

MANN micro-Top Spin-on filters for lube and hydraulic oils



MANN micro-Top Spin-on filters

MANN Spin-on filters are fine filters used for the filtration of lube and hydraulic oils as well as in engines, machines and installations. The fineness of the MANN micro-Top filter elements (star-pleated paper) is in the μm range.

Design

The MANN micro-Top filter element is fixed into the housing. The inlet and outlet for the liquid to be filtered are located in the threaded cover. The spin-on filters are simply screwed on specially provided connections on engines and machines.



Operation

Spin-on filters are generally used as full-flow filters, i.e. they are installed in the circuit in a way ensuring that all the liquid to be cleaned passes through them every time it circulates.

Deposit of dirt particles on the paper element causes the flow resistance to increase.

When a certain differential pressure is reached (e.g. upon cold start or when the filtering element is clogged), a bypass valve in the filter opens, ensuring sufficient lubrication.

For the opening pressure of the bypass valve, please see the relevant table.

An optionally integrated non-return valve prevents the running dry of the filter. In this way the operating pressure is reached quickly after starting the engine.

MANN micro-Top Spin-on filters

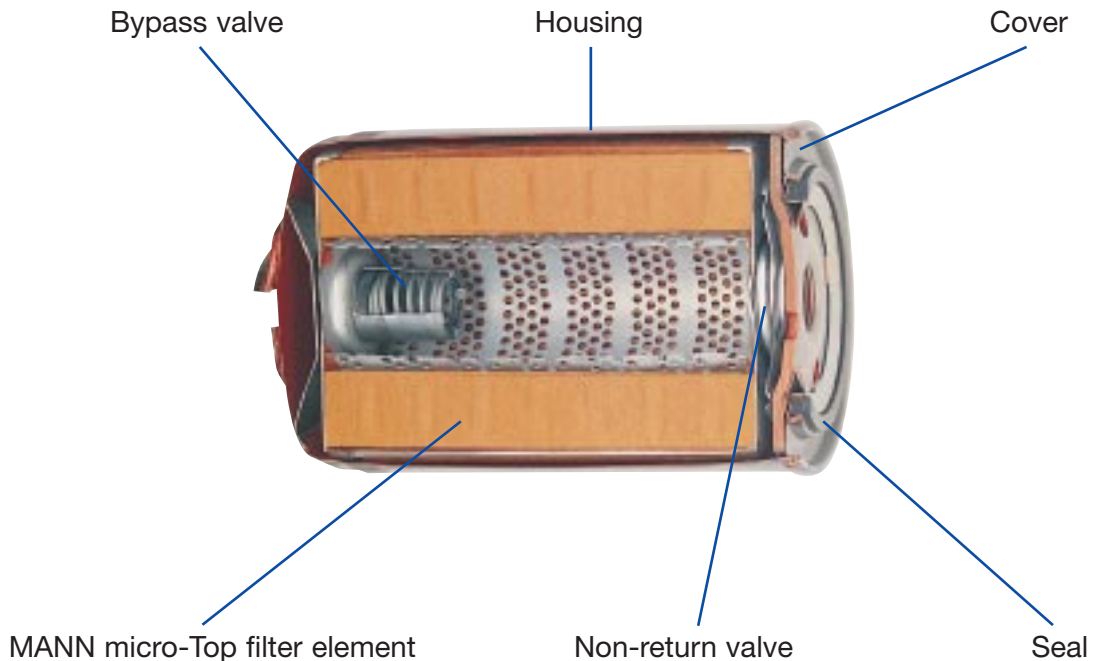
Maintenance

Usually, the maintenance frequency is determined by the engine or machine manufacturer. The maintenance work to be performed is limited to the replacement of the complete spin-on filter. The removal tool shown on page 12 helps in loosening the filter.

On the Spin-on filters suitable for pressures up to 14 bar (1.4 MPa), an integrated non-return valve prevents oil to flow out during the servicing.

