




TYPE
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VF2

2" DISCHARGE SUMP PUMPS



Capacities to 125 gpm, Heads to 52'.
From 1/4 to 1 1/2 hp. discharge size
2", 1150 and 1750 operation.

HIGHLIGHTS

- | | | |
|--|---|---|
|  Vertical Submerged |  For Drainage |  Grouting Frames |
|  Heavy Duty |  For Seepage Water |  Steel Basins |
|  Automatic |  For Boiler Blow-Off | |
|  Single or Duplex |  Pit Covers | |

FEATURES

MOTORS: Nationally recognized manufacture in standard NEMA frame sizes and mounted on rigid single piece cast iron pedestals, rabbetted to assure perfect alignment on pump and motor shaft. Ball bearings are sealed against dirt and moisture and do not require field lubrication. Motors on standard units are drip-proof. Totally enclosed and explosion proof motors also available. Single phase (115/230v.) motors have built-in thermal overload protection in fractional frame sizes. Single phase motors in integral frame sizes and 3 phase (208-230/460v) motors should be provided with magnetic starters.

FLOAT SWITCH: Double break switch in steel enclosure, actuated by copper float, with brass rod and stops.

FLEXIBLE COUPLING: Precision machined with one-piece load cushion. No wear on metal jaws; load is absorbed by cushion compression.

SUSPENSION PLATE: Fourteen inch diameter cast iron suspension plate is standard. Twenty inch diameter steel suspension plates also available.

HANGER PIPE: Seamless steel pipe to insure rigid support for casing and accurate bearing alignment.

DISCHARGE PIPE: Discharge pipe firmly supported at floor plate to prevent piping strain on pump.

SHAFT: Carbon steel, diameter sized to operate at maximum speed without vibration or deflection. Micrometer adjustment provided above thrust bearing allows for proper location of impeller and suction plate.

BEARINGS: Oversize ball thrust bearing carries the weight of impeller and shaft; located in a sealed housing fully protected from dirt and moisture. Bronze guide bearings at pump casing and at intervals along shaft, prevent radial deflection. Intermediate bearings are grease lubricated. Lower bearing is

self-lubricating and suitable for pumping hot or cold water. Special Teflon, Micarta, cutless rubber and iron bearings, are also available if job conditions demand.

IMPELLER: Single-piece cast bronze impeller, machined and balanced, held firmly against shaft shoulder with key and lock nut.

CASING: Centrifugal design, accurately machined for uniform clearance of impeller and rigid connection to hanger pipe. Large area cast iron strainer fastened to bottom of casing.

COVERS AND BASINS: Pit covers are available for round, square, or rectangular sump pits. Covers can be furnished with grouting frames if desired. Steel and cast iron sump basins of all diameters and depths are also available. Covers and basins are fabricated to suit pump suspension plates and control openings and include vent connection and handhole or manhole. Basin inlet sizes and locations are determined by job conditions.

MATERIALS OF CONSTRUCTION: Standard bronze-fitted pumps have bronze impellers, pump bearing and intermediate bearings. Casing, suction plate, motor pedestal and strainer are cast iron suspension plate. Hanger pipe and discharge pipe are steel. Pumps of all-bronze, or all-iron construction also available.

