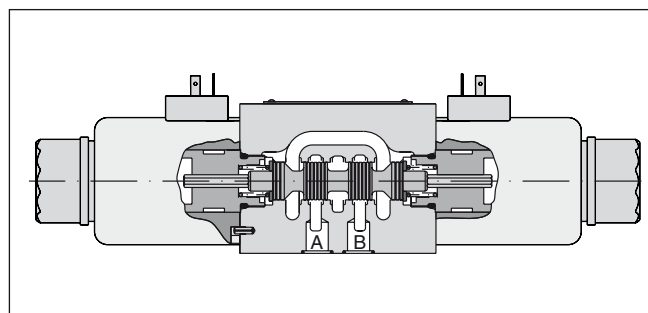
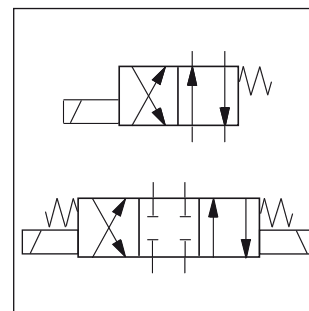


The new NG10 direct operated directional control valve series D3W provides high functional limits up to 150 l/min in combination with a low, energy saving pressure drop.

The wide variety of options includes soft shift anchor tubes for smooth operation.

Versions with position control, additional surface protection and connector variants are shown in the following chapters.



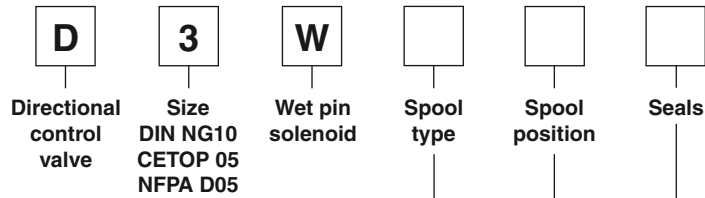
2

Technical data

| | | | | | | | |
|-----------------------------------|--|--|---|--------|---------|-------------------------------|-------------------------------|
| General | | Directional spool valve | | | | | |
| Design | | Solenoid | | | | | |
| Actuation | | DIN NG10 / CETOP 05 / NFPA D05 | | | | | |
| Size | | DIN 24340 A10 / ISO 4401 / CETOP RP 121-H / NFPA D05 | | | | | |
| Mounting interface | | unrestricted, preferably horizontal | | | | | |
| Mounting position | | unrestricted, preferably horizontal | | | | | |
| Ambient temperature | | [°C] | -25...+50 | | | | |
| MTTF _D value | | [years] | 150 | | | | |
| Weight | | [kg] | 4.8 (1 solenoid), 6.3 (2 solenoids) | | | | |
| Hydraulic | | P, A B: 350; T: 210 (DC), 105 (AC) | | | | | |
| Max. operating pressure | | [bar] | Hydraulic oil in accordance with DIN 51524 / 51525 | | | | |
| Fluid | | Hydraulic oil in accordance with DIN 51524 / 51525 | | | | | |
| Fluid temperature | | [°C] | -25 ... +70 | | | | |
| Viscosity permitted | | [cSt] / [mm ² /s] | 2.8...400 | | | | |
| Viscosity recommended | | [cSt] / [mm ² /s] | 30...80 | | | | |
| Filtration | | ISO 4406 (1999); 18/16/13 (meet NAS 1638: 7) | | | | | |
| Flow max. | | [l/min] | 150 (DC); 115 (AC) (see shift limits) | | | | |
| Leakage at 50 bar | | [ml/min] | Up to 20 per flow path, depending on spool | | | | |
| Static / Dynamic | | see table response time | | | | | |
| Electrical characteristics | | 100% ED; CAUTION: coil temperature up to 150 °C possible | | | | | |
| Duty ratio | | 10000 | | | | | |
| Max. switching frequency | | [1/h] | IP 65 in accordance with EN 60529 (plugged and mounted) | | | | |
| Protection class | | IP 65 in accordance with EN 60529 (plugged and mounted) | | | | | |
| Code | | K | J | U | G | Y | T |
| Supply voltage / ripple | | 12 V = | 24 V = | 98 V = | 205 V = | 110V at 50Hz/ 120V at 60Hz | 230V at 50Hz/ 240V at 60Hz |
| Tolerance supply voltage | | ±10 | ±10 | ±10 | ±10 | ±5 | ±5 |
| Current consumption hold | | [A] | 3 | 1.5 | 0.35 | 0.18 | 0.4 / 0.36 |
| Current consumption in rush | | [A] | 3 | 1.5 | 0.35 | 0.18 | 3.41 / 3.31 |
| Power consumption hold | | [W] | 36 | 36 | 34 | 36 | 88 / 86 |
| Power consumption in rush | | [W] | 36 | 36 | 34 | 36 | 375 / 397 |
| Solenoid connection | | Connector as per EN 175301-803, solenoid identification as per ISO 9461. | | | | | |
| Wiring min. | | [mm ²] | 3 x 1.5 recommended | | | | |
| Wiring length max. | | [m] | 50 recommended | | | | |

