



Pall Corporation

9000

9680/9681 Series Filter Assembly

H I G H P R E S S U R E F I L T E R S

Port Size 1", 1¼" and 1½"



9680/9681 Series Filter Assembly Technical Information

Notes and Specifications

Maximum working pressure: 420 bar

Fatigue pressure: 275 bar
YE47 option available for applications in excess of 10⁶ cycles.

Proof pressure: 630 bar
Burst pressure: 1260 bar typ.

Temperature range:
Nitrile Seals: -43°C to +120°C
Fluorocarbon Seals: -29°C to +120°C
60°C max in HWCF or water glycol fluids.

Bypass valve (9680 series only) setting: 3.4 ± 0.3 bar
ΔP switch indicator setting: 2.4 ± 0.3 bar
Bypass valve (9681 series only) setting: None
ΔP switch indicator setting: 6.9 ± 1.0 bar
(See PME DELTAP for full indicator details)

Reverse flow valve:
9680 series: 'C' option (with in to out bypass)
9681 series: 'K' option (with no bypass)

Maximum recommended flow rate: 380 L/min

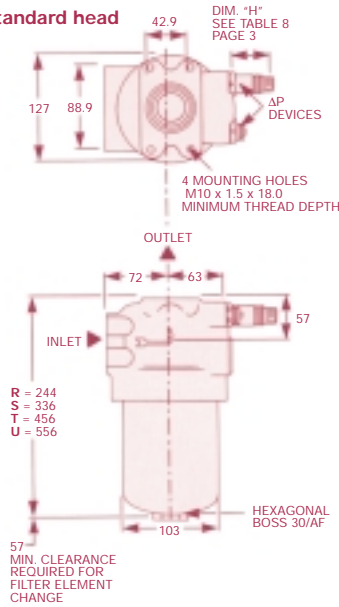
Finish: Paint on a phosphate base.

Disposable filter medium: **Ultipor III**
Element collapse pressure rating per ISO 2941: 20 bar minimum with bypass valve
210 bar minimum without bypass valve

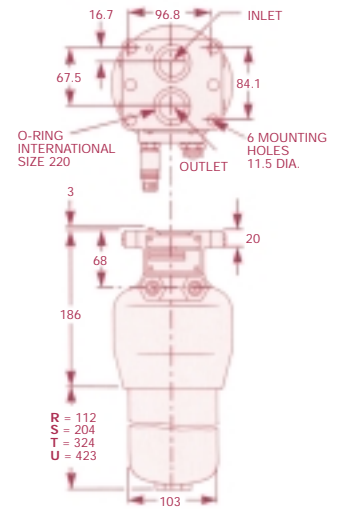
The equipment has been assessed in accordance with the guidelines laid down in The European Pressure Directive 97/23/EC and has been classified within Sound Engineering Practice S.E.P. Suitable for use with Group 2 fluids only. Consult Sales for other fluid gas group suitability.

All dimensions in mm unless otherwise stated.

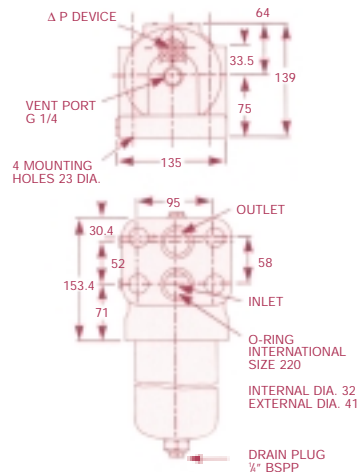
Standard head



"K" head option

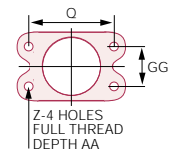


"S" head option



Flange mounting bolt dimensions (per SAE 518c)

'Pall' P/N Code	Nominal Pipe Size	Maximum Recommended Pressure	GG	Q	Z Thread	AA Min
F20	1 1/4"	210 bar	30.2mm	58.7mm	M10 x 1.5-6H	19mm
F24	1 1/2"	210 bar	35.7mm	69.9mm	M12 x 1.75	19mm
G20	1 1/4"	420 bar	31.8mm	66.7mm	M14 x 2	19mm



