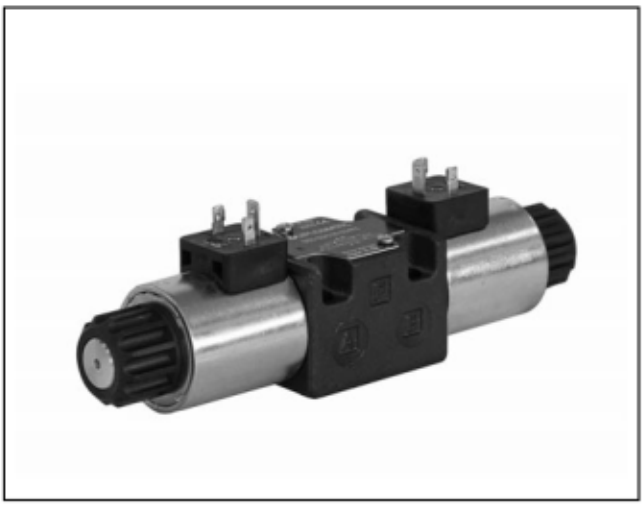
Part number:

HYDROMA HYDRAULICKÉ SYSTÉMY | HIDROMA SISTEMS UKŁADY HYDRAULICZNE | HYDROMA ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ



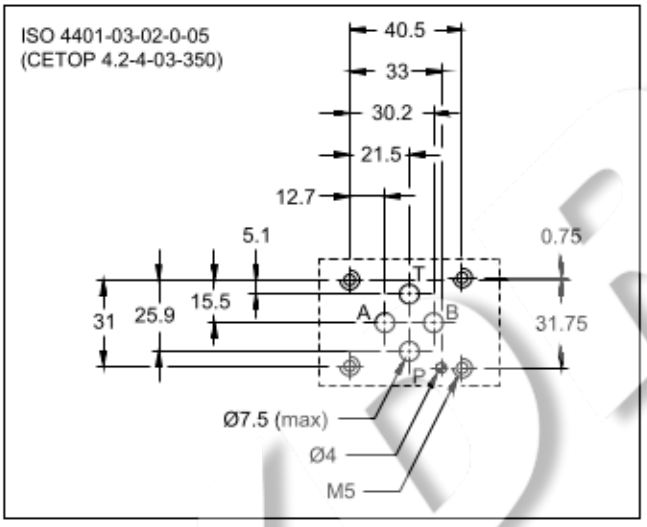
# DS3

## SOLENOID OPERATED DIRECTIONAL CONTROL VALVE

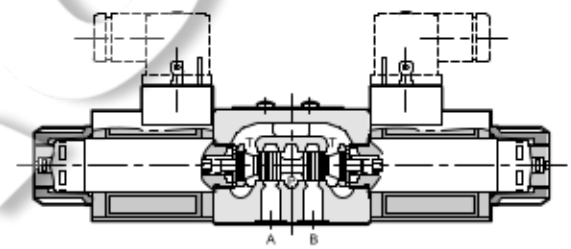
### SUBPLATE MOUNTING ISO 4401-03

**p** max **350** bar
**Q** max **100** l/min

### MOUNTING INTERFACE




### OPERATING PRINCIPLE




— Solenoid actuated directional control valve, direct operated, with mounting surface according to ISO 4401-03 standards.

— The valve is supplied with 3- or 4-port design, with 2 or 3 positions with a wide range of spools.

— The valve body is made with high strength iron castings provided with wide internal paths in order to minimize the flow pressure drop. Wet armature solenoids with interchangeable coils are used (for further information on solenoids see point 7).

— The valve is available with DC or AC solenoids. DC solenoids can also be fed with AC power supply, by using connectors with a built-in rectifier bridge (see points 6.4 and 7.2).

— The DC valve is also available in a soft-shifting version (see point 14).

— The DC valve is also available with zinc-nickel coating that ensures a salt spray resistance up to 600 hours.

— It is available a version with UL certified 24V DC coils for Canada and United States. (see point 15).