With electrical connections the protective conductor (PE ↓) must be connected according to the relevant regulations.

2



| 3 position spools | |
|-------------------|------------|
| Code | Spool type |
| | a 0 b |
| 001 | |
| 002 | |
| 003 | |
| 004 | |
| 005 | |
| 006 | |
| 007 | |
| 008 | |
| 009 | |
| 010 ¹⁾ | |
| 011 | |
| 012 | |
| 014 | |
| 015 | |
| 016 | |
| 021 ¹⁾ | |
| 022 ¹⁾ | |
| 031 ¹⁾ | |
| 032 ¹⁾ | |
| 081 ¹⁾ | |
| 082 ¹⁾ | |
| 102 ¹⁾ | |

| 2 position spools | |
|-------------------|------------|
| Code | Spool type |
| | a b |
| 020 | |
| 026 | |
| 030 | |
| 101 ¹⁾ | |

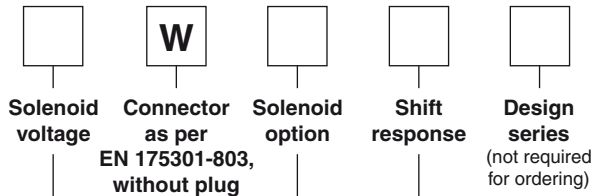
¹⁾ Only available for DC voltage.

| Code | Seals |
|------|-------|
| N | NBR |
| V | FPM |

| 3 position spools | | |
|-------------------|------------------------------------|---|
| Code | all 3 position spools | |
| C | | 3 positions. Spring offset in position "0". Operated in position "a" or "b". |
| | Standard | Spool type 008 and 009 |
| E | Operated in position "a". | Operated in position "b". |
| F | Spring offset in position "b". | Spring offset in position "a". |
| K | Operated in position "b". | Operated in position "a". |
| M | Spring offset in position "a". | Spring offset in position "b". |

| 2 position spools | | |
|-------------------|----------------|--|
| Code | Spool position | |
| B | | 2 positions. Spring offset in position "b". Operated in position "a". |
| D | | 2 positions. Operated in position "a" or "b". No center or offset position. |
| H | | 2 positions. Spring offset in position "a". Operated in position "b". |

**Bold letters =
 Short-term availability**



| Code | Shift response |
|------------------|--------------------------|
| omit | Standard response |
| S4 ³⁾ | orifice diameter 1.0 mm |
| S7 ³⁾ | orifice diameter 1.75 mm |

³⁾ DC only

| Code | Solenoid option |
|------|---|
| omit | Standard solenoid with manual override |
| T | without manual override |

| Code | Solenoid voltage |
|-----------------|-----------------------|
| K | 12V = |
| J | 24V = |
| U ²⁾ | 98V = |
| G ²⁾ | 205V = |
| Y | 110V 50Hz / 120V 60Hz |
| T | 230V 50Hz / 240V 60Hz |

²⁾ To be used with rectifier plug when DC solenoids are used with AC input.