Configuration

The stated values in the table are standard which – depending on the application – can be adjusted upwards. For further information please ask your sales engineer.



Technical data

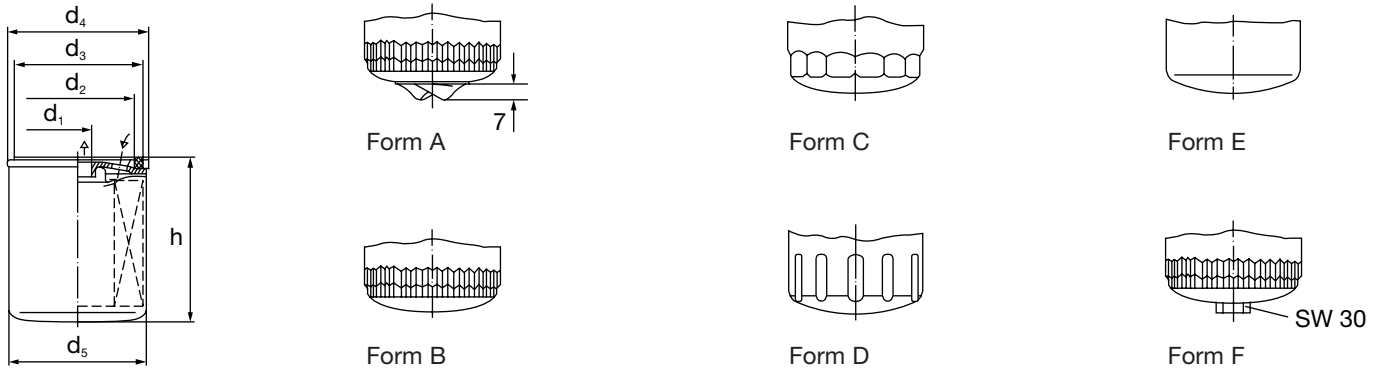
Filter fineness:	12 µm 50 % fractional separation efficiency (single pass) 30 µm 99 % fractional separation efficiency (single pass) Other filter fineness upon request
Nominal flow rate:	25 to 540 l/min.
Operating pressure:	14; 20; 25 or 35 bar (1.4; 2; 2.5 or 3.5 MPa)
Operating temperature:	Max. 120 °C
Bypass valve:	Opens at differential pressures of 0.8 to 2.5 / 3.5 bar with or without non-return valve

MANN micro-Top Spin-on filters

Nominal pressure 14 bar (1.4 MPa)

Spin-on filters for this pressure range are used primarily for the filtration of lube oils. Applications for other liquids upon request.

- Opening pressure of bypass: 0.8 to 2.5 bar (80 to 250 kPa).
- With non-return valve.



Filter mounting: metric thread

Part No.	Form	Nominal flow rate [l/min]	Dimensions in mm and inches						Non-return valve [bar] [KPa]		Bypass valve [bar] [KPa]	
			d ₁	d ₂	d ₃	d ₄	d ₅	h				
W 712/15	D	15	M 18x1.5	62	71	80	76	94	0.12	12	1.0	100
W 815	D	20	M 20x1.5	62	71	90	86	89	0.12	12	1.5	150
W 920/25	B	20	M 20x1.5	62	71	96	93	95	0.12	12	0.8	80

