



PROJECT NAME	
LOCATION	
CLIENT	
PUMP CAPACITY	750 GPM @ 10 BAR

UL/FM APPROVED FIRE PUMP TECHNICAL SUBMITTAL

SUB#	REV	DATE	DESCRIPTION	PREPARED BY	REVIEWED BY	APPROVED BY

NAFFCO

الشركة الوطنية لصناعة معدات مكافحة الحريق بمنطقة National Fire Fighting Manufacturing FZCO

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تمت الموافقة على المنتج في ٢٠١٣/١٢/٢٥ رقم ٩ لسنة ٢٠١٣ بقرار مجلس وزراء جمهورية مصر العربية رقم ١
Permit was issued to Lameco Co., Ltd. ٢٠١٣/١٢/٢٥ رقم ٩ لسنة ٢٠١٣ by the Council of Ministers of the Arab Republic of Egypt No. ١ of ٢٠١٣ with limited quality.





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الشركة الوطنية لصناعة معدات مكافحة الحريق، ش.م.م

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PROPOSED PRODUCT SCHEDULE

الشركة الوطنية لصناعة معدات مكافحة الحريق - غرب
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PROJECT NAME	
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LIST OF PROPOSED MATERIAL

SL. No.	ITEM DESCRIPTION	LISTINGS / APPROVALS	MANUFACTURER
1	ELECTRIC MOTOR DRIVEN FIRE PUMP RATED POINT: 750 GPM @ 10 BAR MODEL: NF-S-150-100 ACCESSORIES • CASING CIRCULATION RELIEF VALVE - ¾" • SUCTION COMPOUND GAUGE - 4" DIAL ½" CONNECTION • DISCHARGE PRESSURE GAUGES - 3½" DIAL ¼" CONNECTION • AUTOMATIC AIR RELEASE VALVE-1/2" • FLOW METER – 6"	UL / FM UL / FM UL / FM FM	NAFFCO
2	ELECTRIC MOTOR 125 HP, 2950 RPM, 415 V, 3 PH, 50 HZ, ENCLOSURE – ODP	UL	NATIONAL MOTORS
3	ELECTRIC PUMP CONTROLLER MODEL: NYF-SDM1, WYE-DELTA OPEN TRANSITION STARTING TYPE 125 HP, 415 V, 3 PH, 50 HZ, ENCLOSURE - NEMA 2	UL	NAFFCO
4	DIESEL ENGINE DRIVEN FIRE PUMP RATED POINT: 750 GPM @ 10 BAR MODEL: NF-S-150-100 ACCESSORIES • SUCTION COMPOUND GAUGE - 4" DIAL ½" CONNECTION • DISCHARGE PRESSURE GAUGES - 3½" DIAL ¼" CONNECTION • AUTOMATIC AIR RELEASE VALVE-1/2" • PRESSURE RELIEF VALVE – 4"	UL / FM UL / FM UL / FM UL / FM	NAFFCO
5	DIESEL ENGINE MODEL: FD-180H 185 HP, 2900 RPM ACCESSORIES • FUEL TANK WITH FITTINGS – 250 GALLONS • FIRE PUMP DIESEL FUEL SYSTEM • DUAL SET OF BATTERIES • INDUSTRIAL MUFFLER • FLEXIBLE EXHAUST CONNECTOR	UL	FIREDRIVER
6	DIESEL ENGINE FIRE PUMP CONTROLLER MODEL: NYF-DM1 24 VDC BATTERY START, 220 VAC / 1 PH / 50 HZ, ENCLOSURE - NEMA 2	UL / FM	NAFFCO
7	JOCKEY PUMP DUTY POINT: 10 GPM @ 10 BAR MODEL: NFVL4-120, MOTOR: 2.2 kW, 2900 RPM, 415 V, 3 PHASE, 50 HZ, ENCLOSURE -TEFC	-	NAFFCO
8	JOCKEY PUMP CONTROLLER MODEL: NYF-JDO1, 3 HP, 415 V, 3 PHASE, 50 HZ, ENCLOSURE - NEMA 2	UL	NAFFCO





ELECTRIC MOTOR DRIVEN FIRE PUMP

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NAFFCO Listed Fire Pumps 2900 RPM





An Introduction to NAFFCO

NAFFCO FZCO is among the world's leading manufacturers and suppliers of top-tier firefighting equipment, fire protection systems, fire alarms, security and safety engineering systems worldwide. Since its humble beginnings, NAFFCO has grown from its headquarters in Dubai, UAE to expand to serving over 100 countries around the world.

One Stop Shopping for All Your Fire Safety and Security Needs

Today's companies recognize the importance and convenience of having multiple safety services available under one roof, a "one-stop shopping" source for all types of fire protection systems. As the undisputed leader in

firefighting technology and fire safety solutions, NAFFCO has worked in both the private and government sectors, as well as manufacturing plants, hospitals, stadiums, malls and other organizational projects, delivering comprehensive fire safety and engineering solutions.

NAFFCO is associated with globally renowned international companies in the fire protection industry such as Esser, Secutron, Megalights, Evax, Fike, Central, Shield, Mueller, Giacomini, RB Pumps, Bombas, Ideal Pumps, Joslyn Pumps, Peerless Pumps.

At NAFFCO we are passionate about sustaining, upgrading and improving any means of safety, by having over 2 million square foot of manufacturing space, over 450 engineers, and following all the latest technology available. We live by our passion, the passion to protect.





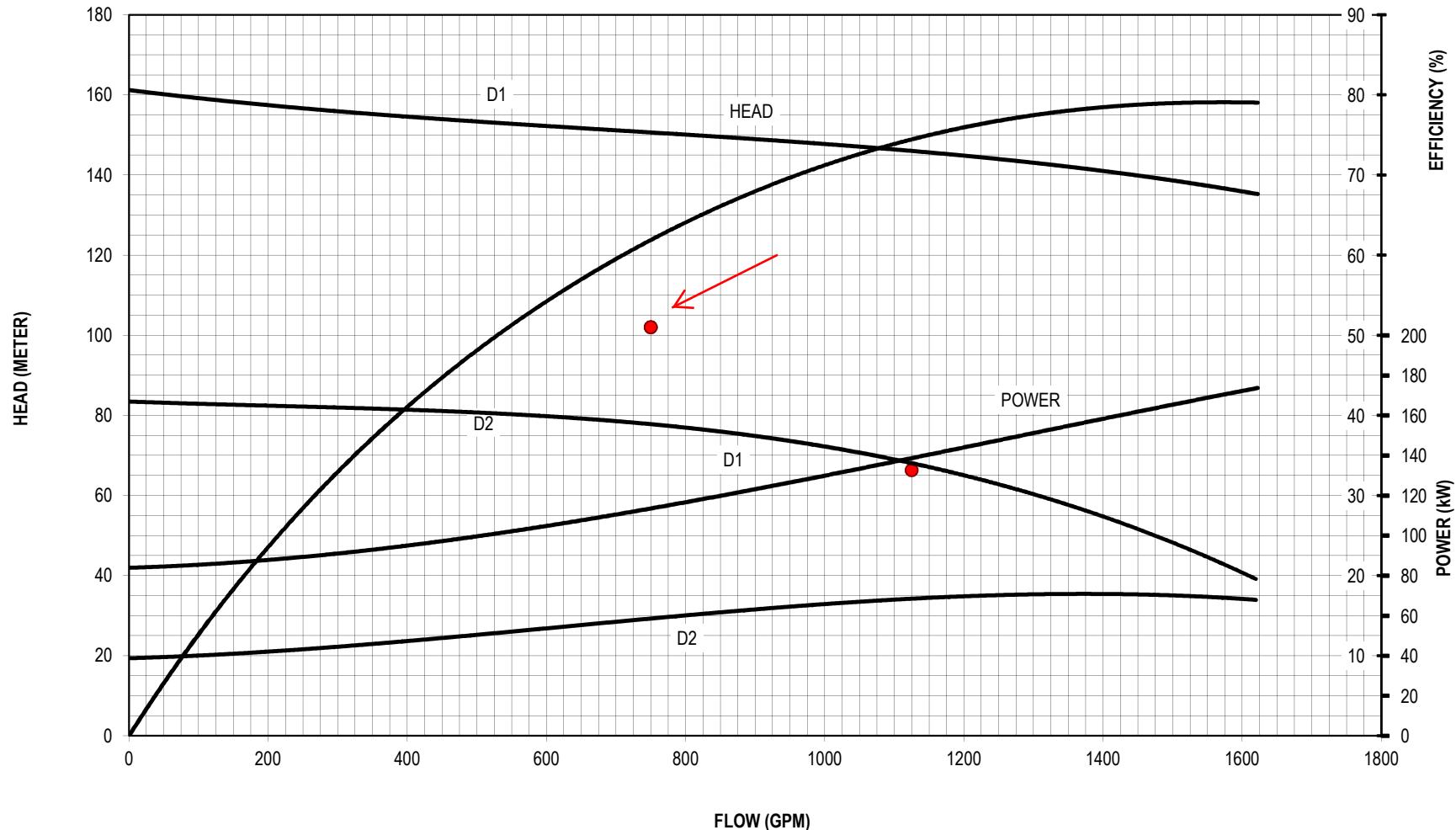
PUMP TYPE HSC
PUMP MODEL NF - S - 150 -100
SIZE (SUC. X DIS.) 6 x 4 INCH
D1 330 MM
RATED SPEED 2900 RPM

CURVE NO. 014
FLUID TYPE WATER
SP. GRAVITY 1
D2 245 MM

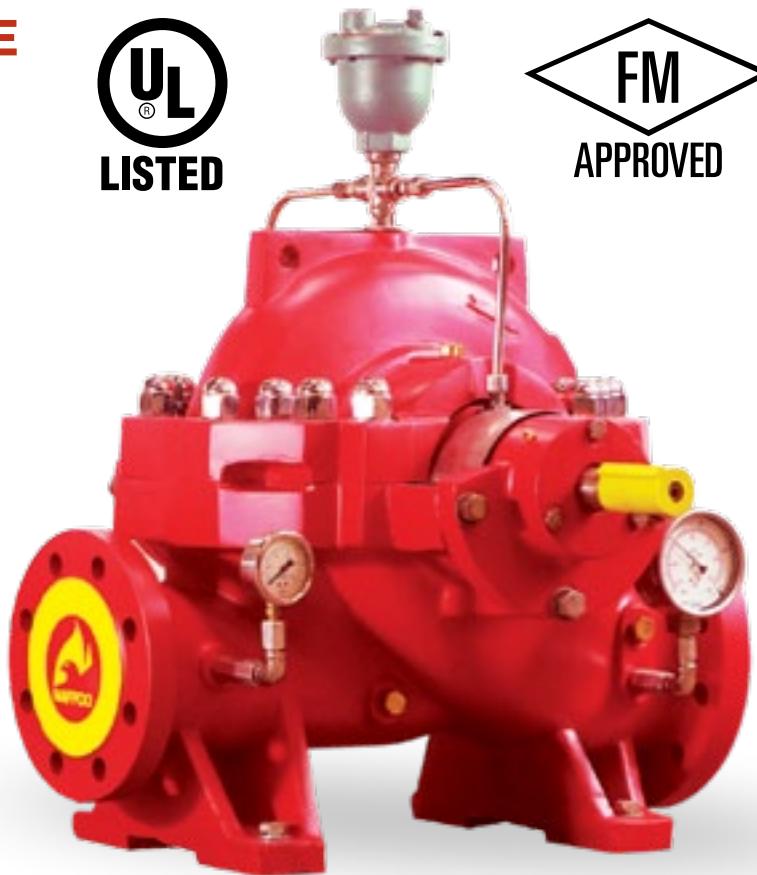
FLOW (GPM) 750
1000

UL LISTED HEAD (PSI)	FM APPROVED HEAD (PSI)
112 - 213	108 - 216
101 - 208	101 - 215

DUTY FLOW 750 US GPM
DUTY HEAD 101.97 METER



HORIZONTAL SPLIT CASE PUMPS



FEATURES

- Performance characteristics as per NFPA 20
- Complete unit responsibility.
- Complete in-house fabrication capabilities.
- Hydrostatic testing facilities.
- Operation run test as per NFPA 20, UL 448 and FM 1311 requirements.
- Horizontal Split case pumps for capacities from 750 to 1500 US GPM.
- Drivers: Electric motor drive or diesel engine drive.
- Electrical testing capabilities for motors and controllers as per NFPA standards.
- Capable of supplying additional accessories wherever required.

Approved Fire Pump Models with Ratings

RATED CAPACITY - 750 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-125-80	236	236	2900	5	3	1
2	NF-S-150-100	112 - 213	108 - 216	2900	6	4	1
3	NF-S-150-100-375	226 - 276	227 - 280	2900	6	4	1

RATED CAPACITY - 1000 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-150-100	101 - 208	101 - 215	2900	6	4	1
2	NF-S-150-100-375	219 - 273	215 - 273	2900	6	4	1
3	NF-S-200-125	143 - 267	143 - 252	2900	8	5	1

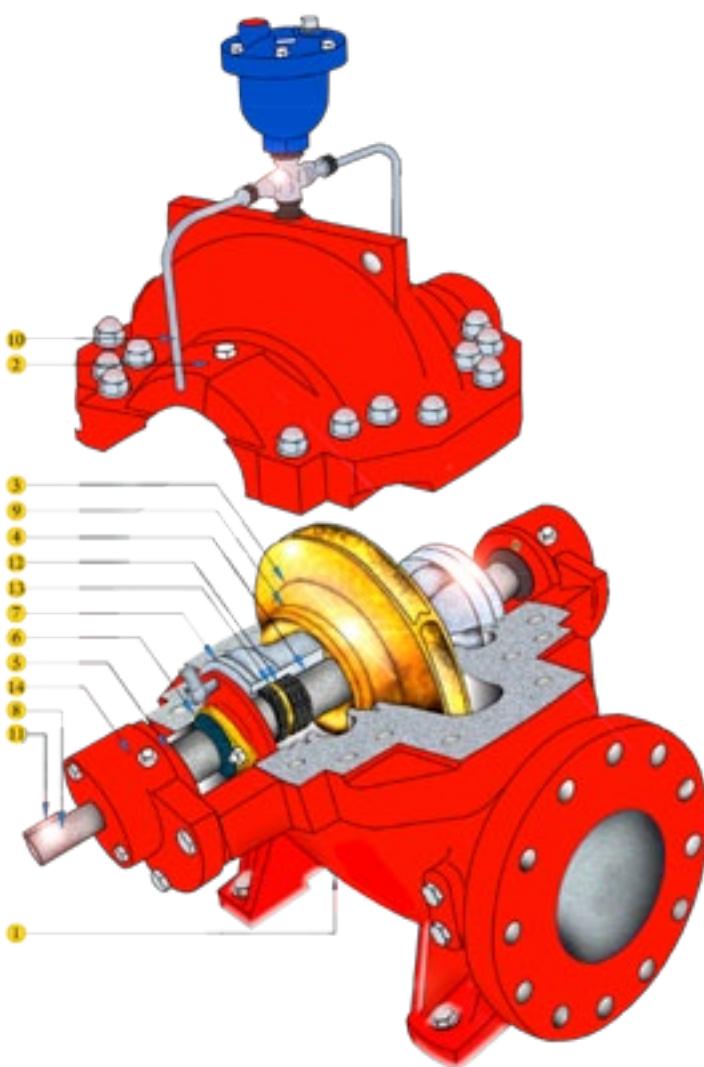
RATED CAPACITY - 1250 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-200-125	137 - 263	134- 250	2900	8	5	1

RATED CAPACITY - 1500 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-200-125	130 - 256	121- 242	2900	8	5	1

OPEN VIEW



PUMP CASING: The casing is axially split, which permits removal of the complete rotor without moving either piping or motor. Pumps generating high heads have double volutes to reduce radial forces, ensuring minimal shaft deflection and low bearing loads. Replaceable wear rings protect the casing at the impeller running clearances.

IMPELLER: The closed impeller has double curved vanes. The double suction design gives practically zero axial forces. Each impeller is dynamically balanced according to ISO 1940-1 standard.

BEARINGS: Grease lubricated deep groove ball bearings are provided on both sides.

SHAFT SEAL: Soft-packed stuffing box. Cooling lines are provided for additional cooling of the graphite impregnated type gland packing.

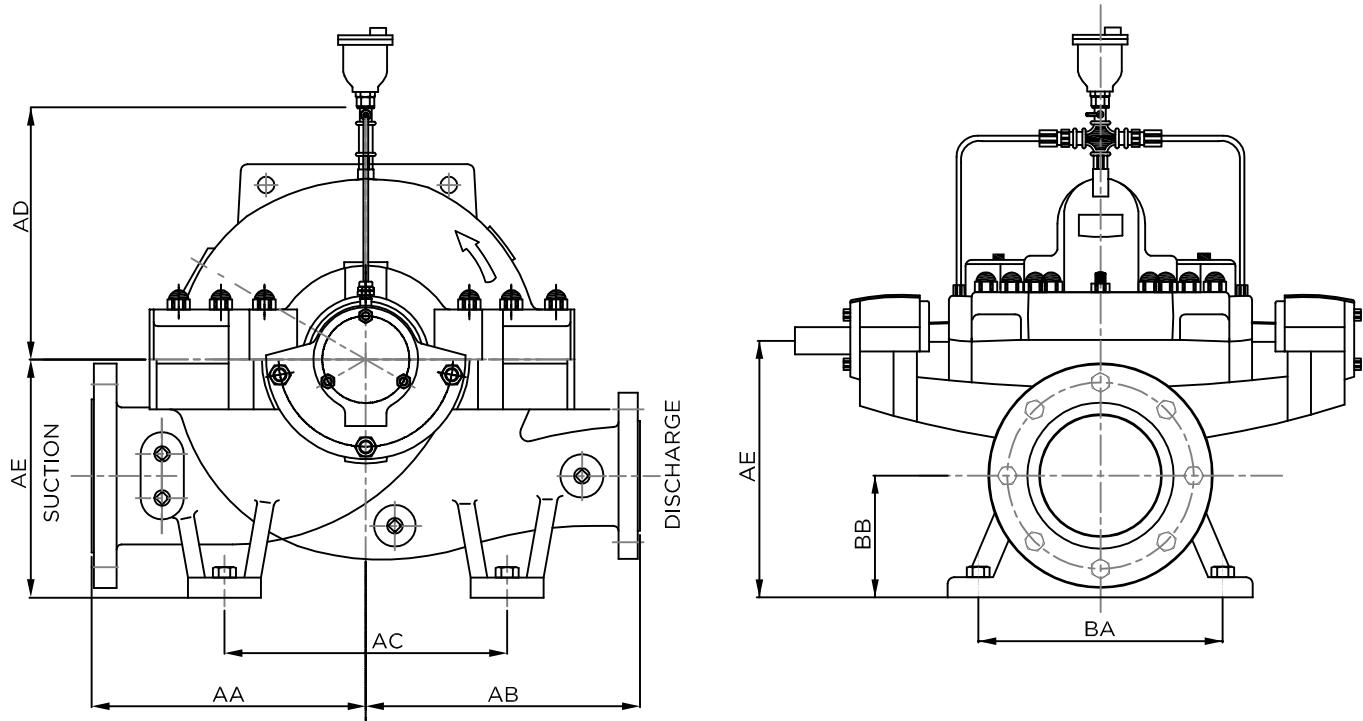
PUMP MODEL NAME ILLUSTRATION

NF	Series Name
S	Split Case
150	Suction Size (mm)
100	Discharge Size (mm)

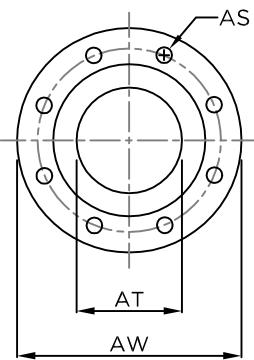
DESCRIPTION

No.	Part Name	Material	Qty.
1	Lower Casing	Cast Iron ASTM A48 Class 40	1
2	Upper Casing	Cast Iron ASTM A48 Class 40	1
3	Impeller	Bronze SAE 40	1
4	Shaft Sleeve	Stainless Steel AISI 420	2
5	Bearing Cover	Cast Iron ASTM A48 Class 40	2
6	Gland	Bronze SAE 40	2
7	Stuffing Box	Cast Iron ASTM A48 Class 40	2
8	Shaft	Alloy Steel AISI 4340	1
9	Wear Ring	Bronze SAE 40	2
10	Flushing Pipe	Stainless Steel, Gr. 304	2
11	Coupling Key	Stainless Steel AISI 420	1
12	Gland Packing	Graphite Impregnated	8
13	Lantern Ring	Bronze SAE 40	2
14	Bearing Housing	Cast Iron ASTM A48 Class 40	2

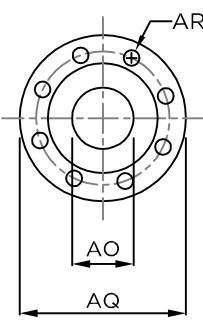
DIMENSIONAL DRAWING



FIRE PUMP DIMENSIONS - HORIZONTAL SPLIT CASE PUMP



SUCTION FLANGE



DISCHARGE FLANGE



Suction and Discharge Flanges:

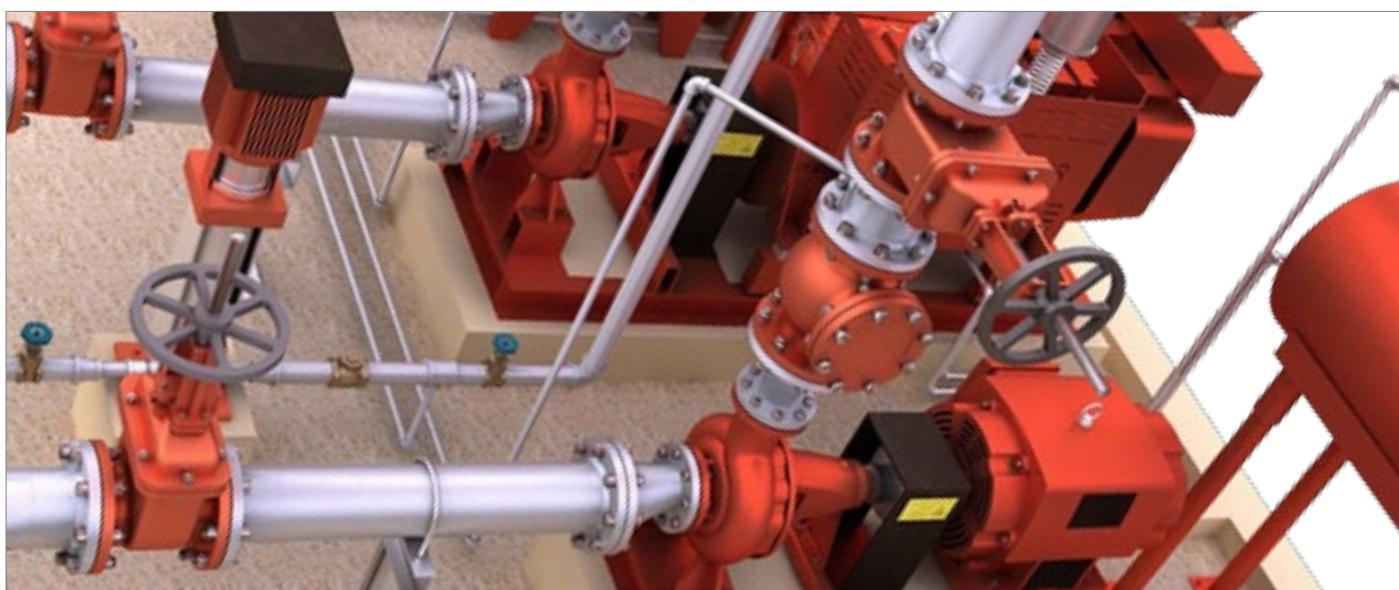
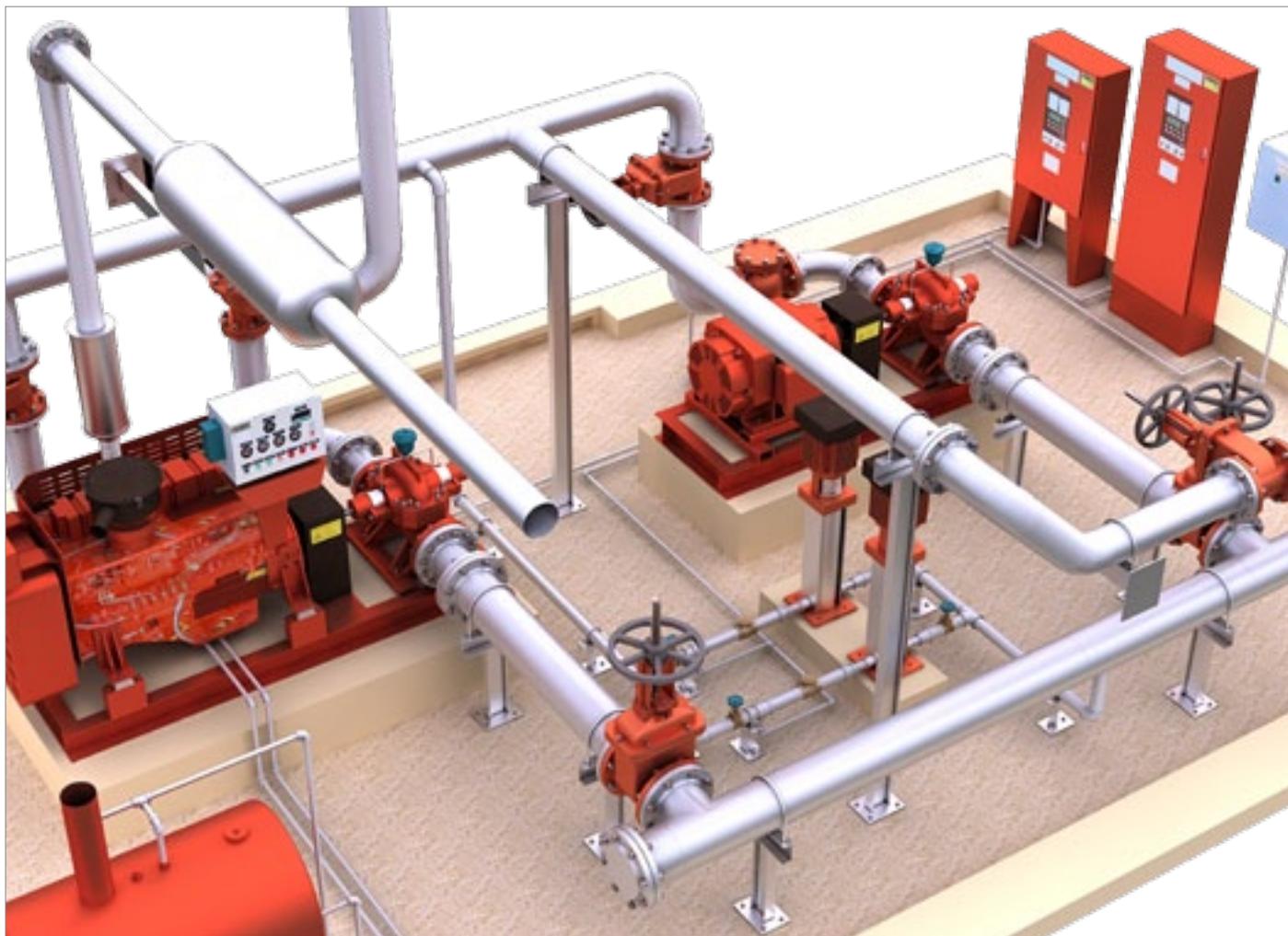
Standard - ASME B16.1
Class Rating - Class 250

TABLE OF DIMENSIONS

Model	AA	AB	AC	AD	AE	BA	BB	Suction Flange			Discharge Flange		
								AW	AT	AS	AQ	AO	AR
NF-S-125-80	330	330	340	306	315	270	175	280	5"	8 holes Ø22 on PCD 235	210	3"	8 holes Ø22 on PCD 168
NF-S-150-100	330	330	400	267	355	270	185	320	6"	12 holes Ø22 on PCD 270	255	4"	8 holes Ø22 on PCD 200
NF-S-150-100-375	375	375	400	340	355	270	185	320	6"	12 holes Ø22 on PCD 270	255	4"	8 holes Ø22 on PCD 200
NF-S-200-125	395	370	450	367	400	340	200	380	8"	12 holes Ø28 on PCD 330	280	5"	8 holes Ø22 on PCD 235

All dimensions are in mm unless otherwise indicated.