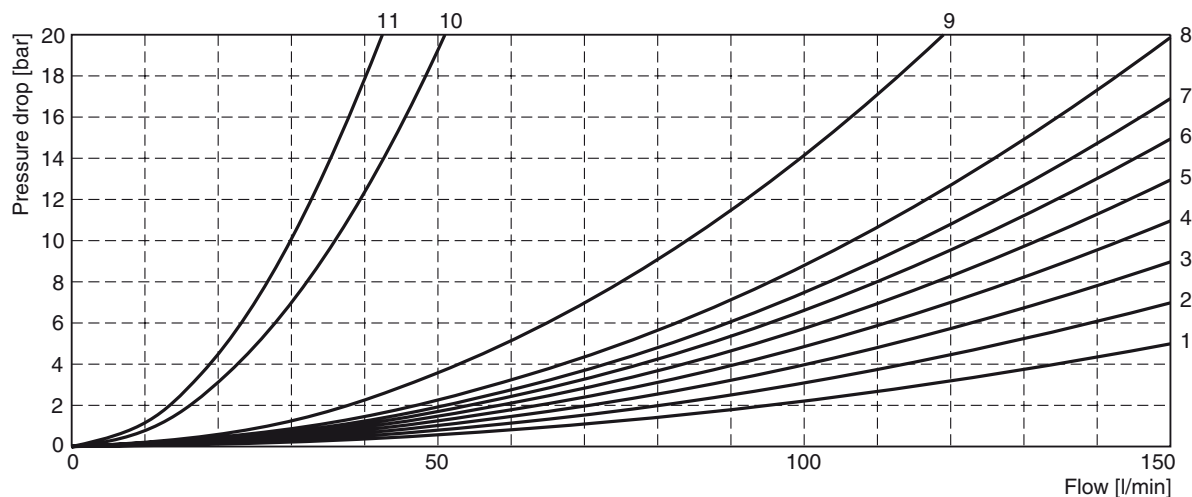
Further spool types and solenoid voltages on request.

The flow curve diagram shows the flow versus pressure drop curves for all spool types. For each spool type, operating position and flow direction the relevant curve number is given in the table below.

2

| Spool | Position b | | Position a | | Position 0 | | | | | |
|-------|------------|------|------------|------|------------|------|------|------|------|------|
| | P->A | B->T | P->B | A->T | P->A | P->B | A->T | B->T | P->T | A->B |
| 001 | 6 | 5 | 6 | 6 | - | - | - | - | - | - |
| 002 | 3 | 5 | 3 | 3 | 1 | 1 | 4 | 5 | 1 | 6 |
| 003 | 2 | 2 | 3 | 1 | - | - | 3 | - | - | - |
| 004 | 5 | 4 | 4 | 4 | - | - | 8 | 8 | - | 9 |
| 005 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - |
| 006 | 1 | 2 | 1 | 3 | 2 | 2 | - | - | - | 3 |
| 007 | 2 | 1 | 2 | 2 | - | 1 | - | 2 | 3 | - |
| 010 | 2 | - | 2 | - | - | - | - | - | - | - |
| 011 | 2 | 2 | 2 | 2 | - | - | 11 | 11 | - | 11 |
| 012 | 1 | 2 | 2 | 2 | 10 | 10 | 10 | 10 | 11 | 11 |
| 014 | 1 | 2 | 2 | 2 | 1 | - | 2 | - | 3 | - |
| 015 | 2 | 1 | 2 | 2 | - | - | - | 3 | - | - |
| 016 | 2 | 2 | 1 | 2 | - | 2 | - | - | - | - |
| 020 | 6 | 6 | 5 | 7 | - | - | - | - | - | - |
| 026 | 5 | - | 5 | - | - | - | - | - | - | - |
| 030 | 4 | 5 | 3 | 5 | - | - | - | - | - | - |
| | P->B | A->T | P->A | B->T | P->A | P->B | A->T | B->T | P->T | A->B |
| 008 | 8 | 7 | 7 | 6 | - | - | - | - | 9 | - |
| 009 | 4 | 4 | 5 | 8 | - | - | - | - | 9 | - |
| | Position b | | Position a | | | | | | | |
| | P->A | P->B | A->B | P->B | A->T | | | | | |
| 021 | 2 | 4 | 8 | 3 | 2 | | | | | |
| | P->A | B->T | | P->A | P->B | A->B | | | | |
| 022 | 3 | 2 | | 3 | 2 | 8 | | | | |

