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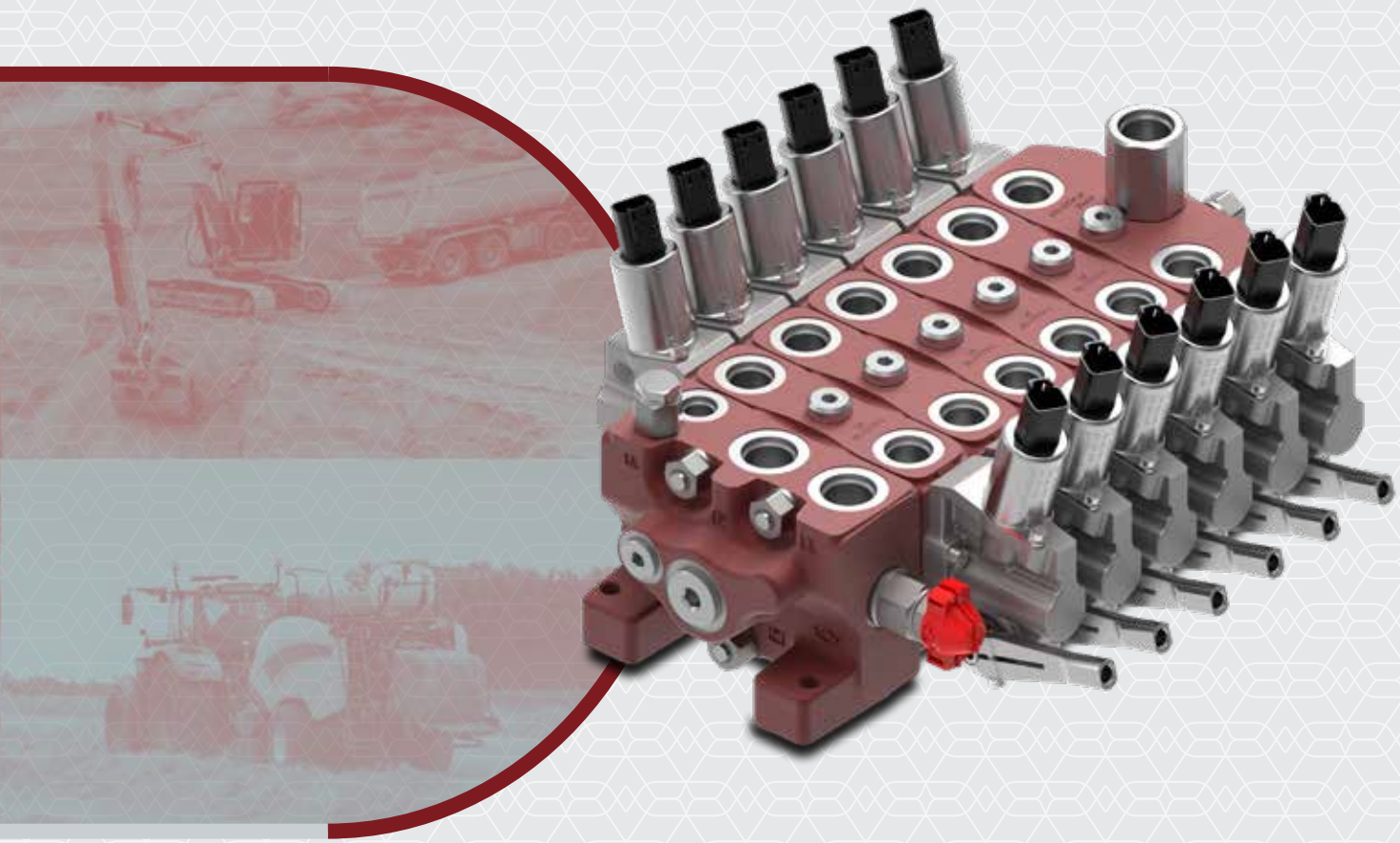
MOTION BY PEOPLE

# SDS100

Sectional Directional
Control Valve




DIRECTIONAL VALVES

## General informations

Simple, compact and heavy duty designed sectional valve from 1 to 10 sections for open and closed center hydraulic systems.

- Available with parallel, tandem or series circuit.
- Available manual, pneumatic, electric ON/OFF, proportional hydraulic and electro-hydraulic spool control kits.
- Fitted with a main pressure relief valve and a load check valve on every working section.
- Optional carry-over port.
- Optional secondary aux valve block on ports.
- Intermediate sections for several types of circuit.

**Additional information**
This catalogue shows the product in the most standard configurations.
Please contact Sales Dpt. for more detailed information or special request.

**WARNING!**
All specifications of this catalogue refer to the standard product at this date.
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN INCORRECT USE OF THE PRODUCT.

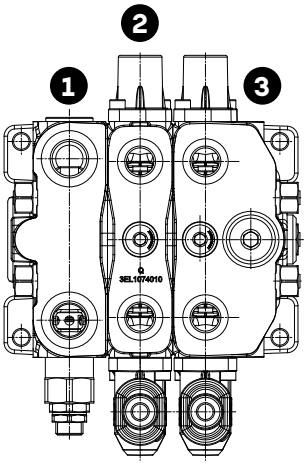
1st edition July 2025

## Content

## General guide to configuration

### Standard working section

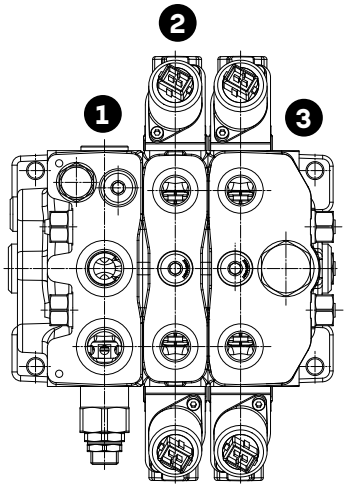
Fitted with manual, pneumatic, proportional hydraulic and ON/OFF electric control.

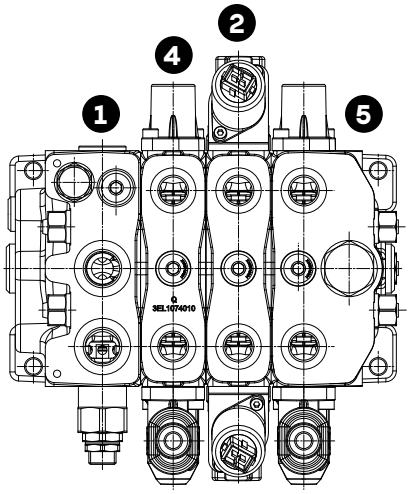



**1**: CN standard inlet section
**2**: Standard working section (type Q, P, SQ, SP)
**3**: Standard working section with outlet (type RQ, RP, RQS, RPS)

### Working section with internal pilot and drain lines

They need inlet section with pressure reducing valve and outlet section with backpressure valve.
They are prearranged for double side proportional electro-hydraulic control but it's possible to mount manual and mechanical control using sections with cross pilot line and drain.




**1**: CRA inlet section with pressure reducing valve, relief valve, pilot lines on both sides, drain prearrangement, pressure reduced line prearrangement
**2**: Working sections (type QE, PE, SQE, SPE) with double side electro-hydraulic control
**3**: Double side electro-hydraulic control working sectrion with optional outlet (type RPE, RQE, RPSE), pilot lines on both side and backpressure valve
**4**: Working section (type QA, PA, SQA, SPA) with mechanical control and cross pilot line
**5**: Mechanical control working section with optional outlet (type RPA, RQA), O-ring seats for cross pilot line closing, backpressure valve.

## Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46mm²/s - *46 cSt* viscosity at 40°C - *104°F* temperature.

| | | | |
|---|---|---|---|
| Number sections | | From 1 to 10 | |
| Nominal flow rating | | 60 l/min | *16 US gpm* |
| Max pressure | | 315 bar | *4600 psi* |
| Back pressure (max.) on outlet **T** port | With mechanical devices | 10 bar | *145 psi* |
| | With hydraulic, pneumatic and electric devices | 30 bar | *435 psi* |
| | With electro-hydraulic devices | 10 bar | *145 psi* |
| Internal leakage A(B)->T (standard) | Δp = 100 bar - *1450 psi* | 5 cm³/min | *0.31 in³/min* |
| Fluid | | Mineral based oil | |
| Fluid temperature | With NBR (BUNA-N) seals | from -20°C to 80°C | *from -4° to 176°F* |
| Viscosity | Operating range | from 15 to 75 mm²/s | *from 15 to 75 cSt* |
| | Min. | 12 mm²/s | *12 cSt* |
| | Max. | 400 mm²/s | *400 cSt* |
| Max level of contamination | | -/19/16 - ISO 4406 | *NAS 1638 - class 10* |
| Environmental temperature for working conditions | With mechanical devices | from -40°C to 60°C | *from -40°F to 140°F* |
| | With hydraulic and pneumatic devices | from -30°C to 60°C | *from -22°F to 140°F* |
| | With electro-hydraulic and electric devices | from -30°C to 50°C | *from -4°F to 122°F* |
| Tie rods tightening torque (wrench 17) | | 35 Nm | *26 lbft* |

Note - For different conditions please contact Sales Dept.

## Standard thread

| **REFERENCE STANDARDS** | | | | | | |
|---|---|---|---|---|---|---|
| | | **BSP** | **UN-UNF** | **METRIC(*)** | **METRIC ISO(*)** | **NPTF** |
| THREAD ACCORDING TO | | ISO 228/1 | ISO 263 | ISO 262 | ISO262 | ANSI B1.20.3 |
| | | BS 2779 | ANSI B1.1 unified | | | |
| CAVITY ACCORDING TO | ISO | 1179-1 | 11926-1 | 9974-1 | 6149 | |
| | SAE | | J1926-1 | | J2244 | J476a |
| | DIN | 3852-2 shape X or Y | | 3852-1 shape X or Y | | |

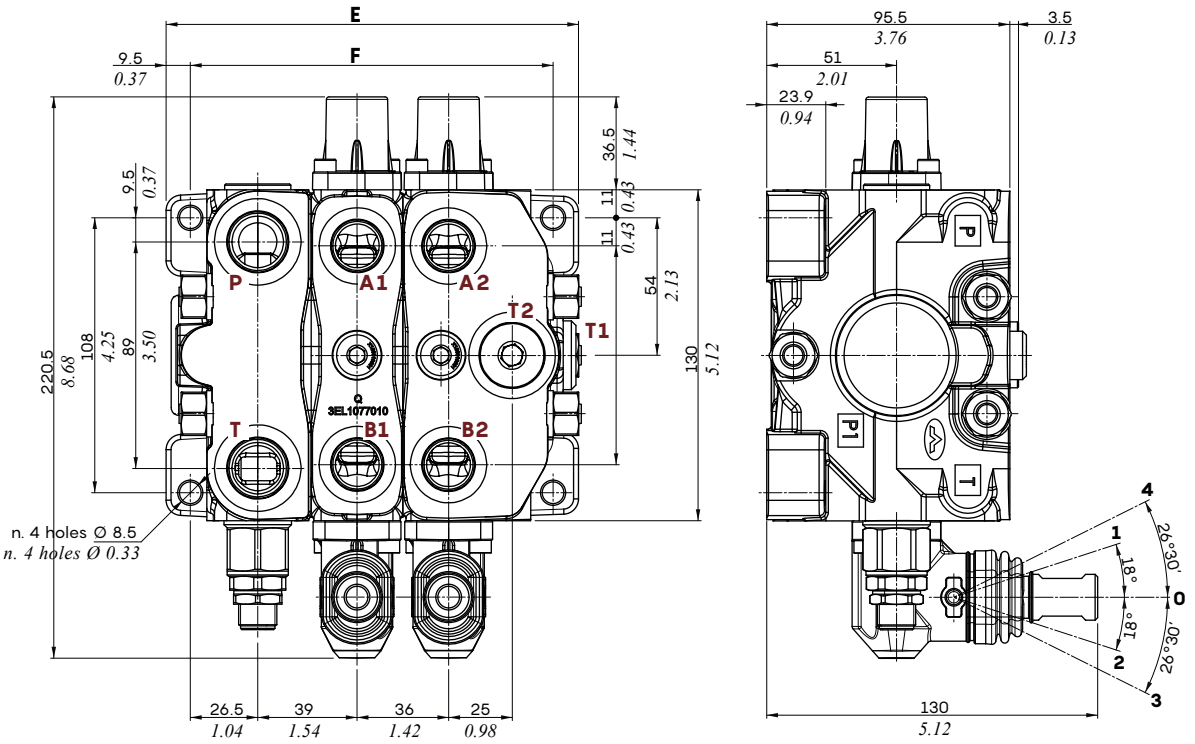
Note(*) - Metric threading is available on request.

