

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

HIDROMA
SYSTEMS

UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

FRA-RFM

RETURN FILTERS

MATERIALS

Head and cover : Aluminium alloy

Bowl :

Polyamide for FRA21-31-32-33-41

Zinc plated steel for FRA11-42-51-52- 53-5D

Bypass valve: Polyamide

Seals: NBR Nitrile

FKM Fluoroelastomer on request

Indicator housing: Brass

PRESSURE

Max. working: 300 kPa (3 bar)

Collapse, differential for the filter element (ISO 2941): 300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

WORKING TEMPERATURE

From -25° to +110° C

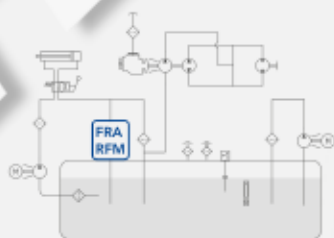
COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG

(according to ISO 6743/4)

For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website.



FRA

RETURN FILTERS

ORDERING AND OPTION CHART

| F | R | A | COMPLETE FILTER FAMILY | | | | | | | | | | | | | | FILTER ELEMENT FAMILY | | | | |
|---|---|---|--|----|----|----|----|----|-----|-----|----|----|----|----|----|----|-----------------------|---------------|----|----|----|
| | | | SIZE & LENGHT | 11 | 21 | 31 | 32 | 33 | 41 | 42 | 51 | 5A | 52 | 5B | 5C | 53 | 5D | SIZE & LENGHT | E | R | A |
| | | | PORT TYPE | | | | | | | | | | | | | | | | | | |
| | | | B = BSP thread | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| | | | N = NPT thread | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | S = SAE thread | - | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S |
| | | | F = SAE flange 3000 psi | - | - | - | - | - | - | - | F | F | F | F | F | F | F | F | F | F | F |
| | | | PORT SIZE | | | | | | | | | | | | | | | | | | |
| | | | 03 = 3/8" | 03 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | | 04 = 1/2" | - | 04 | 04 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | | 06 = 3/4" | - | - | 06 | 06 | 06 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | | 08 = 1" | - | - | - | 08 | 08 | 08 | 08 | - | - | - | - | - | - | - | - | - | - | - |
| | | | 10 = 1" 1/4 (F10 not available) | - | - | - | - | - | 10 | 10 | 10 | 10 | 10 | - | - | - | - | - | - | - | - |
| | | | 12 = 1" 1/2 (** F12 available only for FRA4+ only) | - | - | - | - | - | (*) | (*) | 12 | 12 | 12 | - | - | - | - | - | - | - | - |
| | | | 16 = 2" (F16 not available) | - | - | - | - | - | - | - | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | | | 20 = 2" 1/2 (F20 only) | - | - | - | - | - | - | - | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| | | | BYPASS VALVE | | | | | | | | | | | | | | | | | | |
| | | | B = 170 kPa (1,7 bar) | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| | | | SEALS | | | | | | | | | | | | | | | | | | |
| | | | N = NBR Nitrile | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | F = FKM Fluoroelastomer | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| | | | FILTER MEDIA | | | | | | | | | | | | | | | | | | |
| | | | FA = fibreglass 5 µm(c) β>1.000 | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA | FA |
| | | | FB = fibreglass 7 µm(c) β>1.000 | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB | FB |
| | | | FC = fibreglass 12 µm(c) β>1.000 | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC |
| | | | FD = fibreglass 21 µm(c) β>1.000 | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD |
| | | | CC = impregnated cellulose 10 µm β>2 | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC | CC |
| | | | CD = impregnated cellulose 25 µm β>2 | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD |
| | | | ME = wire mesh 60 µm | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME | ME |
| | | | CLOGGING INDICATOR | | | | | | | | | | | | | | | | | | |
| | | | 01 = 1/8" port, plugged | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 |
| | | | 30 = pressure gauge, rear connection | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | | | 32 = pressure gauge, bottom connection | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| | | | P1 = SPDT pressure switch | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 |
| | | | ACCESSORIES | | | | | | | | | | | | | | | | | | |
| | | | W = without | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W |
| | | | P = with filling plug | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P |
| | | | ACCESSORIES | | | | | | | | | | | | | | | | | | |
| | | | X= no other accessory available | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |

RFM

RETURN FILTERS

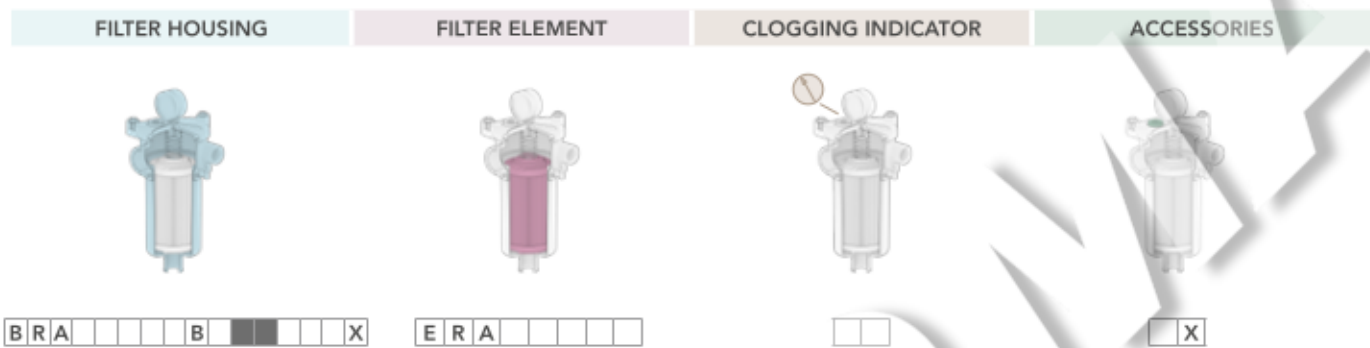
ORDERING AND OPTION CHART

| R | F | M | COMPLETE FILTER FAMILY | FILTER ELEMENT FAMILY | | | | | | | | | | | | | | | | C | R | E | | |
|---|---|---|--|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|--|--|
| | | | SIZE & LENGHT | 004 | 008 | 012 | 015 | 020 | 025 | 030 | 040 | 050 | 055 | 060 | 070 | 080 | 100 | 110 | 125 | 150 | 160 | | | |
| | | | | 004 | 008 | 015 | 015 | 025 | 025 | 030 | 050 | 050 | 055 | 060 | 060 | 080 | 100 | 110 | 125 | 150 | 160 | SIZE & LENGHT | | |
| | | | FILTER MEDIA | FILTER MEDIA | | | | | | | | | | | | | | | | | | | | |
| | | | FT = fibreglass 5 µm(c) β>1.000 | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | FT | | | |
| | | | FC = fibreglass 7 µm(c) β>1.000 | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | FC | | | |
| | | | FD = fibreglass 12 µm(c) β>1.000 | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | FD | | | |
| | | | FV = fibreglass 21 µm(c) β>1.000 | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | FV | | | |
| | | | CD = impregnated cellulose 10 µm β>2 | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | CD | | | |
| | | | CV = impregnated cellulose 25 µm β>2 | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | CV | | | |
| | | | MS = wire mesh 60 µm | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | MS | | | |
| | | | SEALS | SEALS | | | | | | | | | | | | | | | | | | | | |
| | | | 1 = NBR Nitrile | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| | | | 2 = FKM Fluoroelastomer | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| | | | BYPASS VALVE | BYPASS VALVE | | | | | | | | | | | | | | | | | | | | |
| | | | B = 170 kPa (1,7 bar) | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | | | |
| | | | PORT TYPE | PORT TYPE | | | | | | | | | | | | | | | | | | | | |
| | | | B = BSP thread | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | | | |
| | | | N = NPT thread | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | | | |
| | | | S = SAE thread | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | | | |
| | | | F = SAE flange 3000 psi | - | - | - | - | - | - | - | - | - | - | - | - | - | F | F | F | F | F | | | |
| | | | PORT SIZE | PORT SIZE | | | | | | | | | | | | | | | | | | | | |
| | | | 2 = 3/8" | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| | | | 3 = 1/2" | - | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| | | | 4 = 3/4" | - | - | - | 4 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| | | | 5 = 1" | - | - | - | - | - | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | | | |
| | | | 6 = 1" 1/4 (F6 not available) | - | - | - | - | - | - | - | - | 6 | 6 | 6 | - | - | - | - | - | - | - | | | |
| | | | 7 = 1" 1/2 | - | - | - | - | - | - | - | - | - | - | - | 7 | 7 | 7 | - | - | - | - | | | |
| | | | 8 = 2" (F8 not available) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 8 | 8 | 8 | 8 | | | |
| | | | 9 = 2" 1/2 (F9 only) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 9 | 9 | 9 | 9 | | | |
| | | | CLOGGING INDICATOR | CLOGGING INDICATOR | | | | | | | | | | | | | | | | | | | | |
| | | | 01 = 1/8" port, plugged | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | 01 | | | |
| | | | 30 = pressure gauge, rear connection | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | | | |
| | | | 32 = pressure gauge, cottom connection | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | | | |
| | | | P1 = SPDT pressure switch | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | P1 | | | |
| | | | ACCESSORIES | ACCESSORIES | | | | | | | | | | | | | | | | | | | | |
| | | | S = without | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | | | |
| | | | T = with filling plug | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | | | |
| X | | | ACCESSORIES | ACCESSORIES | | | | | | | | | | | | | | | | | | | | |
| | | | X= no other accessory available | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | |

FRA

RETURN FILTERS

SPARE PARTS ELEMENTS



SPARE SEAL KIT

| | NBR | FKM |
|---------------------|------------|------------|
| FRA11 RFM004 | 521.0032.2 | 521.0039.2 |
| FRA21 RFM008 | 521.0012.2 | 521.0040.2 |
| FRA31 RFM012-015 | 521.0013.2 | 521.0041.2 |
| FRA32 RFM020-025 | 521.0013.2 | 521.0041.2 |
| FRA33 RFM030 | 521.0013.2 | 521.0041.2 |
| FRA41 RFM040-050 | 521.0014.2 | 521.0043.2 |
| FRA42 RFM055 | 521.0014.2 | 521.0043.2 |
| FRA51 RFM060-070 | 521.0015.2 | 521.0044.2 |
| FRA5A RFM080 | 521.0015.2 | 521.0044.2 |
| FRA52 RFM100 | 521.0015.2 | 521.0044.2 |
| FRA5B RFM110 | 521.0015.2 | 521.0044.2 |
| FRA5C RFM125 | 521.0015.2 | 521.0044.2 |
| FRA53 RFM150 | 521.0015.2 | 521.0044.2 |
| FRA5D RFM160 | 521.0015.2 | 521.0044.2 |

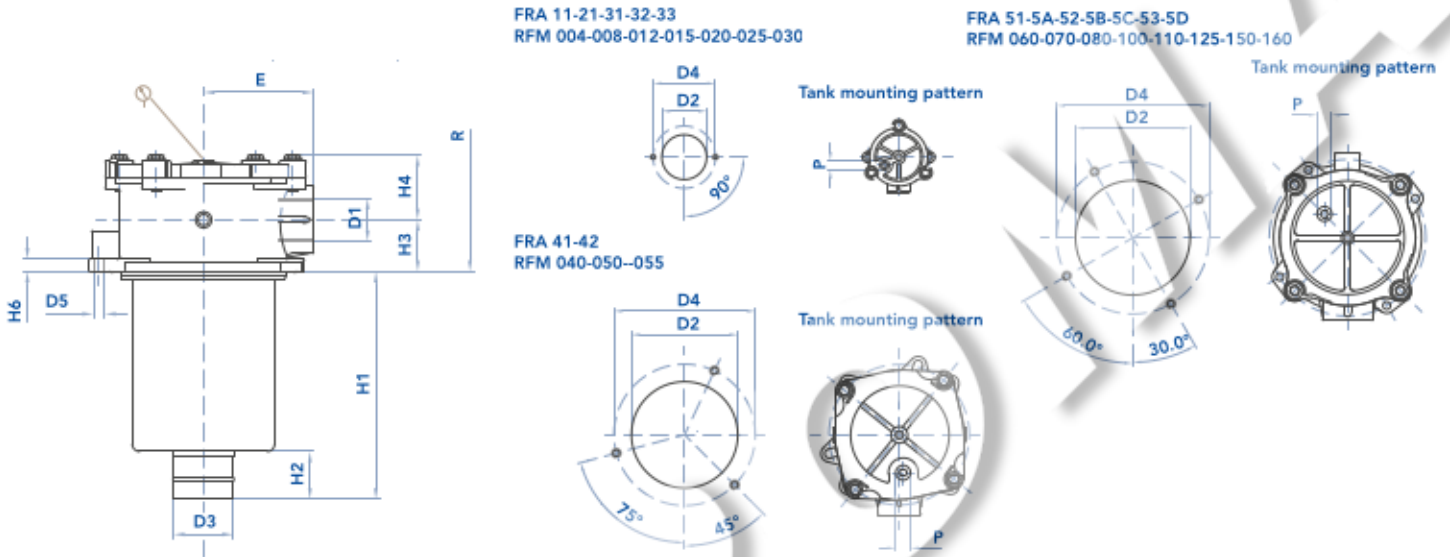
SPARE SPRING

| | |
|---------------------|------------|
| FRA11 RFM004 | 008.0032.1 |
| FRA21 RFM008 | 008.0149.1 |
| FRA31 RFM012-015 | 008.0003.1 |
| FRA32 RFM020-025 | 008.0003.1 |
| FRA33 RFM030 | 008.0003.1 |
| FRA41 RFM040-050 | 008.0151.1 |
| FRA42 RFM055 | 008.0151.1 |
| FRA51 RFM060-070 | 008.0028.1 |
| FRA5A RFM080 | 008.0028.1 |
| FRA52 RFM100 | 008.0028.1 |
| FRA5B RFM110 | 008.0028.1 |
| FRA5C RFM125 | 008.0028.1 |
| FRA53 RFM150 | 008.0028.1 |
| FRA5D RFM160 | 008.0028.1 |

RFM

RETURN FILTERS

INSTALLATION DRAWING

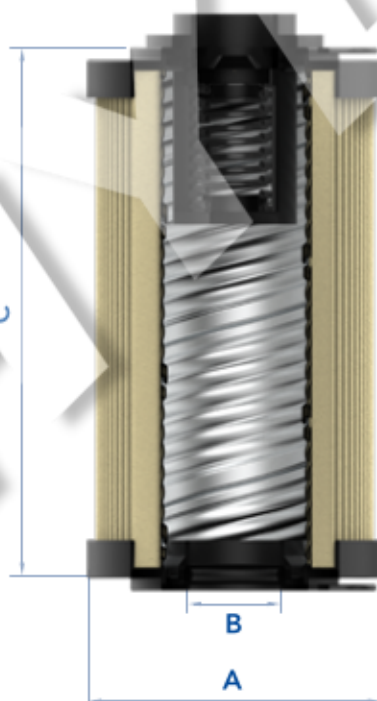


FILTER HOUSING

| | D1 | min D2 | max D2 | D3 | D4 | D5 | E | H1 | H2 | H3 | H4 | H6 | P | R | Kg |
|---------------------|----------------------------|--------|--------|------|-----|------|-----|-----|----|----|----|----|------|-----|------|
