

PRESSURE OPERATED PUMP ADCAMAT POP LC (Low capacity)

DESCRIPTION

The ADCAMAT POP (Pressure Operated Pump) fabricated carbon steel or stainless steel is recommended in the transfer of high-temperature liquids such as condensate, oils and other liquids to a higher elevation or pressure.

The pump starts when there is something to pump and stops when there isn't.

Under certain conditions, it can drain a closed vessel under vacuum or pressure.

The pump can be operated by steam, compressed air or gas and can be used for lifting any kind of no corrosive liquids.

Connections are flanged or female screwed (with screwed flanges).



FUNCTION

Liquid flows by gravity into the pump through an inlet check valve lifting a float which, at the upper limit of its travel, opens the supply valve which allows steam or compressed air to enter the pump body. Pressure in the pump builds up until just sufficient to overcome back pressure.

The pressurized liquid opens the outlet check valve and discharge commences. When the float reaches the minimum lower level it closes the steam or compressed air supply valve and opens the vent, allowing the liquid to fill the pump again.

As the amount of liquid discharged at each stroke is known, the total volume passed during a given period can be calculated by counting the number of strokes during that period. For this purpose a special counter is available which screws into a tapped connection on the top cover of the pump. This counter records the number of pumping strokes thus enabling the pump to function as a reliable flow meter.

MAIN FEATURES : Non-electric requirements.
 Pump mechanism can be installed in any position
 rotating 360°, only limited by the flange holes.

OPTIONS: Stainless steel construction.
 Level gauge.
 Stroke counter.

USE : To lift condensate or hot and cold liquids.

AVAILABLE MODELS :

ADCAMAT POP-S (LC) - carbon steel construction
 ADCAMAT POP-SS (LC)- Stainless steel construction
 (Carbon steel version is sandblasted, metallized and black painted).

SIZES : DN 25 LC; DN 40 LC ; DN 40 x 25 LC

CONNECTIONS : Flanged EN1092-1 PN16. Special flanges upon request. Female screwed ISO 7/1 Rp (BS21).

INSTALLATION : Horizontal installation.
 See IMI installation and maintenance instructions.

MOTIVE GAS : Steam or compressed air.

CE Marking :

This product have been designed for use on water, steam, air and other gases which are in Group 2 of the PED - European Pressure Equipment Directive 97/23/EC and it comply with those requirements. All the sizes fall within category 2. The product carry the CE mark.

