



## PRESSURE OPERATED PUMP ADCAMAT POP-S DN100

### DESCRIPTION

The ADCAMAT POP (Pressure Operated Pump) fabricated carbon steel (stainless steel on request) 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 non-corrosive liquids.

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



### OPERATION

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.

**OPTIONS:** Duplex packaged design  
Stainless steel construction.  
Level gauge.  
Stroke counter.

**USE :** To lift condensate or hot and cold liquids.

### AVAILABLE

**MODELS :** ADCAMAT POP-S - carbon steel construction  
(Carbon steel version is sandblasted, metallized and black painted).

**SIZES :** DN 100 x 100 (for smaller sizes see IS 9.101 E)

**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 has been designed for use on water, steam, air and other gases which are in Group 2 of the European PED-Pressure Equipment Directive in use and it complies with those requirements.

This size falls within category IV.  
The product carries the CE mark.

**APPLICATION LIMITS**

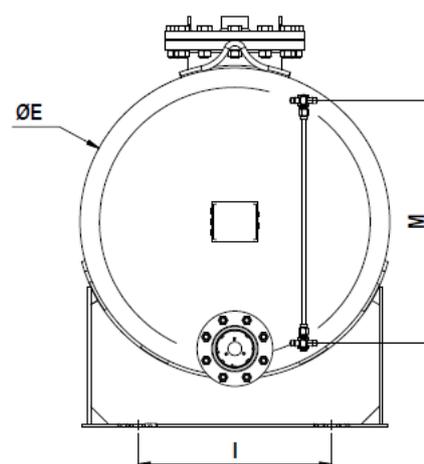
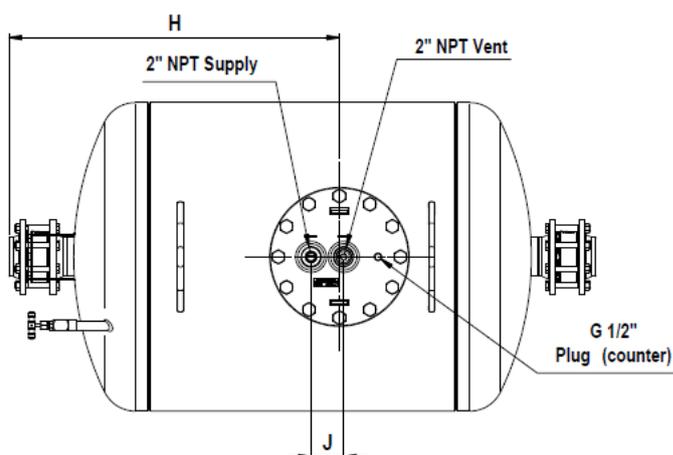
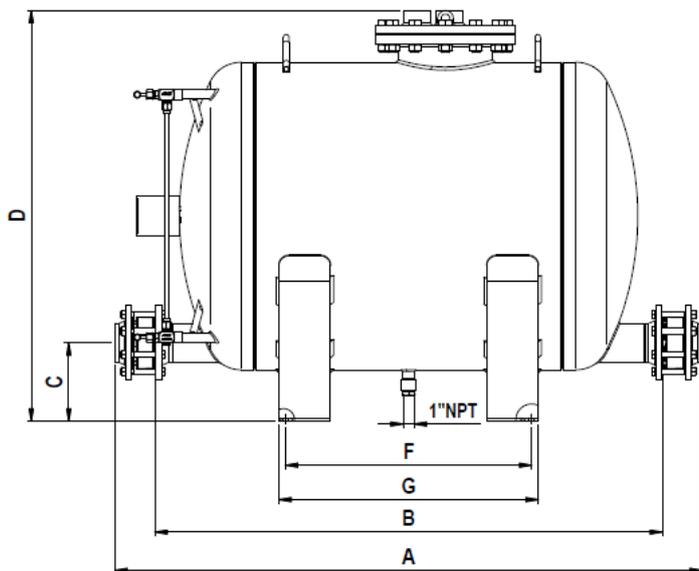
Minimum density	0,80 kg/dm <sup>3</sup>
Maximum viscosity	5° Engler
Maximum motive pressure	10 bar
Minimum motive pressure	1 bar
Pump discharge per cycle DN100 to DN100	325 l