FIRE PUMP INSTALLATION



NFPA 20 requirements related to the installation of fire pump set should be followed strictly. The main pipe sizes, necessary distances between the piping components, valve sizes, branch pipe sizes, bends in the

pipe line etc. shall be such that it will facilitate the most efficient and effective performance of the fire pump set. The foundation, grouting, support and bolting should also be in line with a stringent design based on NFPA 20.



Serving Over 100 Countries Worldwide



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In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.



ELECTRIC FIRE PUMP MOTOR

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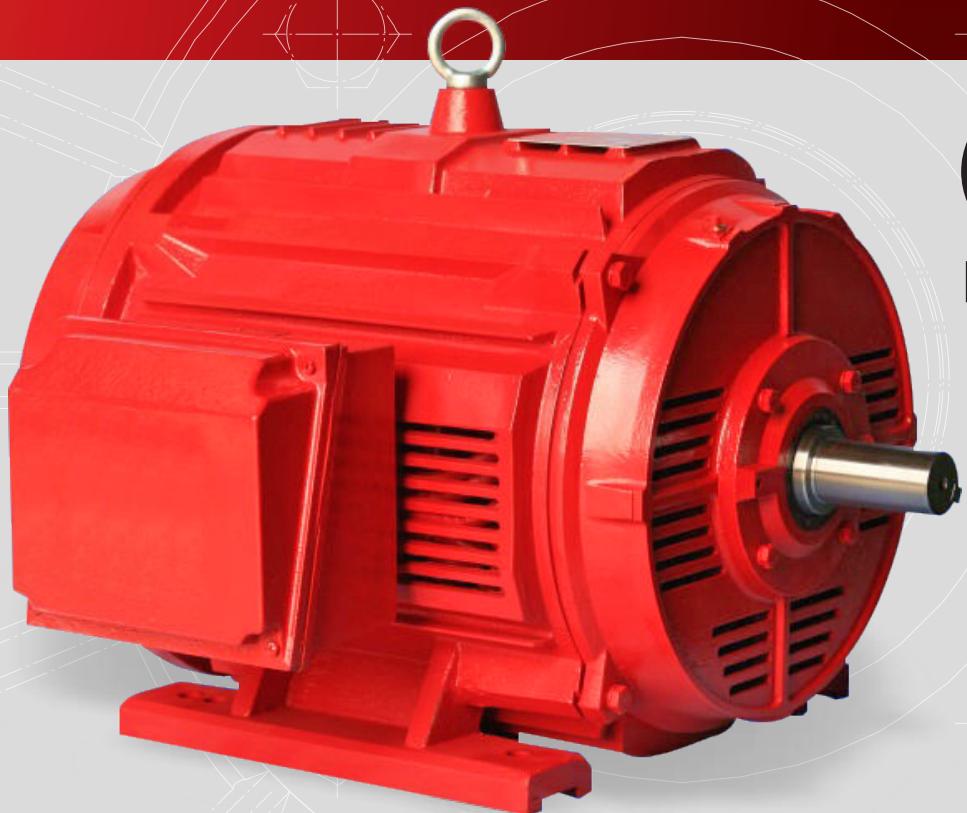
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تم إنشاء موقعنا الإلكتروني بموجب قرار رقم ١ لسنة ٢٠١٣ بتعديل بعض أحكام المرسوم رقم ٩ لسنة ٢٠١٢ بتعديل بعض أحكام المرسوم رقم ٧ لسنة ٢٠١٢.





FIRE PUMP MOTORS



BUILT TO SERVE

Open Drip Proof



FIRE PUMP MOTORS

National Motors' NMCM series consists of motors designed for fire pump applications as specified in NFPA 20 (Standard for the Installation of Stationary Pumps for Fire Protection). They are certified by UL as per the requirement of UL 1004-5 'Standard for Fire Pump Motors'. These three phase horizontal low-voltage squirrel-cage medium induction motors are constructed and manufactured as per the requirements of NEMA MG 1 standard Design B.

With Open Drip Proof enclosures, they provide best possible ventilation suitable for environments having minimal airborne contaminants and better cooling that contribute to the most efficient performance available from these motors. These certified motors are fully complaint with the motor efficiency requirements as given in the EISA (Energy Independence and Security Act of 2007 - US federal act).

Features:

15 to 350 horse power rating

400 – 415 voltage rating at 50 hertz

NEMA Energy efficient design

1.15 Service Factor

Class F insulation

50 °C Ambient Temperature rating*

Regreasable Ball Bearing

Cast Iron construction frame

Frame size from 254T to 449TS

UL File No. EX26863

Stainless Steel name plate

RAL 3000 Standard red painted

IP23 Degree of Protection

Altitude rating of 1000 meters above sea level*

F1 foot mounting

2 Pole, 2920 - 2945 rpm speed**

Temperature Rise below Class B (80 K)

Suitable for various standard starters such as across the line, wye-delta, soft starter etc.



Note:

* Derating may be required for higher values.

** Rated speed of the motor varies depending on motor size and it is mentioned on the next page.



PERFORMANCE DATA

Model No.	Rated Output (hp)	Frame Size	Frequency (Hz)	Rated Voltage (v)	Full Load Current (A)	Service Factor	Number of Poles	Speed (rpm)
NMCM50152PO	15	254T	50	400-415	19.7	1.15	2	2920
NMCM50202PO	20	256T	50	400-415	25.9	1.15	2	2920
NMCM50252PO	25	284TS	50	400-415	31.9	1.15	2	2930
NMCM50302PO	30	286TS	50	400-415	38.8	1.15	2	2930
NMCM50402PO	40	286TS	50	400-415	50.5	1.15	2	2925
	40	324TS	50	400-415	50.6	1.15	2	2930
NMCM50502PO	50	324TS	50	400-415	61.3	1.15	2	2930
	50	326TS	50	400-415	63	1.15	2	2930
NMCM50602PO	60	364TS	50	400-415	75.4	1.15	2	2930
	60	326TS	50	400-415	75.8	1.15	2	2935
NMCM50752PO	75	364TS	50	400-415	92.2	1.15	2	2940
	75	365TS	50	400-415	93.6	1.15	2	2940
NMCM501002PO	100	365TS	50	400-415	119.8	1.15	2	2940
	100	405TS	50	400-415	124.5	1.15	2	2940
NMCM501252PO	125	404TS	50	400-415	143.5	1.15	2	2940
	125	444TS	50	400-415	155.3	1.15	2	2940
NMCM501502PO	150	405TS	50	400-415	178.6	1.15	2	2940
	150	445TS	50	400-415	182.9	1.15	2	2940
NMCM502002PO	200	447TS	50	400-415	243	1.15	2	2940
	200	444TS	50	400-415	258.2	1.15	2	2945
NMCM502502PO	250	449TS	50	400-415	302	1.15	2	2940
NMCM503002PO	300	447TS	50	400-415	355	1.15	2	2945
	300	449TS	50	400-415	355	1.15	2	2945
NMCM503502PO	350	447TS	50	400-415	451.5	1.15	2	2945
	350	449TS	50	400-415	451.5	1.15	2	2945

Model No.	Locked Rotor Current (A)	Phases	Insulation Class	Rated Ambient Temperature (°C)	Duty	Power Factor	Temperature Rise (K)	Enclosure
NMCM50152PO	141	3	F	50	Continuous	0.91	55	ODP
NMCM50202PO	177	3	F	50	Continuous	0.91	78	ODP
NMCM50252PO	222	3	F	50	Continuous	0.91	70	ODP
NMCM50302PO	264	3	F	50	Continuous	0.91	70	ODP
NMCM50402PO	354	3	F	50	Continuous	0.91	70	ODP
	354	3	F	50	Continuous	0.91	65	ODP
NMCM50502PO	441	3	F	50	Continuous	0.91	76	ODP
	441	3	F	50	Continuous	0.91	75	ODP
NMCM50602PO	529	3	F	50	Continuous	0.91	63	ODP
	529	3	F	50	Continuous	0.91	75	ODP
NMCM50752PO	661	3	F	50	Continuous	0.92	78	ODP
	661	3	F	50	Continuous	0.92	75	ODP
NMCM501002PO	883	3	F	50	Continuous	0.92	80	ODP
	883	3	F	50	Continuous	0.92	78	ODP
NMCM501252PO	1105	3	F	50	Continuous	0.92	80	ODP
	1105	3	F	50	Continuous	0.92	78	ODP
NMCM501502PO	1319	3	F	50	Continuous	0.93	80	ODP
	1319	3	F	50	Continuous	0.93	80	ODP
NMCM502002PO	1764	3	F	50	Continuous	0.93	80	ODP
	1764	3	F	50	Continuous	0.93	80	ODP
NMCM502502PO	2320	3	F	50	Continuous	0.93	80	ODP
NMCM503002PO	2770	3	F	50	Continuous	0.93	80	ODP
	2770	3	F	50	Continuous	0.93	80	ODP
NMCM503502PO	3243	3	F	50	Continuous	0.93	80	ODP
	3243	3	F	50	Continuous	0.93	80	ODP

DESIGNED AS PER NEMA MG 1

TESTED AS PER UL 1004-5

INSTALLED AS PER NFPA 20



NAFFCO

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In line with NAFFCO policy for continuous product development, NAFFCO has right to change specifications without prior notice.

CAT. NO. NF/NAT-UL01/E



ELECTRIC FIRE PUMP CONTROLLER

شركة الروطانية لصناعة معدات مكافحة الحريق ب.ش.م.م
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Micro Processor Based Fire Pump Controllers



NEMA



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UL LISTED ELECTRIC MOTOR MICROPROCESSOR BASED CONTROLLER

MODEL NFY-SDM1 REDUCED VOLTAGE/ STAR - DELTA (OPEN TRANSITION)

MODEL NFY-DOM1 DIRECT ON LINE

NAFFCO Electric Motor Controllers for fire pumps are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL218 (Standard for Fire Pump Controller), UL508a (Standard for Industrial Control Panel), NFPA20 (National Fire Protection Association Pamphlet 20- Standard for Centrifugal Fire Pumps), NFPA70 (National Electric Code) and NEMA.

Power ratings vary from 40 to 400 horsepower, 230 / 380 / 415 VAC, 50/60 Hz.

Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used.

This controller is completely wired, assembled, programmed and tested at the factory before shipment, and ready for immediate installation.

STANDARD FEATURES

- 230 / 380 / 415 VAC, 50/60 Hz main 3 phase system power.
- Voltage Surge Protector.
- Main disconnecting switch with rotary handle sized for disconnecting motor horsepower and voltage.
- Circuit breaker with shunt trip coil and rotary handle.
- Rated motor contactors.
- Emergency run mechanism to mechanically close motor contactor contacts to start motor in case of emergency.
- Manual start and stop push buttons.
- 20x4 LCD display showing all system parameters and variables.
- User friendly software enables user to program all related parameters like timers, pressure, inputs, outputs ... etc.
- Shows 3 phase line voltages.
- Shows 3 phase line motor currents.
- Shows real value of discharge pressure.
- Shows motor running hours.
- Shows ambient temperature.
- Starting delay timer (programmable) for sequence multiple pumps starting.
- Automatic or manual shutdown after automatic start (selectable).
- Automatic shutdown mode enabled/disabled indicator.
- Power ON/Healthy indicator.
- Automatic mode indicator.
- Manual mode indicator.



STANDARD FEATURES

- Motor Run indicator/free contact.
- Phase Loss/Failure alarm / indicator / free contact.
- Phase sequence error alarm/indicator / free contact.
- System error alarm / indicator / free contact.
- Fail to start alarm / indicator.
- System error alarm / indicator.
- Pump lockout indicator / free contact.
- Push button for alarm silence (only for additional alarms).
- Motor locked rotor trip at 600% of FLA, after programmable time delay.
- Programmable automatic test, which can be programmed to start at any desired day, hour and minute in the week.
- Manual test push button.
- Motor overload alarm/ indicator / free contact (programmable).
- Over voltage alarm/indicator / free contact (programmable).
- Under voltage alarm/ indicator / free contact (programmable).
- Low discharge pressure alarm / indicator / free contact (programmable).
- Deluge valve on alarm / indicator / free contact (programmable).

- Remote start on alarm / indicator / free contact (programmable).
- Manual local start on alarm/ indicator / free contact (programmable).
- Fail while run alarm / indicator / free contact (programmable).
- Emergency start on alarm / indicator / free contact (programmable).
- Test on alarm/ indicator / free contact (programmable).
- 10 additional programmable indicators (LED's).
- 10 additional programmable auxiliary digital inputs.
- 7 additional programmable output relays (free contacts).
- Pressure transducer with analog voltage output.
- Data logging system for pressure and events.
- USB port for saving recorded pressure and events on USB memory, and can be viewed with MS word and Excel.
- Electrically actuated built in discharge solenoid valve.
- Electrical alarm bell.
- UL listed enclosure.

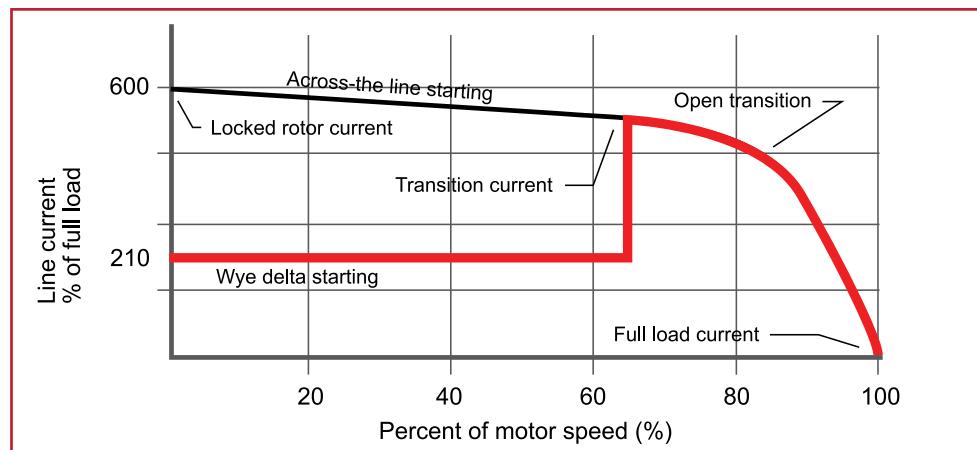


Fig (1)

MOTOR STARTING CHARACTERISTICS: DOL AND STAR-DELTA

SEQUENCE OF OPERATION

This controller is working under both automatic and manual modes with manual or automatic shut down (automatic shut down is possible only after automatic start).

MANUAL MODE

- In this mode, there will be no effect of pressure sensor and deluge valve.
- Manual start of motor can be done by pressing start P.B.
- Manual start can also be done by pushing emergency start mechanical handle.
- This handle provides direct on line continuous starting
- In this mode motor can be stopped only manually by pressing Stop P.B.
- All alarm signals are operational in this mode.

AUTOMATIC MODE

- In this mode, if pressure goes down till the cut-in pressure point then motor will start automatically.
- If the N/C contact of the deluge valve is opened, this will cause the pump to start automatically exactly as if the pressure goes down to starting pressure.
- In case of multiple pumps, it may be necessary to delay the starting of each motor to prevent simultaneous starting of all motors. Sequential starting can be adjusted by a programmable timer. User has to specify if the pump is connected as single/parallel with other pumps, or if the pump is connected in series with other pumps (programmable). In the first case (single or parallel), system may delay starting in automatic mode only, but starting in manual mode will not be delayed. In the second case (series), system may delay starting in automatic mode and in manual mode, and this is to avoid dry running of pump (see table 1) Notice that in case no time delay is required before starting (for example when pump is single), then time delay can be programmed to zero.



TIME DELAY BEFORE STARTING THE FIRE PUMP

REASON OF STARTING	SINGLE PUMP OR PARALLEL PUMPS	SERIES JUMPS
Drop in pressure	With delay	With delay
Deluge valve	With delay	With delay
Remote start	No delay	With delay
Manual start	No delay	With delay

Table (1)

- If remote start switch was momentarily actuated, motor will start directly and automatically, and it will not stop unless operator presses stop push button on the panel's door. In this mode (remote start mode) there will be no effect of deluge valve signal and low pressure signal.
- Motor automatic start by pressure sensor and deluge valve can be disabled by pump lockout contact (external contact) which can be connected with controller (this option can be used in case of having a stand-by pump, where it is not desired both pumps to start automatically at the same time).
- Two ways of shutdown are possible in this mode (operator have to select one of them by software):
 1. Manual shutdown: After automatic start, motor can be stopped in this mode only by pressing manual stop push button. If the pump was on demand (low pressure or deluge valve active), and in auto mode, then pump cannot be stop manually, unless it is not on demand any more.
 2. Automatic shutdown: After automatic start, controller will keep motor running for a period (programmable). After that, if the pump was not any more on demand, then controller will automatically shutdown the motor. If within this period, the pump became not on demand, operator can shut it down manually by pressing manual stop push button.

METHODS OF STOPPING THE FIRE PUMP

REASON OF STARTING	AUTOMATIC STOP	MANUAL STOP
Drop in pressure	YES - selectable (After running hold time)	YES - selectable
Deluge valve	YES - selectable (After running hold time)	YES - selectable
Remote start	NO	YES
Manual start	NO	YES

Table (2)

- All alarm signals are operational in auto mode.
- Automatic weekly test is only operational at auto mode and can be enabled or disabled (operator selection). If enabled, then user has to program the delay time before starting the test. Also to program the day, hour and minute where the weekly automatic test is desired to start. Test can be terminated by pressing Test ON/OFF push button.
- Manual test is operational in auto mode only, and it can be applied by pressing test ON/OFF push button. Test can be terminated by pressing Test ON/OFF push button again.

FUNCTIONALITY

- During operation of the system, controller will be reading voltages, currents, pressure, and sensing many input signals. These reading can be monitored on the LCD display.
- If controller detected loss of one phase or more, then it will give an alarm and will prevent the motor from starting, but if the loss of phase happened while the motor was running, then controller will give alarm but will not stop the motor.
- If controller detected phase reversal, it will give alarm and will not start the motor.
- Controller will detect over voltage, under voltage and overload (over current), and will give alarms showing these errors.
- If the controller closed contactors to start the motor (due to auto or manual start), but the motor didn't start after some delay (programmable time delay), then controller will give alarm (fail to start alarm). Controller will sense if motor started or not by sensing the motor current.
- If the controller closed contactors to start the motor (due to auto or manual start), but the motor didn't start after some delay (programmable time delay), because of LOCKED ROTOR, then controller will activate the shunt trip coil of the MCCB and shut it down. Controller will sense if motor is in locked rotor situation or not by sensing the motor current.

RATING

POWER (HP)	RATED VOLTAGE (VAC)	FREQUENCY (Hz)	RATED CONTENT (A)	SHORT CIRCUIT CURRENT (kA)	ENCLOSED SIZE (mm)
40	380 - 415	50 or 60	66	100kA	1100(L) x 750(W) x 300(D)
50	380 - 415	50 or 60	83	100kA	1100(L) x 750(W) x 300(D)
60	380 - 415	50 or 60	103	100kA	1100(L) x 750(W) x 300(D)
75	380 - 415	50 or 60	128	100kA	1200(L) x 800(W) x 300(D)
100	380 - 415	50 or 60	165	100kA	1200(L) x 800(W) x 300(D)
125	380 - 415	50 or 60	208	100kA	1200(L) x 800(W) x 300(D)
150	380 - 415	50 or 60	240	100kA	1500(L) x 800(W) x 350(D)
200	380 - 415	50 or 60	320	100kA	1500(L) x 800(W) x 350(D)
250	380 - 415	50 or 60	403	50kA	1500(L) x 800(W) x 350(D)
300	380 - 415	50 or 60	482	50kA	1500(L) x 800(W) x 350(D)
350	380 - 415	50 or 60	560	50kA	1700(L) x 950(W) x 400(D)
400	380 - 415	50 or 60	636	50kA	1700(L) x 950(W) x 400(D)

Table (3)

Electric Pump Controller

Reduced Voltage / Star - Delta (Open Transition)

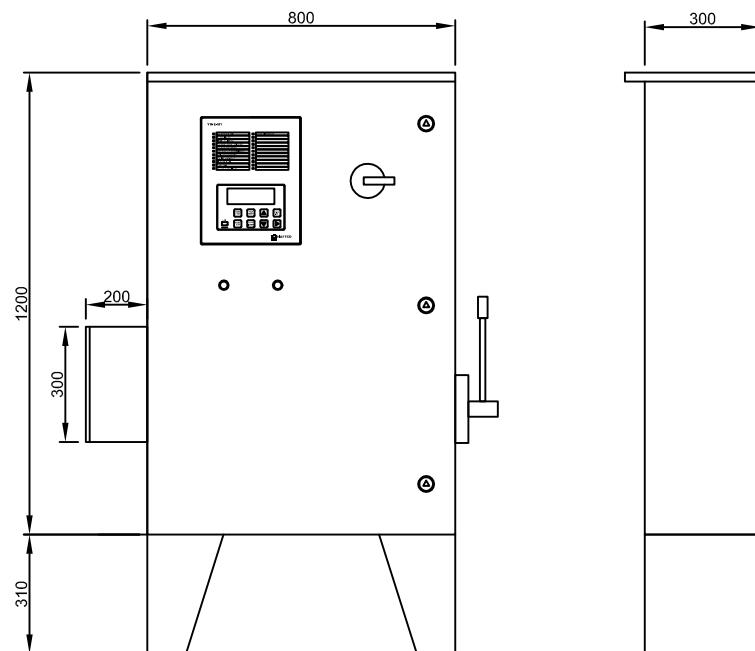
Enclosure

Model: NFY-SDM1

Version 1.0



Enclosure for 75, 100 and 125 HP Controllers



TECHNICAL DATA :

S.NO.	DESCRIPTION	DATA
1.	SIZE	1200(HEIGHT)X800(WIDTH)X300(DEPTH)
2.	MATERIAL	2 mm THICK. GI
3.	PAINT FINISH	RAL 301 POWDER COATED
4.	DOOR LOCK	TRIANGULAR LOCK WITH KEY
5.	HINGES	BUSH PIN HINGES
6.	DOOR OPENING	RIGHT HAND SIDE TO LEFT HAND SIDE
	FRONT	
	BACK	Non
7.	DOOR OPENING ANGLE	120°
8.	ALL DIMENSIONS ARE IN MM	
9.	PROTECTION RATING	NEMA 2
10.	BASE PLATE	FRONT

Client :

Desinged By : Eng. Yousef Abu Hadhoud

Panel Model No : NFY-SDM1

Title / Name :

Electric Fire Pump Controller

Approved By : Eng. Emad Kassab

Version: 1.0

Drawing No :

Date :

09/04/2012

Panel Serial No :

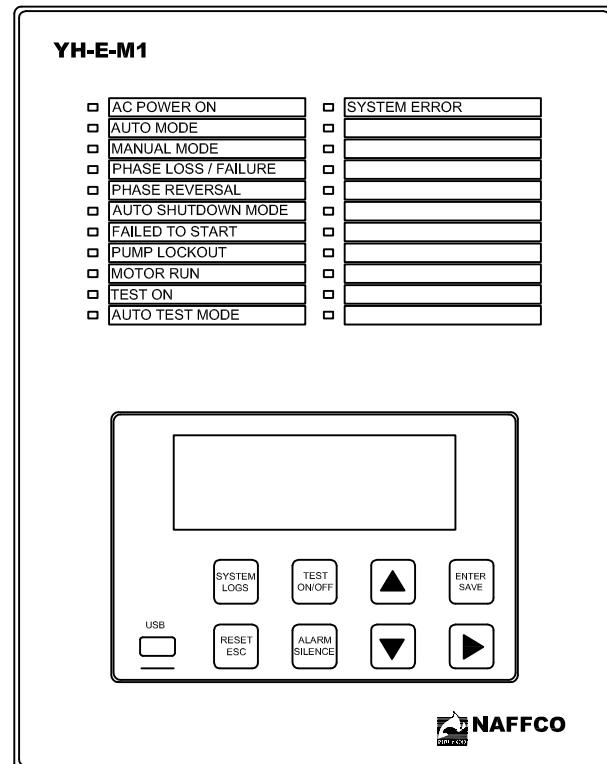
Page Description:

Enclosure

29 of 107

Sheet

2 of 8

Model: YH-E-M1

Client:

Designed By: Eng. Yousef Abu Hadhoud

Panel Model No.: NFY-SDM1

Title / Name :

Approved By: Eng. Emad Kassab

Version: 1.0

Electric Fire Pump Controller

Drawing No.:

Date:

09/04/2012

Panel Serial No.:

Page Description: 30 of 107
Electronic Controller Front

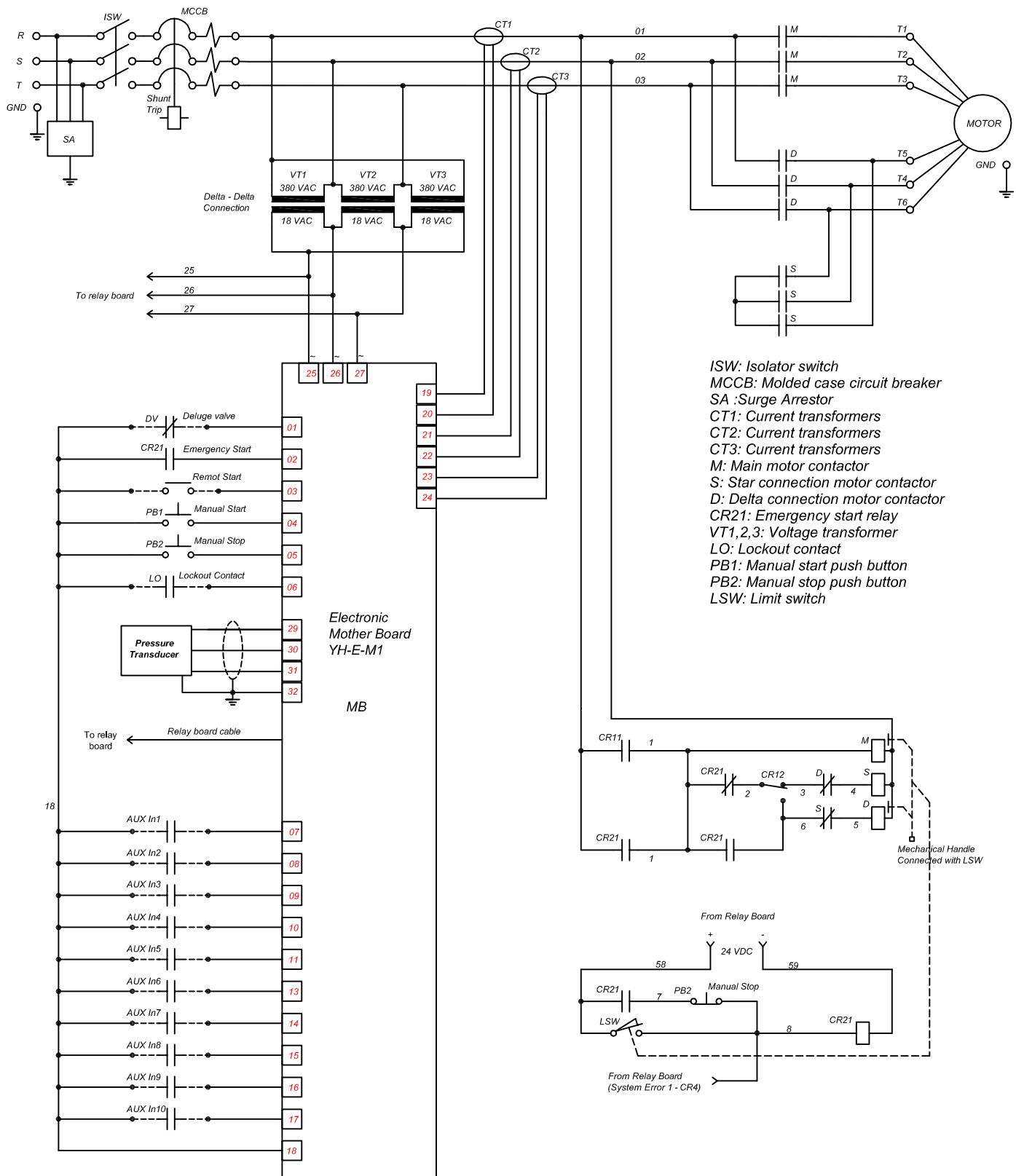
Sheet 6 of 8

Electric Pump Controller

Reduced Voltage / Star - Delta (Open Transition)

Wiring Schematic

Model: NFY-SDM1
Version 1.0



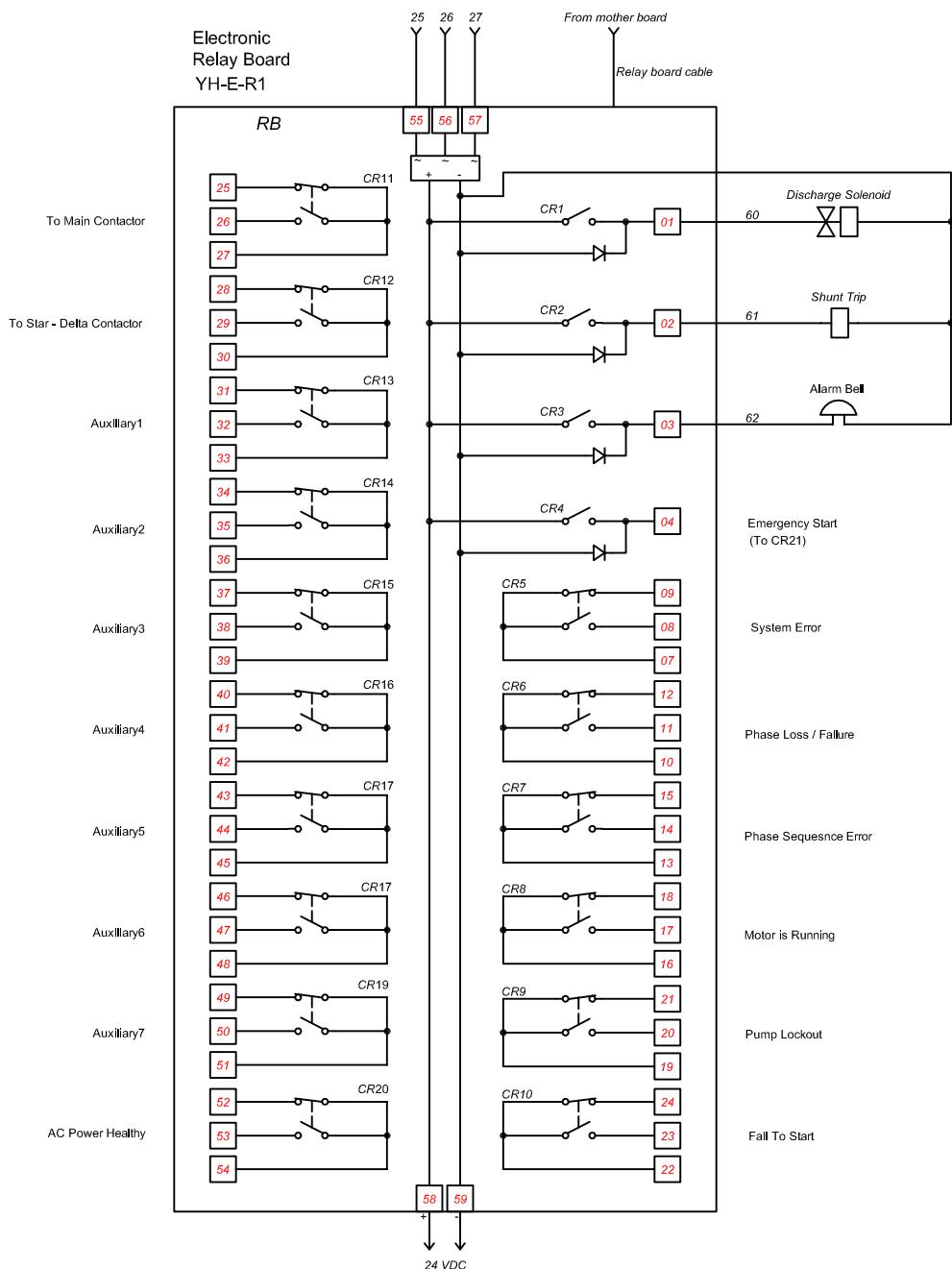
Client:	Designed By : Eng. Yousef Abu Hadhoud		Panel Model No : NFY-SDM1
	Approved By : Eng. Emad Kassab		Version: 1.0
Title / Name :	Title / Name :		Panel Serial No :
	Electric Fire Pump Controller		Page Description : 31 of 107 Mother board wiring diagram
	Drawing No :	Date :	Sheet 7 of 8
		09/04/2012	

Electric Pump Controller

Reduced Voltage / Star - Delta (Open Transition)

Wiring Schematic

Model: NFY-SDM1
Version 1.0



Client :

Designed By : Eng. Yousef Abu Hadhoud

Panel Model No : NFY-SDM1

Title / Name :

Approved By : Eng. Emad Kassab

Version: 1.0

Electric Fire Pump Controller

Drawing No :

Date :

09/04/2012

Panel Serial No :

Page Description : 32 of 107
Relay board wiring diagram

Sheet 8 of 8



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World Headquarters
Dubai, United Arab Emirates
Email: info@naffco.com
www.naffco.com

In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.



DIESEL ENGINE DRIVEN FIRE PUMP

شركة الوطنية لصناعة معدات مكافحة الحريق بشرم الشيخ
National Fire Fighting Manufacturing FZCO

PO Box 17014, Dubai, United Arab Emirates
Tel.: +971 4 815 1111, Fax: +971 4 815 1222
E-mail: info@nattco.com, www.nattco.com

UAE Law 1 of 2000 (Law No. 1 of 2000) and Law 9 of 2000 (Law No. 9 of 2000) issued pursuant to Law No. 2 of 1990 & implementing regulation No. 1 of 1990 with limited quality.





NAFFCO Listed Fire Pumps 2900 RPM





PUMP TYPE HSC
PUMP MODEL NF - S - 150 -100
SIZE (SUC. X DIS.) 6 x 4 INCH
D1 330 MM
RATED SPEED 2900 RPM

CURVE NO.
FLUID TYPE
SP. GRAVITY

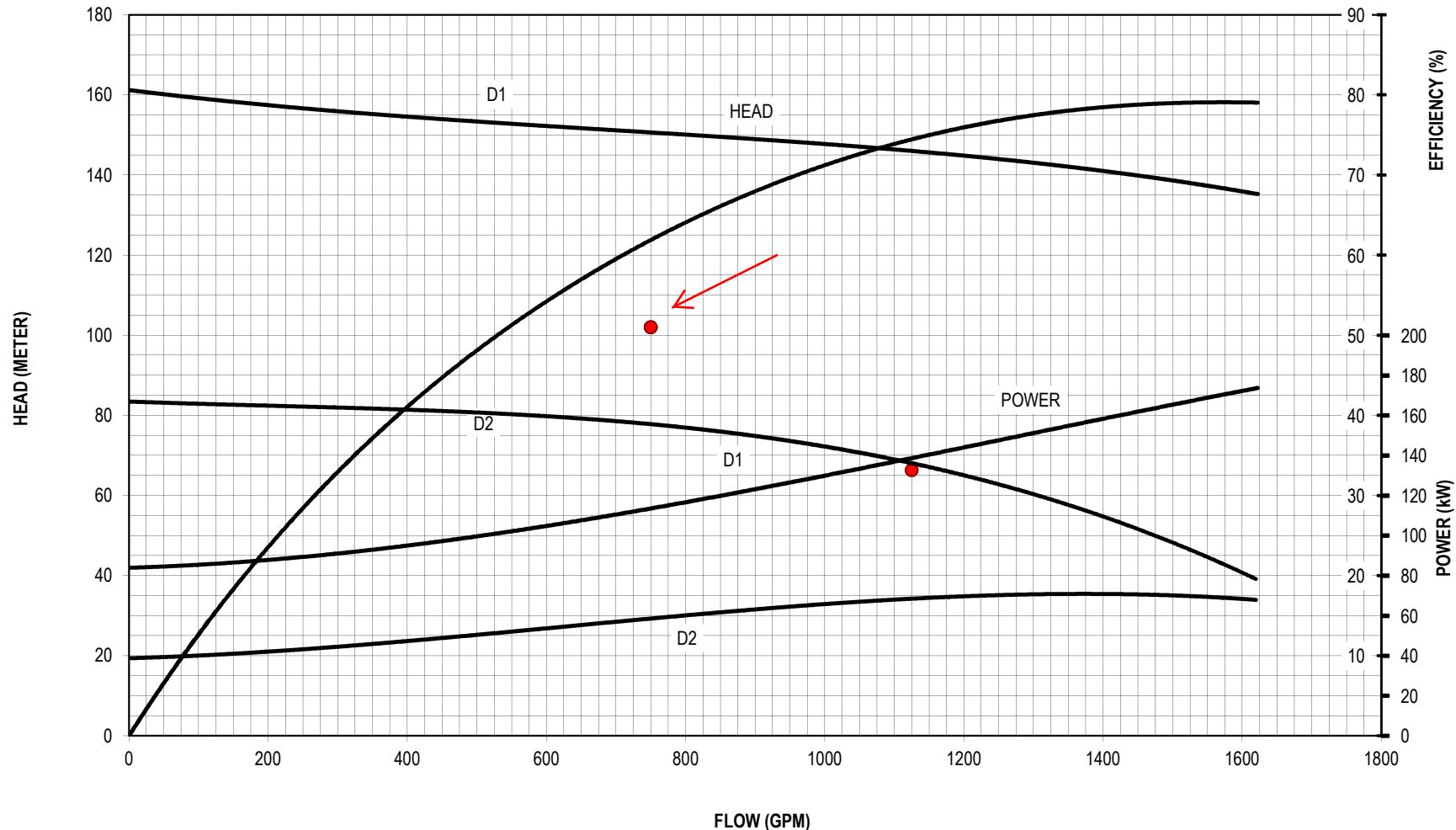
014
WATER
1

FLOW (GPM)
750
1000

UL LISTED HEAD
(PSI)
112 - 213
101 - 208

FM APPROVED HEAD
(PSI)
108 - 216
101 - 215

DUTY FLOW 750 US GPM
DUTY HEAD 101.97 METER





An Introduction to NAFFCO

NAFFCO FZCO is among the world's leading manufacturers and suppliers of top-tier firefighting equipment, fire protection systems, fire alarms, security and safety engineering systems worldwide. Since its humble beginnings, NAFFCO has grown from its headquarters in Dubai, UAE to expand to serving over 100 countries around the world.

One Stop Shopping for All Your Fire Safety and Security Needs

Today's companies recognize the importance and convenience of having multiple safety services available under one roof, a "one-stop shopping" source for all types of fire protection systems. As the undisputed leader in

firefighting technology and fire safety solutions, NAFFCO has worked in both the private and government sectors, as well as manufacturing plants, hospitals, stadiums, malls and other organizational projects, delivering comprehensive fire safety and engineering solutions.

NAFFCO is associated with globally renowned international companies in the fire protection industry such as Esser, Secutron, Megalights, Evax, Fike, Central, Shield, Mueller, Giacomini, RB Pumps, Bombas, Ideal Pumps, Joslyn Pumps, Peerless Pumps.

At NAFFCO we are passionate about sustaining, upgrading and improving any means of safety, by having over 2 million square foot of manufacturing space, over 450 engineers, and following all the latest technology available. We live by our passion, the passion to protect.



HORIZONTAL SPLIT CASE PUMPS



FEATURES

- Performance characteristics as per NFPA 20
- Complete unit responsibility.
- Complete in-house fabrication capabilities.
- Hydrostatic testing facilities.
- Operation run test as per NFPA 20, UL 448 and FM 1311 requirements.
- Horizontal Split case pumps for capacities from 750 to 1500 US GPM.
- Drivers: Electric motor drive or diesel engine drive.
- Electrical testing capabilities for motors and controllers as per NFPA standards.
- Capable of supplying additional accessories wherever required.

Approved Fire Pump Models with Ratings

RATED CAPACITY - 750 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-125-80	236	236	2900	5	3	1
2	NF-S-150-100	112 - 213	108 - 216	2900	6	4	1
3	NF-S-150-100-375	226 - 276	227 - 280	2900	6	4	1

RATED CAPACITY - 1000 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-150-100	101 - 208	101 - 215	2900	6	4	1
2	NF-S-150-100-375	219 - 273	215 - 273	2900	6	4	1
3	NF-S-200-125	143 - 267	143 - 252	2900	8	5	1

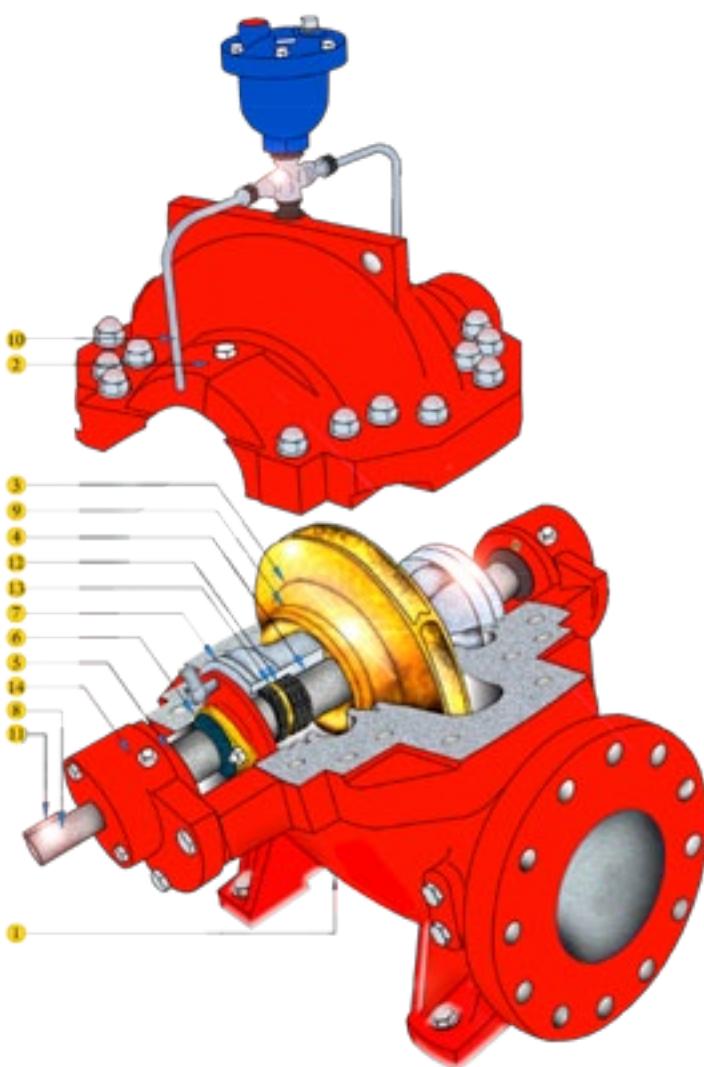
RATED CAPACITY - 1250 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-200-125	137 - 263	134- 250	2900	8	5	1

RATED CAPACITY - 1500 US GPM

Sl. No.	Pump Model	UL Listed Pressure (PSI)	FM Approved Pressure (PSI)	Rated Speed (RPM)	Suction Inlet Dia. (Inch)	Discharge Outlet Dia. (Inch)	Stage(s)
1	NF-S-200-125	130 - 256	121- 242	2900	8	5	1

OPEN VIEW



PUMP CASING: The casing is axially split, which permits removal of the complete rotor without moving either piping or motor. Pumps generating high heads have double volutes to reduce radial forces, ensuring minimal shaft deflection and low bearing loads. Replaceable wear rings protect the casing at the impeller running clearances.

IMPELLER: The closed impeller has double curved vanes. The double suction design gives practically zero axial forces. Each impeller is dynamically balanced according to ISO 1940-1 standard.

BEARINGS: Grease lubricated deep groove ball bearings are provided on both sides.

SHAFT SEAL: Soft-packed stuffing box. Cooling lines are provided for additional cooling of the graphite impregnated type gland packing.

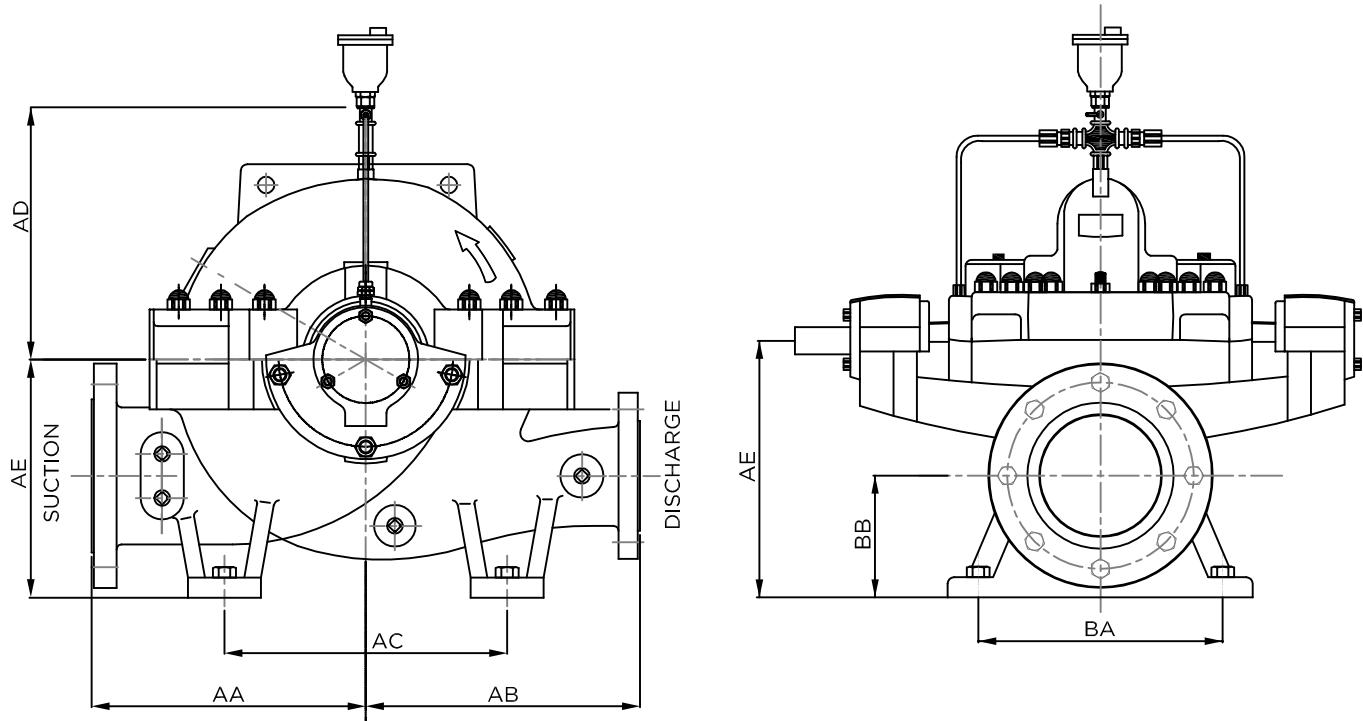
PUMP MODEL NAME ILLUSTRATION

NF	Series Name
S	Split Case
150	Suction Size (mm)
100	Discharge Size (mm)

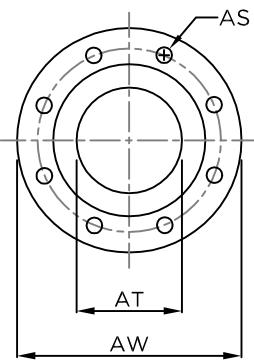
DESCRIPTION

No.	Part Name	Material	Qty.
1	Lower Casing	Cast Iron ASTM A48 Class 40	1
2	Upper Casing	Cast Iron ASTM A48 Class 40	1
3	Impeller	Bronze SAE 40	1
4	Shaft Sleeve	Stainless Steel AISI 420	2
5	Bearing Cover	Cast Iron ASTM A48 Class 40	2
6	Gland	Bronze SAE 40	2
7	Stuffing Box	Cast Iron ASTM A48 Class 40	2
8	Shaft	Alloy Steel AISI 4340	1
9	Wear Ring	Bronze SAE 40	2
10	Flushing Pipe	Stainless Steel, Gr. 304	2
11	Coupling Key	Stainless Steel AISI 420	1
12	Gland Packing	Graphite Impregnated	8
13	Lantern Ring	Bronze SAE 40	2
14	Bearing Housing	Cast Iron ASTM A48 Class 40	2

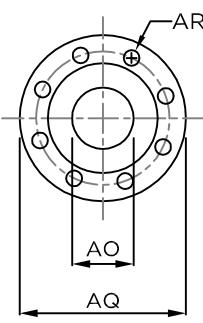
DIMENSIONAL DRAWING



FIRE PUMP DIMENSIONS - HORIZONTAL SPLIT CASE PUMP



SUCTION FLANGE



DISCHARGE FLANGE



Suction and Discharge Flanges:

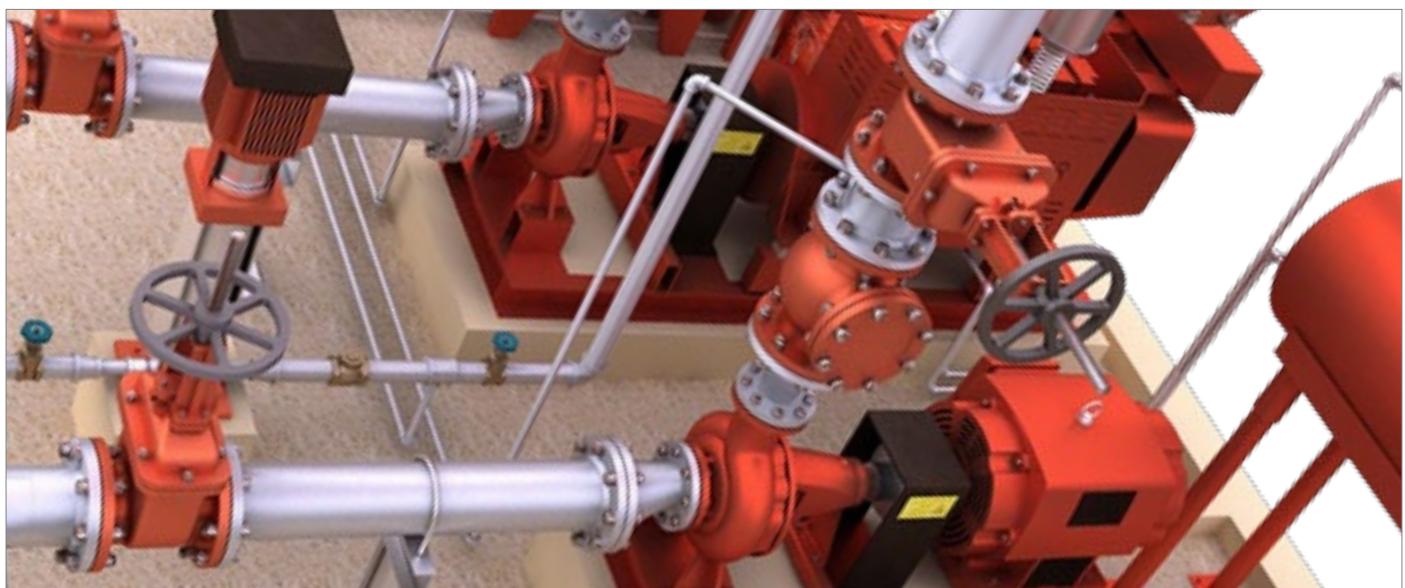
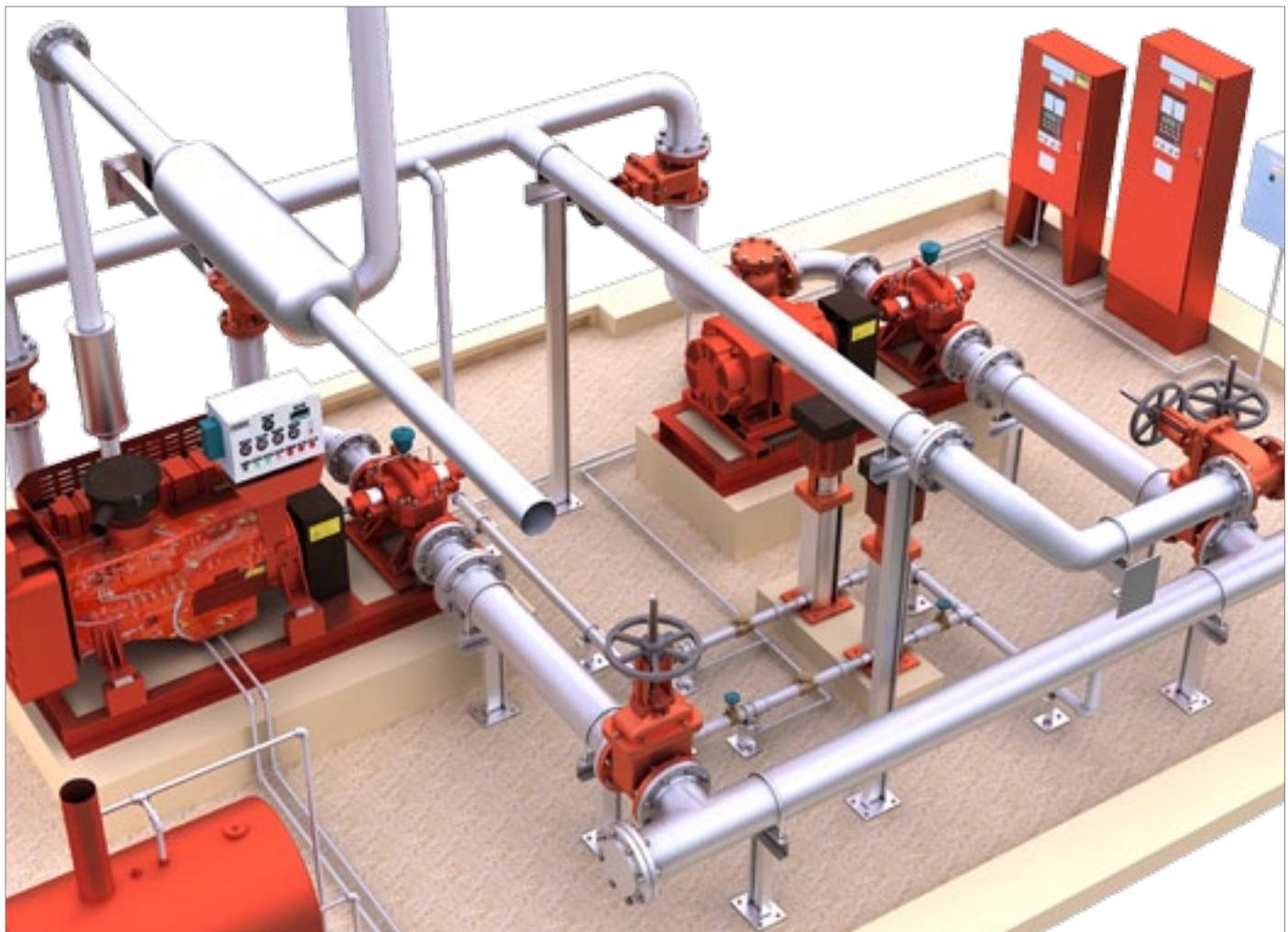
Standard - ASME B16.1
Class Rating - Class 250

TABLE OF DIMENSIONS

Model	AA	AB	AC	AD	AE	BA	BB	Suction Flange			Discharge Flange		
								AW	AT	AS	AQ	AO	AR
NF-S-125-80	330	330	340	306	315	270	175	280	5"	8 holes Ø22 on PCD 235	210	3"	8 holes Ø22 on PCD 168
NF-S-150-100	330	330	400	267	355	270	185	320	6"	12 holes Ø22 on PCD 270	255	4"	8 holes Ø22 on PCD 200
NF-S-150-100-375	375	375	400	340	355	270	185	320	6"	12 holes Ø22 on PCD 270	255	4"	8 holes Ø22 on PCD 200
NF-S-200-125	395	370	450	367	400	340	200	380	8"	12 holes Ø28 on PCD 330	280	5"	8 holes Ø22 on PCD 235

All dimensions are in mm unless otherwise indicated.

