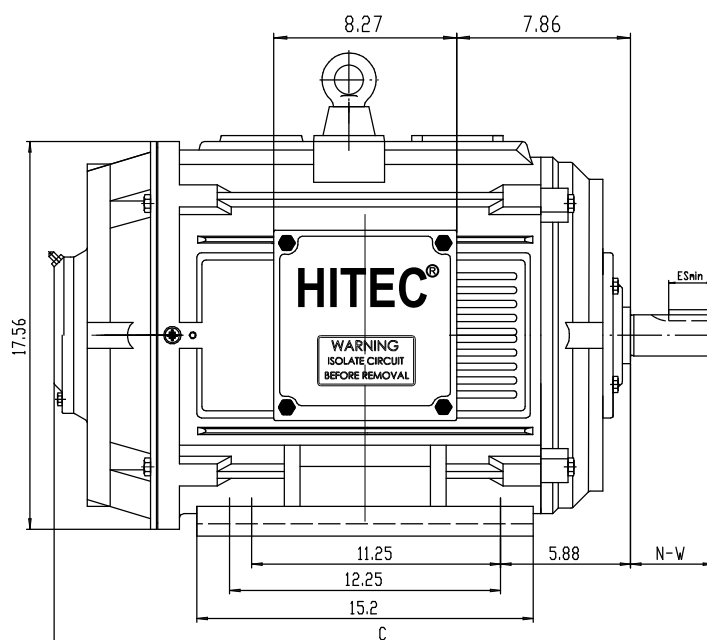
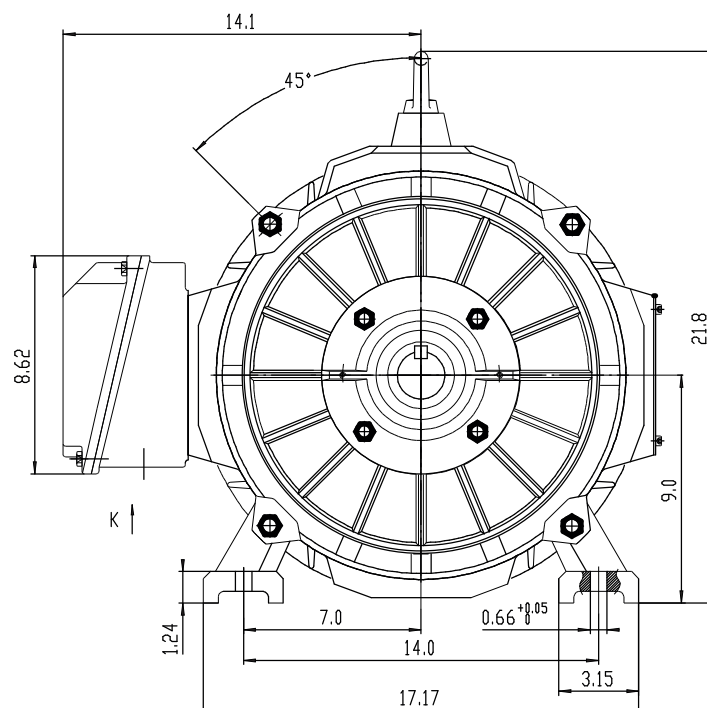
Frame	LF15250C322
Output	60HP
Frequency	50HZ
Poles	2POLE
Rated speed	2949
Slip	1.687%
Rated voltage	415V
Rated current	75.11A
L. R. Amperes	481.46A
II/In	6.41
No load current	13.32A
Rated torque	146.4NM
Locked rotor torque	276.70NM
Breakdown torque	351.36NM
Design	NEMA DESIGN B
Insulation class	CLASS F
Temperature rise	61K
Locked rotor time	10s
Service factor	1.15
Duty cycle	S1
Ambient temperature	50
Altitude	1000m
Mounting	GENERAL
Rotation	CW/CCW
Aprox. weight*	315KGS
Moment of inertia	0.249
Sound Pressure Level	92

Load	Power factor	Efficiency (%)
100%	0.915	91.1
75%	0.915	91.7
50%	0.890	91.2

	Bearing	Quantity (lubricant)
Front	6313C3	160g
Rear	6312C3	145g

Lubrication interval	6500 hr
Grease	Polyurea grease

Sectional Details





TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model GPA

Full Service Full Voltage

Across the Line Start

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.

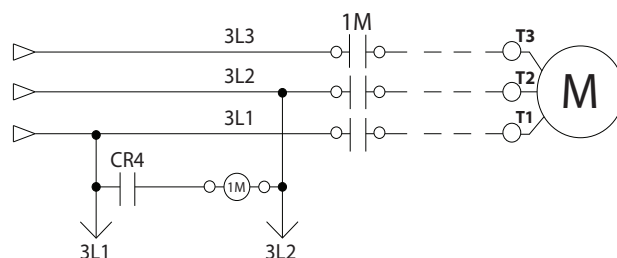


N.Y.C.
APPROVED



November 2018

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



N.Y.C.
APPROVED



OPTIONAL



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)	
	Underwriters Laboratory (UL)	• UL218 - Fire Pump Controllers • CSA C22.2 No. 14 Industrial Control Equipment
	FM Global	Class 1321/1323
	New York City	Accepted for use in the City of New York by the Department of Buildings
	Seismic Certification	See page 7 for details
	Optional	
Enclosure	☐ CE Mark	Various EN, IEC & CEE directives and standards
	Protection Rating ☒ Standard: NEMA 2 (IP31) 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 416V 50 Hz / 60Hz	440V to 480V 60Hz	575V to 600V 60Hz
	HP (kw)				
☐ Standard 100kA	5-150 (3.7 - 110)	5-200 (3.7 - 147)	5-300 (3.7 - 220)	5-450 (3.7 - 335)	n/a
☐ Optional 150kA					
☐ Standard 50kA	200 (147)	250 (184)	350 - 450 (257 - 335)	500 (373)	5-500 (3.7- 373)
☐ Optional 100kA	n/a	n/a	n/a	n/a	

*Please see Disconnecting Means details on page 3



Ambient Temperature Rating	Standard: ☐ 5°C to 40°C / 41°F to 104°F Optional: ☒ 5°C to 55°C / 41°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 - Integrated limit switch - Pull and latch activation - 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	4" 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 (°F or °C) • Lockout
Visual & Audible Alarms	Visual • Control voltage not healthy • Invalid cut-in • Lock rotor current • Loss of power • Low ambient temperature • Low water level • Motor trouble • Phase reversal (normal power) • 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.

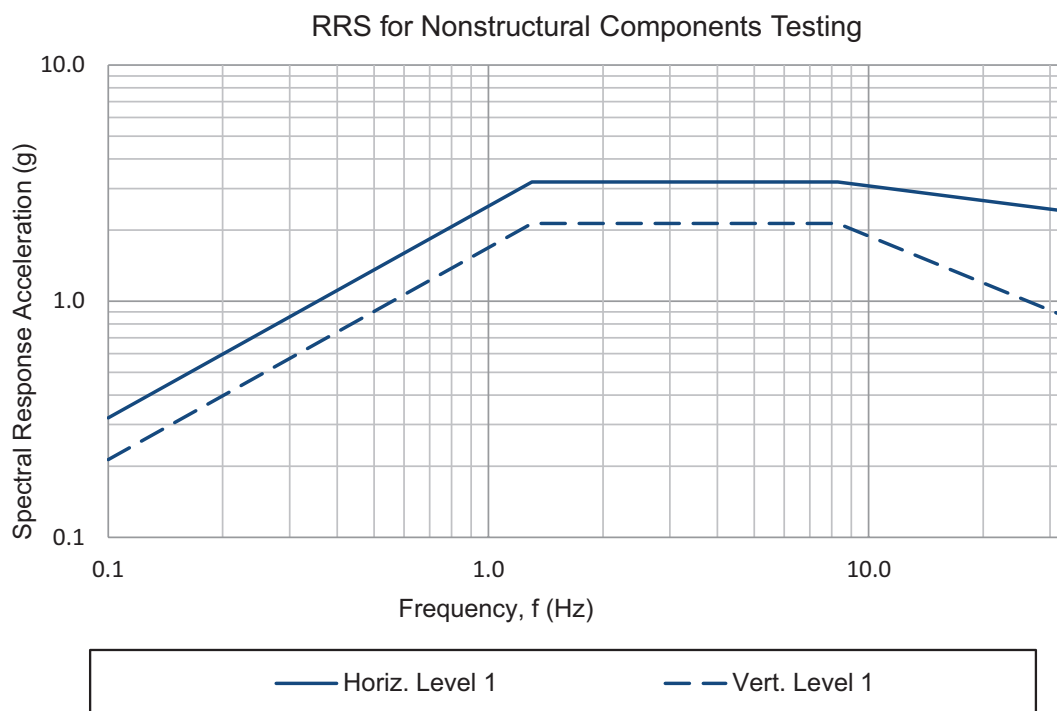


ViZiTouch V2 Operator Interface	• Embedded microcomputer with software PLC logic • 7.0" color touch screen (HMI technology) • Upgradable software • Multi-language		
Communication Protocol Capability	• Protocol: Modbus • Connection type: Shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See bulletin MOD-GPx		
Operation	Automatic Start	• Start on pressure drop • Remote start signal from automatic device	
	Manual Start	• Start pushbutton • Run test pushbutton • Deluge valve start • 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



Seismic Certification	Seismic Certification Company	TRU Compliance, LLC A Tobalski Watkins Affiliate					TWEI Project No.: 15014				
	Mounting details	Rigid base and wall mounting									
	Seismic Information	Building Code	Test Criteria	Seismic Parameters	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
		IBC 2015, CBC 2016	ICC-ES AC156	ASCE 7-10 Chapter 13	2.0	1.0	1.5	3.20	2.40	1.33	0.53
				3.2	0.0	1.5	3.20	1.28	2.13	0.85	



Notes:

- Components are tested in accordance with ICC-ES AC156, IBC 2015 & CBC 2016.
- OSHPD Special Seismic Certification Preapproval (OSP)



☐ A4	Flow switch provision	☐ C18	High water reservoir level c/w visual indication and alarm contact (DPDT)
☐ A8	Foam pump application w/o pressure transducer and run test solenoid valve.	☐ C19	Emergency start alarm contact (DPDT)
☐ A9	Low zone pump control function	☐ C20	Manual start alarm contact (DPDT)
☐ A10	Middle zone pump control function	☐ C21	Deluge valve start alarm contact (DPDT)
☐ A11	High zone pump control function	☐ C22	Remote automatic start alarm contact (DPDT)
☐ A13	Non-pressure actuated controller w/o pressure transducer and run test solenoid valve	☐ C23	Remote manual start alarm contact (DPDT)
☐ A16	Lockout/interlock circuit from equipment installed inside the pump room	☐ C24	High pump room temperature alarm contact (DPDT)
☐ 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	☐ C25	Second set of standard alarm contacts (DPDT) (Typical for city of Los Angeles and Denver)
☐ B11B	Built in alarm panel same as B11 but 220-240VAC supervisory power	☐ Cx	Additional visual and alarm contact (Specify function) (DPDT)
☐ B19A	High motor temperature c/w thermostat relay and alarm contacts (DPDT)	☐ D1	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
☐ B19B	High motor temperature c/w PT100 relay and alarm contacts (DPDT)	☐ D1A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
☐ B21	Ground fault alarm detection c/w visual indication and alarm contact (DPDT)	☐ D5	Pressure transducer and run test solenoid valve for fresh water rated for 0-500PSI (for factory calibration purposes only)
☐ C1	Extra motor run alarm contact (DPDT)	☐ D5D	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
☐ C4	Periodic test alarm contact (DPDT)	☐ D10	Omit mounting feet (when applicable)
☐ C6	Low discharge pressure alarm contact (DPDT)	☐ D13	High withstand rating for (normal power section) • 208V to 480V = 150kA • 600V = 100kA
☐ C7	Low pump room temperature alarm contact (DPDT)	☐ D14	Anti-condensation heater & thermostat
☐ C10	Low water reservoir level alarm contact (DPDT)	☐ D14A	Anti-condensation heater & humidistat
☐ C11	High electric motor temperature alarm contact (DPDT)	☐ D14B	Anti-condensation heater & thermostat & humidistat
☐ C12	High electric motor vibration c/w visual indication and alarm contact (DPDT)	☐ D15	Tropicalization
☐ C14	Pump on demand / automatic start alarm contact (DPDT)	☐ D18	CE Mark with factory certificate
☐ C15	Pump fail to start alarm contact (DPDT)	☐ D26	Modbus with RTU frame format and RS485 connection
☐ C16	Control voltage healthy alarm contact (DPDT)	☐ D27	Motor heater connection (external single phase power source and heater on/off contact)
☐ C17	Flow meter valve loop open c/w visual indication and alarm contact (DPDT)	☐ D27A	Motor heater connection (internal single phase power source and heater on/off contact)

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



☐ D28	Customized drawing set
☐ D34A	Field programmable I/O board - 5 Input / 5 output

☐ 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

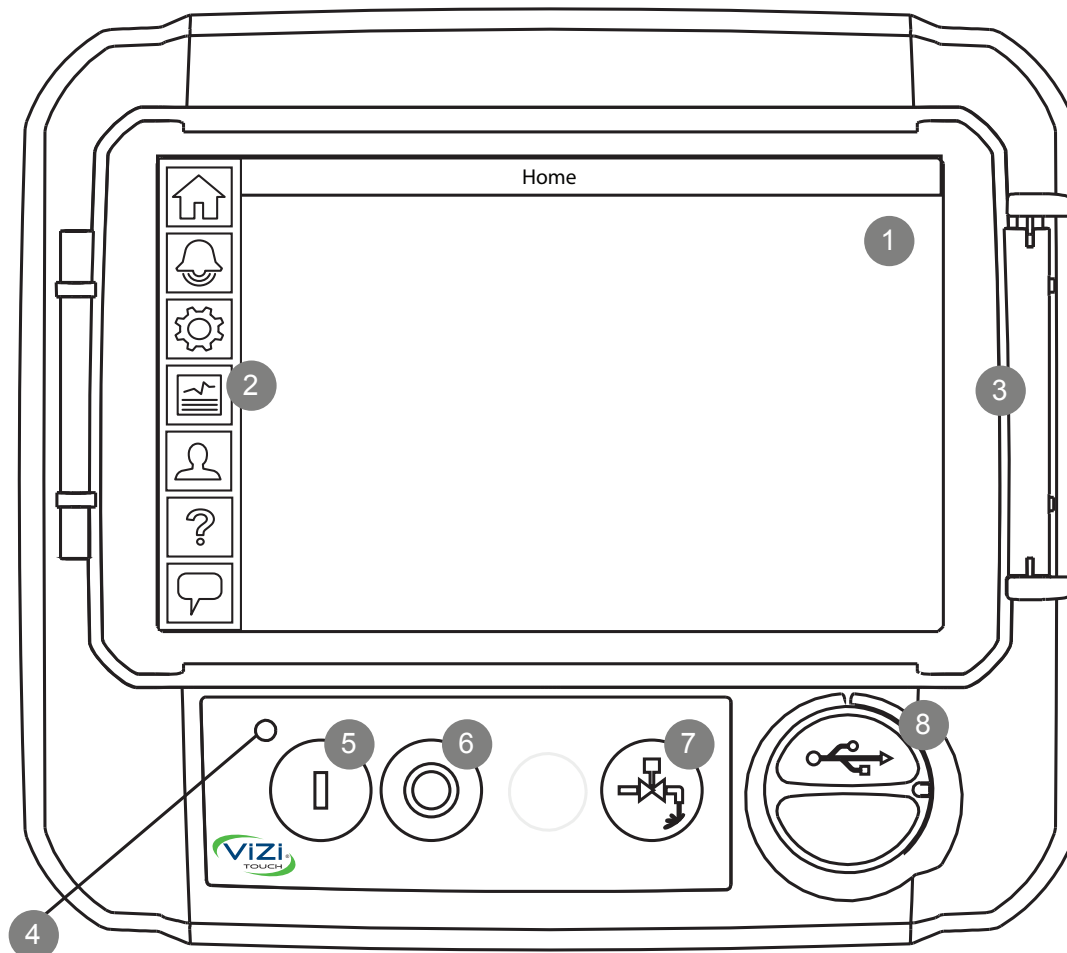
Additional Options:

☐	_____
☐	_____
☐	_____
☐	_____
☐	_____

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



ViZiTouch V2 Operator Interface

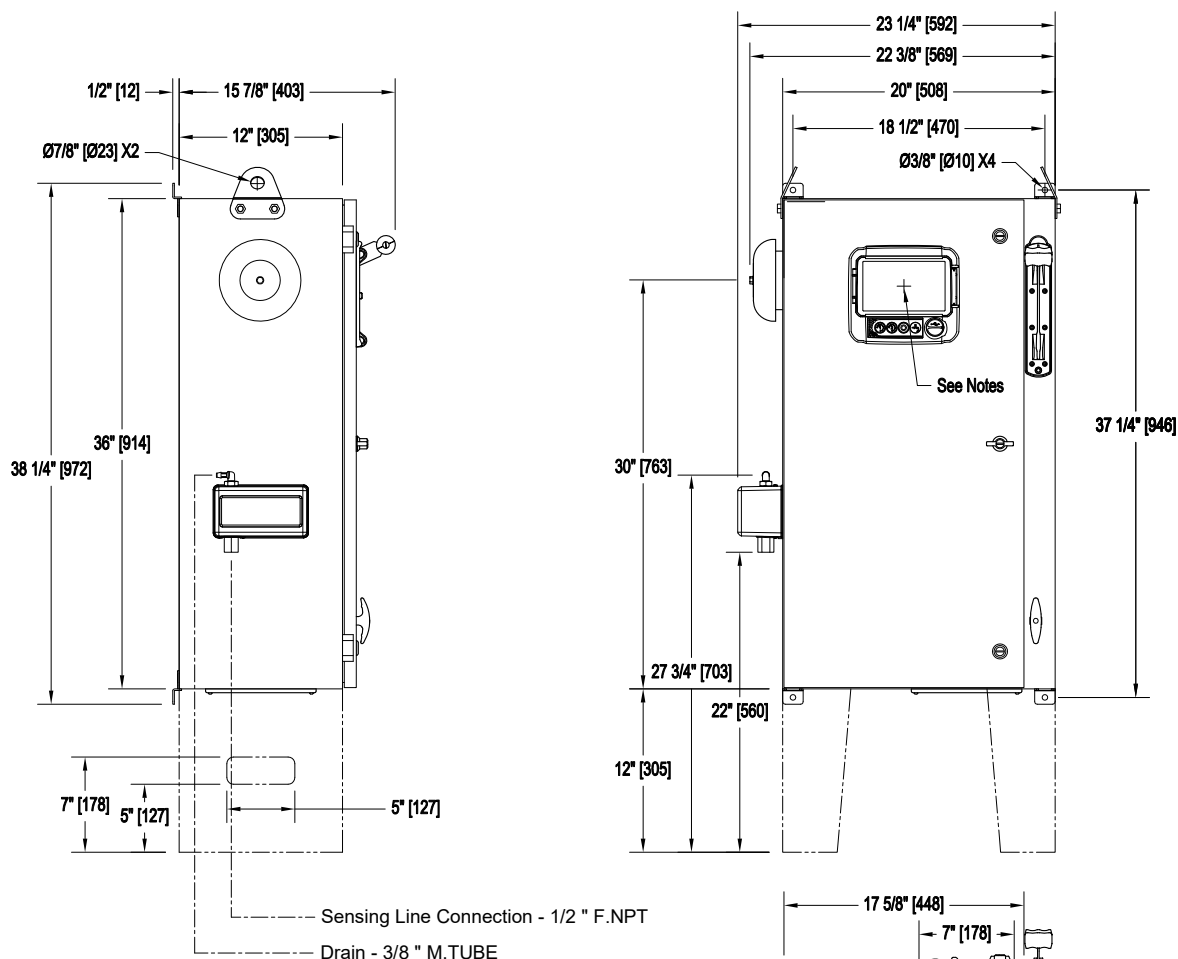


- 1 - Color touch screen
- 2 - Onscreen menu
 - HOME page
 - ALARM page
 - CONFIGURATION page
 - HISTORY page
 - SERVICE page
 - MANUAL page
 - LANGUAGES page

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

Dimensions

Built to the latest edition of the NFPA 20 standard

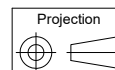


Voltage / Power Table		
Voltage	Min HP	Max HP
208	5	30
220 - 240	5	30
380 - 400 - 415	5	60
440 - 480	5	60
600	5	75

Notes:

- Standard NEMA: NEMA 2
- Standard paint : textured red RAL 3002.
- All dimensions are in inches [millimeters].
- Center of ViZiTouCh screen: 29-5/8" [751] 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.
- Seismic mounting to be rigid wall and base only.

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



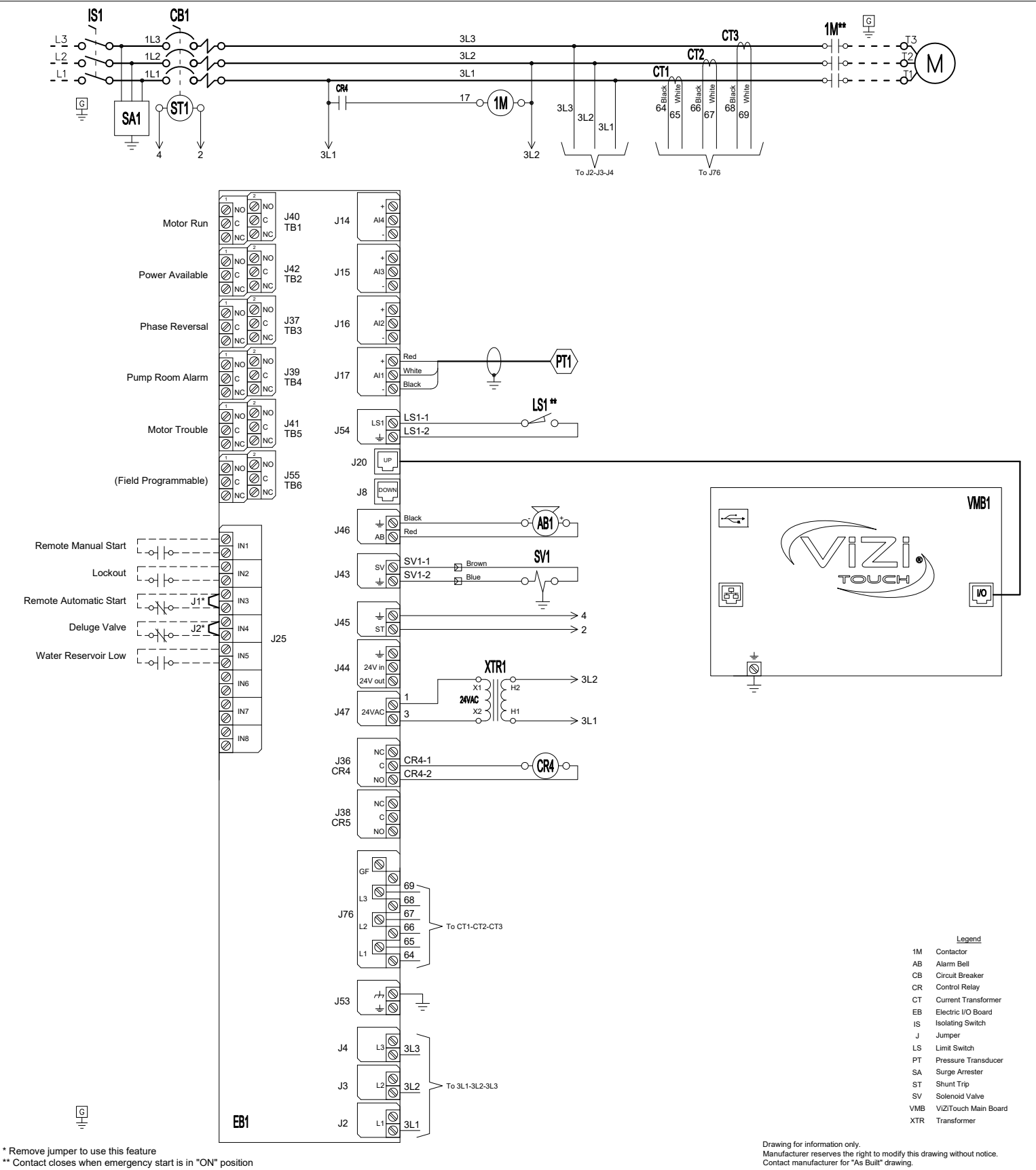
REV.	DESCRIPTION	DD/MM/YY	Drawing number
2.	Revised logo	18/06/18	GPX-DI161 /E
1.	Valve Change	21/11/17	
0.	First issue	16/11/16	

Electric Fire Pump Controller
Full Voltage / Across the Line

Model: GPA

Wiring schematic

Built to the latest edition of the NFPA 20 standard



* Remove jumper to use this feature
** Contact closes when emergency start is in "ON" position

Drawing for information only.
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REV.	DESCRIPTION	DD/MM/YY	Drawing number
2	Update Logo	23/04/18	GPA-WS600 /E
1	Removed (fail safe) text from Power Available relay	20/02/17	
0	First issue	10/11/16	



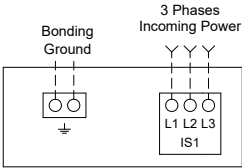
Electric Fire Pump Controller

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	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 250)	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 250)	1x (2/0 to 250)	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	75	100	125	150	200	250	300	350	400	450	500
208	1x (300 to 500)	1x (500)	2x (4/0 to 500)	2x (250 to 500)	2x (400 to 600)	-----	-----	-----	-----	-----	-----
220 to 240	1x (250 to 500)	1x (350 to 500)	2x (3/0 to 500)	2x (4/0 to 500)	2x (350 to 500)	2x (500 to 600)	-----	-----	-----	-----	-----
380 to 416	1x (1/0 to 250)	1x (3/0 to 250)	1x (250)	1x (300 to 500)	2x (3/0 to 250)	2x (4/0 to 500)	2x (300 to 500)	2x (400 to 600) 2x (400 to 500)	2x (500 to 600)	2x (600)	-----
440 to 480	1x (1 to 250)	1x (2/0 to 250)	1x (3/0 to 250)	1x (4/0 to 250)	1x (350 to 500)	2x (3/0 to 250)	2x (4/0 to 500)	2x (300 to 500)	2x (350 to 500)	2x (400 to 600)	2x (500 to 600)
600	1x (3 to 1/0)	1x (1 to 250)	1x (2/0 to 250)	1x (3/0 to 250)	1x (250 to 500)	1x (350 to 500)	2x (3/0 to 250)	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	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 to 250)	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 250)	1x (4/0 to 250)	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	75	100	125	150	200	250	300	350	400	450	500
208	1x (400 to 500)	1x(500) 90°C or 2x(4/0 to 250) **	2x (300 to 500)	2x (350 to 500)	2x (600)	-----	-----	-----	-----	-----	-----
220 to 240	1x (350 to 500)	1x (500)	2x (250 to 500)	2x (300 to 500)	2x (500)	2x (600) 90°C *	-----	-----	-----	-----	-----
380 to 416	1x (3/0 to 250)	1x (250)	1x (350) ** N/A **	1x (400 to 500)	2x (4/0 to 250)	2x (300 to 500)	2x (400 to 500)	2x (500 to 600) 2x (500)	2x (600) 90°C *	2x (600) 90°C *	-----
440 to 480	1x (1/0 to 250)	1x (3/0 to 250)	1x (250)	1x (300) ** or 1x (250) 90°C *	1x (500)	2x (250)	2x (300 to 500)	2x (400 to 500)	2x (500)	2x (600)	2x (600) 90°C *
600	1x (1 to 1/0)	1x (2/0 to 250)	1x (3/0 to 250)	1x (4/0 to 250)	1x (350 to 500)	1x (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.
Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.