Flow curve diagram

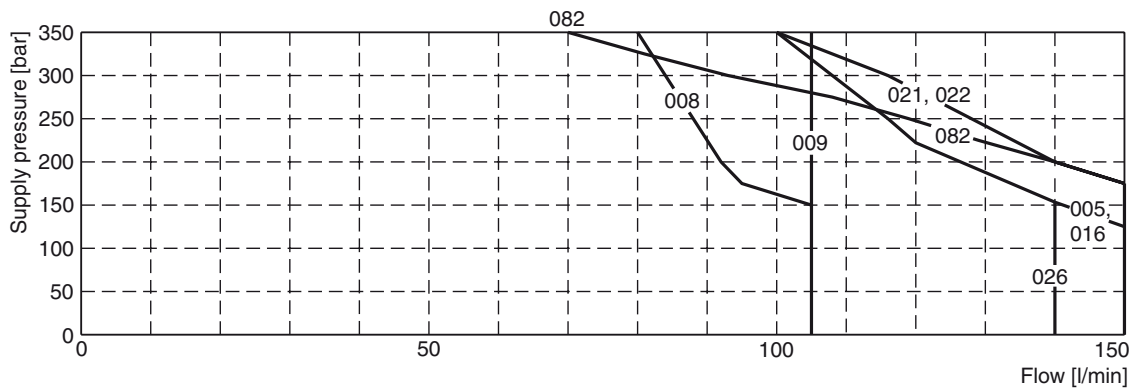
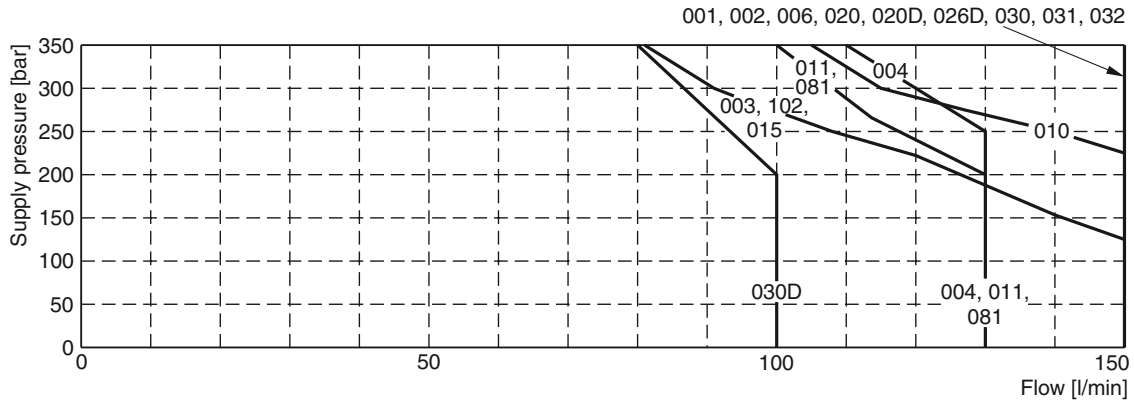


All characteristic curves measured with HLP46 at 50°C.

