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Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER® PUMP COMPANY

SECTION: 5.10.030
FM1326
0615
Supersedes
0603

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GRINDER PUMP SIZING AND SELECTION WORKSHEET

See back side for sizing and selection worksheet. Fill out front side and return to representative or Zoeller Pump Company for system sizing and selection assistance. Complete shaded boxes if sizing of pumps is required. Complete unshaded boxes for system selection.

CONTROLS (840 ONLY)

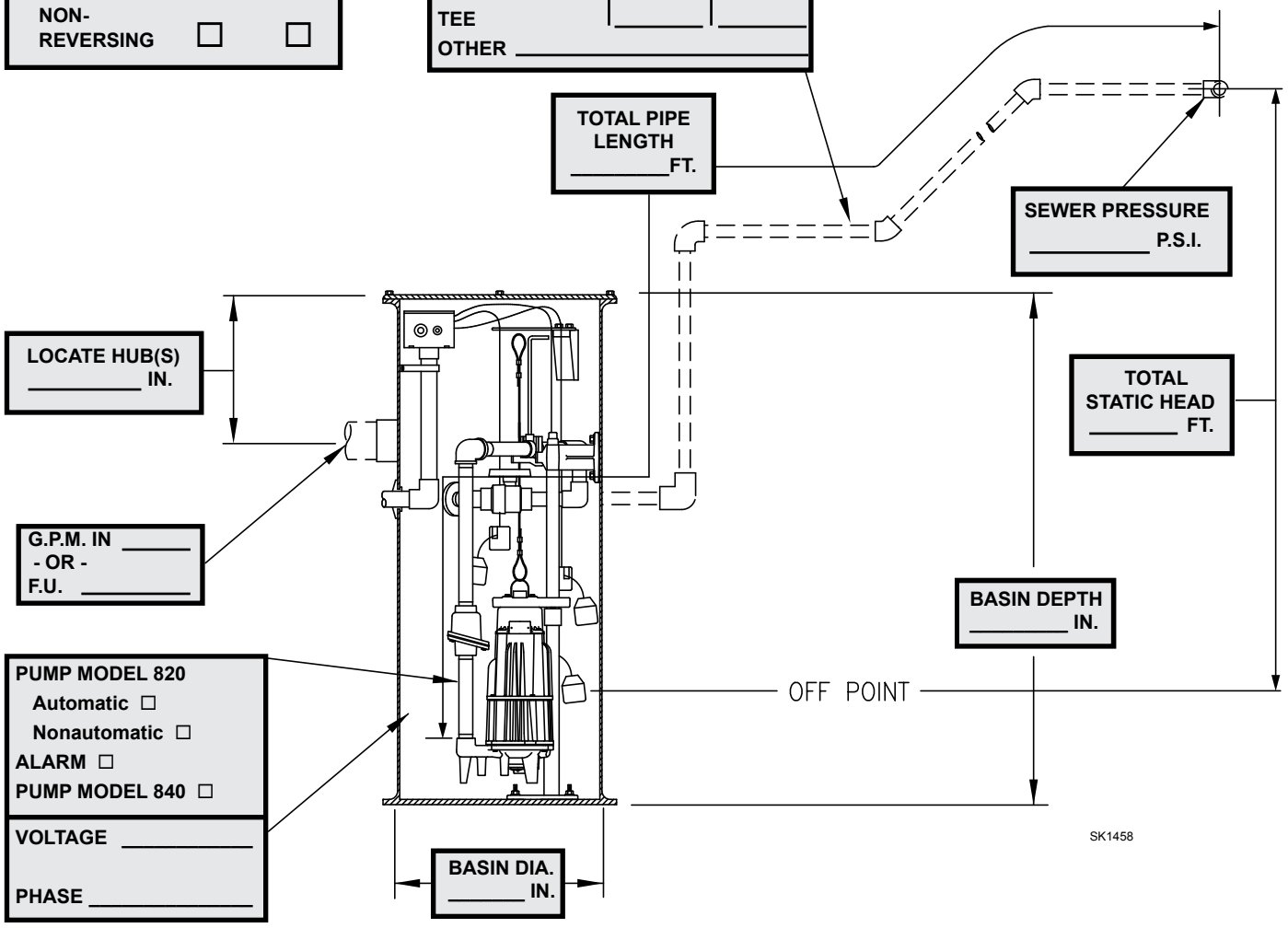
	SIMPLEX	DUPLEX
AUTO REVERSING	☐	☐
MANUAL REVERSING	☐	☐
NON-REVERSING	☐	☐

PIPE MAT'L _____ **SIZE** _____

FITTINGS	QTY.	SIZE
CHECK VALVE		
90° ELBOW		
45° ELBOW		
GATE VALVE		
TEE		
OTHER _____		

ASSEMBLY TYPE

	INDOOR	OUTDOOR
PRE-PACKAGED	☐	☐
FIELD ASSEMBLED	☐	☐



CUSTOMER _____
ADDRESS _____
JOB _____
JOB# _____ REP. _____
G.P.M. _____ AT T.D.H. OF _____

GRINDER PUMP SIZING AND SELECTION WORKSHEET

To begin, fill in the shaded areas on the front side. A calculator and additional sheet of paper may be required.