| FRA11 RFM004 | 3/8" | 50 | 50 | 12 | 80 | 6,5 | 40 | 59 | 16 | 12 | 33 | 9 | 1/8" | 90 | 0,30 |
| FRA21 RFM008 | 1/2" | 67 | 68 | 24 | 90 | 6,5 | 50 | 80 | 20 | 22 | 33 | 9 | 3/8" | 120 | 0,45 |
| FRA31 RFM012-015 | 1/2"-3/4" | 89 | 90 | 28 | 115 | 9 | 67 | 102 | 25 | 28 | 47 | 10 | 3/8" | 150 | 0,80 |
| FRA32 RFM020-025 | 3/4" - 1" | 89 | 90 | 28 | 115 | 9 | 67 | 150 | 25 | 28 | 47 | 10 | 3/8" | 190 | 0,95 |
| FRA33 RFM030 | 3/4" - 1" | 89 | 90 | 40 | 115 | 9 | 67 | 234 | 30 | 28 | 47 | 10 | 3/8" | 270 | 1,10 |
| FRA41 RFM040-050 | 1" - 1"1/4 - 1"1/2 | 126 | 131 | 40 | 175 | 10,5 | 95 | 248 | 50 | 35 | 56 | 13 | 1/2" | 289 | 2,10 |
| FRA42 RFM055 | 1" - 1"1/4 - 1"1/2 | 126 | 131 | 40 | 175 | 10,5 | 95 | 265 | 30 | 35 | 56 | 13 | 1/2" | 306 | 2,30 |
| FRA51 RFM060-070 | 1"1/4 - 1"1/2 - 2" - 2"1/2 | 174 | 180 | 50 | 220 | 10,5 | 115 | 178 | 50 | 55 | 69 | 13 | 1/2" | 250 | 3,10 |
| FRA5A RFM080 | 1"1/4 - 1"1/2 - 2" - 2"1/2 | 174 | 180 | 50 | 220 | 10,5 | 115 | 240 | 50 | 55 | 69 | 13 | 1/2" | 315 | 3,50 |
| FRA52 RFM100 | 1"1/4 - 1"1/2 - 2" - 2"1/2 | 174 | 180 | 63,5 | 220 | 10,5 | 115 | 240 | 50 | 55 | 69 | 13 | 1/2" | 315 | 3,60 |
| FRA5B RFM110 | 2" - 2"1/2 | 174 | 180 | 63,5 | 220 | 10,5 | 115 | 240 | 50 | 55 | 69 | 13 | 1/2" | 315 | 3,65 |
| FRA5C RFM125 | 2" - 2"1/2 | 174 | 180 | 63,5 | 220 | 10,5 | 115 | 240 | 50 | 55 | 69 | 13 | 1/2" | 250 | 3,65 |
| FRA53 RFM150 | 2" - 2"1/2 | 174 | 180 | 63,5 | 220 | 10,5 | 115 | 285 | 50 | 55 | 69 | 13 | 1/2" | 355 | 4,10 |
| FRA5D RFM160 | 2" - 2"1/2 | 174 | 180 | 63,5 | 220 | 10,5 | 115 | 300 | 50 | 55 | 69 | 13 | 1/2" | 370 | 4,30 |

