

High Pressure Dryer HLP-MSD 0055 to 0870, PN 100 to PN 400

High pressure adsorption dryer, heatless regenerating, pre-, and afterfilter included.

Compressed air is lead through the inlet of the dryer (J) and across the prefilter (3). At this stage, the air is cleaned from particles and condensate.

The condensate is removed via a manually operated drain (5) or optional via a automatic condensate drain (16).

Via a 4/2-way ball valve (KH1), the air is lead into the adsorption vessel (1), in which the air is dried down to the required pressure dewpoint.

Via a non-return valve (7), the air is let into an afterfilter (4), in which possibly released particles from the desiccant are retained.

Via the outlet (O), the clean and dry air is lead into the compressed air network and to the point of use.

While one vessel is in the drying phase (adsorption), the other vessel is being dried again (regeneration).

Regeneration of the moisture-laden desiccant is achieved with a partial flow of the dried medium.

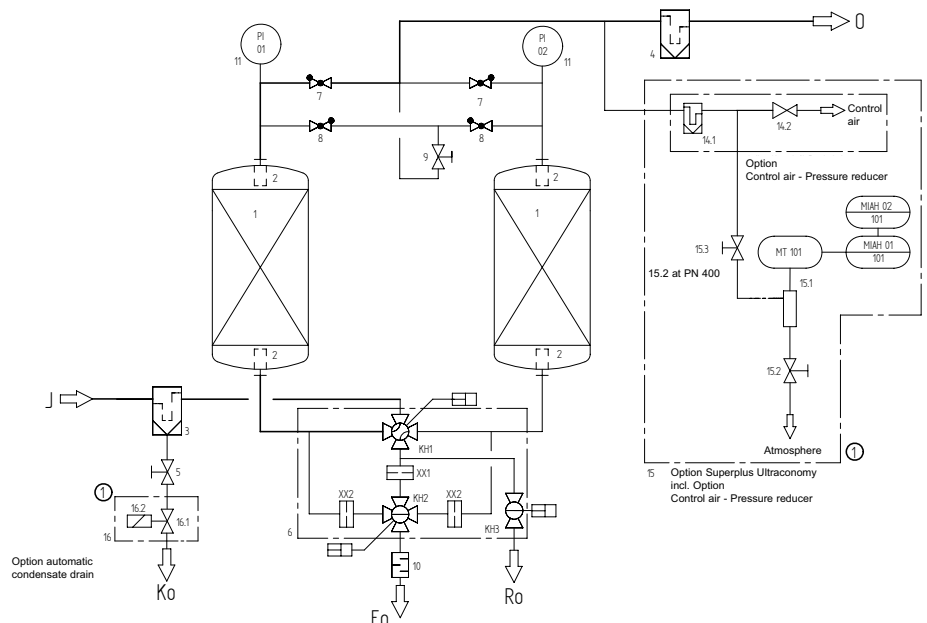
At the start of regeneration, the 4-way ball valve (KH2) is switched to the position "depressurizing".

In this way the adsorber is brought down to atmospheric pressure. The compressed air passes out of the system through the silencer (10). In the 2nd step the 2-way ball valve is opened.

A partial flow of the dried medium flows through a bypass in the upper piping and through the regenerating adsorber out to the atmosphere across a silencer (10).



High pressure adsorption dryer
HLD-MSD



HLP PN 100 - PN 400

Features HLP PN 100 - 400	Benefits
Complete purification package including pre-, afterfilter and hand operated drain (optional automatic condensate drain)	Turnkey-system; all components from one hand, technically perfectly matched to each other
Optimally dimensioned filters	Safe separation of particle and aerosols (on adherence to the specified parameters), large filter surface causes low differential pressure of the unit, thereby low operating cost
Indication of operating status (adsorption, regeneration, pressurizing, service, alarm) via LED display	High operating safety, all operating status can be easily detected at any time
Intermittend operation as standard	Coupling with the compressor with central applications possible, thus savings of regeneration air and operating cost
Use of pneumatically controlled seat valves	High operating safety, low pressure losses, low operating and maintenance costs
option package available	Flexibility in application; option package for economic and safe system integration in the compressed air network - dew point-dependent capacity control - automatic condensate drain - control air supply - starting valve

Product description:
Complete purification package with heatless adsorption dryer which works on the basis of pressure swing adsorption. Inclusive pre-, afterfilter, optional automatic condensate drain.