The diagram below specifies the shift limits for valves with DC and AC solenoids. Valves with spool position "F" or "M" can only be operated up to 70% of the limits. The specifications apply to balanced flow conditions. The

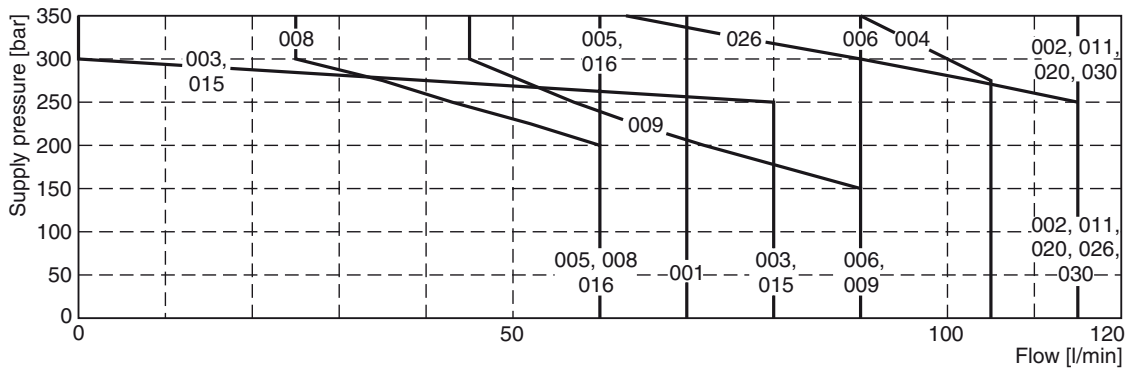
shift limits can be considerably lower at unbalanced flow conditions. To avoid flow rates beyond the shift limits, a plug-in orifice can be inserted in the P-port.

Shift limits, DC voltage *



Measured with HLP46 at 50°C, 90% U_{nom} and warm solenoids.

Shift limits, AC voltage *



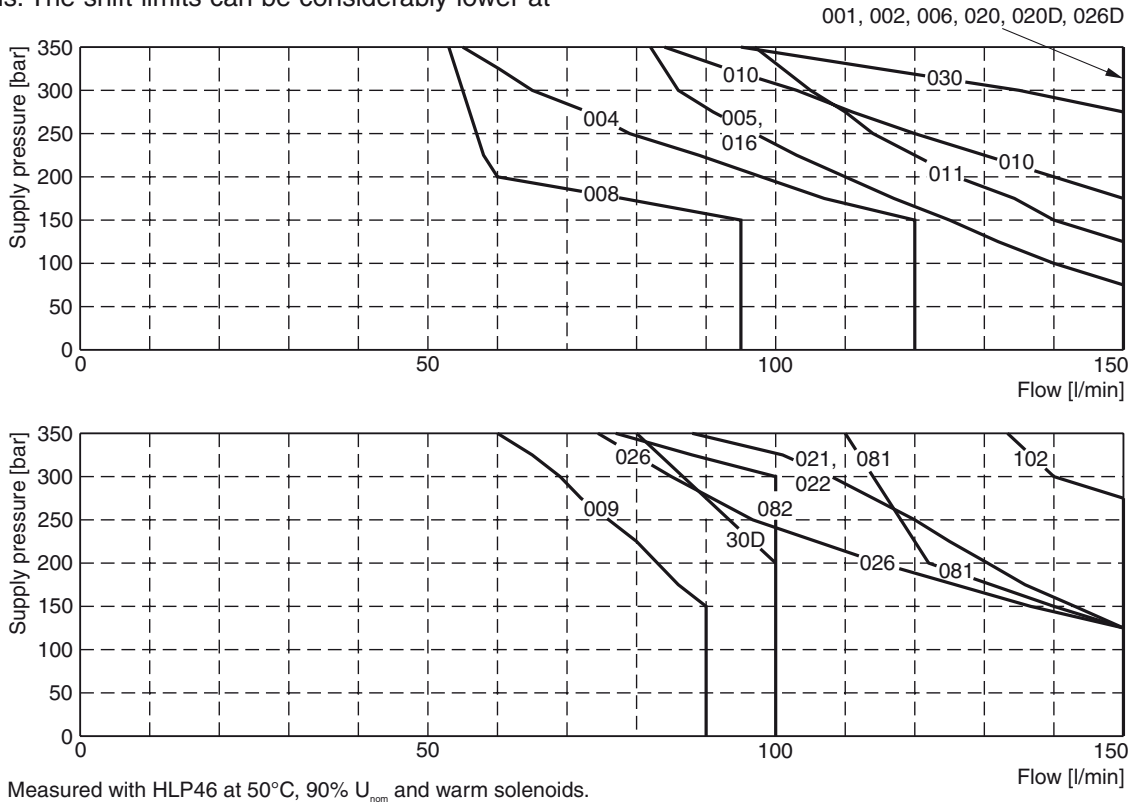
Measured with HLP46 at 50°C, 95% U_{nom} and warm solenoids.

