

Fuel Pumps & Valves

219 Hahn Drive Frankfort, KY 40601

Tele: 800.766.1233 Fax: 502.223.4629 www.websterfuelpumps.com

SUBMITTAL DATA

TRANSFER / SUPPLY PUMP DUPLEX UNITS SIMPLEX UNITS SPM-SPMB-SPMV

PROJECT

ARCHITECT

ENGINEER

DATE

CONTRACTOR

WEBSTER REPRESENTATIVE

EQUIPMENT

CONTENTS

TRANSFER / SUPPLY PUMP / SIMPLEX / DUPLEX UNITS SUBMITTAL DATA

DATA

_

	MODEL #
	SIMPLEX
	DUPLEX MANUAL
ZIP	DUPLEX AUTO.
	ZIP

PUMP

TOTAL FIRING RATE GPH	MAXIMUM HEAD	FEET
SUCTION: LIFT IN FEET	FLOW GPH	
VALVE ADJUST: PRESSURE RANGE MINIMUM _	PSI MAXIMUM PSI	

MOTOR

HORSE POWER	RPM	WATTS	
VOLTS	PHASE	HZ	ENCLOSURE

ACCESSORIES

CHECK VALVE	VACUUM BREAKER
COMPOUND GAUGE	OIL SAFETY VALVE
ELECTRIC ALTERNATOR	MECHANICAL ALTERNATOR
COMMON DISCHARGE MANIFOLD WITH CHECK VALVE	
OTHER	

The SPM DUPLEX models consist of two pump/motor assemblies with a pre-piped, common discharge manifold. One pump/motor unit operates continuously, with the second providing backup service if the main pump fails. Either automatic (SPM-DA models) or manual (SPM-DM models) controls are available.

The duplex automatic series are designed specifically for buildings where a constant supply of oil must be assured: hospitals, apartment buildings, schools and other commercial/industrial buildings. The SPM-DA models consist of two identical supply pump and motor sets mounted on a rigid channel iron base. Central to the base is a pedestal which supports the control panel. On the side of the control panel is a selector switch that identifies either Pump #1 or Pump #2 to serve as the lead pump set. The other pump set then automatically becomes to lag pump set. Should the lead pump lose pressure, for any reason, it will automatically be turned off and the lag pump turned on. Simultaneously, an audible alarm will be activated to notify as service person that a pressure failure has occurred and attention must be given to the SPM-DA unit. The control panel is equipped with a lead-lag switch to permit manual alternation of the pumps to provide even wear on each pump.

The duplex manual series is designed for commercial and industrial structures where an oil supply is required only during occupancy, and a qualified person is always present to perform the manual switching. It is not recommended for structures with water sprinkler systems that are unoccupied for long periods of time. The SPM-DM consists of two identical supply pump and motor sets mounted on a rigid channel iron base. Central to the base is a pedestal upon which is mounted a selector switch only. If the active pump set fails, it must manually be turned off and the inactive unit turned on.

Motors on standard pump sets are 1725 RPM, single phase 60 hertz units and must be specified for operation at 115 or 230 AC volts. Single phase 50 hertz motors are available on special request. Special pump sets are also available with 1725 RPM, three phase 50 or 60 hertz motors. Contact the factory for information. Both frequency of operation and AC voltage must be specified (230 or 460 AC volts).

Many other features are available such as oil spill pans under pump sets, indicator lights, pressure regulating valves, etc. Contact the factory at (502) 695-4400 for information on these features and others that may not be listed.

DUPLEX AUTOMATIC OPERATION

The basic premise for the control of an automatic duplex system is that a faulty supply pump will not develop adequate pressure to supply fuel oil. By continuously monitoring pressure and issuing an indication when a decrease in pressure occurs, it is able to switch from the lead pump, which has developed a fault, to the lag pump.

Pressure monitoring is accomplished by using a Honeywell[®] Pressuretrol model L404F having a variable pressure range (10-150 psi) and a variable differential range (10-22 psi).