Medium:
Compressed air/ nitrogen

Pressure dewpoint:
- 40°C at 100% load

Operating pressure:
PN 100: min. 41 bar (ü), max. 100 bar (ü) PN 250: min. 101 bar (ü), max. 250 bar (ü) PN 400: min. 251 bar (ü), max. 400 bar (ü)

Medium temperature:
min. 5°C, max. 55°C.

Ambient temperature:
min. 4°C, max. 50°C.

Power supply:
230 V/ 50-60Hz optional 115 V/ 50-60Hz 24 V DC

Power consumption:
approx. 40 W

Design, manufacture, testing
Adsorber and filter: acc. to RL 97/23/EG

Declaration of conformity:
acc. to RL 97/23/EG

HLP PN 100	Volume flow in m ³ /h (1 bar, 20°C)*	Regeneration air losses (average) m ³ /h (1 bar, 20°C)	Volume flow out (min.) m ³ /h (1 bar, 20°C)	Pressure loss initial mbar
0055	55	2,2	52,3	80
0110	110	4,4	104,4	165
0185	185	7,3	175,5	430
0370	370	12,9	354,4	795
0655	655	21,6	629,8	860

HLP PN 250	Volume flow in m ³ /h (1 bar, 20°C)*	Regeneration air losses (average) m ³ /h (1 bar, 20°C)	Volume flow out (min.) m ³ /h (1 bar, 20°C)	Pressure loss initial mbar
0090	90	3,8	85,4	90
0195	195	7,8	185,7	225
0310	310	12,3	295,2	560
0600	600	23,8	571,8	1120
1050	1050	41,2	1000,9	1320

HLP PN 400	Volume flow in m ³ /h (1 bar, 20°C)*	Regeneration air losses (average) m ³ /h (1 bar, 20°C)	Volume flow out (min.) m ³ /h (1 bar, 20°C)	Pressure loss initial mbar
0115	115	5,1	108,4	220
0215	215	9,3	203,2	630
0320	320	14,0	302,8	450
0500	500	22,3	472,0	1015
0870	870	38,0	822,9	885

* related to 1 bar (abs) and 20 °C at intake of compressor and 7 bar system pressure and 35 °C inlet temperature into dryer

HLP PN 100 - PN 400

Sizing PN 100:

HLP	Inlet temperature	Operating pressure (bar)											
		45	50	55	60	65	70	75	80	85	90	95	100
PN 100	30°C	0,48	0,53	0,58	0,63	0,69	0,74	0,79	0,84	0,89	0,95	1,00	1,05
	35°C	0,46	0,50	0,55	0,60	0,65	0,70	0,75	0,80	0,85	0,90	0,95	1,00
	40°C	0,36	0,39	0,43	0,47	0,51	0,55	0,59	0,63	0,66	0,70	0,74	0,78
	45°C	0,28	0,31	0,34	0,37	0,40	0,43	0,46	0,49	0,52	0,55	0,58	0,61
	50°C	0,22	0,24	0,27	0,29	0,31	0,34	0,36	0,38	0,41	0,43	0,46	0,48
	55°C	0,17	0,19	0,21	0,23	0,25	0,27	0,29	0,30	0,32	0,34	0,36	0,38

Example:

$$\dot{V}_{nom} = 65 \text{ m}^3/\text{h}$$

Inlet temperature = 40°C

Operating pressure = 85 bar (ü)

Pressure dewpoint = -40°C

$$\dot{V}_{corr} = \frac{\dot{V}_{nom}}{f} = \frac{65 \text{ m}^3/\text{h}}{0,66} = 98,5 \text{ m}^3/\text{h}$$