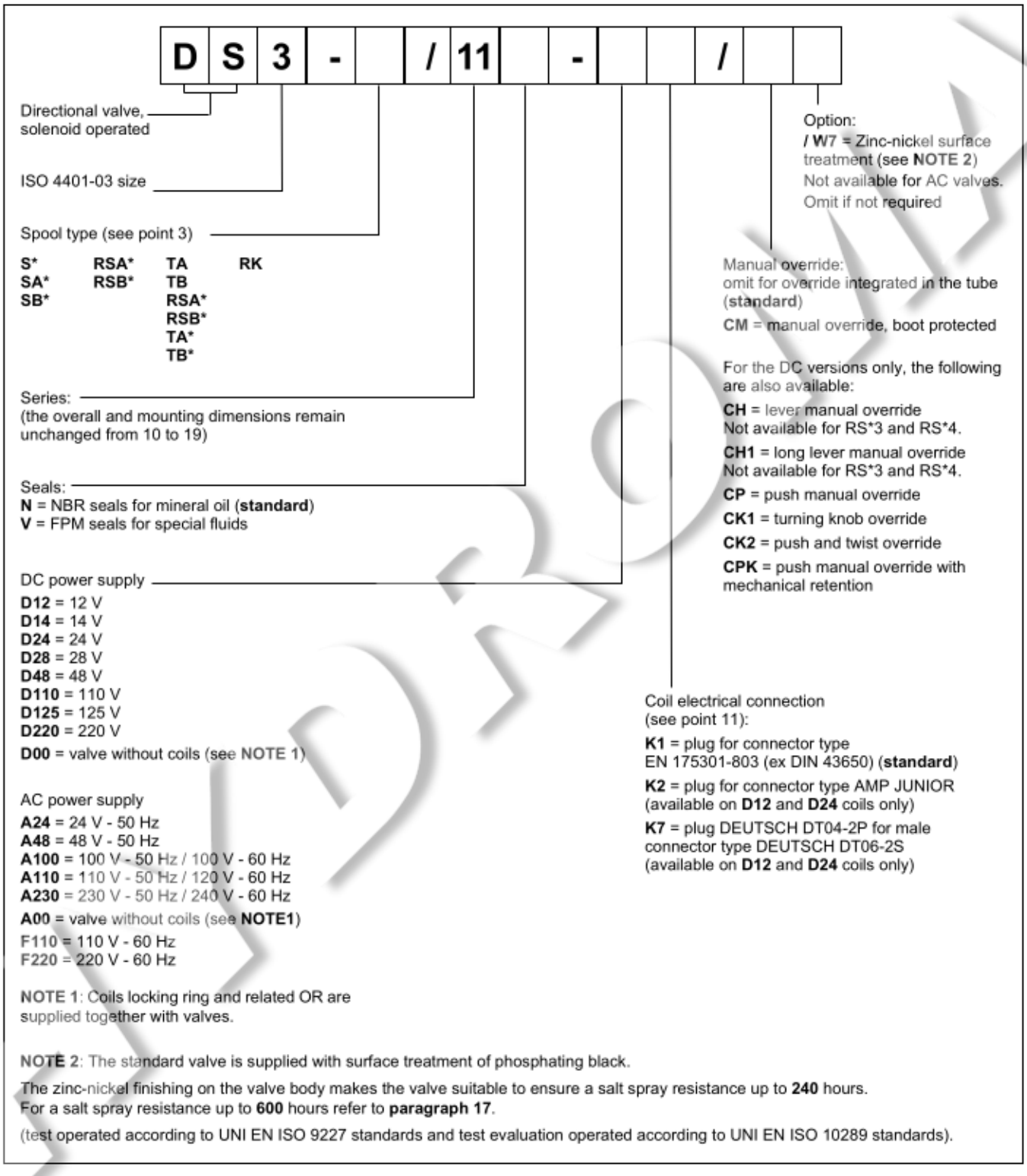
— Alternative to the standard manual override there are lever, push, knob, push and twist, boot and mechanical detent devices.