A three position "SELECTOR" switch mounted on the right side of the control panel is used to select "PUMP 1" or "PUMP 2" as the lead pump. Center position on the selector switch turns the control unit "OFF". Just below the selector is a "TEST" push button. While the automatic duplex system is operating, pushing the test button will turn off the lead pump and turn on the lag pump. At the same time an audible alarm signal is sounded. Switching the selector switch to the "OFF" position and then back to the original setting will restore the control back to its original operating condition.

INITIAL SETUP

Before connecting the unit to main power, make sure the "SELECTOR" switch is in the "OFF" position. Set the Pressuretrol "MAIN" scale (scale on the right hand side) to slightly less (about 5%) than expected designed pressure of the system, and the differential setting marked "DIFF" (scale on the left hand side) to the pressure difference you would like the system to switch from lead pump to lag pump. An an example: the system has been designed to operate at 85 psi, set the main pressure at 80 psi. If the pressure should drop to 70 psi you wish the lead pump to switch in the lag pump. Thus the differential pressure should be set at 10 psi (80 psi - 70 psi) = 10 psi.

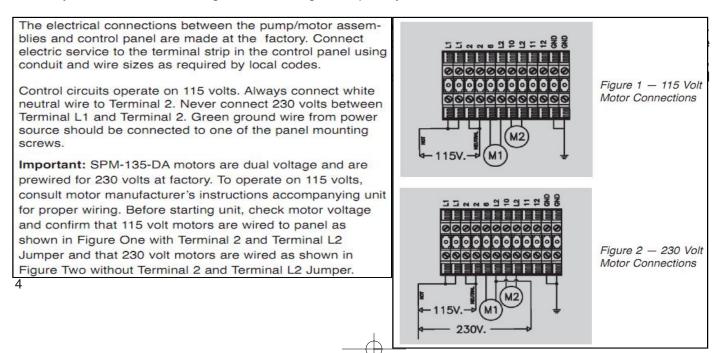
Briefly turn on the system to check pump rotation (clockwise looking into the shaft), and set pump pressures at system designed levels.

Once the system has been set up, power connected and pump rotating verified, the system can be checked as follows:

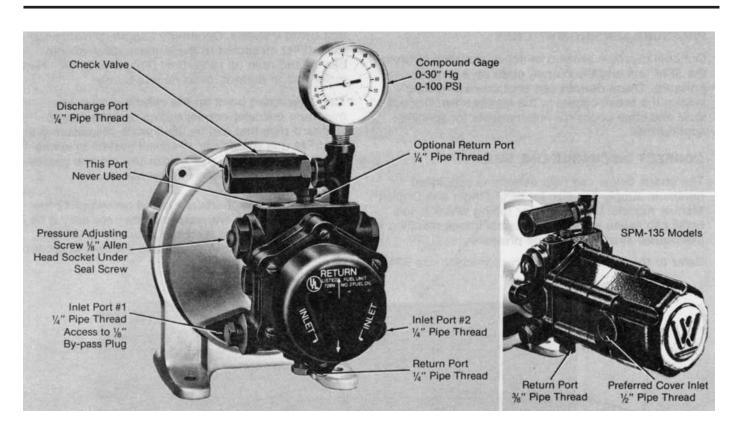
- Turn on the system and allow the lead pump to run for several minutes. If in about 20 or 30 seconds after turning the system on, the lead pump drops out, check pump pressure settings and Pressuretrol "MAIN" pressure setting. The Pressuretrol setting must be about 5% less than pump set pressure. If all pressures check, and the lead pump still drops out, lower the Pressuretrol setting another 5% and try again. If condition still continues, contact the factory at (502) 695-4400.
- 2. After the system lead pump has run for several minutes push the "TEST" button. The lead pump should drop out, lag pump turn on, and the audible alarm sound.
- Reset the system by turning the selector switch to "OFF" and back to its previous setting. The same lead pump should be engaged. Allow to run for several minutes. Re-adjust pump pressure setting to 20% below designed pressure. The lead pump should drop out, lag pump turn on and the audio alarm sound.
- 4. Turn off the system, set the proper pressures and turn the system back on. Your system should be properly set.