Filter mounting: unified thread in inches

Part No.	Form	Nominal flow rate [l/min]	Dimensions in mm and inches						Non-return valve [bar] [KPa]		Bypass valve [bar] [KPa]		Short designation to DIN ISO 71457
			d ₁	d ₂	d ₃	d ₄	d ₅	h					
W 712/1	C	12	3/4 - 16 UNF	62	71	80	76	79	0.12	12	-	-	-
W 712/4	C	15	3/4 - 16 UNF	62	71	80	76	93	0.12	12	2.5	250	A 0.4
W 719/4	C	20	3/4 - 16 UNF	62	71	80	76	123	0.12	12	2.5	250	-
W 920	A	25	3/4 - 16 UNF	62	71	96	93	95	0.12	12	2.5	250	B 0.5
W 920/7	B	25	3/4 - 16 UNF	62	71	96	93	95	0.12	12	1.2	120	-
W 930	A	25	3/4 - 16 UNF	62	71	96	93	114	0.12	12	2.5	250	B 0.6
W 940	A	40	3/4 - 16 UNF	62	71	96	93	142	0.12	12	2.5	250	B 0.8
W 940/1	B	40	3/4 - 16 UNF	62	71	96	93	142	0.12	12	1.2	120	-
W 940/13	F	40	3/4 - 16 UNF	62	71	96	93	142	0.12	12	2.5	250	-
W 940/18	B	40	1 - 12 UNF	62	71	96	93	142	0.12	12	2.5	250	A 0.8x1
W 950	B	45	1 - 12 UNF	62	71	96	93	170	0.12	12	2.5	250	A 1
W 950/1	B	45	1 - 12 UNF	62	71	96	93	170	0.12	12	1.2	120	-
W 962	B	70	1 - 12 UNF	62	71	96	93	210	0.12	12	2.5	250	A 1.2
W 962/2	A	70	1 - 12 UNF	62	71	96	93	210	0.12	12	2.5	250	B 1.2
W 1130	C	30	3/4 - 16 UNF	62	71	110	108	115	0.12	12	1.0	100	-
W 1140	C	45	3/4 - 16 UNF	62	71	110	108	135	0.12	12	1.2	120	-
W 1170	C	70	1 - 12 UNF	62	71	110	108	227	0.12	12	1.2	120	-
W 11 102	C	100	1 1/8 - 16 UN	93	104	110	108	260	0.12	12	2.5	250	-
W 1374/2	E	85	G 1 1/4	100	111	140	136	177	-	-	-	-	-
W 1374/4	E	85	1 1/2 - 16 UN - 2 B	100	111	140	136	177	-	-	0.2	20	-

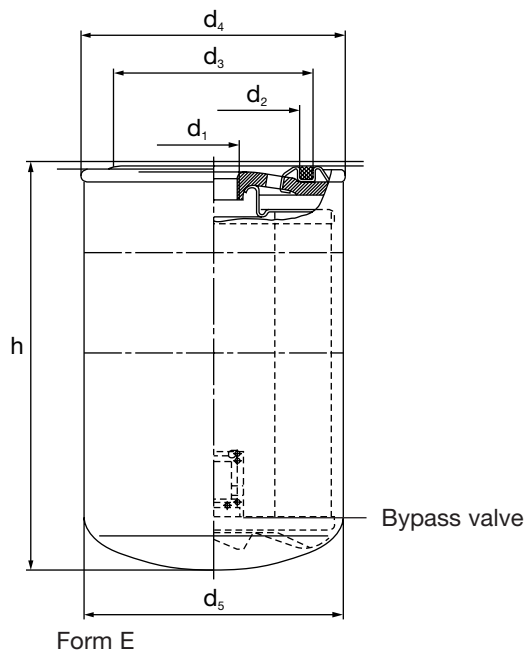
MANN micro-Top Spin-on filters

Nominal pressure 35/25/20 bar (3.5/2.5/2.0 MPa)



Spin-on filters for this pressure range are used primarily for the filtration of hydraulic oils in compliance with DIN 51 524 and DIN 51 525. Applications for other liquids upon request.

- Opening pressure of bypass: 0.8 to 2.5 bar (80 to 350 KPa).