| **PORTS THREAD** | | |
|---|---|---|
| MAIN PORTS | **BSP** | **UN-UNF** |
| Inlet **P** and **P1** | G 1/2 | 7/8"-14 (SAE10) |
| Ports **A** and **B** | G 3/8 - G 1/2 | 9/16-18 (SAE 6) - 3/4"-16 (SAE8) |
| Outlet **T, T1, T2** and carry-over **C** | G 1/2 | 7/8"-14 (SAE10) |
| Pilot **V** and drain **L** | G 1/4 | 9/16-18 (SAE 6) |
| CONTROLS PILOT PORTS | | |
| Hydraulic pilots | G 1/4 | 7/16-20 (SAE 4) |
| Pneumatic pilots | NPTF 1/8-27 | NPTF 1/8-27 |

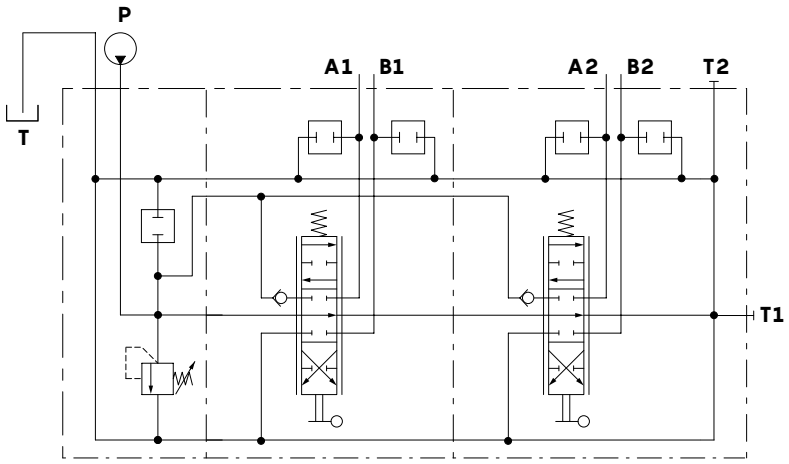
## Dimensional data and hydraulic circuit

### Configuration with mechanical, proportional hydraulic, ON/OFF electric controls

#### Left inlet standard configuration example




| TYPE | E | | F | |
|---|---|---|---|---|
| | mm | *in* | mm | *in* |
| **SDS100/1-SAE** | 128.1 | *5.04* | 106.5 | *4.19* |
| **SDS100/2-SAE** | 164.1 | *6.46* | 142.5 | *5.61* |
| **SDS100/3-SAE** | 200.1 | *7.87* | 178.5 | *7.02* |
| **SDS100/4-SAE** | 236.1 | *9.29* | 214.5 | *8.44* |
| **SDS100/5-SAE** | 272.1 | *10.71* | 250.5 | *9.86* |
| **SDS100/6-SAE** | 308.1 | *12.13* | 286.5 | *11.28* |
| **SDS100/7-SAE** | 344.1 | *13.54* | 322.5 | *12.70* |
| **SDS100/8-SAE** | 380.1 | *14.96* | 358.5 | *14.11* |
| **SDS100/9-SAE** | 416.1 | *16.38* | 394.5 | *15.53* |
| **SDS100/10-SAE** | 452.1 | *17.80* | 430.5 | *16.94* |



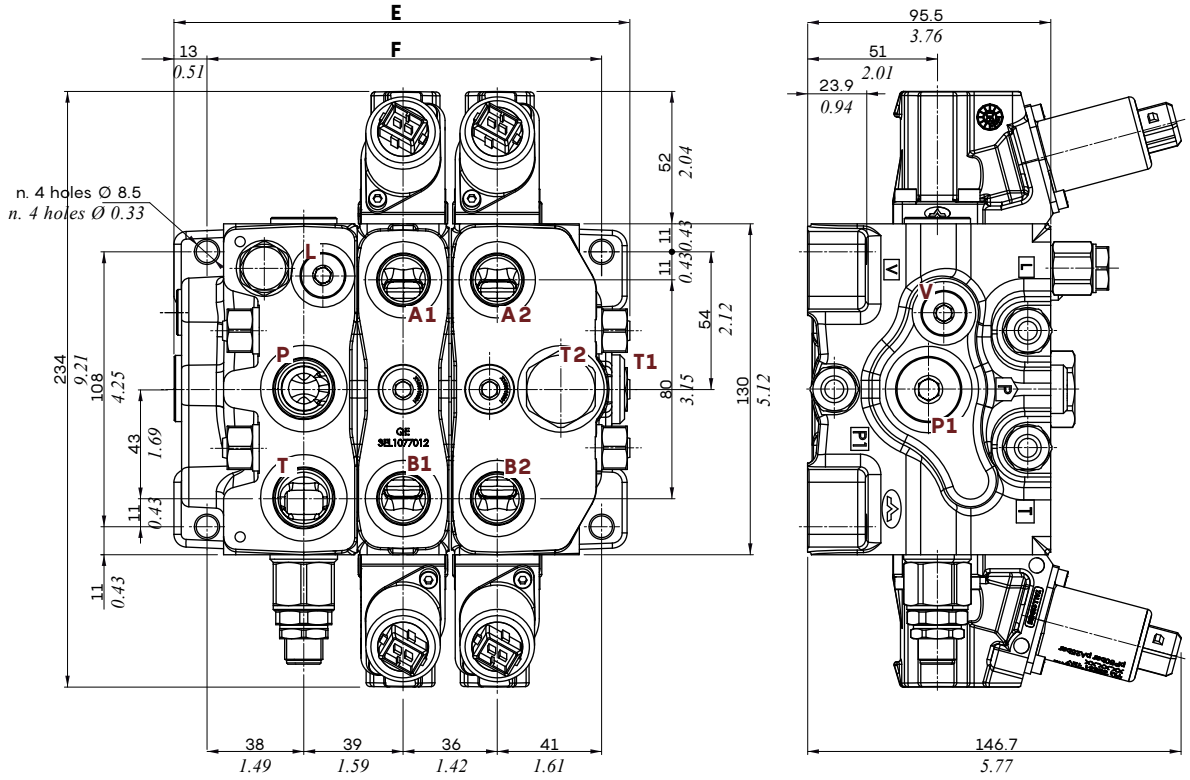

Parallel circuit, port valve arrangement on the sections
SDS100/2/CN(TVGW3-175)/P-101-8L.UTUT/RP-101-8L.UTUT-F-SAE

Note - Drawings and dimensions are referred to **UN-UNF** thread

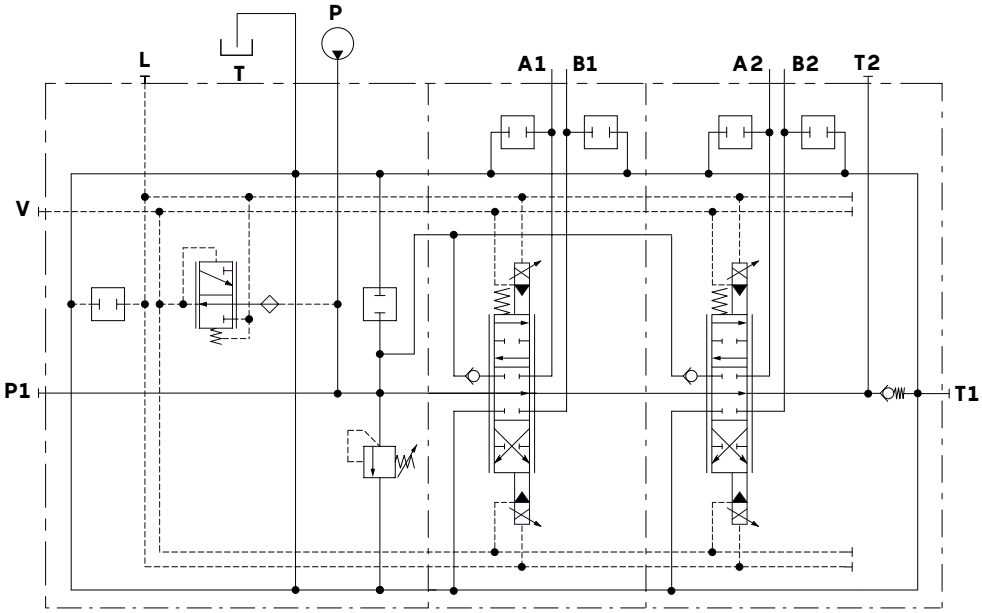
## Dimensional data and hydraulic circuit

### Configuration with electro-hydraulic control

### Left inlet standard configuration example




| TYPE | E | | F | |
|---|---|---|---|---|
| | mm | *in* | mm | *in* |
| **SDS100/1-SAE** | 141 | *5.55* | 118 | *4.64* |
| **SDS100/2-SAE** | 177 | *6.96* | 154 | *6.06* |
| **SDS100/3-SAE** | 213 | *8.38* | 190 | *7.48* |
| **SDS100/4-SAE** | 249 | *9.80* | 226 | *8.90* |
| **SDS100/5-SAE** | 285 | *11.22* | 262 | *10.31* |
| **SDS100/6-SAE** | 357 | *14.05* | 298 | *11.73* |
| **SDS100/7-SAE** | 393 | *15.47* | 334 | *13.15* |
| **SDS100/8-SAE** | 429 | *16.89* | 370 | *14.56* |
| **SDS100/9-SAE** | 465 | *18.30* | 406 | *15.98* |
| **SDS100/10-SAE** | 501 | *19.72* | 442 | *17.40* |



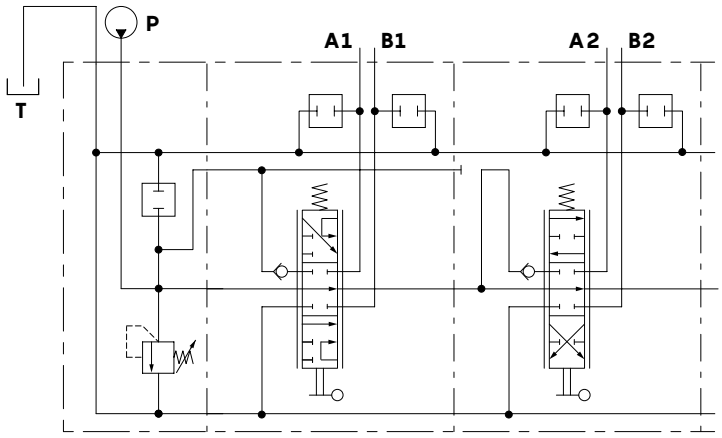

Parallel circuit, internal pilot and drain, port valve arrangement on the sections
SDS100/2/CRAD(TVGW3-175)/PE-ET101-8EBET.UTUT/
RPE-1ET01-8EB3T.UTUT-VRC-F-TAP(VL)-SAE

Note - Drawings and dimensions are referred to **UN-UNF** thread

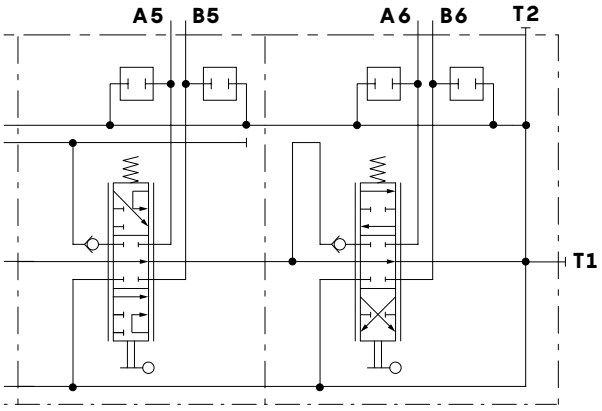
## Hydraulic circuit

In addition to the parallel circuit, the SDS100 is available with working sections with series circuit and parallel-series (tandem).