### PERFORMANCES

(obtained with mineral oil with viscosity of 36 cSt at 50°C)

| | | CC | CA |
|---|---|---|---|
| Maximum operating pressure:<br>- P - A - B ports<br>- T port | bar | 350<br>210 | <br>160 |
| Maximum flowrate | l/min | 100 | |
| Pressure drops Δp-Q | see point 4 | | |
| Operating limits | see point 6 | | |
| Electrical features | see point 7 | | |
| Electrical connections | see point 11 | | |
| Ambient temperature range | °C | -20 / +50 | |
| Fluid temperature range | °C | -20 / +80 | |
| Fluid viscosity range | cSt | 10 ÷ 400 | |
| Fluid contamination degree | according to ISO 4406:1999 class 20/18/15 | | |
| Recommended viscosity | cSt | 25 | |
| Mass: single solenoid valve<br>double solenoid valve | kg | 1,5<br>2 | 1,4<br>2 |

## 1 - IDENTIFICATION CODE




NOTE 1: Coils locking ring and related OR are supplied together with valves.

NOTE 2: The standard valve is supplied with surface treatment of phosphating black.

The zinc-nickel finishing on the valve body makes the valve suitable to ensure a salt spray resistance up to **240** hours.
For a salt spray resistance up to **600** hours refer to **paragraph 17**.

(test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards).

## 2 - HYDRAULIC FLUIDS

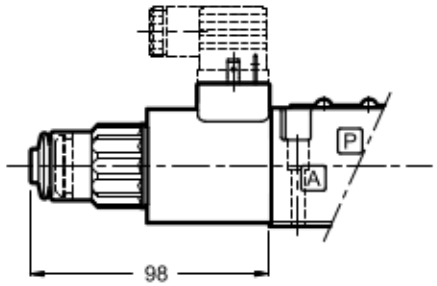
Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals (code N). For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other fluid types such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

## 13 - MANUAL OVERRIDES

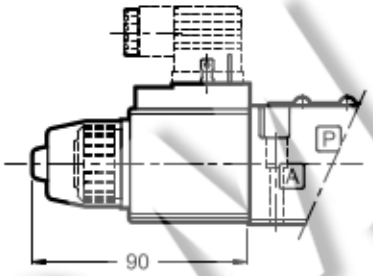
### 13.1 - Manual override, boot protected