Selected adsorption dryer: HLP 0110 - PN100

Sizing PN 250:

HLP	Inlet temperature	Operating pressure (bar)														
		110	120	130	140	150	160	170	180	190	200	210	220	230	240	250
PN 250	30°C	0,46	0,51	0,55	0,59	0,63	0,67	0,72	0,76	0,80	0,84	0,88	0,92	0,97	1,01	1,05
	35°C	0,44	0,48	0,52	0,56	0,60	0,64	0,68	0,72	0,76	0,80	0,84	0,88	0,92	0,96	1,00
	40°C	0,34	0,38	0,41	0,44	0,47	0,50	0,53	0,56	0,59	0,62	0,66	0,69	0,72	0,75	0,78
	45°C	0,27	0,29	0,32	0,34	0,37	0,39	0,42	0,44	0,46	0,49	0,51	0,54	0,56	0,59	0,61
	50°C	0,21	0,23	0,25	0,27	0,29	0,31	0,33	0,35	0,37	0,38	0,40	0,42	0,44	0,46	0,48
	55°C	0,17	0,18	0,20	0,21	0,23	0,24	0,26	0,27	0,29	0,30	0,32	0,33	0,35	0,36	0,38

Example:

$$\dot{V}_{nom} = 80 \text{ m}^3/\text{h}$$

Inlet temperature = 40°C

Operating pressure = 200 bar (ü)

Pressure dewpoint = -40°C

$$\dot{V}_{corr} = \frac{\dot{V}_{nom}}{f} = \frac{80 \text{ m}^3/\text{h}}{0,62} = 129 \text{ m}^3/\text{h}$$

Selected adsorption dryer: HLP 0195 - PN250

Sizing PN 400:

HLP	Inlet temperature	Operating pressure (bar)						
		250	275	300	325	350	375	400
PN 400	30°C	0,66	0,72	0,79	0,85	0,92	0,98	1,05
	35°C	0,63	0,69	0,75	0,81	0,88	0,94	1,00
	40°C	0,49	0,54	0,59	0,63	0,68	0,73	0,78
	45°C	0,38	0,42	0,46	0,50	0,53	0,57	0,61
	50°C	0,30	0,33	0,36	0,39	0,42	0,45	0,48
	55°C	0,24	0,26	0,29	0,31	0,33	0,36	0,38

Example:

$$\dot{V}_{nom} = 290 \text{ m}^3/\text{h}$$

Inlet temperature = 40°C

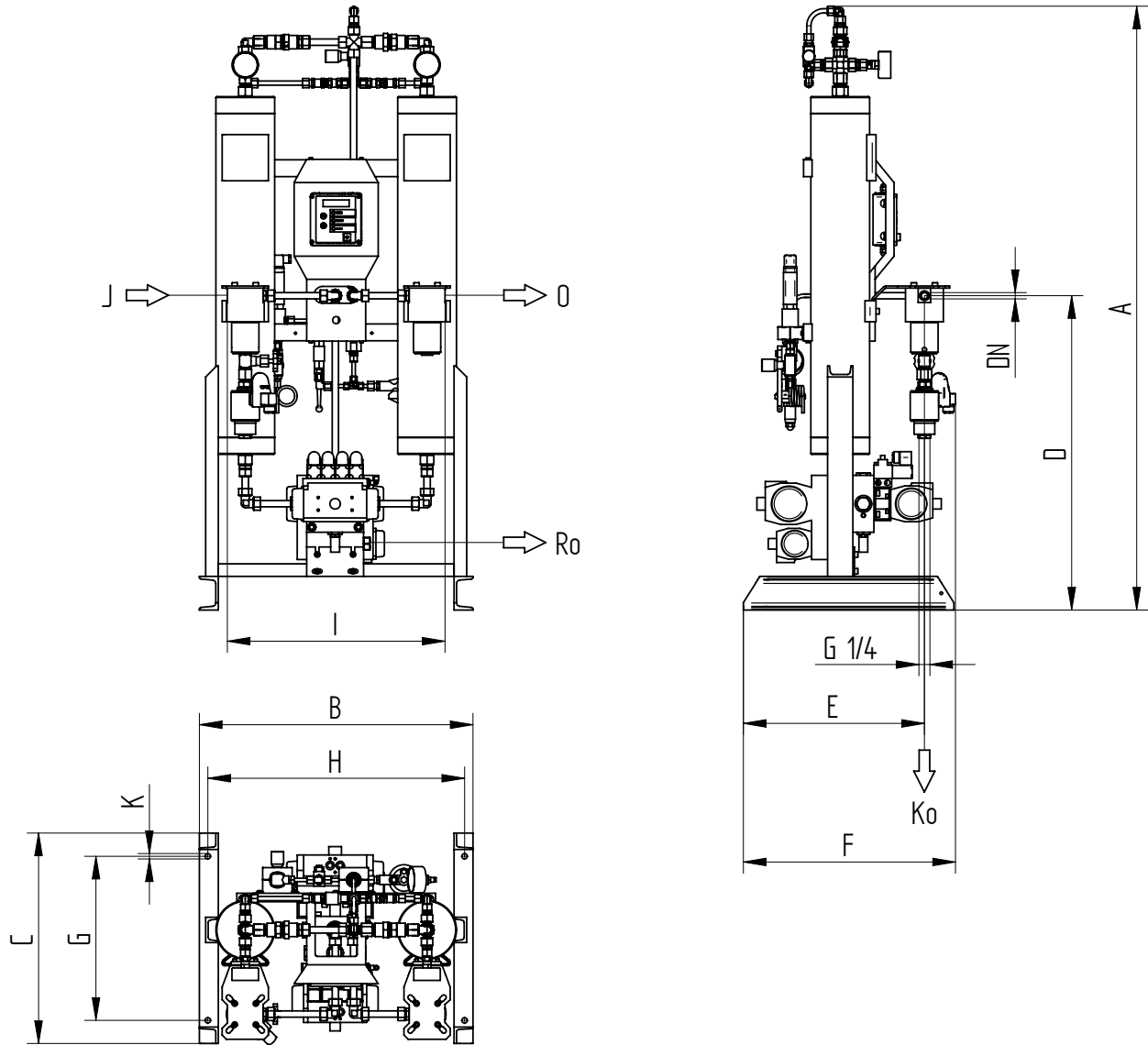
Operating pressure = 350 bar (ü)

Pressure dewpoint = -40°C

$$\dot{V}_{corr} = \frac{\dot{V}_{nom}}{f} = \frac{290 \text{ m}^3/\text{h}}{0,68} = 426,5 \text{ m}^3/\text{h}$$

