MT450 SERIES

HIGH PRESSURE INLINE FILTERS

ACCORDING TO DIN 24550 FILTER ELEMENTS

MT450-040, 063, 100, 160, 250, 400

Operating Conditions

Operating Pressure	Up to 450 Bar [6526 psi]
Operating Flow	Up to 400 l/min.[lpm] (DIN24550)
Connection Type	Up to G1 ½, SAE 1 ½, SAE 24"
Operating Temperature	-20℃ to +110℃ [-4℉ to +230℉]
Filter Ratings	3,6,10,20 and 25 µ

Features

- Suitable for inline type connection
- High efficiency filter elements
- Durable Housing and filter elements
- High dirt holding capacity
- Low pressure differential
- Bypass which minimizing the pressure loss
- Verification with International test standards

Usage Areas

- Industrial Hydraulic
- Mobile Hydraulic
- Marine Hydraulic
- Open-Sea Hydraulic
- Aircraft Hydraulic
- Space Hydraulic

Contents

Filtration

Pressure inline filters are installed on the hydraulic system line to ensure cleaning / filtration of used oil constantly.

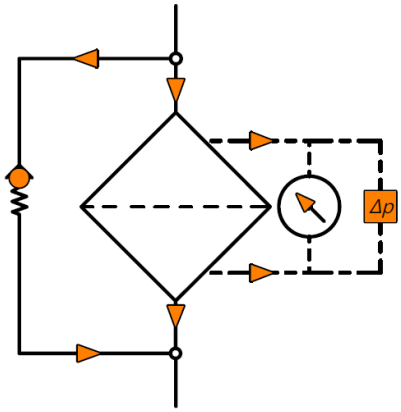
In addition to the Suction and Return filters in the hydraulic systems, the pressure filters positioned directly on the pressure source of the working fluid that the fluid is circulated cleanly in the system and runs smoothly.

In order to having desired degree of pollution that using in the hydraulic system ; the filter element selects according to the sensitivity of the elements in the system.

MT450 SERIES HIGH PRESSURE INLINE FILTERS

TECHNICAL SPECIFICATIONS AND STANDARDS

MT450-040, 063, 100, 160, 250, 400



MT450 SERIES

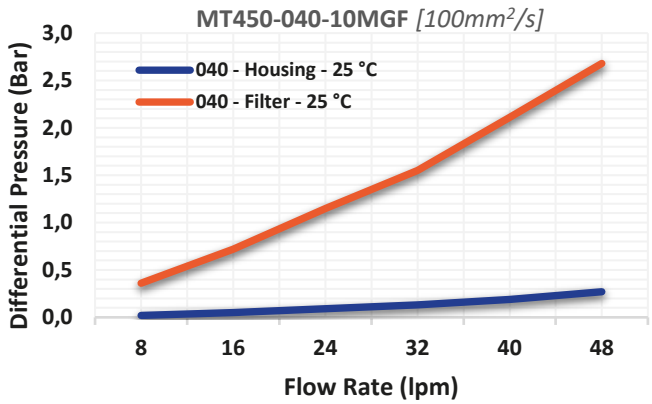
040-400 Series	Weight	Volume	Burst Pressure	Fatigue Strength	Body Materials	
	Assembly	Housing	bar	ISO 10771	Head	Assembly
040	4,45 kg	0,22 lt	1350	Infinite Lifetime at Operating Pressure (>10^6 Cycle Repeats	EN-GJS-500-7	EN-GJS-500-7
063	5,65 kg	0,36 lt				
100	7,05 kg	0,53 lt				
160	18,80 kg	1,37 lt				
250	21,90 kg	2,05 lt				
400	27,00 kg	3,20 lt				