Filter mounting: unified thread in inches

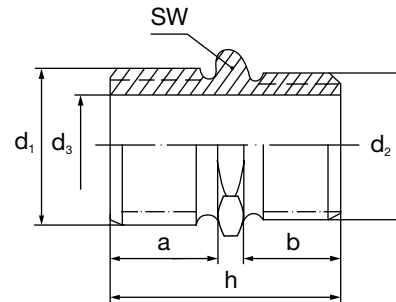
Part No.	Form	Nominal flow rate ¹⁾ [l/min]	Dimensions in mm and inches						Bypass valve [bar] [KPa]		Maximum operating pressure [bar] [MPa]	
			d ₁	d ₂	d ₃	d ₄	d ₅	h				
WD 724/3	E	20	³ / ₄ – 16 UNF	62	71	80	76	140	3.5	350	35	3.5
WD 920	E	25	³ / ₄ – 16 UNF	62	71	96	93	97	2.5	250	25	2.5
WD 940	E	40	³ / ₄ – 16 UNF	62	71	96	93	144	2.5	250	25	2.5
WD 940/2	E	35	1 – 12 UNF	62	71	96	93	144	2.5	250	25	2.5
WD 950	E	40	1 – 12 UNF	62	71	96	93	172	2.5	250	25	2.5
WD 950/2	E	50	1 – 12 UNF	62.5	72.5	98	96	170	3.5	350	25	2.5
WD 962	E	70	1 – 12 UNF	62	71	96	93	212	2.5	250	25	2.5
WD 1374	E	95	1½ – 16 UN	100	111	140	136	177	–	–	20	2.0
WD 13 145	E	180	1½ – 16 UN	100	111	140	136	302	2.5	250	20	2.0

¹⁾ Flow resistance 0.3-0.6 at 36 mm²/sec.

Accessories for MANN micro-Top Spin-on filters

Double union

When the mounting plate is provided with a female thread, a double union is required for the assembly of the filter.

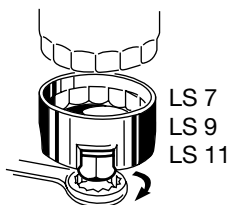


Dimensions and part numbers

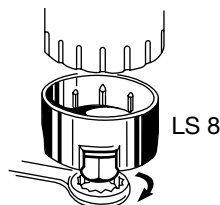
Part No.	Dimensions in mm and inches						
	d ₁	d ₂	d ₃	a	b	h	SW
21 018 15 331	M 18x1.5	M 18x1.5	12	10	10	25	24
21 019 15 111	³ / ₄ – 16 UNF	M 18x1.5	13	17	14.5	35.5	24
21 025 15 101	1 – 12 UNF	M 24x1.5	18	17	15.5	37	27
21 030 15 251	1 ¹ / ₈ – 16 UN	M 30x1.5	22	17.5	17.5	40	32
21 039 15 101	1 ¹ / ₂ – 16 UN	M 38x1.5	30	19.5	15	41	46

Removal tool

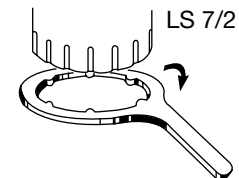
For easy disassembly of the MANN micro-Top Spin-on filters.



Form B
Form C



Form D



Form D

Mann micro-Top Spin-on Filters	W 7 ...		W 8 ...	W 9 ...	W 11 ...
Filter form	C	D	D	B	C
Suited MANN removal tool	LS 7	LS 7/2	LS 8	LS 9	LS 11

Form A (see page 10) with loosening cam only requires a heavy screwdriver or a round bar, 8 to 10 mm thick, for disassembly.

Form E (see page 10 and 11) requires the strap-type tool commercially available.

MANN micro-Top Filter Elements for filters for liquids



MANN micro-Top Filter Elements

MANN micro-Top filter elements are fine filters for engine and hydraulic oils, fuels, coolants and paints.

The filter fineness is in the μm range.

The MANN micro-Top filter elements are distinguished by following features:

- High and constant filtration efficiency
- High dirt-retention capacity of the paper filter elements due to the large filtering surface and the optimal paper structure.
- The specially embossed paper ensures lasting efficiency of the whole filter surface over the entire operating time.
- Resistance to water, coolants, fuels, oils and other hydrocarbons up to temperatures of $140\text{ }^{\circ}\text{C}$ thanks to the special impregnation.
- Various types as per DIN- or ISO-specifications.
- Available in more than 100 countries.