FRA-RFM

RETURN FILTERS



MAINTENANCE

The best time to change your filter element is just before it reaches its maximum dirt-holding capacity. For this reason, we recommend to monitor the pressure of the hydraulic oil flowing through the filter with a clogging indicator. When it is time to change the filter element, switch off the system before opening the filter housing. Unscrew the cover of the filter head and remove the spring (to be hold) and the dirty filter element. Replace it with an original UFI element, verifying the part number on the filter label or on the catalogue. Clean the bowl; check the gaskets conditions and replace if necessary. Insert the clean element and the spring into his seat, handling with care and cleanliness. Replace the cover on the filter head with the screw.

We recommend the stocking of a spare UFI filter element for timely replacement when required.

FILTER ELEMENT

| | A | B | C | Kg | AREA (cm ²) | | |
|-----------------|-----|----|-----|------|-------------------------|----------|----------|
| | | | | | Media F+ | Media C+ | Media M+ |
| ERA11 CRE004 | 38 | 13 | 50 | 0,05 | 270 | 345 | 270 |
| ERA21 CRE008 | 52 | 24 | 70 | 0,10 | 310 | 380 | 240 |
| ERA31 CRE015 | 70 | 28 | 85 | 0,20 | 620 | 990 | 460 |
| ERA32 CRE025 | 70 | 28 | 130 | 0,25 | 1.000 | 1.600 | 740 |
| ERA33 CRE030 | 70 | 40 | 210 | 0,40 | 1.660 | 2.670 | 1.220 |
| ERA41 CRE050 | 99 | 40 | 211 | 0,75 | 3.800 | 4.280 | 1.900 |
| ERA42 CRE055 | 99 | 40 | 250 | 0,90 | 4.550 | 5.100 | 2.270 |
| ERA51 CRE060 | 130 | 51 | 140 | 1,00 | 4.140 | 4.360 | 1.800 |
| ERA5A CRE080 | 130 | 51 | 200 | 1,10 | 5.840 | 6.460 | 2.730 |
| ERA52 CRE100 | 130 | 63 | 200 | 1,35 | 6.190 | 6.520 | 2.690 |
| ERA5B CRE110 | 130 | 63 | 200 | 1,45 | 7.070 | 7.200 | 3.900 |
| ERA5C CRE125 | 130 | 63 | 232 | 1,50 | 7.280 | 7.600 | 3.040 |
| ERA53 CRE150 | 130 | 63 | 251 | 1,55 | 7.930 | 8.350 | 3.450 |
| ERA5D CRE160 | 130 | 63 | 266 | 1,60 | 8.400 | 8.800 | 3.730 |

The used filter elements cannot be cleaned and are classified as "Dangerous waste material". They must be disposed according to local laws by authorized Companies.