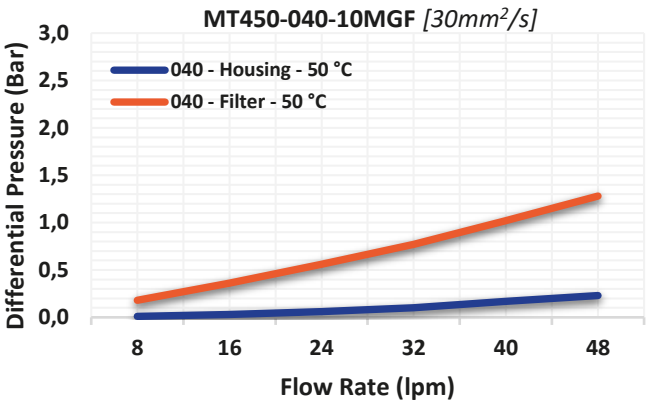
STANDARDS

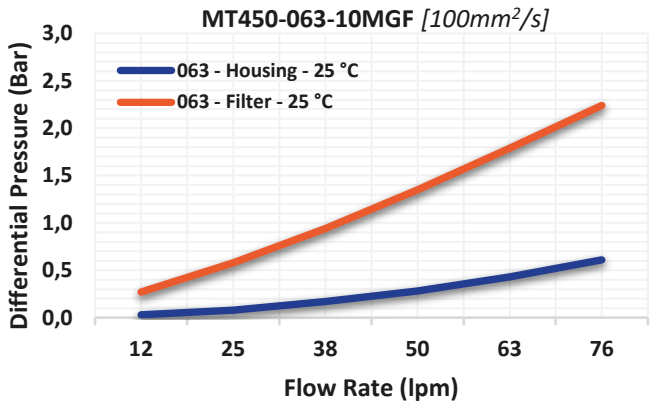
ISO 3968	Hydraulic Fluid Power — Filters — Evaluation of Differential Pressure Versus Flow
ISO 10771-1	Hydraulic Fluid Power — Fatigue Pressure Testing of Metal Pressure-Containing Envelopes — Part 1: Test Method
DIN 24550	Fluid Power - Hydraulic Filters - Part 1: Definitions, Nominal Pressures, Nominal Sizes, Fitting Dimensions
ISO 16889	Hydraulic Fluid Power – Filters – Multi-Pass Method for Evaluating Filtration Performance of a Filter Element
ISO 2941	Hydraulic Fluid Power - Filter Elements - Verification of Collapse/Burst Pressure Rating
ISO 2942	Hydraulic Fluid Power – Filter Elements – Verification of Fabrication Integrity and Determination of The First Bubble Point
ISO 2943	Hydraulic Fluid Power — Filter Elements — Verification of Material Compatibility with Fluids

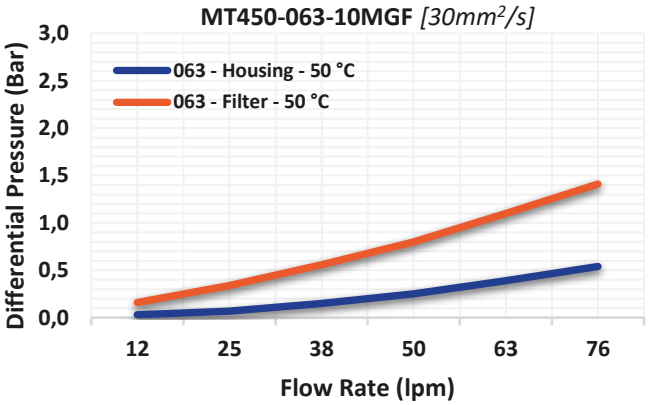
CHARACTERISTIC CURVES *(According to ISO 3698)*