APPLICATION LIMITS

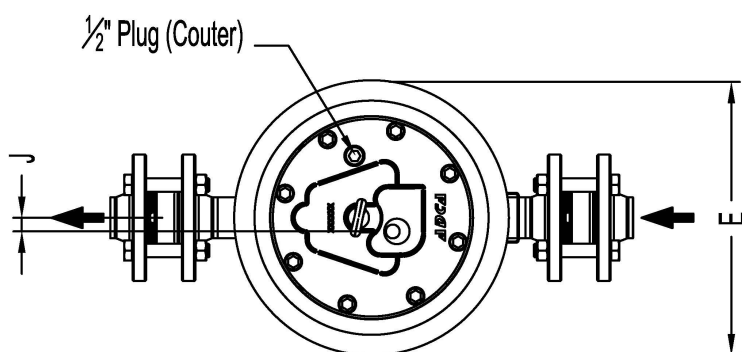
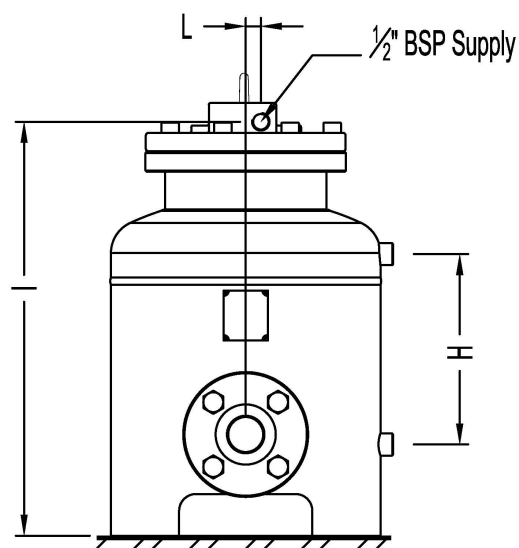
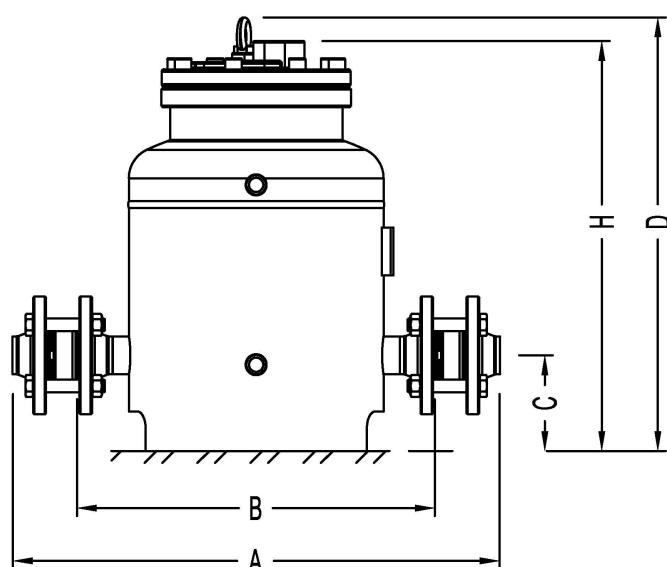
Minimum density	0,80 kg/dm ³
Maximum viscosity	5° Engler
Maximum motive pressure	10 bar
Minimum motive pressure	0,5 bar
Pump discharge per cycle DN25 to DN40	11,2 l

LIMITING CONDITIONS *

POP-S			POP-SS		
	Press. bar	Temp. °C		Press. bar	Temp. °C
PN16	16	50	PN16	16	50
	14	100		16	100
	13	195		12	195
	12	250		13	250
ANSI Cl.150	16	50	ANSI Cl.150	16	50
	13	195		12	195

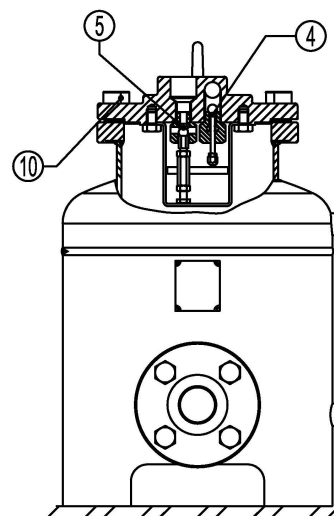
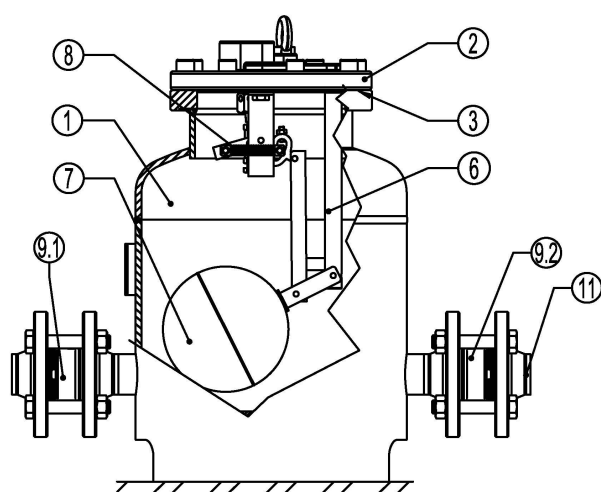
Minimum operating temp.: -10°C; Design code: AD-Merkblatt

* Rating according to EN1092:2007


DIMENSIONS (mm)