Verify that the Company you choose has the expertise and authorization to dispose this type of waste material.

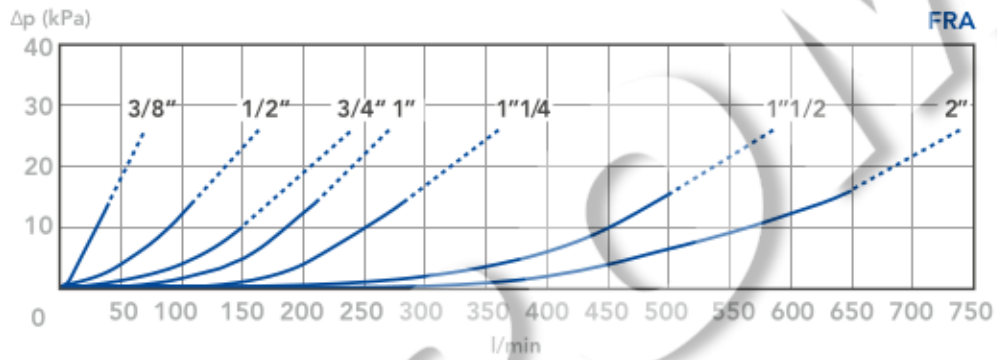
PRESSURE DROP CURVES (Δp)

The "Assembly Pressure Drop (Δp)" is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

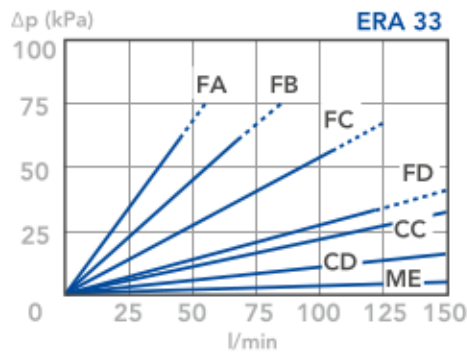
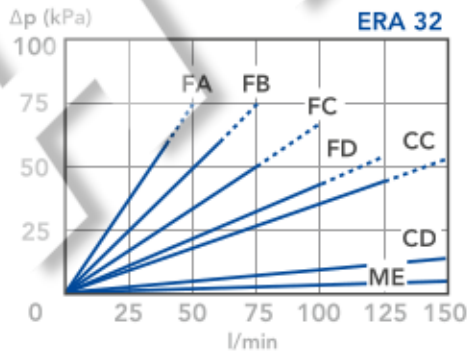
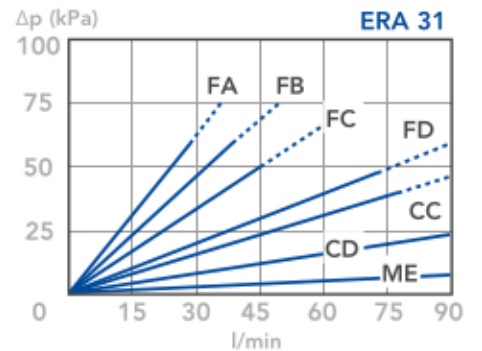
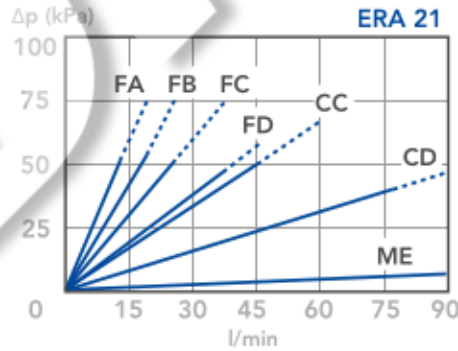
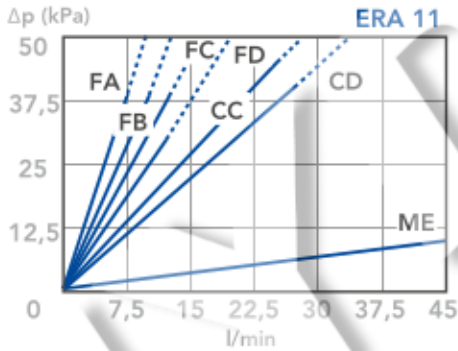
FILTER HOUSING PRESSURE DROP