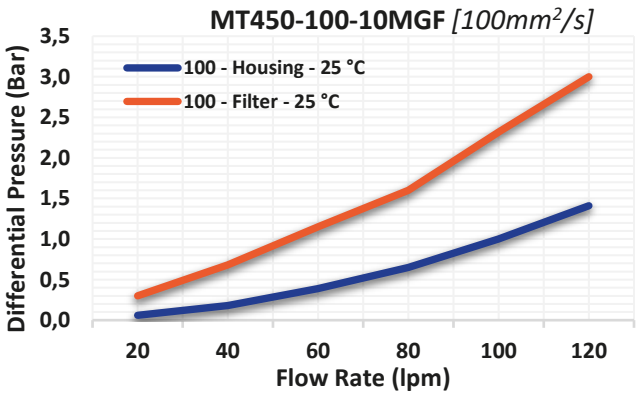
Test FLUID : HLP46

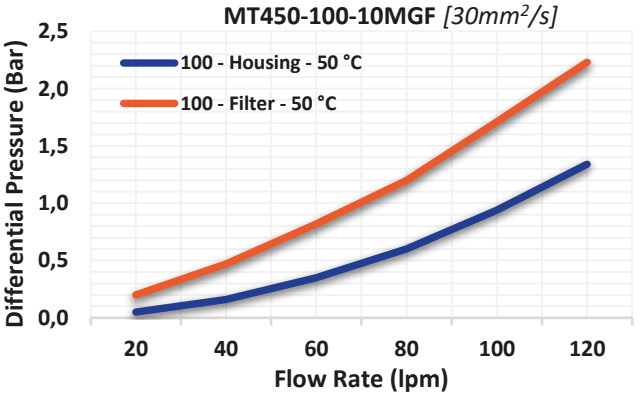


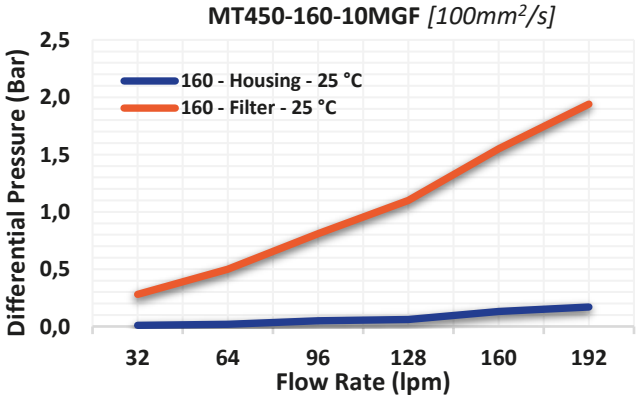


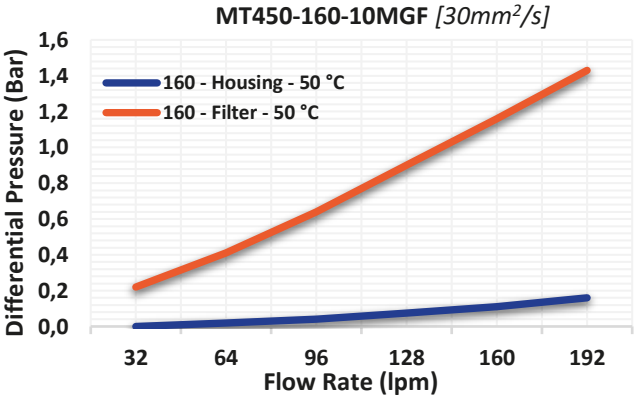


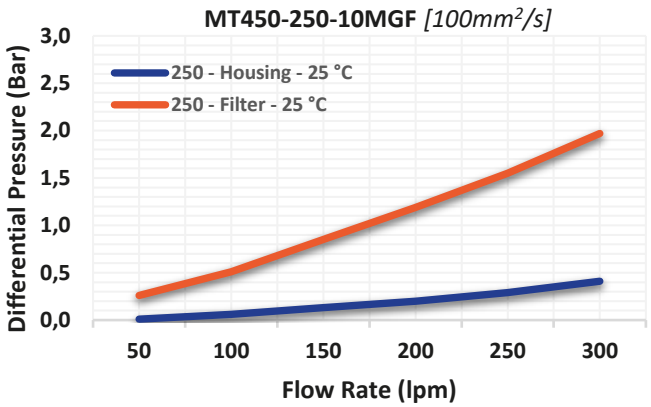


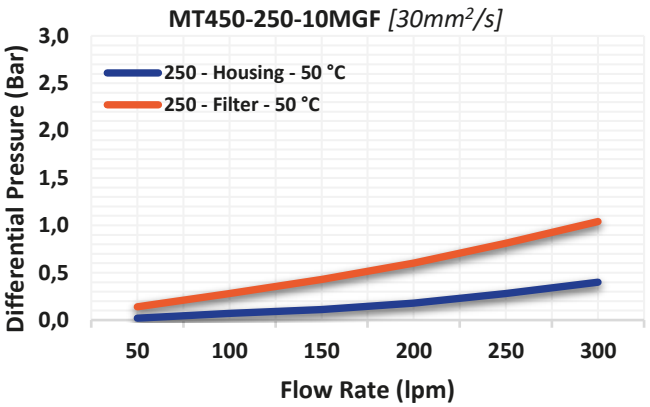


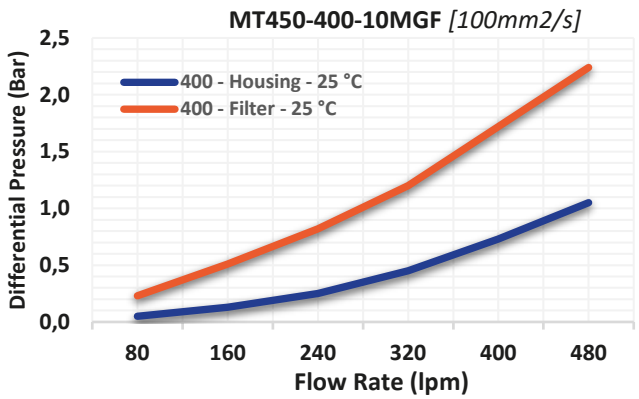


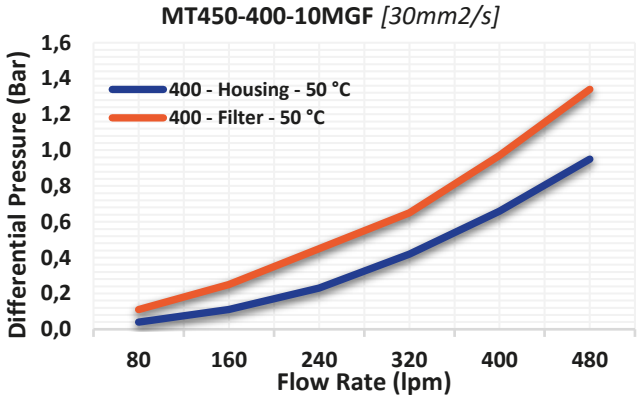












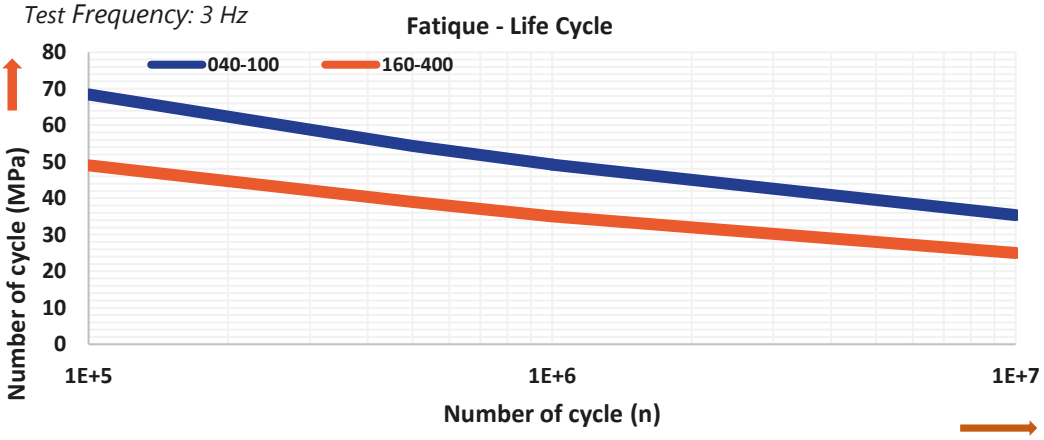
PREFERRED TYPES

With 10-micron filter element including bypass valve at 30 mm²/s kinematic viscosity;

MT450 TYPES

040- 400	When Δp=1,0 Bar; Flow Rate (lpm)	Part Number	Replaceable Filter Element Code
MT450-040-10MGFD-P5.0-N-D3	40	HBF040.00	MT00031
MT450-063-10MGFD-P5.0-N-D3	72	HBF063.00	MT00086
MT450-100-10MGFD-P5.0-N-D3	82	HBF100.00	MT00088
MT450-160-10MGFD-P5.0-N-D5	136	HBF160.00	MT00041
MT450-250-10MGFD-P5.0-N-D5	246	HBF250.00	MT00090
MT450-400-10MGFD-P5.0-N-D5	406	HBF400.00	MT00092

FATIGUE STRENGTH (According to ISO 10771-1)



RECOMMENDED FILTRATION RATES