ELECTRICAL POWER CONNECTIONS

Abide by all local electrical wiring codes in wiring the duplex systems.



SPM Single Supply Units



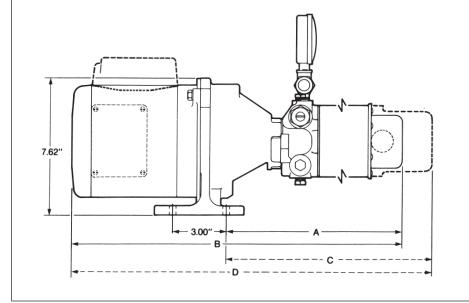
DIMENSIONS

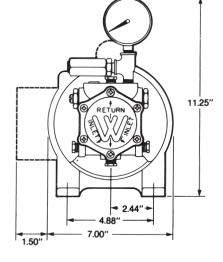
SPM Single Units

Models	Α	В	С	D
SPM-15	6.88	16.36		
SPM-30	7.44	17.42		
SPM-65	8.96	18.94		
SPM-135			10.94	21.51

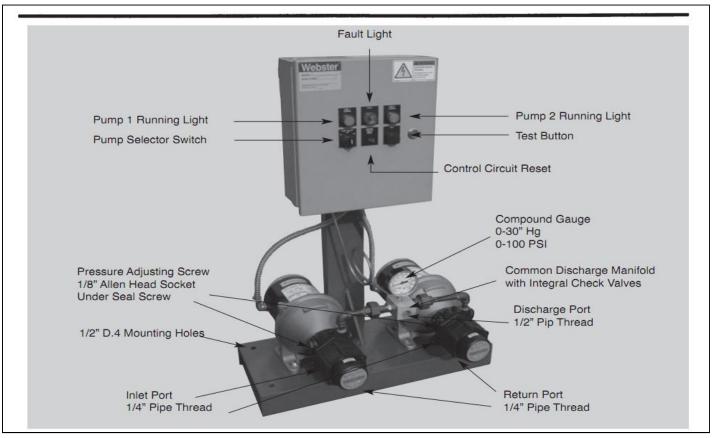
The basic dimensions indicated apply to all size SPM units. Refer to the table for variable dimensions "A" through "D."

Model SPM-135 (with 1/2 HP motor) includes external motor starter capacitor and junction box illustrated by dotted lines. Larger cover with preferred inlet on Model SPM-135 also illustrated by dotted lines.





SPM Duplex Automatic Models



SPECIFICATIONS

SPM Duplex Automatic units consist of two SPM Series Pump/Motor assemblies and an electrical control panel. They are designed for use in maintained pressure supply systems *only*. If system pressure falls below a preset level, the control automatically switches from the primary pump/motor unit to the secondary unit. If the backup pump/motor unit also fails to reach or maintain preset system pressure, the control also shuts off the backup unit.

A pump selector switch allows the two pump/motor units to be manually alternated for even wear on each pump. Pump pressures can be set at a range from 20 PSI to 85 PSI. See Correct Supply Line Size charts for maximum discharge head.

TANK TO PUMP CONNECTIONS

Units should be set for two pipe operation. Preferred installation calls for a separate suction line from tank to pump for each pump/motor unit. If system failure

occurs because of a gross leak in the suction line of the primary unit, the second unit can still provide backup service.

The correct suction line size can be determined by referring to the line sizing charts. Generally, the return line should be sized the same as the suction line. Low pressure drop, swing type check valves can be installed in the suction lines, assuring that pumps are full of oil, ready for service. Check valves in return lines allow removal of inactive pump for servicing. Use of shutoff valves in return lines is not recommended. **Be certain all plugs and connections are secure and leak-tight.**

SPECIFICATIONS SPM-15 / SPM-30 / SPM-65 / SPM-135

CAPACITIES: 15, 30, 65, and 135 GPH.