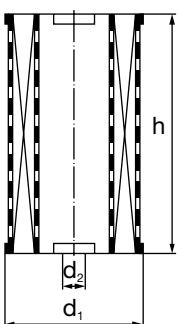
Operation

The flow of liquid to be filtered passes the filter from the outside to the inside. Exception: Filter elements for steering hydraulic systems.

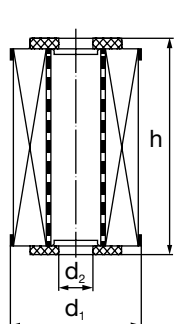
Maintenance

The maintenance frequency is usually prescribed by the engine or installation manufacturer. Servicing is limited to the replacement of the MANN micro-Top filter elements.

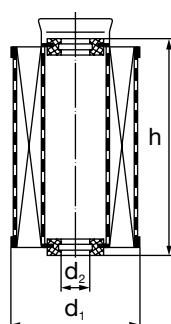
Types



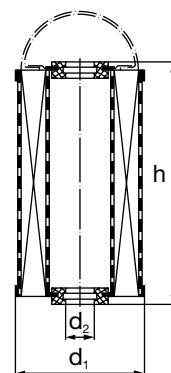
Form A



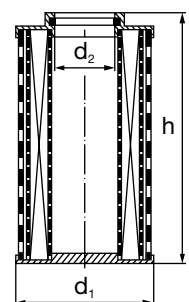
Form B



Form C



Form D



Form E

MANN micro-Top Filter Elements

for fuel filters and partial-flow oil filters

MANN micro-Top Filter elements and MANN felt filter elements for fuel filters

Part No.		Form (Page 20)	Nominal flow rate [l/h]	Dimensions in mm			Short designation as per DIN 73 358
MANN micro-Top filter elements	MANN Felt filter element			d ₁	d ₂ ¹⁾	h	
P 46/1	–	B	35	40	8.5	133	
P 64	–	A	15	52	12	44	
P 78	–	A	37	65	14	53	
P 609	–	B ⁵⁾	30	51	8 ³⁾	68	
P 707¹⁾	BF 707 ¹⁾	D ⁵⁾	90 ⁴⁾	65	14 ²⁾	116	DIN 73 358 – E 0.5
P 715¹⁾	BF 715 ¹⁾	D ⁵⁾	65 ⁴⁾	65	14 ²⁾	65	DIN 73 358 – E 0.2
P 725	–	A	95	65	14	100.5	
P 810	–	A	70	70	21	84	
P 811¹⁾	BF 811 ¹⁾	D ⁵⁾	120 ⁴⁾	83	14 ²⁾	147	DIN 73 358 – E 1
P 824	–	A	80	72	33	89	
P 825	–	B ⁵⁾	72	77	26	100	
P 833	–	A	110	72	21	125	
P 921/2	–	B ⁵⁾	120	83	26	118	
P 934	–	B ⁶⁾	150	83	10 ³⁾	167	
P 1018/1¹⁾	BF 1018/1 ¹⁾	D	310 ⁴⁾	106	20 ²⁾	171.5	DIN 73 358 – E 2

1) Interchangeable in filters to DIN 73 358, 73 359 and 73 360. For this reason, the dimensions indicated are those of the largest element.

2) Seal diameter for pipes to DIN 2391 or similar bolt.

3) Nominal diameter for bolt.

4) Flow rate with 1 m gradient (when new, to DIN 73 358).

5) With felt gasket.

6) With cork insert.

MANN micro-Top Filter elements (fiber pack) for oil filters in partial flow

Part No.	Form (Page 20)	Filling volume [cm ³]	Dimensions in mm			Short designation as per DIN 71 455
			d ₁	d ₂ ¹⁾	h	
PF 815	D	310	75	14	104	
PF 915	D	520	90	14	110	
PF 925	D	630	98	14	110	DIN 71 455 – E 1
PF 1025	D	1 300	98	14	206	
PF 1155	D	950	110	14	125	DIN 71 455 – E 1.5
PF 1190	D	1 600	110	14	202	DIN 71 455 – E 2.5
PF 13 140	D	2 300	130	14	202	DIN 71 455 – E 3.5
PF 1535	D	3 800	150	25	250	DIN 71 455 – E 5
PF 1552	D	5 500	150	32	367	DIN 71 455 – E 8
PF 19 326	D	10 100	197.5	22	378	

1) Seal diameter for pipes to DIN 2391 or similar bolt.