		<140 bar	<210 bar	>210 bar
PUMP	Fixed Displacement Gear Pump	20 µ	20 µ	10 µ
	Fixed Displacement Wing Pump	20 µ	10 µ	10 µ
	Fixed Displacement Piston Pump	20 µ	10 µ	6 µ
	Variable Displacement Wing Pump	20 µ	10 µ	6 µ
	Variable Displacement Piston Pump	10 µ	6 µ	3 µ
VALVE	Direction Valve	20 µ		10 µ
	Pressure Regulation Valve	10 µ		10 µ
	Flow Control Valve	10 µ		10 µ
	Check Valve	20 µ		20 µ
	Cartridge Valve	20 µ		10 µ
	Ball Valve	10 µ		6 µ
	Pre-Charge Valve	20 µ		10 µ
	Load Sensing Direction Valve	10 µ		6 µ
	Remote Control Hydraulic Valve	10 µ		6 µ
	Proportional Direction Valve	10 µ		6 µ
	Proportional Pressure Control Valve	10 µ		6 µ
	Proportional Cartridge Valve	10 µ		6 µ
	Proportional Ball Valve	10 µ		6 µ
	Servo Valve	6 µ		3 µ
ACTUATOR	Cylinders	20 µ	20 µ	20 µ
	Wing Hydro motor	20 µ	10 µ	10 µ
	Axial Piston Hydro motor	10 µ	10 µ	6 µ
	Gear Hydro motor	25 µ	20 µ	10 µ
	Radial Piston Hydro motor	20 µ	20 µ	10 µ
	Piston Hydro motor	10 µ	6 µ	3 µ
HYDRAULIC TRANSMISSION SYSTEM		10 µ	6 µ	6 µ