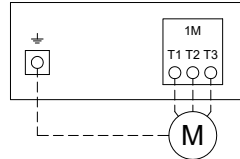
Electric Fire Pump Controller

Model: GPX

Terminal Diagram and Sizing For GPA,GPR & GPS

Built to the latest edition of the NFPA 20 standard

Motor Terminals



Models : GPA,
GPR & GPS

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).

Field Wiring According to Bending Space (AWG or MCM). Terminals T1 - T2 - T3

HP Voltage	5	7.5	10	15	20	25	30	40	50	60
208	1x (10)	1x (10)	1x (8 to 2)	1x (6 to 2)	1x (4 to 1/0)	1x (3 to 1/0)	1x (2 to 1/0)	1x (1/0 to 3/0)	1x (3/0)	1x (4/0 to 300)
220 to 240	1x (12 to 10)	1x (10)	1x (8 to 2)	1x (6 to 2)	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)
380 to 416	1x (14 to 10)	1x (12 to 10)	1x (10)	1x (8 to 2)	1x (8 to 2)	1x (6 to 2)	1x (6 to 1/0)	1x (4 to 1/0)	1x (3 to 1/0)	1x (3 to 1/0)
440 to 480	1x (14 to 10)	1x (14 to 10)	1x (12 to 10)	1x (10)	1x (8 to 2)	1x (8 to 2)	1x (6 to 2)	1x (6 to 2)	1x (4 to 1/0)	1x (3 to 1/0)
600	1x (14 to 10)	1x (14 to 10)	1x (14 to 10)	1x (10)	1x (10)	1x (8 to 2)	1x (8 to 2)	1x (6 to 2)	1x (6 to 2)	1x (4 to 1/0)

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

ALUMINUM CONDUCTORS for Contactor (1M).

Field Wiring According to Bending Space (AWG or MCM). Terminals T1 - T2 - T3

HP Voltage	5	7.5	10	15	20	25	30	40	50	60
208	1x (10)	1x (10) 90°C *	1x (6 to 2)	1x (4 to 2)	1x (2 to 1/0)	1x (1 to 1/0)	1x (1/0)	1x (2/0) 90°C *	Consult Factory	1x (300)
220 to 240	1x (10)	1x (10) 90°C *	1x (8 to 2)	1x (4 to 2)	1x (3 to 1/0)	1x (2 to 1/0)	1x (1 to 1/0)	1x (2/0)	1x (3/0) 90°C *	Consult Factory
380 to 416	1x (12 to 10)	1x (12 to 10)	1x (10)	1x (8 to 2)	1x (6 to 2)	1x (6 to 2)	1x (4 to 1/0)	1x (2 to 1/0)	1x (1 to 1/0)	1x (1/0)
440 to 480	1x (12 to 10)	1x (12 to 10)	1x (10)	1x (10)	1x (8 to 2)	1x (6 to 2)	1x (6 to 2)	1x (4 to 2)	1x (2 to 1/0)	1x (1 to 1/0)
600	1x (12 to 10)	1x (12 to 10)	1x (12 to 10)	1x (10)	1x (10)	1x (8 to 2)	1x (8 to 2)	1x (4 to 2)	1x (4 to 2)	1x (2 to 1/0)

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

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

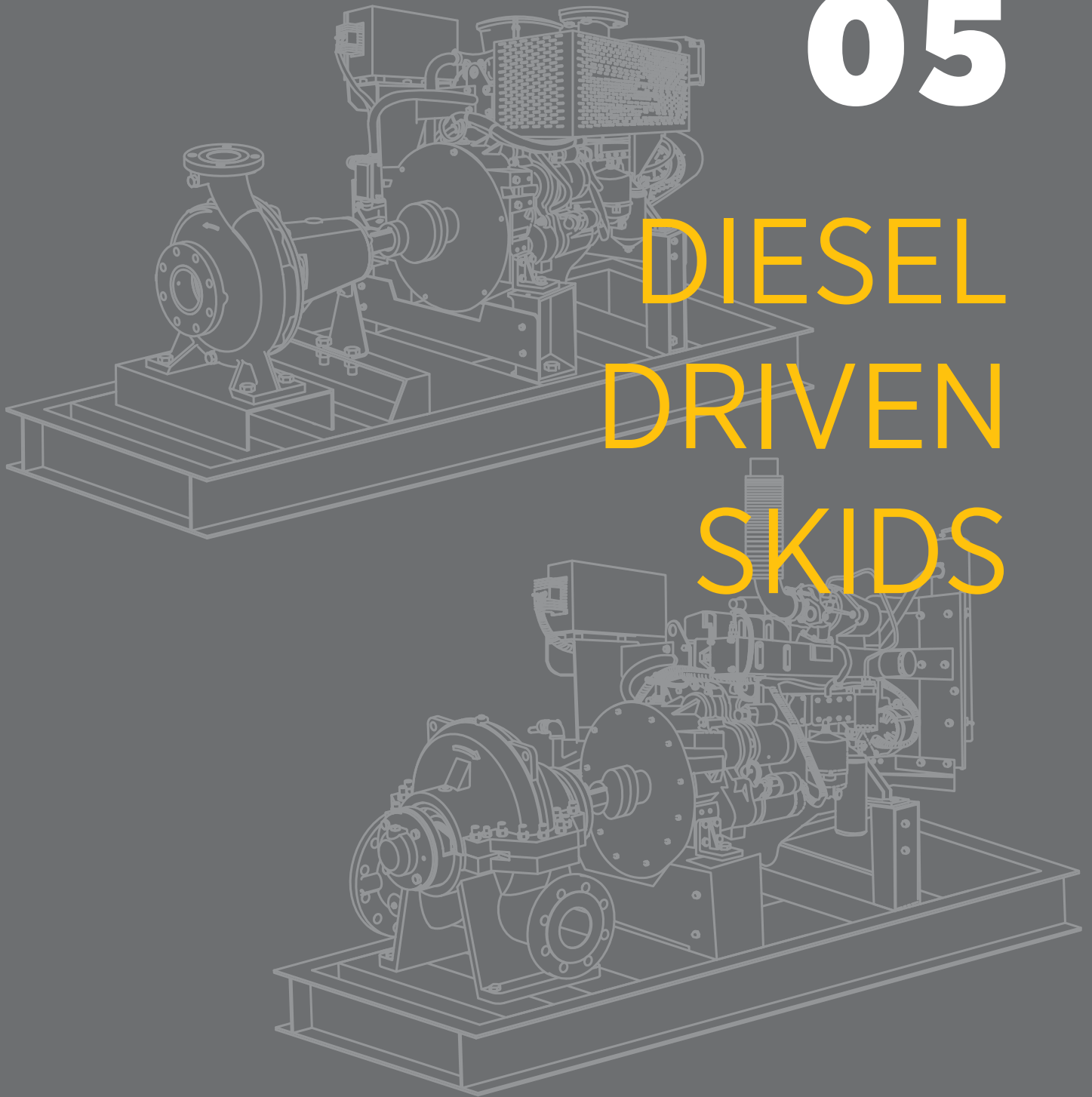
Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
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REV.	DESCRIPTION	DD/MM/YY	Drawing number
2	Revised logo	18/06/18	GPX-TD601 2/2 / E
1	General Revision (added AL coverage)	10/07/17	
0	First issue	16/03/17	

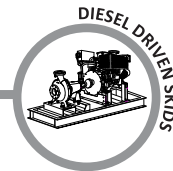
05

DIESEL DRIVEN SKIDS



FIRE PUMP SYSTEMS

Saudi Factory for Fire Equipment reserves the right to make revisions to its products and their specifications, and to this catalogue and related information, without prior notice. All products must be installed and maintained in accordance with applicable instructions and/or standards.



GENERAL FEATURES OVERVIEW

- SFFECO is an established well reputed manufacturer of **Premium Custom Diesel Driven Centrifugal Fire Pump Skids**. We specialized in designing and developing packages in compliance to **NFPA 20 requirements with Listed & Approved Drivers**.
- SFFECO offers listed Centrifugal Fire Pump Skids that **meet every fire protection need**.
- SFFECO as standard uses **STALLION Diesel Engine** or **CLARKE Diesel Engine** with our own **Listed and Approved Centrifugal Fire Pumps** to package **Heavy Duty and High Quality Compact Skids**.
- Our Listed and Approved Fire Pumps can also be coupled with any other Listed Diesel Engine Drivers of **any specific brand** as per client requirement.



- Driven by **Listed & Approved** Fire Pumps and Diesel Engine Drivers
- Well aligned and Coupled for **Direct Operation**.
- Skid Packages are **Pre-Tested and Inspected** thoroughly before release to client.
- **One piece base plate** with Anchor Bolt holes.
- Engineered coated hot rolled mild steel to **resist corrosion and abrasion**.
- Heavy Fabricated **C-Channel structure** rigidly constructed to provide **proper alignment of Pump & Diesel Engien**.
- **Compact skid Design** with **Small Foot-Print** for Retrofit.
- **High standard of Quality** in material Construction finish and Workmanship.

SFFECO Diesel Driven Centrifugal Fire Pump Skids are available in combinations of both Listed and Approved Centrifugal End Suction Pumps and Centrifugal Horizontal Split Case Pumps coupled with Listed Diesel Engine Drivers.

OPTIONAL

- Base mounted and Pre-wired controllers with Diesel Driven skids.
- Drip Rim Base
- Hook Clamp



Diesel Fire Pump

<u>Item Description</u>		<u>Proposed</u>
<u>Diesel Pump:</u>		
Make	:	SFFECO
Model	:	SFP 500-25 EM-2G
Type	:	Horizontal End Suction
Rated Flow	:	500 USGPM
Rated Head	:	y Bar,
Impeller Size	:	Ø257 mm
Suction / Discharge	:	Ø100 / Ø80
Rated Speed	:	2900rpm
Casing	:	Ductile Iron
Impeller Material	:	Bronze
Shaft	:	Stainless Steel
Pump Approval	:	ULc a Approved
<u>Diesel Engine:</u>		
Make	:	Stallion
Model	:	FC 40yp
Rated Power	:	TM/75 hp
Rated Speed	:	2900 RPM
Type	:	4 Cylinder
Engine Approval	:	UL / C a !LJN20ŠŘ
Fuel Tank	:	90 Gallon Tank (Sizing as per NFPA)
<u>Diesel Pump Controller:</u>		
Make	:	TORNATEC, Canada
Model	:	GPD
Operation	:	Combined Automatic Manual Start & Remote Start
Enclosure	:	Standard NEMA-UL-CSA Type2-IP31
Mounting	:	Wall Mounted
Method of Start	:	Standard
Operation Interface	:	VIZI touch
Power Supply	:	220VAC, 12VDC
Controller Approval	:	UL Listed/FM Approved, Built to NFPA 20 Standard

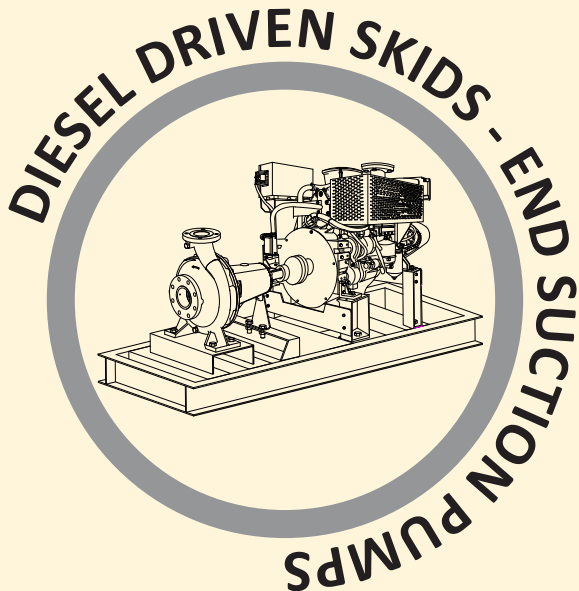


TECHNICAL DATA SHEETS

- *DIMENSION DATA - STALLION*
- *SELECTION CURVES*

PUMP MODELS

1. SFP 500-26 EM @ 2900 RPM



FLOW
500
GPM



Performance Chart

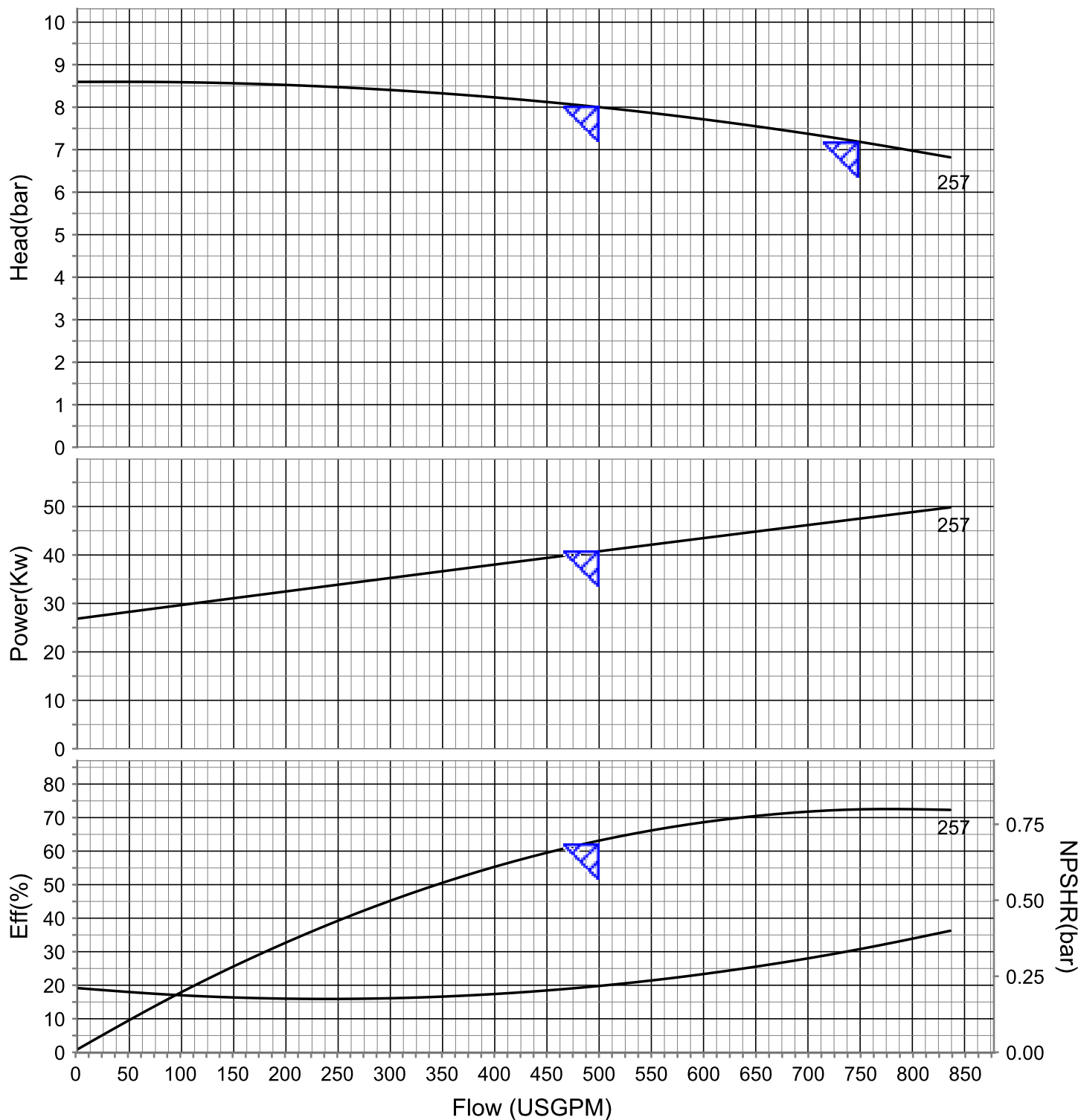
Pump	SFP-500-25 EM- 2G	Tag Number	-
Quote #	-	Date	18 September 2021
Project	-		

General Data

Impeller type	Selected Ø	Speed	Stage
Closed	257.0 mm	2900	1

Operating Data

Duty flow	Duty Head	Efficiency	Power on shaft	NPSHr	
500.0 USGPM	8.0 bar	61.85 %	40.76 Kw 54.64 HP	0.22	
Density	Kinematic viscosity	Viscosity coeff. Cq	Viscosity coeff. Ch	Viscosity coeff. C	Fluid
1000.0 kg/dm3	-	1	1	1	Water



BLACK STATION

PRODUCING TRUST IN FIRE AND SAFETY



Product of



CERTIFIED DIESEL DRIVEN ENGINES

www.sffecoglobal.com



SFFECO GLOBAL with its more than 30 years of experience has always been a progressive organization that has remained in the forefront of the fire fighting industry with innovative, re-engineered and unique products.

SFFECO GLOBAL in its state-of-the-art manufacturing plants in RIYADH & DUBAI works in close connections with renowned governmental and certification bodies to provide key answer to the challenges faced by the society.

SFFECO GLOBAL brings together over 3-Decades of expertise and experience in form of Design, Consultancy, Testing, Commissioning, Maintenance and Refurbishment of fire protection and fire fighting system.

SFFECO GLOBAL works with many Global and International certification bodies. The logos shown on the catalog are to display our association with the respective certification bodies. For Product certifications, please visit the respective product page or contact our sales team.



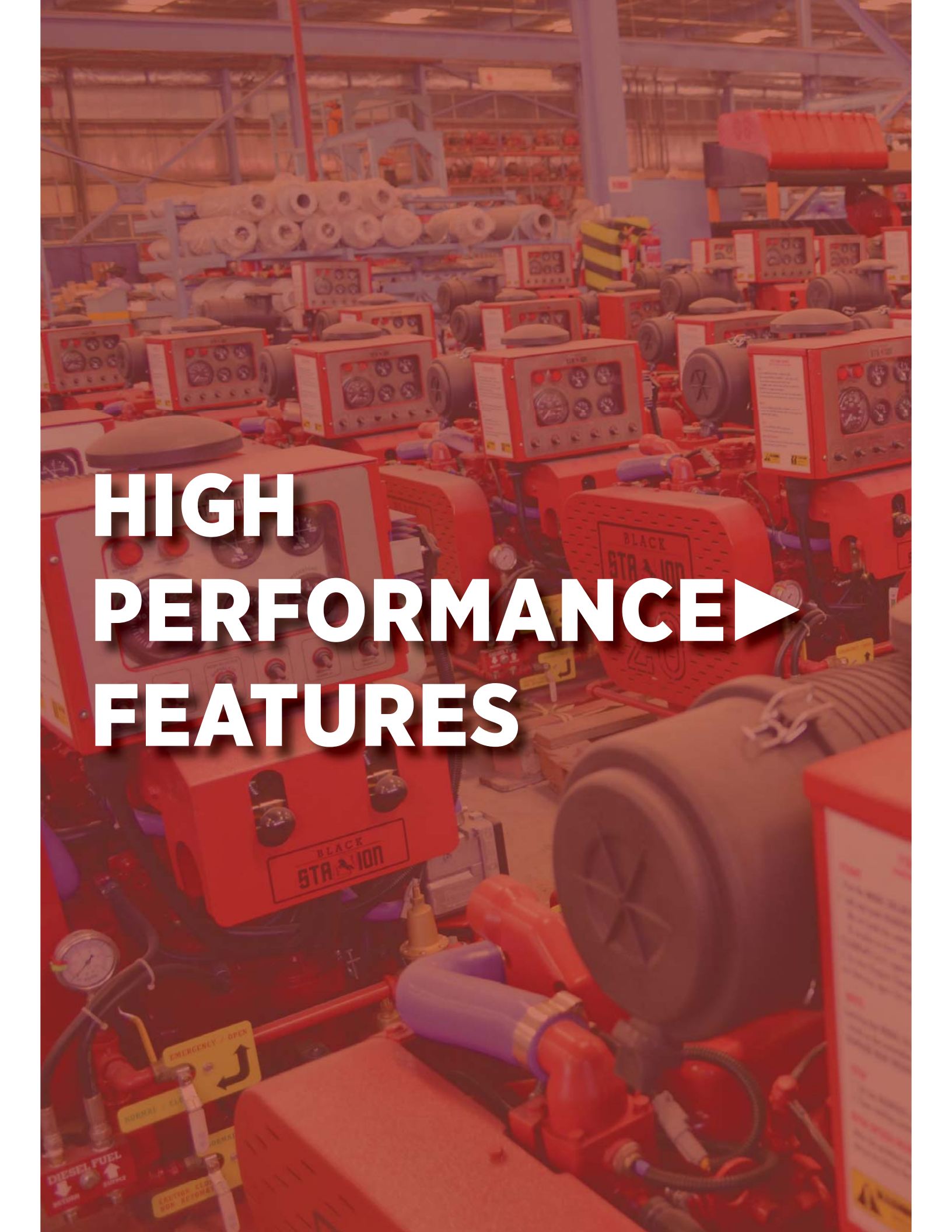


BLACK STALLION today is a symbol for producing efficient, reliable, high performance, cost effective and premium quality internal combustion engines with a wide range of power. Our wide range enables you to find the best engine to fit your needs to deliver effectively and efficiently. We produce engines that meet all the requirements of the NFPA 20 quality and compliance standards and has passed all the tests of the UL 1247 and FM class Number 1333 requirements. Our manufacturing and testing facilities are Witnessed by UL/FM and each product produced are tested to meet all the requirements before they are delivered.

BLACK STALLION is known for reengineering and developing internal combustion engines which is the crucial component for any fire pump.

*QUALITY
EFFICIENCY
PERFORMANCE
DELIVERY*





HIGH PERFORMANCE ► FEATURES

- Disposable dry type air filter
- Able to reach the power within 20sec of starting of the engine
- Flexible hose supply and return fuel connections
- Spin-on type fuel and oil filter
- Inline type, gear driven fuel injection system
- High capacity automatic engine water heater to keep engine warm in the cold conditions
- Water to water, shell and tube type heat exchanger
- Instrumentation panel evaluates as per UL50E and meeting NEMA TYP-2 Requirements.
- Electronic over speed control with reset and test functions
- Energized to stop type solenoid
- High torque starters
- Tamper proof Adjustable speed control
- Water cooling loop

DIESEL ENGINES

BLACK STALLION is an internal combustion diesel engine trademark by SFFECO Global. It is known for reengineering and developing internal combustion engines which is the crucial component for any fire pump.

BLACK STALLION today is a symbol for producing efficient, reliable, high performance, cost effective and premium quality internal combustion engines with a wide range of power. Our wide range enables you to find the best engine to fit your needs to deliver effectively and efficiently. We produce engines that meet all the requirements of the NFPA 20 quality and compliance standards and has passed all the tests of the UL 1247 and FM class Number 1333 requirements.

To provide this confidence, each diesel engine of ours, goes through multiple tests like Endurance Test, and governor test before dispatch from our factory.

