PENBERTHY SUBMERSIBLE AUTOMATIC SUMP DRAINERS

Reliable, fail-safe units that create a powerful pumping action by using either water or saturated steam as the operating medium, without electricity

FEATURES

- Durable construction for long life.
- Simple, virtually maintenance-free design.
- No need for electricity.
- No moving parts in jet pump to wear out.
- Low initial cost.
- Easy installation.

GENERAL APPLICATION

Applications for these models include sump evacuation, steam service and boiler room operations, general manufacturing installations, in-plant services and manufacturing processes of many types.

TECHNICAL DATA

Materials:	Bronze, copper, brass and stainless steel
Pipe connections	
Inlet:	¾" (DN 20)
Outlet:	1¼" (DN 32)
Pressures:	to 200 psig (13.79 barg)
Temperatures:	-20 to 400°F (-29 to 204°C)

© 2017 Emerson. All rights reserved.

PRODUCT OVERVIEW

Penberthy submersible automatic sump drainers provide practical solutions in environments with limited access and no electrical service (such as maintenance pits for underground cable, wiring or piping). They function effectively in either primary pumping operations or on standby to operate when electrical failure occurs. The units cannot be flooded, require minimal upkeep and are unaffected by power outages.

Capitalizing on a time-proven design, these units are available in either a space-saving non-loop design or an efficient loop configuration. There are four models:

Model 2R-W is non-loop and operates with a liquid motive.
Model 2R-WL is a loop design that operates with a liquid motive.
Model 2R-S is non-loop and uses a steam motive.
Model 2R-SL is a loop design that operates with a steam motive.

Their operation is simple. A copper float, rising with the water level, slides on a center tube to activate a low-friction valve automatically which 'turns the pump on'.

TABLE 1 - MODEL SPECIFICATIONS: 2R-W, 2R-WL - inches (mm)

	Pipe connect			Drainer	Drainer	Max. pump
Model	Outlet	Inlet	High water	diam.	height	down range
2R-W	1¼" (31.8)	¾" (19.1)	13½" (343)	12⅞" (327)	20" (508)	5" (127)
2R-WL	1¼" (31.8)	¾" (19.1)	13½" (343)	14¾" (375)	20" (508)	5" (127)

TABLE 2 - MODEL SPECIFICATIONS: 2R-S, 2R-SL - inches (mm)

	Pipe connect			Drainer	Drainer	Max. pump
Model	Outlet	Inlet	High water	diam.	height	down range
2R-S	1¼" (31.8)	¾" (19.1)	13½" (343)	12⅞" (327)	20" (508)	5" (127)
2R-SL	1¼" (31.8)	¾" (19.1)	13½" (343)	14¾" (375)	20" (508)	5" (127)

MODEL SHOWN - 2R - SL

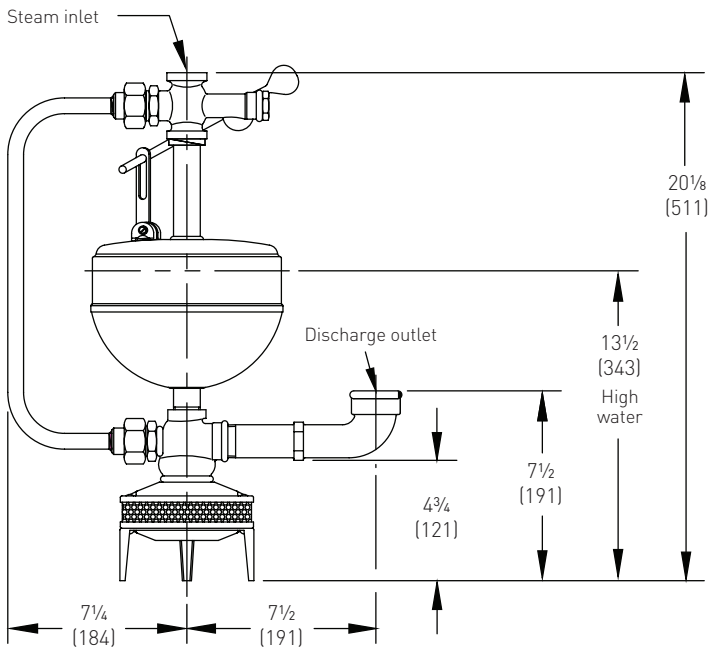

TABLE 3 - 2R-W/2R-WL CAPACITIES: gph (lph) OF SUCTION FLOW

	Discharge head in feet	Operating water pressure psig (kPag)									
Model	**(meters)**	**10 (69)**	**15 (103)**	**20 (138)**	**30 (207)**	**40 (276)**	**60 (414)**	**80 (552)**	**100 (689)**	**120 (827)**	**150 (1034)**
2R-W	5 (1.5)	216 (817)	308 (1165)	417 (1578)	547 (2070)	668 (2529)	837 (3168)	1071 (4053)	1008 (3815)	999 (3781)	984 (3724)
	6 (1.8)		302 (1143)	401 (1517)	514 (1945)	740 (2600)	938 (3551)	1060 (4012)	1008 (3815)	999 (3781)	984 (3724)
	9 (2.7)				403 (1525)	559 (2115)	803 (3034)	1048 (3466)	1008 (3815)	999 (3781)	984 (3724)
	12 (3.7)					452 (1710)	702 (2657)	820 (3103)	1008 (3815)	999 (3781)	984 (3724)
	15 (4.6)						629 (2360)	817 (3092)	966 (3656)	999 (3781)	984 (3724)
	18 (5.5)							709 (2684)	914 (3449)	999 (3781)	984 (3724)
2R-WL	5 (1.5)	240 (908)	342 (1294)	463 (1752)	608 (2301)	742 (2808)	930 (3520)	1190 (4504)	1120 (4239)	1110 (4201)	1093 (4137)
	6 (1.8)		335 (1267)	446 (1688)	571 (2161)	822 (3112)	1042 (3943)	1178 (4498)	1120 (4239)	1110 (4201)	1093 (4137)
	9 (2.7)			273 (1033)	448 (1695)	621 (2350)	892 (3376)	1164 (4405)	1120 (4239)	1110 (4201)	1093 (4137)
	12 (3.7)				321 (1214)	502 (1400)	780 (2952)	1022 (3868)	1120 (4239)	1110 (4201)	1093 (4137)
	15 (4.6)					344 (1302)	684 (2588)	908 (3436)	1073 (4061)	1110 (4201)	1093 (4137)
	18 (5.5)					207 (783)	542 (2051)	788 (2982)	1015 (3841)	1107 (4149)	1093 (4137)