NOMINAL FLOW RATES*

	3 µ	6 µ	10 µ	20 µ	25 µ
040	15 l/min	25 l/min	40 l/min	80 l/min	100 l/min
063	25 l/min	35 l/min	63 l/min	85 l/min	105 l/min
100	45 l/min	72 l/min	100 l/min	130 l/min	225 l/min
160	80 l/min	105 l/min	160 l/min	220 l/min	275 l/min
250	125 l/min	180 l/min	250 l/min	340 l/min	405 l/min
400	160 l/min	200 l/min	400 l/min	510 l/min	575 l/min

* If Temperature is 50°C for HLP46 according to ISO 16889 (ΔP: 1 bar) Nominal Flow rate are obtaioned at table.

FILTER SELECTION

Filter selection should be decided based on operating conditions. The oil which is used for operating fluid, should be selected according to viscosity when it is operating conditions.
High Pressure Inline Filters, which are tested under 10 µ filter element and ΔP=1 bar according to DIN24550 Standard, should be preferred according to different filtering sensitivities and the viscosity of the fluid used under operating conditions.
In using filter with bypass, bypass pressure is recommended that it need to be minimum 3 times more filter differential pressure.

$$\Delta P_{total} = \Delta P_{housing} + \Delta P_{filter\ element}$$

$$\Delta P_{housing}\ can\ be\ found\ at\ Characteristic\ Curves\ Chapter$$

$$\Delta P_{Filter\ Element} = Q\ x\ \frac{Gc}{1000}\ x\ \frac{\nu}{30}$$

Q = It is the volumetric flow value of the system where the filtration will be made.. (l/min)
ν = It is the viscosity value of the fluid used in the system where the filtration will be made under operating conditions.. (mm²/s)

GRADIENT COEFFICIENT (Gc)

	3 µ	6 µ	10 µ	20 µ	25 µ
040	57,98	34,39	21,75	10,92	8,72
063	42,34	30,55	16,98	8,85	6,19
100	16,98	10,56	7,59	5,83	3,37
160	13,16	9,98	6,56	4,78	3,81
250	4,25	2,95	2,12	1,56	1,31
400	1,97	1,58	0,79	0,62	0,55

* Coefficients obtained according to ISO 16889 (ΔP: 1 bar) at 50°C Temperature (30 mm²/s) for HLP46 OIL. (mbar/(l/min))

For Example;

For MT450 series, 6 µ filtration accuracy with 60 mm²/s viscosity fluid is required with 40 l/min flow rate. (Preffered Bypass Opening Pressure: 3.5 bar)

- MT450-040 için:

$$\Delta P_{\text{Filter Element}} = Q\ x \frac{Gc}{1000}\ x\ \frac{\nu}{30} = 40\ x \frac{34,39}{1000}\ x \frac{60}{30} = 2,75\ \text{bar}$$

$$\Delta P_{\text{total}} = \Delta P_{\text{housing}} + \Delta P_{\text{Filter element}} = 0,2 + 2,75 = 2,95\ \text{bar}$$

$$P_{\text{Bypass}} = 3,5\ \text{bar} \Rightarrow \frac{3,5\text{bar}}{3} = 1,17\ \text{bar} < 2,95\ \text{bar Not Applicable}$$

- For MT450-100:

$$\Delta P_{\text{Filter Element}} = Q\ x \frac{Gc}{1000}\ x\ \frac{\nu}{30} = 40\ x \frac{10,56}{1000}\ x \frac{60}{30} = 0,85\ \text{bar}$$

$$\Delta P_{\text{total}} = \Delta P_{Housing} + \Delta P_{\text{Filter Elemant}} = 0,18 + 0,85 = 1,03\ \text{bar}$$

$$P_{\text{Bypass}} = 3,5\ \text{bar} \Rightarrow \frac{3,5\text{bar}}{3} = 1,17\ \text{bar} > 1,03\ \text{bar Applicable}$$

FILTER ORDERING CODE

Example of Ordering Code:

Standard	-	Model	-	Filtering Rating	Diff. Pressure	-	Clogging Indicator	-	Seal	-	Connection
MT450	-	160	-	10MGF	D	-	P5.0	-	N	-	D5

MT450

Models*	Flow Rate	40 lpm	**040**
		63 lpm	**063**
		100 lpm	**100**
		160 lpm	**160**
		250 lpm	**250**
		400 lpm	**400**
Filter Element (DIN24550)	Filter Rating	3 microns	**03MGF**
		6 microns	**06MGF**
		10 microns	**10MGF**
		20 microns	**20MGF**
		25 microns	**25MGF**
	Collapse/ Burst Pressure	30 bar	**D**
		330 bar	**Y**
Clogging Indicator**	Without Indicator		**P0.0**
	Signal Pressure (Electronic)	2,2 bar	**P2.2**
		5 bar	**P5.0**
		8 bar	**P8.0**
	Signal Pressure (Mechanical)	2,2 bar	**M2.2**
		5 bar	**M5.0**
		8 bar	**M8.0**
Seals	Material	NBR	**N**
		EPDM	**E**
Ports For optional connections, check ports table below	For 040, 063, 100 Standard Connection	G1	**D3**
	For 160, 250, 400 Standard Connection	G1 1/2	**D5**

* Volumetric flow rate in l/min is the values specified for 25 micron filtration precision according to DIN24550.
**Bypass valve opening pressure; The pollution indicator is 3.5 bar for 2.2 bar signal pressure, 7 bar for 5 bar signal pressure. Not Applicable bypass valve for the pollution indicator 8 bar signal pressure.

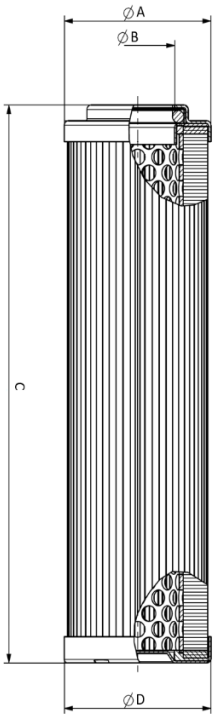
OPTIONAL PORT CONNECTIONS

Connections	Connection Standard	Filter Types		Ordering Code
		040-063-100	160-250-400	
G1/2	ISO 228	O		D1
G3/4		O		D2
G1		S		D3
G1 1/4			O	D4
G1 1/2			S	D5
SAE 1 1/2	SAE FLANGE 6.000 psi		O	F1
SAE 10"	SAE J926	O		K1
SAE 12"		O		K2
SAE 24"			O	K3

Standard Connection : S Optional Connection : O

FILTER ELEMENT *(According to DIN24550)*

Dimensions And Technical Specifications



Technical Specifications

Operating Temperature	-20°C...+110°C
Flow Direction	Outside to Inside
Filter Material	Fiberglass
Filter Sensitivity (ISO 16889)	3µm β>200
	6µm β>200
	10µm β>200
	20µm β>200
	25µm β>200
Dirt Holding Capacity (@2 bar)	22,2 mg/cm²
Compatibility with Fluids	HH-HL-HM
	HR-HV-HG

Standards;