Shift limits soft shift

The diagram below specifies the shift limits. Valves with spool position "F" or "M" can only be operated up to 70% of the limits. The specifications apply to balanced flow conditions. The shift limits can be considerably lower at

unbalanced flow conditions. To avoid flow rates beyond the shift limits, a plug-in orifice can be inserted in the P-port.

2



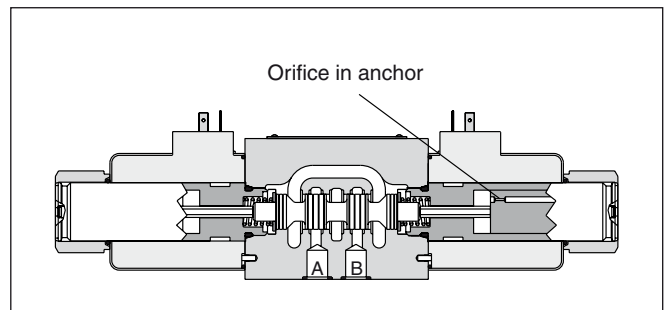
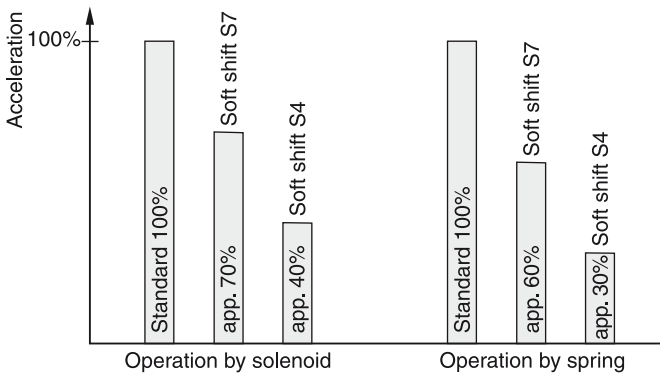
Response times D3W Soft Shift

| Code | Orifice size | Energize | De-energize |
|------------|--------------|-------------------------|------------------------|
| (Standard) | - | 105 ms (DC) 21 ms (AC)* | 85 ms (DC) 35 ms (AC)* |
| S4 | 1.0 mm | 320 ms | 550 ms |
| S7 | 1.75 mm | 160 ms | 370 ms |

Step response times were obtained under the following conditions: HLP46 at 50°C with the valve operating at 175 bar and 65 l/min. Published response times are nominal and may vary with spool, flow, pressure and temperature.

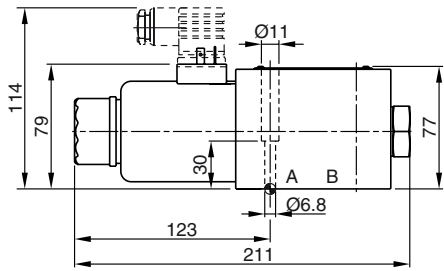
* For AC input and soft shift use rectifier plug.