PRESSURE: Maximum operating pressure to 80 PSI or 200' of head.

- MOTORS: All motors are 60 HERTZ, 1725 RPM, continuous duty. 1/6, 1/4, 1/3 HP: SPLIT PHASE, 115 OR 230 VOLT operation 1/2 HP: Capacitor start / induction run, TEFC, DUAL 115/230 VOLT Motors are clockwise as viewed from motor shaft end. 50 HERTZ and/or 3 PHASE motors are available upon request.
- PUMPS: SPM 15, 35, AND 65 USES WEBSTER "2R" SERIES PUMP UNITS SPM 135 USES WEBSTER "2V" SERIES PUMP UNITS WEBSTER 2R AND 2V ARE UL LISTED

PORTING: SPM 15, 30, 65: 1/4" NPTF - 2 INLETS, OUTLET PORT AND TOP AND BOTTOM RETURNS SPM 135: 1/4" NPTF - OUTLET PORT 3/8" NPTF - RETURN PORT, 2 OPTIONAL INLETS 1/2" NPTF - INLET

- SEAL: All models Double lip type. BUNA N. VITON available upon request.
- MOUNTING: All models Four bolt foot mount.
- FILTER: Rotary self cleaning type, except in SPM 135. Use of external line filter recommended. For additional filter requirements, contact the factory.
- VALVES: Pressure regulating assembly in pump maintains set pressure. Check valve maintains oil in feeder lines for instant starts. External regulators are required for flow rates higher than 135 GPH. Contact the factory for information.
- GAUGE: 2 1/2" DIA., Calibrated from 30" of HG vacuum to 100 PSI. For other requirements, contact the factory.
- INLET VACUUM: All units 15" HG maximum.

NATIONAL FIRE PROTECTION ASSOCIATION COMPLIANCE REQUIRES FUEL INLET PRESSURE NOT TO EXCEED 3 PSIG.

CONTROLS: Duplex automatic with lead-lag switch, alarm, and push button test switch. Duplex manual with selector switch only. Additional controls are available. Contact the factory.

SPM DUPLEX UNITS

MODELS MOTOR VOLTAGE	CONTROLS MOTOR HP	WATTS @ PUMP 85 PSI MODEL #	SUCTION CAPACITY GPH	MAX OUTPUT FLOW @ PSI, GPH ¹	TOTAL FIRING RATE, GPH	BTU (MILLIONS)
SPM-15-1 120V SPM-15-2 240V SPM-15-X 3 PHASE SPM-15-1-DA 115 SPM-15-1-DM 115 SPM-15-2-DA 230 SPM-15-2-DM 230 SPM-15-X-DA SPM-15-X-DA	SIMPLEX SIMPLEX AUTOMATIC MANUAL 1/6 AUTOMATIC MANUAL AUTOMATIC 3 PHASE MANUAL	65 2R181C-5BQ	4 35	25	15	1.5
SPM-30-1 120V SPM-30-2 240V SPM-30-X 3 PHASE SPM-30-1-DA 115 SPM-30-1-DM 115 SPM-30-2-DA 230 SPM-30-2-DM 230 SPM-30-X-DA SPM-30-X-DA	SIMPLEX SIMPLEX AUTOMATIC MANUAL 1/4 AUTOMATIC MANUAL AUTOMATIC 3 PHASE MANUAL	85 2R283C-5BQ	4 70	45	30	3.0
SPM-65-1 120V SPM-65-2 240V SPM-65-X 3 PHASE SPM-65-1-DA 115 SPM-65-1-DM 115 SPM-65-2-DA 230 SPM-65-2-DM 230 SPM-65-X-DA SPM-65-X-DA	SIMPLEX SIMPLEX AUTOMATIC MANUAL 1/3 AUTOMATIC MANUAL AUTOMATIC 3 PHASE MANUAL	175 2R686C-5E	3Q4125	90	65	6.5
SPM-135 SPM-135-X 3 PHASE SPM-135-DA 115 SPM-135-DM 115 SPM-135-X-DA SPM-135-X-DM	SIMPLEX DUAL VOLTAGE AUTOMATIC MANUAL 1/2 AUTOMATIC 3 PHASE MANUAL	300 2V086C-5D0	20 250	167	135	13.5