Features:

- Engine Type: In line 4 Stroke cycle.
- Cooling System : Water Cool
- Rated Power : From 15 HP to 590 Hp
- 1400,1600,1800,2800,2900,3000
And 1400-1800, 2800-3000 (Refer individual ratings for RPM)
- Number Of Cylinders : 3 , 4, 6 and 12 Cylinders
- Aspiration: Naturally Aspirated and Turbo Charger
- Rotation: Counter Clock Wise (Fronting Fly Wheel)
- Innovative Design
- Latest Technology
- Performance Oriented
- Competitive Pricing
- Premium Quality
- Compact Arrangement
- Low Maintenance
- Easy to Operate
- Efficient Fuel Consumption
- Fast & Timely Delivery

Specification:

UL/FM ENGINE RATINGS AT SPECIFIC SPEEDS				
Model Numbers	Rated Power, HP	Number of cylinders	Speed (RPM)	Certification
BS04040TMSF	40	4	2800	UL/FM
BS04050TMSF	50	4	2800	UL/FM
BS04057TMSF	57	4	2800	UL/FM
BS04080MSF	80	4	2800	UL/FM
BS04090MSF	90	4	2800	UL/FM
BS04100MSF	100	4	2800	UL/FM
BS04111MSF	111	4	2800	UL/FM
BS03020MSF	20	3	2900	UL/FM
BS04030MSF	30	4	2900	UL/FM
BS04040TMSF	40	4	2900	UL/FM
BS04050TMSF	50	4	2900	UL/FM
BS04040MSF	40	4	2900	UL/FM
BS04050MSF	50	4	2900	UL/FM
BS04057MSF	57	4	2900	UL/FM
BS04070MSF	70	4	2900	UL/FM
BS04075MSF	75	4	2900	UL/FM
BS04080MSF	80	4	2900	UL/FM
BS04090MSF	90	4	2900	UL/FM
BS04100MSF	100	4	2900	UL/FM
BS06100MSF	100	6	2900	UL/FM
BS06110MSF	110	6	2900	UL/FM

UL/FM ENGINE RATINGS AT SPECIFIC SPEEDS

Model Numbers	Rated Power, HP	Number of cylinders	Speed (RPM)	Certification
BS06118MSF	118	6	2900	UL/FM
BS06120MSF	120	6	2900	UL/FM
BS06128MSF	128	6	2900	UL/FM
BS06150MSF	150	6	2900	UL/FM
BS06160MSF	160	6	2900	UL/FM
BS06175MSF	175	6	2900	UL/FM
BS06186MSF	186	6	2900	UL/FM
BS06200MSF	200	6	2900	UL/FM
BS06210MSF	210	6	2900	UL/FM
BS06212MSF	212	6	2900	UL/FM
BS06220MSF	220	6	2900	UL/FM
BS06240MSF	240	6	2900	UL/FM
BS06250MSF	250	6	2900	UL/FM
BS06265MSF	265	6	2900	UL/FM
BS04040TMSF	40	4	3000	UL/FM
BS04050TMSF	50	4	3000	UL/FM
BS04056TMSF	56	4	3000	UL/FM
BS04080MSF	80	4	3000	UL/FM
BS04090MSF	90	4	3000	UL/FM
BS04100MSF	100	4	3000	UL/FM
BS04110MSF	110	4	3000	UL/FM
BS06300LSF	300	6	1400	UL/FM
BS06310LSF	310	6	1400	UL/FM
BS06329LSF	329	6	1400	UL/FM
BS06350LSF	350	6	1400	UL/FM
BS06375LSF	375	6	1400	UL/FM
BS06400LSF	400	6	1400	UL/FM
BS012430LSF	430	12	1400	UL/FM
BS012455LSF	455	12	1400	UL/FM
BS012480LSF	480	12	1400	UL/FM
BS012510LSF	510	12	1400	UL/FM
BS06300LSF	300	6	1600	UL/FM
BS06320LSF	320	6	1600	UL/FM
BS06336LSF	336	6	1600	UL/FM
BS06370LSF	370	6	1600	UL/FM
BS06372LSF	372	6	1600	UL/FM
BS06390LSF	390	6	1600	UL/FM
BS06405LSF	405	6	1600	UL/FM
BS012450LSF	450	12	1600	UL/FM
BS012475LSF	475	12	1600	UL/FM
BS012530LSF	530	12	1600	UL/FM
BS012545LSF	545	12	1600	UL/FM
BS06300LSF	300	6	1800	UL/FM
BS06320LSF	320	6	1800	UL/FM
BS06343LSF	343	6	1800	UL/FM
BS06370LSF	370	6	1800	UL/FM
BS012450LSF	450	12	1800	UL/FM
BS012500LSF	500	12	1800	UL/FM
BS012570LSF	570	12	1800	UL/FM

DIESEL ENGINES

UL ENGINE RATINGS AT SPECIFIC SPEEDS

Model Numbers	Rated Power, HP	Number of cylinders	Speed (RPM)	Certification
BS03015MSF	15	3	2900	UL
BS04036MSF	36	4	2900	UL
BS04057TMSF	56	4	2900	UL
BS04079MSF	79	4	2900	UL
BS04111MSF	110	4	2900	UL
BS06215MSF	215	6	2900	UL
BS06218MSF	218	6	2900	UL
BS06272MSF	272	6	2900	UL
BS06275MSF	275	6	2900	UL
BS012518LSF	518	12	1400	UL
BS012503LSF	502	12	1600	UL
BS012553LSF	552	12	1600	UL
BS06390LSF	400	6	1800	UL
BS06390LSF	410	6	1800	UL
BS012550LSF	550	12	1800	UL
BS012589LSF	590	12	1800	UL

FM ENGINE RATINGS AT SPECIFIC SPEEDS

Model Numbers	Rated Power, HP	Number of cylinders	Speed (RPM)	Certification
BS03021MSF	21	3	2800	FM
BS04030MSF	30	4	2800	FM
BS04036MSF	35.5	4	2800	FM
BS04040MSF	40	4	2800	FM
BS04050MSF	50	4	2800	FM
BS04059MSF	58.5	4	2800	FM
BS04065MSF	65	4	2800	FM
BS04070MSF	70	4	2800	FM
BS04075MSF	75	4	2800	FM
BS06100MSF	100	6	2800	FM
BS06110MSF	110	6	2800	FM
BS06127MSF	127	6	2800	FM
BS06147MSF	146.5	6	2800	FM
BS06134MSF	133.5	6	2800	FM
BS06155MSF	154.5	6	2800	FM
BS06240MSF	240	6	2800	FM
BS03021MSF	21	3	2900	FM
BS04036MSF	35.5	4	2900	FM
BS04056TMSF	56	4	2900	FM
BS04060TMSF	60	4	2900	FM
BS04059MSF	58.5	4	2900	FM
BS04110MSF	110	4	2900	FM
BS04114MSF	114	4	2900	FM
BS06127MSF	127	6	2900	FM
BS06147MSF	146.5	6	2900	FM
BS06188MSF	187.5	6	2900	FM

FM ENGINE RATINGS AT SPECIFIC SPEEDS

Model Numbers	Rated Power, HP	Number of cylinders	Speed (RPM)	Certification
BS06272MSF	271.5	6	2900	FM
BS03021MSF	21	3	3000	FM
BS04030MSF	30	4	3000	FM
BS04036MSF	35.5	4	3000	FM
BS04040MSF	40	4	3000	FM
BS04050MSF	50	4	3000	FM
BS04059MSF	58.5	4	3000	FM
BS04065MSF	65	4	3000	FM
BS04070MSF	70	4	3000	FM
BS04075MSF	75	4	3000	FM
BS04111MSF	111	4	3000	FM
BS06100MSF	100	6	3000	FM
BS06110MSF	110	6	3000	FM
BS06127MSF	127	6	3000	FM
BS06147MSF	146.5	6	3000	FM
BS06160MSF	160	6	3000	FM
BS06175MSF	175	6	3000	FM
BS06191MSF	190.5	6	3000	FM
BS06200MSF	200	6	3000	FM
BS06210MSF	210	6	3000	FM
BS06216MSF	216	6	3000	FM
BS06230MSF	230	6	3000	FM
BS06250MSF	250	6	3000	FM
BS06272MSF	271.5	6	3000	FM
BS06330LSF	330	6	1400	FM
BS06410LSF	410	6	1400	FM
BS012515LSF	515	12	1400	FM
BS06350LSF	350	6	1600	FM
BS06365LSF	365	6	1600	FM
BS06406LSF	406	6	1600	FM
BS012502LSF	502	12	1600	FM
BS012508LSF	508	12	1600	FM
BS012552LSF	552	12	1600	FM
BS012562LSF	562	12	1600	FM
BS06400LSF	400	6	1800	FM
BS06407LSF	407	6	1800	FM
BS012548LSF	548	12	1800	FM
BS012585LSF	585	12	1800	FM

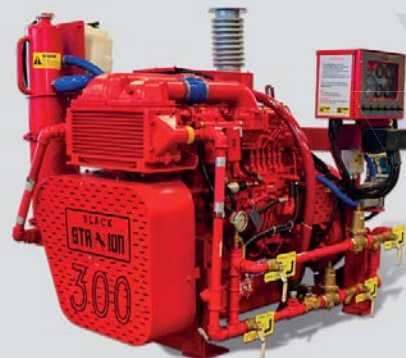
DIESEL ENGINES

DIESEL ENGINES RATED FOR USE WITHIN SPEED RANGES							
SNo.	Proposed Model Numbers	Minimum		Maximum		No. of Cylinders	Cerification
		Rated Speed(rpm)	Rated HP	Rated Speed (rpm)	Rated HP		
1	BS0320MSR	2800	20	3000	21	3	FM
2	BS0440AMSR	2800	35.5	3000	35.5	4	FM
3	BS0440MSR	2800	57	3000	56	4	UL/FM
4	BS0460MSR	2800	58.5	3000	58.5	4	FM
5	BS0485MSR	2800	75	3000	75	4	FM
6	BS04100MSR	2800	111	3000	110	4	UL
7	BS04100MSR	2800	111	3000	111	4	FM
8	BS06130MSR	2800	127	3000	127	6	FM
9	BS06150MSR	2800	146.5	3000	146.5	6	FM
10	BS06195MSR	2800	133.5	3000	190.5	6	FM
11	BS06250MSR	2800	154.5	3000	216	6	FM
12	BS06300MSR	2800	240	3000	271.5	6	FM
13	BS06400LSR	1400	329	1800	343	6	UL
14	BS06400LSR	1400	330	1800	343	6	FM
15	BS06450LSR	1400	400	1800	410	6	UL
16	BS06450LSR	1400	410	1800	407	6	FM
17	BS12550LSR	1400	455	1800	550	12	UL
18	BS12550LSR	1400	455	1800	548	12	FM
19	BS12650LSR	1400	518	1800	588	12	UL
20	BS12650LSR	1400	515	1800	585	12	FM

- **BLACK STALLION Engines are UL/FM Approved. Please contact our sales team for each individual engine certification.**
- **Standard diesel engines are also available and ranges from 25 HP to 536 HP.**
- **FM Engine model listings are awaited, Please contact our sales team for our existing FM Approved engine models**



2800, 2900, 3000 RPM
15 - 275 HP



1400, 1600, 1800 RPM
300 - 588 HP

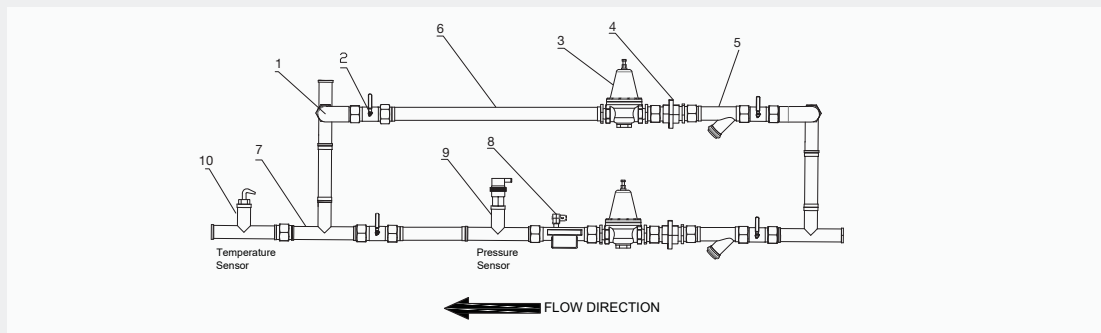
COOLING LOOP ▼

FEATURES & SPECIFICATIONS

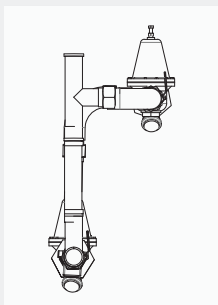
- Complying to UL /FM standards.
- Manufactured as per the guidelines of NFPA 20.
- Hydrostatically tested to assure optimum performance
- All components are checked for pipe strain and leakage prior to initial start-up.
- Black stallion cooling loop incorporates all components required by NFPA and is sized and selected to provide the required volume of water at the proper pressure for the heat exchanger of the engine models.
- Flushing type strainer is used to protect the regulator valve, solenoid valve and the tubes of the heat exchanger from foreign material.
- The regulator valves are used to control the volume and pressure of the cooling water.
- The pressure guages indicates the back pressure on the cooling water discharge. The recommended back pressure to assure adequate flow is less than 20psi and should not exceed the allowable pressure.
- Cooling Loop is available in sizes of 1/2", 3/4", 1", 1 1/4", 1 1/2" and 2" as shown in the table below, selected as per the Engine Size.
- SS and GI Cooling loops are available.
- Option of diaphragm is available instead of solenoid valve..
- Black stallion standard cooling loop is available in Red Epoxy Coated Finish. Other finishes are available upon request

PARTS LIST STANDARD COOLING LOOP

FRONT VIEW



SIDE VIEW



No.	Description
1	Elbow - 90
2	Ball Valve - UL Listed
3	Pressure Regulating Valve
4	Bush Reducer
5	Y-Strainer
6	G.I. Pipe
7	Tee
8	Solenoid Valve
9	Pressure Sensor
10	Temperature Sensor



Note: Pressure and Temperature sensors are FM cooling loop requirements
Note: Components & Accessories of the Cooling Loop are Certified and Approved.

Product of



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TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model GPD

Diesel Engine Driven Fire Pump Controller



Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

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



N.Y.C.
APPROVED



November 2018



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)	
	Underwriters Laboratory (UL)	• UL218 - Fire Pump Controllers • CSA C22.2 No. 14 Industrial Control Equipment
	FM Global	Class 1321/1323
	New York City	Accepted for use in the City of New York by the Department of Buildings
	Seismic Certification	See page 5 for details
	Optional	
Enclosure	☐ CE Mark	Various EN, IEC & CEE directives and standards
	Protection Rating ☐ Standard: NEMA 2 (IP31) Optional ☐ NEMA 12 ☐ NEMA 4X-304 sst painted ☐ IP54 ☐ NEMA 3 ☐ NEMA 4X-304 sst brushed finish ☐ IP55 ☐ NEMA 3R ☐ NEMA 4X-316 sst painted ☐ IP65 ☐ NEMA 4 ☐ NEMA 4X-316 sst brushed finish ☐ IP66	
	Accessories • Bottom entry gland plate • Lifting Lugs • Keylock handle	
	Paint Specifications • Red RAL3002 • Powder coating • Glossy textured finish	
Ambient Temperature Rating	Standard ☐ 4°C to 40°C / 39°F to 104°F Optional ☐ 4°C to 55°C / 39°F to 131°F	
General	AC	☐ 120V / 1ph / 60hz ☐ 208V to 240V / 1ph / 50-60hz
	DC	☐ 12VDC ☐ 24VDC
	Grounding system	• Negative
	Battery chargers	• Two independent fully automatic • 10A continuous charge • 500mA trickle charge
Electrical Reading	• Battery 1 & Battery 2 voltage • Battery 1 & Battery 2 charging amperage • Charging mode	
Pressure Reading	• Continuous system pressure display • Cut-in and cut-out pressure setting	
Pressure and Event Recorder	• Pressure readings with date stamp • Event recording with date stamp • Under regular maintained operation, events are stored in memory for the life of the controller. • Data viewable on operator interface display screen • Downloadable by USB port to external memory device	





Pressure sensing	• Pressure transducer and run test solenoid valve assembly for fresh water application • Pressure sensing connection 1/2" Female NPT • Drain connection 3/8" • Rated and calibrated for 0-500psi working pressure • Externally mounted with protective cover
Audible Alarm	4" alarm bell - 85 dB at 10ft. (3m)
Visual Indications	• Engine run • Main switch AUTO • Main switch in OFF • Main switch in HAND • Periodic test • Cranking Cycle • AC Power available • Pump room temperature (°F or °C)
Visual & Audible Alarms	Visual only • Pump room trouble • Pump on demand • AC Failure • Charger 1 Failure • Charger 2 Failure • Weak battery 1 • Weak battery 2 • Battery 1 overvoltage • Battery 2 overvoltage • Loss of continuity 1 • Loss of continuity 2 • High fuel level • Fuel tank leak • PLD low suction pressure • High raw water temperature • Low pump room temperature • High pump room temperature • ECM warning • Weekly test cut-in not reached • Check weekly test solenoid • Pressure transducer fault • Invalid Cut-In • Service required Visual and Audible • Engine trouble • Controller trouble • Engine low oil pressure • Engine high temperature • Engine low temperature • Engine overspeed • DC Failure • Battery 1 Failure • Battery 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 • Common engine trouble • High engine temperature • Fail to start • Fuel injection malfunction** • ECM selector switch in alternate position*** • Common pump room trouble (field re-assignable)* • Low fuel level • High fuel level • Fuel tank leak • H-O-A selector switch in OFF or HAND • Free (field programmable)* • Pressure transducer fault • Battery #1 & battery #2 failure • DC failure • Loss of continuity (starter) #1 and/or #2 • PLD low suction pressure • Overspeed • Fail when running • Low oil pressure • Low pump room temperature • High pump room temperature • AC Failure

*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 • Deluge valve start (re-assignable) • Fuel tank leak (re-assignable) • High fuel level (re-assignable)		
ViZiTouch V2 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 • Deluge valve start • Remote start from manual device	
	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		

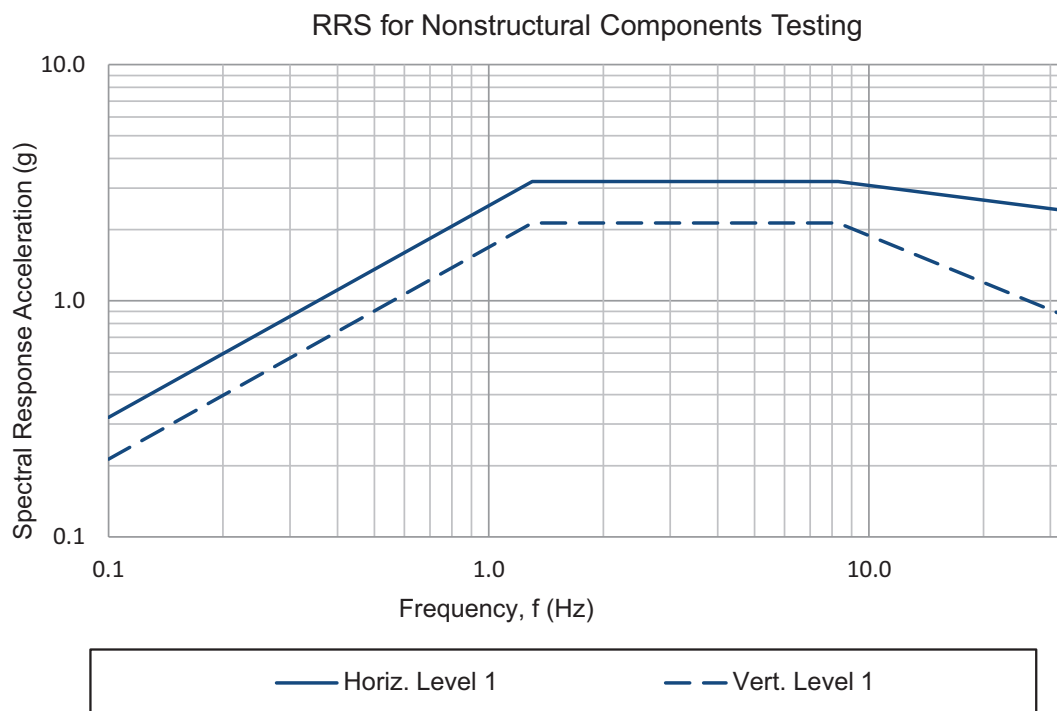
Alarm and shutdown schedule		Automatic Start	Manual or Remote Start	Run Test or Periodic Test
	High Coolant	Alarm only	Alarm only	Shutdown
	Low Oil Pressure	Alarm only	Alarm only	Shutdown
	Overspeed	Shutdown	Shutdown	Shutdown

	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.



Seismic Certification	Seismic Certification Company	TRU Compliance, LLC A Tobalski Watkins Affiliate					TWEI Project No.: 15014				
	Mounting details	Rigid wall mounting									
	Seismic Information	Building Code	Test Criteria	Seismic Parameters	S _{DS}	z/h	I _P	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
		IBC 2015, CBC 2016	ICC-ES AC156	ASCE 7-10 Chapter 13	2.0	1.0	1.5	3.20	2.40	1.33	0.53
				3.2	0.0	1.5	3.20	1.28	2.13	0.85	



Notes:

- Components are tested in accordance with ICC-ES AC156, IBC 2015 & CBC 2016.
- OSHPD Special Seismic Certification Preapproval (OSP)

☐	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

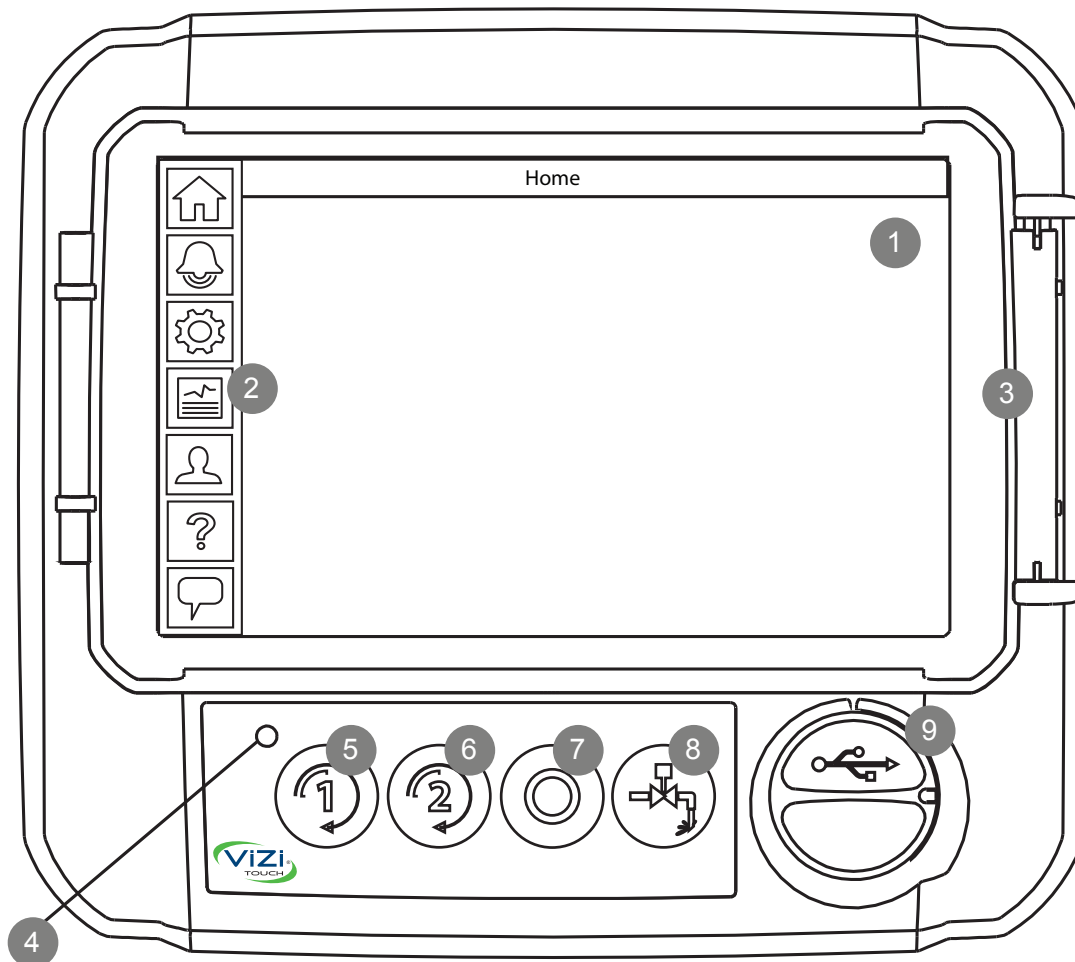
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☐	L02	French
☐	L03	Spanish
☐	L04	German
☐	L05	Italian
☐	L06	Polish
☐	L07	Romanian
☐	L08	Hungarian
☐	L09	Slovak
☐	L10	Croatian
☐	L11	Czech
☐	L12	Portuguese
☐	L13	Dutch
☐	L14	Russian
☐	L15	Turkish
☐	L16	Swedish
☐	L17	Bulgarian
☐	L18	Thai
☐	L19	Indonesian
☐	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 - CRANK 1 button