**LIMITING CONDITIONS \***

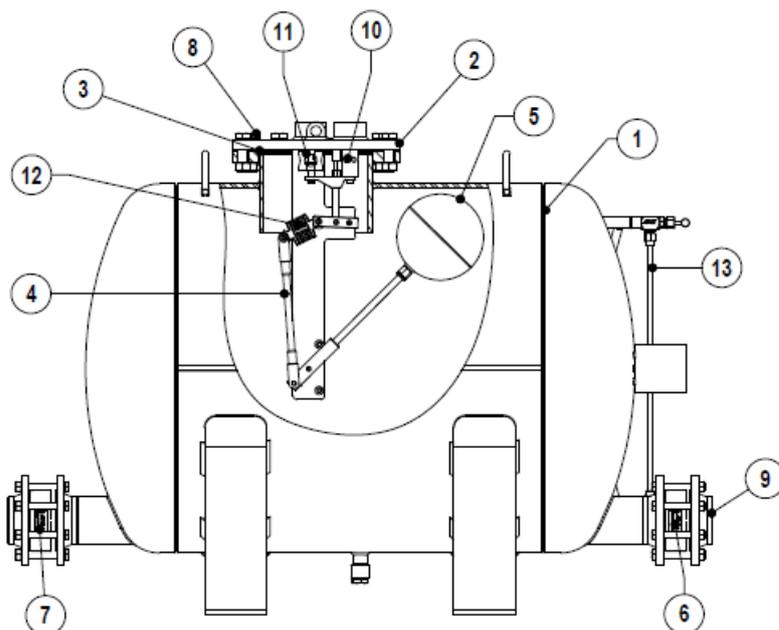
POP-S		
	Press. bar	Temp. °C
PN16	16	50
	14	100
	13	195
	12	250
ANSI Cl.150	16	50
	13	195

Minimum operating temp.: 20°C

Design code: AD-Merkblatt


**DIMENSIONS (mm)**

DN	A EN Flg.	A ANSI 150 lbs	B	C	D	Ø E	F	G	H	I	J	M	Weight Kgs	VOL. dm <sup>3</sup>
100 (4")	1705	1760	1473	229	1200	900	715	753	960	564	95	710	565	1028



MATERIALS		
POS.	DESIGNATION	MATERIAL - POP-S
1	PUMP BODY	P265GH / 1.0425 ; P235GH / 1.0345 S235JR / 1.0038
2	COVER	GJS-400-15 / 0.7040
3	*COVER GASKET	NON ASBESTOS
4	INTERNAL MECHANISM	STAINLESS STEEL
5	*FLOAT	STAINLESS STEEL
6	*RD40 OUTLET CHECK VALVE	CF8M / 1.4408
7	*RD40 INLET CHECK VALVE	CF8M / 1.4408
8	BOLTS	STEEL 8.8
9	**PN16 EN 1092-1 FLANGES	P250GH / 1.0460
10	* MOTIVE INLET VALVE/SEAT ASSY	STAINLESS STEEL
11	* EXHAUST VALVE/SEAT ASSY	STAINLESS STEEL
12	* SPRINGS	INCONEL
13	*** LEVEL GAUGE COCKS/GLASS	SEE CATALOGUE IS LGC135.10