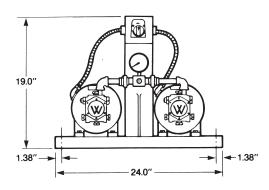
¹FIRING RATE IN GPH @ 1725 RPM Pumping #2 fuel oil @75° F. Total firing rate is equal to the sum of burner firing rates, when burners are set for one-pipe operation as recommended. total must not exceed maximum rating shown.

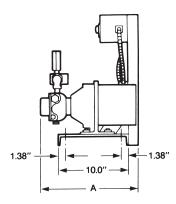
For any additional requirements, contact the factory.

SPM DUPLEX DIMENSIONS

SPM DUPLEX MANUAL SUPPLY UNIT

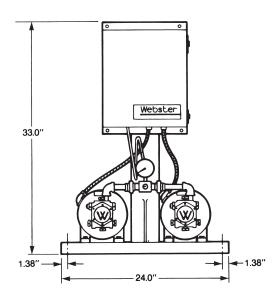
MODELS	"A"	PIPE THD SIZE
SPM-15-()-DM	14.94	1/4
SPM-30-()-DM	16.53	1/4
SPM-65-()-DM	16.90	1/4
SPM-135-DM	21.37	3/8

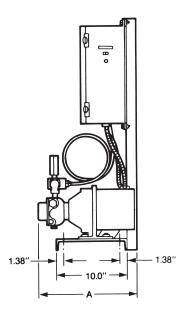




SPM DUPLEX AUTOMATIC UNIT

MODELS	"A"	PIPE THD SIZE
SPM-15-()-DA	14.94	1/4
SPM-30-()-DA	16.53	1/4
SPM-65-()-DA	16.90	1/4
SPM-135-DA	21.37	3/8





9

SPMB Series Single and Duplex Supply Units



B series transfer pumps are designed to provide efficient pumping of #1 to #6 fuel oils, in capacities from 80 to 290 gallons per hour, at pressures up to 500 PSI (except #1 oil). With high-density gray iron body construction, heat-treated alloy steel gears and shafts, and special antifriction bearings. B series transfer pumps offer superior durability and high mechanical efficiency. Double lip Viton seals, are standard. These pumps are also available in pump and motor packages. Available in 115/230 volt single phase or 230/460 volt three phase, simplex, duplex automatic and duplex manual configurations. All B series pumps are UL approved.

SPECIFICATIONS SPMB 18B-R / 37B-R / 47B-R / 59B-R

CAPACITIES: 82, 159, 220, and 292 GPH.

PRESSURE: Maximum operating pressure to 80 PSI or 200' of head.

MOTORS: All motors are 60 HERTZ, 1725 RPM, continuous duty. SPLIT PHASE, 115 OR 230 VOLT operation 1/2 HP: Capacitor start / induction run, TEFC, DUAL 115/230 VOLT Motors are clockwise as viewed from motor shaft end. 50 HERTZ and/or 3 PHASE motors are available upon request.

- PUMPS: 18B-R, 37B-R, 47B-R, 59B-R
- PORTING: 18B, 37B, 47B 1/2" NPTF side inlet and outlet 59B 3/4" NPTF side inlet and outlet
- SEAL: All models Double lip type. VITON
- MOUNTING: All models Four bolt foot mount.
- FILTER: Use of external line filter recommended.
- VALVES: External pressure regulating or relief valve recommended.
- GAUGE: 2 1/2" DIA., Calibrated from 30" of HG vacuum to 100 PSI.
- INLET VACUUM: All units 15" HG maximum.