Multipass Filtration Ratings per ISO 16889

'Pall' Media Grade	Micrometre Size for β _{x(c)} Values*	Terminal ΔP Bar						
		β _{x(c)} =2	β _{x(c)} =10	β _{x(c)} =75	β _{x(c)} =100	β _{x(c)} =200	β _{x(c)} =1000	
9600	KZ	<2	<2	<2	<2	2	2.5	4
	KP	<2	<2	3.1	3.3	3.8	5	4
	KN	2.1	3.4	5.0	5.2	5.7	7	4
	KS	3.2	5.5	8.3	8.7	9.7	12	4
	KT	7.2	11	15.8	16.5	18.2	22	4
9601	DP	<2	<2	3.0	3.2	3.8	5	16
	DT	3.3	6.3	10.1	10.7	12	15	16

* Beta ratios are designated using the symbol (c) to signify they were measured using the ISO 16889 procedure.

9680/9681 Series Filter Assembly Technical Information

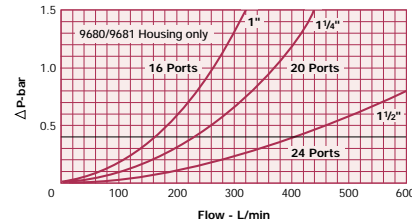
Filter assembly clean pressure drop = ΔP housing + ΔP element

Element pressure drop factor

Multiply flow rate by Δp factor/1000 to determine pressure drop (bar) with fluid at 30 cSt 0.9 S.G. Correct for other viscosities and specific gravity by multiplying new viscosity in cSt/30 x new S.G./0.9.

Housing pressure drop

Using fluid with s.g. 0.9 housing pressure drop is directly proportional to specific gravity.



9600 Series Element ΔP factor (bar/L/min)

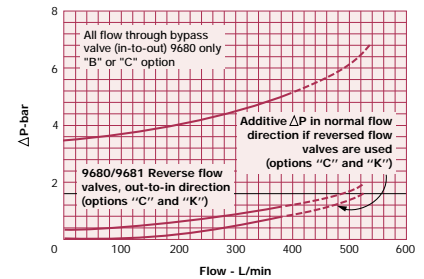
Length	KZ	KP	KN	KS	KT
4"	11.96	6.18	4.44	3.24	2.29
8"	6.11	3.14	2.29	1.70	1.19
13"	3.74	1.93	1.41	1.03	0.73
16"	2.84	1.46	1.07	0.78	0.55

9601 Series Element ΔP factor (bar/L/min)

Length	DP	DT
4"	16.75	6.74
8"	8.49	3.41
13"	5.10	2.05
16"	3.87	1.55

Bypass valve curves

Bypass valve pressure drop using fluid with s.g. 0.9. Valve pressure drop is directly proportional to fluid specific gravity.



Sample ΔP calculation

HH9680C20KNTBM at 200 L/min flow rate using a hydraulic fluid at 50 cSt and specific gravity (s.g.) 1.2.

ΔP assembly
 = ΔP housing + ΔP element
 = (0.3 x 1.2/0.9)
 + ((200 x 1.41/1000) x 50/30 x 1.2/0.9)
 = 0.4 (housing) + 0.63 (element)
 = **1.03 bar**

Ordering Information

Filter Assembly 'Pall' Part No:

Replacement Element 'Pall' Part No:

Seal Kit 'Pall' Part No:

H 968

HC960 F

H9600SK

Table 1. Seal Type

Code	Seal Material	Fluid Service
H	Nitrile	Petroleum, water-oil emulsions, water glycol
Z	Fluorocarbon	Specified synthetics

Table 2. Element Collapse Rating

Code	Rating
0	20 bar diff. for housings with bypass valves
1	210 bar diff. for housings without bypass valves 'Dirt-Fuse' element option

Table 3. Port Type

Code	Option
C	BSP thread
F	SAE split flange with metric holding bolts. Standard pressure 210 bar.
G	SAE split flange with metric holding bolts. High pressure 420 bar.
K	Top manifold mounting
S	Side manifold mounting

Table 4. Port Size

Code	Option	Available for
16	1"	Port type C
20	1 1/4"	Port type C, F, G, K, S
24	1 1/2"	Port type C, F

Table 5. Filter Element

Medium Code	Rating (μm) ($\beta_{x(C)} \geq 1000$)*	
9600	KZ	2.5
	KP	5
	KN	7
	KS	12
9601	KT	22
	DP	5
	DT	15