### Series circuit

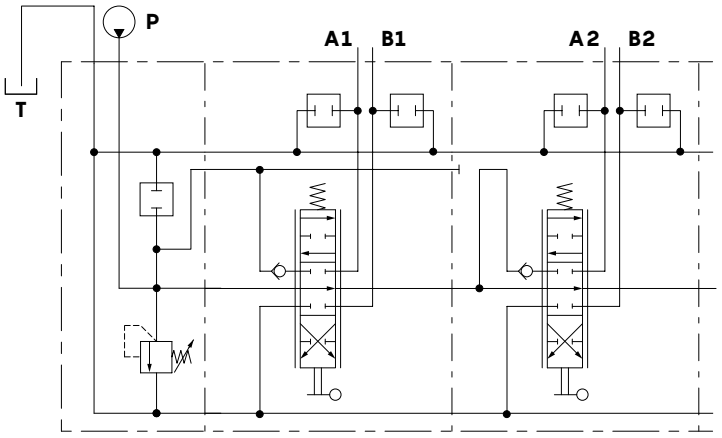



Series between standard working sections, serie spool
SDS100/2/CN(TVGW3-175)/P-**1S01**-8L.UTUT/**SP**-101-8L.UTUT/.....

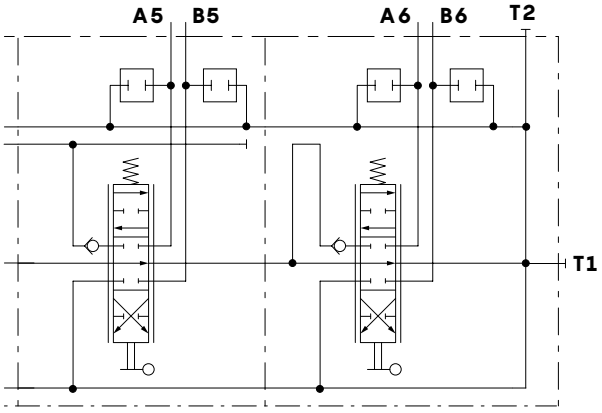



Series between penultimate and last section, serie spool
...../**PR-1S01**-8L.UTUT/**RPS**-101-8L.UTUT-F-SAE

### Parallel-series circuit (tandem)



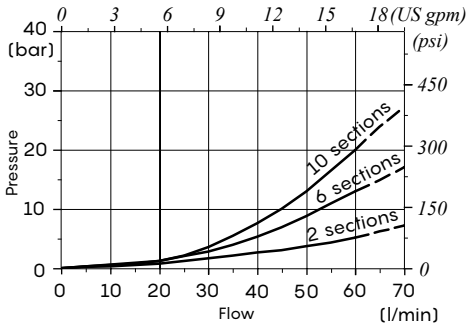

Tandem between standard work sections, standard spool
SDS100/2/CN(TVGW3-175)/P-101-8L.UTUT/**SP**-101-8L.UTUT/.....



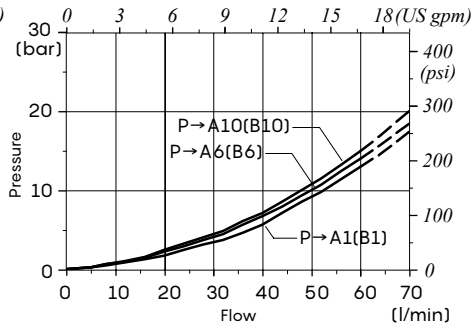

Tandem between penultimate and last section, standard spool
...../**PR**-101-8L.UTUT/**RPS**-101-8L.UTUT-F-SAE

## Performance data

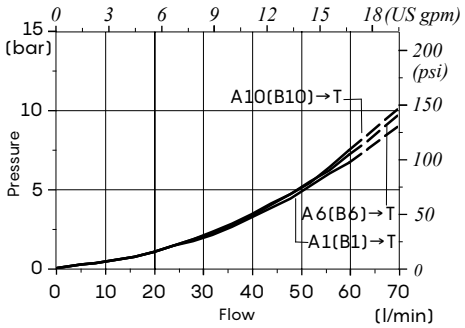
**P⇒T pressure drops (spool type 1)**




**P⇒A(B) pressure drops (spool type 1)**




**A(B)⇒T pressure drops (spool type 1)**



## Complete section ordering codes

### Configuration with mechanical, proportional hydraulic, ON/OFF electric controls

**A Standard configuration with BP3 secondary aux valve block:**

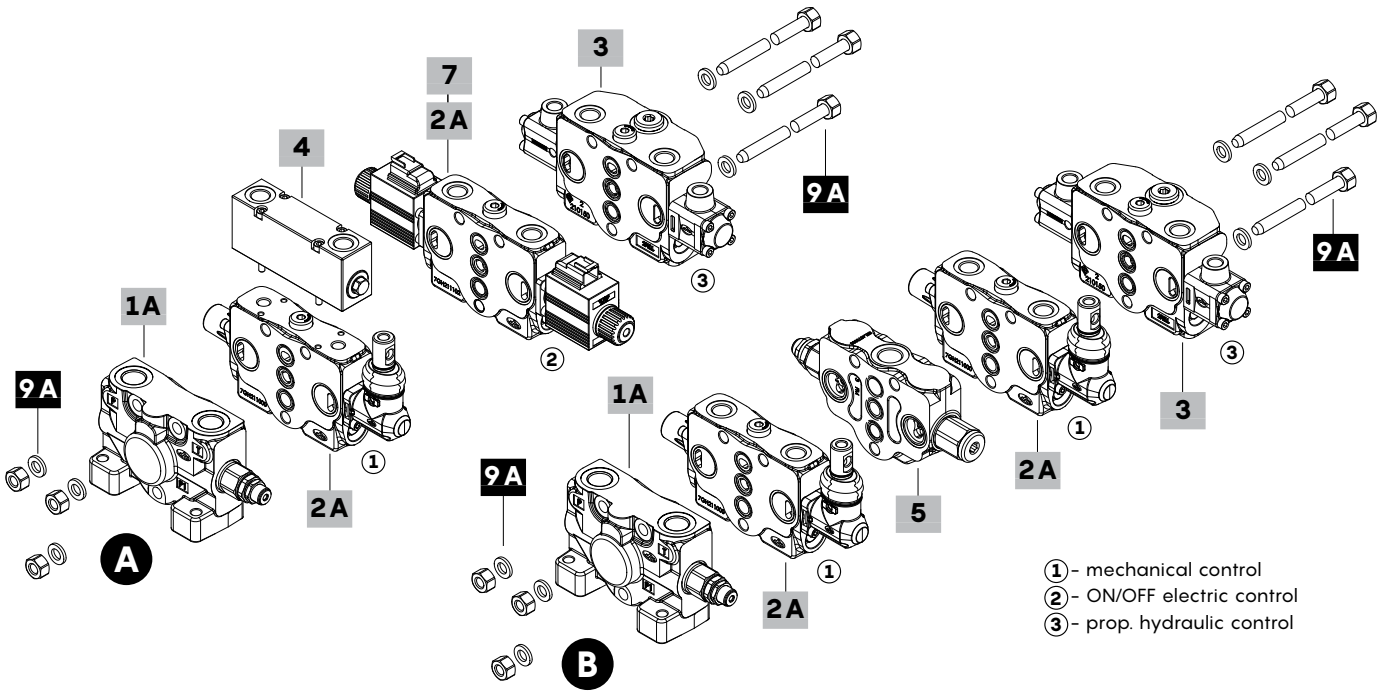
SDS100/3/CN(TVGW3-175)/PU-101-8L.UTUT.BP3A/P-S101-8ES3.UTUT/RP-I112-8IM.UTUT-F-12VDC-SAE

Nr of working section: 1A | 2A | 4 | 2A | 3 | 7 | 8

**B Standard configuration with EI2 intermediate inlet section:**

SDS100/3/CN(TVGW3-175)/P-101-8L.UTUT/EI2(TVGW3-125\GF-T)/P-101-8L.UTUT/RP-I112-8IM.UTUT-F-SAE

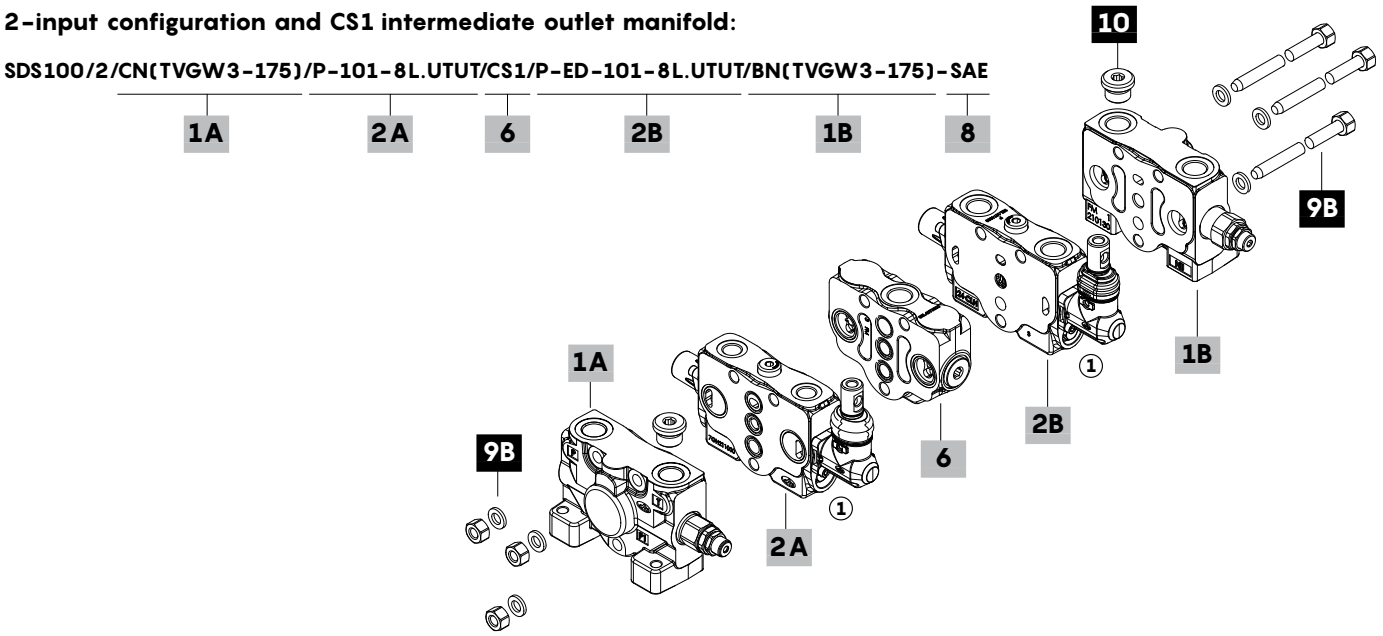
1A | 2A | 5 | 2A | 3 | 8




**2-input configuration and CS1 intermediate outlet manifold:**

SDS100/2/CN(TVGW3-175)/P-101-8L.UTUT/CS1/P-ED-101-8L.UTUT/BN(TVGW3-175)-SAE

1A | 2A | 6 | 2B | 1B | 8



## Complete section ordering codes

### Configuration with mechanical, proportional hydraulic, ON/OFF electric controls

#### 1A Inlet section*

TYPE: **SDS100/CN(SV)-SAE10** CODE: 610205008
DESCRIPTION: P and T upper ports, without pressure relief valve
TYPE: **SDS100/CN(TVGW3-175)-SAE10** CODE: 610201003
DESCRIPTION: P and T upper ports, with pressure relief valve