NATIONAL FIRE PROTECTION ASSOCIATION COMPLIANCE REQUIRES FUEL INLET PRESSURE NOT TO EXCEED 3 PSIG.

CONTROLS: Duplex automatic with lead-lag switch, alarm, and push button test switch. Duplex manual with selector switch only. Additional controls are available. Contact the factory.

SPMB Ordering Code



MOTOR HORSEPOWER (1725 RPM STANDARD)

No. Description * 25 .25 HP * 33 .33 HP 50 .50 HP .75 HP 75 100 1.0 HP 1.5 HP 150 2.0 HP 200 300 3.0 HP

★ = only available in 115V or 230V single phase

MOTOR HORSEPOWER (1725 RPM STANDARD)

4	Under pressure, read horsepower required at 1750 RPM				
Pump Model	Maximum [°] gph Nominal	25 psi	100 psi	200 psi	300 psil
18BR	82	.25	.25	.25	.33
37BR	159	.25	.25	.50	.75
47BR	220	.25	.50	.75	1.00
59BR	292	.25	.50	.75	1.50

MOTOR PHASE

² Code	Description
А	Single Phase / 60 cycle / 115/208/230 VAC
В	Three Phase / 60 cycle / 208 / 230 / 460 VAC
Х	Consult factory for other types

MOTOR ENCLOSURE

³ Code	Description
Т	TEFC Std/ thru 2 HP
0	OPDP Std. over 2 HP

SPMB Duplex Ordering Code

When ordering SPMB Duplex models add suffix:

"DM," for manual control models, or "DA," for automatic control models.

Example: SPMB-50AT/18BR-DA

5	Code Duplex Units	
	DM	Duplex with manual controls
	DA	Duplex with automatic controls

When sizing SPMB units, remember that the pressures indicated are at the pump outlet.

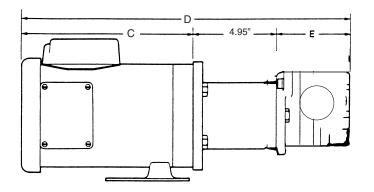
All pumps relying on atmospheric pressure to push the fuel oil into them are subject to cavitation. As fuel viscosity (thickness) increases, the tendency for cavitation becomes greater. Therefore, iti is best to mount the pump at the base of the tank and to use the largest diameter, shortest length, and straightest inlet possible. A large diameter inlet pipe or hose necked-down at the pump is preferable to a longer lentth of similar diameter pipe because the fuel tends to adhere to the inside of the pipe.

When initially starting a unit, it is desireable and sometimes necessary to have a vent valve or plug on the pressure side of the pump to facilitate its priming.

DIMENSIONS Motor NEMA В С ΗP Fame Α Туре Size (Standard) .50 56C TEFC 9.00 8.25 9.20 .75 56C TEFC 9.00 8.25 9.20 56C TEFC 8.25 10.20 1.00 9.00 1.50 56C TEFC 9.00 8.25 11.20 2.00 56C TEFC 9.00 8.25 11.20 3.00 182TC OPDP 9.63 11.05 11.00 OPDP 9.63 12.40 5.00 184TC 11.05 7.50 213TC OPDP 11.63 13.00 13.90

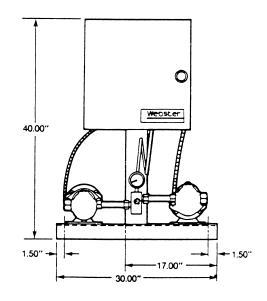
Pump			
Model	E	D	
18BR	3.36	(.50HP) 17.06	
37BR	3.71	(.75HP) 17.41	
47BR	4.05	(.75HP) 17.75	
59BR	4.40	(.75HP) 18.10	