FIRE PUMP INSTALLATION



NFPA 20 requirements related to the installation of fire pump set should be followed strictly. The main pipe sizes, necessary distances between the piping components, valve sizes, branch pipe sizes, bends in the

pipe line etc. shall be such that it will facilitate the most efficient and effective performance of the fire pump set. The foundation, grouting, support and bolting should also be in line with a stringent design based on NFPA 20.



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DIESEL ENGINE

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National Fire Fighting Manufacturing FZCO

PO Box 17014, Dubai, United Arab Emirates
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FIRE DRIVER[®]

UL LISTED DIESEL ENGINE FOR FIRE PUMPS



State of the art engineering for world class engines





Introduction



Fire drive diesel engines are specifically designed and manufactured for fire fighting applications according to UL1247 standard. The better torque characteristics of these engines ensure reliable operation in emergency conditions. These engines are UL listed and comply with the requirements for diesel engine drives as detailed in NFPA20.

Engines are run tested at the factory prior to the dispatch to ensure that they meet the certified performance ratings.



Specs	Engine Models							
	FD 30H	FD50H	FD 80H	FD 80R	FD110R	FD 140H	FD180H	FD225H
Engine								
Power output	19hp	36hp	50hp	50hp	87hp	127hp	185hp	225hp
Number of Cylinders	03	04	04	04	06	06	06	06
Lub. Oil pressure	0.2 to 0.4Mpa	0.20 to 0.50Mpa	0.20 to 0.60Mpa	0.20 to 0.60Mpa				
Alternator	12v	12v	12v	12v	24v	24v	24v	24v
Starting								
Motor Voltage	12v	12v	12v	12v	24v	24v	24v	24v
Crankshaft								
idle speed	750-850rpm	750-850rpm	750-850rpm	750-850rpm	750-850rpm	750-850rpm	1200rpm	1200rpm
Thermostat								
opening temp	82°C	82°C	82°C	82°C	82°C	82°C	N/A	N/A
Rated Speed	2900rpm	2900rpm	2900rpm	2900rpm	2900rpm	2900rpm	2900rpm	2900rpm
Self-priming	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Aspiration	Natural	Natural	Natural	Natural	Natural	Natural	Turbocharger	Turbocharger-Intercooling
Engine oil grade	15w 40	15w 40	15w 40					

Engine Rating Baselines

Engines are rated at standard SAE J 1349 testing code. Net power rating conditions are obtained at 29.61 inches Hg (100.3 k Pa) barometer (approximately 300 feet or 91.44m above sea level) and 77°F or 25°C.

A deduction of 3% from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000ft or 305m altitude above 300ft or 91.4m

A deduction of 1% from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F or 5.6°C above 77°F or 25°C ambient temperature.

Features:

- Reliable performance
- Easily serviceable type construction
- Accurate instrumentation facilities
- Reduced noise level
- Dependable controlling systems
- Better fuel efficiency - Economic fuel Consumption rate
- Efficient lubrication system
- Cooling system designed for optimum heat transfer
- Air intake system constructed for efficient air cold weather
- Longer engine life
- Heavy duty construction





FIRE DRIVER®

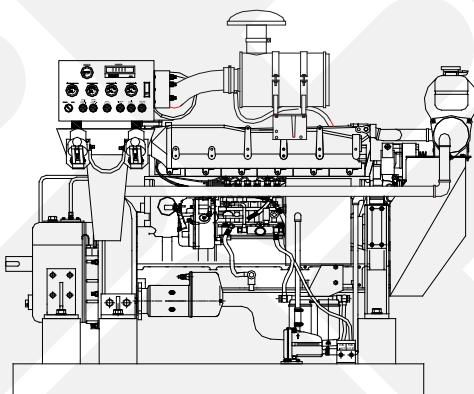
UL LISTED DIESEL ENGINE FOR FIRE PUMPS



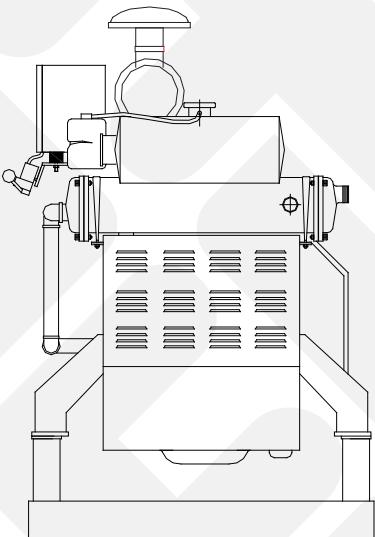
FIRE DRIVER DIESEL ENGINE SPECIFICATIONS

Sr No.	Engine system	System Parameters
1	Engine basic data	
a	Injection type	Direct injection
b	Aspiration	Turbocharger
c	Number of cylinders and its arrangement	4 cycle, in-line, 6 cylinder
d	Bore X Stroke	126 x 135 (mm)
e	Total displacement	8.8 L
f	Engine rotation (view from flywheel end)	Counter clockwise
g	Type of combustion chamber	Direct injection. (square form)
h	Firing order	(1-5-3-6-2-4)
i	Dimensions (L x W x H) in MM	1890 x 930 x 1520
j	Over all weight	1250 Kg
2	Engine Net performance	
a	Rated speed	2900 rpm
b	Rated power	185 Hp
c	Specific fuel consumption	34 to 36 Kg/hr
3	Fuel system	
a	Injection pump	Mechanical upright fuel injection pump
b	fuel specification	ASTM D 975
4	Exhaust system	
a	Exhaust gas flow	1 x 380 Lt/second
b	Maximum allowable back pressure (Kpa)	4
c	Maximum exhaust gas temperature	600°C
5	Lubrication system	
a	Lub oil specification	15 W 40
b	Total system capacity including sump and filter	28L
c	Maximum lub oil temperature	70 to 90°C
d	Lub oil filter	0818A
e	Lub oil pressure	0.20 to 0.60 Mpa
f	Minimum lub oil pressure at rated speed	0.20 Mpa
6	Cooling system	
a	Engine water temperature	70 to 90 °C
b	Cooling system	Forced close and cycle (Heat Exchanger)
7	Electrical system	
a	System voltage	24 volt
b	Starter motor rating	24 V, 6.6 kw

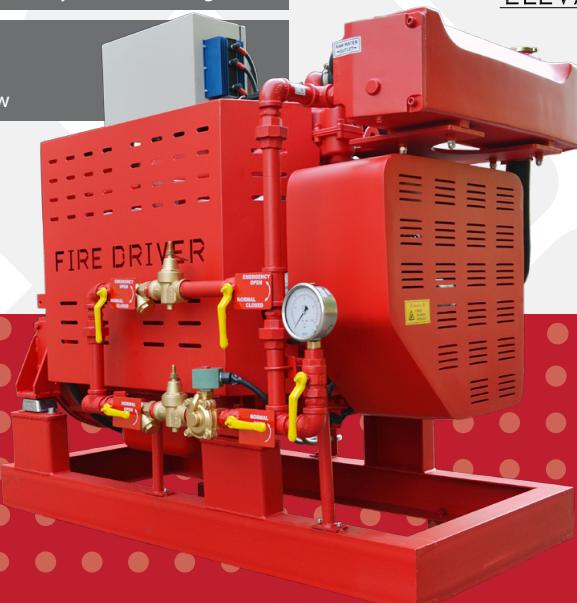
ENGINE MODEL - FD 180 H



LEFT SIDE VIEW



ELEVATION





FIRE DRIVER
UL LISTED DIESEL ENGINE FOR FIRE PUMPS

Our manufacturing facility for the diesel engine has been assessed against ISO 9001:2000 requirements by Under Writers Laboratories Inc and loss prevention certification board.



Fully equipped automatic dynamometer engine testing facilities

- Endurance test
- Operational test
- Continuous running test
- Rotational speed test
- Load test

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For further information please contact:

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T: +971 4 806 6666 F: +971 4 881 6229
E: pumps@naffco.ae
www.fire-driver.com

We reserve the right to modify specifications without prior notice



DIESEL ENGINE CONTROLLER

شركة الوطنية لصناعة معدات مكافحة الحريق بشرم الشيخ
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Micro Processor Based Fire Pump Controllers



NEMA



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NAFFCO FZCO is among the world's leading manufacturers and suppliers of top-tier firefighting equipment, fire protection systems, fire alarms, security and safety engineering systems worldwide. Since its humble beginnings, NAFFCO has grown from its headquarters in Dubai, UAE to expand to serving over 100 countries around the world.

One Stop Shopping for All Your Fire Safety and Security Needs

Today's companies recognize the importance and convenience of having multiple safety services available under one roof, a "one-stop shopping" source for all types of fire protection systems. As the undisputed leader in

firefighting technology and fire safety solutions, NAFFCO has worked in both the private and government sectors, as well as manufacturing plants, hospitals, stadiums, malls and other organizational projects, delivering comprehensive fire safety and engineering solutions.

NAFFCO is associated with globally renowned international companies in the fire protection industry such as Esser, Secutron, Megalights, Evax, Fike, Central, Shield, Mueller, Giacomini, RB Pumps, Bombas, Ideal Pumps, Joslyn Pumps, Peerless Pumps.

At NAFFCO we are passionate about sustaining, upgrading and improving any means of safety, by having over 2 million square foot of manufacturing space, over 450 engineers, and following all the latest technology available. We live by our passion, the passion to protect.



UL LISTED DIESEL ENGINE MICROPROCESSOR BASED CONTROLLER

MODEL NFY-DM1

NAFFCO Fire Diesel Engine Controller are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL218 (Standard for Fire Pump Controller), UL508a (Standard for Industrial Control Panel), NFPA20 (National Fire Protection Association Pamphlet 20 - Standard for Centrifugal Fire Pumps), NFPA70 (National Electric Code) and NEMA.

Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321 / 1323 (Standard for Fire Pump Controller). Power ratings suitable for 12/24

volts DC operating voltage, 110 / 220 volts AC input voltage, 50/60 Hz. These controllers are compatible with most types of fire fighting diesel engines.

Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used. This controller is completely wired, assembled and tested at the factory before shipment, and ready for immediate installation.

STANDARD FEATURES

- System error alarm / indicator.
- AC power healthy indicator.
- DC power healthy indicator / free contact.
- Speed switch error or failed while running alarm / indicator.
- Automatic shutdown enabled/disabled indicator.
- Low discharge pressure alarm / indicator / freecontact (programmable).
- Deluge valve on alarm / indicator / free contact(programmable).
- Remote start on alarm / indicator / free contact(programmable).
- 10 additional programmable indicators.
- 11 additional programmable digital inputs.
- 8 additional programmable output relays (free contacts).
- Common alarm free contact.
- Electrical alarm bell.
- Push button for alarm silence (only for additional alarms).
- Pressure transducer with analog voltage output.
- Data logging system for pressure and events.
- USB port for saving recorded pressure and events on USB memory, and can be viewed with MS word and Excel.
- Electrically actuated built in discharge solenoid valve.
- UL listed enclosure.
- 220 / 110 VAC main line system power.
- 12 / 24 VDC system control voltage.
- Automatic / Manual / OFF mode (selectable).
- Two 12 / 24 VDC, 10 Amps smart automatic microprocessor battery chargers.
- Protection circuit breakers before and after batterychargers.
- 20x4 LCD display showing all system parameters and variables.
- User friendly software enable user to program allrelated parameters like timers, pressure, inputs,outputs ... etc.
- Shows battery 1 and 2 voltages.
- Shows battery 1 and 2 charging currents.
- Shows real value of discharge pressure.
- Shows engine running hours.



STANDARD FEATURES

- Showing ambient temperature.
- Automatic cranking from two different batteries.
- Two push buttons for manual cranking from two different batteries.
- Manual stop push button.
- Programmable automatic weekly test, which can be programmed to start at any desired day, hour and minute in a week.
- Manual test push button.
- Starting delay timer (programmable) for sequence multiple pumps starting.
- Automatic or manual shutdown after automatic start (selectable).
- Compatible with fuel solenoid engines and stopped solenoid engines.

- Engine run indicator / free contact.
- Test running indicator / free contact.
- Automatic mode indicator / free contact.
- Manual mode indicator.
- Battery Charger1 error indicator.
- Battery Charger2 error indicator.
- Battery1 failure alarm / indicator.
- Battery2 failure alarm / indicator.
- Low oil pressure alarm / indicator.
- High water temperature alarm / indicator.
- Over speed shut down alarm / indicator.
- Engine failed to start alarm / indicator.
- Cranking coil 1 failure alarm / indicator.
- Cranking coil 2 failure alarm / indicator.

SEQUENCE OF OPERATION

This controller is working under three modes; automatic, off (reset) and manual mode, with manual or automatic shut down (automatic shut down is possible only after automatic start).

MANUAL MODE

- In this mode, there will be no effect of pressure sensor, deluge valve or remote start.
- Manual direct cranking can be actuated by pressing on battery 1 manual cranking P.B, or on battery 2 manual cranking P.B, or by pressing on both (start from both batteries in parallel).
- Shutting down engine can only be done by pressing manual stop Push Button.
- Failed to start alarm signal are not operational in this mode, and all other alarm signals are operational.
- Over speed alarm is functional in this mode, and will stop the pump directly and automatically and actuate alarm, and controller will not start engine again unless operator resets the over speed relay at diesel engine, and then resets the Over Speed Alarm by pressing reset PB of the controller.
- Low oil pressure and high water temperature errors will not stop the diesel engine, but only will give alarm, and alarm will remain until operator resets it by pressing reset PB.

OFF MODE

- In this mode starting diesel engine is not possible in any case.
- Automatic test and manual test are not operational.
- Alarm bell is not enabled in this mode, but alarm indicators are enabled.
- This mode also is used to shutdown the engine.

AUTOMATIC MODE

- In this mode, if pressure goes down till the cut-in pressure point then diesel engine will start automatically.
- If the N/C contact of the deluge valve was opened, this will cause the pump to start automatically exactly as if the pressure goes down to starting pressure.
- In case of multiple pumps, it may be necessary to delay the starting of each engine to prevent simultaneous starting of all engines. Sequential starting can be adjusted by a programmable timer (1 – 99 seconds). User has to specify whether the pump is connected as single/parallel with other pumps, or if the pump is connected in series with other pumps (programmable). In the first case (single or parallel), system will apply time delay before automatic start (by water pressure or deluge valve), but starting by remote start will not be delayed. In the second case (series), system will apply time delay before automatic start (by water pressure or deluge valve), and also before starting by remote start, and this is to avoid dry running of pump (see table 4).

TIME DELAY BEFORE STARTING THE FIRE PUMP

REASON OF STARTING	SINGLE PUMP OR PARALLEL PUMPS	SERIES PUMPS
Drop in pressure	With delay	With delay
Deluge valve	With delay	With delay
Remote start	No delay	With delay



- If remote start switch was momentarily actuated, the diesel engine will start directly and automatically, and it will not stop unless operator presses stop push button on the panel's door. In this mode (remote start mode) there will be no effect of the low oil pressure alarm, high water temperature alarm, and also will be no effect of deluge valve signal and low pressure signal.
- Engine automatic start by pressure sensor and deluge valve can be disabled by pump lockout contact (external contact) which can be connected with controller (this option can be used in case of having a

stand-by pump, where it is not desired both pumps to start automatically at the same time).

- Automatic starting for the diesel engine will be done by automatic cranking from battery 1, and if failed from battery 2, with certain cranking and rest period (period is programmable). Controller will try to crank engine up to six times, but if engine did not start after these six attempts, "Failed To Start Alarm" will be activated, as shown in fig (2):

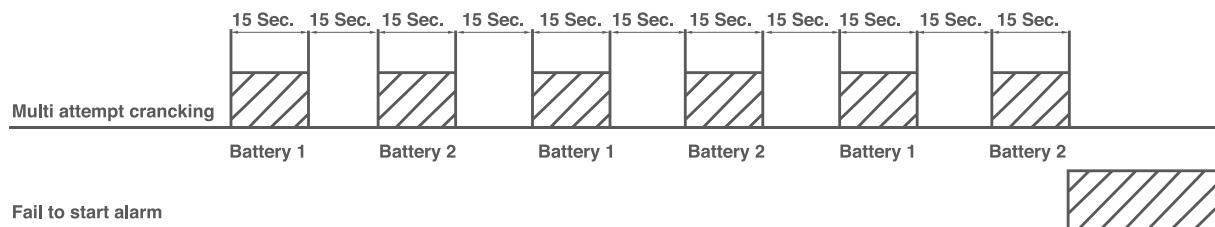


Figure (2)

- If remote start switch was momentarily actuated, the diesel engine will start directly and automatically, and it will not stop unless operator presses stop push button on the panel's door. In this mode (remote start mode) there will be no effect of the low oil pressure alarm, high water temperature alarm, and also will be no effect of deluge valve signal and low pressure signal.
- Engine automatic start by pressure sensor and deluge valve can be disabled by pump lockout contact (external contact) which can be connected with controller (this option can be used in case of having a

stand-by pump, where it is not desired both pumps to start automatically at the same time).

- Automatic starting for the diesel engine will be done by automatic cranking from battery 1, and if failed from battery 2, with certain cranking and rest period (period is programmable). Controller will try to crank engine up to six times, but if engine did not start after these six attempts, "Failed To Start Alarm" will be activated, as shown in fig (2):

METHODS OF STOPPING THE FIRE PUMP

REASON OF STARTING	AUTOMATIC STOP	MANUAL STOP
Drop in pressure	YES - selectable (After running hold time)	With delay
Deluge valve	YES - selectable (After running hold time)	With delay
Remote start	NO	YES
Remote start	NO	YES

- If one of the batteries was dead or disconnected, the controller will automatically crank all six attempts from the healthy battery and ignore the dead battery.
- Two ways of shutdown are possible in this mode (operator must select one of them by software):

1. Manual shutdown: After automatic start, engine can be stopped in this mode only by pressing manual stop push button, but engine can't be stopped if the pump was still on demand (pressure still low or deluge valve still active), unless user put the switch on OFF position.
2. Automatic shutdown: After automatic start, controller will keep engine running for a period varies from 1 to 120 minutes (programmable). After that, if the pump was not any more on demand, then controller will automatically shutdown the engine. If within this period, the pump became not on demand, operator can shut it down manually by pressing manual stop push button.
- When the engine is running because the pump being on demand (due to low pressure or activation of deluge valve or remote start), it will not stop if there was high water temperature alarm, or low oil pressure alarm, but if it was running and the reason of starting has gone then it will directly stop if any of these two

alarms was activated, and alarm will remain until operator resets it by pressing reset PB.

- In this mode (auto), operator can't start the diesel engine by the manual cranking push buttons.
- Over speed alarm is functional in this mode, and will stop the pump directly and automatically and actuate alarm, and controller will not start engine again unless operator resets the over speed relay at diesel engine, and then resets the Over Speed Alarm by pressing reset PB of the controller.
- All alarm signals are operational in auto mode.
- Automatic weekly test is only operational at auto mode and can be enabled or disabled (operator selection). If enabled, then user has to program the delay time before starting the test. Also to program the day, hour and minute where the weekly automatic test is desired to start. Test can be terminated by pressing Test ON/OFF push button.
- Manual test is operational in auto mode only, and it can be applied by pressing test ON/OFF push button. Test can be terminated by pressing Test ON/OFF push button again.

COMPATIBILITY WITH FUEL SOLENOIDS ENGINES AND WITH STOPPER SOLENOIDS ENGINES

NFY-DM1 controller can be connected with engines that can be stopped by stopper solenoid or by fuel solenoid, and it works as the following:

- In OFF mode, controller will directly stop the engine by activating the stopper solenoid for some seconds (programmable), and by deactivating the fuel solenoid. After this time delay, engine should be completely stopped.
- In Manual mode, controller will be always activating fuel solenoid to keep engine ready for running. If the engine was running in this mode and then manually stopped, then (same as OFF mode), controller will directly stop the engine by activating the stopper

solenoid for some seconds (programmable), and by deactivating the fuel solenoid. After this time delay, engine should be completely stopped. After that controller will activate back the fuel solenoid to keep engine ready for running again.

- In Automatic mode, controller will not activate any solenoid if pump was not on demand, but when pump becomes on demand (engine to run), controller will activate fuel solenoid to allow engine to crank and run. And after running, if engine has got to stop, then controller will do the same stopping sequence as in OFF mode above.

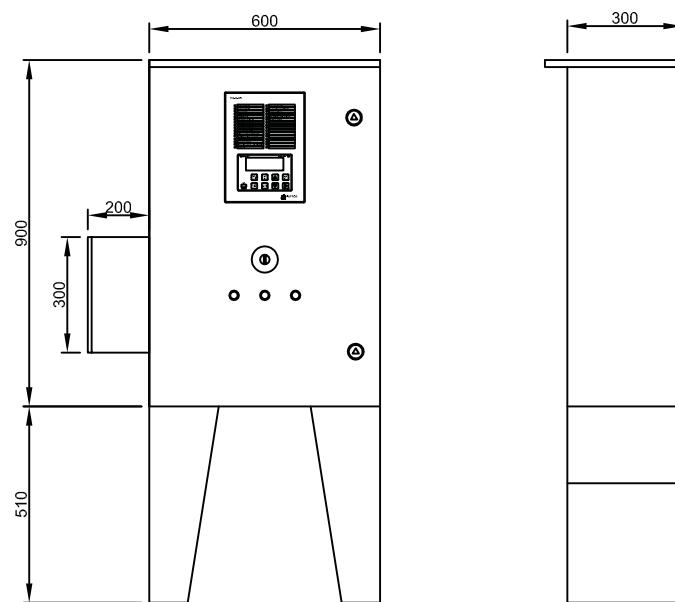
RATINGS

LINE VOLTAGE (VAC)	DC VOLTAGE (VDC)	ENCLOSURE SIZE (MM)
220/110	12/24	900(H) x 600(W) x 300(D)

Figure (6)



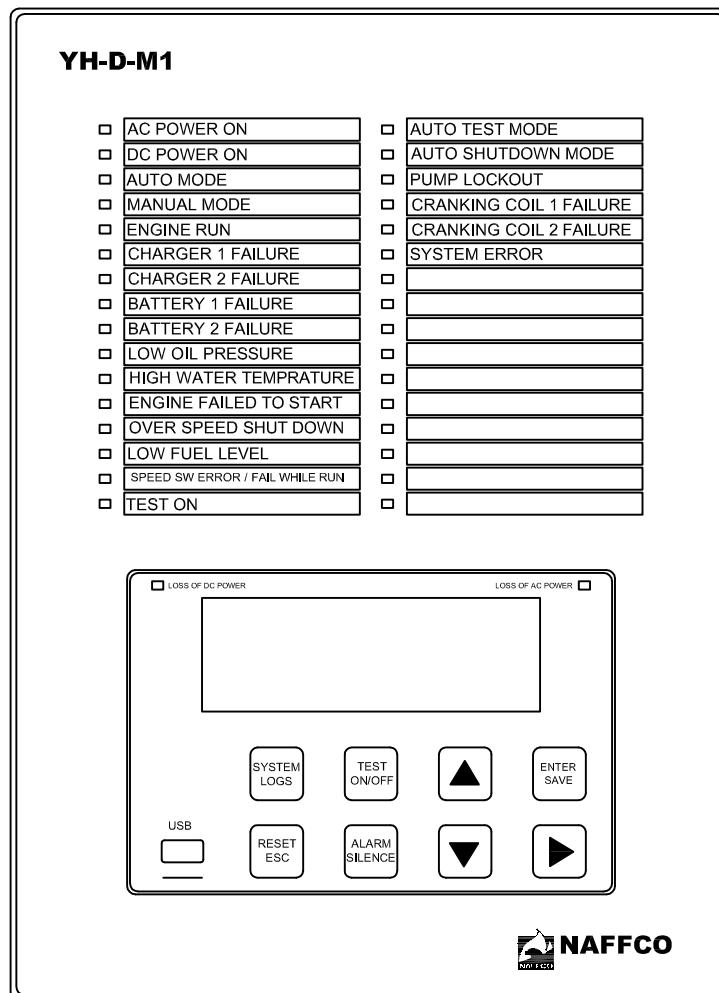
Enclosure for Diesel Engine Controller Model NFY-DM1



TECHNICAL DATA :

S.NO.	DESCRIPTION		DATA
1.	SIZE		900(HEIGHT)X600(WIDTH)X300(DEPTH)
2.	MATERIAL		1.5 mm THICK. GI
3.	PAINT FINISH		RAL 301 POWDER COATED
4.	DOOR LOCK		TRIANGULAR LOCK WITH KEY
5.	HINGES		BUSH PIN HINGES
6.	DOOR OPENING	FRONT BACK	RIGHT HAND SIDE TO LEFT HAND SIDE Non
7.	DOOR OPENING ANGLE		120°
8.	ALL DIMENSIONS ARE IN MM		
9.	PROTECTION RATING		NEMA 2

Client :	Designed By : Eng. Yousef Abu Hadhoud		Panel Model No : NFY-DM1
	Approved By : Eng. Emad Kassab		Version: 1.0
Title / Name : Diesel Fire Pump Controller	Drawing No : 09/04/2012		Panel Serial No : Page Description : 5 Of 107
	Date : 09/04/2012		Sheet 1 of 4