6 - CRANK 2 button

7 - STOP button

8 - RUN TEST button

9 - USB port

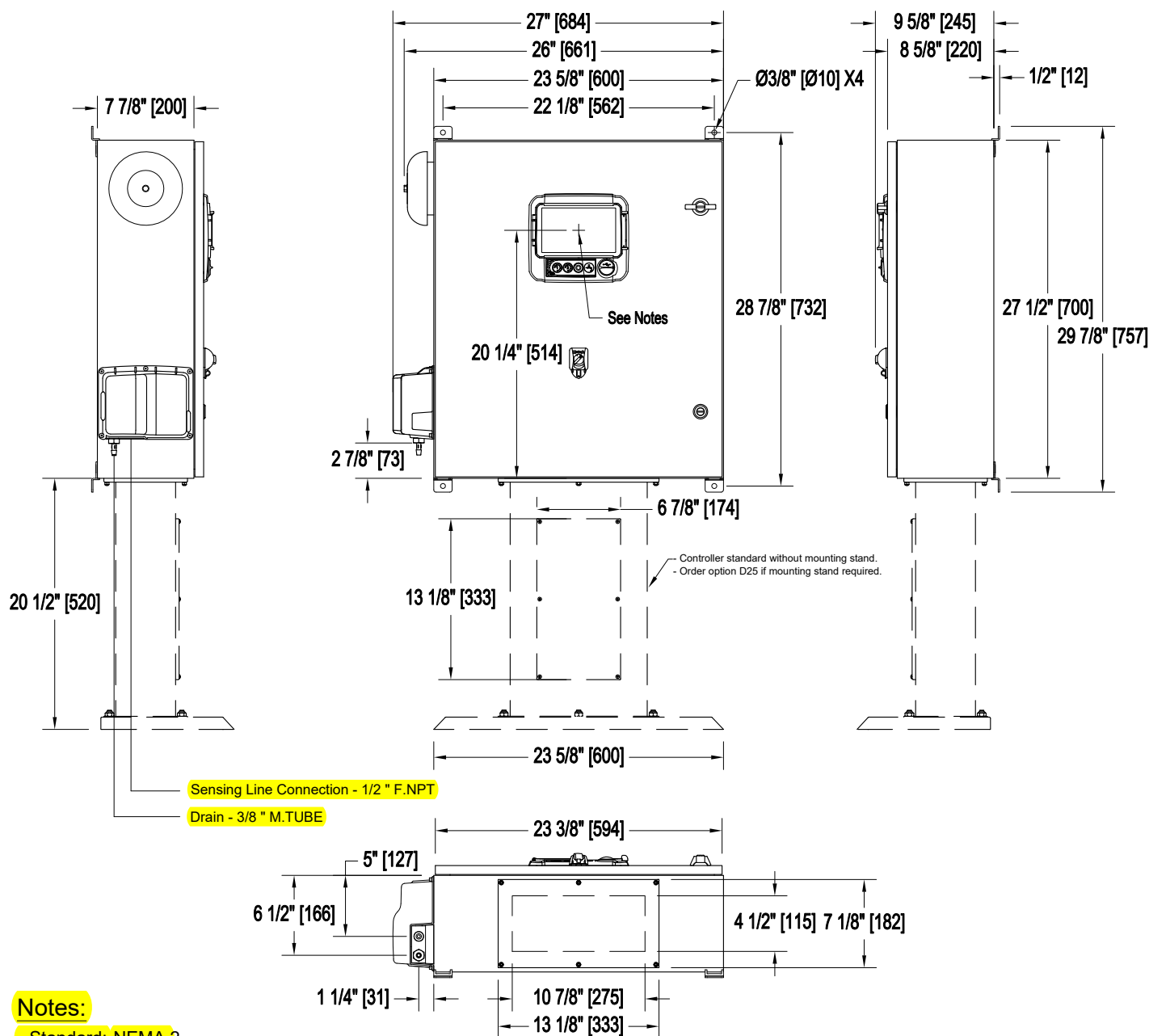
Diesel Engine Fire Pump Controller

12Vdc or 24Vdc Negative Ground

Model: GPD

Dimensions

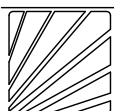
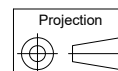
Built to the latest edition of the NFPA 20 standard



Notes:

- Standard: NEMA 2
- Standard paint : textured red RAL 3002.
- All dimensions are in inches [millimeters].
- Center of ViZiTouch 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.
- Seismic mounting to be rigid wall only.

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



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1.	Revised logo	18/06/18	GPD-DI700 /E
0.	First issue	18/11/16	

Built to the latest edition of the NFPA 20 standard

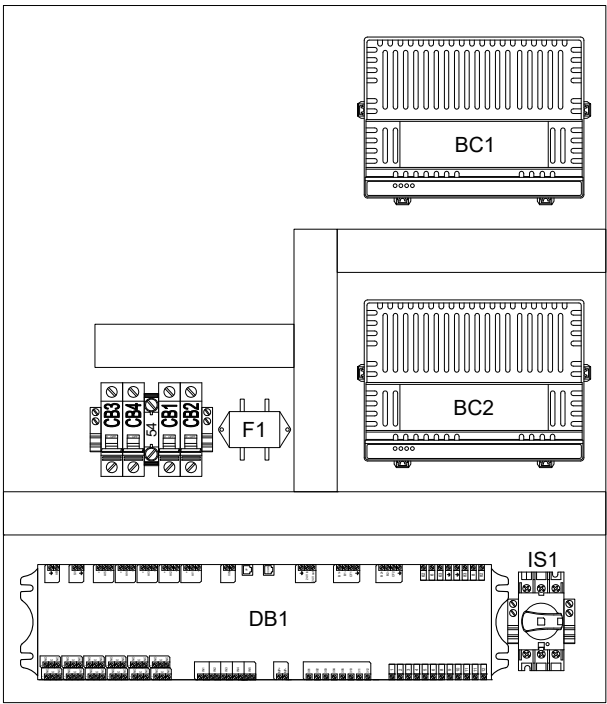
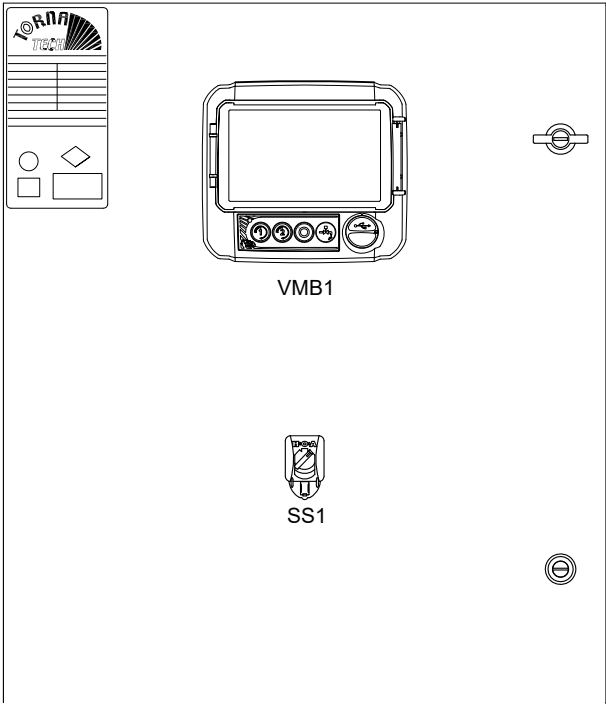
CDL

Diesel Engine Fire Pump Controller
12VDC or 24VDC Negative Ground
Layout

Model:GPD

Built to the latest edition of the NFPA 20 standard

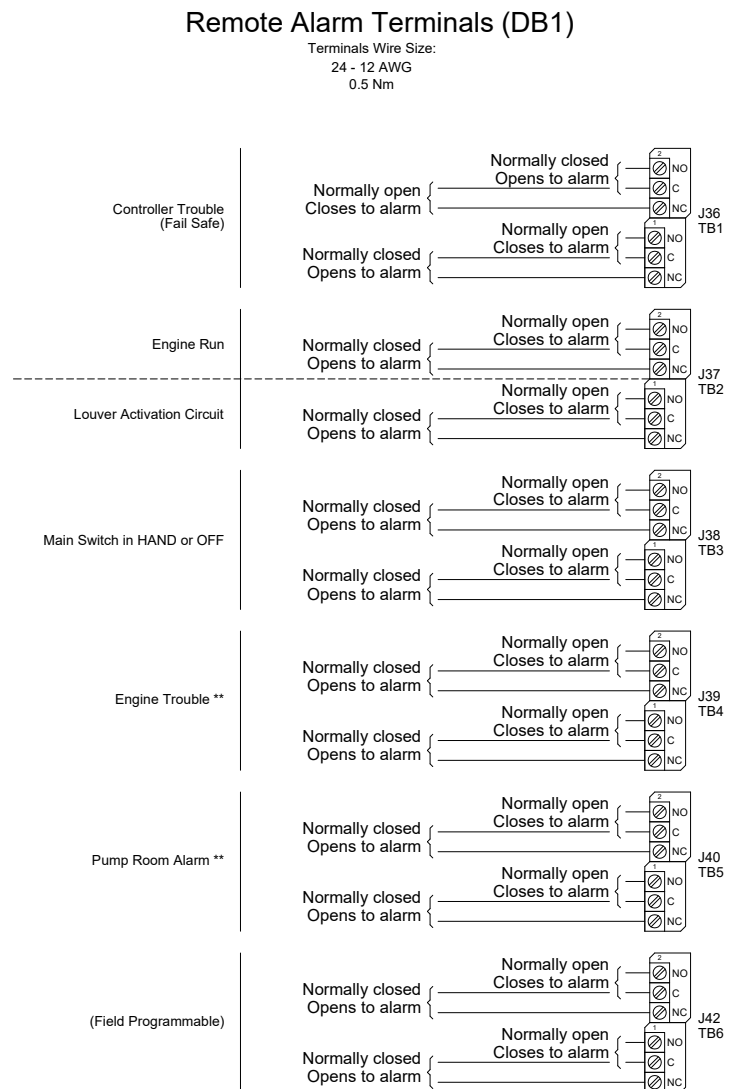
Designation	Description
BC1-BC2	Battery Charger #1 and #2
CB1-2	Magnetic Breaker 1 Pole 10 A
CB3-4	Magnetic Breaker 1 Pole 16 A
DB1	I/O Diesel Board
F1	Filter
IS1	Isolating Switch
SS1	Lockable 3 Position Selector Switch
VMB1	ViZiTouch Main Board



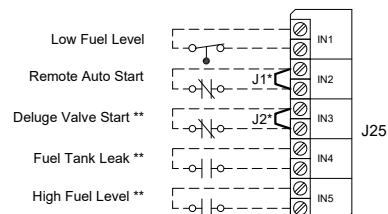
REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Revised logo	18/06/18	GPD-LY700 /E
0	First issue	21/11/16	

Model: GPD

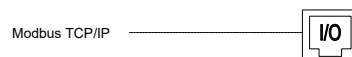
Built to the latest edition of the NFPA 20 standard



Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Shielded Female Connector RJ45



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

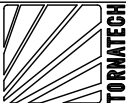
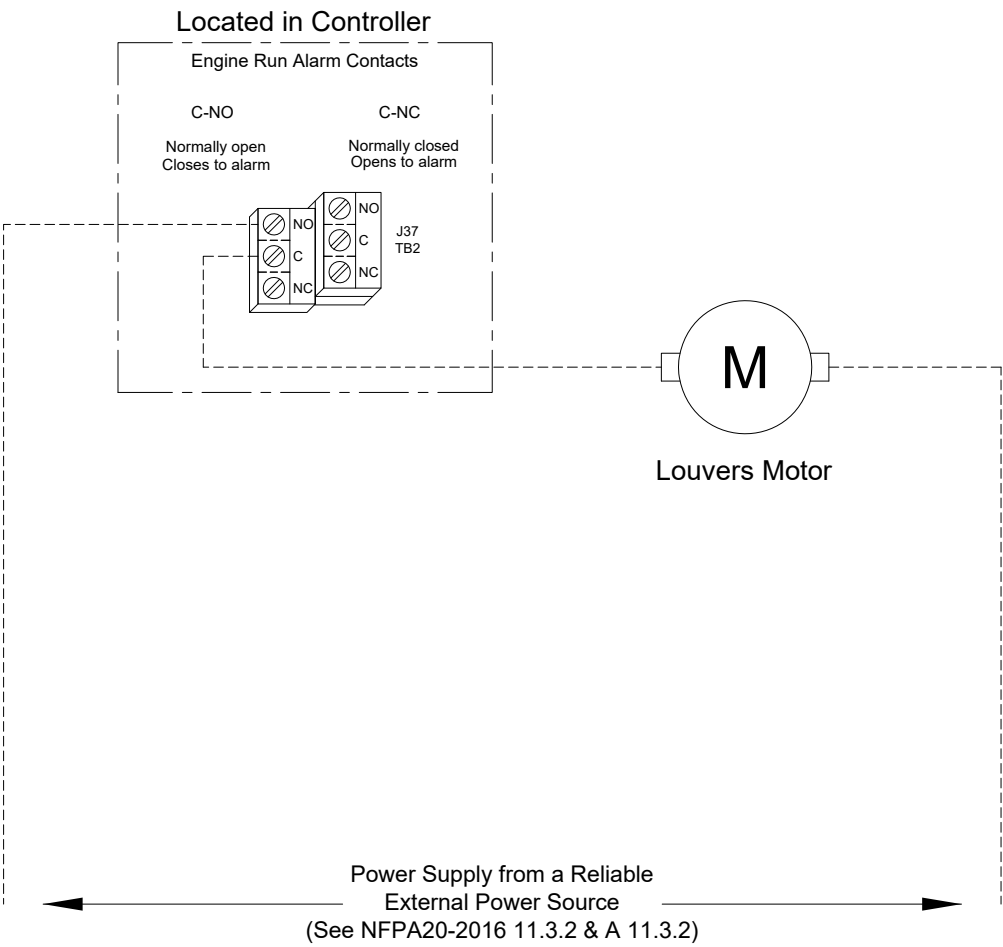
* Remove jumper to use this feature
** Re-assignable



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Revised logo	18/06/18	GPD-TD700 /E
0	First issue	10/11/16	

Diesel Engine Fire Pump Controller
12VDC or 24VDC Negative Ground
Louver Connection

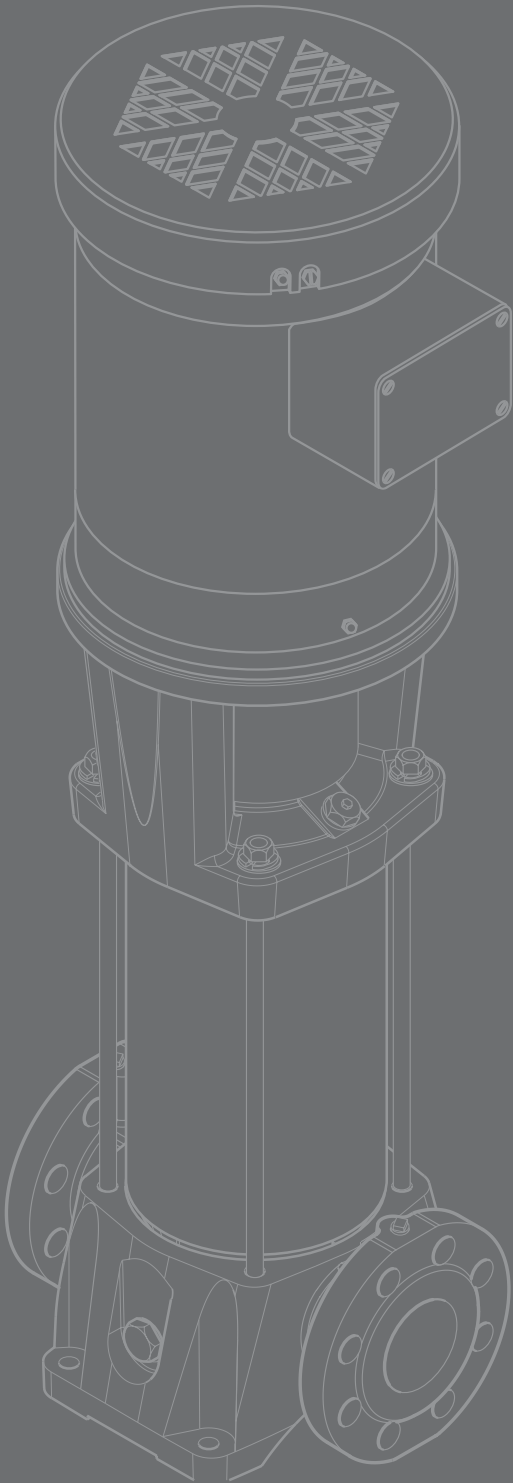
Model: GPD
Built to the latest edition of the NFPA 20 standard



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Revised logo	18/06/18	GPD-TD701 /E
0	First issue	10/11/16	

06

JOCKEY PUMPS



FIRE PUMP SYSTEMS

Saudi Factory for Fire Equipment reserves the right to make revisions to its products and their specifications, and to this catalogue and related information, without prior notice. All products must be installed and maintained in accordance with applicable instructions and/or standards.

SFFECO.com

Jockey Fire Pump

Item Description

Proposed

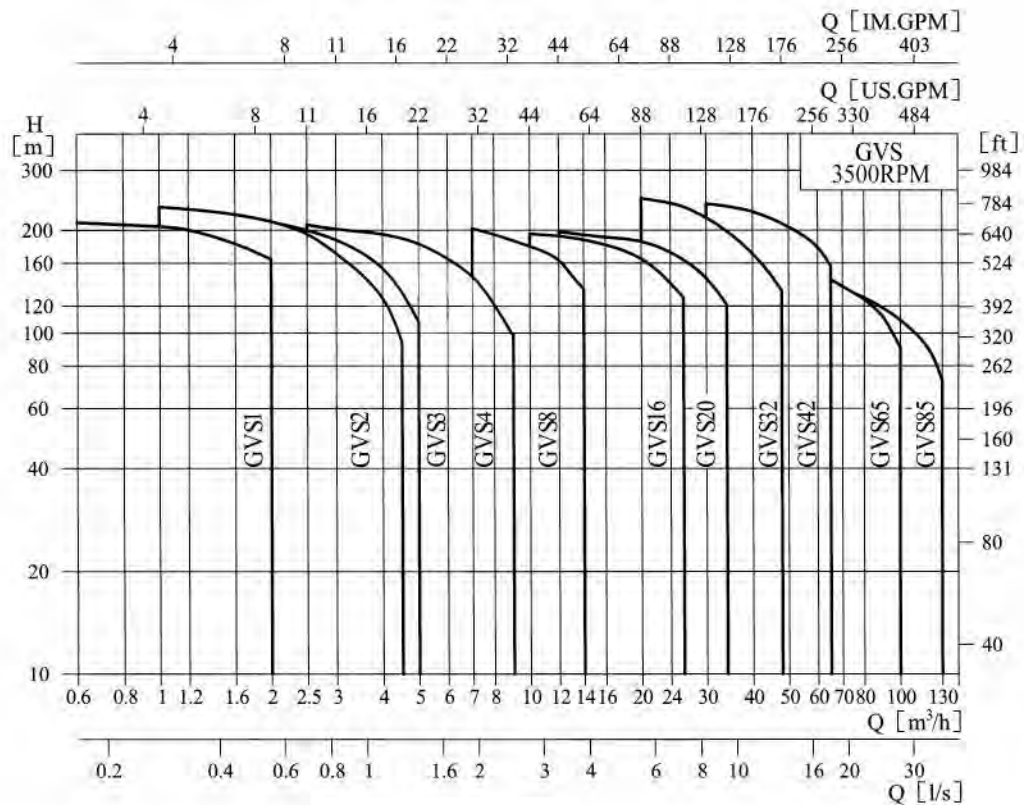
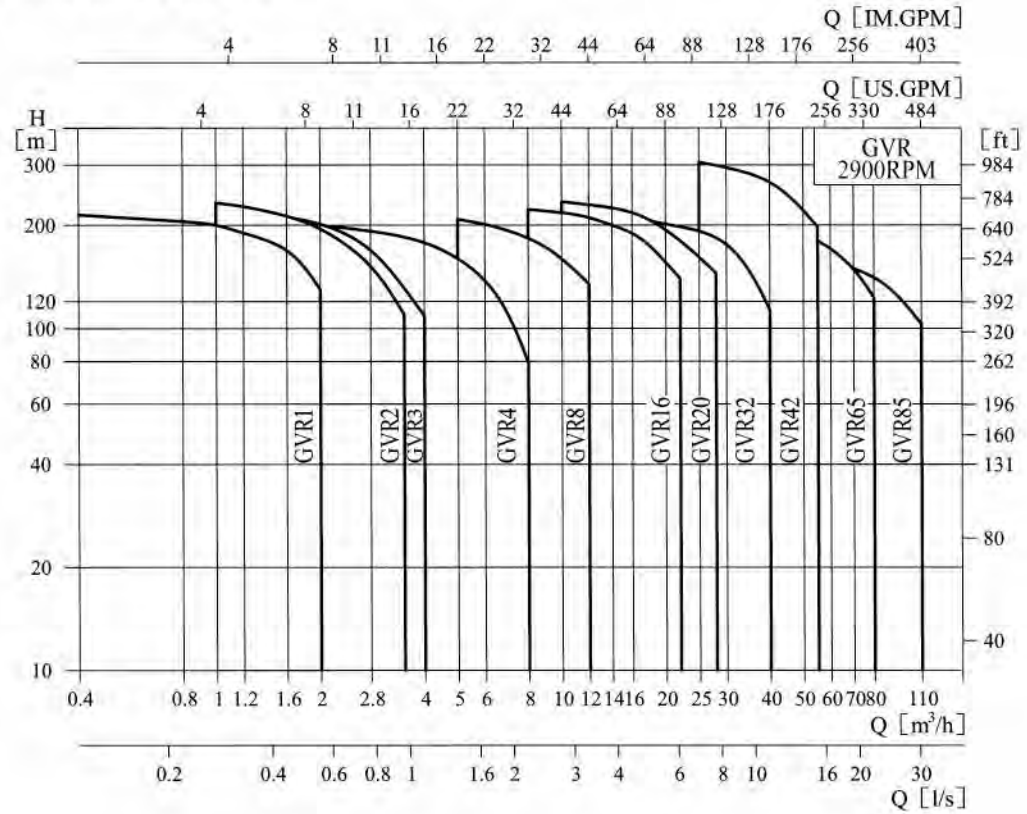
<u>Electric Pump:</u>		
Make	:	"G MAX Pumps", UK
Model / Series	:	GVR 4/100
Type	:	Vertical Multi-stage
Rated Flow	:	10.5 USGPM
Rated Head	:	8.7 Bar
Suction / Discharge	:	Ø32/ ø32
Rated Speed	:	2900 RPM, 50Hz
<u>Motor:</u>		
Type	:	TEFC motor
Power Supply	:	3Ph , 380 V, 50 Hz
Rated Power	:	3HP
Rated Speed	:	2900 RPM
<u>Jockey Pump Controller</u>		
Make	:	"Tornatech", Canada
Model	:	JP3
Operation	:	Combined Automatic & Manual
Enclosure	:	Standard NEMA 2
Mounting	:	Wall Mounted
Method of Start	:	DOL
Means of Activation	:	Pressure Transducer, Selector Switch
Power Supply	:	3Ph, 380 V, 50Hz
Controller Approval	:	UL Listed

****Remarks:** The Jockey Pump capacity showing in the quotation is indicative only, While factory has the right to select a different model/flow rate capacity assuring that will be between 1-10% from the flow rate capacity of the main pump.