DN	A *	B	C	D	E	H	I	J	L	M	Weight Kgs	VOL. dm ³
25	578	444	122	552	323	552	500	17	18	229	60	25,7
40	615	454	122	552	323	552	500	17	18	229	61	25,7
40x25	597	449	122	552	323	552	500	17	18	229	60	25,7

* A - with welding neck EN 1092-1 flanges



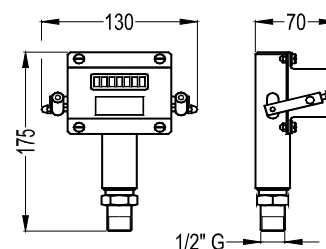
MATERIALS			
POS.	DESIGNATION	MATERIAL - POP-S	MATERIAL - POP-SS
1	PUMP BODY	P265GH / 1.0425 ; P235GH / 1.0345 S235JR / 1.0038	AISI316 / 1.4401 ; AISI316L / 1.4406
2	COVER	GJS-400-15 / 0.7040	CF8M / 1.4408
3	*COVER GASKET	NON ASBESTOS	NON ASBESTOS
4	*INLET VALVE/SEAT ASSY.	STAINLESS STEEL	STAINLESS STEEL
5	*EXHAUST VALVE/SEAT ASSY.	STAINLESS STEEL	STAINLESS STEEL
6	INTERNAL MECHANISM	STAINLESS STEEL	STAINLESS STEEL
7	*FLOAT	STAINLESS STEEL	STAINLESS STEEL
8	*SPRING ASSY.(2PCS)	INCONEL	INCONEL
9.1	*RD40 OUTLET CHECK VALVE	CF8M / 1.4408	CF8M / 1.4408
9.2	*RD40 INLET CHECK VALVE	CF8M / 1.4408	CF8M / 1.4408
10	BOLTS	STEEL 8.8	A2 - 70
11	**PN16 EN 1092-1 FLANGES	P250GH / 1.0460	AISI316 / 1.4401

* Available spare parts

** Welding neck EN 1092-1 flanges. Threaded flanges on request.

Stroke counter :

Available on request, it can be screwed directly into the top cover of the pump or above the pump through a 1/2" size pipe for easier reading (max.1m).



How to select and size

SIZING OF THE SYSTEM

The discharge capacity of the pump is a function of:

1. Condensate load.....Kg/h
2. The pressure of operating medium (steam, compressed air or gas).
3. The total lift or back pressure the pump will have to exhaust against. This includes the change in fluid level elevation after the pump (0.0981bar/m of lift), plus pressure in the return piping, plus the pressure drop in bar caused by pipe friction, plus any other system component pressure drop the pump exhaust will have to overcome.
4. Filling head available (300 mm is recommended).

INSTALLATION – Open system

Fig.1 shows a typical example of installation of ADCAMAT automatic pump. For further details and instructions please contact the factory or our distributor.

RECEIVER

A receiver is recommended to temporarily hold the liquid and prevent any flooding of the equipment, while the pump is in the pumping cycle. A length of pipe of large diameter or a tank can also be used (see Chart 4).