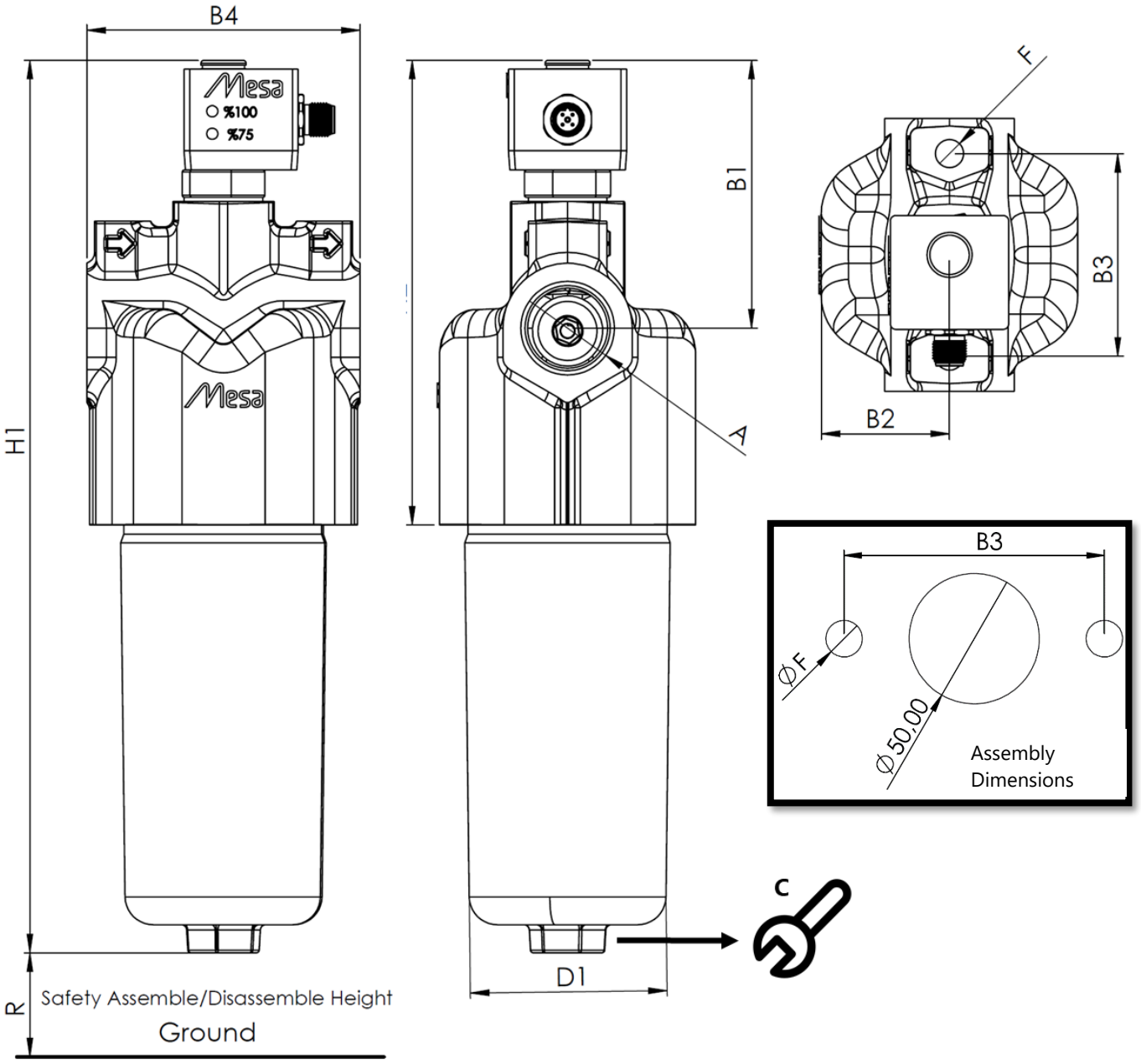
ISO 2941, ISO 2942, ISO 16889

DIMENSIONS

Filter Element	A	B	C	D
MT450-040-...	45	22.2	100	45
MT450-063-...	45	22.2	160	45
MT450-100-...	45	22.2	250	45
MT450-160-...	80	40.2	160	80
MT450-250-...	80	40.2	250	80
MT450-400-...	80	40.2	400	80

*All Dimensions are mm.in

DIMENSIONS

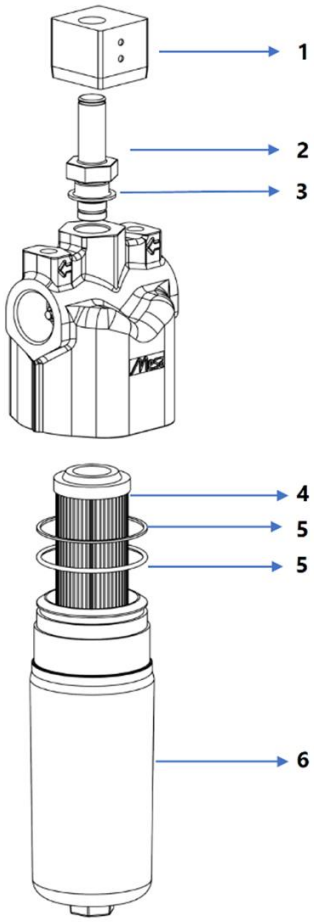


MT450

	A	B1	B2	B3	B4	C	D1	F	H1	H2	R
040	G1	107	45,5	72	97	24	70	M10x12	256	172	140
063	G1	107	45,5	72	97	24	70	M10x12	318	172	200
100	G1	107	45,5	72	97	24	70	M10x12	409	172	290
160	G1 ½	139,2	73,5	104	170	32	120	M12x14	374	230,9	230
250	G1 ½	139,2	73,5	104	170	32	120	M12x14	464	230,9	310
400	G1 ½	139,2	73,5	104	170	32	120	M12x14	614	230,9	460

*All Dimensions are in mm.