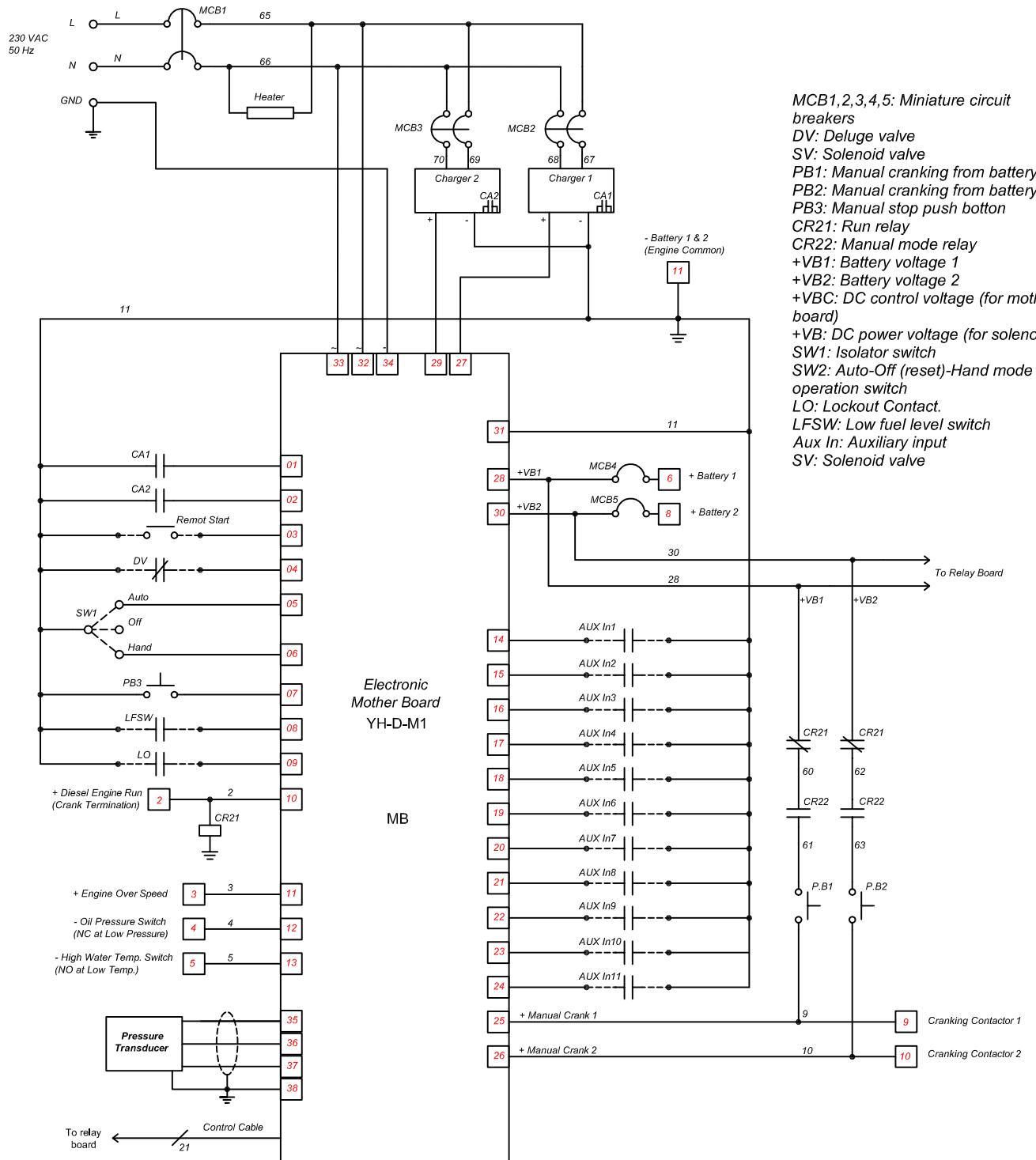
Model: YH-D-M1

	Client:	Designed By: Eng. Yousef Abu Hadhoud		Panel Model No : NFY-DM1
	Approved By: Eng. Emad Kassab		Version: 1.0	
	Title / Name :	Drawing No : Date :		Panel Serial No :
	Diesel Fire Pump Controller	09/04/2012	Page Description: 56 Of 107 Electronic Controller Front Panel	

Diesel Pump Controller

Wiring Schematic

Model: NFY-DM1
Version: 1.0

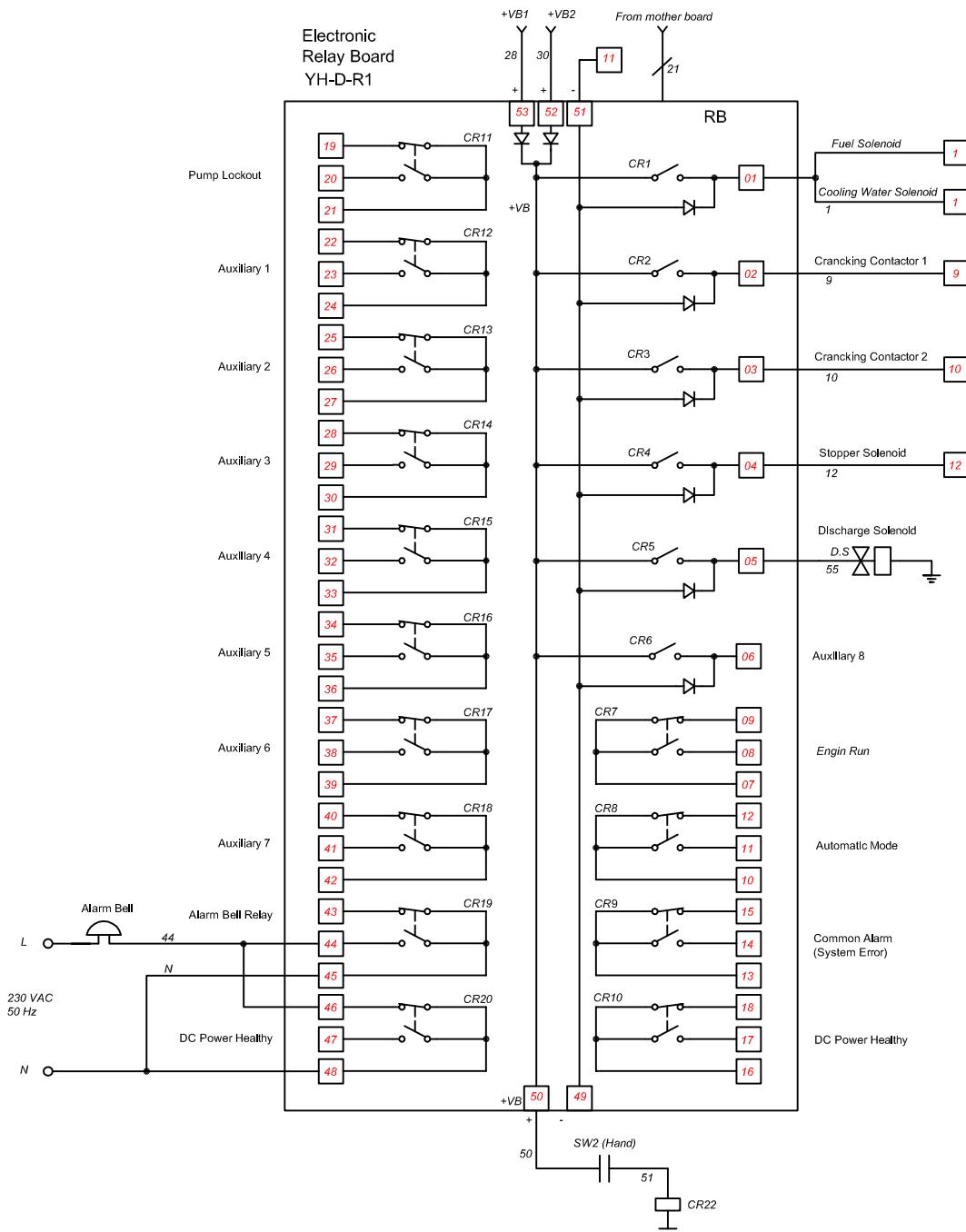


Client:	Designed By : Eng. Yousef Abu Hadhoud	Panel Model No : NFY-DM1
Title / Name :	Approved By : Eng. Emad Kassab	Version: 1.0
		Panel Serial No :
	Drawing No : 09/04/2012	Date : 09/04/2012
Diesel Fire Pump Controller	Page Description : 7 of 107 Mother board wiring diagram	Sheet 3 of 4

Diesel Pump Controller

Wiring Schematic

Model: NFY-DM1
Version: 1.0



Client:

Desinged By: Eng. Yousef Abu Hadhoud

Panel Model No.: NFY-DM1

Title / Name :

Approved By: Eng. Emad Kassab

Version: 1.0

Diesel Fire Pump Controller

Drawing No.:

Date:

09/04/2012

Panel Serial No.:

Page Description: 8 of 107
Relay board wiring diagram

Sheet 4 of 4



Serving Over 100 Countries Worldwide



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In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.



JOCKEY PUMP

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UAE Law 1 of 2000 (Law No. 1 of 2000) and Law 9 of 2000 (Law No. 9 of 2000) issued pursuant to Law No. 2 of 1990 & implementing regulation No. 1 of 1990 with limited validity.





Vertical Multistage Pumps





AN INTRODUCTION TO NAFFCO

NAFFCO was founded in Dubai, UAE to become the world's leading producer and supplier of life safety solutions. By recognizing the importance and convenience of having easy access to multiple safety services, we became specialized by offering complete solutions under one roof for all types of high quality firefighting equipment, fire protection systems, fire alarms, addressable emergency systems, security systems, custom-made vehicles such as fire trucks, ambulances, mobile hospitals and airport rescue firefighting vehicles (ARFF).

With the most talented and dedicated employees from around the world, NAFFCO has over 450 passionate engineers and over 3 million square feet of manufacturing facilities. We are currently exporting to over 100 countries worldwide.

Our products have been consistently certified by UL, FM, BSI, LPCB and Global Mark according to the latest International Quality Standard for their strict adherence to ISO 9001 quality management system and certified for ISO 14001 environmental management systems and BS OHSAS 18001 for occupational safety by UL DQS.

Our success is driven by our passion to protect; our vision is to become the world's number one provider of innovative solutions in protecting life, environment and property.

NAFFCO VERTICAL MULTISTAGE PUMPS

NF-VL / NF-VLS is a vertical multistage in-line pump series with all wetted parts made of stainless steel. It is suitable for a variety of different applications involving various liquids from potable water to industrial effluent and cover a wide range of flow and pressure requirements.

The major features of this series pumps are efficient operation, low noise, compact structure, light weight, easy to service, good seal performance etc. Its high head low capacity performance range makes it especially suit-

able for using as a pressure maintenance pump (Jockey Pump) in firefighting applications and it meets NFPA 20 requirements for Jockey Pumps. Each pump set is tested in our factory, prior to dispatch, to confirm that the performance is achieved per the specified requirements.

READING THE MODEL NAME

Example: NF-VL 4-120

NF - Series Name

VL - Vertical Multistage

4 - Nominal Capacity in m³/hr

120 - Number of Stages x 10

Note: Letter 'S' will be added to 'VL' for the models that are designed for 60 Hz operation.

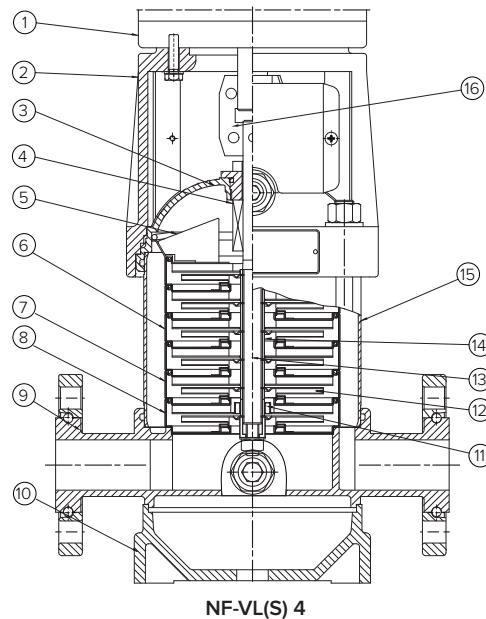
SL. NO.	PART NAME	MATERIAL	STANDARD
1	Electric Motor	Aluminum Frame	
2	Driver Pedestal (Motor Base)	Cast iron	ASTM A48 Class 25 B
3	Seal Base	Stainless Steel	AISI 304
4	Mechanical Seal	Tungsten Carbide / Graphite	
5	Top Diffuser	Stainless Steel	AISI 304
6	Diffuser	Stainless Steel	AISI 304
7	Support Diffuser	Stainless Steel	AISI 304
8	Inducer	Stainless Steel	AISI 304
9	Suction & Discharge Chamber	Stainless Steel	AISI 304
10	Pump Base Plate	Cast Iron	ASTM A48 Class 25 B
11	Bearing	Tungsten Carbide	
12	Impeller	Stainless Steel	AISI 304
13	Shaft	Stainless Steel	AISI 304
14	Impeller Sleeve	Stainless Steel	AISI 304
15	Outer Sleeve (Cylinder)	Stainless Steel	AISI 304
16	Coupling	Carbon Steel	AISI 1040
17	O ring	FPM	
18	Flanges	Cast Iron	ASTM A48 Class 35 B

Table 1

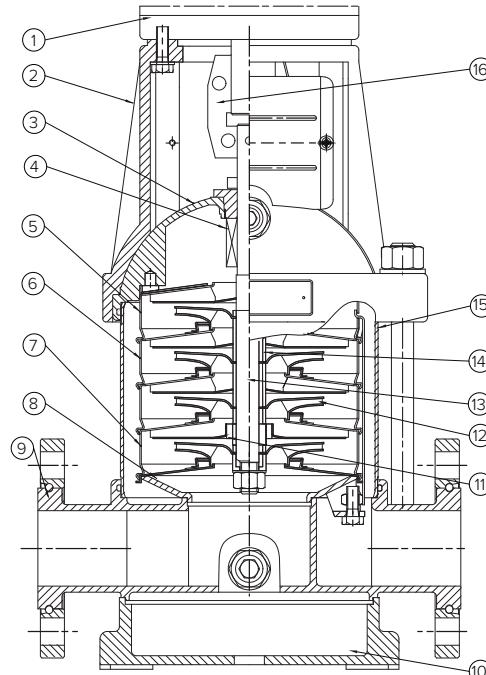
FEATURES

- Reliable Performance
- Stringent Tests
- Easy to Service
- Quality Materials
- Efficient Operation
- Longer Service Life

CROSS SECTIONAL DRAWING



NF-VL(S) 4

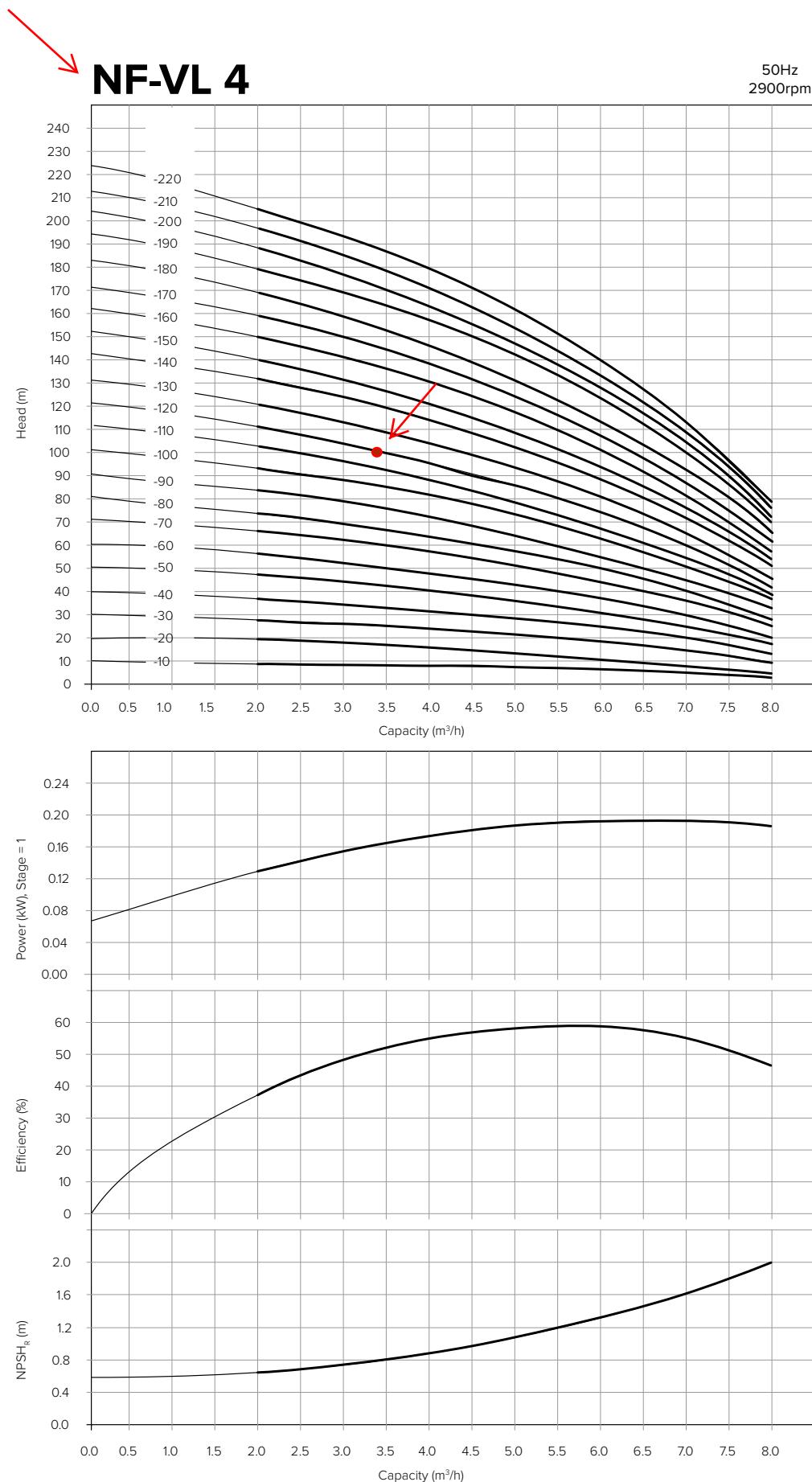


NF-VL(S) 8, 16

SPECIFICATIONS

LIQUID DATA		PUMP DATA	
Pumped Liquid Type	: Thin, clean and non-aggressive, non-explosive liquids, not containing solid particles or fibers.	Pump Design Test Standard	: ISO 9906
Liquid pH range	: pH 5-9	Nozzle Connections	: Flanged
Temperature Range		Nozzle Connection Design Standard	: EN 1092-2
Standard Design	: -15°C to +90°C	Flange Rating and Type	: Refer Table of Dimensions
Hot water Design	: -15°C to +120°C	ANSI/HI 2.1-2.2 Designation	: Vertical in-line casing diffuser pump (VS8)
ELECTRIC MOTOR DATA			
Enclosure	: V18 ("C" Type Face at Drive End) < 4 kW V1 ("D" Type Flange at Drive End) > 5.5 kW Shaft Down, No Feet	Pump Bearing Lubrication	: Pumped Liquid
Standard	: IEC 60034	Shaft Shape (for securing impeller on to the shaft)	: Double-D
Voltage	: 380-415 V 460 V	Mechanical Seal	: Cartridge Type
Phase	: 3	Minimum Suction Pressure Required	: Refer the NPSH Curve of the corresponding pump model
Frequency	: 50 / 60 Hz	Maximum Suction Pressure	: Please refer the below Table No. 2
Insulation Class	: F		
Enclosure IP Rating	: IP55		
Efficiency Class	: Eff. 2		
Noise Level	: 85 dB(A) @ 1 m.		
Ambient Temperature	: Standard: 40°C High: 50°C with 0.95 & 55°C with 0.92 derating factors (for other temperatures refer the below Curve No. 1)		
Ambient Temperature	: Standard: 1000 m High: 2250 m with 0.95 & 3500 m with 0.88 derating factors (for other altitudes refer the temperature derating curve)		
Pump Model		Maximum Suction Pressure (bar)	
50 Hz			
NF-VL 4-10 – NF-VL 4-20		NF-VL 4-30 – NF-VL 4-100	6
NF-VL 4-30 – NF-VL 4-100		NF-VL 4-110 – NF-VL 4-220	10
NF-VL 4-110 – NF-VL 4-220		NF-VL 8-10 – NF-VL 8-70	15
NF-VL 8-10 – NF-VL 8-70		NF-VL 8-80 – NF-VL 8-200	6
NF-VL 8-80 – NF-VL 8-200		NF-VL 16-20 – NF-VL 16-30	10
NF-VL 16-20 – NF-VL 16-30		NF-VL 16-40 – NF-VL 16-160	6
NF-VL 16-40 – NF-VL 16-160			10
60 Hz			
NF-VLS 4-20		NF-VLS 4-30 – NF-VLS 4-80	6
NF-VLS 4-30 – NF-VLS 4-80		NF-VLS 4-100 – NF-VLS 4-160	10
NF-VLS 4-100 – NF-VLS 4-160		NF-VLS 8-10 – NF-VLS 8-50	15
NF-VLS 8-10 – NF-VLS 8-50		NF-VLS 8-60 – NF-VLS 8-140	6
NF-VLS 8-60 – NF-VLS 8-140		NF-VLS 16-10 – NF-VLS 16-20	10
NF-VLS 16-10 – NF-VLS 16-20		NF-VLS 16-30 – NF-VLS 16-100	6
NF-VLS 16-30 – NF-VLS 16-100			10

Table 2





Serving Over 100 Countries Worldwide



NAFFCO

Email: info@naffco.com
www.naffco.com

In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.



JOCKEY PUMP CONTROLLER

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National Fire Fighting Manufacturing FZCO

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UAE Law 1 of 2000 (Law No. 1 of 2000) and Law 9 of 2000 (Law No. 9 of 2000) issued pursuant to Law No. 2 of 1990 & implementing regulation No. 1 of 1990 with limited validity.



UL LISTED JOCKEY PUMP CONTROLLER

MODEL NFY-JSD1 REDUCED VOLTAGE/ STAR - DELTA (OPEN TRANSITION)

MODEL NFY-JDO1 DIRECT ON LINE

NAFFCO Jockey Pump Controllers for fire pumps are listed by Underwriters Laboratories (UL file number E309408), in accordance with UL508a (Standard for Industrial Control Panel), NFPA70 (National Electric Code) and NEMA.

Power ratings vary from 1.5 to 40 horsepower, 380 to 415 volts, 50 or 60 Hz. Only high quality UL listed or

UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used.

The controller is completely wired, assembled and tested at the factory before shipment, and ready for immediate installation.

STANDARD FEATURES

- Main disconnected switch with rotary handle, sized for disconnecting motor horsepower and voltage.
- Motor Starter rated to motor's horsepower, with thermal and short circuit protection.
- Rated motor contactors.
- Circuit breaker for protection of control circuit.
- Selector switch for Hand—Off—Automatic operation.
- Star—Delta starting timer. (in Model NFY-JSD1)
- Power ON/Healthy indicator/free contact.
- Pump Run indicator/free contact.
- Pump Trip indicator/free contact.
- Adjustable pressure switch.
- UL listed enclosure.

SEQUENCE OF OPERATION

This controller is working under three modes automatic off and manual mode.

OFF (RESET) MODE

In this mode, the controller is considered to be off and can't start the Jockey pump.

AUTOMATIC START

In this mode, controller will start the Jockey pump automatically and directly at low pressure detection by the pressure switch, and will stop the pump automatically and directly when the pressure goes up again.

MANUAL START

In this mode, controller will start the Jockey pump directly, and will not stop until selector switch is switched off or in Auto mode.