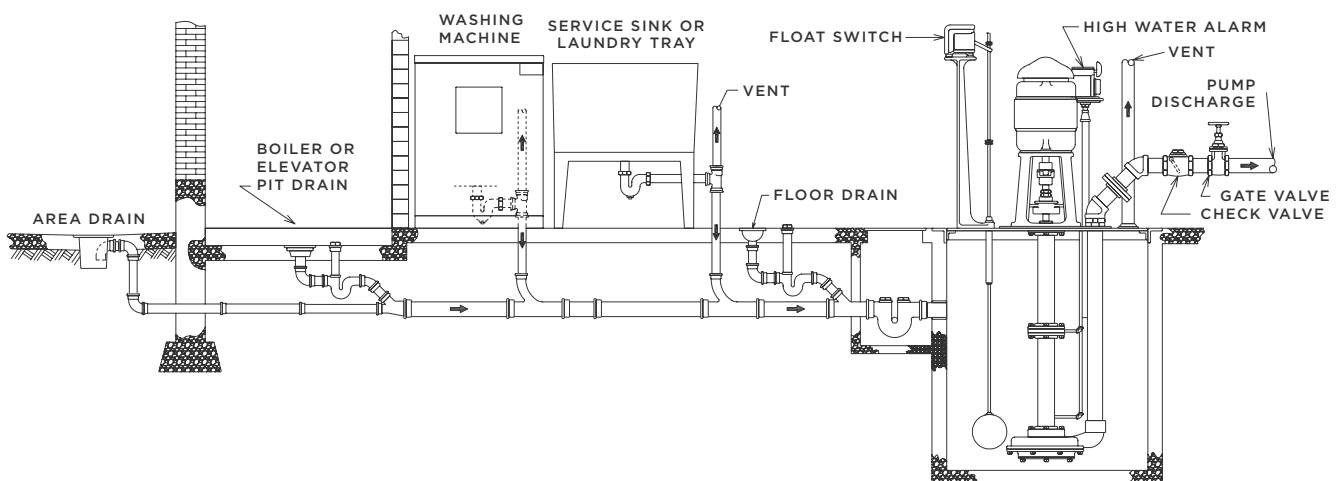
SINGLE AND DUPLEX UNITS:

Single units include one pump and motor, one float switch, one magnetic starter (if required), and one pit cover or basin.

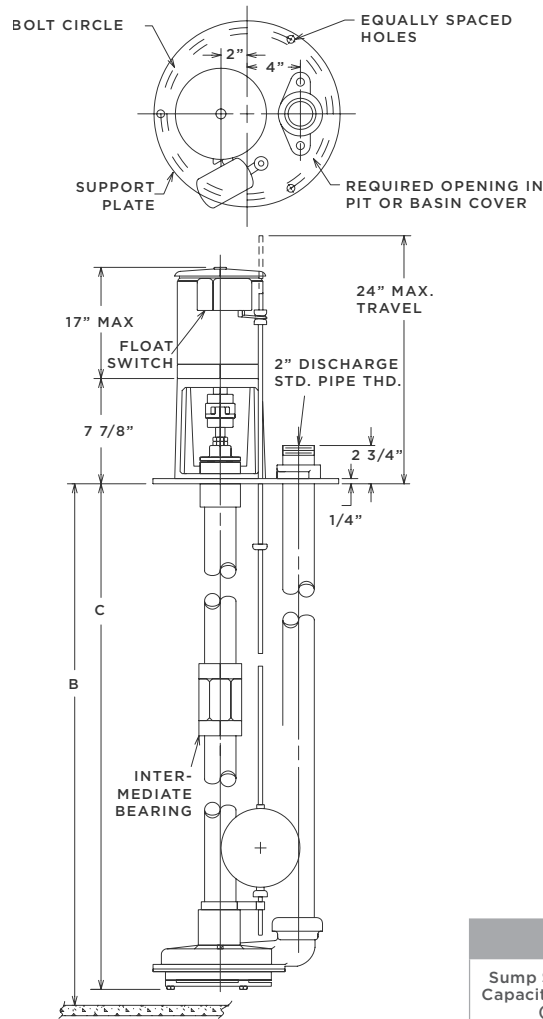
Duplex units include two pumps and motors, two float switches*, two magnetic starters (if required), and one pit cover or basin.

*One alternating float switch can be furnished on duplex units, instead of the two float switches, to alternate the operation of the two pumps, and to provide two-pump simultaneous operation in the event one pump cannot handle the in-flow.

TYPICAL SIMPLEX INSTALLATION



Engineering Selection Table			
Pump Type	Capacity GPM	Discharge Head-Feet	Motor HP
1750 RPM			
VF-2	15	30	0.5
VF-2	15	41	0.75
VF-2	15	52	1
VF-2	30	28	0.5
VF-2	30	35	0.75
VF-2	30	47	1
VF-2	30	52	1.5
VF-2	50	23	0.5
VF-2	50	30	0.75
VF-2	50	38	1
VF-2	50	47	1.5
VF-2	75	17	0.5
VF-2	75	22	0.75
VF-2	75	27	1
VF-2	75	40	1.5
VF-2	100	10	0.5
VF-2	100	15	0.75
VF-2	100	20	1
VF-2	100	29	1.5
VF-2	125	10	0.75
VF-2	125	15	1
VF-2	125	24	1.5
1150 RPM			
VF-2	15	15	0.25
VF-2	15	18	0.33
VF-2	15	23	0.5
VF-2	15	25	0.75
VF-2	30	13	0.25
VF-2	30	17	0.33
VF-2	30	22	0.5
VF-2	30	24	0.75
VF-2	50	10	0.25
VF-2	50	13	0.33
VF-2	50	18	0.5
VF-2	50	21	0.75
VF-2	75	9	0.33
VF-2	75	12	0.5
VF-2	75	15	0.75