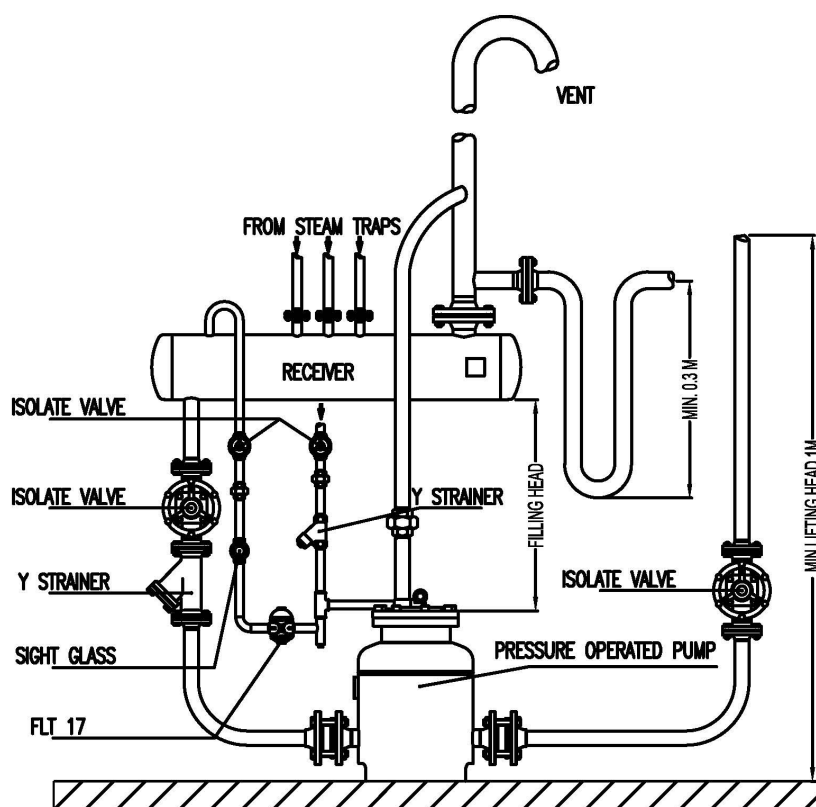


Fig.1

Motive Pressure bar	Total Lift bar	FLOW RATE IN Kg/h Installation with 300 mm filling head above the pump cover.	
		DN 25 x DN 25	DN 40 x DN 40 DN 40 x DN 25
1	0,35	820	1260
2		1050	1540
3		1100	1750
4		1150	1860
5		1210	1970
6		1250	2160
8		1290	2195
10		1300	2060
2	1	800	1200
3		940	1430
4		1080	1590
5		1110	1660
6		1140	1730
8		1180	1820
10		1200	1880
3	2	790	1100
4		900	1520
5		1000	1580
6		1140	1690
8		1200	1785
10		1220	1820
4	3	750	1000
5		860	1310
6		910	1450
8		970	1540
10		980	1580
5	4	730	960
6		840	1310
8		920	1500
10		940	1410
6	5	710	890
8		770	1040
10		880	1150
7	6	730	840
8		790	980
10		880	1090

Chart 1 (Based on liquid specific gravity 0,9 - 1,0)

Example:

Condensate load	950 Kg/h
Filling head	150 mm
Motive fluid	Compressed air
Available pressure	8 bar
Vertical lift after pump	10 m
Return piping pressure	1,2 bar
Piping friction pressure drop	Negligible

Correction for filling Head:

With 150 mm filling head the correction factor from chart 3 is 0,7. The corrected capacity is,
 $1540 \text{ Kg/h} \times 0,7 = 1078 \text{ kg/h}$

Calculations:

Total back pressure: $1,2 \text{ bar} + (10 \text{ m} \times 0,0981) = 2,181 \text{ bar}$
 Pump choice, assuming steam as motive pressure at 8bar and a back pressure of 3bar, the DN40 pump has a capacity of 1540 kg/h according to Chart 1.

Correction for air as a motive fluid:

The % back pressure $2,181 \text{ bar} / 7 \text{ bar} = 27\%$
 The correction factor from chart 2, is 1,08.
 The corrected capacity is, $1078 \text{ kg/h} \times 1,08 = 1164,2 \text{ Kg/h}$,
 and so a DN40 pump is still recommended.

CAPACITY CORRECTION FACTOR FOR GASES OTHER THAN STEAM					
% Back press.vs. Motive Press.(BP/MP)	10%	30%	50%	70%	90%
Correction factor	1,04	1,08	1,12	1,18	1,28

Chart 2

CAPACITY MULTIPLYING FACTORS FOR OTHER FILLING HEADS				
PUMP SIZE	FILLING HEAD mm			
	150	300	600	900
ALL	0,7	1	1,2	1,35

Chart 3

SUGGESTED RECEIVER		
PUMP SIZE	25	40
PIPE SIZE W/ 1m LENGTH	6"	8"

Chart 4