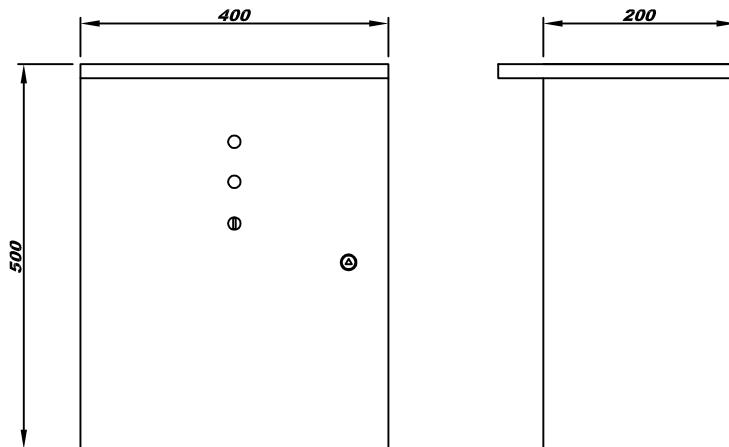




RATING

POWER (HP)	RATED VOLTAGE (VAC)	FREQUENCY (Hz)	RATED CONTENT (A)	SHORT CIRCUIT CURRENT (kA)	ENCLOSED SIZE (mm)
1.5	380 - 415	50 or 60	3.3	5	500(H) x 400(W) x 250(D)
2	380 - 415	50 or 60	4.3	5	500(H) x 400(W) x 250(D)
3	380 - 415	50 or 60	6.1	5	500(H) x 400(W) x 250(D)
5	380 - 415	50 or 60	9.7	5	500(H) x 400(W) x 250(D)
7.5	380 - 415	50 or 60	14	5	500(H) x 400(W) x 250(D)
10	380 - 415	50 or 60	18	5	500(H) x 400(W) x 250(D)
15	380 - 415	50 or 60	27	5	500(H) x 400(W) x 250(D)
20	380 - 415	50 or 60	34	5	500(H) x 400(W) x 250(D)
25	380 - 415	50 or 60	44	5	600(H) x 500(W) x 250(D)
30	380 - 415	50 or 60	51	5	600(H) x 500(W) x 250(D)
40	380 - 415	50 or 60	66	5	600(H) x 500(W) x 250(D)

Table (7)

Jockey Pump Controller**Direct On Line****Enclosure****Model: NFY-JDO1****Version: 1.0****Enclosure for 1.5 To 20 HP Controllers****TECHNICAL DATA :**

S.NO.	DESCRIPTION	DATA
1.	SIZE	500(HEIGHT)X400(WIDTH)X200(DEPTH)
2.	MATERIAL	1.5 mm THICK. GI
3.	PAINT FINISH	RAL 301 POWDER COATED
4.	DOOR LOCK	TRIANGULAR LOCK WITH KEY
5.	HINGES	2 BUSH PIN HINGES 60 MM
6.	DOOR OPENING	RIGHT HAND SIDE TO LEFT HAND SIDE
	FRONT	
	BACK	Non
7.	DOOR OPENING ANGLE	120°
8.	ALL DIMENSIONS ARE IN MM	
9.	PROTECTION RATING	NEMA 2
10.	BASE PLATE	FRONT

FIRE PROTECTION BY


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 WORLD LEADERS IN FIRE PROTECTION SYSTEMS
 NATIONAL FIRE FIGHTING MANUFACTURING CO. LTD.
 P.O. BOX 17014, DUBAI - U.A.E. TEL.: 04-8815859 FAX : 04-8816229
 WEBSITE : www.naffco.com


Client :

Designed By : **Eng. Yousef Abu Hadhoud**

Panel Model No : NFY-JDO1

Title / Name :

Approved By : **Eng. Emad Kassab**

Version: 1.0

Jockey Fire Pump Controller

Drawing No :

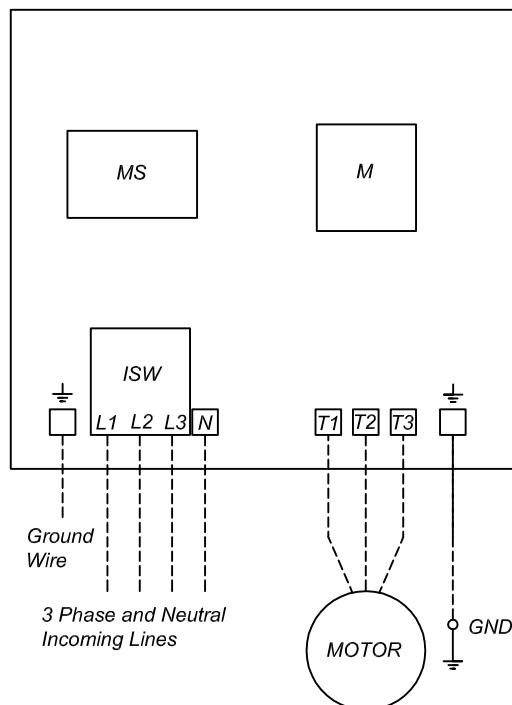
Date : 02/08/2008

Panel Serial No :

Page Description : **69 of 107**
Enclosure

Sheet 1 of 4

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Power Circuit Layout*Controller
Internal Layout*

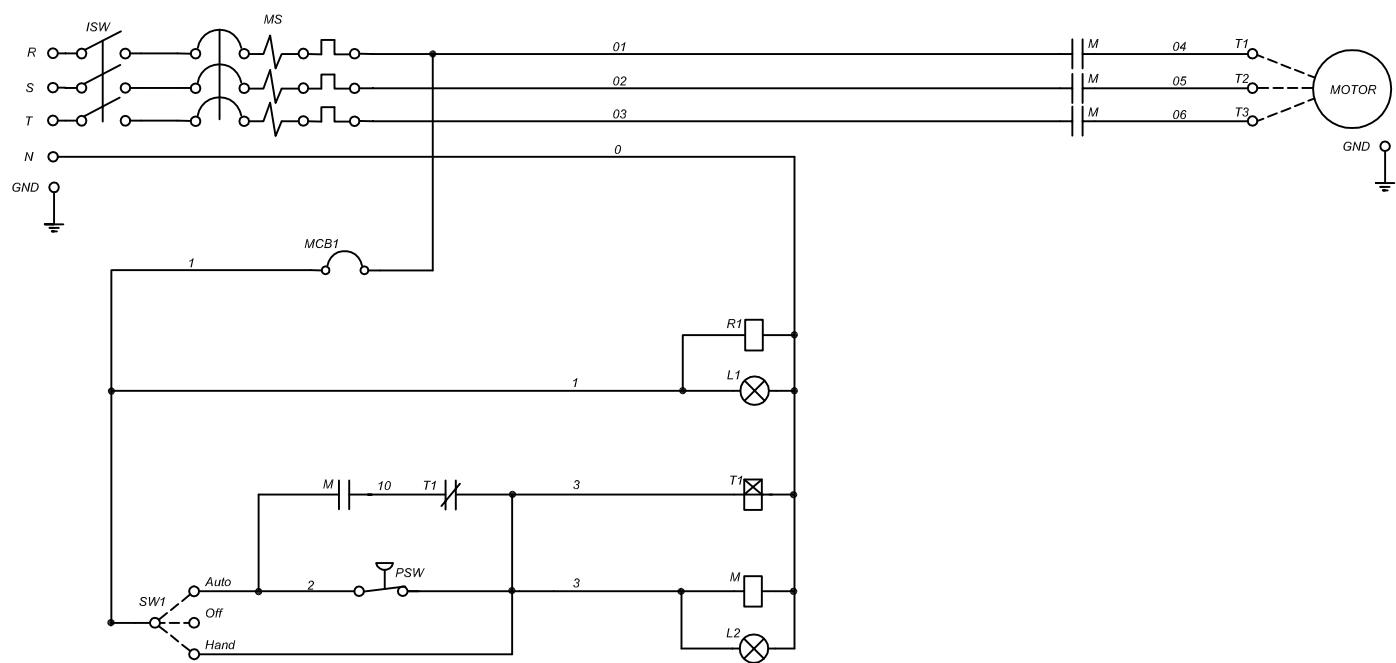
Jockey Pump Controller

Direct on line connection (D.O.L)

Wiring Schematic

Model: NFY-JDO1

Version: 2.0



ISW: Isolator switch

MS: Motor Starter

M: Main motor contactor

MCB1: 1 pole miniature circuit breaker

SW1: Auto - Off - Hand selector switch

PSW: Pressure switch (N.C at low pressure)

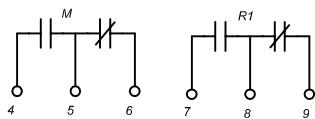
L1: Power on indicator

L2: Motor run indicator

R1: Auxiliary Trip Relay

T1: Holding Timer

Relays free contacts Terminal Blocks



Note:

For Free Contacts and Control remote wiring,
use 14 - 12 AWG (2.5 - 4 mm) wires

Jumpers:

J1: Disconnect to activate deluge valve

J2: Disconnect to activate automatic stop



Client:

Designed By : **Eng. Yousef Abu Hadhoud**

Panel Model No : NFY-JDO1

Title / Name :

Approved By : **Eng. Emad Kassab**

Version: 2.0

Jockey Fire Pump Controller

Drawing No :

Date :

03/01/2009

Panel Serial No :

Page Description: **71 of 107**
Motor Control Circuit

Sheet
3 of 4

Copper Wire Sizes for Controller Model NFY-JD01

Motor Power [HP]	Line Terminal Wire Size Per Phase				Output Motor Wire Size Per Phase				Ground Wire			
	Min		Max		Min		Max		Min		Max	
	AWG or MCM	mm Sq.	AWG or MCM	mm Sq.	AWG or MCM	mm Sq.	AWG or MCM	mm Sq.	AWG or MCM	mm Sq.	AWG or MCM	mm Sq.
1.5	16	1.3	8	8.4	16	1.3	8	8.4	8	8.4	6	13.3
2	16	1.3	8	8.4	16	1.3	8	8.4	8	8.4	6	13.3
3	14	2.1	8	8.4	14	2.1	8	8.4	8	8.4	6	13.3
5	14	2.1	8	8.4	14	2.1	8	8.4	8	8.4	6	13.3
7.5	14	2.1	8	8.4	14	2.1	8	8.4	8	8.4	6	13.3
10	12	3.3	8	8.4	12	3.3	8	8.4	8	8.4	6	13.3
15	10	5.3	6	13.3	10	5.3	6	13.3	8	8.4	6	13.3
20	8	8.4	6	13.3	8	8.4	6	13.3	8	8.4	6	13.3
25	8	8.4	6	13.3	8	8.4	6	13.3	8	8.4	6	13.3
30	6	13.3	6	13.3	6	13.3	6	13.3	6	13.3	1/0	53.5
40	4	21.2	1	42.4	4	21.2	1	42.4	4	21.2	1/0	53.5

Tightening Torque

AWG OR CIRCULAR MILL SIZE	TIGHTENING TORQUE USING EXTERNAL DRIVE WRENCH	
	LP.In	N.m
14	75	8.5
12	75	8.5
10	75	8.5
8	75	8.5
6	110	12.4
4	110	12.4
2	150	16.9
1	150	16.9
1/0	180	20.3
2/0	180	20.3
3/0	250	28.2
4/0	250	28.2
250	325	36.7
350	325	36.7
500	375	42.4
600	375	42.4
700	375	42.4
750	375	42.4
800	500	56.5
1000	500	56.5



Serving Over 100 Countries Worldwide



NAFFCO FZCO
World Headquarters
Dubai, United Arab Emirates
Email: info@naffco.com
www.naffco.com

In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.



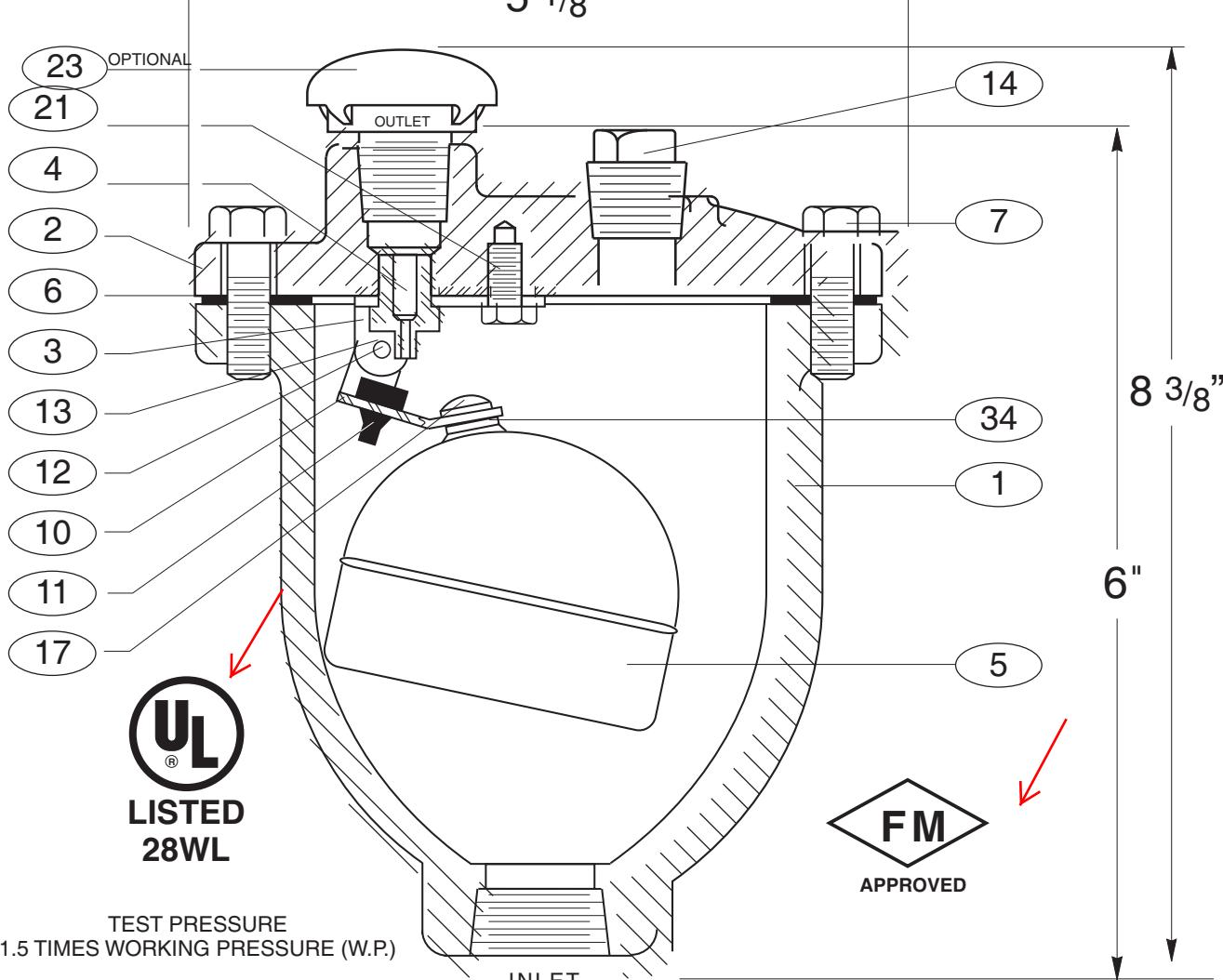
ACCESSORIES

شركة الوطنية لصناعة معدات مكافحة الحريق بشرم الشيخ
National Fire Fighting Manufacturing FZCO

PO Box 17014, Dubai, United Arab Emirates
Tel.: +971 4 815 1111, Fax: +971 4 815 1222
E-mail: info@nattco.com, www.nattco.com

UAE Law 1 of 2000 (Law No. 1 of 2000) and Law 9 of 2000 (Law No. 9 of 2000) issued pursuant to Law No. 2 of 1990 & implementing regulation No. 1 of 1990 with limited quality.





SEE DRAWING NO. VM-22-M FOR STANDARD MATERIAL OF CONSTRUCTION.

VALVE SIZE	MODEL NO. **	INLET SIZE	OUTLET SIZE	MAX. W.P. P.S.I.	ORIFICE SIZE
1/2"-3/4" *	22.4	3/4" N.P.T.	1/2" N.P.T.	175	3/32"
1"	22.3	1" N.P.T.	1/2" N.P.T.	175	3/32"
1/2"	22.7	1/2" N.P.T.	1/2" N.P.T.	300	1/16"
1/2"-3/4"-1" *	22.9	1" N.P.T.	1/2" N.P.T.	300	1/16"

* When multiple size inlets are indicated for a specific model number, the valve is threaded for the largest size indicated and a reducer bushing is provided for the smaller sizes.

** Add "H" to Model No. for optional screened hood SPK-5H.

1	BODY	11	ORIFICE BUTTON
2	COVER	12	PIVOT PIN
3	LEVER FRAME	13	PIN RETAINER (NOT SHOWN)
4	SEAT	14	PIPE PLUG
5	FLOAT	17	FLOAT RETAINER
6	GASKET	21	LOCATOR
7	COVER BOLT	23	SCREENED HOOD
10	FLOAT ARM	34	LOCK WASHER

Revised 4-13-04

AIR RELEASE VALVE

DATE 5-8-69

VAL-MATIC®

VALVE AND MANUFACTURING CORP.

VM-22

FIRE PROTECTION WELL SERVICE AIR VALVE
Val-Matic® Valve Specification

1 Scope

1.1 This specification is intended to cover the design, manufacture, and testing of 1 in. through 3 in. Well Service Air Valves suitable for clean or raw water service in fire protection applications with pressures up to 300 psig.

1.2 Well Service Air Valves shall be fully automatic float operated valves designed to exhaust air which is present in the vertical pump column on pump startup and allow air to re-enter the column on pump shutdown or should a negative pressure occur. A top mounted Throttling Device shall provide adjustable control of the exhaust rate.

2 Connections

2.1 Valve sizes 3 in. (76 mm) and smaller shall have full size NPT inlets and outlets equal to the nominal valve size.

2.2 The body inlet connection shall be hexagonal for a wrench connection.

3 Design

3.1 The valve body shall provide a through flow area equal to the nominal valve size. A bolted cover with alloy screws and flat gasket shall be provided to allow for maintenance and repair.

3.2 Floats shall be unconditionally guaranteed against failure including pressure surges. The float shall have a hexagonal guide shaft supported in the body by circular bushings to prevent binding from debris. The float shall be protected against direct water impact by an internal baffle and stainless steel diffuser screen to break up the solid water column before coming in contact with the float.

3.3 The resilient seat shall provide drop tight shut off to the full valve pressure rating. The seat shall be a minimum of 1/2 in. (12 mm) thick on 2 in. (50 mm) and larger valves and secured in such a manner as to prevent distortion. The seat shall be precision molded with an o-ring type sealing surface and a slot in the seat opening to provide a positive seal at low pressures.

3.4 Valves shall be equipped with a throttling device to control the discharge of air from the valve. The device shall have an externally adjustable screw and locknut for adjusting the discharge control disc.

4 Materials

4.1 The Well Service Air Valve body, cover, and baffle shall be constructed of ASTM A126 Class B cast iron.

4.2 The float, guide shafts, and bushings shall be constructed of Type 316 Stainless Steel. Non-metallic guides and bushings are not acceptable.

4.3 The seat shall be Buna-N capable of providing drop tight shut off at the valve full pressure rating.

5 Manufacture

5.1 The manufacturer shall demonstrate a minimum of five (5) years experience in the manufacture of air valves. The valves shall be Underwriters Laboratories Listed and manufactured and tested in accordance with American Water Works Association Standard (AWWA) C512.

5.2 The exterior of the valve shall be coated with a universal alkyd primer.

5.3 Well Service Air Valves shall be Series #101WST as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL. USA. or approved equal.

Revised 7-28-04

FIRE PROTECTION WELL SERVICE AIR VALVE SPECIFICATION

DATE 12-19-97



**VAL-MATIC®
VALVE AND MANUFACTURING CORP.**

DRWG. NO.

SS-1439

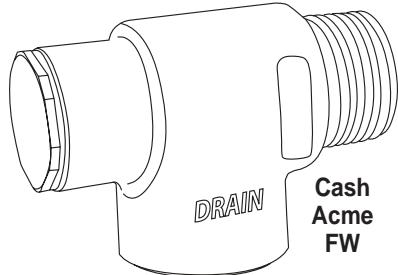
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FW and FWC Miniature Relief Valves

DESCRIPTION

The Cash Acme FW miniature relief valves are designed for commercial and industrial applications including thermal expansion protection, static pressure and over-pressure relief, very low capacity pump relief, and other uses of similar nature where tight shut-off is required.

The **Cash Acme FW and FWC Valves** are small, low-cost relief valves suitable for static over-pressure protection. A calibrated adjusting screw allows for occasional changes in pressure setting without the use of a pressure gauge (**FWC** only). Brass bodies come with male inlet and female outlet, silicone seat and stainless steel spring. The **FW** and **FWC** valves have standard factory pressure settings of 125 psi.



FEATURES AND BENEFITS

Offers protection against problematic and over-pressure conditions:

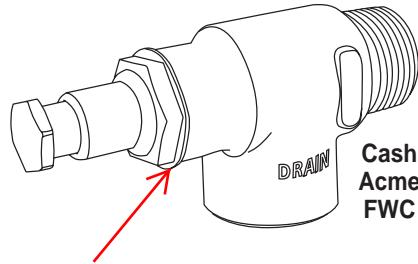
Thermal expansion protection, static pressure and over-pressure relief, very low capacity pump relief and other uses of similar nature where tight shut-off is required.

Commercial and industrial applications:

Designed to meet the needs of a wide variety of water systems.

Every valve is tested for performance prior to shipping:

Specify and install with confidence!



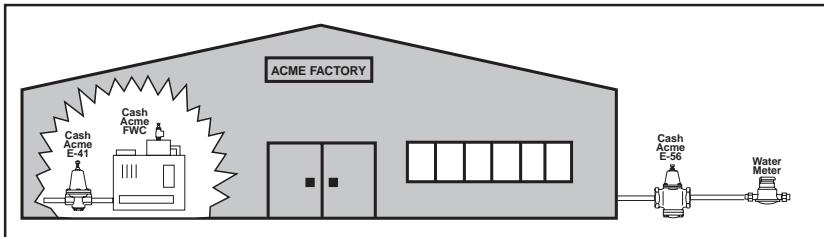
SPECIFICATION

FW: A miniature relief valve shall be installed to relieve pressure for applications where tight shut-off is required. The valve shall be of bronze construction with a male inlet and female outlet. The valve shall have a silicone seat and a stainless steel pressure spring. The valve shall be a **Cash Acme FW Relief Valve**.

FWC: A miniature relief valve shall be installed to relieve pressure for applications where tight shut-off is required. The valve shall be of bronze construction with a male inlet and female outlet. The valve shall have a silicone seat and a stainless steel pressure spring. The valve shall have a calibrated adjusting screw. The valve shall be a **Cash Acme FWC Relief Valve**.

FW and FWC Miniature Relief Valves

TYPICAL INSTALLATION



SPECIFICATION DATA

Performance:

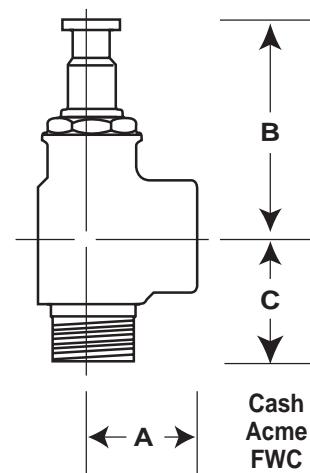
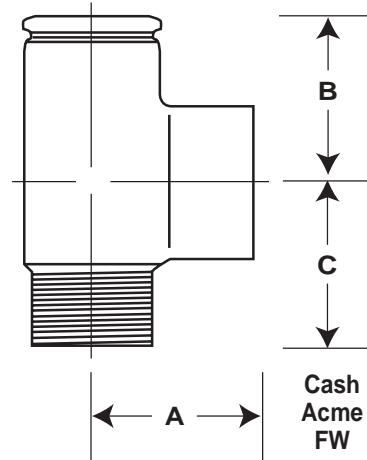
Set pressure range 15 - 200 psi (Type F) and 25 - 175 psi (Type FWC)
 Maximum temperature 210° F
 Service Water

Materials:

Body Brass
 Pressure Spring Stainless steel
 Seat Disc Silicone

CONNECTIONS

Threaded (NPT) male inlet and female outlet



Dimensions	A	B	C
FW - 1/2"	1 3/16"	1 11/32"	1 1/2"
FW - 3/4"	1 3/16"	1 11/32"	1 1/2"
FWC - 1/2"	1 3/16"	2 5/8"	1 1/2"
FWC - 3/4"	1 1/4"	2 5/8"	1 1/2"

Bourdon Tube Pressure Gauges

Stainless Steel Series

Type 232.50 - Dry Case ←

Type 233.50 - Liquid-filled Case

WIKA Datasheet 23X.50

Applications

- With liquid filled case for applications with high dynamic pressure pulsations or vibration
- Suitable for corrosive environments and gaseous or liquid media that will not obstruct the pressure system
- Process industry: chemical/petrochemical, power stations, mining, on and offshore, environmental technology, mechanical engineering and plant construction

Special features

- Excellent load-cycle stability and shock resistance
- All stainless steel construction
- Positive pressure ranges to 20,000 PSI

Standard Features

Design

ASME B40.100 & EN 837-1

Sizes

2½", 4" & 6" (63, 100 and 160 mm)

Accuracy class

2½": ± 2 1/2% of span (ASME B40.100 Grade A)
4" & 6": ± 1.0% of span (ASME B40.100 Grade 1A)

Ranges

Vacuum / Compound -30 to 30 psi
Pressure from 0/15 to 0/15,000 psi - 2½" & 4"
Pressure from 0/10 to 0/20,000 psi - 6"
or other equivalent units of pressure or vacuum

Working pressure

2½": Steady: 3/4 scale value
Fluctuating: 2/3 full scale value
Short time: full scale value

4 & 6": Steady: full scale value
Fluctuating: 0.9 x full scale value
Short time: 1.3 x full scale value

Operating temperature

Ambient: -40°F to +140°F (-40°C to +60°C) - dry
-4°F to +140°F (-20°C to +60°C) - glycerine filled
-40°F to +140°F (-40°C to +60°C) - silicone filled
Medium: +212°F (+100°C) maximum



Bourdon Tube Pressure Gauge Model 232.50

Temperature error

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

Weather protection

Weather tight (NEMA 4X / IP65)

Pressure connection

Material: 316L stainless steel
Lower mount (LM) or lower back mount (LBM)
Center back mount (CBM) for 2½" size
1/4" NPT or 1/2" NPT limited to wrench flat area

Bourdon tube

Material: 316L stainless steel
≤ 1,000 PSI: C-type
≥ 1,500 PSI: helical type

Movement

Stainless steel

Dial

White aluminum with black lettering, 2½" with stop pin

Pointer

Black aluminum, adjustable

Case

Stainless steel, with pressure relief in top of case (2½") or in back of case (4" & 6"), ranges ≤ 160 PSI with compensating valve to vent case.

Bezel ring

Stainless steel, bayonet-type

Window

Laminated safety glass

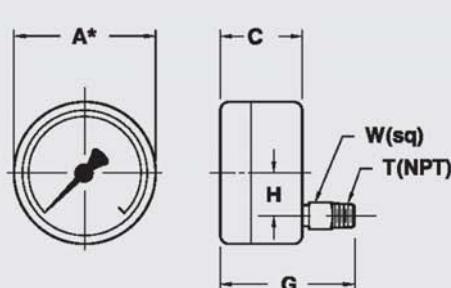
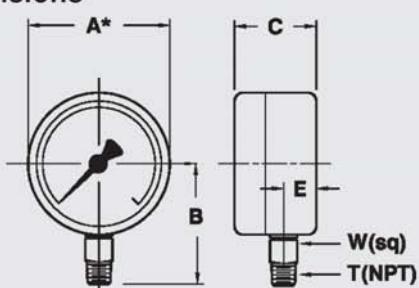
Case fill

Glycerine 99.7% - Type 233.50

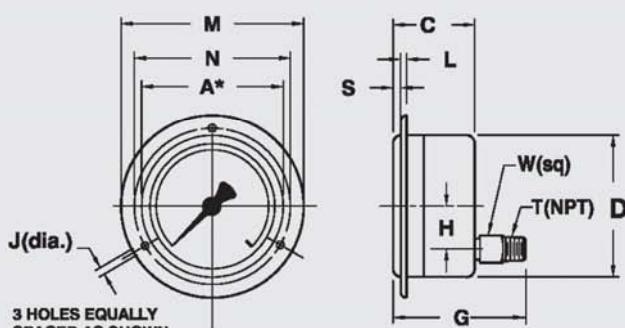
Optional extras

- Other pressure connections
- Monel wetted parts (Type 26X.50)
- SS front or rear flange
- U-clamp mounting, SS
- Silicone or fluorolube case filling
- Red drag pointer or mark pointer
- Special connections limited to wrench flat area
- Custom dial layout
- Other pressure scales available
bar, kPa, MPa, kg/cm² and dual scales
- Integral alarm contacts or transmitters

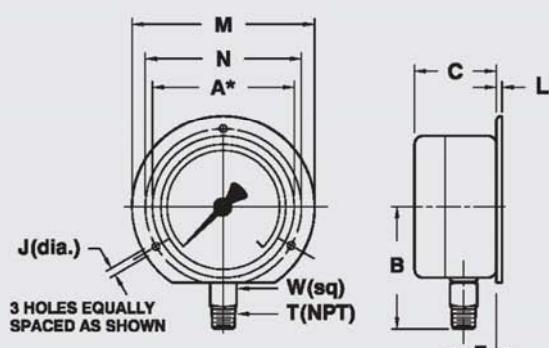
Dimensions



LOWER MOUNT



LBM/FRONT FLANGE



LM/REAR FLANGE

Size

	A	B	C	E	G	H	J	L	M	N	S	T	W	Weight ³
2.5"	mm	63	54	33	9.5	57	Note1	3.6	3	85	75	5	14	0.35 lb. dry
	in	2.48	2.13	1.30	0.37	2.24		0.14	0.12	3.35	2.95	0.20	0.55	0.44 lb. filled
4"	mm	101	87	49.5	15.5	83	30	4.8	3	132	116	5	22	1.32 lb. dry
	in	3.98	3.43	1.95	0.61	3.27	1.18	0.19	0.12	5.20	4.57	0.20	1/2"	0.87 1.98 lb. filled
6"	mm	161	118	49.5 ²	15.5	83	50	5.8	3	196	178	5	22	2.42 lb. dry
	in	6.34	4.65	1.95 ²	0.61	3.27	1.97	0.23	0.12	7.72	7.01	0.20	1/2"	0.87 4.40 lb. filled

¹ Center back mount (CBM)
² 3 Holes equally spaced as shown
³ Weight without optional accessories

² Plus 0.63" (16 mm) for pressure ranges ≥ 1,500 PSI

³ Weight without optional accessories

Ordering information

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



WIKA Instrument Corporation

1000 Wiegand Boulevard
Lawrenceville, GA 30045
Tel (770) 513-8200 Toll-free 1-888-WIKA-USA
Fax (770) 338-5118
E-Mail info@wika.com
www.wika.com

Shield - Pressure Gauge

Model: SD-P

TECHNICAL DATA :

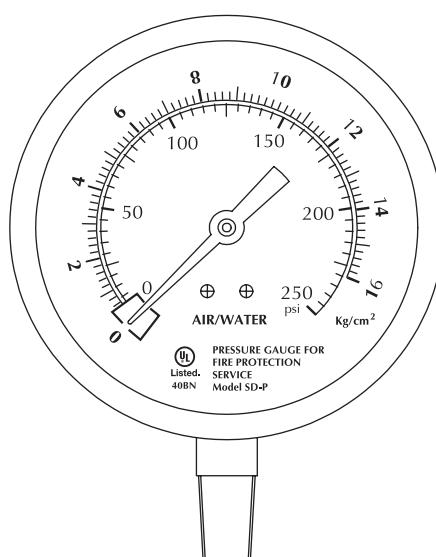
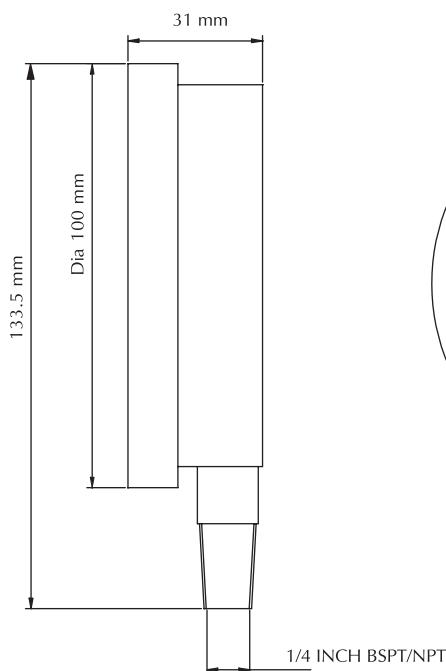
DIAL SIZE	: 90mm 3½"
CONNECTION	: ¼" BSPT (¼" NPT OPTIONAL)
RANGE	: 0-16 KG/SQCM & 0-250 PSI
BURDON TUBE & MOVEMENT	: Phosphors Bronze Brudon tube and brass movement
DIAL TYPE	: White background Brudon with dual reading in KG/SQM. and PSI
CASE AND BAZEL	: Polished Stainless Steel Case. Positive seal against weather moisture and dust
MOUNTING	: Direct
WINDOW	: Hardened Glass
ACCURACY	: ± 2% of FSD for middle half of scale
APPROVALS	: UL Listed
REFERENCE STANDARD	: UL 393, NFPA-13
ORDERING INFORMATION	: Specify connection



MODEL-SDP Pressure Gauges are specifically designed for Fire Sprinkler Services. The pressure gauge is Underwriters Laboratory Listed. It has corrosion resistant polished stainless steel case and Bezel and Brass wetted parts. The dial has pressure reading in KG/SQCM and PSI. The gauge window is hardened glass.