TABLE 4 - WATER CONSUMPTION - gph (lph)

	Operating water pressure, psig (kPag)									
Model	**10 (69)**	**15 (103)**	**20 (138)**	**30 (207)**	**40 (276)**	**60 (414)**	**80 (552)**	**100 (689)**	**120 (827)**	**150 (1034)**
2R-W	135 (510)	165 (624)	180 (681)	225 (851)	255 (965)	300 (1135)	345 (1305)	390 (1476)	420 (1599)	471 (1782)
2R-WL	135 (510)	165 (624)	180 (681)	225 (851)	255 (965)	300 (1135)	345 (1305)	390 (1476)	420 (1599)	471 (1782)

TABLE 5 - 2R-S/2R-SL CAPACITIES: gph (lph) OF SUCTION FLOW

	Discharge head in feet	Operating steam pressure psig (kPag)									
Model	**(meters)**	**10 (69)**	**15 (103)**	**20 (138)**	**30 (207)**	**40 (276)**	**60 (414)**	**80 (552)**	**100 (689)**	**120 (827)**	**150 (1034)**
2R-S	5 (1.5)	249 (942)	409 (1548)	524 (1983)	696 (2635)	940 (3557)	1044 (3951)	1035 (3917)	990 (3747)	963 (3644)	904 (3421)
	6 (1.8)		383 (1449)	476 (1801)	644 (2437)	862 (3262)	1040 (3936)	1035 (3917)	944 (3573)	963 (3614)	904 (3421)
	9 (2.7)				562 (2127)	721 (2728)	1026 (3883)	1040 (3936)	998 (3777)	963 (3614)	904 (3421)
	12 (3.7)					557 (2108)	880 (3330)	1042 (3943)	990 (3747)	945 (3576)	904 (3421)
	15 (4.6)						703 (2660)	1038 (3928)	990 (3747)	945 (3576)	904 (3421)
	18 (5.5)							873 (3304)	988 (3739)	864 (3270)	904 (3421)
2R-SL	5 (1.5)	328 (1241)	454 (1748)	582 (2202)	773 (2925)	1044 (3951)	1160 (4390)	1150 (4352)	1100 (4163)	1070 (4049)	1005 (3803)
	6 (1.8)		437 (1654)	529 (2002)	715 (2706)	958 (3626)	1158 (4383)	1140 (4314)	1104 (4178)	1070 (4049)	1005 (3803)
	9 (2.7)				625 (2365)	801 (3031)	1140 (4314)	1155 (4371)	1109 (4197)	1070 (4049)	1005 (3803)
	12 (3.7)					619 (2342)	978 (3701)	1158 (4383)	1100 (4163)	1050 (3974)	1005 (3803)
	15 (4.6)						781 (2956)	1154 (4367)	1100 (4163)	1050 (3974)	1005 (3803)
	18 (5.5)							970 (3671)	1098 (4195)	1050 (3974)	1005 (3803)

TABLE 6 - STEAM CONSUMPTION - lbs./min. (kg/min.)

	Operating steam pressure psig (kPag)									
Model	**10 (69)**	**15 (103)**	**20 (138)**	**30 (207)**	**40 (276)**	**60 (414)**	**80 (552)**	**100 (689)**	**120 (827)**	**150 (1034)**
2R-S	0.47 (0.21)	0.59 (0.27)	0.69 (0.31)	0.89 (0.4)	1.1 (0.5)	1.46 (0.66)	1.84 (0.83)	2.21 (1.0)	2.59 (1.2)	3.14 (1.4)
2R-SL	0.54 (0.24)	0.66 (0.30)	0.77 (3.50)	0.99 (0.45)	1.2 (0.54)	1.62 (0.73)	2.04 (0.93)	2.46 (1.1)	2.88 (1.3)	3.5 (1.6)

NOTE

** All suction flow rates are based on water at 70°F (21°C)

SELECTION GUIDE

To determine the correct submersible automatic sump drainer, make note of the required specification data listed below. Use the capacity and consumption tables to determine the optimum submersible automatic sump drainer for your application.

Motive
- Water or steam
- Pressure (available)
- Flow rate (available volume)

Suction
- Required pumping capacity

Discharge
- Pressure or discharge head (that unit must overcome)

SELECTION GUIDE

Example:		2R	- W	L	- 01
Model					
2R	2R submersible automatic sump drainer				
Operating medium					
W	Water				
S	Steam				
Loop					
-	Without loop				
L	With loop				
Variation					
01	Catalog standard				

© 2017 Emerson. All rights reserved.