**MULTISTAGE STAINLESS STEEL
CENTRIFUGAL PUMP**

● Performance scope



● Product range

Description	GV1	GV2	GV3	GV4	GV8	GV16	GV20	GV32	GV42	GV65	GV85
2900RPM											
Rated flow [m³/h]	1	2	3	4	8	16	20	32	42	65	85
Rated flow [l/s]	0.28	0.56	0.83	1.1	2.2	4.4	5.6	8.9	11.7	18	24
Flow range [m³/h]	0.4-2	1-3.5	1.2-4	1.5-8	5-12	8-22	10-28	16-40	25-55	30-80	50-110
Flow range [l/s]	0.11-0.56	0.28-0.97	0.33-1.1	0.42-2.2	1.4-3.3	2.2-6.1	2.8-7.8	4.4-11.1	6.9-15.3	8.3-22.2	13.8-30.5
Max.pressure [bar]	21	23	22	21	21	22	23	26	30	22	17
Motor power [kW]	0.37-2.2	0.37-3	0.37-3	0.37-4	0.75-7.5	2.2-15	1.1-18.5	1.5-30	3.0-45	4.0-45	5.5-45
Temperature range [°C]	-15~+120										
Max. efficiency [%]	44	46	54	59	64	66	69	76	78	80	81
Type											
GVR	●	●	●	●	●	●	●	●	●	●	●

GVR Pipe connection

DIN Flange	DN25	DN25	DN25	DN32	DN40	DN50	DN50	DN65	DN80	DN100	DN100
Oval Flange	G1	G1	G1	G1 ¹ / ₄	G1 ¹ / ₂						

3500RPM

Rated flow [m³/h]	1	2	3	4	8	16	20	32	42	65	85
Rated flow [l/s]	0.28	0.56	0.83	1.1	2.2	4.4	5.6	8.9	11.7	18	24
Flow range [m³/h]	0.6-2	1-4.5	1.5-5	2.5-9	7-14	10-26	12-34	20-48	30-65	40-100	60-130
Flow range [l/s]	0.17-0.56	0.28-1.25	0.42-1.4	0.7-2.5	1.9-3.9	2.8-7.2	3.3-9.4	5.5-13.3	8.3-18	11.1-27.7	16.7-36.1
Max.pressure [bar]	24	23.5	23	21	20	20	20	25	26	18	15
Motor power [kW]	0.37-3	0.55-4	0.37-4	0.75-5.5	0.75-11	2.2-18.5	2.2-18.5	3-30	5.5-45	7.5-45	11-45
Temperature range [°C]	-15~+120										
Max. efficiency [%]	44	46	54	59	64	66	69	76	78	80	81
Type											
GVS	●	●	●	●	●	●	●	●	●	●	●

GVS Pipe connection

DIN Flange	DN25	DN25	DN25	DN32	DN40	DN50	DN50	DN65	DN80	DN100	DN100
Oval Flange	G1	G1	G1	G1 ¹ / ₄	G1 ¹ / ₂						

● Pump

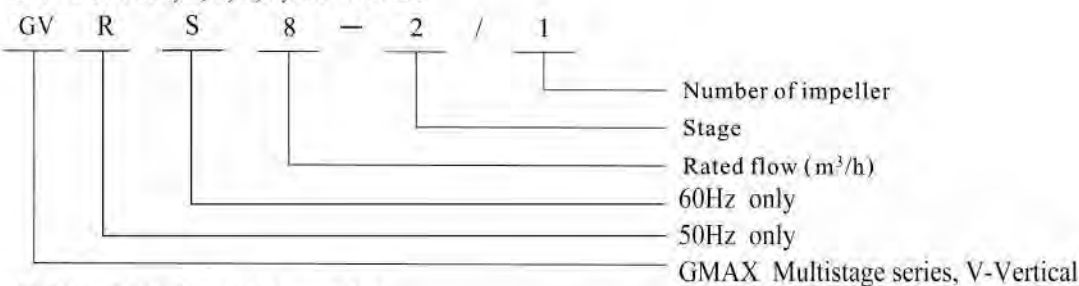
GVR/GVS is a kind of vertical non-self priming multistage centrifugal pump, which is driven by a standard electric motor. The motor output shaft directly connects with the pump shaft through a coupling. The pressure-resistant cylinder and flow passage components are fixed between pump head and inlet & outlet section with tie-bar bolts. The inlet and outlet are located at the pump bottom at the same plane. This kind of pump can be equipped with an intelligent protector to effectively prevent it from dry-running, out-of-phase and overload.

● Motor

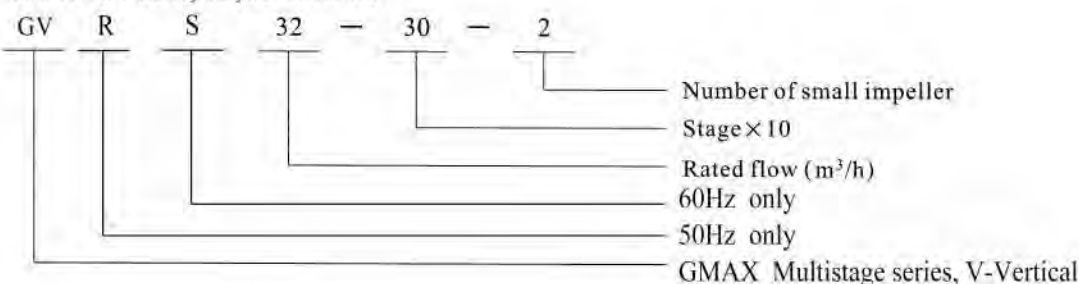
- Full-enclosed air-blast two-pole standard motor
- Protection class: IP55
- Insulation class: F
- Standard voltage: 50Hz: 1 × 220-230 / 240V
3 × 200-220 / 346-380V
3 × 220-240 / 380-415V
3 × 380-415V
- Standard voltage: 60Hz: 3 × 200-230 / 346-400V
3 × 200-255 / 380-440V
3 × 200-277 / 380-480V

● Definition of Model

GVR/GVS1,2,3,4,8,16 and 20



GVR/GVS32,42,65 and 85



● Application

GVR/GVS is a kind of multifunctional products. It can be used to convey various medium from tap water to industrial liquid at different temperature and with different flow rate and pressure.

- Water supply: Water filter and transport in Waterworks, boosting of main pipeline, boosting in high-rise buildings.
- Industrial boosting: Process flow water system, cleaning system, high-pressure washing system, fire fighting system.
- Industrial liquid conveying: Cooling and air-conditioning system, boiler water supply and condensing system, machine-associated purpose, acids and alkali.
- Water treatment: Ultrafiltration system, reverse osmosis system, distillation system, separator, swimming pool.
- Irrigation: Farmland irrigation, spray irrigation, drip-ping irrigation.

● Operation conditions

- Thin, clean, non-flammable and non-explosive liquid containing no solid granules and fibers.
- Liquid temperature:
Normal temperature type: -15℃ ~ +70℃,
Hot water type: +70℃ ~ +120℃
- Ambient temperature: up to +40℃
- Altitude: up to 1000m

● Max inlet pressure

The maximum inlet pressure is shown in the table below. But the actual inlet pressure plus the valve close pressure of the pump shall be lower than the max. allowable working pressure.

Model	Max inlet pressure
2900RPM	
GVR1	
1-2~1-8	6[bar]
1-9~1-36	10[bar]
GVR2	
2-2	6[bar]
2-3~2-11	10[bar]
2-13~2-26	15[bar]
GVR3	
3-2~3-5	6[bar]
3-6~3-29	10[bar]
3-31~3-36	15[bar]
GVR4	
4-2	6[bar]
4-3~4-10	10[bar]
4-12~4-22	15[bar]
GVR8	
8-2/1~8-6	6[bar]
8-8~8-20	10[bar]
GVR16	
16-2~16-3	6[bar]
16-4~16-16	10[bar]
GVR20	
20-1~20-3	6[bar]
20-4~20-17	10[bar]
GVR32	
32-10-1~32-20-2	3[bar]
32-20~32-40	4[bar]
32-50-2~32-100	10[bar]
32-110-2~32-140	15[bar]
GVR42	
42-10-1	3[bar]
42-10~42-20	4[bar]
42-30-2~42-50	10[bar]
42-60-2~42-130-2	15[bar]
GVR65	
65-10-1~65-20-2	4[bar]
65-20-1~65-30	10[bar]
65-40-2~65-80-1	15[bar]
GVR85	
85-10-1~85-10	4[bar]
85-20-2~85-30-2	10[bar]
85-30-1~85-60	15[bar]

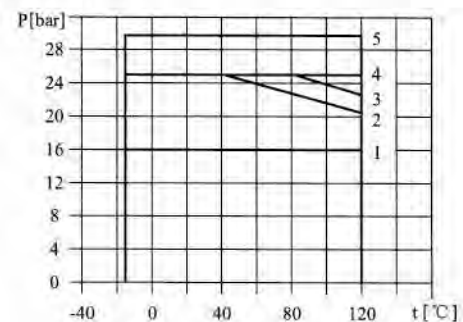
Model	Max inlet pressure
3500RPM	
GVS1	
1-2~1-6	6[bar]
1-7~1-25	10[bar]
GVS2	
2-2	6[bar]
2-3~2-7	10[bar]
2-9~2-18	15[bar]
GVS3	
3-2~3-5	6[bar]
3-6~3-19	10[bar]
3-20~3-25	15[bar]
GVS4	
4-2	6[bar]
4-3~4-8	10[bar]
4-10~4-16	15[bar]
GVS8	
8-2/1~8-5	6[bar]
8-6~8-14	10[bar]
GVS16	
16-2/1~16-2	6[bar]
16-3~16-10	10[bar]
GVS20	
20-1~20-2	6[bar]
20-3~20-10	10[bar]
GVS32	
32-10-1~32-30-2	4[bar]
32-30~32-70	10[bar]
32-80-2~32-100-2	15[bar]
GVS42	
42-10-1~42-20-2	4[bar]
42-20~42-40-2	10[bar]
42-40~42-70	15[bar]
GVS65	
65-10-1~65-20-2	4[bar]
65-20~65-30-2	10[bar]
65-30~65-50-2	15[bar]
GVS85	
85-10-1~85-10	4[bar]
85-20-2~85-20	10[bar]
85-30-2~85-40-2	15[bar]

● Max working pressure

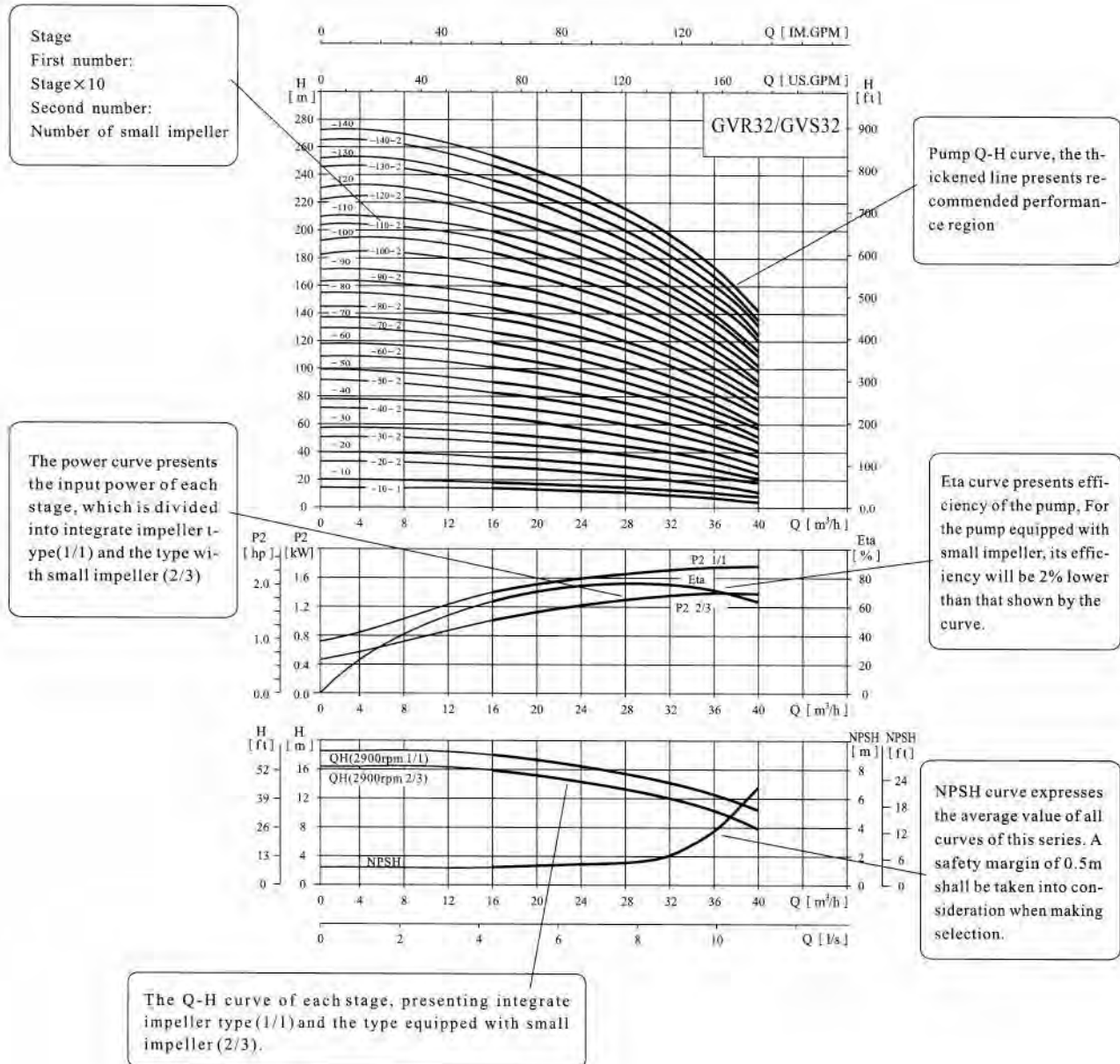
Model	Curve number
2900RPM	
GVR1	
1-2~1-23	1
1-25~1-36	2
GVR2	
2-2-15	1
2-18~2-26	2
GVR3	
3-2~3-23	1
3-25~3-36	2
GVR4	
4-2~4-16	1
4-19~4-22	2
GVR8	
8-2/1~8-12	1
8-14~8-20	3
GVR16	
16-2~16-8	1
16-10~16-16	3
GVR20	
20-1~20-8	1
20-10~20-17	3
GVR32	
32-10-1~32-70	1
32-80-2~32-120	4
32-130~32-140	5
GVR42	
42-10-1~42-60	1
42-70-2~42-90	4
42-100-2~42-130-2	5
GVR65	
65-10-1~65-50	1
65-60-2~65-80-1	4
GVR85	
85-10-1~85-50-2	1
85-50~85-60	4

Model	Curve number
3500RPM	
GVS1	
1-2~1-17	1
1-19~1-25	2
GVS2	
2-2~2-11	1
2-13~2-18	2
GVS3	
3-2~3-15	1
3-17~3-25	2
GVS4	
4-2~4-10	1
4-12~4-16	2
GVS8	
8-2/1~8-8	1
8-10~8-14	3
GVS16	
16-2~16-6	1
16-7~16-10	3
GVS20	
20-1~20-4	1
20-5~20-10	3
GVS32	
32-10-1~32-50-2	1
32-50~32-90-2	4
32-90~32-100-2	5
GVS42	
42-10-1~42-30	1
42-40-2~42-60	4
42-70-2~42-70	5
GVS65	
65-10-1~65-30	1
65-40-2~65-50-2	4
GVS85	
85-10-1~85-30	1
85-40-2	4

The following figure shows the limitation of pressure and temperature, which shall be kept within the region as shown in the figure.



● Curve illustration



● Performance curve

Following conditions are suitable for the performance curves shown below:

- 1、 All curves are based on the measured values of 50Hz: constant motor speed 2900r/min, 60Hz: constant motor speed 3500 r/min;
- 2、 Curve tolerance in conformity with ISO9906 Annex A.

3、 Measurement is done with 20°C air-free water, kinematic viscosity of 1mm²/sec.

4、 The operation of pump shall refer to the performance region indicated by the thickened curve to prevent overheating due to too small flow rate or overload of motor due to too large flow rate.

● Minimum inlet pressure NPSH

In case that the pressure in pump is lower than the steam pressure used to convey liquid, the cavitations will occur. To avoid cavitations, a minimum pressure at the inlet side of the pump shall be guaranteed. The maximum suction stroke can be calculated with following formula:

$$H = P_b \times 10.2 - NPSH - H_f - H_v - H_s$$

P_b = atmosphere pressure [bar]

(can be set as 1 bar)

In a closed system, P_b means system pressure [bar]

NPSH = Net positive suction head [m]

(It can be read out from the point of possible max. flow rate shown on NPSH curve)

H_f = Pipeline loss at the inlet [m]

H_v = Steam pressure [m]

H_s = Safety margin = Minimum 0.5m delivery head

If the calculated result H is positive, the pump may run under the max. Suction stroke H .

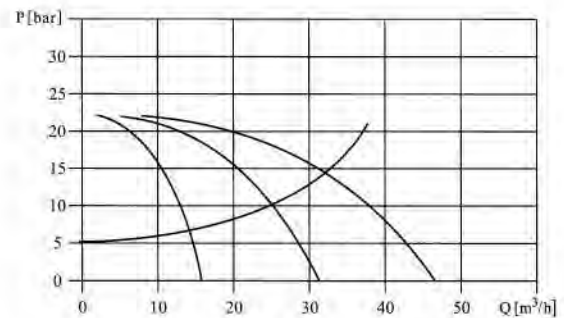
In case the calculated result H is negative, a delivery head of min. Inlet pressure is necessary.

● Operation in parallel

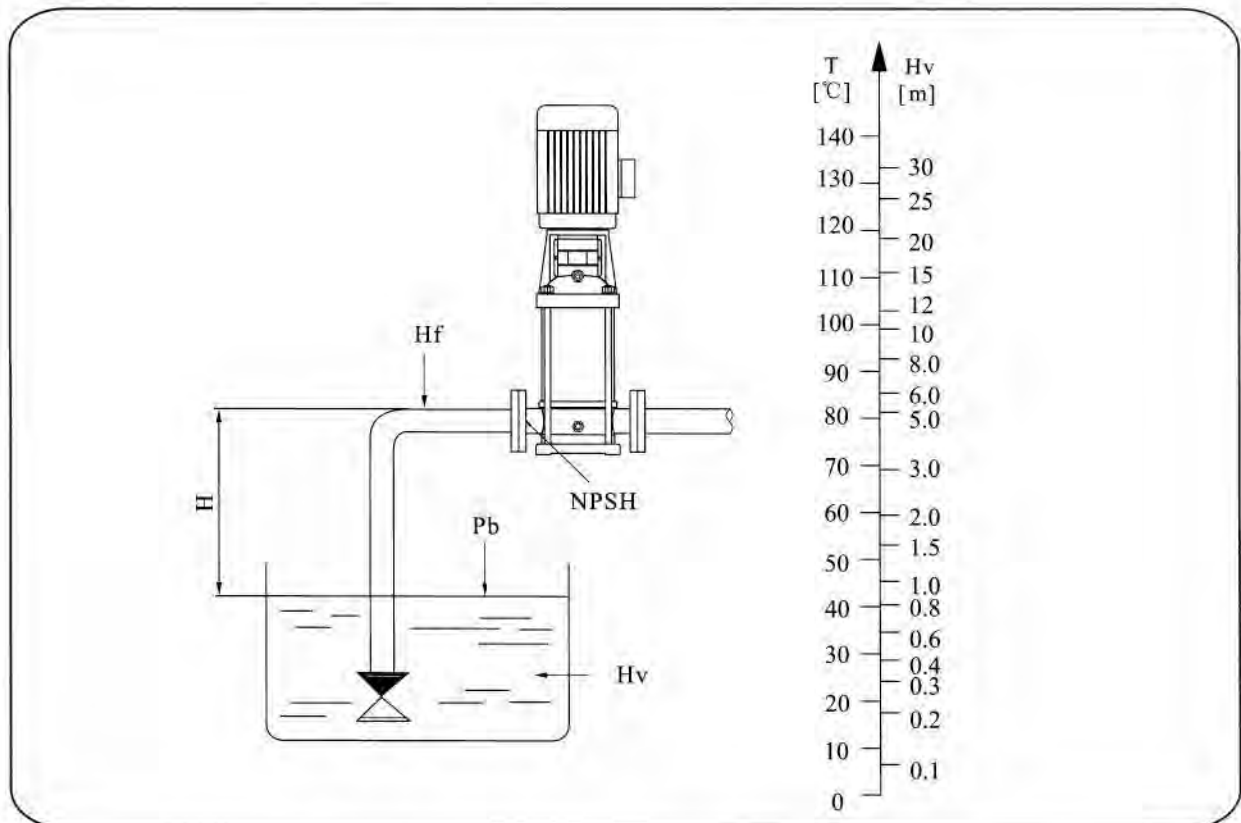
Connecting several pumps in parallel running will benefit much more than running a single large pump.

- Applicable to different working states necessary in a variable flow system.

- Increasing the possibility of water supply when the pump is in failure. Because in case of pump failure, only part of the system flow is effected.

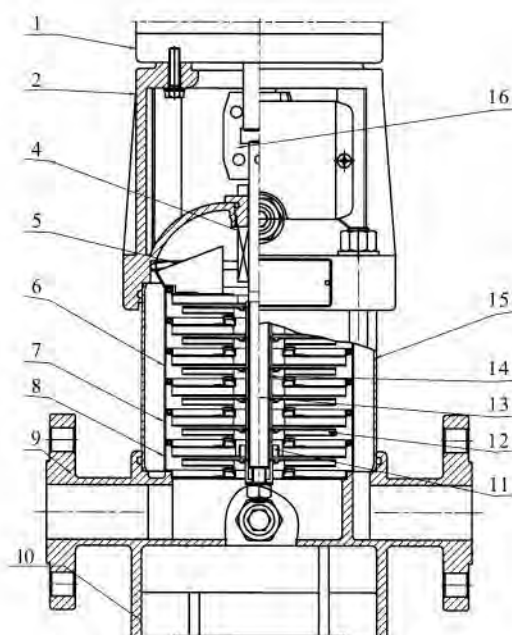


Two pumps or more can be connected in parallel running if necessary.



Check and ensure that the pump is not at cavitations state.

● Section drawing GVR/GVS 1,2,3,4



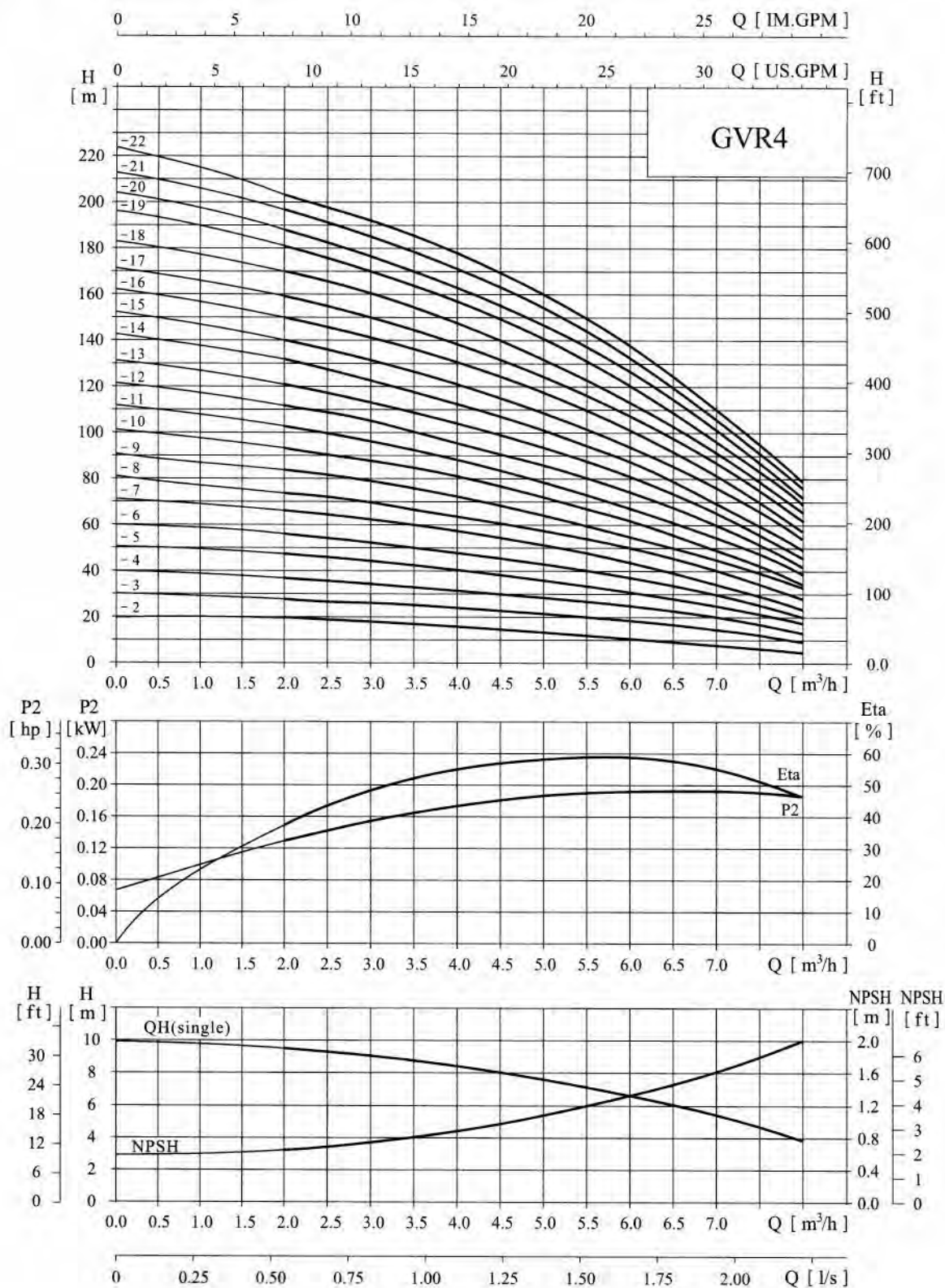
● Material GVR/GVS 1,2,3,4

NO	Name	Material	AISI/ASTM
1	Motor		
2	Pump head	Cast iron	ASTM25B
3	Seal base	Stainless steel	AISI304
4	Mechanical seal		
5	Top diffuser	Stainless steel	AISI304
6	Diffuser	Stainless steel	AISI304
7	Support diffuser	Stainless steel	AISI304
8	Inducer	Stainless steel	AISI304
9	Inlet and outlet chamber	Cast iron	ASTM25B
10	Base plate	Cast iron	

NO	Name	Material	AISI/ASTM
11	Bearing	Tungsten carbide	
12	Impeller	Stainless steel	AISI304
13	Shaft	Stainless steel	AISI304 AISI316
14	Impeller sleeve	Stainless steel	AISI304
15	Cylinder	Stainless steel	AISI304
16	Coupling	Carbon steel	

● Performance curve

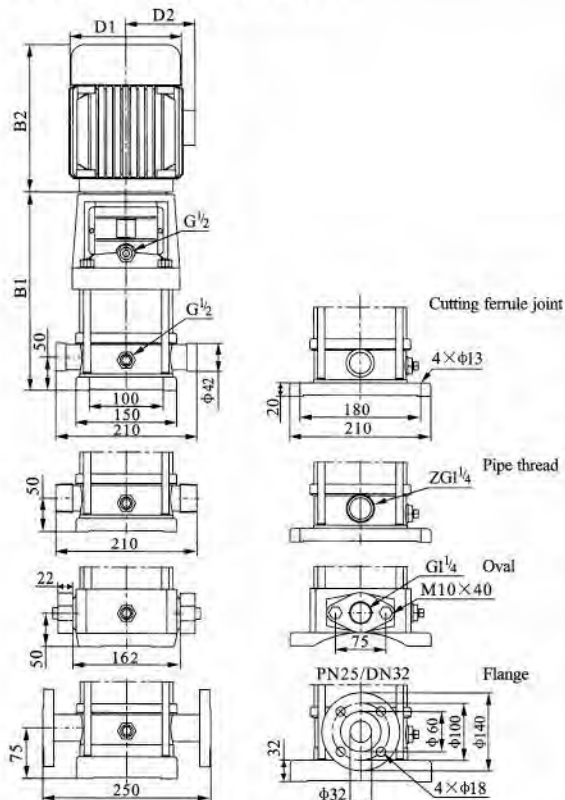
ISO9906 Annex A



● Performance table

Model	Power (kw)	Q (m³/h)	1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0
GVR4-2	0.37	H (m)	19	18	17	15	13	10	8	6
GVR4-3	0.55		28	27	26	24	20	18	13	10
GVR4-4	0.75		38	36	34	32	27	24	19	13
GVR4-5	1.1		47	45	43	40	34	31	23	17
GVR4-6	1.1		56	54	52	48	41	37	28	20
GVR4-7	1.5		66	63	61	56	48	43	33	24
GVR4-8	1.5		74	72	70	64	55	50	38	27
GVR4-10	2.2		96	90	87	81	71	62	48	34
GVR4-12	2.2		114	108	104	95	85	75	58	41
GVR4-14	3.0		136	126	122	112	101	89	68	48
GVR4-16	3.0		152	144	140	129	115	101	78	55
GVR4-19	4.0		183	171	168	153	137	122	93	67
GVR4-22	4.0		211	200	192	178	160	138	108	79

● Installation sketch



● Size and weight

Model	Size (mm)					Weight (kg)
	B1	B2	B1+B2	D1	D2	
GVR 4-2	276	210	486	148	117	20
GVR 4-3	303	210	513	148	117	20
GVR 4-4	340	245	585	170	142	20
GVR 4-5	367	245	612	170	142	25
GVR 4-6	394	245	639	170	142	25
GVR 4-7	431	290	721	190	155	30
GVR 4-8	458	290	748	190	155	30
GVR 4-10	512	290	802	190	155	30
GVR 4-12	566	290	856	190	155	35
GVR 4-14	630	315	945	197	165	35
GVR 4-16	684	315	999	197	165	40
GVR 4-19	765	335	1100	230	188	45
GVR 4-22	846	335	1181	230	188	50

GVR4-19 ~ 4-22 sub-connection of pipeline without oval flange

The overall dimensions of the single-phase motor and explosion-proof motor are a little changed. Pls contact us for details.



TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model JP3

Across the Line Start
Jockey Pump Controller



Contents:

Data Sheets

Dimensional Data

Wiring Schematics

Field Connections

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



N.Y.C.
APPROVED



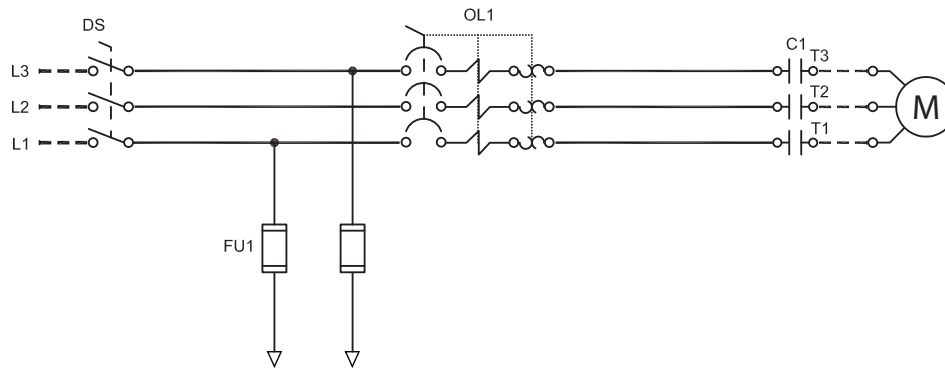
August 2018



TORNATECH

Technical Data

Model JP3 Jockey Pump Controller



N.Y.C.
APPROVED



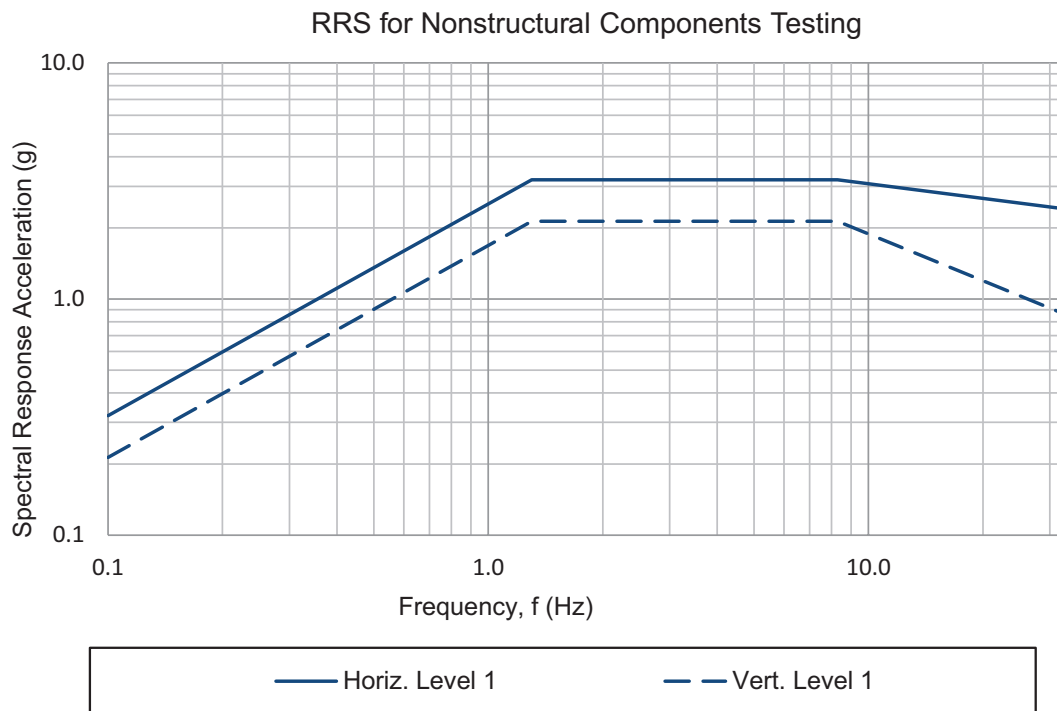
Listing	Underwriters Laboratory (UL)	UL508A - Industrial Pump Controllers
	CSA	CSA C22.2 No. 14 Industrial Control Equipment
	New York City	Accepted for use in the City of New York by the Department of Buildings
	Seismic Certification	See page 4 for details
	Optional	
	☐ CE Mark	Various EN, IEC & CEE directives and standards
Enclosure	Protection Rating	
	☐ Standard: NEMA 2 (IP31)	
	Optional	
	☐ NEMA 12 ☐ NEMA 3 ☐ NEMA 3R ☐ NEMA 4	☐ NEMA 4X-304 sst painted ☐ NEMA 4X-304 sst brushed finish ☐ NEMA 4X-316 sst painted ☐ NEMA 4X-316 sst brushed finish
	Accessories	
	• Wall mounting lugs (x4)	Paint Specifications
		• Red RAL3002 • Powder coating • Glossy textured finish



Fuseless Motor Starter	• Main disconnect – padlockable – rotary type handle – door interlocked • Thermo-magnetic motor protector • Contactor		
Control Circuit	• 24V.AC		
iPD+ Operator Interface	• Solid state controls • All adjustments on door front • Navigation pushbuttons		
Pressure Sensing	• Pressure transducer for fresh water application 316 stainless steel construction • Rated for 0-600psi working pressure • Pressure sensing line connection 1/4" Male NPT		
Visual Indications	• Manual motor start/run LED • Automatic motor start/run LED • Motor overload • Pressure reading • Start pressure • Stop pressure • System pressure • System pressure diagnostic LED's • Green: system pressure at or above stop pressure • Yellow: system pressure between start and stop pressure • Red: system pressure at or below start pressure • AUTO mode • OFF mode		
Timers	• Minimum run timer (off delay) • Delay start timer (on delay) • Visual countdown		
Counters	• Pump start counter • Elapsed timer meter (hours / non-resettable)		
Operators	• OFF-AUTO pushbutton • Start and Stop pushbutton		
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)



Seismic Certification	Seismic Certification Company	TRU Compliance, LLC A Tobalski Watkins Affiliate					TWEI Project No.: 15014				
	Mounting details	Rigid wall mounting									
	Seismic Information	Building Code	Test Criteria	Seismic Parameters	S _{Ds}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
		IBC 2015, CBC 2016	ICC-ES AC156	ASCE 7-10 Chapter 13	2.0	1.0	1.5	3.20	2.40	1.33	0.53
				3.2	0.0	1.5	3.20	1.28	2.13	0.85	



Notes:

- Components are tested in accordance with ICC-ES AC156, IBC 2015 & CBC 2016.
- OSHPD Special Seismic Certification Preapproval (OSP)

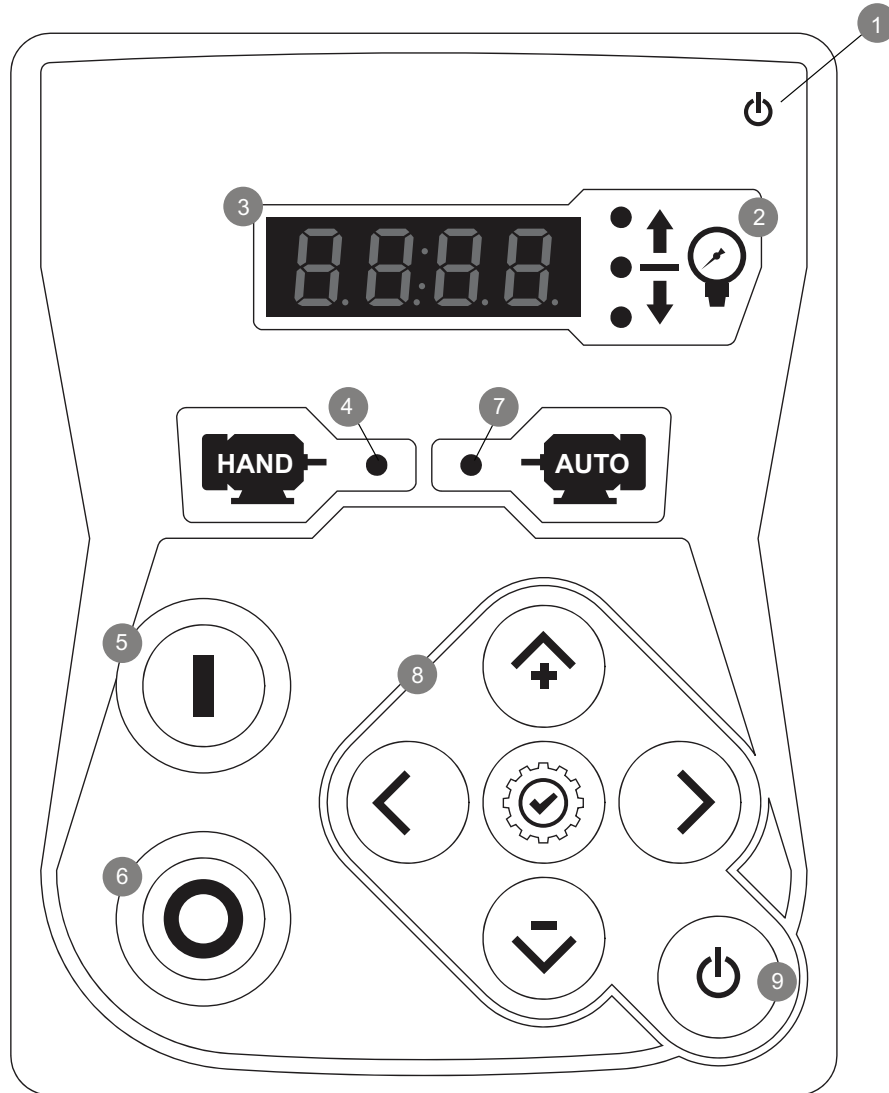


☐	A4	Elapsed time meter (time totalizer)
☐	A5	Motor run alarm contact
☐	A6	Loss of power alarm contact
☐	A7	Overload or short circuit alarm contact
☐	D12	CE Mark c/w externally mounted wetted parts
☐	D13A	Externally mounted wetted parts
☐	D14	Export packing for 1 controller
☐	D18	Audible alarm
☐	D19	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	Selector switch in auto alarm contacts
☐	D29	Selector switch in off alarm contacts
☐	D30	Motor heater circuit
☐	D32	Service entrance rated - 100kA short circuit withstand rating: • 120V/1ph (0.5hp max.) • 240V/1ph (1hp max.) • 200V-208V - 60hz (2hp max.) • 220V-240V - 60hz (3hp max.) • 380V-416V - 50hz - 60hz (5hp max.) • 440V-480V - 60hz (5hp max.)
☐	D33	Service entrance rated - 65kA short circuit withstand rating: • 120V/1ph (0.5hp max.) • 240V/1ph (1hp max.) • 200V-208V - 60hz (3hp-15hp max.) • 220V-240V - 60hz (515hp max.) • 380V-416V - 50hz - 60hz (7.5hp - 40hp max.) • 440V-480V - 60hz (7.5hp-40hp max.)
☐	D34	Service entrance rated - 42kA short circuit withstand rating: • 600V - 60hz (7.5hp max.)

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

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

iPD+ Operator Interface



- | | |
|-----------------------|-------------------------|
| 1 - Power on LED | 6 - STOP pushbutton |
| 2 - System status LED | 7 - Auto start LED |
| 3 - Digital display | 8 - Navigation keypad |
| 4 - Hand start LED | 9 - ON - OFF pushbutton |
| 5 - START pushbutton | |

Jockey Pump Controller

Across the Line / 3 Phase

Model:JP3

Dimensions

Built to the latest edition of the UL 508A & CSA C22.2 No.14 standard

PER QUOTE DRAWING No.



REV. DESCRIPTION

DD/MM/YY

5 Modified Tomatech & Seismic Logo

14/04/16

6 Modified J19 Outputs ID

10/06/16

7 Revised logo

18/06/18

Drawing No.

JP3-DI500/E

A

B

C

D

E

F

G

H

I

A

B

C

D

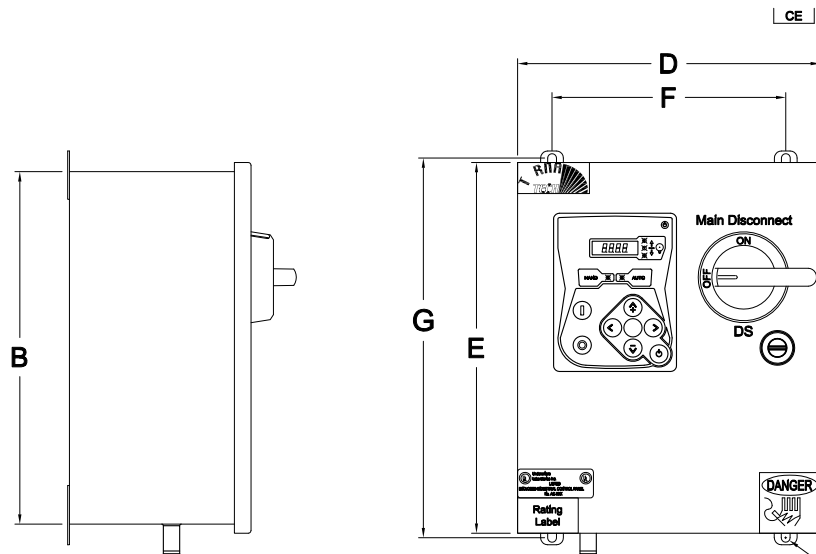
E

F

G

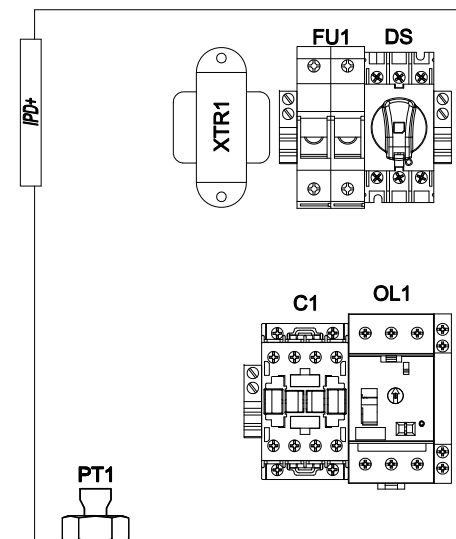
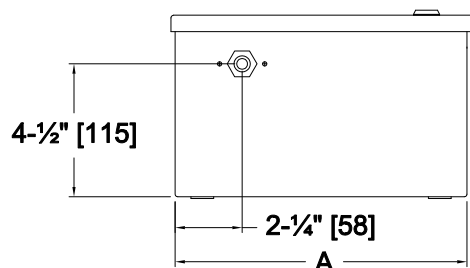
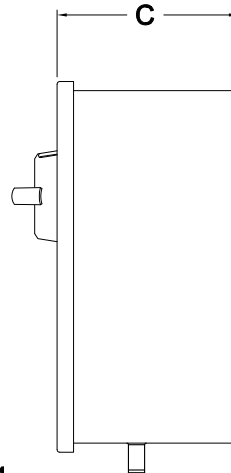
H

I



Ø $\frac{3}{8}$ " [9] x4

Sensing Line Connection 1/4" M.NPT



Standard Internal Layout

Dimensions*

Maximum Motor Horsepower					Enclosure Dimensions	Door Dimensions	Anchor Dimensions
200-208V	220-240V	380-416V	440-480V	575-600V	A X B X C	D X E	F X G
10HP	10HP	15HP	20HP	25HP	10"x12"x6-1/2"	10-5/8"x12-5/8"	8"x12-5/8"
20HP	30HP	40HP	60HP	80HP	16"x16"x7-1/2"	16-1/2"x16-1/2"	14"x16-5/8"

Notes:

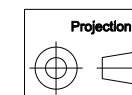
- Standard NEMA: NEMA 2
- Standard Paint: Textured Red RAL 3002.
- All Dimensions are in Inches [Millimeters]
- Use Watertight Conduit and Connector Only.
- Protect Equipment Against Drilling Chips.
- Door Swing Equal to Door Width

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.



Jockey Pump Controller

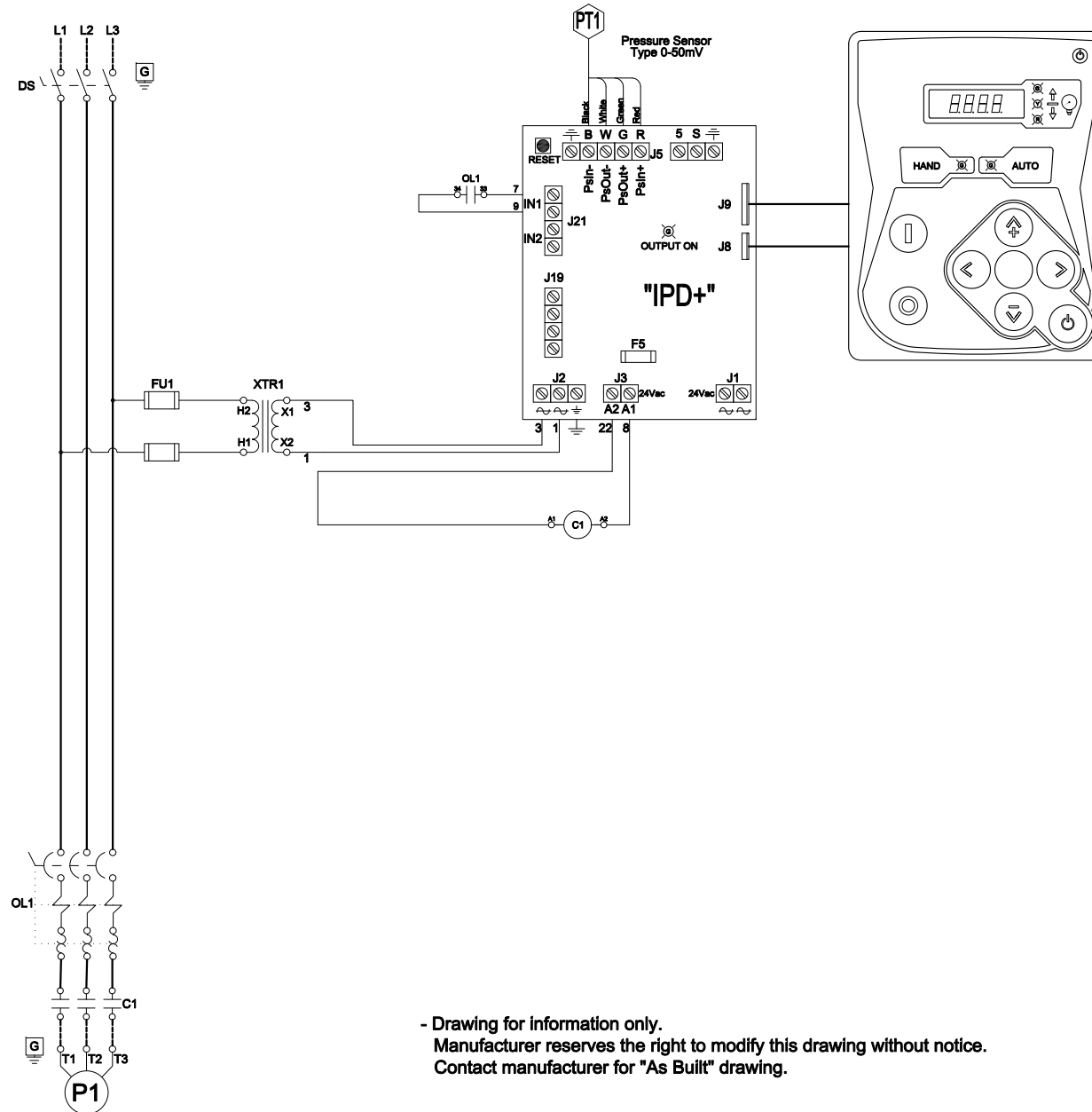
Across the Line / 3 Phase

Model:JP3

Wiring schematic

Built to the latest edition of the UL 508A & CSA C22.2 No.14 standard

PER QUOTE DRAWING No.						
REV.	DESCRIPTION	DD/MM/YY				
5	Modified Tornatech & Seismic Logo	14/04/16				
6	Modified J19 Outputs ID	10/06/16				
7	Revised logo	18/06/18				
Drawing No.						JP3-WS500/E



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

Jockey Pump Controller

Across the Line / 3 Phase

Model:JP3

Line and Motor Terminal Size

Built to the latest edition of the UL 508A & CSA C22.2 No.14 standard

PER QUOTE DRAWING No.



REV.

DESCRIPTION

DD/MM/YY

5 Modified Tomatech & Seismic Logo

14/04/16

6 Modified J19 Outputs ID

10/06/16

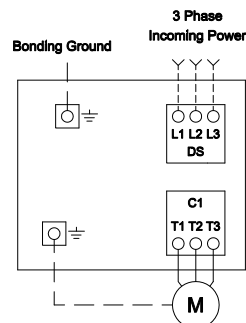
7 Revised logo

18/06/18

Drawing No.