(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP

(pressure drop values of the elements by ME - MF - MG media are very similar)

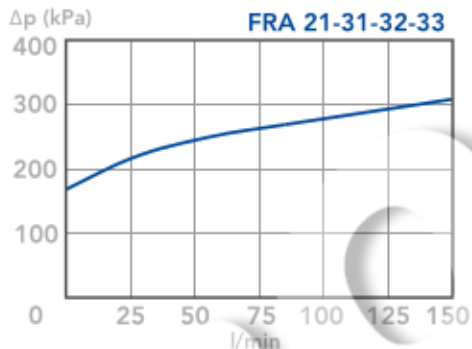


FRA-RFM

RETURN FILTERS

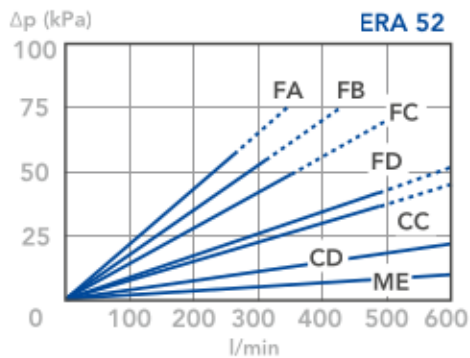
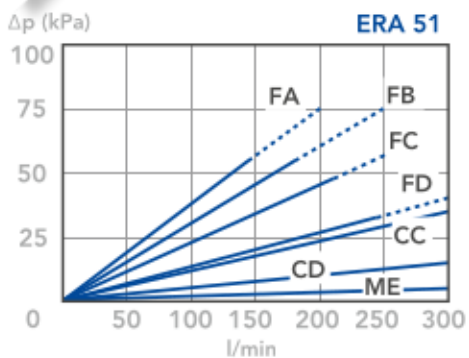
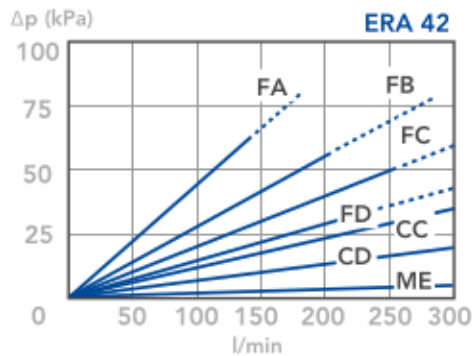
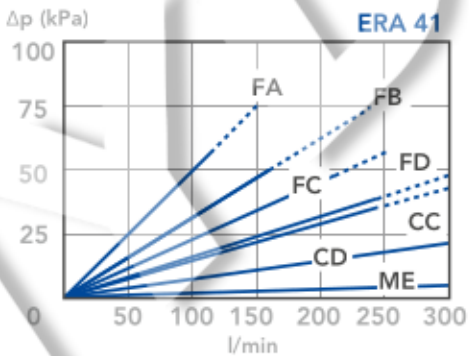
BYPASS VALVE PRESSURE DROP

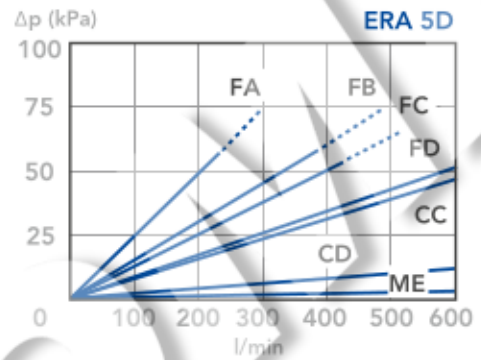
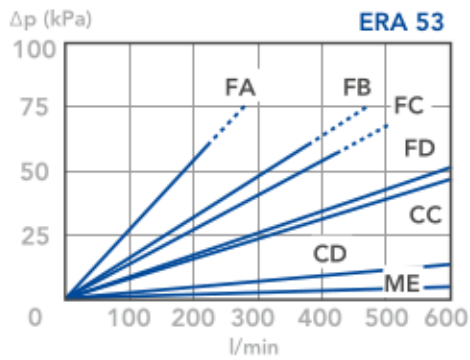
When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



CLEAN FILTER ELEMENT PRESSURE DROP

(pressure drop values of the elements by ME - MF - MG media are very similar)





BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.