**CM-DS3/11 - Version for DC solenoid valve**



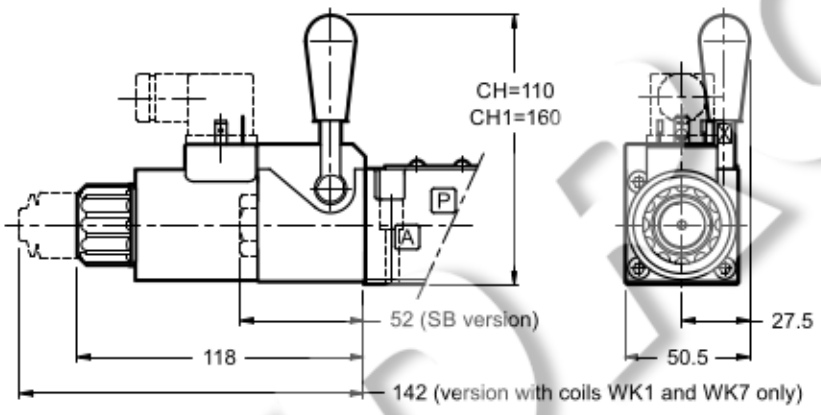

Code: 3401150006

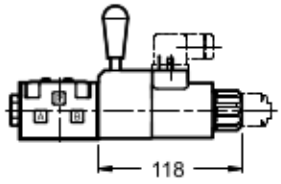
**Version for AC solenoid valve**




Code: 0269201

### 13.2 - CH-DS3/11 and CH1-DS3/10 Lever manual override (only for DC solenoid valve)

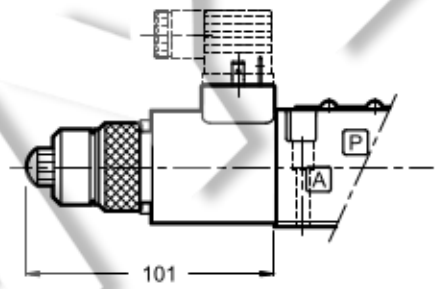



**NOTES**: the CH device is located on the A side of the valve, with the exception of the valves type DS3-TB.

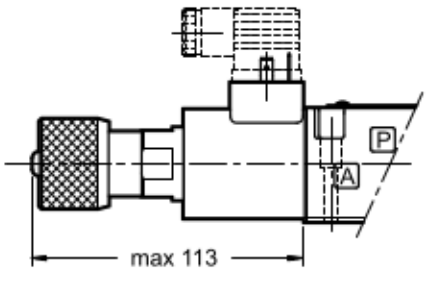
The high resistance to corrosion valves (point 17) are equipped with a boot for solenoid tube protection.

### 13.3 - CP-DS3/10 Push manual override (only for DC solenoid valve)



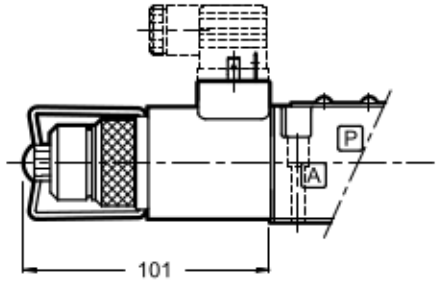

Code: 3401150005

### 13.4 - CK1-DS3/14 Knob manual override, turning (only for DC solenoid valve)



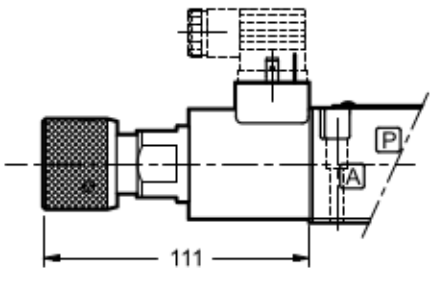

Code: 3401150031

### 13.5 - CPK-DS3/10 Push manual override with mechanical retention (only for DC solenoid valve)




Code: 3401150004

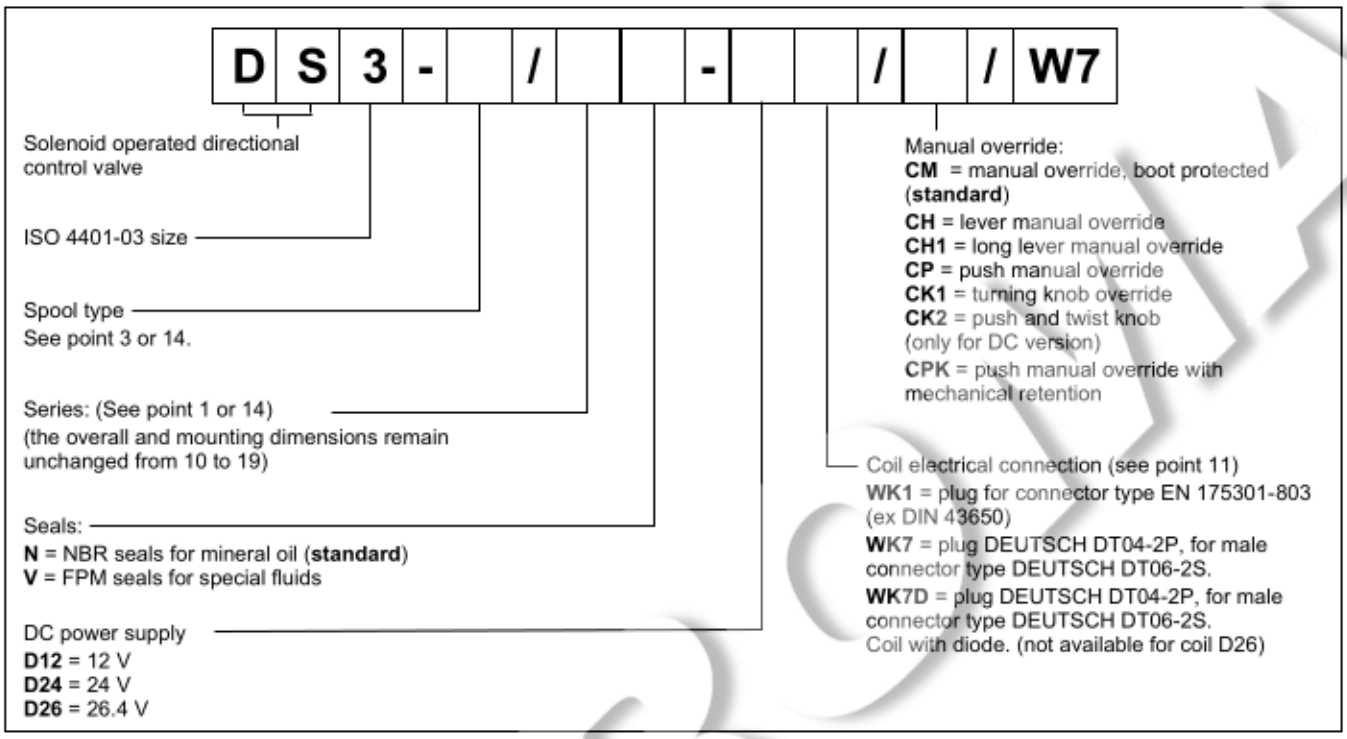
### 13.6 - CK2-DS3/12 Push and twist manual override (only for DC solenoid valve)