JP3-TD500/E

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			
10HP	10HP	20HP	20HP	25HP	#14 AWG - #6 AWG	2 Nm	#14 AWG - #2 AWG
20HP	30HP	40HP	60HP	60HP	#12 AWG - #1 AWG	6 Nm	#6 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			
5HP	7.5HP	10HP	15HP	20HP	#14 AWG - #10 AWG	1.8 Nm	#14 AWG - #2 AWG
10HP	10HP	15HP	20HP	25HP	#14 AWG - #6 AWG	2.5 Nm	#12 AWG - #2 AWG
15HP	20HP	30HP	50HP	50HP	#10 AWG - #3 AWG	5 Nm	#12 AWG - #2 AWG
20HP	30HP	40HP	60HP	60HP	#10 AWG - #2 AWG	11.3 Nm	#12 AWG - #2 AWG

07

ACCESSORIES AND ARRANGEMENTS

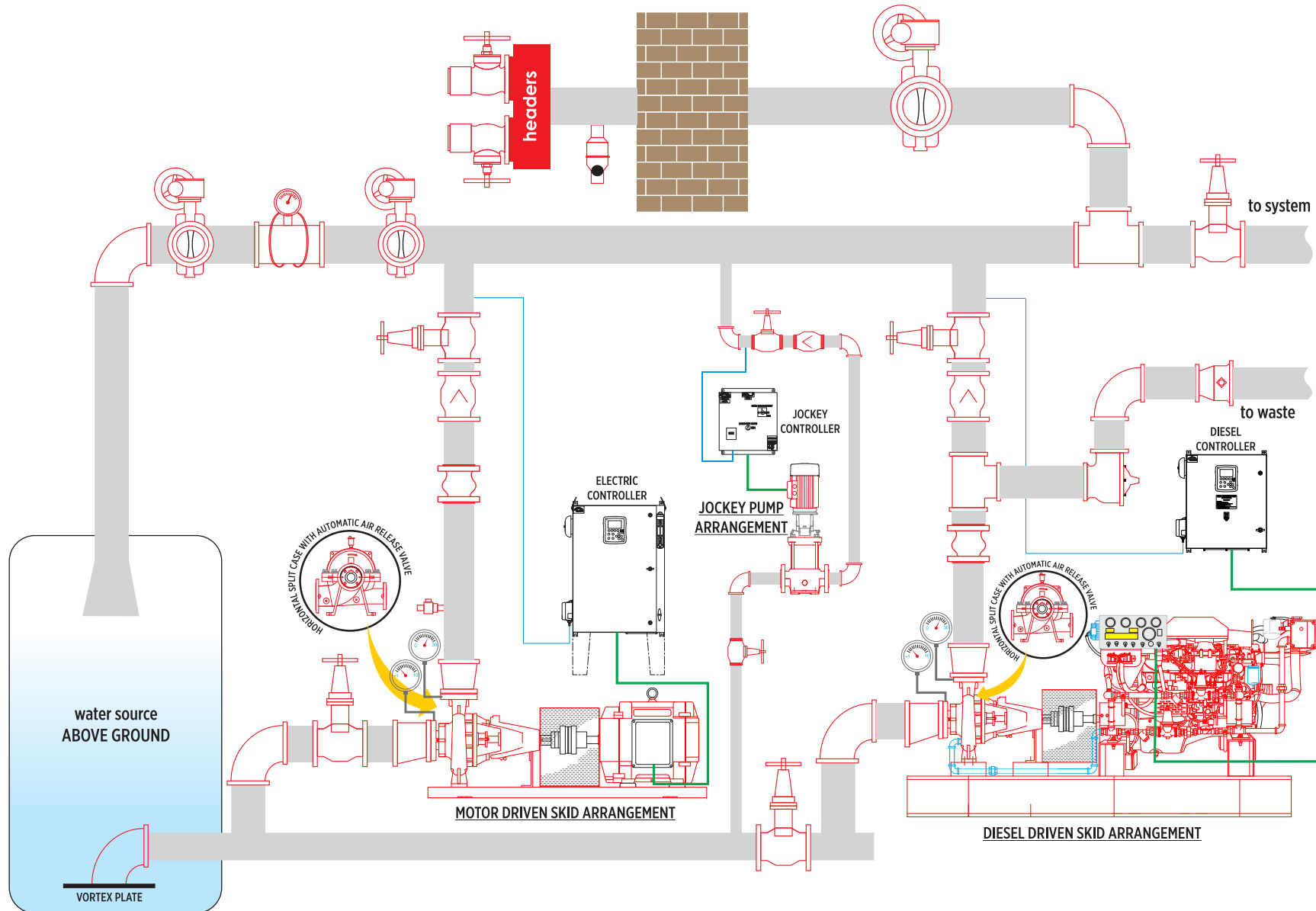


FIRE PUMP SYSTEMS

Saudi Factory for Fire Equipment reserves the right to make revisions to its products and their specifications, and to this catalogue and related information, without prior notice. All products must be installed and maintained in accordance with applicable instructions and/or standards.



FIRE PUMP SYSTEMS ARRANGEMENT WITH ACCESSORIES & CONTROLLERS



LEGEND OF ACCESSORIES

	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	GATE VALVE OS&Y
	CHECK VALVE
	FLEXIBLE JOINT
	ELBOW
	TEE
	COMPOUND PRESSURE GAUGE
	DISCHARGE PRESSURE GAUGE
	CASING RELIEF VALVE
	FLOW METER
	DRIP BALL VALVE
	BUTTERFLY VALVE GATE VALVE OS&Y CAN BE USED OPTIONAL
	GATE VALVE
	WASTE CONE
	MAIN RELIEF VALVE
	HOSE VALVE
	ELECTRIC CONNECTION
	RAW WATER COOLANT LINE
	PIPES
	SENSING LINE

08

CERTIFICATIONS AND APPROVALS



FIRE PUMP SYSTEMS

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QWZU.EX16126 - Centrifugal Fire Pumps, End Suction

Centrifugal Fire Pumps, End Suction

[See General Information for Centrifugal Fire Pumps, End Suction](#)**SFFECO GLOBAL FZE (FORMALLY SAUDI FACTORY FOR FIRE EQUIPMENT FZCO)**

EX16126

S-10833

JEBEL ALI FREE ZONE

AUTHORITY SOUTH 1

DUBAI, UNITED ARAB EMIRATES

Fire pumps, single stage.

Rated Capacity GPM	Size In.	Model Dsg	Rated Net Pressure Range psi	Approx Speed RPM	Max Working Pressure psi
50	2.5X2	SFP-50-20 EM-2G	74-93	2900	180
50	2.5X2	SFP-50-20 EM-2G	79-99	3000	180
50	2 x 1-1/4	SFP 50-20 EM	68-87	2900	230
50	2 x 1-1/4	SFP 50-20 EH	101-129	3500	230
50	2 x 1-1/4	SFP 50-26 EM	115-140	2900	230
50	2 x 1-1/4	SFP 50-26 EH	163-206	3500	230
50	2-1/2 x 2	SFP 50-20 EHA	106-129	3500	230
50	3 x 2-1/2	SFP 50-20 EHB	108-121	3500	230
50	2-1/2 x 1-1/2	SFP 50-26 EMA	114-136	2900	230
50	2-1/2 x 1-1/2	SFP 50-42 EH	122-146	3000	230
50	2-1/2 x 1-1/2	SFP 50-40 EH	166-198	3500	230
100	2.5X2	SFP-100-20 EM-2G	72-92	2900	180
100	2.5X2	SFP-100-20 EM-2G	77-98	3000	180
100	2 x 1-1/4	SFP 100-20 EH	119	3500	230
100	2 x 1-1/4	SFP 100-26 EH	159-195	3500	230
100	2-1/2 x 2	SFP 100-50 EH	104-128	3500	230
100	2-1/2 x 1-1/2	SFP 100-26 EM	109-134	2900	230
100	2-1/2 x 1-1/2	SFP 100-42 EH	116-143	3000	230

100	2-1/2 x 1-1/2	SFP 100-40 EH	162-198	3500	230
100	3 x 2-1/2	SFP 100-20 EHB	108-24	3500	230
150	3X2	SFP-150-32 EM-2G	95-142	2900	239
150	3X2	SFP-150-32 EM-2G	102-153	3000	239
150	2.5X2	SFP-150-20 EM-2G	71-90	2900	180
150	2.5X2	SFP-150-20 EM-2G	76-97	3000	180
150	3X2.5	SFP-150-65 EM-2G	80-93	2900	180
150	3X2.5	SFP-150-65 EM-2G	86-99	3000	180
150	3 x 2-1/2	SFP 150-20 EH	108-128	3500	230
150	2-1/2 x 1-1/2	SFP 150-26 EM	124	2900	230
150	2-1/2 x 1-1/2	SFP 150-42 EH	107-135	3000	230
150	2-1/2 x 1-1/2	SFP 150-26 EH	156-191	3500	230
150	2-1/2 x 2	SFP 150-20 EHA	102-126	3500	230
200	3X2	SFP-200-32 EM-2G	89-139	2900	239
200	3X2	SFP-200-32 EM-2G	96-149	3000	239
200	3X2.5	SFP-200-65 EM-2G	79-91	2900	180
200	3X2.5	SFP-200-65 EM-2G	85-98	3000	180
200	3 x 2-1/2	SFP 200-20 EH	106-127	3500	230
200	2-1/2 x 2	SFP 200-20 EHA	96-120	3500	230
200	3 x 2-1/2	SFP 200-65 EM	115-136	2900	230
250	3 x 2-1/2	SFP 250-26 EM	113-134	2900	230
250	3 x 2-1/2	SFP 250-20 EH	103-124	3500	230
300	3 x 2-1/2	SFP 300-26 EM	110-132	2900	230
300	3 x 2-1/2	SFP 300-20 EH	101-123	3500	230
400	4 x 3	SFP 400-26 EM	110-133	2900	230
400	4 x 3	SFP 400-26 EH	191	3500	240
250	3X2	SFP-250-32 EM-2G	82-132	2900	239
250	3X2	SFP-250-32 EM-2G	89-143	3000	239
250	4X2.5	SFP-250-42 EM- 2G	87-146	2900	239
250	4X2.5	SFP-250-42 EM- 2G	94-156	3000	239
250	3X2.5	SFP-250-65 EM-2G	77-90	2900	180

250	3X2.5	SFP-250-65 EM-2G	83-97	3000	180
300	4X2.5	SFP- 300-42 EM- 2G	85-143	2900	239
300	4X2.5	SFP-300-42 EM- 2G	91-154	3000	239
300	3X2.5	SFP-300-65 EM-2G	75-90	2900	180
300	3X2.5	SFP-300-65 EM-2G	81-96	3000	180
400	5X3	SFP-400-31 EM-2G	134-218	2900	315
400	5X3	SFP-400-31 EM-2G	143-234	3000	315
400	5X3	SFP-400-25 EM- 2G	86-139	2900	235
400	5X3	SFP-400-25 EM- 2G	93-149	3000	235
400	5X4	SFP-400-54 EM-2G	137-215	2900	315
400	5X4	SFP-400-54 EM-2G	147-230	3000	315
400	4X2.5	SFP-400-42 EM- 2G	79-141	2900	239
400	4X2.5	SFP-400-42 EM- 2G	86-151	3000	239
400	4 x 3	SFP 400-32 EM	158-200	2900	250
400	4 x 3	SFP 400-80 EH	105 - 193	3500	235
450	5X3	SFP-450-31 EM-2G	131-217	2900	315
450	5X3	SFP-450-31 EM-2G	141-232	3000	315
450	5X3	SFP-450-25 EM- 2G	85-138	2900	235
450	5X3	SFP-450-25 EM- 2G	91-148	3000	235
450	5X4	SFP-450-54 EM-2G	136-214	2900	315
450	5X4	SFP-450-54 EM-2G	146-229	3000	315
450	4X2.5	SFP-450-42 EM- 2G	78-137	2900	239
450	4X2.5	SFP- 450-42 EM- 2G	84-148	3000	239
450	4 x 3	SFP 450-26 EM	109-132	2900	230
450	4 x 3	SFP 450-26 EH	188	3500	240
450	4 x 3	SFP 450-32 EM	154-198	2900	250
450	4 x 3	SFP 450-80 EH	102 - 190	3500	235
500	5X3	SFP-500-31 EM-2G	129-217	2900	315
500	5X3	SFP-500-31 EM-2G	139-232	3000	315
500	5X3	SFP-500-25 EM- 2G	83-136	2900	235
500	5X3	SFP-500-25 EM- 2G	90-146	3000	235

500	5X4	SFP-500-54 EM-2G	136-214	2900	315
500	5X4	SFP-500-54 EM-2G	146-229	3000	315
500	4X2.5	SFP-500-42 EM- 2G	143	3000	239
500	6X5	SFP-500-20 EM-2G	68-84	2900	175
500	6X5	SFP-500-20 EM-2G	73-90	3000	175
500	6X5	SFP-500-20 EH-2G	100-121	3500	210
500	6X5	SFP-500-20 EH-2G	105-128	3600	210
500	6X5	SFP-500-26 EM-2G	118-136	2900	230
500	6X5	SFP-500-26 EM-2G	126-146	3000	230
500	6X5	SFP-500-26 EH-2G	168-199	3500	290
500	6X5	SFP-500-26 EH-2G	178-210	3600	290
500	4 x 3	SFP 500-26 EM	108-131	2900	230
500	4 x 3	SFP 500-26 EH	185	3500	240
500	4 x 3	SFP 500-32 EM	149-194	2900	250
500	4 x 3	SFP 500-80 EH	99 - 188	3500	235
500	5 x 4	SFP 500-12 EM	111 - 133	2900	225
500	5 x 4	SFP 500-13 EM	122 - 210	2900	245
750	5 x 4	SFP 750-26 EM	102 - 127	2900	225
750	5 x 4	SFP 750-32 EM	122 - 207	2900	245
750	5X4	SFP-750-54 EM-2G	131-208	2900	315
750	5X4	SFP-750-54 EM-2G	141-223	3000	315
750	6X5	SFP-750-20 EM-2G	65-81	2900	175
750	6X5	SFP-750-20 EM-2G	70-87	3000	175
750	6X5	SFP-750-20 EH-2G	97-120	3500	210
750	6X5	SFP-750-20 EH-2G	103-127	3600	210
750	6X5	SFP-750-26 EM-2G	116-135	2900	230
750	6X5	SFP-750-26 EM-2G	125-145	3000	230
750	6X5	SFP-750-26 EH-2G	167-198	3500	290
750	6X5	SFP-750-26 EH-2G	177-210	3600	290
1000	5X4	SFP-1000-54 EM-2G	122-200	2900	315
1000	5X4	SFP-1000-54 EM-2G	132-215	3000	239

1000	6X5	SFP-1000-20 EM-2G	60-78	2900	175
1000	6X5	SFP-1000-20 EM-2G	65-84	3000	175
1000	6X5	SFP-1000-20 EH-2G	92-116	3500	210
1000	6X5	SFP-1000-20 EH-2G	98-123	3600	210
1000	6X5	SFP-1000-26 EM-2G	113-133	2900	230
1000	6X5	SFP-1000-26 EM-2G	121-143	3000	230
1000	6X5	SFP-1000-26 EH-2G	164-196	3500	290
1000	6X5	SFP-1000-26 EH-2G	174-208	3600	290

Marking: Tradename &/or trademark "SFFECO",



Last Updated on 2018-08-22

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CERTIFICATE OF COMPLIANCE

Certificate Number 20171227-EX16126
Report Reference EX16126-20171221
Issue Date 2017-DECEMBER-27

Issued to: SAUDI FACTORY FOR FIRE EQUIPMENT FZCo
S-10833
JEBEL ALI FREE ZONE
AUTHORITY SOUTH 1
DUBAI
261281 UNITED ARAB EMIRATES

**This is to certify that
representative samples of** CENTRIFUGAL FIRE PUMPS, END SUCTION
Refer to Addendum page for models

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

Standard(s) for Safety: UL 448 - STANDARD FOR CENTRIFUGAL STATIONARY
PUMPS FOR FIRE-PROTECTION SERVICE

Additional Information: See the UL Online Certifications Directory at
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Bruce Mahrenholz, Director North American Certification Program

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CERTIFICATE OF COMPLIANCE

Certificate Number 20171227-EX16126
Report Reference EX16126-20171221
Issue Date 2017-DECEMBER-27

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

MODELS

SFP-50-20 EM-2G, SFP-50-20 EM-2G, SFP-100-20 EM-2G, SFP-100-20 EM-2G, SFP-150-32 EM-2G, SFP-150-32 EM-2G, SFP-150-20 EM-2G, SFP-150-20 EM-2G, SFP-150-65 EM-2G, SFP-150-65 EM-2G, SFP-200-32 EM-2G, SFP-200-32 EM-2G, SFP-200-65 EM-2G, SFP-200-65 EM-2G, SFP-250-32 EM-2G, SFP-250-32 EM-2G, SFP-250-42 EM- 2G, SFP-250-42 EM- 2G, SFP-250-65 EM-2G, SFP-250-65 EM-2G, SFP- 300-42 EM- 2G, SFP-300-42 EM- 2G, SFP-300-65 EM-2G, SFP-300-65 EM-2G, SFP-400-31 EM-2G, SFP-400-31 EM-2G, SFP-400-25 EM- 2G, SFP-400-25 EM- 2G, SFP-400-54 EM-2G, SFP-400-54 EM-2G, SFP-400-42 EM- 2G, SFP-400-42 EM- 2G, SFP-450-31 EM-2G, SFP-450-31 EM-2G, SFP-450-25 EM- 2G, SFP-450-25 EM- 2G, SFP-450-54 EM-2G, SFP-450-54 EM-2G, SFP-450-42 EM- 2G, SFP- 450-42 EM- 2G, SFP-500-31 EM-2G, SFP-500-31 EM-2G, SFP-500-25 EM- 2G, SFP-500-25 EM- 2G, SFP-500-54 EM-2G, SFP-500-54 EM-2G, SFP-500-42 EM- 2G, SFP-500-20 EM-2G, SFP-500-20 EM-2G, SFP-500-20 EH-2G, SFP-500-20 EH-2G, SFP-500-26 EM-2G, SFP-500-26 EM-2G, SFP-500-26 EH-2G, SFP-500-26 EH-2G, SFP-750-54 EM-2G, SFP-750-54 EM-2G, SFP-750-20 EM-2G, SFP-750-20 EM-2G, SFP-750-20 EH-2G, SFP-750-20 EH-2G, SFP-750-26 EM-2G, SFP-750-26 EM-2G, SFP-750-26 EH-2G, SFP-750-26 EH-2G, SFP-1000-54 EM-2G, SFP-1000-54 EM-2G, SFP-1000-20 EM-2G, SFP-1000-20 EM-2G, SFP-1000-20 EH-2G, SFP-1000-20 EH-2G, SFP-1000-26 EM-2G, SFP-1000-26 EM-2G, SFP-1000-26 EH-2G, SFP-1000-26 EH-2G



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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Certificate of Compliance

This certificate is issued for the following:

**Centrifugal Fire Pumps
(Horizontal, End Suction Type)**

SFP 50-20 EM, SFP 50-20 EH, SFP 50-26 EM, SFP 50-26 EH, SFP 100-50 EH, SFP 150-20 EH, SFP 200-20 EH, SFP 200-65 EM, SFP 250-20 EH, SFP 250-26 EM, SFP 300-20 EH, SFP 300-26 EM, SFP 400-26 EH, SFP 400-32 EM, SFP 400-26 EM, SFP 400-80 EH, SFP 450-26 EM, SFP 450-26 EH, SFP 450-32 EM, SFP 450-80 EH, SFP 500-12 EM, SFP 500-13 EM, SFP 500-26 EM, SFP 500-26 EH, SFP 500-32 EM, SFP 500-80 EH, SFP 750-26 EM and SFP 750-32 EM

Prepared for:

Saudi Factory for Fire Equipment FZCo
PO Box 261281
JAFZ South
Dubai, S-1083, UAE

FM Approvals Class: 1319

Approval Identification: 3052725 Approval Granted: November 20, 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.

A handwritten signature in black ink, reading 'Richard B. Dunne', written over a horizontal line.

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



Member of the FM Global Group



Certificate of Compliance

This certificate is issued for the following:

**Centrifugal Fire Pumps
(Horizontal, End Suction Type)**
(See Attached Listing)

Prepared for:

Saudi Factory for Fire Equipment FZCO
P.O. Box 261318
JAFZA South 1
Dubai, U.A.E.

FM Approvals Class: 1319 (January 2018)

Approval Identification: 3062708

Approval Granted: July 9, 2019

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.

A handwritten signature in black ink, appearing to read 'D.B. Fuller', written over a horizontal line.

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



Member of the FM Global Group



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Certificate of Compliance

Product	Rated Capacity, (gal/min)	Rated Capacity, (dm ³ /min)	Rated Net Head at Rated Capacity, psi	Rated Net Head at Rated Capacity, kPa	Rated Speed, r/min	Suction Inlet, dia., in.	Discharge Outlet, dia., in.	Stage(s)
SFP 150-20 EHA	150	580	104-129	715-890	3500	2.5	2	1
SFP 200-20 EHA	200	755	98-124	675-855	3500	2.5	2	1
SFP 50-20 EM-2G	50	190	74-93	510-640	2900	2.5	2	1
SFP 50-20 EM-2G	50	190	79-99	545-685	3000	2.5	2	1
SFP 100-20 EM-2G	100	380	72-92	495-635	2900	2.5	2	1
SFP 100-20 EM-2G	100	380	77-98	530-675	3000	2.5	2	1
SFP 150-20 EM-2G	150	580	71-90	490-620	2900	2.5	2	1
SFP 150-20 EM-2G	150	580	76-97	525-670	3000	2.5	2	1
SFP 150-65 EM-2G	150	580	80-93	550-640	2900	3	2.5	1
SFP 150-65 EM-2G	150	580	86-99	595-685	3000	3	2.5	1
SFP 150-32 EM-2G	150	580	95-142	655-980	2900	3	2	1
SFP 150-32 EM-2G	150	580	102-153	705-1055	3000	3	2	1
SFP 200-65 EM-2G	200	755	79-91	545-625	2900	3	2.5	1
SFP 200-65 EM-2G	200	755	85-98	585-675	3000	3	2.5	1
SFP 200-32 EM-2G	200	755	89-139	615-960	2900	3	2	1
SFP 200-32 EM-2G	200	755	96-149	660-1025	3000	3	2	1
SFP 250-65 EM-2G	250	945	77-90	530-620	2900	3	2.5	1
SFP 250-32 EM-2G	250	945	82-132	565-910	2900	3	2	1
SFP 250-65 EM-2G	250	945	83-97	570-670	3000	3	2.5	1
SFP 250-42 EM-2G	250	945	87-146	600-1005	2900	4	2.5	1
SFP 250-32 EM-2G	250	945	89-143	615-985	3000	3	2	1
SFP 250-42 EM-2G	250	945	94-156	650-1075	3000	4	2.5	1
SFP 300-65 EM-2G	300	1135	76-90	525-620	2900	3	2.5	1
SFP 300-65 EM-2G	300	1135	81-96	560-660	3000	3	2.5	1
SFP 300-42 EM-2G	300	1135	85-143	585-985	2900	4	2.5	1
SFP 300-42 EM-2G	300	1135	91-154	625-1060	3000	4	2.5	1
SFP 400-42 EM-2G	400	1515	79-141	545-970	2900	4	2.5	1
SFP 400-42 EM-2G	400	1515	86-151	595-1040	3000	4	2.5	1
SFP 400-25 EM-2G	400	1515	86-139	595-960	2900	5	3	1
SFP 400-25 EM-2G	400	1515	93-149	640-1025	3000	5	3	1
SFP 400-31 EM-2G	400	1515	134-218	925-1505	2900	5	3	1
SFP 400-54 EM-2G	400	1515	137-215	945-1480	2900	5	4	1
SFP 400-31 EM-2G	400	1515	143-234	985-1615	3000	5	3	1
SFP 400-54 EM-2G	400	1515	147-230	1015-1585	3000	5	4	1
SFP 450-42 EM-2G	450	1705	78-137	540-945	2900	4	2.5	1
SFP 450-42 EM-2G	450	1705	84-148	580-1020	3000	4	2.5	1
SFP 450-25 EM-2G	450	1705	86-138	595-950	2900	5	3	1
SFP 450-25 EM-2G	450	1705	91-148	625-1020	3000	5	3	1
SFP 450-31 EM-2G	450	1705	131-217	905-1495	2900	5	3	1
SFP 450-54 EM-2G	450	1705	136-214	940-1475	2900	5	4	1
SFP 450-31 EM-2G	450	1705	141-232	970-1600	3000	5	3	1