Table 6. Length

Assembly Code	Element Code	Dry Wt. Kg	
		9680	9681
R	4	8.7	9.5
S	8	11	12
T	13	13.3	14.8
U	16	15.5	17.5

Table 7. Bypass Option

Code	Option	Available for
B	3.4 ± 0.3 bar bypass	9680
C	3.4 ± 0.3 bar bypass with reverse flow valve	9680
K	Reverse flow valve with no in-to-out bypass	9681
W	Without bypass valve	9681
N	No element - no flow	9681

Table 8. Differential Pressure (ΔP) Device Options

Code	Description	H Dim
B	Bleed plug and seal in place of ΔP indicator.	8mm
D	Visual indicator.	23mm
E	Visual indicator in stainless steel.	23mm
M	Electrical switch-SPDT. Automatic reset. Hirschmann type plug & socket. IEC class IP65.	78mm
P	Visual indicator with thermal lockout.	23mm
R	Electrical switch-SPDT with neon light indicator. Hirschmann type plug & socket. IEC class IP65.	90mm
W	Electrical switch-SPDT for hazardous environments. CENELEC EN50014 Class EExIICT6.	47mm

Note: Stainless steel indicators are required for fatigue applications above 275 bar. Refer to PMEDELTA for details.

9680/9681 Series Filter Assembly Features and Benefits

Features and Benefits

Ferrous housing of cast ductile iron head and forged carbon steel bowl
Rated for 275 bar fatigue pressure.

Positive sealing

Unique positive sealing interface using standard 'O' rings.

Mounting

Port option in 1", 1 1/4" and 1 1/2" BSP, 1 1/4" or 1 1/2" SAE split flange or 1 1/4" side or top mounted manifolds.

High fatigue forged carbon steel bowl

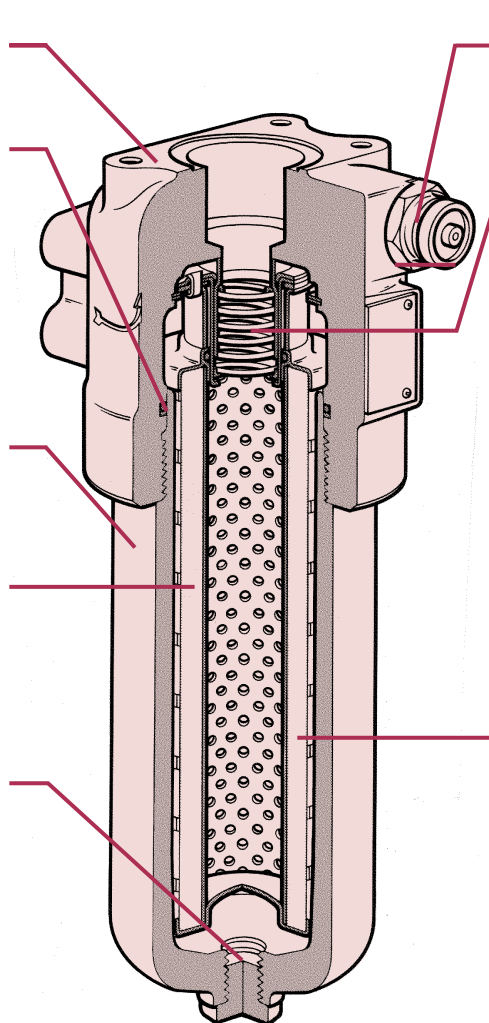
Bowl cannot be engaged with inverted element.

Fully supported element construction for out-to-in flow

- High collapse strength and filtration integrity.
- Uniform diffused flow.

Drain port

Optional 1/4" drain port for filter draining during filter change.



Optional visual and electrical differential pressure indicating devices

Accurate and reliable indication of the need for element service.

Bypass valve

Full flow low inertia bypass valve mounted in the filter head between inlet and outlet port.

- Operation is independent of clogging indicator.
- Instant response to limit ΔP across element during cold starts and flow surges.
- Fluid flow clear of the element when in bypass mode.

Sampling port

Sampling via the differential pressure indicator port for sampling without breaking lines.

Ultipor III elements

Ultipor III filter media

- Unique composite structure.
- Graded pore construction.
- Inert, inorganic fibres.
- Removal ratings:-
2.5, 5, 7, 12 and 22 micrometres where $\beta_{x(c)} \geq 1000$ to ISO 16889.



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