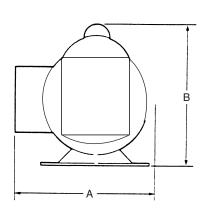
SPMB SINGLE SUPPLY UNIT

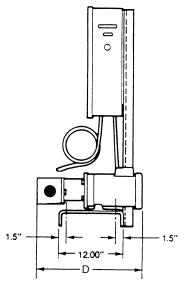


SPMB DUPLEX SUPPLY UNIT

(Dimensions are for 3 Phase Duplex Automatic Consult Factory for Single Phase Dimensions)

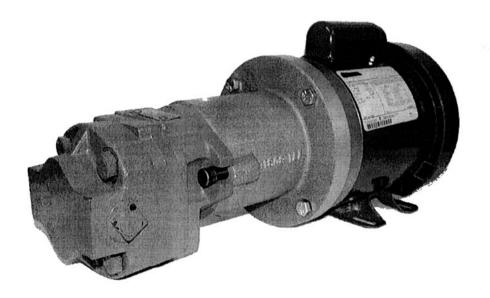






SPMB Series Single and Duplex Supply Units

SPMV Series Single and Duplex Supply Units



Webster SPMV singe and duplex supply units are designed for high capacity applications where 430 to 1790 GPH are required. Quite running, gear type pumps are aviailable in four sizes and incorporated hardened integral shafts, journals and gears, special anti-friction bearings. Buna-N seals, and cast iron gear plates. Standard motors ranging from 1/2 hp to 7.5 hp)373 w to 11.2 kw) are 1725 RPM NEMA "C" face, 115 volt single-phase or 230 volt three-phase, 60 cycle type with TEFC enclosures through 2 hp (1490w) and OPDP enclosures over 2 hp (1490w).

Webster SPMV motor/pump high capacity fuel oil supply units are designed to be used with fuels oils including JP4. Fluid viscosities should not exceed 6000 SUS. Suction should exceed 10" Hg. Inlet pressures are rated at 34 PSI continously and 50 PSI for short periods. The unit is designed to operate in -29° F to +200° F conditions, depending on viscosity of oil. The motor is precision aligned and coupled to pump with machined adapter and flexible coupling.

SPECIFICATIONS

Capacity:

430 to 1790 GPH with fluid viscosity to 10,000 SSU.

SPECIFICATIONS SPMV 086K / 194K / 237K / 388K

CAPACITIES: 439, 902, 1114, and 1730 GPH.

PRESSURE: Maximum operating pressure to 80 PSI or 200' of head.

MOTORS: Standard 60 CY. 1725 RPM NEMA "C" face 1/2 through 15 HP available. Single Phase 115/208/230 VAC or Three Phase 208/230/460 VAC. TEFC are available.

PUMPS: 086K, 194K, 237K, 388K

PORTING: 086K-194K 1" NPT side inlet and outlet 237K-388K 1 1/2" x 1 1/4" NPT

SEAL: All models - Double lip type. VITON

- MOUNTING: All models Four bolt foot mount.
- FILTER: Use of external line filter recommended.
- VALVES: External pressure regulating or relief recommended.
- GAUGE: 2 1/2" DIA., Calibrated from 30" of HG vacuum to 100 PSI. For other requirements, contact the factory.

INLET VACUUM: All units - 15" HG maximum.

NATIONAL FIRE PROTECTION ASSOCIATION COMPLIANCE REQUIRES FUEL INLET PRESSURE NOT TO EXCEED 3 PSIG.

CONTROLS: Duplex automatic with lead-lag switch, alarm, and push button test switch. Duplex manual with selector switch only. Additional controls are available. Contact the factory.