STEP #1 Determine the type and quantity of each plumbing fixture. Multiply each by its fixture unit values in figure "A".
Sum these values _____
Determine GPM from figure "B". _____GPM (1)

STEP #2 Refer to Figure "C". Based on the System's discharge piping size, Determine the minimum GPM Listed for that size. _____GPM (2)

STEP #3 Select the greater of the two GPM values in #1 & #2. This is your **Design GPM**. If greater than maximum GPM listed in figure, "B", contact factory. _____GPM (3)

STEP #4 Multiply each pipe fitting by its equivalent length value shown in figure "D" and sum. _____Ft. (4)

STEP #5 Total pipe length from front side _____Ft. (5)

STEP #6 Add #4 & #5. [(4) + (5) = (6)] _____Ft. (6)

STEP #7 Divide #6 by 100 and multiply it by the associated friction value from Figure "E". This is the total Friction Head. _____Ft. (7)

STEP #8 Determine static head in Ft., as shown on front side, from minimum water level to the discharge point. _____Ft. (8)

STEP #9 Sewer Pressure, if any, expressed in feet (PSI x 2.31). _____Ft. (9)

STEP #10 Add #7, #8, & #9. [(7) + (8) + (9) = (10)].
This is the system's **Total Dynamic Head.** (TDH) _____Ft. (10)

STEP #11 Select the Grinder Pump:
Select grinder pump from FM1478 (820) or FM1232 (840).
Base selection on design values, #3 & #10.
_____(Part No.)
Required voltage source _____(Volt/Phase)

STEP #12 Select type of control, basin size, and type of assembly from FM1232.

Final Notes:
1) Consult Factory in any application where TDH is less than 5' #10 .
2) Consult Factory in those applications where the performance requirement exceeds the capability of the Model 840 Grinder.
2) Pump must be capable of providing the minimum required GPM for pipe size, Figure "C", at the calculated TDH #10 .
3) Pump's lock valve must be greater than system's highest point.

FIGURE A

PLUMBING FIXTURE UNIT VALUES*

Fixture Description	Fixture Unit Value	Fixture Description	Fixture Unit Value
Bathtub, 1-1/2" trap	2	Sink, service type	3
Bathtub, 2" trap	3	Sink, scullery	4
Bidet, 1-1/2" trap	3	Sink, surgeons	3
Dental unit or cuspidor	1	Swimming pool (per 100 gallons)	1
Drinking fountain	1	Urinal	4**
Dishwasher, domestic	2	Washing machine	2
Kitchen sink	2	Water closet	3**
Kitchen sink with disposal	3	Water softener	4
Lavatory, 1-1/2" trap	1	Unlisted fixture, 1-1/4" trap	2
Lavatory, barber/beautician	2	Unlisted fixture, 1-1/2" trap	3
laundry tray	2	Unlisted fixture, 2" trap	4
Shower	2	Unlisted fixture, 2-1/2" trap	5
Shower, group (per head)	3	Unlisted fixture, 3" trap	6
Bathroom group consisting of lavatory, bathtub or shower, and water closet			6**

*Graph data is taken form ASPE Handbook, Uniform Plumbing Code, Cameron Hydraulic Data and Plastic Pipe Institute.
** Add 4 fixture units for each flush valve fixture

FIGURE B

PUMP CAPACITY based on total Fixture Units*

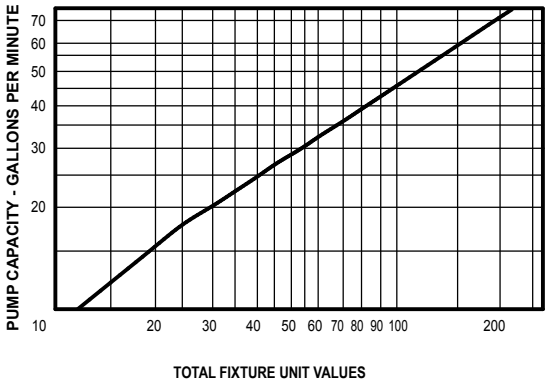


FIGURE C*

Pipe Size	Minimum GPM
1¼"	10
1½"	13
2"	21

FIGURE D*

FRICTION FACTORS FOR PIPE FITTINGS IN TERMS OF EQUIVALENT FEET OF STRAIGHT PIPE

Nominal Pipe Size	90 Elbow	45 Elbow	Tee Branch Flow	Swing Check Valve	Gate Valve
1¼"	3.5	1.8	6.9	11.5	0.9
1½"	4.0	2.2	7.7	13.4	1.1
2"	5.2	2.8	10.3	17.2	1.4

FIGURE E*

FRICTION HEAD IN FEET PER 100' OF SCHEDULE 40 PLASTIC PIPE

	1¼"	1½"	2"
GPM	Plastic	Plastic	Plastic
10	1.45	0.68	0.20
12	2.03	0.96	0.28
15	3.06	1.45	0.43
18	4.29	2.03	0.60
21	5.75	2.71	0.80
25	7.89	3.73	1.10
30	11.1	5.22	1.55
35	14.7	6.95	2.06
40	---	8.90	2.64
45	---	11.1	3.28
50	---	13.45	3.99
60	---	---	5.59
70	---	---	7.44