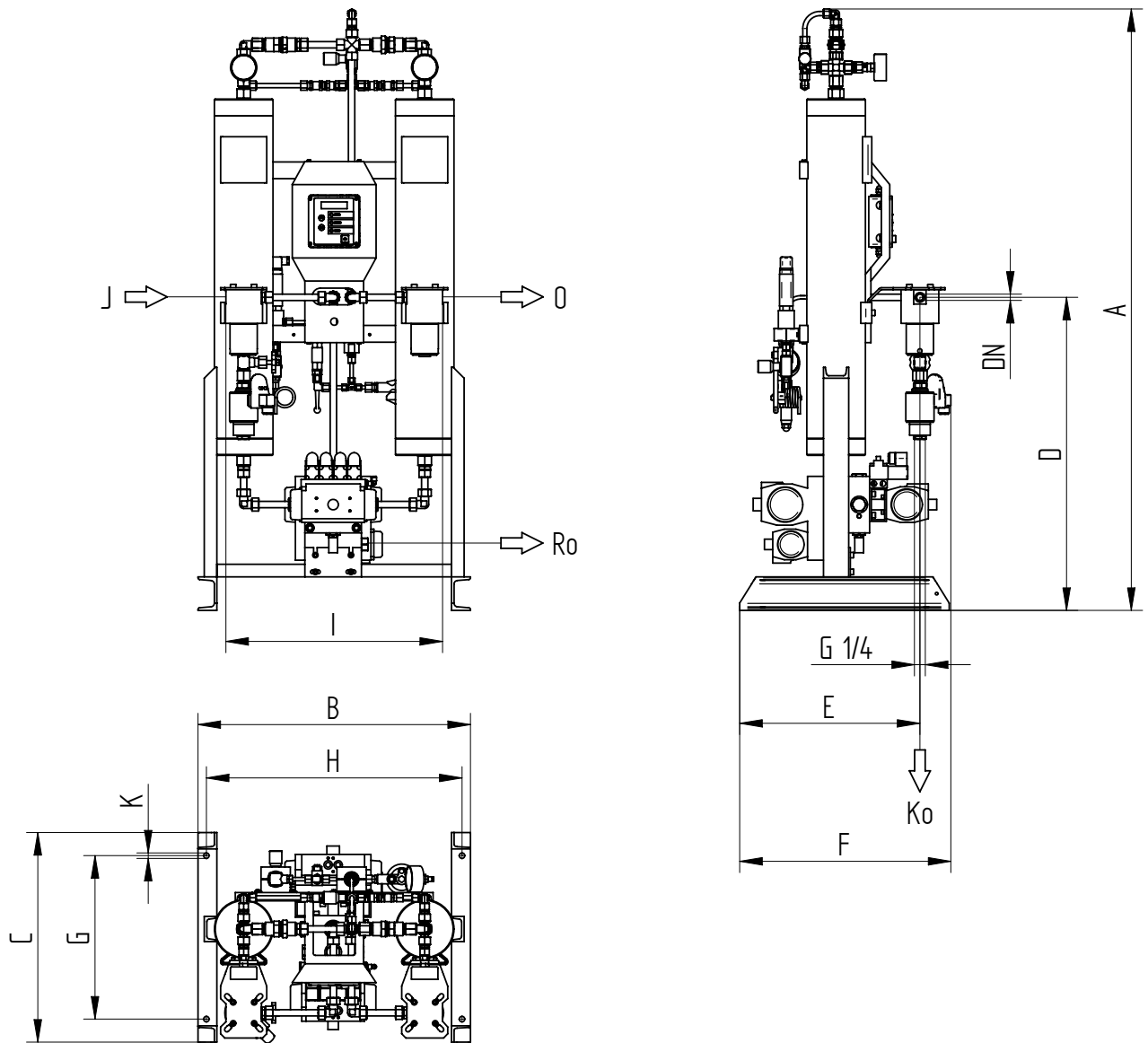
Selected adsorption dryer: HLP 0500 - PN400