#### 1B Right inlet section*

TYPE: **SDS100/BN(SV)-SAE10** CODE: 610205010
DESCRIPTION: P and T upper ports, without pressure relief valve
TYPE: **SDS100/BN(TVGW3-175)-SAE10** CODE: 610205306
DESCRIPTION: P and T upper ports, with pressure relief valve

#### 2A Working section*

**Mechanical control**
TYPE: **SDS100/Q-101-8L-SAE8** CODE: 610155001
DESCRIPTION: Parallel circuit, lever control without port valves arrangement
TYPE: **SDS100/P-101-8L.UTUT-SAE8** CODE: 610101001
DESCRIPTION: As previous one, with port valves arrangement
TYPE: **SDS100/PU-101-8L.UTUT-SAE8** CODE: 610100007
DESCRIPTION: As previous one, with port valves arrangement and secondary aux block valves
TYPE: **SDS100/P-101-8L.U100U100-SAE8** CODE: 610105013
DESCRIPTION: As previous one, with shock valves with fixed setting
TYPE: **SDS100/Q5-501-13NL-SAE8** CODE: 610155600
DESCRIPTION: Floating circuit, lever control without port valves arrangement
TYPE: **SDS100/SQ-101-8L-SAE8** CODE: 610125013
DESCRIPTION: Parallel-series circuit, lever control without port valves arrangement
TYPE: **SDS100/SP-101-8L.UTUT-SAE8** CODE: 610125015
DESCRIPTION: As previous one, with port valves arrangement
**ON/OFF electric control**
TYPE: **SDS100/Q-S102-8ES3-12VDC-SAE8** CODE: 610155008
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/Q-SHC102-8ES3LHC-12VDC-SAE8** CODE: 610105024
DESCRIPTION: As previous one, with emergency lever
**Proportional hydraulic control**
TYPE: **SDS100/Q-I112-8IM-SAE8** CODE: 610155004
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/Q5-I504-13IMS-SAE8** CODE: 610155601
DESCRIPTION: As previous one for floating circuit

#### 2B Right working section*

**Mechanical control**
TYPE: **SDS100/Q-ED-101-8L-SAE8** CODE: 610155002
DESCRIPTION: Parallel circuit, lever control without port valves arrangement
TYPE: **SDS100/P-ED-101-8L.UTUT-SAE8** CODE: 610135002
DESCRIPTION: As previous one, with port valves arrangement
TYPE: **SDS100/P-ED-101-8L.U100U100-SAE8** CODE: 610100009
DESCRIPTION: As previous one, with shock valves with fixed setting
TYPE: **SDS100/Q5-ED-501-13NL-SAE8** CODE: 610100010
DESCRIPTION: Floating circuit, lever control without port valves arrangement
TYPE: **SDS100/SQ-ED-101-8L-SAE8** CODE: 610125017
DESCRIPTION: Parallel-series circuit, lever control without port valves arrangement
TYPE: **SDS100/SP-ED-101-8L.UTUT-SAE8** CODE: 610125018
DESCRIPTION: As previous one, with port valves arrangement
**ON/OFF electric control**
TYPE: **SDS100/Q-ED-S102-8ES3-12VDC-SAE8** CODE: 610100011
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/Q-ED-SHC102-8ES3LHC-12VDC-SAE8**
CODE: 610100012
DESCRIPTION: As previous one, with emergency lever
**Proportional hydraulic control**
TYPE: **SDS100/Q-ED-I112-8IM-SAE8** CODE: 610100013
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/Q5-ED-I504-13IMS-SAE8** CODE: 610100014
DESCRIPTION: As previous one for floating circuit

#### 3 Outlet working section*

**Mechanical control**
TYPE: **SDS100/RQ-101-8L-F-SAE8** CODE: 610355001
DESCRIPTION: Parallel circuit, lever control without port valves arrangement, outlet ports plugged
TYPE: **SDS100/RP-101-8L.UTUT-F-SAE8** CODE: 610301003
DESCRIPTION: As previous one, with port valves arrangement
TYPE: **SDS100/RP-101-8L.U100U100-F-SAE8** CODE: 610305004
DESCRIPTION: As previous one, with shock valves with fixed setting
TYPE: **SDS100/RQ-101-8L-AE-SAE8** CODE: 610355002
DESCRIPTION: Parallel circuit, lever control without port valves arrangement, with carry-over
TYPE: **SDS100/RP-101-8L.UTUT-AE-SAE8** CODE: 610305003
DESCRIPTION: As previous one, with port valves arrangement
**ON/OFF electric control**
TYPE: **SDS100/RQ-S102-8ES3-F-12VDC-SAE8** CODE: 610300002
DESCRIPTION: Parallel circuit, without port valves arrangement
**Proportional hydraulic control**
TYPE: **SDS100/RQ-I112-8IM-F-SAE8** CODE: 610355004
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/RP-I112-8IM.UTUT-F-SAE8** CODE: 610300003
DESCRIPTION: As previous one, with port valves arrangement

#### 4 Secondary aux valve block*

TYPE: **BP3A-SAE8** CODE: 611007102
DESCRIPTION: Double valve block on A and B ports
TYPE: **BP1A-BP2A-SAE8** CODE: 611007111
DESCRIPTION: Single valve block on A or B ports

#### 5 Intermediate inlet section* page 56

TYPE: **SDS100/EI2(TVGW2-125\GF-T)-SAE8** CODE: 610425135
DESCRIPTION: With secondary pressure relief valve and auxiliary inlet (plugged)

#### 6 Intermediate outlet manifold* page 57

TYPE: **SDS100/CS1-SAE8** CODE: 610405010
DESCRIPTION: Outlet manifold

#### 7 Voltage

Specify the voltage of electric devices

#### 8 Valve threading

Only specify if it is different from BSP standard (see page 5)

#### 9A Assembly kit

| CODE | DESCRIPTION | CODE | DESCRIPTION |
|---|---|---|---|
| 5TIR110123 | For 1 section valve | 5TIR110304 | For 6 section valve |
| 5TIR110160 | For 2 section valve | 5TIR110340 | For 7 section valve |
| 5TIR110195 | For 3 section valve | 5TIR110375 | For 8 section valve |
| 5TIR110235 | For 4 section valve | 5TIR110411 | For 9 section valve |
| 5TIR110267 | For 5 section valve | 5TIR110449 | For 10 section valve |

Note - The intermediate section **EI2** is to be considered as an additional section

#### 9B Assembly kit with CS1 outlet manifold

| CODE | DESCRIPTION | CODE | DESCRIPTION |
|---|---|---|---|
| 5TIR110215 | For 2 sec. valve+CS1 | 5TIR110397 | For 7 sec. valve+CS1 |
| 5TIR110252 | For 3 sec. valve+CS1 | 5TIR110431 | For 8 sec. valve+CS1 |
| 5TIR110289 | For 4 sec. valve+CS1 | 5TIR110467 | For 9 sec. valve+CS1 |
| 5TIR110323 | For 5 sec. valve+CS1 | 5TIR110503 | For 10 sec. valve+CS1 |
| 5TIR110359 | For 6 sec. valve+CS1 | | |

#### 10 Component*

| CODE | DESCRIPTION |
|---|---|
| 3XTAP822150 | SAE8 plug for working sections |
| 3XTAP826160 | SAE10 plug for T port closed on inlet section |

Note (*) - Codes are referred to **UN-UNF** thread

## Complete section ordering codes

### Configuration with electro-hydraulic/mixed controls

**Electrohydraulic standard configuration with BP3 secondary aux valve block:**

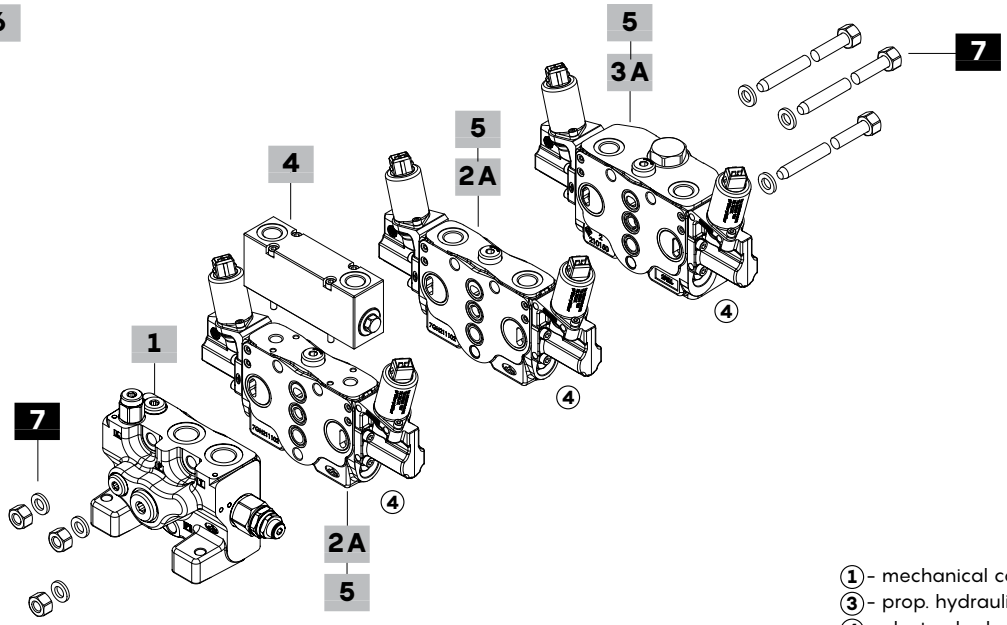
SDS100/3/CRAD(TVGW3-175)/PEU-ET101-8EB3T.UTUT.BP3A/PE-ET101-8EB3T.UTUT/RPE-ET101-8EB3T.UTUT-VRC-F-

Nr of working section

| 1 | 2A | 4 | 2A | 3A |
|---|---|---|---|---|

12VDC-TAP(VL)-SAE

| 5 | 1 | 6 |
|---|---|---|

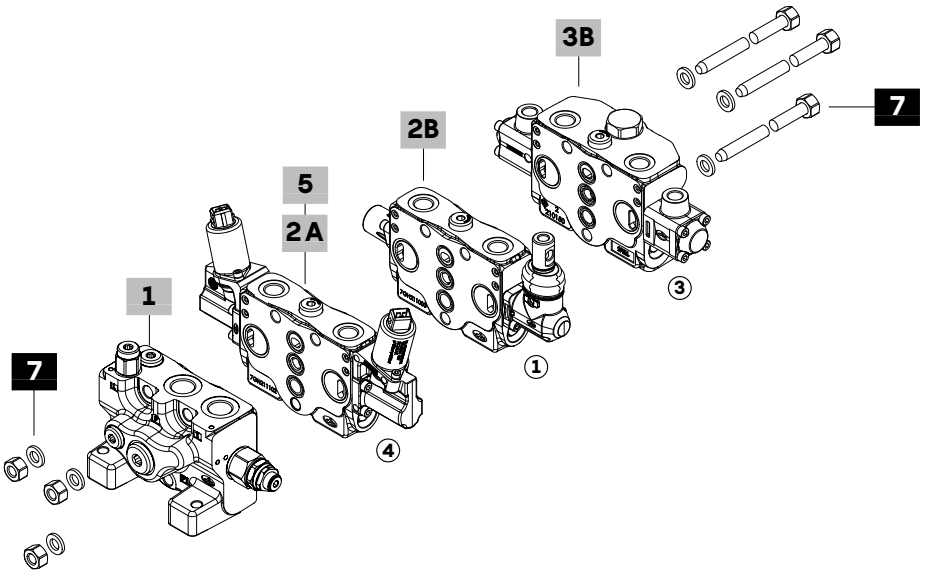



① - mechanical control
③ - prop. hydraulic control
④ - electro-hydraulic control

**Mixed electrohydraulic/mechanical configuration:**

SDS100/3/CRAD(TVGW3-175)/PE-ET101-8EB3T.UTUT/PA-101-8L.UTUT/RPA-I112-8IM.UTUT-VRC-F-12VDC-TAP(VL)-SAE

| 1 | 2A | 2B | 3B | 5 | 1 | 6 |
|---|---|---|---|---|---|---|



## Complete section ordering codes

### Configuration with electro-hydraulic/mixed controls

#### 1 Inlet section*

TYPE: **SDS100/CRAD(TVGW3-175)-TAP(LV)-SAE10** CODE: 610205021
DESCRIPTION: P and T upper ports open, pilot V and drain L plugged, with pressure relief valve and pressure reducing valve
TYPE: **SDS100/CPAD(TVGW3-175)-NOTAP(LV)-SAE10** CODE: 610205023
DESCRIPTION: P and T upper ports open, pilot V and drain L open, with pressure relief valve and without pressure reducing valve (plugged)