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Product	Rated Capacity, (gal/min)	Rated Capacity, (dm ³ /min)	Rated Net Head at Rated Capacity, psi	Rated Net Head at Rated Capacity, kPa	Rated Speed, r/min	Suction Inlet, dia., in.	Discharge Outlet, dia., in.	Stage(s)
SFP 150-20 EHA	150	580	104-129	715-890	3500	2.5	2	1
SFP 200-20 EHA	200	755	98-124	675-855	3500	2.5	2	1
SFP 450-54 EM-2G	450	1705	146-229	1005-1580	3000	5	4	1
SFP 500-20 EM-2G	500	1895	69-84	475-580	2900	6	5	1
SFP 500-20 EM-2G	500	1895	73-90	505-620	3000	6	5	1
SFP 500-25 EM-2G	500	1895	83-136	575-935	2900	5	3	1
SFP 500-25 EM-2G	500	1895	90-146	620-1005	3000	5	3	1
SFP 500-20 EH-2G	500	1895	100-121	670-835	3500	6	5	1
SFP 500-20 EH-2G	500	1895	105-128	725-885	3600	6	5	1
SFP 500-26 EM-2G	500	1895	118-136	815-940	2900	6	5	1
SFP 500-26 EM-2G	500	1895	126-146	870-1005	3000	6	5	1
SFP 500-31 EM-2G	500	1895	129-217	890-1495	2900	5	3	1
SFP 500-54 EM-2G	500	1895	136-214	940-1475	2900	5	4	1
SFP 500-31 EM-2G	500	1895	139-232	960-1600	3000	5	3	1
SFP 500-42 EM-2G	500	1895	143	985	3000	4	2.5	1
SFP 500-54 EM-2G	500	1895	146-229	1005-1580	3000	5	4	1
SFP 500-26 EH-2G	500	1895	168-199	1160-1370	3500	6	5	1
SFP 500-26 EH-2G	500	1895	178-210	1225-1450	3600	6	5	1
SFP 750-20 EM-2G	750	2840	65-81	450-560	2900	6	5	1
SFP 750-20 EM-2G	750	2840	70-87	485-600	3000	6	5	1
SFP 750-20 EH-2G	750	2840	97-120	670-825	3500	6	5	1
SFP 750-20 EH-2G	750	2840	103-127	710-875	3600	6	5	1
SFP 750-26 EM-2G	750	2840	116-135	800-930	2900	6	5	1
SFP 750-26 EM-2G	750	2840	125-145	860-1000	3000	6	5	1
SFP 750-54 EM-2G	750	2840	131-208	905-1435	2900	5	4	1
SFP 750-54 EM-2G	750	2840	141-223	970-1540	3000	5	4	1
SFP 750-26 EH-2G	750	2840	167-198	1150-1365	3500	6	5	1
SFP 750-26 EH-2G	750	2840	177-210	1220-1450	3600	6	5	1
SFP 1000-20 EM-2G	1000	3785	60-78	415-540	2900	6	5	1
SFP 1000-20 EM-2G	1000	3785	65-84	450-580	3000	6	5	1
SFP 1000-20 EH-2G	1000	3785	92-116	635-800	3500	6	5	1
SFP 1000-20 EH-2G	1000	3785	98-123	675-850	3600	6	5	1
SFP 1000-26 EM-2G	1000	3785	113-133	780-915	2900	6	5	1
SFP 1000-26 EM-2G	1000	3785	121-143	835-985	3000	6	5	1
SFP 1000-54 EM-2G	1000	3785	122-200	840-1380	2900	5	4	1
SFP 1000-54 EM-2G	1000	3785	132-215	910-1480	3000	5	4	1
SFP 1000-26 EH-2G	1000	3785	164-196	1130-1350	3500	6	5	1
SFP 1000-26 EH-2G	1000	3785	174-208	1200-1435	3600	6	5	1

CERTIFICATE OF COMPLIANCE

Certificate Number 20190923-EX16109
Report Reference EX16109-20161130
Issue Date 2019-SEPTEMBER-23

Issued to: SAUDI FACTORY FOR FIRE EQUIPMENT FZCo
S-10833
JEBEL ALI FREE ZONE
AUTHORITY SOUTH 1
DUBAI
261281 UNITED ARAB EMIRATES

**This certificate confirms that
representative samples of**

INTERNAL-COMBUSTION ENGINES FOR DRIVING
STATIONARY FIRE PUMPS

See Addendum page

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

Standard(s) for Safety:
Additional Information:

UL 1247 - Diesel Engines for Driving Stationary Fire Pumps
See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

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Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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CERTIFICATE OF COMPLIANCE

Certificate Number 20190923-EX16109
Report Reference EX16109-20161130
Issue Date 2019-SEPTEMBER-23

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

Diesel engines for driving stationary fire pumps

Diesel engines for driving stationary fire pumps consisting of the following models having specific power ratings, speeds, and number of cylinders:

Model - BS03015MSF, BS03020MSF, BS04030MSF, BS04036MSF, BS04040TMSF, BS04050TMSF, BS04056TMSF, BS04040TMSF, BS04050TMSF, BS04057TMSF, BS04040TMSF, BS04050TMSF, BS04057TMSF, BS04040MSF, BS04050MSF, BS04057MSF, BS04070MSF, BS04075MSF, BS04079MSF, BS04080MSF, BS04090MSF, BS04100MSF, BS04110MSF, BS04080MSF, BS04090MSF, BS04100MSF, BS04111MSF, BS06100MSF, BS06110MSF, BS06118MSF, BS06120MSF, BS06128MSF, BS06150MSF, BS06160MSF, BS06175MSF, BS06186MSF, BS06200MSF, BS06210MSF, BS06212MSF, BS06215MSF, BS06218MSF, BS06220MSF, BS06240MSF, BS06250MSF, BS06265MSF, BS06272MSF, BS06275MSF, BS06300LSF, BS06320LSF, BS06343LSF, BS06300LSF, BS06320LSF, BS06336LSF, BS06300LSF, BS06310LSF, BS06329LSF, BS06370LSF, BS06390LSF, BS06390LSF, BS06370LSF, BS06372LSF, BS06390LSF, BS06405LSF, BS06350LSF, BS06375LSF, BS06400LSF, BS012450LSF, BS012500LSF, BS012550LSF, BS012450LSF, BS012475LSF, BS012503LSF, BS012430LSF, BS012455LSF, BS012570LSF, BS012589LSF, BS012530LSF, BS012545LSF, BS012553LSF, BS012480LSF, BS012510LSF, BS012518LSF

Diesel engines for driving stationary fire pumps consisting of the following models for use within speed ranges, and number of cylinders:

Model - BS0440MSR, BS04100MSR, BS06400LSR, BS06450LSR, BS12550LSR, BS12650LSR



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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QYLU.EX16109 - Internal-combustion Engines for Driving Stationary Fire Pumps

Internal-combustion Engines for Driving Stationary Fire Pumps

SFFECO GLOBAL FZE (Formerly Saudi Factory For Fire Equipment FZCO)

EX16109

S-10833

JEBEL ALI FREE ZONE

AUTHORITY SOUTH 1

DUBAI, 261281 United Arab Emirates

DIESEL ENGINES RATED FOR USE WITHIN SPEED RANGES

Model	No. of Cylinders	Minimum		Maximum	
		Rated Speed (rpm)	Rated HP	Rated Speed (rpm)	Rated HP
BS0440MSR	4	2800	57	3000	56
BS04100MSR	4	2800	111	3000	110
BS06400LSR	6	1400	329	1800	343
BS06450LSR	6	1400	400	1800	410
BS12550LSR	12	1400	455	1800	550
BS12650LSR	12	1400	518	1800	588

DIESEL ENGINES RATED AT SPECIFIC SPEEDS

Model	No. of Cylinders	Rated Power, HP	Speed (RPM)
BS03015MSF	3	15	2900
FC3015-UL	3	15	2900
FC3015	3	15	2900
BS03020MSF	3	20	2900
FC3020-UL	3	20	2900
FC3020	3	20	2900
BS04030MSF	4	30	2900
FC4040-UL	3	30	2900

FC4040	3	30	2900
BS04036MSF	4	36	2900
BS04040TMSF	4	40	3000
BS04050TMSF	4	50	3000
BS04056TMSF	4	56	3000
BS04040TMSF	4	40	2900
BS04050TMSF	4	50	2900
BS04056TMSF	4	56	2900
BS04040TMSF	4	40	2800
BS04050TMSF	4	50	2800
BS04057TMSF	4	57	2800
BS04040MSF	4	40	2900
BS04050MSF	4	50	2900
BS04057MSF	4	57	2900
FC4060-UL	4	57	2900
FC4060	4	57	2900
BS04070MSF	4	70	2900
BS04075MSF	4	75	2900
BS04079MSF	4	79	2900
FC4085-UL	4	71	2900
FC4085	4	71	2900
BS04080MSF	4	80	3000
BS04090MSF	4	90	3000
BS04100MSF	4	100	3000
BS04110MSF	4	110	3000
BS04080MSF	4	80	2900
BS04090MSF	4	90	2900
BS04100MSF	4	100	2900
BS04110MSF	4	110	2900
BS04080MSF	4	80	2800
BS04090MSF	4	90	2800

BS04100MSF	4	100	2800
BS04111MSF	4	111	2800
BS06100MSF	6	100	2900
BS06110MSF	6	110	2900
BS06118MSF	6	118	2900
FC6130-UL	6	118	2900
FC6130	6	118	2900
BS06120MSF	6	120	2900
BS06128MSF	6	128	2900
FC6150-UL	6	128	2900
FC6150	6	128	2900
BS06150MSF	6	150	2900
BS06160MSF	6	160	2900
BS06175MSF	6	175	2900
BS06186MSF	6	186	2900
FC6195-UL	6	186	2900
FC6195	6	186	2900
BS06200MSF	6	200	2900
BS06210MSF	6	210	2900
BS06212MSF	6	212	2900
BS06215MSF	6	215	2900
BS06218MSF	6	218	2900
FC6250-UL	6	209	2900
FC6250	6	209	2900
BS06220MSF	6	220	2900
BS06240MSF	6	240	2900
BS06250MSF	6	250	2900
BS06259MSF	6	259	2900
BS06265MSF	6	265	2900
BS06272MSF	6	272	2900
BS06275MSF	6	275	2900

FC6300-UL	6	259	2900
FC6300	6	259	2900
BS06300LSF	6	300	1800
BS06320LSF	6	320	1800
BS06343LSF	6	343	1800
BS06300LSF	6	300	1600
BS06320LSF	6	320	1600
BS06336LSF	6	336	1600
BS06300LSF	6	300	1400
BS06310LSF	6	310	1400
BS06329LSF	6	329	1400
BS06370LSF	6	370	1800
BS06400LSF	6	400	1800
BS06407LSF	6	407	1800
BS06410LSF	6	410	1800
BS06370LSF	6	370	1600
BS06372LSF	6	372	1600
BS06390LSF	6	390	1600
BS06405LSF	6	405	1600
BS06350LSF	6	350	1400
BS06375LSF	6	375	1400
BS06400LSF	6	400	1400
BS012450LSF	12	450	1800
BS012500LSF	12	500	1800
BS012548LSF	12	548	1800
BS012550LSF	12	550	1800
BS012450LSF	12	450	1600
BS012475LSF	12	475	1600
BS012502LSF	12	502	1600
BS012430LSF	12	430	1400
BS012455LSF	12	455	1400

BS012570LSF	12	570	1800
BS012585LSF	12	585	1800
BS012588LSF	12	588	1800
BS012530LSF	12	530	1600
BS012545LSF	12	545	1600
BS012552LSF	12	552	1600
BS012480LSF	12	480	1400
BS012510LSF	12	510	1400
BS012515LSF	12	515	1400
BS012518LSF	12	518	1400

Trademark and/or Tradename: "SFFECO",  

Last Updated on 2021-04-27

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Certificate of Compliance

This certificate is issued for the following:

Diesel Engine Fire Pump Drivers

(see full listing attached)

Prepared for:

Saudi Factory for Fire Equipment FZCo
PO Box 261281
JAFZA South, Dubai S-10833
United Arab Emirates

Manufactured at:

Saudi Factory for Fire Equipment FZCo
PO Box 261281
JAFZA South, Dubai S-10833
United Arab Emirates

FM Approvals Class: 1333 (January 2018)

Approval Identification: 0003063444

Approval Granted: October 29, 2020

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.

A handwritten signature in black ink, appearing to read 'D.B. Fuller', written over a horizontal line.

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



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Certificate of Compliance

Fire Pump Installation Systems Diesel Engines for Fire Pump Drivers Diesel Engines for Fire Pump Drivers, Liquid Cooled

Product	Rated Power, hp	Rated Power, kW	Rated Speed, r/min
BS03020MSF	20	15	2900
BS0320MSR	21	16	3000
BS0320MSR	21	16	2900
BS0320MSR	21	16	2800
BS03021MSF	21	16	3000
BS03021MSF	21	16	2900
BS03021MSF	21	16	2800
BS04030MSF	30	22	3000
BS04030MSF	30	22	2900
BS04030MSF	30	22	2800
BS04036MSF	35.5	26.5	3000
BS04036MSF	35.5	26.5	2900
BS04036MSF	35.5	26.5	2800
BS0440MSR	35.5	26.5	3000
BS0440MSR	35.5	26.5	2800
BS04040TMSF	40	30	3000
BS04040TMSF	40	30	2900
BS04040TMSF	40	30	2800
BS0440MSR	56	42	3000
BS0440MSR	60	45	2900
BS0440MSR	57	42.5	2800
BS04040MSF	40	30	3000
BS04040MSF	40	30	2900
BS04040MSF	40	30	2800
BS04050MSF	50	37	3000
BS04050MSF	50	37	2900
BS04050MSF	50	37	2800
BS04050TMSF	50	37	3000
BS04050TMSF	50	37	2900
BS04050TMSF	50	37	2800
BS04056TMSF	56	42	3000
BS04056TMSF	56	42	2900
BS04057MSF	57	42.5	2900
BS04057TMSF	57	42.5	2800
BS04059MSF	58.5	44	3000
BS04059MSF	58.5	44	2900
BS04059MSF	58.5	44	2800



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Product	Rated Power, hp	Rated Power, kW	Rated Speed, r/min
BS0460MSR	58.5	44	3000
BS0460MSR	58.5	44	2900
BS0460MSR	58.5	44	2800
BS04060TMSF	60	45	2900
BS04065MSF	65	48.5	3000
BS04065MSF	65	48.5	2800
BS04070MSF	70	52	3000
BS04070MSF	70	52	2900
BS04070MSF	70	52	2800
BS04075MSF	75	56	3000
BS04075MSF	75	56	2900
BS04075MSF	75	56	2800
BS04080MSF	80	60	3000
BS04080MSF	80	60	2900
BS04080MSF	80	60	2800
BS0485MSR	75	56	3000
BS0485MSR	75	56	2900
BS0485MSR	75	56	2800
BS04090MSF	90	67	3000
BS04090MSF	90	67	2900
BS04090MSF	90	67	2800
BS04100MSF	100	75	3000
BS04100MSF	100	75	2900
BS04100MSF	100	75	2800
BS04100MSR	111	83	3000
BS04100MSR	111	83	2900
BS04100MSR	111	83	2800
BS04110MSF	110	82	3000
BS04110MSF	110	82	2900
BS04111MSF	111	83	3000
BS04111MSF	111	83	2800
BS04114MSF	114	85	2900
BS06100MSF	100	75	3000
BS06100MSF	100	75	2900
BS06100MSF	100	75	2800
BS06110MSF	110	82	3000
BS06110MSF	110	82	2900
BS06110MSF	110	82	2800
BS06118MSF	118	88	2900
BS06120MSF	120	90	2900



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Product	Rated Power, hp	Rated Power, kW	Rated Speed, r/min
BS06127MSF	127	95	3000
BS06127MSF	127	95	2900
BS06127MSF	127	95	2800
BS06128MSF	128	95	2900
BS06130MSR	127	95	3000
BS06130MSR	127	95	2900
BS06130MSR	127	95	2800
BS06134MSF	133.5	100	2800
BS06147MSF	146.5	109	3000
BS06147MSF	146.5	109	2900
BS06147MSF	146.5	109	2800
BS06150MSF	150	112	2900
BS06150MSR	146.5	109	3000
BS06150MSR	146.5	109	2900
BS06150MSR	146.5	109	2800
BS06155MSF	154.5	115	2800
BS06160MSF	160	119	3000
BS06160MSF	160	119	2900
BS06175MSF	175	130	3000
BS06175MSF	175	130	2900
BS06186MSF	186	139	2900
BS06188MSF	187.5	140	2900
BS06191MSF	190.5	142	3000
BS06195MSR	190.5	142	3000
BS06195MSR	187.5	140	2900
BS06195MSR	133.5	100	2800
BS06200MSF	200	149	3000
BS06200MSF	200	149	2900
BS06210MSF	210	157	3000
BS06210MSF	210	157	2900
BS06212MSF	212	158	2900
BS06216MSF	216	161	3000
BS06220MSF	220	164	2900
BS06230MSF	230	172	3000
BS06240MSF	240	179	2900
BS06240MSF	240	179	2800
BS06250MSF	250	186	3000
BS06250MSF	250	186	2900
BS06250MSR	216	161	3000
BS06250MSR	212	158	2900



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Product	Rated Power, hp	Rated Power, kW	Rated Speed, r/min
BS06250MSR	154.5	115	2800
BS06259MSF	259	193	2900
BS06265MSF	265	198	2900
BS06272MSF	271.5	203	3000
BS06272MSF	271.5	203	2900
BS06300LSF	300	224	1800
BS06300LSF	300	224	1600
BS06300LSF	300	224	1400
BS06300MSR	271.5	203	3000
BS06300MSR	271.5	203	2900
BS06300MSR	240	179	2800
BS06310LSF	310	231	1400
BS06320LSF	320	239	1800
BS06320LSF	320	239	1600
BS06329LSF	329	245	1400
BS06330LSF	330	246	1400
BS06336LSF	336	251	1600
BS06343LSF	343	256	1800
BS06350LSF	350	261	1600
BS06350LSF	350	261	1400
BS06365LSF	365	272	1600
BS06370LSF	370	276	1800
BS06370LSF	370	276	1600
BS06372LSF	372	277	1600
BS06375LSF	375	280	1400
BS06390LSF	390	291	1600
BS06400LSF	400	298	1800
BS06400LSF	400	298	1400
BS06400LSR	343	256	1800
BS06400LSR	365	272	1600
BS06400LSR	330	246	1400
BS06405LSF	405	302	1600
BS06406LSF	406	303	1600
BS06407LSF	407	304	1800
BS06410LSF	410	306	1400
BS06450LSR	407	304	1800
BS06450LSR	406	303	1600
BS06450LSR	410	306	1400
BS012430LSF	430	321	1400
BS012450LSF	450	336	1800



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Product	Rated Power, hp	Rated Power, kW	Rated Speed, r/min
BS012450LSF	450	336	1600
BS012455LSF	455	339	1400
BS012475LSF	475	354	1600
BS012480LSF	480	358	1400
BS012500LSF	500	373	1800
BS012502LSF	502	374	1600
BS012508LSF	508	379	1600
BS012510LSF	510	380	1400
BS012515LSF	515	384	1400
BS012530LSF	530	395	1600
BS012545LSF	545	406	1600
BS012548LSF	548	409	1800
BS012550LSR	548	409	1800
BS012550LSR	508	379	1600
BS012550LSR	455	339	1400
BS012552LSF	552	412	1600
BS012562LSF	562	419	1600
BS012570LSF	570	425	1800
BS012585LSF	585	436	1800
BS012650LSR	585	436	1800
BS012650LSR	562	419	1600
BS012650LSR	515	384	1400



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QYZS.EX3971 Pump Controllers, Fire

[Page Bottom](#)

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 Ascoelectric 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 Ascoelectric 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:
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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 2 nd 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

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Fire Pumps

Before ordering a fire pump, consult FM Approvals regarding size, type of driver, suction supplies and location. Proposals for fire pump installations, including plans showing location and piping connections, should be sent to FM Global for review before the order is placed. Give the manufacturer complete data, including rated capacity, net head and suction head. Contracts for pump installations or changes should be let subsequent to acceptance of plans and subject to satisfactory field tests by FM Global.

The pump manufacturer or his authorized representative is responsible for furnishing a complete unit consisting of pump, driver and necessary accessories, all according to FM Global's standards.

Satisfactory performance in an operating test after installation should be guaranteed. A new fire pump installation is not acceptable until FM Global has witnessed a satisfactory field acceptance test. This will include a test of endurance of the pump and reliability of the power supply.

Exact horsepower requirements for each pump must be determined by a shop test on the specific pump. Approximate horsepower requirements at rated pump conditions are as follows:

<i>Rated Capacity, gal/min (dm³/min)</i>	<i>Rated Net Head, psi (kPa)</i>	<i>Approximate Power Required, hp (kW)</i>
500 (1895)	100 (690)	50-60 (37-45)
750 (2840)	100 (690)	60-75 (45-56)
1000 (3785)	100 (690)	75-100 (56-75)
1500 (5680)	100 (690)	100-125 (75-93)
2000 (7570)	100 (690)	125-150 (93-112)
2500 (9465)	100 (690)	150-200 (112-149)

In the listings on the following page, rated net head represents the amount of pressure boost obtainable from a pump of a given type and impeller size when operating at rated speed.

The rated net head range indicates that impellers of various diameters are obtainable for the given type of pump.

Although not recommended for installations where suction is normally taken under lift, FM Approved pumps have been tested for proper operation under negative suction conditions up to 15 ft (5 m) at 150% of rated capacity.

Centrifugal Fire Pumps, Horizontal End-Suction Type

FM Approved horizontal end-suction fire pumps must be of the "back-pullout" design and be driven through a spacer coupling. That is, it must be possible to replace the rotating assembly of an installed pump without disturbing suction and discharge piping or the driver. These pumps feature a horizontal suction connection opposite the driver end and a vertical, centerline discharge connection.

SFP 500-26 EM

Company Name:	Saudi Factory for Fire Equipment Co (SFFECO)
Company Address:	PO Box 261281 , JAFZ South, Dubai, S-1083, UAE
Company Website:	http://www.sffeco.com
New/Updated Product Listing:	No
Listing Country:	United Arab Emirates
Rated Capacity, (gal/min) :	500
Rated Capacity, (dm³/min):	1895
Rated Net Head at Rated Capacity, psi:	104-131
Rated Net Head at Rated Capacity, kPa:	715-905

Rated Speed, r/min:	2900
Suction Inlet, dia., in.:	4
Discharge Outlet, dia., in.:	3
Stage(s):	1
Certification Type:	FM Approved

Fire Pump Controllers- Full Service Electric Motor

Controllers for electric motor-driven fire pumps as listed are for alternating current squirrel-cage motors unless indicated as for slip ring motors. They are available for manual operation alone or for combined manual and automatic operation. Controllers for squirrel-cage motors are FM Approved for three phase power. They are of two types: across-the-line and reduced voltage. All model code combinations may not apply.

Model GPx-a/(b or c)/d/e

Model GPx-a/(b or c)/d/e Electric Motor Fire Pump Controller - Low Voltage, UL Listed and FM Approved

Standard Enclosure: NEMA/UL Type 2.

Standard Ambient Temperature Operating Range: 39°F (4°C) to 104°F (40°C)

Optional Ambient Temperature Operating Range: 39°F (4°C) to 131°F (55°C) (See Remarks)

<i>x = Model</i>	<i>a = Voltage, Vac</i>	<i>b = Horsepower</i>	<i>c = Minimum to Maximum Full Load Current</i>
A - Across the Line R - Autotransformer S - Soft Starter P - Part Winding V - Primary Resistor Y - Wye Delta Open Transition W - Wye Delta Closed Transition	208 220 230 240 380 400 415 440 460 480 600	3 to 200 HP (208 V) 3 to 250HP (220 - 240 V) 3 to 450 HP (380 - 415 V) 3 to 500 HP (440 - 480 V) 3 to 500 HP (600 V)	*For motors rated in kW
<i>d = Number of Phases</i>		<i>e = Frequency</i>	
1 - Single Phase System 3 - Three Phase System		50 - 50 Hz 60 - 60 Hz	

Remarks

a. Model GPx Series controllers larger than 190 FLA require the inclusion of a fan(s) inside the enclosure to maintain the optional 131°F (55°C) maximum ambient temperature rating. This modification is only Approved when installed by the manufacturer.

Company Name:	TornaTech Inc
Company Address:	7075 Place Robert Joncas # 132, Saint Laurent, Quebec H4M 2Z2, CAN
Company Website:	http://www.tornatech.com
New/Updated Product Listing:	No
Listing Country:	Canada
Certification Type:	FM Approved

Fire Pump Controllers-Diesel Engines

Controllers provide an automatic means for starting internal combustion engine-driven fire pump units. These controllers are designed for dual battery operation.

Model GPD(FM)-a-b-c

Model GPD(FM)-a-b-c

Model GPD(FM)-a-b-c Diesel Engine Fire Pump Controller with ViZiTouch Control

Standard Enclosure: NEMA/UL Type 2.

Standard Ambient Temperature Operating Range: 39°F (4°C) to 104°F (40°C)

Optional Ambient Temperature Operating Range: 39°F (4°C) to 131°F (55°C) (See Remarks)

a = Voltage, Vdc	b = Voltage Input, Vac	c = Options
12 - 12 VDC	120 - 110-120V / 50-60Hz	
24 - 24 VDC	220 - 208-240V / 50-60Hz	

Note: Both GPD and GPDFM models are FM Approved.

Remarks

a. Model GPD Series controllers require the installation of a NEMA rated filter fan to maintain the optional 131°F (55°C) maximum ambient temperature rating. This modification is only Approved when installed by the manufacturer.

Company Name:	TornaTech Inc
Company Address:	7075 Place Robert Joncas # 132, Saint Laurent, Quebec H4M 2Z2, CAN
Company Website:	http://www.tornatech.com
New/Updated Product Listing:	No
Listing Country:	Canada
Certification Type:	FM Approved

CERTIFICATE OF COMPLIANCE

Certificate Number 20140708-E158750
Report Reference E158750-19940223
Issue Date 2014-JULY-08

Issued to: TORNATECH INC
132
7075 PLACE ROBERT-JONCAS
ST LAURENT
QC H4M 2Z2 CANADA

**This is to certify that
representative samples of**

INDUSTRIAL CONTROL PANELS

Industrial control panels. Includes jockey pump controller Model JP, remote alarm panel for electric fire pump controllers Model APE, remote alarm panel for diesel engine fire pump controllers Model APD, and low pressure shutdown panel Model APL. These models are not exhaustive.

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

Standard(s) for Safety: UL 508, Standard for Industrial Control Panels
CSA C22.2 NO. 14, Industrial Control Equipment

Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Listing Mark for the US and Canada should be considered as being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US and Canada.

The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and "US" identifiers:  the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.



William R. Carney, Director, North American Certification Programs
UL LLC

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