**Description**

**Application**
In the pressure circuits of hydraulic and lubrication systems.

**Performance features**
*Protection against wear:*
By means of filter elements that, in full-flow filtration, meet even the highest demands regarding cleanliness classes.

*Protection against malfunction:*
Through installation near to the control valves or other expensive components. The specific determined flow rate guarantees a closed by-pass valve even at $v \leq 200 \text{ mm}^2/\text{s}$ (cold start condition).

**Filter elements**
Flow direction from outside to centre. The star-shaped pleating of the filter material results in:
- large filter surfaces
- low pressure drop
- high dirt-holding capacities
- long service life

**Filter maintenance**
By using a clogging indicator the correct moment for maintenance is stated and guarantees the optimum utilization of the filter life.

**Materials**
- Filter head: Aluminium alloy
- Filter bowl: Aluminium alloy
- Seals: NBR (FPM on request)
- Filter media: **EXAPOR® MAX 2** - inorganic multi-layer microfibre web
  - Paper - cellulose web, impregnated with resin

**Accessories**
Electrical and/or optical clogging indicators are available - optionally with one or two switching points resp. temperature suppression.

Dimensions and technical data see catalogue sheet 60.30.
Characteristics

Operating pressure
0 ... 63 bar, min. 3 x 10^6 pressure cycles
Nominal pressure according to DIN 24550
0 ... 100 bar, min. 10^4 pressure cycles
Quasi-static operating pressure

Permissible pressures for other numbers of cycles

Nominal flow rate
Up to 90 l/min (see Selection Chart, column 2)
The nominal flow rates indicated by ARGO-HYTOS are based on the following features:
› closed by-pass valve at \( v \leq 200 \text{ mm/s} \)
› element service life > 1000 operating hours at an average fluid
› contamination of 0,07 g per l/min flow volume
› flow velocity in the connection lines:
  up to 100 bar \( \leq 6 \text{ m/s} \)

Filter fineness
5 \( \mu \text{m(c)} \) ... 30 \( \mu \text{m(c)} \)
\( \beta \)-values according to ISO 16889
(see Selection Chart, column 4 and diagram Dx)

Dirt-holding capacity
Values in g test dust ISO MTD according to ISO 16889
(see Selection Chart, column 5)

Hydraulic fluids
Mineral oil and biodegradable fluids
(HEES and HETG, see info-sheet 00.20)

Temperature range
\(-30 \text{ °C} \ldots +100 \text{ °C} \) (temporary \(-40 \text{ °C} \ldots +120 \text{ °C} \))

Viscosity at nominal flow rate
› at operating temperature: \( v < 60 \text{ mm}^2/\text{s} \)
› as starting viscosity: \( v_{\text{max}} = 1200 \text{ mm}^2/\text{s} \)
› at initial operation:
The recommended starting viscosity can be read from the diagram D (pressure drop as a function of the kinematic viscosity) as follows: Find the 70 % \( \Delta p \) of the cracking pressure of the by-pass valve on the vertical axis. Draw a horizontal line so that it intersects the \( \Delta p \) curve at a point. Read this point on the horizontal axis for the viscosity.

Mounting position
Preferably vertical, filter head on top

Connection
Threaded ports according to ISO 228 or DIN 13.
Sizes see Selection Chart, column 6 (other port threads on request).
Diagrams

$\Delta p$-curves for complete filters in Selection Chart, column 3

**D1** Pressure drop as a function of the flow volume at $v = 35 \text{ mm}^2/\text{s}$ (0 = casing empty)

![Diagram D1](image1)

**D2** Pressure drop as a function of the flow volume at $v = 35 \text{ mm}^2/\text{s}$ (0 = casing empty)

![Diagram D2](image2)

Filter fineness curves in Selection Chart, column 4

**Dx** Filtration ratio $\beta$ as a function of particle size $x$ obtained by the Multi-Pass-Test according to ISO 16889

![Diagram Dx](image3)

The abbreviations represent the following $\beta$-values resp. finenesses:

**For EXAPOR® MAX2 and Paper elements:**

- $5\text{EX2} = \beta_{5\text{(c)}} = 200$ EXAPOR® MAX 2
- $7\text{EX2} = \beta_{7\text{(c)}} = 200$ EXAPOR® MAX 2
- $10\text{EX2} = \beta_{10\text{(c)}} = 200$ EXAPOR® MAX 2
- $16\text{EX2} = \beta_{16\text{(c)}} = 200$ EXAPOR® MAX 2
- $30\text{P} = \beta_{30\text{(c)}} = 200$ Paper

Based on the structure of the filter media of the $30\text{P}$ paper elements, deviations from the printed curves are quite probable.

For special applications, finenesses differing from these curves are also available by using special composed filter media.
Optical or electrical indicators are available to monitor the clogging condition of the element. If the indicator should be already mounted onto the filter head use the abbreviation "M" behind the part number of the indicator. The printed order acknowledgement show both items separately.

Order example: The filter D 042-156 has to be supplied with optical clogging indicator - response pressure 2,0 bar
Order description: D 042-156 / DG 042-01 M Mounted

For the appropriate clogging indicators see catalogue sheet 60.30

Remarks:
- The switching pressure of the clogging indicator has always to be lower than the cracking pressure of the by-pass valve (see Selection Chart, column 7).
- The filters listed in this chart are standard filters. Other designs available on request.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Nominal flow rate</th>
<th>Pressure drop see diag.</th>
<th>Filter fineness see diag.</th>
<th>Dirt-holding capacity</th>
<th>Connection A/B</th>
<th>Cracking pressure of by-pass</th>
<th>Symbol</th>
<th>Replacement filter element Part No.</th>
<th>Weight</th>
<th>Clogging indicator</th>
<th>Remarks</th>
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<td>bar</td>
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</tbody>
</table>

* Paper media supported with metal gauze
Dimensions

Clogging indicator optional:
Pressure holes plugged with screws M4

Version with electrical clogging indicator
DG 041

Minimum distance from ferromagnetic parts: 7 mm

Measurements

| Type  | A/B | C | D | E | F | G | H | I | K | L | M | N | O | P | Q | R | S | T | U | V | W |
| D 042 | G½ | 39| 148| 27| 45,5| 80| 58,5| 55| 27| 35| M6/8| 44| AF36| 19| 15| 70| 81| 55| 23| 30| 35,5|
| D 062 | G½, G¾ | 39| 244| 27| 45,5| 80| 58,5| 55| 27| 35| M6/8| 44| AF36| 19| 15| 70| 81| 55| 23| 30| 35,5|

Symbols

1  2  3  4  5  6  7

The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

### Quality Assurance

**Quality management according to DIN EN ISO 9001**

To ensure constant quality in production and operation, ARGO-HYTOS filter elements undergo strict controls and tests according to the following ISO standards:

- **ISO 2941** Verification of collapse/burst pressure rating
- **ISO 2942** Verification of fabrication integrity (Bubble Point Test)
- **ISO 2943** Verification of material compatibility with fluids
- **ISO 3968** Verification of material compatibility with fluids
- **ISO 16889** Multi-Pass-Test (evaluation of filter fineness and dirt-holding capacity)
- **ISO 23181** Determination of resistance to flow fatigue using high viscosity fluid

Before release into the series production the filter casing is tested for fatigue strength in our pressure pulse test rig. Various quality controls during the production process guarantee the leakfree function and solidity of our filters.