#### 2A Working section*

**Electro-hydraulic control**
TYPE: **SDS100/QE-ET101-8EB3T-12VDC-SAE8** CODE: 610151009
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/PE-ET101-8EB3T.UTUT-12VDC-SAE8** CODE: 610105023
DESCRIPTION: As previous one, with port valves arrangement
TYPE: **SDS100/PE-PU-ET101-8EB3T.UTUT-12VDC-SAE8**
CODE: 610100008
DESCRIPTION: As previous one, with port valves arrangement and secondary aux block valves
TYPE: **SDS100/SQE-ET101-8EB3T-12VDC-SAE8** CODE: 610121012
DESCRIPTION: Parallel-series circuit, without port valves arrangement
TYPE: **SDS100/SPE-ET101-8EB3T.UTUT-12VDC-SAE8**
CODE: 610125020
DESCRIPTION: As previous one, with port valves arrangement

#### 2B Working section with cross pilot lines*

**Mechanical control**
TYPE: **SDS100/QA-101-8L-SAE8** CODE: 610155006
DESCRIPTION: Parallel circuit, lever control without port valves arrangement
TYPE: **SDS100/PA-101-8L.UTUT-SAE8** CODE: 610105008
DESCRIPTION: As previous one, with port valves arrangement
TYPE: **SDS100/PA-101-8L.U100U100-SAE8** CODE: 610105014
DESCRIPTION: As previous one, with shock valves with fixed setting
TYPE: **SDS100/SQA-101-8L-SAE8** CODE: 610125021
DESCRIPTION: Parallel-series circuit, lever control without port valves arrangement
TYPE: **SDS100/SPA-101-8L.UTUT-SAE8** CODE: 610125022
DESCRIPTION: As previous one, with port valves arrangement
**ON/OFF electric control**
TYPE: **SDS100/PA-S102-8ES3.UTUT-12VDC-SAE8**
CODE: 610100015
DESCRIPTION: Parallel circuit, with port valves arrangement
**Proportional hydraulic control**
TYPE: **SDS100/QA-I112-8IM-SAE8** CODE: 610100016
DESCRIPTION: Parallel circuit, without port valves arrangement

#### 3A Outlet working section*

**Electro-hydraulic control**
TYPE: **SDS100/RQE-ET101-8EB3T-VRC-F-12VDC-SAE8**
CODE: 610355005
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SDS100/RPE-ET101-8EB3T.UTUT-VRC-F-12VDC-SAE8**
CODE: 610305015
DESCRIPTION: As previous one, with port valves arrangement
TYPE: **SDS100/RQE-ET101-8EB3T-VRE-F-12VDC-SAE8**
CODE: 610355006
DESCRIPTION: Parallel circuit, without port valves arrangement, with continuation of the pressure line (carry-over)
TYPE: **SDS100/RPE-ET101-8EB3T.UTUT-VRE-F-12VDC-SAE8**
CODE: 610305011
DESCRIPTION: As previous one, with port valves arrangement

#### 3B Outlet working section with cross pilot lines*

**Mechanical control**
TYPE: **SDS100/RQA-101-8L-VRC-F-SAE8** CODE: 610301015
DESCRIPTION: Parallel circuit, lever control without port valves arrangement
TYPE: **SDS100/RPA-101-8L.UTUT-VRC-F-SAE8** CODE: 610305007
DESCRIPTION: As previous one, with port valves arrangement

#### 4 Secondary aux valve block*

TYPE: **BP3A-SAE8** CODE: 611007102
DESCRIPTION: Double valve block on A and B ports
TYPE: **BP1A-BP2A-SAE8** CODE: 611007111
DESCRIPTION: Single valve block on A or B ports

#### 5 Voltage

Specify the voltage of electric devices

#### 6 Valve threading

Only specify if it is different from BSP standard (see page 5)

#### 7 Assembly kit

| CODE | DESCRIPTION | CODE | DESCRIPTION |
|---|---|---|---|
| 5TIR110123 | For 1 section valve | 5TIR110304 | For 6 section valve |
| 5TIR110160 | For 2 section valve | 5TIR110340 | For 7 section valve |
| 5TIR110195 | For 3 section valve | 5TIR110375 | For 8 section valve |
| 5TIR110235 | For 4 section valve | 5TIR110411 | For 9 section valve |
| 5TIR110267 | For 5 section valve | 5TIR110449 | For 10 section valve |

Note (*) - Codes are referred to **UN-UNF** thread

## Parts ordering codes

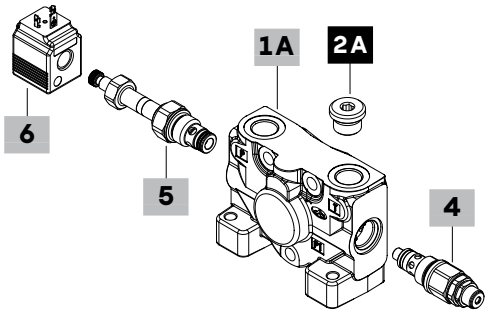
### For valve with mechanical, prop. hydraulic, ON/OFF electric controls

C: left inlet
B: right inlet

Valve setting (bar)

**SDS100 / CN (TVGW3 - 175) ELPW - 12VDC-SAE**

**1A 4 5 6 8**



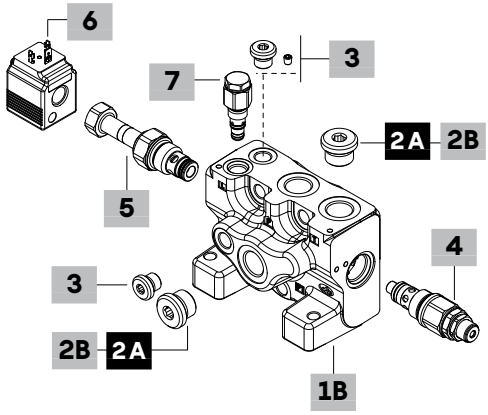

### For valve with electro-hydraulic/mixed controls

C: left inlet
B: right inlet

R: with pressure reducing valve
P: with reducing valve blanking plug

**SDS100 / C R A D (TVGW3 - 175) ELNW - 12VDC - TAP(VL)-SAE**

**1B 7 1B 2B 4 5 6 3 8**




### 1A Inlet section* page 14

TYPE: **SDS100/CN-SAE10** CODE: 3FIA107700
DESCRIPTION: P and T upper ports
TYPE: **SDS100/CNL-SAE10** CODE: 3FIA107704
DESCRIPTION: P and T upper ports, P1 side port
TYPE: **SDS100/CNM-SAE10** CODE: 3FIA107701
DESCRIPTION: P and T upper ports, pressure gauge arrangement on M port (plugged)

### 2A Plug for P, P1, T and M ports*

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| - | 3XTAP826160 | SAE10 plug |
| - | 3XTAP817130 | SAE6 plug for pressure gauge arrangement |

### 1B Inlet section* page 16

TYPE: **SDS100/CRA-SAE10** CODE: 3FIA107706
DESCRIPTION: With pressure reducing valve arrangement, P, T and drain L upper ports, P1 and pilot V side ports

### 2B Configuration P and T2 ports* page 16

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **D** | 3XTAP826160 | P e T upper ports open, P1 side port plugged; require n. 1 SAE10 plug |
| **C** | 3XTAP826160 | P1 side port and T upper port open, P upper port plugged; require n. 1 SAE10 plug |
| **G** | - | P and T upper ports, P1 side port open |

### 3 Configuration V and L ports* page 16

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **TAP(VL)** | 3XTAP817130 | V and L ports plugged; require n. 2 SAE6 plug |
| **NOTAP(VL)** | 4TAP306006 | V and L ports open; require n. 1 conic M6 plug on L port |
| **NOTAP(V)** | 3XTAP817130 | V port open and L ports plugged; require n. 1 SAE6 plug on L port |
| **NOTAP(L)** | 3XTAP817130+ 4TAP306006 | V port plugged and L port open; require n. 1 SAE6 plug on V port and n. 1 conic M6 plug on L port |

Note (*) - Codes are referred to **UN-UNF** thread

### 4 Pressure relief valve page 17

Valves standard setting is referred to 5 l/min *(1.3 US gpm)* flow.

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **(TVGW2-80)** | 0MC100020A04 | Range 76-125 bar *(1100-1800 psi)* std setting 80 bar *(1160 psi)* |
| **(TVGW3-175)** | 0MC100020A05 | Range 126-220 bar *(1820-3200 psi)* std setting 175 bar *(2550 psi)* |
| **(TVGW4-220)** | 0MC100020A06 | Range 215-260 bar *(3010-3770 psi)* std setting 220 bar *(3200 psi)* |
| **(TGW5-250)** | 0MC10002025 | Range 180-350 bar *(2600-5100 psi)* std setting 250 bar *(3600 psi)* |
| **SV** | XTAP526360 | Relief valve blanking plug |

### 5 Solenoid operated unloading valve page 17

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **ELNW** | 0EF10002000 | Without emergency override |
| **ELPW** | 0EF10002002 | With push-button emergency override |
| **ELVW** | 0EF10002003 | With screw emergency override |
| **ELTW** | 0EF10002004 | With "twist&push" emergency override |
| **LT** | XTAP526360 | Unloading valve blanking plug |

### 6 Coil

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **12VDC** | 4SLE001200A | 12VDC BER type coil, ISO4400 connector |

For coil **BER** list, see page 58

### 7 Pressure reducing valve page 18

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **R** | X219740035 | Pressure reducing valve |
| **P** | XTAP418350 | Reducing valve blanking plug |

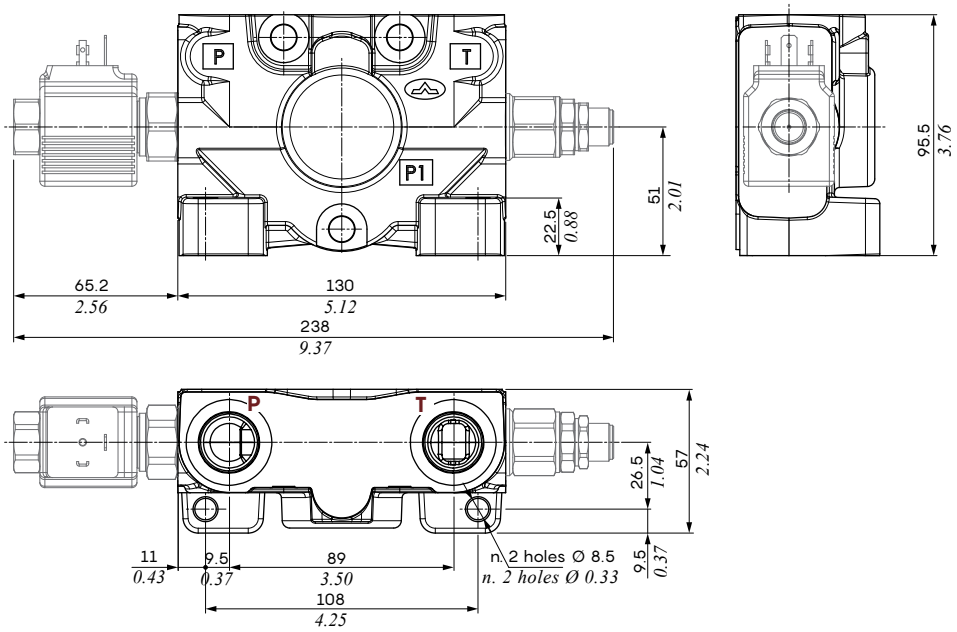
### 8 Section threading

Only specify if it is different from BSP standard (see page 5)