MANN micro-Top Filter Elements

Star-pleated paper elements for full-flow oil filters

MANN micro-Top Filter elements for full-flow oil filters

Part No.	Form (Page 20)	Nominal flow rate [l/min]	Dimensions in mm			Short designation as per DIN ISO 7747
			d ₁	d ₂	h	
H 53	A	5	40	12.8	64	
H 53/3 ¹⁾	A	5	40	12.8	64	
H 601	A	12	59	18	100.5	
H 617 ⁹⁾	A	16	59	28.2	100.5	
H 712	B ⁵⁾	23	70	33	156.5	
H 715/1	B	13	70	20	109	
H 720	A	19	70	26	117	A 70x26x117
H 729	A	22	70	26	165	A 70x26x165
H 804	B ⁷⁾	22	69	33	140	
H 813/1	B ⁵⁾	11	72	32	87.5	
H 815	C	15	76	19 ²⁾	107.5	
H 816	B ⁵⁾	18	72	32	108.5	
H 820/3	A	20	72	21	117	
H 827/1	B	25	72	33	154	
H 829	A	28	72	26	165	
H 928/1	A	30	87	20	117	
H 932/2	A	30	84	24.2	134	
H 943	A	46	84	24.2	196	
H 943/2	B ⁵⁾	53	90	32	201	
H 947/1	D	47	84	23.4	196	
H 960	A	57	84	24.2	229	
H 973	D ⁴⁾	72	90	24.4	220.2	
H 1018/2	B ⁷⁾	22	94	34	78	
H 1029/1	B ⁵⁾	32	100	34	101	
H 1032	C	27 ³⁾	100	19 ²⁾	126	
H 1034	A	40	100	30	117	A 100x30x117
H 1038	B ⁵⁾	35	94	34	119.5	
H 1048	B ⁷⁾	50	100	26	151	
H 1050/1	A	57	100	30	165	A 100x30x165
H 1050/2	B	50	99	30	182	
H 1053	C	61 ³⁾	100	25 ²⁾	204	
H 1053/2	B ⁵⁾	49	92	49	179.5	
H 1060	A	68	100	30	196	A 100x30x196
H 1072	A	82	100	30	234	A 100x30x234
H 1072/11	B ⁵⁾	82	100	40.5	236.5	
H 1075/1	B	72	92	50	262	
H 1081	A	82	100	40	234	A 100x40x234
H 1258	A	63	117	73	165	
H 1263/1	B	60	117	56	138	
H 1290/1	B	75	118	59	165	
H 1465 ¹⁾	A	63	132	95	163	
H 1496	B ⁵⁾	85	133	88	229	
H 1565/1	B ⁷⁾	68	150	88	106.5	
H 10 196	A	195	100	40	565	
H 12 105	B ⁵⁾	100	114	36	232	
H 12 107	A	95	117	56	196	
H 12 107/1	A	81	117	56	196	
H 12 110/1	B	88	117	56	227.5	

MANN micro-Top Filter Elements

for full-flow oil filters and filters for steering hydraulic systems

MANN micro-Top Filter elements for full-flow oil filters (continued)