Code: 3401150026

## 17 - HIGH IP DEGREE AND CORROSION RESISTANCE VERSION

### 17.1 - Identification code




### 17.2 - Corrosion resistance

This version features the zinc-nickel coating on all exposed metal parts of the valve, making it resistant to exposure to the salt spray for **600** hours (test performed according to UNI EN ISO 9227 and assessment test performed according to UNI EN ISO 10289).

### 17.3 - DC coils

The coils feature a zinc-nickel surface treatment.

The WK7D coil includes a suppressor diode of pulses for protection from voltage peaks during switching. During the switching the diode significantly reduces the energy released by the winding, by limiting the voltage to 31.4V in the D12 coil and to 58.9 V in the D24 coil.

**(values ±10%)**

| | Nominal voltage [V] | Resistance at 20°C [Ω] | Current consumpt. [A] | Power consumpt [W] | Coil code | | |
|---|---|---|---|---|---|---|---|
| | | | | | WK1 | WK7 | WK7D |
| D12 | 12 | 4,4 | 2,72 | 32,7 | 1903590 | 1903580 | 1903600 |
| D24 | 24 | 18,6 | 1,29 | 31 | 1903591 | 1903581 | 1903601 |
| D26 | 26,4 | 21,8 | 1,21 | 32 | 1903599 | 1903589 | - |

### 17.4 - Protection from atmospheric agents IEC 60529

The IP protection degree is guaranteed only with both valve and connectors of an equivalent IP degree, correctly connected and installed.

| electric connection | electric connection protection | whole valve protection |
|---|---|---|
| **WK1** | IP66 | IP66 |
| **WK7** | IP66/IP68/IP69<br>IP69K* | IP66/IP68/IP69<br>IP69K* |
| **WK7D** | IP66/IP68/IP69<br>IP69K* | IP66/IP68/IP69<br>IP69K* |

(*) The IP69K protection degree is not taken into account in IEC 60529 but it is included in ISO 20653.

**NOTE**: As regards the liquid ingress protection (second digit), there are three means of protection.

Codes from 1 to 6 are related to water jets.

Rates 7 and 8 are related to immersion.

Rate 9 is reserved for high pressure and temperature water jets.

This means that IPX6 covers all the lower steps, rate IPX8 covers IPX7 but not IPX6 and lower, instead IPX9 does not cover any of them.

Whether a device meets two types of protection requirements it must be indicated by listing both the tests separated by a slash.

(E.g. a marking of an equipment covered both by temporary immersion and water jets is IP66/IP68).