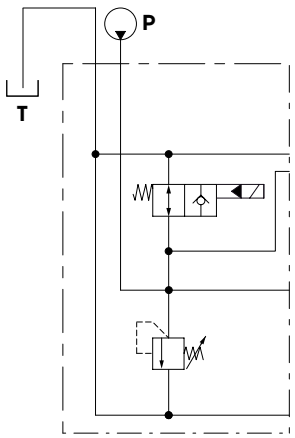
## Dimensional data and hydraulic circuit

### Inlet section for valve with mechanical, proportional hydraulic, ON/OFF electric controls

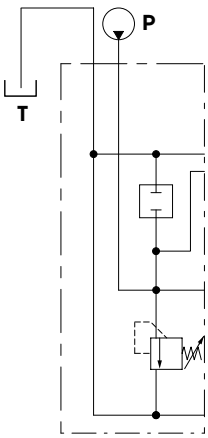
**Type CN/BN-SAE**



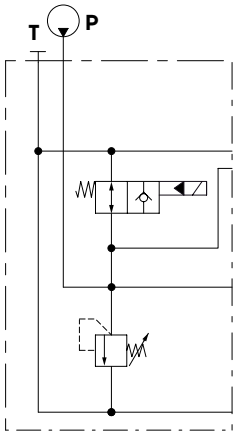

**With unloading valve**




**Without unloading valve, with blanking plug**




**With T port plugged**
for configuration with manifold CS1 or type TA/TL hydraulic circuit



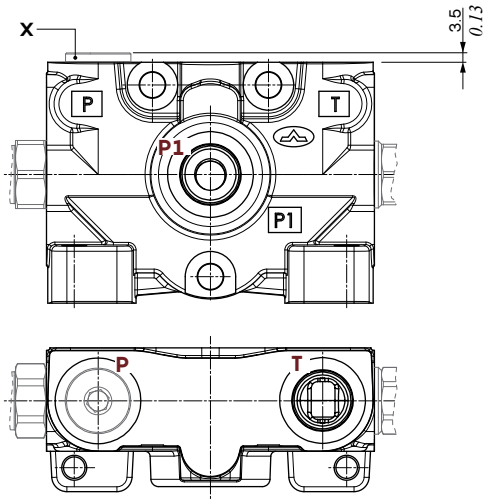

**Wrenches and tightening torques**
Note - For valves wrench and torque see related pages

## Dimensional data and hydraulic circuit

### Inlet section for valve with mechanical, proportional hydraulic, ON/OFF electric controls

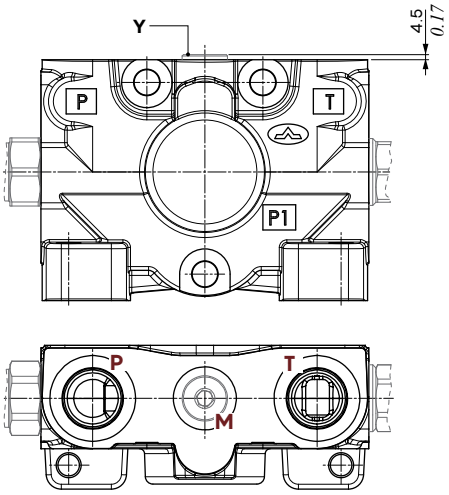
**Type CNL/BNL-SAE**

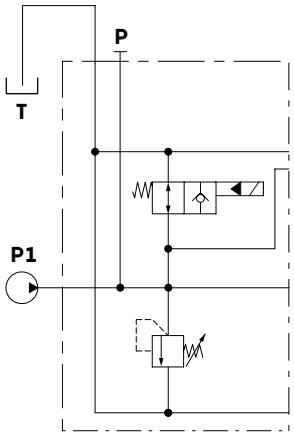
Unlisted dimensions are the same as inlet section type CN

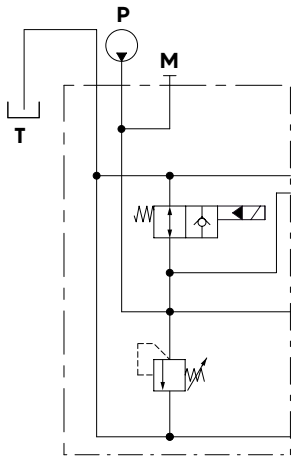



**Type CNM/BNM-SAE**

Unlisted dimensions are the same as inlet section type CN




**Wrenches and tightening torques**
X = allen wrench 8 - 24 Nm *(17.7 lbft)*
Y = allen wrench 6 - 24 Nm *(17.7 lbft)*

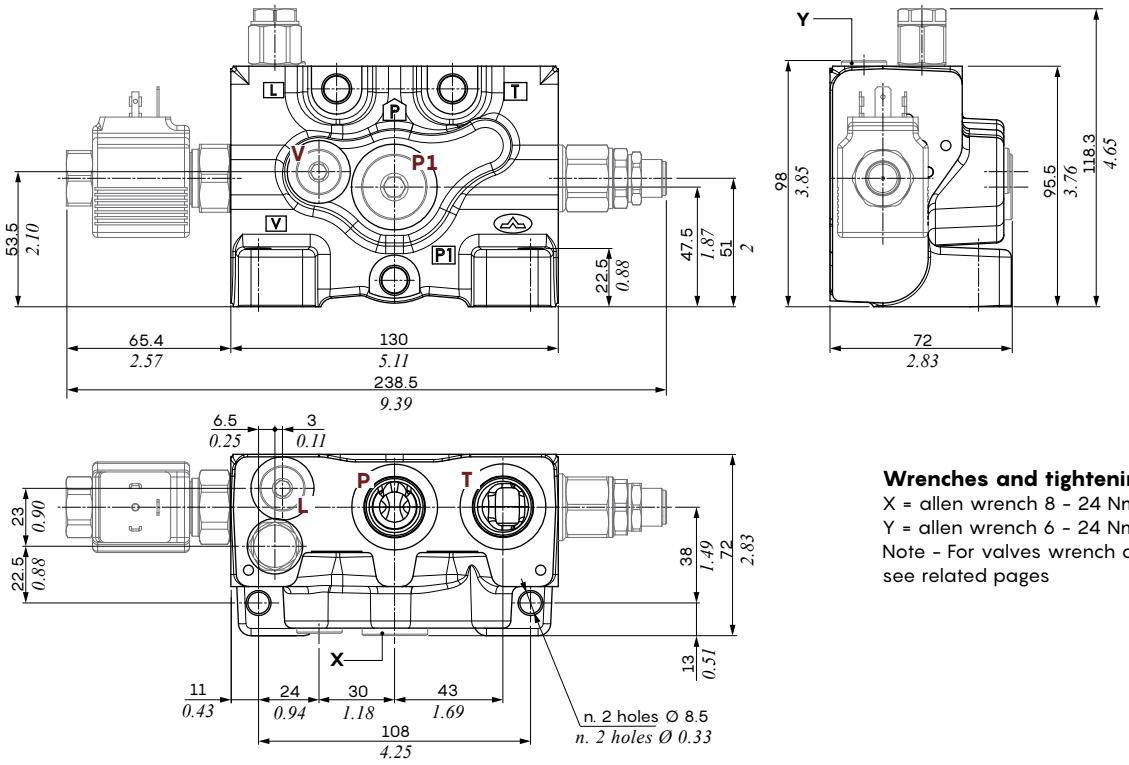
| Configuration ports | | | | |
|---|---|---|---|---|
| **Type** | **P port** | **P1 port** | **T port** | **M port** |
| **CN/BN-SAE** | open | - | open or plugged | - |
| **CNL/BNL-SAE** | plugged | open | open | - |
| **CNM/BNM-SAE** | open | - | open | plugged |

Note - For description of the inlet sections, see page 13

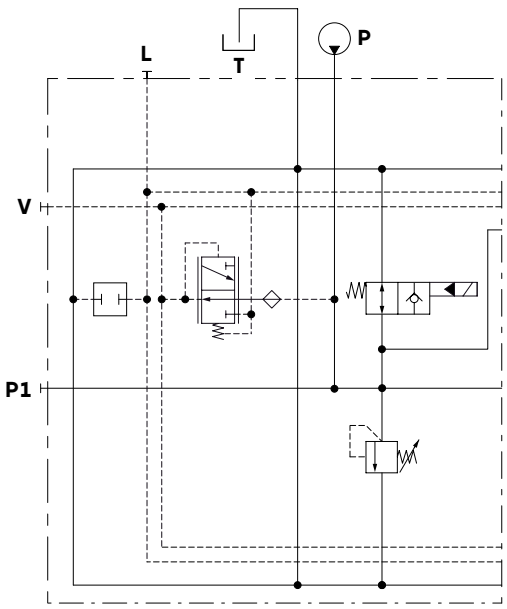
## Dimensional data and hydraulic circuit

### Inlet section for valve with electro-hydraulic/mixed controls

**Type CRAD/BRAD-SAE**




**Wrenches and tightening torques**
X = allen wrench 8 - 24 Nm *(17.7 lbft)*
Y = allen wrench 6 - 24 Nm *(17.7 lbft)*
Note - For valves wrench and torque see related pages



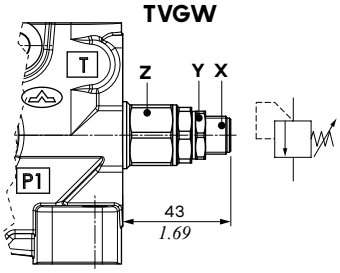

| Configuration ports | | | | |
|---|---|---|---|---|
| **Type** | **P port** | **P1 port** | **T port** | **Pressure reducing valve** |
| **CRA-D-SAE BRA-D-SAE** | open | plugged | open | yes |
| **CPA-D-SAE BPA-D-SAE** | open | plugged | open | plugged |
| **CRA-C-SAE BRA-C-SAE** | plugged | open | open | yes |
| **CPA-C-SAE BPA-C-SAE** | plugged | open | open | plugged |
| **CRA-G-SAE BRA-G-SAE** | open | open | open | yes |

Note - For description of the inlet section, see page 13

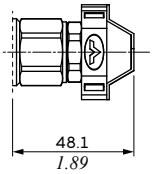
| Configuration ports | | |
|---|---|---|
| **Type** | **V port** | **L port** |
| **TAP(VL)** | plugged | plugged |
| **NOTAP(VL)** | open | open |
| **NOTAP(L)** | plugged | open |
| **NOTAP(V)** | open | plugged |

## Pressure relief valve

### TVGW



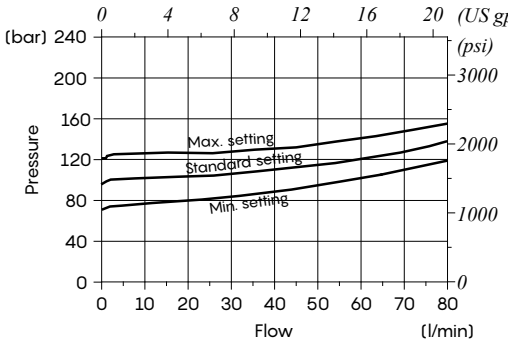

### TVZW



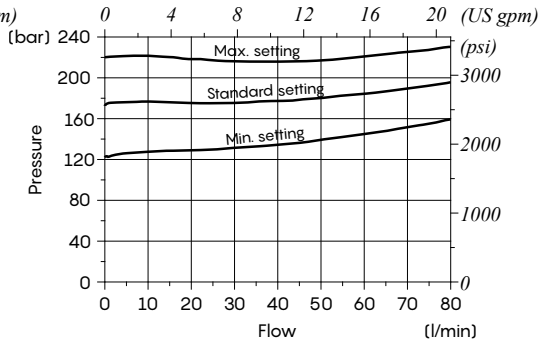

**Legenda**
**TVGW/TGW**: screw adjustment
**TVZW**: with anti-tamper cap
RAL3003 pigmented
(cap code 4COP126301, n. 2 pcs)