Support Plates				
Dia. Plate	BC	Cover Opening	No. Bolt Holes	Dia. Holes
14	13	12	3	15/32
20	19	18	4	15/32

Pit or Basin Depths	
B Pit Depth	C Pump Length
2'-0"	22"
2'-6"	27"
3'-0"	33"
3'-6"	39"
4'-0"	45"
4'-6"	50"
5'-0"	56"
5'-6"	62"
6'-0"	68"
6'-6"	74"
7'-0"	80"
7'-6"	86"
8'-0"	92"
8'-6"	98"
9'-0"	104"
9'-6"	110"
10'-0"	116"
10'-6"	122"
11'-0"	128"
11'-6"	134"
12'-0"	140"

Sump Size		
Sump Size Determined by Pump Capacity and Depth of Sump Inlet (Gallons per Minute)	A Min. Dia. for Single Unit	A Min. Dia. for Duplex Unit
15	18	30
30	24	36
50	30	42
75	30	42
100	36	42
125	36	42

* Sump should be approximately 3 feet deeper than inlet

SUGGESTED SPECIFICATIONS FOR ARCHITECTS AND ENGINEERS:

Furnish and install where shown on plans, Type VF-2 Simplex (or Duplex), vertical, submerged, sump pump; as manufactured by Federal Pump Corporation.

(Each) pump having a capacity of _____gpm against a Total Dynamic Head of _____feet. Pump to have 2 inch ips discharge and to be constructed for pit (or basin) _____ ft. _____ins. in depth. Shaft shall be carbon steel, and impeller shall be bronze, open non-clog type. Ball thrust bearing shall be located in dust and moisture-proof housing above suspension plate. Impeller to be non-overloading at the hp specified throughout the entire range of operation.

Pumps to be driven though flexible coupling by _____hp, _____rpm, _____phase, _____cycles, _____volts, drip-proof motor.

(Each) Pump shall be controlled by an enclosed double-break float switch actuated by copper float, brass rod and adjustable stops. (For duplex units, specify: Furnish a pedestal mounted alternating float switch assembly with copper float, brass rod and adjustable stops, to alternate cycles of operation of pumps and provide 2-pump operation under peak load conditions.)

Furnish built-in thermal overload protective device for single phase motors in fractional hp frames

Furnish magnetic line voltage type starters for single phase motors in integral hp frames and all 3 phase motors.

Steel pit cover to be furnished for concrete pit _____ ft. _____ ins. x _____ ft. _____ins., with necessary openings for pump, manhole, controls and vent connection.

Welded angle iron grouting frame also to be furnished. If concrete pit is not to be installed, specify: Furnish fiberglass (or steel) basin, _____ft. _____ ins. In diameter and _____ft. _____ins. in depth, complete with cover and inlets as required by job conditions.

PUMP DISCHARGE HEAD

The discharge head for a sump pump installation consists of the following elements:

STATIC HEAD: The difference in elevation between the lowest water level in the sump pit, and the maximum height of the discharge line.

FRICTION: Loss of head in the discharge line, including valves and other filterings.

BACK PRESSURE: Proper allowance must be made for back pressure in sewer line, if existing.

EXAMPLE

Sump pit 5 feet in depth to be set in ground, with top flush with finished floor. Basement floor 10 feet highest point of discharge line. Sump pump capacity 50 gpm. Size of discharge line is 3 inches.

Static Head	*14 ft.
Friction Head: discharge line	2 ft.
Valves and other fittings	2 ft.
Back Pressure	5 ft.
Total Dynamic Head	23 ft.

* Lowest water level estimated to be 1 ft. above bottom of sump pit.