SPMV Ordering Code



MOTOR HORSEPOWER (1725 RPM STANDARD)

1 <i>No.</i>	Description
50	.50 HP
75	.75 HP
100	1.0 HP
150	1.5 HP
200	2.0 HP
300	3.0 HP
500	5.0 HP
750	7.5 HP

MOTOR HORSEPOWER (1725 RPM STANDARD)

4			der pressui /er required	re, read ' at 1750 RF	PM
Pump Model	Maximum [−] gph Nominal	25 psi	100 psi	200 psi	300 psil
086K	439	.50	.75	1.00	1.50
194K	902	1.00	1.75	2.50	3.00
237K	1114	1.00	2.00	3.00	4.00
388K	1791	2.00	3.50	4.50	6.00

 \star = only available in 115V or 230V single phase

MOTOR PHASE

² Code	Description
А	Single Phase / 60 cycle / 115/208/230 VAC
В	Three Phase / 60 cycle / 208 / 230 / 460 VAC
Х	Consult factory for other types

MOTOR ENCLOSURE

³ Code	Description
Т	TEFC Std. thru 2 HP
0	OPDP Std. over 2 HP

When sizing SPMV units, remember that the pressures indicated are at the pump outlet.

All pumps relying on atmospheric pressure to push the fuel oil into them are subject to cavitation. As fuel viscosity (thickness) increases, the tendency for cavitation becomes greater. Therefore, it is best to mount the pump at the base of the tank and to use the largest diameter, shortest length, and straightest inlet possible.

SPMB Duplex Ordering Code

When ordering SPMV Duplex models add suffix:

"DM," for manual control models, or "DA," for automatic control models.

Example: SPMV-50AT/086K-DA

5 Code	Duplex Units
DM	Duplex with manual controls
DA	Duplex with automatic controls

A large diameter inlet pipe or hose necked-down at the pump is preferable to a longer lentth of similar diameter pipe because the fuel tends to adhere to the inside of the pipe.

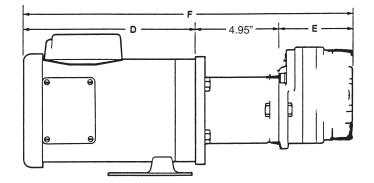
When initially starting a unit, it is desireable and sometimes necessary to have a vent valve or plug on the pressure side of the pump to facilitate its priming.

SPMV Series Single and Duplex Supply Units

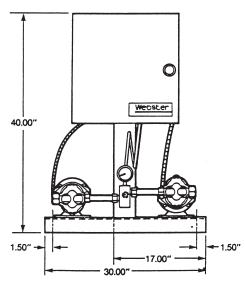
DIMEN	SIONS					
	Motor					
	NEMA					
HP	Fame	Туре	Α	В	С	D
	Size	(Standard)				
.50	56C	TEFC	6.30	9.00	8.25	9.20
.75	56C	TEFC	6.30	9.00	8.25	9.20
1.00	56C	TEFC	6.30	9.00	8.25	10.20
1.50	56C	TEFC	6.30	9.00	8.25	11.20
2.00	56C	TEFC	6.30	9.00	8.25	11.20
3.00	182TC	OPDP	7.30	9.63	11.05	11.00
5.00	184TC	OPDP	7.30	9.63	11.05	12.40
7.50	213TC	OPDP	8.00	11.63	13.00	13.90

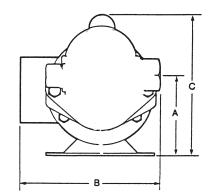
			F		
Pump					
Model	E	Minimum	Maximum		
086K	4.90	19.05 (.50HP)	20.85 (3.00HP)		
194K	5.65	19.90 (.75HP)	23.10 (5.00HP)		
237K	8.80	23.15 (.75HP)	27.85 (7.50HP)		
388K	9.80	23.95 (.75HP)	28.65 (7.50HP)		

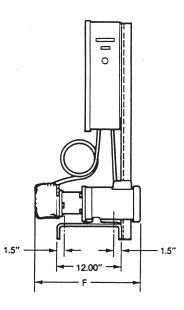
SPMJ SINGLE SUPPLY UNIT



SPMJ DUPLEX SUPPLY UNIT







17

NOTES

Œ

Đ

NOTES

Œ

E

19

L002715:Layout 1 10/24/07 1:02 PM Page 20

Đ



Div of Capital City Tool Inc.

219 Hahn Drive Frankfort, KY 40601 Tele: 800.766.1233 Fax: 502.223.4629 www.websterfuelpumps.com