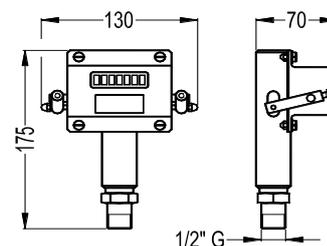
\* Available spare parts

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

\*\*\* Optional

**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 ( 600 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.

SUGGESTED RECEIVER			
PUMP SIZE	DN 100 x DN 100		
RECEIVER SIZE Diam x LENGTH	406 x 2000	640 x 1500	800 x 1500

Consult the factory for the correct selection

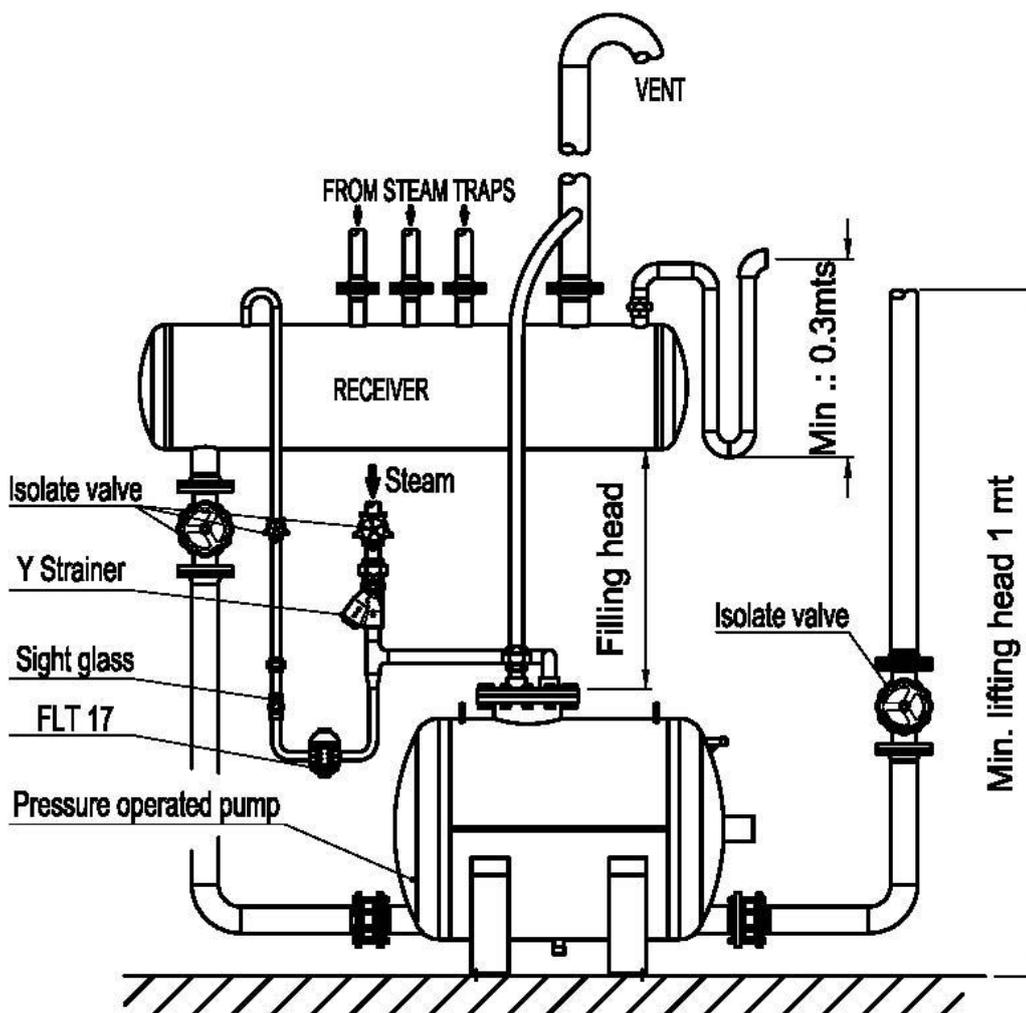


Fig.1

FLOW RATE IN Kg/h Installation with 600 mm filling head above the pump cover.		
Motive Pressure bar	Total Lift bar	DN 100 x 100
1	0,35	13130
1,7		16850
3,5		21900
5		24830
7		26880
10		29800
1,7	1	16630
3,5		20400
5		23050
7		25100
10	1,5	28200
2,5		13210
3,5		15150
5		17280
7	3	19100
10		21410
3,5		11860
4		12300
5	4	12900
7		13740
10		14980
4,5		11700
5	4	11840
7		12710
10		13760

Chart 1 ( Based on liquid specific gravity 0,9 - 1,0 )  
Filling head is measured from the bottom of receiver to top of pump cover.

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

**Example:**

Condensate load	8500 Kg/h
Filling head	150 mm
Motive fluid	Compressed air
Available pressure	7 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, 13740 Kgs/h x 0,7 = 9618 kg/h

CAPACITY MULTIPLYING FACTORS FOR OTHER FILLING HEADS				
PUMPP SIZE	FILLING HEAD mm			
	150	300	600	900
DN 100 x 100	0,7	0,8	1	1,08

Chart 3

**Calculations:**

Total back pressure: 1,2bar + ( 10m x 0,0981 ) = 2,181bar  
Pump choice, assuming steam as motive pressure at 7bar and a back pressure of 3bar, the DN100 pump has a capacity of 13740 kg/h according to Chart 1.

**Correction for air as a motive fluid:**

The % back pressure 2,181bar/7bar = 31%  
The correction factor from chart 2, is 1,08.  
The corrected capacity is, 9618kg/h x 1,08 = 10387,44Kg/h, and so a DN100 pump is still recommended.