HLP 0055 - 0655, PN 100



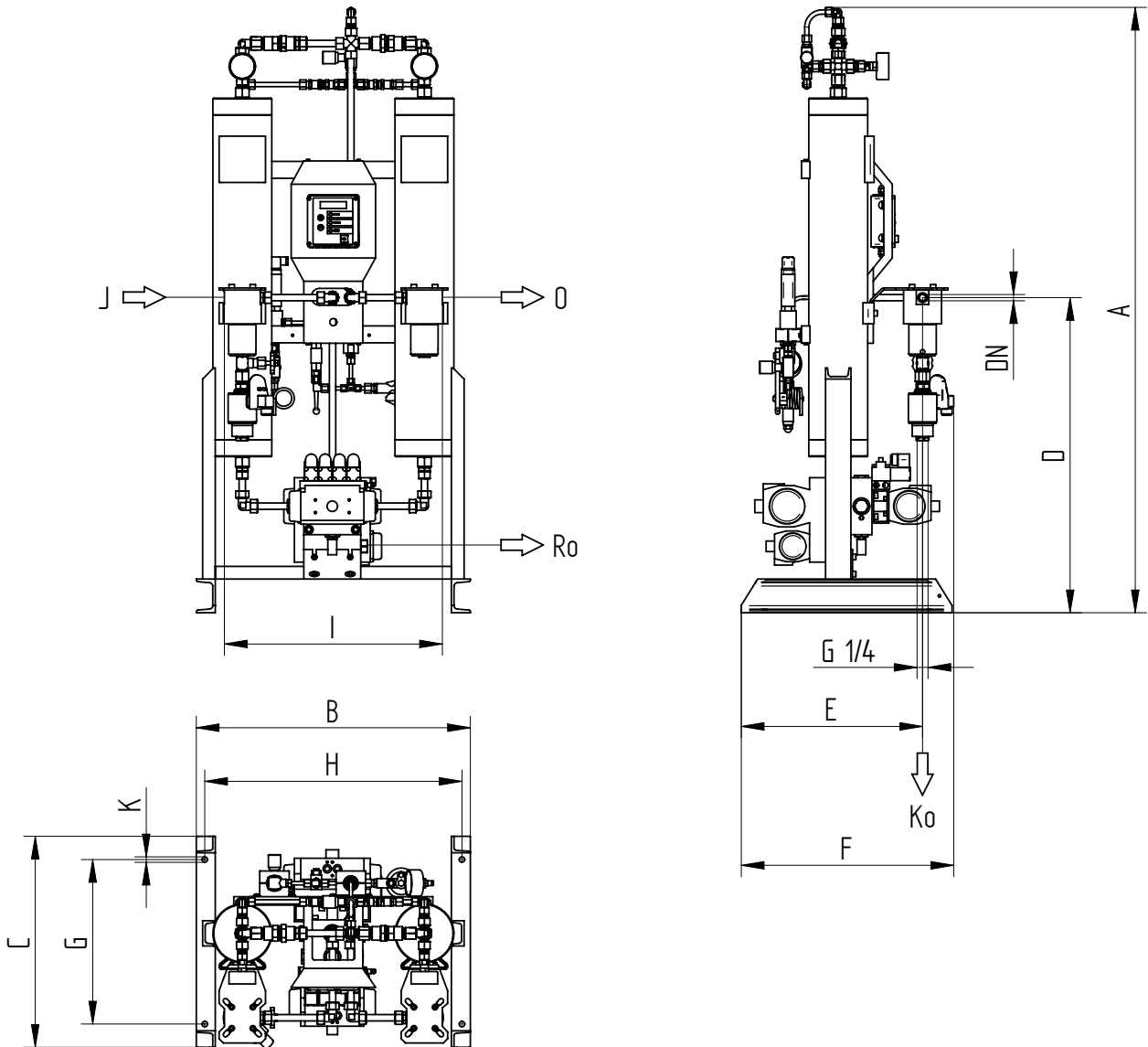
HLP PN 100	Connection " DN	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm
0055	G 1/4	1245	590	500	650	410	485	390	550	500	13
0110	G 3/8	1385	615	500	650	420	490	390	575	505	13
0185	G 3/8	1435	650	500	750	430	505	390	610	520	13
0370	G 1/2	1830	730	580	860	485	560	445	690	580	17
0655	G 3/4	1875	820	580	930	520	590	445	780	625	17

HLP 0090 - 1050, PN 250



HLP PN 250	Connection DN	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm
0090	G 1/4	1280	570	500	650	405	480	390	530	495	13
0195	G 3/8	1340	615	500	630	420	495	390	575	505	13
0310	G 3/8	1300	670	500	610	440	510	390	630	515	13
0600	G 1/2	1755	730	580	850	485	560	445	685	580	17
1050	G 3/4	1890	835	580	940	520	595	445	795	640	17

HLP 0115 - 0870, PN 400



HLP PN 400	Connection DN	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm
0115	G 1/4	1205	590	500	620	410	485	390	550	500	13
0215	G 3/8	1275	605	500	625	420	495	390	565	490	13
0320	G 3/8	1330	660	500	650	430	505	390	620	525	13
0500	G 1/2	1470	730	580	745	485	560	445	690	580	17
0870	G 3/4	1540	835	580	790	520	595	445	795	640	17