Part No.	Form (Page 20)	Nominal flow rate [l/min]	Dimensions in mm			Short designation as per DIN ISO 7747
			d ₁	d ₂	h	
H 12 113	A	111	117	43	229	
H 12 178	B ⁶⁾	132	117	55	336	
H 12 225	B	183	117	56	462	
H 12 270	B	222	117	56	559	
H 13 127/1 ⁸⁾	A	104	128	14.5	210.5	
H 15 111/2	A	98	150	88	165	
H 15 134	A	143	150	88	196	A 152x88x196
H 15 134/1	B ⁷⁾	143	150	88	211	
H 15 135	C	80	150	31.5	252	
H 15 190	C	80	150	31.5	364	
H 15 190/6	C	80	150	31	364	
H 15 190/11	C	80	150	31	364	
H 15 222/2	A	200	150	88	330	
H 15 263 ¹⁾	B	262	150	88	425	
H 15 395	B	392	150	88	631	
H 15 432	B	355	150	88	597	
H 15 475	C	80	150	31	364	
H 15 490	A	525	150	88	722	
H 15 490/2	B	525	150	88	733	
H 18 265	A	227	170	115	363	
H 18 300	A	303	170	115	484	
H 20 211	B	175	194	118	183	
H 20 440	B	363	194	118	366	
H 25 669	A	663	242	132	366	

1) Flow from the inside to the outside.

2) Seal diameter for pipes to DIN 2391 or similar bolt.

3) Flow rate related to discharge cross section.

4) Without clip.

5) With cardboard end cap as gasket.

6) With felt gasket.

7) With cork gasket.

8) See project drawing.

9) With bypass valve.

MANN micro-Top Filter elements for filters for steering hydraulic systems

Part No.	Form (Page 20)	Nominal flow rate [l/min]	Dimensions in mm		
			d ₁	d ₂	h
H 601/4	A	13	60	18	100.5
H 615	C	13	59	13 ¹⁾	111.5
H 910/2	C ²⁾	9	82	13 ¹⁾	60.5
H 919/7	C	25	82	13 ¹⁾	111.5

1) Seal diameter for pipes to DIN 2391 or similar bolt.

2) Without grip.

MANN micro-Top Filter Elements

for paint filters and high-pressure filters for hydraulic systems

MANN micro-Top Filter elements for paint filters

Part No.	Form (Page 20)	Nominal flow rate	Dimensions in mm			Filter fineness µm absolute
			d ₁	d ₂	h	
H 840	B ²⁾		72	27	251	50
H 845	B ²⁾		72	27	251	25
H 850/4	B		72	27	251	5
H 850/5	B		72	27	251	10
H 965	B ²⁾	indicated	90	27	251	35
H 974	B ²⁾		90	27	251	25
H 974/1	B ²⁾	upon	90	27	251	50
H 984	B ²⁾		90	27	251	10
H 996	B ²⁾	request	90	27	251	5
H 15 206/1	C		150	31 ¹⁾	364	35
H 15 230/1	C		150	31 ¹⁾	364	25
H 15 250/1	C		150	31 ¹⁾	364	10
H 18 321	A		180	120	366	10
H 18 321/1	A		180	120	366	25

1) Outer diameter to DIN 2391.

2) With felt gasket.

MANN micro-Top Filter elements for high-pressure filters for hydraulic systems

Part No.	Form (Page 20)	Nominal flow rate [l/min]	Dimensions in mm			Filter fineness µm absolute
			d ₁	d ₂	h	
HD 46	E	25	40	18	122	25
HD 46/1	E	20	40	18	122	3
HD 46/2	E	25	40	18	122	10
HD 46/3	E	25	40	18	122	10
HD 65	E	60	57	25	71	25
HD 65/1	E	45	57	25	71	3
HD 65/2	E	45	57	25	71	10
HD 610	E	100	57	25	124	25
HD 610/1	E	70	57	25	124	3
HD 610/2	E	70	57	25	124	10
HD 613	E	150	57	25	171	25
HD 613/1	E	100	57	25	171	3
HD 613/2	E	100	57	25	171	10
HD 938	E	300	85	46	200	25
HD 938/1	E	250	85	46	200	3
HD 938/2	E	250	85	46	200	10
HD 958	E	450	85	46	300	25
HD 958/1	E	350	85	46	300	3
HD 958/2	E	350	85	46	300	10