Acceleration for different orifice sizes (archived against a valve without soft shift)

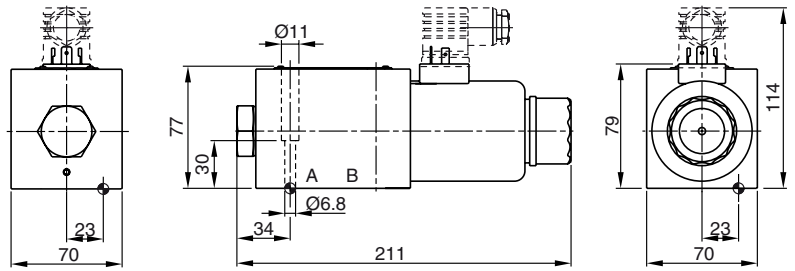


For even softer shifting, the proportional spools 081, 082, 101 and 102 can be used.

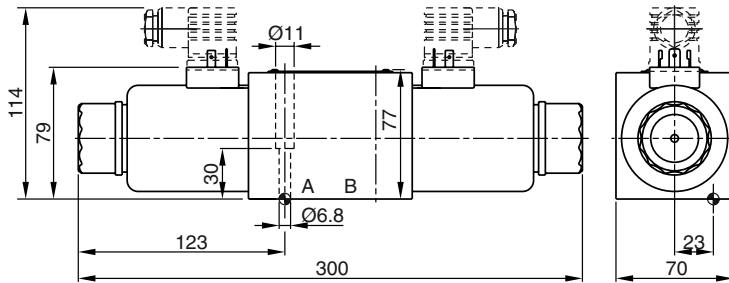
**Interface EN 175301-803, DC solenoid
 B, E, F -style**



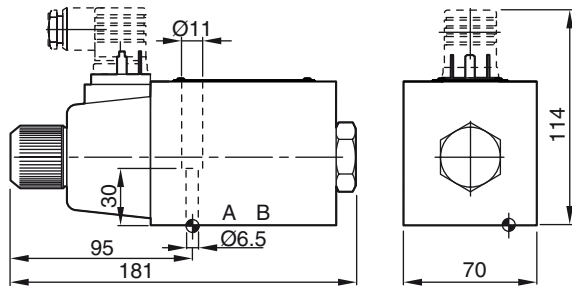
H, K, M -style



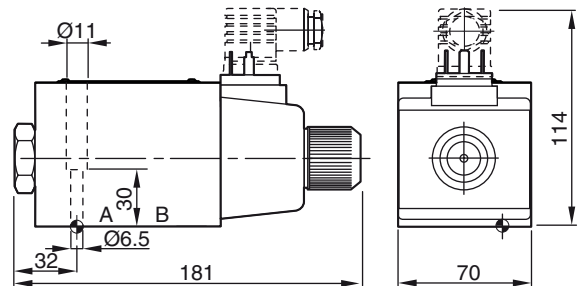
C, D -style



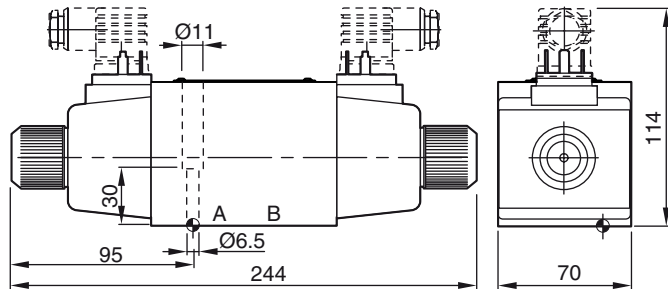
**Interface EN 175301-803, AC solenoid
 B, E, F -style**





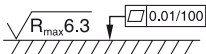


H, K, M -style



C, D -style



| | | | | |
|---|--|--|--|--|
| Surface finish |  Kit |  4x M6x40 DIN 912 12.9 |  13.2 Nm ±15% |  Kit |
|  | BK385 | | | NBR: SK-D3W-30 FPM: SK-D3W-V30 |

The space necessary to remove the plug per EN 175301-803, design type AF is at least 15 mm.
 The torque for the screw M3 of the plug has to be 0.5 to 0.6 Nm.

D3W stand_UK.INDD CM_17.05.2010