**Wrenches and tightening torques**
X = allen wrench 5
Y = wrench 19 - 20 Nm *(14.7 lbft)*
Z = wrench 24 - 50 Nm *(36.8 lbft)*

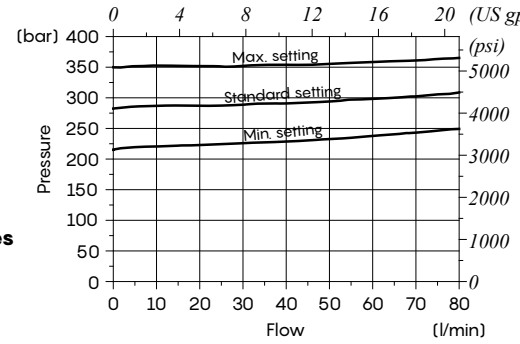
### Setting range type TVGW2



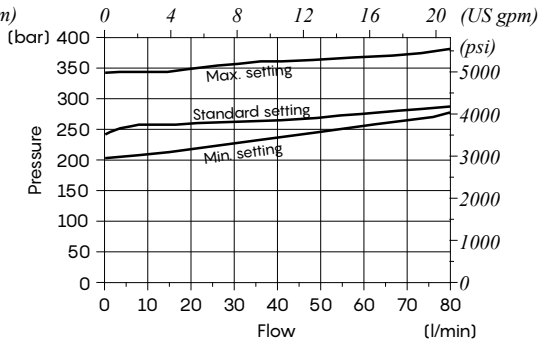

### Setting range type TVGW3




### Setting range type TVGW4

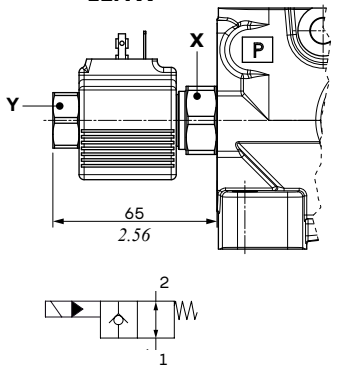



### Setting range type TGW4

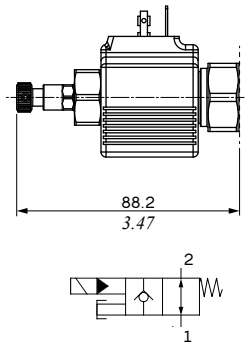



## Solenoid operated unloading valve

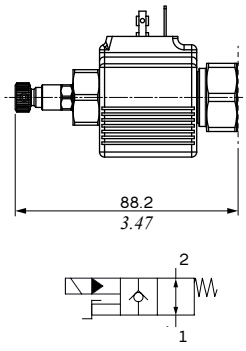
### ELNW



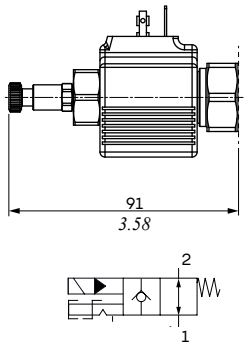

### ELPW




### ELVW




### ELTW

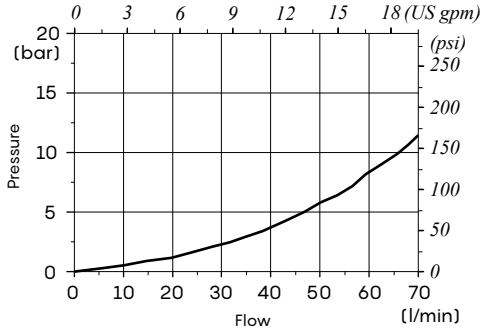



**Legenda**
**ELNW**: without emergency override
**ELPW**: with push-button emergency override
**ELVW**: with screw emergency override
**ELTW**: with "push&twist" emergency override

**Features**
Max. flow.....: 70 l/min *(18.49 US gpm)*
Max. pressure.....: 380 bar *(5500 psi)*
Internal Leakage.....: 0,50 cm³/min at 210 bar
*(0.030 in³/min @ 3050 psi)*
For coil features see **BER** type coil at page 58

**Wrenches and tightening torques**
X = wrench 27 - 50 Nm *(36.8 lbft)*
Y = wrench 22 - 5 Nm *(3.68 lbft)*

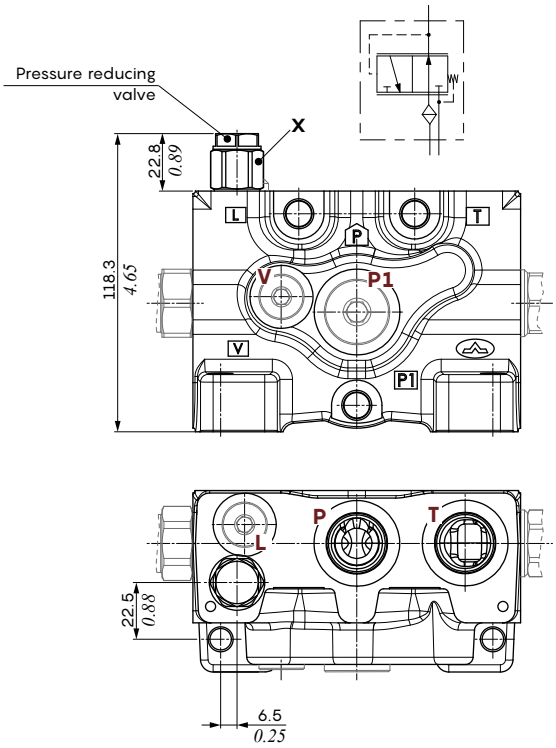
### Pressure drops



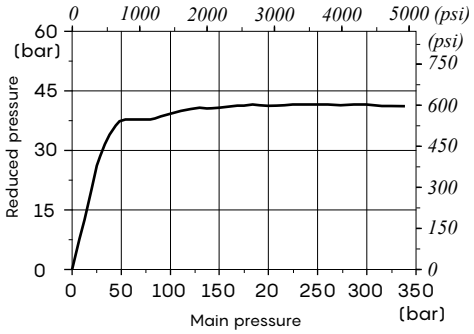
## Inlet valve

### Pressure reducing valve

**Inlet section for valve with electro-hydraulic/mixed controls**




**Pressure reducing valve type R**
**Inlet pressure vs. reduced pressure**

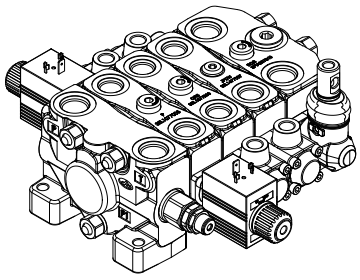



**Wrenches and tightening torques**
X = wrench 19 - 42 Nm *(31 lbft)*

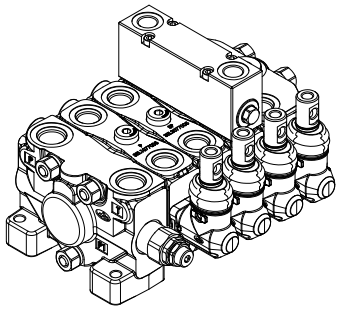
**Features**
Max. inlet pressure.....: 380 bar *(5500 psi)*
Reduced pressure range.....: 30-45 bar *(435-650 psi)*
Max. back pressure.....: 25 bar *(360 psi)*
Max. flow.....: 4 l/min *(1.05 psi)*
Internal leakage.....: max 20 $cm^3$/min at 100 bar *(1.22 $in^3$/min @ 1450 psi)*