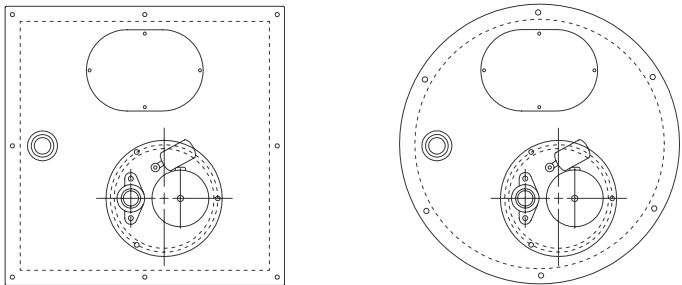
PUMP SIZING DATA

PUMP CAPACITY Sump Pump capacity can be selected from the following table, depending on the type of soil in which the building foundation is located. The gpm ratings apply to a single pump unit and to each pump of a duplex set.

Sq. Ft. of Floor Space	GPM (Clay Soil)	GPM (Sandy Soil)
0 to 2,000	15	50
2,000 to 4,000	30	75
4,000 to 6,000	50	100
6,000 to 10,000	75	125
10,000 to 15,000	100	150
15,000 to 20,000	125	200
20,000 to 30,000	150	250
30,000 to 40,000	200	300

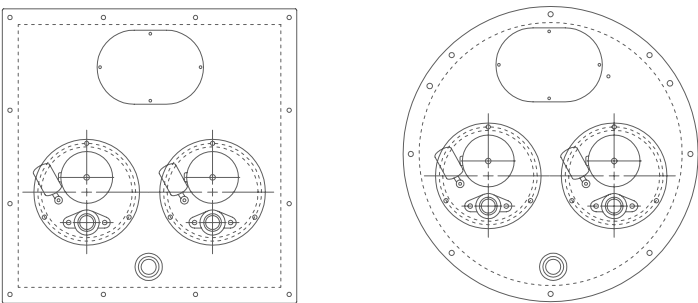
If basement floor is more than 3 feet below sewer level, add 10% additional pump capacity for each foot in excess of 3 feet. If building is located within 1000 feet of river or lake, add 20% additional pump capacity.

SIMPLEX COVERS



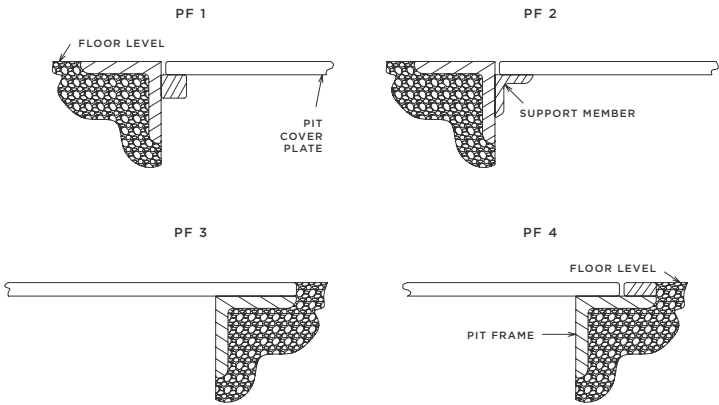
The above drawings of pit and basin cover plates for Type VSP Sump Pumps show standard arrangements of Simplex and Duplex Units for both circular and square plates. Square plates are usually furnished for concrete pits, while circular plates are normally furnished for cylindrical cast iron and steel basins.

DUPLEX COVERS



Fabricated steel plates are furnished as standard. Steel plates of rectangular and special shapes can be supplied, when specified. All cover plates are treated with a corrosion resistant coating.

PIT FRAMES



Type PF-1: furnished as standard for square and rectangular pits. Permits frame and cover to be installed flush with finished floor. Has bar support for cover.

Type PF-2: construction same as PF-1 except with angle iron support for cover.

Type PF-3: furnished as standard for round pits. Frame supports cover and should be recessed into concrete so that cover is flush with finished floor.

Type PF-4: construction same as PF-3 except with filler strip. Frames and covers are treated with a corrosion resistant coating, and are available in non standard shapes and sizes, sectional construction, and galvanized or checkered steel.



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