The pressure gauge must be mounted by square provided for spanner grip on the socket and not by turning the case. Turning of case will damage the gauge. Use PTFE tape around male threads of the gauge for sealing. Pressure gauge must be mounted in vertical position and isolated with valve or cock. The pressure gauge must be handled with due care for best results, the gauge should be stored in the original packing in which it has been shipped. It is advisable to ship the gauge in the same package for future transit.

The pressure gauge, which is visibly damaged, should not be installed. It is recommended that the pressure gauges must be inspected regularly for possible corrosion or damage. The gauge must be periodically calibrated as per requirement or as per local authority having jurisdiction.



Shield/2005 Shield reserves the right to change the contents without notice.



GLOBAL VISION INC.

VENTURI FIRE PUMP FLOW SYSTEM



DATED 07-01-07

Line Size	Pump GPM	Meter Range Min. & Max. GPM	Model Number Grooved	Model Number Butt Weld	Model Number 150# Flanged	Model Number <Threaded> *300# FLANGED*
**1-1/4"	25	12.5 – 50	* 1.25"-25-G	1.25"-25-B	* 1.25"-25-F	1.25"-25-T
**2"	50	25 – 100	* 2"-50-G	2"-50-B	* 2"-50-F	2"-50-T
**2-1/2"	100	50 - 200	2.5"-100-G	2.5"-100-B	2.5"-100-F	*2.5"-100-F3
3"	150	75 – 300	3"-150-G	3"-150-B	3"-150-F	*3"-150-F3
3"	200	100 – 400	3"-200-G	3"-200-B	3"-200-F	*3"-150-F3
4"	250	125 – 500	4"-250-G	4"-250-B	4"-250-F	*4"-250-F3
4"	300	150 – 600	4"-300-G	4"-300-B	4"-300-F	*4"-300-F3
4"	400	200 – 800	4"-400-G	4"-400-B	4"-400-F	*4"-400-F3
4"	450	225 – 900	4"-450-G	4"-450-B	4"-450-F	*4"-450-F3
5"	450	225 – 900	5"-450-G	5"-450-B	5"-450-F	*5"-450-F3
5"	500	250 – 1000	5"-500-G	5"-500-B	5"-500-F	*5"-500-F3
5"	750	375 – 1500	5"-750-G	5"-750-B	5"-750-F	*5"-750-F3
6"	500	250 – 1000	6"-500-G	6"-500-B	6"-500-F	6"-500-F3
6"	750	375 – 1500	6"-750-G	6"-750-B	6"-750-F	6"-750-F3
6"	1000	500 – 2000	6"-1000-G	6"-1000-B	6"-1000-F	6"-1000-F3
6"	1250	625- 2500	6"-1250-G	6"-1250-B	6"-1250-F	6"-1250-F3

*** DENOTES NON-STOCK ITEM, PLEASE CHECK WITH FACTORY FOR AVAILABILITY**

****SIZES 1-1/4", 2", 2-1/2", & 14" ARE NOT FM APPROVED PER FACTORY MUTUAL****

GVI FIRE PUMP METERS - DIMENSIONAL DATA

DP SERIES

CARBON STEEL

CONSTRUCTION & SPECIFICATIONS

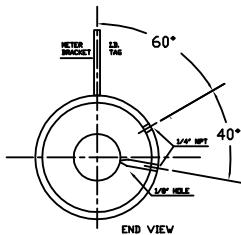
MATERIALS: MACHINED 1018 OR 1026 CARBON STEEL
 VALVES: 1/4" BRASS BALL
 BRASS FITTING: CA360
 FLANGE OPT: 150# ANSI B 16.5
 300# ANSI B 16.5
 ID TAG: POLYCARBONATE

METER DATA

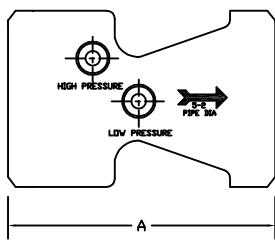
CONSTRUCTION: ALUMINUM BODY
 OPERATION: DIAPHRAGM (BUNA CONVOLUTED)
 ACCURACY: + 2% FULL SCALE
 TEMPERATURE: 180°F / 80°C
 PRESSURE: 500 PSIG - 3450 KPA
 APPROX. WEIGHT: 3.75 LBS (1.7 KGS)

4" DIAL STANDARD - 6" DIAL AVAILABLE

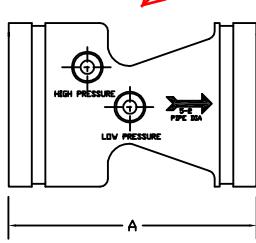
MATERIALS AVAILABLE: STAINLESS STEEL, BRASS, ALUMINUM, MONEL, VARIOUS PLASTICS, EPOXY COATED, AND MANY OTHERS. PLEASE CONSULT FACTORY.



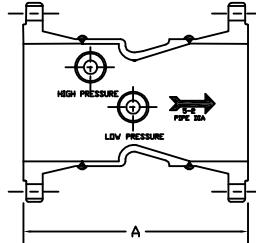
BUTT WELD / GROOVED



BUTT WELD



GROOVED



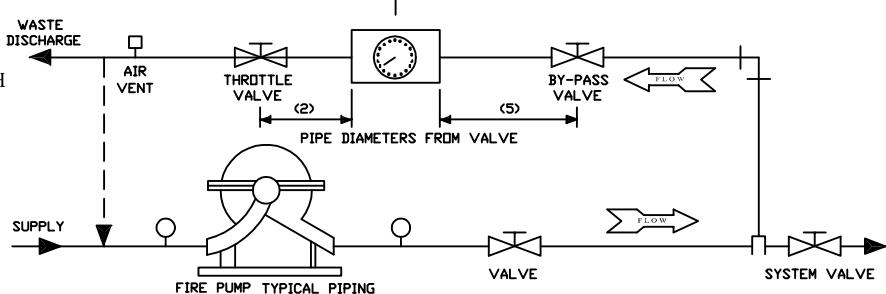
FLANGED

SIZE	PRESSURE 500 PSI		PRESSURE 275 PSI		PRESSURE 500 PSI	
	BUTT WELD & GROOVED		150 # FLANGED		300# FLANGED	
	"A" DIM	APPROX. WEIGHT	"A" DIM	APPROX. WEIGHT	"A" DIM	APPROX. WEIGHT
1-1/4"	4.875	2 lbs.	—	—	—	—
2"	5.000	3.5 lbs.	—	—	—	—
2-1/2"	4.000	5 lbs.	9.250	21 lbs.	10.000	28 lbs.
3"	4.000	6 lbs.	3.975	30 lbs.	10.25	36 lbs.
3-1/2"	—	—	—	—	—	—
4"	5.375	10 lbs.	11.375	40 lbs.	12.125	60 lbs.
5"	6.000	20 lbs.	13.000	58 lbs.	13.750	84 lbs.
6"	7.000	22 lbs.	14.000	70 lbs.	14.750	106 lbs.
8"	7.250	45 lbs.	15.250	107 lbs.	16.000	195 lbs.
10"	8.000	61 lbs.	16.000	165 lbs.	17.250	243 lbs.
12"	12.000	128 lbs.	21.000	288 lbs.	22.250	408 lbs.
14"	14.000	—	—	—	—	—
16"	28.000	—	—	—	—	—

OPERATING INSTRUCTIONS

- CLOSE SYSTEM VALVE.
- OPEN SYSTEM BY-PASS VALVE AND THROTTLE VALVE.
- PURGE METER LOCATED ON VENTURI AS FOLLOWS:
 - OPEN SHUT-OFF VALVES & VENT VALVES.
 - WHEN A STEADY STREAM OF WATER IS PASSING THROUGH EACH PLASTIC HOSE, THE METER IS PURGED OF AIR.
 - CLOSE VENT VALVE AFTER PURGING.
- START FIRE PUMP, READ METER IN GPM
- REFER TO PUMP GPM REQUIREMENT AND ADJUST THROTTLE VALVE FOR THIS REQUIREMENT.
- AFTER TEST OPEN SYSTEM VALVE AND CLOSE SYSTEM BY-PASS AND THROTTLE VALVES.

GVI VENTURI FIRE PUMP TEST METER

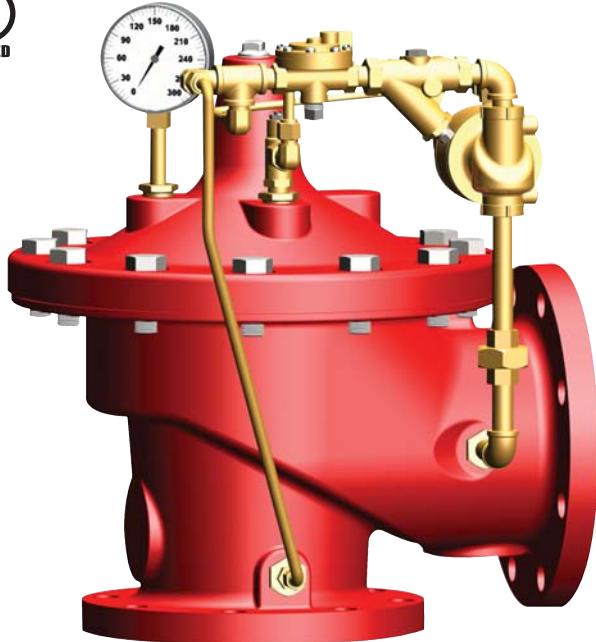




— MODEL —

50B-4KG1 Globe 2050B-4KG1 Angle

Listed/Approved Fire Protection Pressure Relief Valve



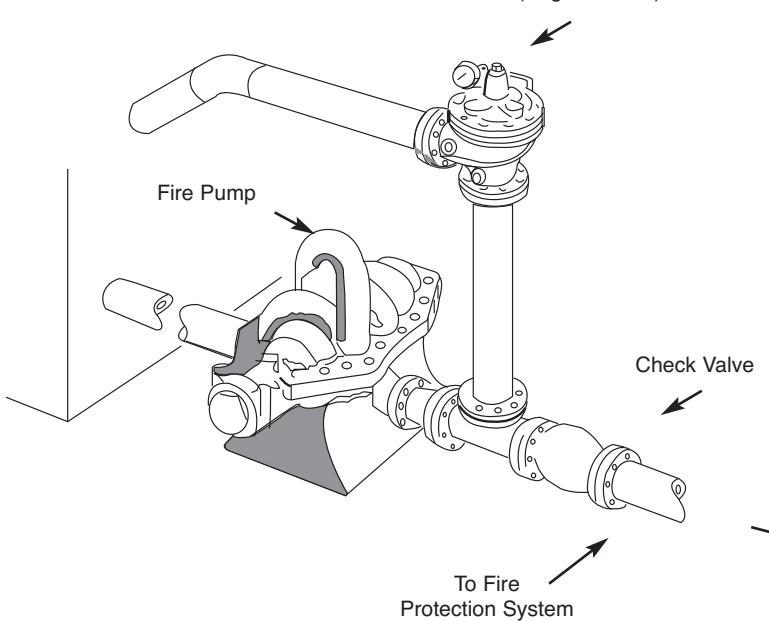
2050B-4KG1 (Angle)

- U.L. Listed / U.L.C. Listed
- Factory Mutual Approved
- Fast Opening to Maintain Steady Line Pressure
- Accommodates Wide Range of Flow Rates
- Closes Gradually for Surge-Free Operation
- Adjustable Pressure Settings, Not Affected by Pressure At Valve Discharge

The Cla-Val Model 50B-4KG1 Globe / 2050B-4KG1 Angle Pressure Relief Valve is designed specifically to automatically relieve excess pressure in fire protection pumping systems. Pilot controlled, it maintains constant system pressure at the pump discharge within very close limits as demands change. The 50B-4KG1 and 2050B-4KG1 can be supplied with optional internal and external epoxy coating of the main valve wetted surfaces.

U.L. Listed.....Sizes 3" thru 8"
F.M. Approved.....Sizes 3" thru 8"
U.L.C. Listed.....Sizes 2" thru 10"

Typical Application



Operation Sequence

At pump start, Cla-Val Relief Valve modulates to relieve excess pump capacity, maintaining positive system pressure at the pump discharge.

When fire demand slows or ceases, Cla-Val Model 50B-4KG1 opens, diverting entire pump output to discharge, allowing fire pump to be stopped without causing surging in the lines.

"Fluid Control at It's Best"



Specifications

Sizes *Globe: 2" - 10" flanged
Angle: 2" - 10" flanged*

End Details 150 and 300 ANSI B16.42

Pressure Ratings class - 175 psi Max.
class - 300 psi Max

Water, to 180°F Max.

Materials **Main Valve Body & Cover**

Ductile Iron ASTM A-536
Naval Bronze ASTM B61
Other Material Available

Standard Main Valve Trim:

Bronze Seat, Teflon Coated
Stainless Steel Stem, Dura-Kleen Stem

Standard Pilot Control System:

Cast Bronze with
Stainless Steel trim

Adjustment Range Available in the following relief pressure ranges:

20-200 psi (150 Class)
100-300 psi (300 Class)

Optional Protective epoxy resin coating of wetted surfaces of main valve cast iron components (UL listed HNFX EX2855)

Purchase Specifications

The Fire Pump Pressure Relief Valve shall modulate to relieve excess pressure in a fire protection system. It shall maintain constant pressure in the system regardless of demand changes. It shall be pilot controlled and back pressure shall not affect its set point. It shall be actuated by line pressure through a pilot control system and open fast in order to maintain steady system pressure as system demand decreases. It shall close gradually to control surges and shall re-seat drip-tight within 5% of its pressure setting. The main valve shall be of the hydraulically-operated, pilot-controlled, diaphragm-type, globe or angle valve. It shall have a single, removable, teflon-coated seat, a grooved stem guided at both ends, and a resilient disc with a rectangular cross section, being contained on 3 1/2 sides. No external packing glands shall be permitted and the diaphragm shall not be used as a seating surface. The pilot control shall be a direct-acting, adjustable, spring-loaded, diaphragm-type valve designed for modulating service to permit flow when controlling pressure exceeds spring setting. This valve shall be UL Listed and Factory Mutual approved. It shall be the Model 50B-4KG1 (globe) or Model 2050B-4KG1 (angle) Pressure Relief Valve as manufactured by Cla-Val Newport Beach, California.

***Special Note:**

The Model 50B-4KG1 Pressure Relief Valve is available with 300# ANSI inlet flange and 150# ANSI outlet flange. This valve is used on higher pressure systems where 300# flange connections are required, and allows for adapting of a discharge cone (generally supplied with 150# flange) to accommodate "atmospheric break" at relief valve discharge. This relief valve, with 300# / 150# flanges is available on special order, and is UNDERWRITERS LABORATORIES LISTED AND FACTORY MUTUAL APPROVED.

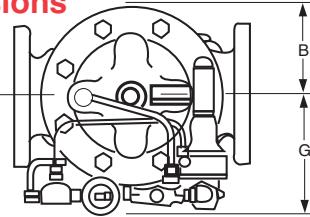
Specifications

Seawater Service Option

Sizes *Globe: 2" - 8" flanged
Angle: 2" - 8" flanged*

Consult factory for materials and flange ratings.

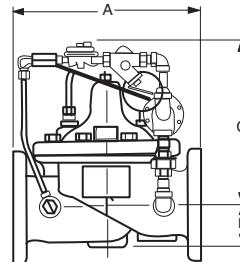
Dimensions



= U.L., F.M. and ULC sizes

= ULC sizes only

Model 50B-4KG1 Globe



Model 2050B-4KG1 Angle

We recommend providing adequate space around valve for maintenance work.

Valve Size (inches)	2"	2 1/2"	3"	4"	6"	8"	10"
Threaded Ends	9.38	11.00	12.50	---	---	---	---
A 150 Flanged	9.38	11.00	12.00	15.00	20.00	25.38	29.75
300 Flanged	10.00	11.62	13.25	15.62	21.00	26.38	31.12
300 X 150			12.88	15.31	20.56	25.88	30.44
B	3.31	4.00	4.56	5.75	7.88	10.00	11.81
C	12.00	12.25	12.50	13.00	14.31	16.31	18.00
D	1.50	1.69	2.66	3.19	4.31	5.31	9.25
Threaded Ends	4.75	5.50	6.25	---	---	---	---
E 150 Flanged	4.75	5.50	6.00	7.50	10.00	12.75	14.88
300 Flanged	5.00	5.88	6.38	7.88	10.50	13.25	15.56
Threaded Ends	3.25	4.00	4.50	---	---	---	---
F 150 Flanged	3.25	4.00	4.00	5.00	6.00	8.00	8.62
300 Flanged	3.50	4.31	4.38	5.31	6.50	8.50	9.31
G & H	6.00	6.69	7.75	7.88	8.50	9.75	13.25

Valve Size (mm)	50	65	80	100	150	200	250
Threaded Ends	238	279	318	---	---	---	---
A 150 Flanged	234	279	305	381	508	645	756
300 Flanged	254	295	337	397	533	670	790
300 X 150	---	---	327	389	522	657	773
B	84	102	116	146	200	254	300
C	305	311	1318	330	363	414	457
D	38	43	65	81	109	135	235
Threaded Ends	121	140	159	---	---	---	---
E 150 Flanged	121	140	152	191	254	324	378
300 Flanged	127	149	162	200	267	337	395
Threaded Ends	83	102	114	---	---	---	---
F 150 Flanged	83	102	102	127	152	203	219
300 Flanged	89	109	111	135	165	216	236
G & H	152	170	197	200	216	248	337

Valve Capacity

Valve Sizes in Inches:	2"	2 1/2"	3"	4"	6"	8"	10"
NFPA 20 Maximum							
Recommended GPM	208	300	500	1000	2500	5000	11000



CLA-VAL

PO Box 1325 Newport Beach CA 92659-0325 • Phone: 949-722-4800
Fax: 949-548-5441 • Web Site: cla-val.com • E-mail: claval@cla-val.com

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Fax: 905-563-4040
E-Mail: sales@cla-val.ca

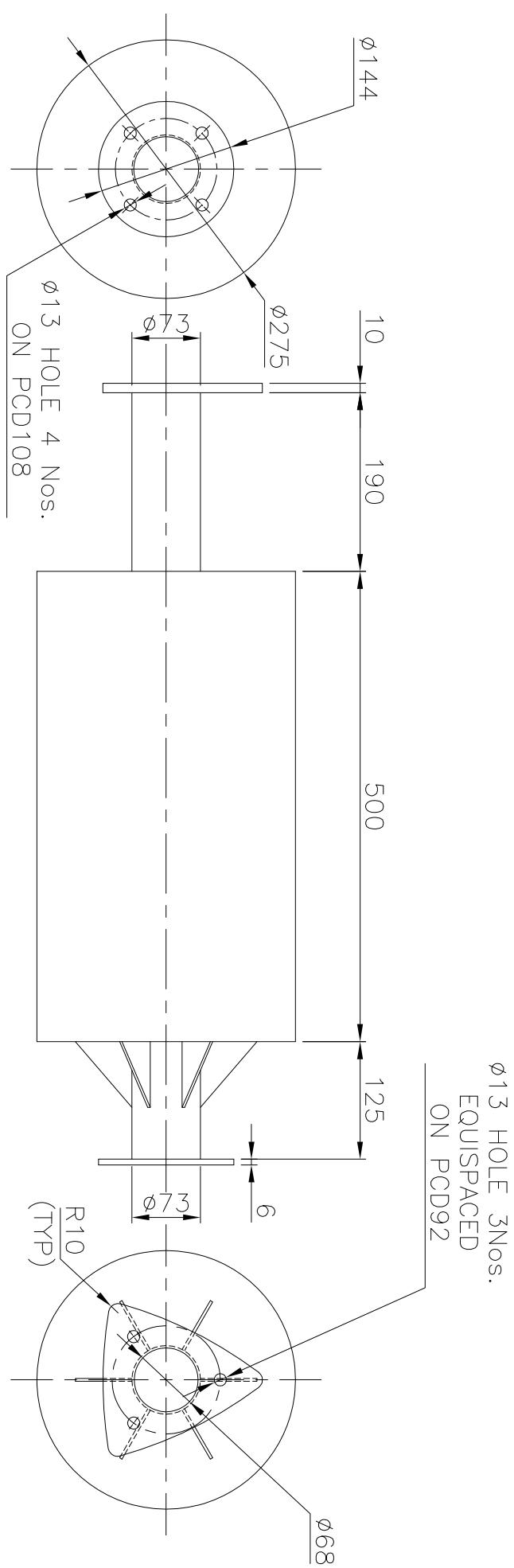
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Lausanne, Switzerland
Phone: 41-21-643-15-55
Fax: 41-21-643-15-50
E-Mail: cla-val@cla-val.ch

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Kent TN1 2 DH England
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Fax: 44-1892-543-423
E-Mail: info@cla-val.co.uk

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National Fire Fighting Manufacturing FZCO

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E-mail: info@naffco.com, www.naffco.com

تم إنشاء موقعنا الإلكتروني بناءً على اتفاقية رقم ١ لسنة ٢٠١٣ بخصوص إنشاء المواقع الإلكترونية في دولة الإمارات العربية المتحدة.

تم إنشاء موقعنا الإلكتروني بناءً على اتفاقية رقم ١ لسنة ٢٠١٣ بخصوص إنشاء المواقع الإلكترونية في دولة الإمارات العربية المتحدة.



**QXJY.EX15024
Centrifugal Fire Pumps, Split Case**[Page Bottom](#)**Centrifugal Fire Pumps, Split Case**[See General Information for Centrifugal Fire Pumps, Split Case](#)**NATIONAL FIRE FIGHTING MFG FZ CO**

EX15024

PO BOX 17014

JEBEL ALI FREE ZONE

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)
500	6 x 4	NF-SS 150-100	118 - 238	3550	290
750	5 x 3	NF-S-125-80	236	2900	290
750	6 x 4	NF-S-150-100-375	226 - 276	2900	363
750	6 x 4	NF-S-150-100	112 - 213	2900	290
750	6 x 4	NF-SS 150-100	114 - 236	3550	290
1000	6 x 4	NF-SS 150-100	111 - 234	3550	290
1000	6 x 4	NF-S-150-100	101 - 208	2900	290
1000	6 x 4	NF-S-150-100-375	219 - 273	2900	363
1000	8 x 5	NF-S-200-125	143 - 267	2900	363
1250	8 x 5	NF-S-200-125	137 - 263	2900	363
1500	8 x 5	NF-S-200-125	130 - 256	2900	363

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ONLINE CERTIFICATIONS DIRECTORY

QXZF.EX26863

Fire Pump Motors

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Fire Pump Motors

[See General Information for Fire Pump Motors](#)

NATIONAL FIRE FIGHTING MFG FZ CO

EX26863

PO BOX 17014

JEBEL ALI FREE ZONE

DUBAI, UNITED ARAB EMIRATES

Model No.	Output	Hz/DC	Volts	FL Amps	Service Factor	Poles	Number of Speeds	RPM	Phases	Ins Class	Prot. Type	Rated Ambient (°C)
(click on a model number to see complete product details)												
NMCM501002PO	100hp	50	400-415	119.8	1.15	2	1	2940	3	F	-	50
	100hp	50	400-415	124.5	1.15	2	1	2940	3	F	-	50
NMCM501252PO	125hp	50	400-415	143.5	1.15	2	1	2940	3	F	-	50
	125hp	50	400-415	155.3	1.15	2	1	2940	3	F	-	50
NMCM501502PO	150hp	50	400-415	178.6	1.15	2	1	2940	3	F	-	50
	150hp	50	400-415	182.9	1.15	2	1	2940	3	F	-	50
NMCM50152PO	15hp	50	400-415	19.7	1.15	2	1	2920	3	F	-	50
NMCM502002PO	200hp	50	400-415	243	1.15	2	1	2940	3	F	-	50
	200hp	50	400-415	258.2	1.15	2	1	2945	3	F	-	50
NMCM50202PO	20hp	50	400-415	25.9	1.15	2	1	2920	3	F	-	50
NMCM502502PO	250hp	50	400-415	302	1.15	2	1	2940	3	F	-	50
NMCM50252PO	25hp	50	400-415	31.9	1.15	2	1	2930	3	F	-	50
NMCM503002PO	300hp	50	400-415	355	1.15	2	1	2945	3	F	-	50
	300hp	50	400-415	355	1.15	2	1	2945	3	F	-	50
NMCM50302PO	30hp	50	400-415	38.8	1.15	2	1	2930	3	F	-	50
NMCM503502PO	350hp	50	400-415	451.5	1.15	2	1	2945	3	F	-	50
	350hp	50	400-415	451.5	1.15	2	1	2945	3	F	-	50
NMCM50402PO	40hp	50	400-	50.5	1.15	2	1	2925	3	F	-	50

			415									
	40hp	50	400-415	50.6	1.15	2	1	2930	3	F	-	50
NMCM50502PO	50hp	50	400-415	61.3	1.15	2	1	2930	3	F	-	50
	50hp	50	400-415	63	1.15	2	1	2930	3	F	-	50
NMCM50602PO	60hp	50	400-415	75.4	1.15	2	1	2930	3	F	-	50
	60hp	50	400-415	75.8	1.15	2	1	2935	3	F	-	50
NMCM50752PO	75hp	50	400-415	92.2	1.15	2	1	2940	3	F	-	50
	75hp	50	400-415	93.6	1.15	2	1	2940	3	F	-	50



Trademark and/or Tradename:

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**ONLINE CERTIFICATIONS DIRECTORY**

QYLU.EX15238
Internal Combustion Engines for Driving Stationary Fire Pumps

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Internal Combustion Engines for Driving Stationary Fire Pumps

[See General Information for Internal Combustion Engines for Driving Stationary Fire Pumps](#)

NATIONAL FIRE FIGHTING MFG FZ CO
PO BOX 17014
JEBEL ALI FREE ZONE
DUBAI, UNITED ARAB EMIRATES

EX15238

DIESEL ENGINES RATED AT SPECIFIC SPEEDS

Model	No. of Cylinders	Rated HP	Rated Speed (rpm)
FD 30 H	3	19	2900
FD 50 H	4	36	2900
FD 80 H	4	50	2900
FD 80 R	4	50	2900
FD 110 R	6	87	2900
FD 140 H	6	127	2900
FD 180 H	6	185	2900
FD 225 H	6	225	2900

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QYZS.EX15064

Pump Controllers, Fire

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Pump Controllers, Fire

[See General Information for Pump Controllers, Fire](#)

NATIONAL FIRE FIGHTING MFG FZ CO

EX15064

PO BOX 17014

JEBEL ALI FREE ZONE

DUBAI, UNITED ARAB EMIRATES

Diesel Engine Fire Pump Controller, Model NFY-D, followed by R1, followed by -110 or -230, followed by -50 or -60, followed by -12 or -24, may be followed by additional suffixes.