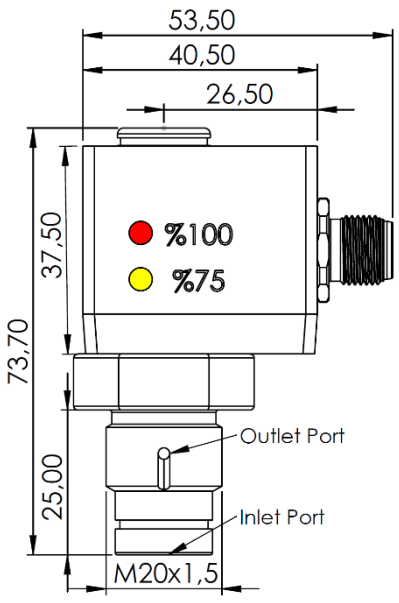
MT450 SERIES SPARE PARTS & ACCESSORIES

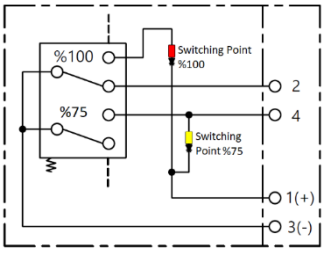


SPARE PARTS LIST

No	Spare Part Name	Details of Model	Part Number
1	M12 x1 4-Pin Electronic Switch	MT450-040/063/100/160/250/400	ES00
2	M20 X 1,5 Clogging Indicator		MBG00
3	M20 Washer		MT00034
4	10µ Glass Fiber Filter Element	MT450-040	MT00031
		MT450-063	MT00086
		MT450-100	MT00088
		MT450-160	MT00041
		MT450-250	MT00090
		MT450-400	MT00092
5	Housing Seal	MT450-040/063/100	MT00033 *(Ø60x2,62 mm, 90 Shore NBR)*
		MT450-160/250/400	MT00042 *(Ø104,37x3,53 mm, 90 Shore NBR)*
	Housing Seal Support	MT450-040/063/100	MT00032 *(Ø65x61x1,25 mm PTFE)*
		MT450-160/250/400	MT00043 *(Ø107x113,43x1,25 mm PTFE)*
6	Housing	MT450-040	M0008
		MT450-063	M0003
		MT450-100	M0009
		MT450-160	M0010
		MT450-250	M0004
		MT450-400	M0011

MT450 SERIES MECHANICAL AND ELECTRONIC MAINTENANCE INDICATORS





Specifications

Operating Pressure	Up to 450 bar [6526 psi]
Signal Pressure (Δp)	5,0 bar
Optional Signal Pressure (Δp) *	2,2-8,0 bar
Bypass Cracking Pressure	7.0 bar
Electronic Switch Connection	M12x1 4-PIN

MT450 SERIES INSTALLATION, COMMISSIONING AND MAINTENANCE CONDITIONS

More than 80% of the malfunctions in hydraulic systems are caused by the contamination of the used oil in the system. In order to prevent these malfunctions, the used oils have to be filtered, continuously. Ensuring continuous filtration will indicate over time that the filter element is clogged and need to be replaced. In order for the operating conditions of the system, not to deteriorate and to operate efficiently, the filter element must be replaced when it reaches 100% occlusion. In MT450 series hydraulic pressure inline filters, the obstruction of the filter is presented to the user as a visual and electrical signal.

How Should Filter Maintenance Be Done?

Before servicing the hydraulic filter in the system, make sure that the system is closed and that the filter is not under pressure. Take the necessary occupational safety measures for filter location and machine safety. Then please follow the steps below;

- For filters with a housing with a discharge outlet (MT450-160 and higher models), open the drain port and drain the hydraulic fluid in the filter element.
- With the help of a wrench, disassemble the filter housing by using the bolt head under the filter housing counterclockwise.
- Remove the filter element by carefully pulling it down.
- Clean the other parts of the hydraulic filter. (Filter head, housing, etc.)
- Assemble the new (clean) filter element as you removed the dirty filter element. Make sure that the new filter element is compatible with your filter (according to DIN24550).
- Before reassembling the filter housing, visually check that it is not damaged and that the sealing elements are in good conditions.
- Assemble the filter housing carefully.

NOTE: Environmental and performance tests were carried out under optimum conditions. Please contact us for extreme environmental conditions.

Power of Regenaration

Regeneration of Hydraulic