Microprocessor-Based Diesel Engine Fire Pump Controller, NFY Type Diesel Engine Fire Pump Controllers, Model NFY, followed by -D, followed by -M1, followed by -110 or -230, followed by -50 or -60, followed by -12 or -24, may be followed by additional suffixes.

Electric Fire Pump Controller, Model NFY, followed by -SD or -DO, followed by R1 followed by -380 or -415, followed by .yyy, where yyy represents two or three digits denoting hp from 40-400 hp, followed by -50 or -60, may be followed by additional suffixes.

Microprocessor-Based Electric Fire Pump Controller, NFY Type Electric Fire Pump Controllers, Model NFY, followed by -D or -DO, followed by -M1, followed by 230, 380 or 415, followed by yyy where yyy represents two or three digits denoting power in HP, followed by 50 or 60, and may be followed by additional suffixes.

These controllers are suitable for use on circuits capable of delivering high fault currents with maximum values as shown in the following table.

Circuit Breaker	Maximum Voltage	Short Circuit Current RMS Symmetrical, kA
C-H HMCP100 Frame	415 Vac	100 kA
C-H HMCP150 Frame	415 Vac	100 kA
C-H HMCP150 Frame	415 Vac	100 kA
C-H HMCP250 Frame	415 Vac	100 kA
C-H HMCP250 Frame	415 Vac	100 kA
C-H HMCP250 Frame	415 Vac	100 kA
C-H HMCP400 Frame	415 Vac	100 kA
C-H HMCP400 Frame	415 Vac	100 kA
C-H HMCP600 Frame	415 Vac	50 kA
C-H HMCP600 Frame	415 Vac	50 kA
C-H HMCP800 Frame	415 Vac	50 kA
C-H HMCP800 Frame	415 Vac	50 kA

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**NITW.E309408
Industrial Control Panels**[Page Bottom](#)**Industrial Control Panels**[See General Information for Industrial Control Panels](#)**NATIONAL FIRE FIGHTING MFG FZ CO**

E309408

PO BOX 17014
JEBEL ALI FREE ZONE
DUBAI, UNITED ARAB EMIRATES

Industrial control panels.

Industrial control panel enclosures.

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QWBS.EX5148 Air-release Valves for Fire Pumps

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Air-release Valves for Fire Pumps

[See General Information for Air-release Valves for Fire Pumps](#)**VAL-MATIC VALVE & MFG CORP**

EX5148

905 S RIVERSIDE DR
ELMHURST, IL 60126-4941 USA**Air release valves for use with split case fire pumps.**

Model	Inlet Size NPT In.	Orifice Size In.	Outlet Size NPT In.	Rated Pressure psig
15A	1/2	1/16	1/2	175
15A.2	3/4	1/16	1/2	175
15A.3	1	1/16	1/2	175
22.4	1/2, 3/4	3/32	1/2	175
22.3	1	3/32	1/2	175
22.7	1/2	1/16	1/2	300
22.9	1/2, 3/4, 1	1/16	1/2	300

Well service air valves for use with vertical turbine fire pumps.

Model	Inlet Size NPT In.	Orifice Size In.	Outlet Size NPT In.	Rated Pressure psig
102 WST	2	2	2	300
103 WST	3	3	3	300
102 ST	2	2	2	300
103 ST	3	3	3	300

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**VEVX.EX6714
Gauges, Pressure**[Page Bottom](#)**Gauges, Pressure**[See General Information for Gauges, Pressure](#)**SHIELD FIRE SAFETY & SECURITY LTD**

28TH FL, REGUS SUITE
ONE CANADA SQUARE
CANARY WHARF
LONDON, E14 5DY UNITED KINGDOM

EX6714

Pressure indicating gauge, Model SD-P, 3-1/2 in. size, with dials graduated 0-250 psi.[Last Updated on 2004-11-15](#)[Questions?](#)[Notice of Disclaimer](#)[Page Top](#)[Copyright © 2008 Underwriters Laboratories Inc.®](#)

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**ONLINE CERTIFICATIONS DIRECTORY****QXZQ.EX2855
Fire Pump Relief Valves**[Page Bottom](#)**Fire Pump Relief Valves**

~~See General Information for Fire Pump Relief Valves~~

GRISWOLD INDUSTRIES, DBA CLA-VAL CO

1701 PLACENTIA AVE
COSTA MESA, CA 92627 USA

EX2855

Model 50B-4KG1 globe pattern, Model 2050B-4KG1 angle pattern, in 3- , 4- , 6- in. sizes. For use where the maximum relief pressure does not exceed 300 psi.

Model 50B-4KG1 globe pattern, Model 2050B-4KG1 angle pattern in 8 in. size. For use where the maximum relief pressure does not exceed 175 psi.

Model 750B-4KG1, 150 lb class, in 3 , 4 , 6, 8 and 10 in. sizes. For use where the maximum relief pressure does not exceed 200 psi .

Model 750B-4KG1, 300 lb class, in 3 , 4 , 6, 8 and 10 in. sizes. For use where the maximum relief pressure does not exceed 300 psi .

[Last Updated on 1999-09-21](#)

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RDL 250-500	Argentina	2500	9465	111-210	765-1448	1750	12	10	1	FM Approved
RDL 250-500	Argentina	3000	11,355	106-210	731-1448	1750	12	10	1	FM Approved
RDL 250-500	Argentina	3250	12,315	132-209	910-1441	1750	12	10	1	FM Approved
RDL 200-500	Argentina	1500	5680	123-135	848-931	1450	10	8	1	FM Approved
RDL 200-500	Argentina	2000	9465	120-132	827-910	1450	10	8	1	FM Approved
RDL 150-310	Argentina	500	1895	47-67	324-462	1750	8	6	1	FM Approved
RDL 150-310	Argentina	750	2840	45-67	310-462	1750	8	6	1	FM Approved
RDL 150-310	Argentina	750	2840	88-130	607-896	2900	8	6	1	FM Approved

National Fire Fighting Mfg FZCO
Box 17014, Jebel Ali Free Zone, Dubai, United Arab Emirates

Product	Listing Country	Rated Capacity, (gal/min)	Rated Capacity, (dm³/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)	Certification Type
NF-S-125-80	United Arab Emirates	750	2840	236	1625	2900	5	3	1	FM Approved
NF-S-150-100	United Arab Emirates	750	2840	108-216	745-1490	2900	6	4	1	FM Approved
NF-S-150-100	United Arab Emirates	1000	3785	101-215	695-1485	2900	6	4	1	FM Approved
NF-S-150-100-375	United Arab Emirates	750	2840	227-280	1565-1930	2900	6	4	1	FM Approved
NF-S-150-100-375	United Arab Emirates	1000	3785	215-273	1485-1880	2900	6	4	1	FM Approved
NF-S-200-125	United Arab Emirates	1000	3785	143-252	985-1735	2900	8	5	1	FM Approved
NF-S-200-125	United Arab Emirates	1250	4730	134-250	925-1725	2900	8	5	1	FM Approved
NF-S-200-125	United Arab Emirates	1500	5680	121-242	835-1670	2900	8	5	1	FM Approved
NF-SS-150-100	United Arab Emirates	500	1895	127-239	875-1650	3550	6	4	1	FM Approved
NF-SS-150-100	United Arab Emirates	750	2840	122-235	840-1620	3550	6	4	1	FM Approved
NF-SS-150-100	United Arab Emirates	1000	3785	112-232	770-1600	3550	6	4	1	FM Approved
NF-SS-200-125	United Arab Emirates	1250	4730	127-214	875-1475	3550	8	5	1	FM Approved
NF-SS-200-125	United Arab Emirates	1500	5860	126-211	870-1455	3550	8	5	1	FM Approved

Patterson Pump Co Sub Gorman-Rupp Co
Box 790, Toccoa, Georgia 30577, USA

Note: Standard construction includes ASA 125 suction and discharge flanges. For ASA 250 discharge flanges, suffix H is added to type designations.

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.

NFY-DM1

Model NFY-Da-b-c-d-e Diesel Engine Fire Pump Controller

Standard Enclosure: NEMA/UL Type 2.

Ambient Temperature Operating Range: 39°F (4°C) to 122°F (50°C)

$a =$ Control Type	$b =$ Voltage (VAC)	$c =$ Frequency (Hz)
M1 – Microprocessor Based	110 230	50 60
$d =$ Battery Voltage (VDC)		$e =$ Additional suffixes denoting optional equipment

Company Name:	National Fire Fighting Mfg FZCO
Company Address:	Box 17014, Jebel Ali Free Zone, Dubai, United Arab Emirates
Company Website:	http://www.naffco.com
New/Updated Product Listing:	Yes
Listing Country:	United Arab Emirates
Certification Type:	FM Approved

Air Release Valves

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

Air Release Valves

<i>Product Designation</i>	<i>Size, in. (mm)</i>	<i>Orifice Diameter, In. (mm)</i>	<i>Pressure Rating psi (kPa)</i>
15A	1/2 (12.7)	1/16 (1.6)	175 (1207)
15A.2	3/4 (19)	1/16 (1.6)	175 (1207)
15A.3	1 (25.4)	1/16 (1.6)	175 (1207)
22.4	1/2, 3/4 (12.7, 19)	3/32 (2.4)	175 (1207)
22.3	1 (25.4)	3/32 (2.4)	175 (1207)
22.7	1/2 (12.7)	1/16 (1.6)	300 (2069)
22.9	1/2, 3/4, 1 (12.7, 19, 25.4)	1/16 (1.6)	300 (2069)

Company Name:	Val-Matic Valve & Mfg Corp
Company Address:	905 Riverside Dr, Elmhurst, Illinois 60126, USA
Company Website:	http://www.valmatic.com
New/Updated Product Listing:	No
Listing Country:	United States of America
Certification Type:	FM Approved

Fire Pump Flowmeter Systems

Fire pump flowmeters may be used to determine the discharge of a fire pump. Water from the pump is temporarily directed through the flowmeter, then to atmospheric drain or back to the water supply source.

It is important that the flowmeter not be connected directly back to the pump suction. This arrangement does not adequately test the condition of the water supply.

These flowmeters are calibrated to measure the fire pump output directly in gal/min (dm^3/min). A control valve is provided in the flowmeter line. This valve must be completely closed, except when the flowmeter is in use. Unless otherwise noted in the listing, these systems have 175 psi (1205 kPa) rated working pressure.

Fire Pump Flowmeter Systems

Pump Rating, gal/min (dm^3/min)	Meter Line Size, in.	Model Designation
150 (570)	3	3-150-X*
200 (755)	3	3-200-X*
250 (945)	4	4-250-X*
300 (1135)	4	4-300-X*
400 (1515)	4	4-400-X*
450 (1705)	4	4-450-X*
450 (1705)	5	5-450-X*
500 (1895)	5	5-500-X*
750 (2840)	5	5-750-X*
500 (1895)	6	6-500-X*
750 (2840)	6	6-750-X*
1000 (3785)	6	6-1000-X*
1250 (4730)	6	6-1250-X*
1000 (3785)	8	8-1000-X*
1250 (4730)	8	8-1250-X*
1500 (5680)	8	8-1500-X*
2000 (7570)	8	8-2000-X*



2500 (9465)	8	8-2500-X*
3000 (11 355)	8	8-3000-X*
1500 (5680)	10	10-1500-X*
2000 (7570)	10	10-2000-X*
2500 (9465)	10	10-2500-X*
3000 (11 355)	10	10-3000-X*
3500 (13 250)	10	10-3500-X*
4000 (15 140)	10	10-4000-X*
4500 (17 035)	10	10-4500-X*
2000 (7570)	12	12-2000-X*
2500 (9465)	12	12-2500-X*
3000 (11 355)	12	12-3000-X*
3500 (13 250)	12	12-3500-X*
4000 (15 140)	12	12-4000-X*
4500 (17 035)	12	12-4500-X*
5000 (18 925)	12	12-5000-X*

Each system consists of a Global Vision Venturi, a differential pressure meter (for portable or permanent installation) and associated fittings. Meter faces are available in direct readout in both GPM (gallons per minute) and LPM (liters per minute), or optional $^3\text{m}^3/\text{h}$ (cubic meters per hour).

- * The suffix "X" signifies the available end connections as follows:
- F- Flanged ends 150 lb (rated working pressure = 275 psi [1895 kPa])
- F3- Flanged ends 300 lb (rated working pressure = 500 psi [3445 kPa])
- B- Weld ends (rated working pressure = 500 psi [3445 kPa])
- G- Grooved ends (rated working pressure = 500 psi [3445 kPa])

Company Name:	Global Vision Inc
Company Address:	8800 Jefferson Hwy, Osseo, Minnesota 55369, USA
Company Website:	http://www.globalvisionincorporated.com
Listing Country:	United States of America
Certification Type:	FM Approved

Pressure Gauges

Gauges for sprinkler systems and fire pumps are designed for use with air or water. These gauges are usually of the Bourdon tube type. The moving parts are fabricated of appropriate corrosion-resistant materials.

When installed on the air side of a dry pipe system, a retard type gauge may be used. This gauge is assembled with a tube appropriate to the unretarded pressure range of the gauge and is provided with a spring to resist the full scale load.

The two common sizes are 4 1/2 and 3 1/2 in. diameter. These gauges can be calibrated with a hydraulic testing unit by adjusting the dial pointer to read correctly at known pressures. Accuracy requirements are that the gauge be correct within 2% over the center third of its scale and within 3% over the remaining two-thirds. Dial marking subdivisions correspond to the maximum accuracy of the gauge.

For service on fire pumps where the suction may be taken under a lift, compound pressure vacuum gauges are available graduated in pressure units over both the pressure and vacuum scales, and are designed not to be injured by vacuum.

To minimize possible damage and provide maximum accuracy, gauges should be selected with scales of about twice the maximum system pressure.

Model SD-P1

Air or Water Pressure Gauge - Model SD-P1, 3-1/2 in. (89 mm) size, Steel Case

- 0 to 300 psi (0 to 2070 kPa)

This gauge has a 1/4 in. male BSPT or NPT bottom connection.

Company Name:	Shield Fire Safety and Security Ltd
Company Address:	Redburn House, 2a Tonbridge Rd, Romford, Essex, RM3 8QE, United Kingdom
Company Website:	http://www.shielduk.com
New/Updated Product Listing:	No
Listing Country:	United Kingdom
Certification Type:	FM Approved

Water Relief Valves

A water relief valve is designed to relieve excessive pressures in a water supply system. It is also used in the discharge line of a fire pump to limit the pressure developed by the pump.

Approval specifications require that a valve, set to operate at 100 psi (690 kPa), will discharge the full rated pump capacity without permitting the pressure to rise above 125 psi (860 kPa). It is designed to permit the removal of all working parts without removing the valve from its pipe connections. Sufficient clearance of all moving parts prevents sticking and avoids faulty operation.

Water Relief Valves

Cat. Nos. 50B-4KG1, 2050B-4KG1. 3, 4, 6, 8 in. NPS (76, 102, 152, 203 mm). Assembly consists of Clayton 100 (globe) or Clayton 2100 (angle) hydraulically operated, diaphragm-actuated valve, Clayton CRL pressure relief control 20-200 psi (140-1380 kPa), Clayton X44A, X46A strainers, Clayton Model 81-01 check valve, pressure gauge and 3/32 in. (2 mm) dia. orifice assembly. Clayton X101C valve position indicator is available as optional equipment. Available ANSI flanged body connections are as follows:

Class 300 inlet, Class 150 outlet, 250 psi rated working pressure;

Class 300 inlet, Class 300 outlet, 400 psi rated working pressure;

Class 150 inlet, Class 150 outlet, 250 psi rated working pressure.

Available ISO flanged body connections are as follows:

PN10, 175 psi (12 bar) rated working pressure;

PN16, 232 psi (16 bar) rated working pressure;

PN25, 363 psi (25 bar) rated working pressure.

Models identified with the suffix "KC" indicate epoxy coated valves.

Catalog No. 750B-4KG. 3, 4 in. NPS (76, 102 mm). Wafer style valve. 300 psi (2070 kPa) rated working pressure assembly consists of a Roll Seal Series 100-42 hydraulically operated valve, Clayton CRL5A pressure relief control available with spring ranges of 20-200 psi (140-1380 kPa) and 100-300 psi (690-2070 kPa), Clayton X43 strainer, Clayton Model 81-01 check valve, pressure gauge and Clayton Model X58X orifice assembly.

Model 850 B, 4, 6, 8, in. NPS (102, 152, 203 mm). Rated working pressure 250 psi (1725 kPa). Assembly consists of the Model 100-43 TDV hydraulically operated, diaphragm-actuated valve, Clayton CRL pressure relief control 20-200 psi (140-1380 kPa), Clayton X44A strainer and orifice assembly, Clayton Model 81-01 check valve and pressure gauge.

Company Name:	Cla-Val Co
Company Address:	Box 1325, Newport Beach, California 92659, USA
Company Website:	http://www.cla-val.com
Listing Country:	United States of America
Certification Type:	FM Approved

BUREAU VERITAS
Certification



Certification

Awarded to

NATIONAL FIRE FIGHTING MANUFACTURING FZ. CO.

JEBEL ALI FREE ZONE, P. O. BOX 17014, DUBAI,
UNITED ARAB EMIRATES

*Bureau Veritas Certification certify that the Management System of the
above organization has been audited and found to be in accordance
with the requirements of the management system standard detailed below*

Standard

ISO 9001:2008

Scope of Certification

**DESIGN, INSTALLATION AND MAINTENANCE OF SYSTEMS FOR FIRE FIGHTING,
FIRE ALARM, FIRE SUPPRESSION, HFC 227 EA, CO₂, INERT GAS, FOAM
AND POWDER FIRE PROTECTION SYSTEM AND FIRE VEHICLES FOR INDUSTRIAL
AND CONSTRUCTIONAL APPLIANCES. MANUFACTURER OF
FIRE FIGHTING EQUIPMENTS SUCH AS FIRE EXTINGUISHERS,
FIRE PUMP SET ASSEMBLIES, HOSE REELS,**

Certification cycle start date: **27TH FEBRUARY 2013**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **26TH FEBRUARY 2016**

Original certification date: **27TH FEBRUARY 2007**

Certificate No. **IND13.3019U/Q**

SERAY TOPAL

Certification Manager, Bureau Veritas Dubai

BUREAU VERITAS
CERTIFICATION (Holding) S.A.
using the accreditation certificate
number 008



Certification body address: Brandon House, 180 Borough High Street, London SE1 1LB, United Kingdom
Local office: Bureau Veritas Certification, P.O Box 9110, 211 Second Floor, 2nd of December Street,
Dune Center, Satwa, Dubai, UAE

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

To check this certificate validity please call: 00971 4 345 3560



Certificate of Management System Registration

Certificate Number: 463

Issue: 12

NAFFCO FZ Co

having complied with the requirements of:

ISO 9001:2008
Quality Management Systems – Requirements

are authorised to use the LPCB Certification Mark on stationery and publications related to the following products and/or services:

NAFFCO FZ Co

P O Box 17014
Jebel Ali
Dubai
United Arab Emirates

Scope:

Manufacture, installation and servicing of portable fire extinguishers, mobile fire extinguishers, auto extinguishing systems, fire hoses, hose reels and fire cabinets.
Assembly of fire pumps, fire pump sets and fire hydrants.
Design, manufacture, installation and servicing of water supply systems, fire sprinklers, water spray, foam systems and gaseous fixed fire fighting systems. Supply of fire blankets.
Manufacture of dry riser inlet boxes to BS 5041-5.

This certificate is maintained and held in force through regular surveillance activities.

Signed for LPCB

Tracie Hunter
Technical Manager

01 February 2014

Date of This Issue

31 January 2017

Expiry Date

09 July 1999

Date of First Issue



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bre

Certificate of Management System Registration

Certificate Number: 463

Issue: 12

NAFFCO FZ Co

having complied with the requirements of:

ISO 9001:2008
Quality Management Systems – Requirements

are authorised to use the LPCB Certification Mark on stationery and publications related to the following products and/or services:

NAFFCO FZ Co

P O Box 17014
Jebel Ali
Dubai
United Arab Emirates

Scope:

Manufacture, installation and servicing of portable fire extinguishers, mobile fire extinguishers, auto extinguishing systems, fire hoses, hose reels and fire cabinets.
Assembly of fire pumps, fire pump sets and fire hydrants.
Design, manufacture, installation and servicing of water supply systems, fire sprinklers, water spray, foam systems and gaseous fixed fire fighting systems. Supply of fire blankets.
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bre



CERTIFICATE



This is to certify that

National Fire Fighting Manufacturing FZ Co (NAFFCO)

Plot No. S10201
Jebel Ali Free Zone (South)
DUBAI
UAE

has implemented and maintains an
Occupational Health and Safety Management System.

Scope:

The Occupational Health and safety activities and supporting process, associated with the Design, Installation, Testing & Commissioning including system warranties for all types of Fire Protection Systems, smoke management system, Fire Alarm & Gas detection systems including Fire Fighting systems, sprinkler systems, dry chemical powder system, wet chemical systems, fire pumps, water spray systems, water mist systems, pre-action systems, foam systems, all types of clean agent systems, CO₂ systems, fire hydrant systems, emergency lighting systems, voice evacuation and public address systems, low voltage systems, gas detection systems, CCTV and security systems .

The Occupational Health and Safety activities and supporting process the manufacture of fire fighting equipment, fire extinguishers, fire pump set assemblies, hydrants (wet & dry), foam concentrates & equipment.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

BS OHSAS 18001 : 2007

Certificate registration no. 20002009 BSOH

Date of original certification 2013-01-10

Date of revision 2015-01-15

Date of certification 2013-01-10

Valid until 2016-01-09



UL DQS Inc.

Ganesh Rao
Managing Director

Accredited Body: UL DQS Inc., 1130 West Lake Cook Road, Suite 340, Buffalo Grove, IL 60089 USA
Administrative Office: UL Management Systems Solutions India Pvt. Ltd., 5th Floor, Anjaneya Techno Park, 147, HAL Airport Road, Kodihalli, Bangalore - 560 017 - India



CERTIFICATE



This is to certify that

National Fire Fighting Manufacturing FZ Co (NAFFCO)

Plot No. S10201
Jebel Ali Free Zone (South)
DUBAI
UAE

with the organizational units/sites as listed in the annex

has implemented and maintains an **Environmental Management System**.

Scope:

The Environmental activities and supporting process, associated with the Design, Installation, Testing & Commissioning including system warranties for all types of Fire Protection Systems, smoke management system, Fire Alarm & Gas detection systems including Fire Fighting systems, sprinkler systems, dry chemical powder system, wet chemical systems, fire pumps, water spray systems, water mist systems, pre-action systems, foam systems, all types of clean agent systems, CO₂ systems, fire hydrant systems, fire alarm systems, emergency lighting systems, voice evacuation and public address systems, low voltage systems, gas detection systems, CCTV and security systems.

The environmental activities and supporting process, associated with the manufacture of fire fighting equipment, fire extinguishers, fire pump set assemblies, hydrants (wet & dry), foam concentrates & equipment.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 14001 : 2004

Certificate registration no.	20002009 UM
Date of original certification	2013-01-10
Date of revision	2015-01-15
Date of certification	2013-01-10
Valid until	2016-01-09



UL DQS Inc.

Ganesh Rao
Managing Director

Accredited Body: UL DQS Inc., 1130 West Lake Cook Road, Suite 340, Buffalo Grove, IL 60089 USA
Administrative Office: UL Management Systems Solutions India Pvt. Ltd., 5th Floor, Anjaneya Techno Park, 147, HAL Airport Road, Kodihalli, Bangalore - 560 017 - India



CERTIFICATE



This is to certify that



NAFFCO FZ CO.

Plot no. S10201
Jebel Ali Free Zone (South)
Dubai
UAE

with the organizational units/sites as listed in the annex

has implemented and maintains a **Quality Management System**.

Scope:

The Design, Installation and Maintenance of Fire fighting, Sprinkler, Fire alarm, Low Voltage, Voice Evacuation and Emergency Light, Fire Suppression Systems, HFC227 ea, CO2, Inert Gas, Dry Chemical Powder, Wet Chemical Powder, Fire Protection Systems, Sprinkler Systems, Deluge Water Spray Systems and Foam Systems for Industrial and Construction Applications. The Manufacture of Fire Fighting Equipment including Fire Rated Cabinets Fire Extinguishers, Fire Pump Set Assemblies, Hydrants (Wet & Dry), Foam Concentrates & Equipment, Skid for Fixed Foam Generating System.
The Remote Location Facility at NAFFCO Electromechanical Co L.L.C Dubai Performs Customer related Processes and Warehousing.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2008

Certificate registration no.	20002009 QM08
Date of original certification	2006-03-07
Date of certification	2015-03-07
Valid until	2018-03-06



UL DQS Inc.

Ganesh Rao
Managing Director



Annex to Certificate Registration No. 20002009 QM08

NAFFCO FZ CO.

Plot no. S10201
Jebel Ali Free Zone (South)
Dubai
UAE

Business Relation #	Location	Scope
20001986	NAFFCO Electromechanical Co L.L.C The Curve Building Plot no. 358-574 AL QUOZ – 3 Dubai UAE	Customer Related Processes and Warehousing.