## Parts ordering codes

### For valve with mechanical, proportional hydraulic, ON/OFF electric controls

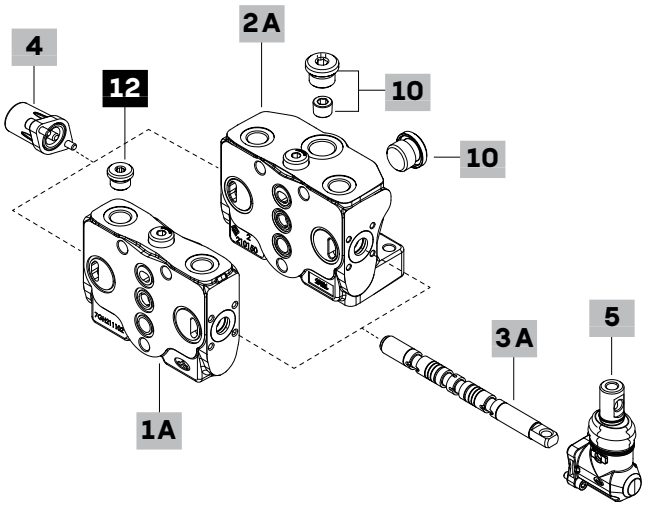


Standard configuration



Configuration with secondary aux valve block

### Standard section with mechanical control:




**Working section**

SDS100 / Q – 401 – 8 L – SAE

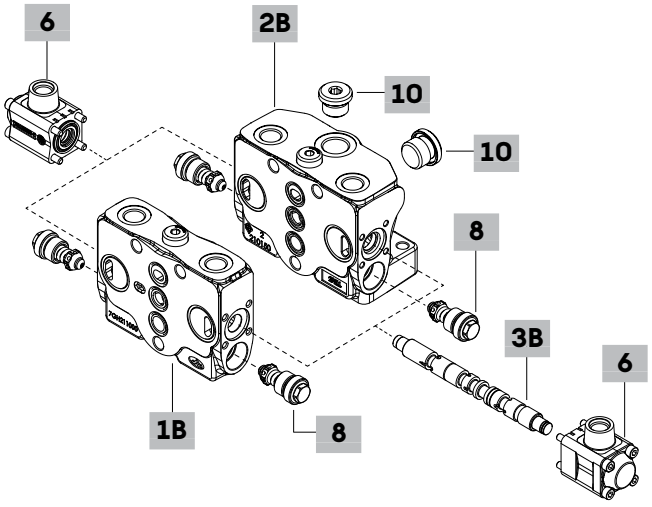
1A 3A 4 5 11

**Outlet working section**

SDS100/RQ – 101 – 8 L – AEK – SAE

2A 3A 4 5 10 11

### Standard section with prop. hydraulic control:




**Working section**

Valve setting (bar): A.....B port

SDS100/P – I112 – 8IM . U100U100 – SAE

1B 3B 6 8 11

**Outlet working section**

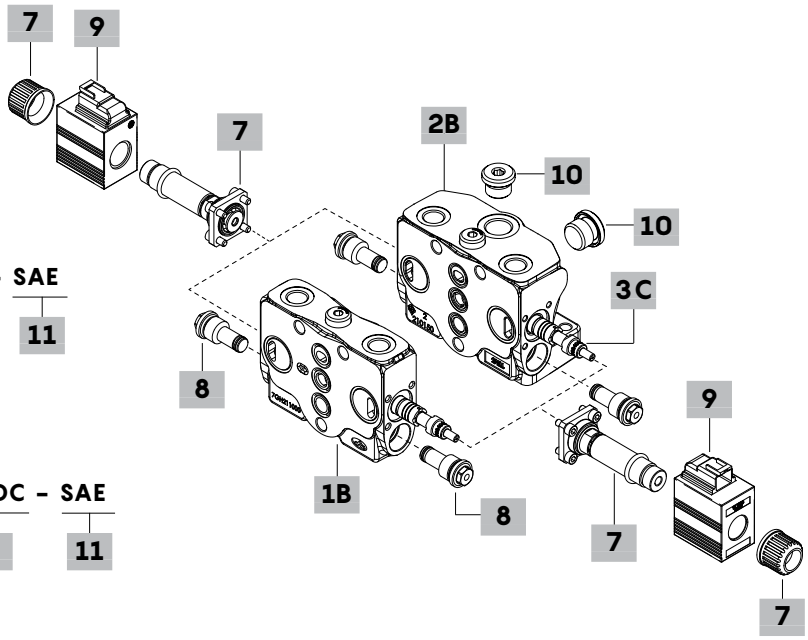
SDS100/RP – I112 – 8IM . UTUT – F – SAE

2B 3B 6 8 10 11

## Parts ordering codes

**For valve with mechanical, proportional hydraulic, ON/OFF electric controls**

**Standard section with ON/OFF electric control:**



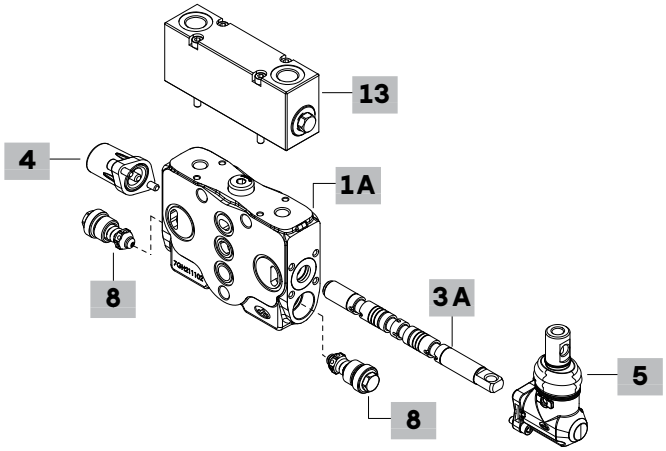

**Working section**

| SDS100 / P | – S102 | – 8ES3 . UTUT | – 12VDC | – SAE |
|---|---|---|---|---|
| 1B | 3C | 7 8 | 9 | 11 |

**Outlet working section**

| SDS100/RP | – S102 | – 8ES3 . UTUT | – F | – 12VDC | – SAE |
|---|---|---|---|---|---|
| 2B | 3C | 7 8 | 10 | 9 | 11 |

**Section with secondary aux valve block arrangement, mechanical control:**




**Working section**

| SDS100 / PU | – 101 | – 8 | L . UTUT . BP3A | – SAE |
|---|---|---|---|---|
| 1A | 3A | 4 5 8 | 13 | 11 |

## Parts ordering codes

### For valve with mechanical, proportional hydraulic, ON/OFF electric controls

Unless otherwise specified, the working section are intended for valve with standard left inlet and right inlet.

### 1A Working section* page 28

**For mechanical control**

Without port valve arrangement:

TYPE: **SDS100/Q-SAE8** CODE: 5EL1077010
DESCRIPTION: For parallel circuit

TYPE: **SDS100/Q-SAE6** CODE: 5EL1078010
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/SQ-SAE8** CODE: 5EL3077010
DESCRIPTION: For series/parallel-series circuits

TYPE: **SDS100/QR-SAE8** CODE: 5EL1577090
DESCRIPTION: For series/parallel-series circuits in combination with outlet working sections type **RQS** or **RPS**

TYPE: **SDS100/Q5-SAE8** CODE: 5EL1077210
DESCRIPTION: Type Q for floating circuit. Only for standard left inlet

With port valve arrangement:

TYPE: **SDS100/P-SAE8** CODE: 5EL1077005
DESCRIPTION: For parallel circuit

TYPE: **SDS100/P-SAE6** CODE: 5EL1078000
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/PU-SAE8** CODE: 5EL1077040
DESCRIPTION: Type P, with secondary aux valve block arrangement

TYPE: **SDS100/SP-SAE8** CODE: 5EL3077005
DESCRIPTION: For series/parallel-series circuits

TYPE: **SDS100/PR-SAE8** CODE: 5EL1577096
DESCRIPTION: For series/parallel-series circuits in combination with outlet working sections type **RQS** or **RPS**

TYPE: **SDS100/P5-SAE8** CODE: 5EL1077200
DESCRIPTION: Type P for floating circuit. Only for standard left inlet

TYPE: **SDS100/P5-SAE6** CODE: 5EL1078200
DESCRIPTION: Type P for floating circuit. Only for standard left inlet with SAE6 ports

### 1B Working section* page 28

**For proportional hydraulic and ON/OFF electric controls**

Without port valve arrangement:

TYPE: **SDS100/Q-(IM-ES)-SAE8** CODE: 5EL107701A
DESCRIPTION: For parallel circuit

TYPE: **SDS100/Q-(IM-ES)-SAE6** CODE: 5EL1078010A
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/SQ-(IM-ES)-SAE8** CODE: 5EL307701A
DESCRIPTION: For series/parallel-series circuits

TYPE: **SDS100/QR-(IM-ES)-SAE8** CODE: 5EL1577090A
DESCRIPTION: For series/parallel-series circuits in combination with outlet working sections type **RQS** or **RPS**

TYPE: **SDS100/Q5-(IM-ES)-SAE8** CODE: 5EL107721A
DESCRIPTION: Type Q for floating circuit. Only for standard left inlet

TYPE: **SDS100/SQ5-(IM)-SAE8** CODE: 5EL307721A
DESCRIPTION: Type SQ for floating circuit. Only for standard left inlet

With port valve arrangement:

TYPE: **SDS100/P-(IM-ES)-SAE8** CODE: 5EL1077005A
DESCRIPTION: For parallel circuit

TYPE: **SDS100/P-(IM-ES)-SAE6** CODE: 5EL1078000A
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/SP-(IM-ES)-SAE8** CODE: 5EL307700A
DESCRIPTION: For series/parallel-series circuits

TYPE: **SDS100/PR-(IM-ES)-SAE8** CODE: 5EL1577096A
DESCRIPTION: For series/parallel-series circuits in combination with outlet working sections type **RQS** or **RPS**

### 1B Working section* page 28

.....continuation

**For proportional hydraulic and ON/OFF electric controls**

With port valve arrangement:

TYPE: **SDS100/P5-(IM-ES)-SAE8** CODE: 5EL1077200A
DESCRIPTION: Type P for floating circuit. Only for standard left inlet

TYPE: **SDS100/P5-(IM-ES)-SAE6** CODE: 5EL1078220A
DESCRIPTION: Type P for floating circuit. Only for standard left inlet with SAE6 ports

TYPE: **SDS100/SP5-(IM)-SAE8** CODE: 5EL307720A
DESCRIPTION: Type SP for floating circuit. Only for standard left inlet

### 2A Outlet working section* page 30

**For mechanical control**

Without port valve arrangement:

TYPE: **SDS100/RQ-SAE8** CODE: 5FIA207710
DESCRIPTION: For parallel circuit

TYPE: **SDS100/RQ-SAE6** CODE: 5FIA207910
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/RQS-SAE8** CODE: 5FIA207719
DESCRIPTION: For series/parallel-series circuits. Requires **QR** or **PR** section upstream

TYPE: **SDS100/RQ5-SAE8** CODE: 5FIA207715
DESCRIPTION: Type RQ for floating circuit. Only for standard left inlet

With port valve arrangement:

TYPE: **SDS100/RP-SAE8** CODE: 5FIA207700
DESCRIPTION: For parallel circuit

TYPE: **SDS100/RP-SAE6** CODE: 5FIA207812
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/RPS-SAE8** CODE: 5FIA207709
DESCRIPTION: For series/parallel-series circuits. Requires **QR** or **PR** section upstream

TYPE: **SDS100/RP5-SAE8** CODE: 5FIA207713
DESCRIPTION: Type RP for floating circuit. Only for standard left inlet

TYPE: **SDS100/RP5-SAE6** CODE: 5FIA207813
DESCRIPTION: Type RP for floating circuit, with SAE6 ports. Only for standard left inlet

### 2B Outlet working section* page 30

**For proportional hydraulic and ON/OFF electric controls**

Without port valve arrangement:

TYPE: **SDS100/RQ-(IM-ES)-SAE8** CODE: 5FIA20771A
DESCRIPTION: For parallel circuit

TYPE: **SDS100/RQ-(IM-ES)-SAE6** CODE: 5FIA207910A
DESCRIPTION: For parallel circuit with SAE6 ports

TYPE: **SDS100/RQS-(IM-ES)-SAE8** CODE: 5FIA207719A
DESCRIPTION: For series/parallel-series circuits. Requires **QR** or **PR** section upstream

TYPE: **SDS100/RQ5-(IM-ES)-SAE8** CODE: 5FIA207715A
DESCRIPTION: Type RQ for floating circuit. Only for standard left inlet

With port valve arrangement:

TYPE: **SDS100/RP-(IM-ES)-SAE8** CODE: 5FIA20770A
DESCRIPTION: For parallel circuit

TYPE: **SDS100/RPS-(IM-ES)-SAE8** CODE: 5FIA207709A
DESCRIPTION: For series/parallel-series circuits. Requires **QR** or **PR** section upstream

TYPE: **SDS100/RP5-(IM-ES)-SAE8** CODE: 5FIA207705A
DESCRIPTION: Type RP for floating circuit. Only for standard left inlet

Note (*) - Codes are referred to **UN-UNF** thread

## Parts ordering codes

### For valve with mechanical, proportional hydraulic, ON/OFF electric controls

#### 3A Spool for mechanical control page 32

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| Double acting with A and B closed in neutral position: | | |
| **109** | 3CU6210202 | 60 l/min *(16 US gpm)* flow |
| **103** | 3CU6210160 | 50 l/min *(13.2 US gpm)* flow |
| **101** | 3CU6210100 | 40 l/min *(10.5 US gpm)* flow |
| **102** | 3CU6210110 | 20 l/min *(5.3 US gpm)* flow |
| **107** | 3CU6210200 | 15 l/min *(3.96 US gpm)* flow |
| **1S01** | 3CU6211100 | For seres circuit, 20÷40 l/min *(5.3÷10.5 US gpm)* flow |
| **1S02** | 3CU6212100 | For seres circuit, 40÷60 l/min *(10.5÷16 US gpm)* flow |
| Double acting with A and B closed in neutral position, regenerative: | | |
| **801** | 3CU6261001 | Regenerative in pos. 2 with spool in; 40 l/min *(10.5 US gpm)* flow |
| **802** | 3CU6261002 | Regenerative in pos. 1, with spool in; 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B to tank in neutral position: | | |
| **201** | 3CU6225130 | 40 l/min *(10.5 US gpm)* flow |
| **2S01** | 3CU6226130 | For seres circuit, 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B partially to tank in neutral position: | | |
| **2H01** | 3CU6225102 | 40 l/min *(10.5 US gpm)* flow |
| **2SH01** | 3CU6226140 | For seres circuit, 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B closed in neutral pos., 4 pos, floating in 4th pos. with spool in; type 13N or 13F positioner and P5 or Q5 working section is required | | |
| **503** | 3CU6242111 | 60 l/min *(16 US gpm)* flow |
| **501** | 3CU6242100 | 40 l/min *(10.5 US gpm)* flow |
| Single acting on A, B plugged: SAE6 or SAE8 plug is required | | |
| **301** | 3CU6231100 | 40 l/min *(10.5 US gpm)* flow |
| Single acting on B, A plugged: SAE6 or SAE8 plug is required | | |
| **401** | 3CU6235100 | 40 l/min *(10.5 US gpm)* flow |

#### 3B Spool for prop. hydraulic control page 32

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| Double acting with A and B closed in neutral position: | | |
| **I117** | 3CU6410117 | 60 l/min *(16 US gpm)* flow |
| **I112** | 3CU6210420 | 50 l/min *(13.2 US gpm)* flow |
| **I118** | 3CU6410118 | 20 l/min *(5.3 US gpm)* flow |
| Double acting with A and B to tank in neutral position: | | |
| **I203** | 3CU6225420 | 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B closed in neutral pos., 4 pos, floating in 4th pos. with spool in; type 13IMS positioner is required | | |
| **I504** | 3CU6442504 | 40 l/min *(10.5 US gpm)* flow |
| Single acting on A, B plugged: SAE6 or SAE8 plug is required | | |
| **I301** | 3CU6431000 | 40 l/min *(10.5 US gpm)* flow |

Note: the respective version I401 with single acting on B is obtained by turning the spool

#### 3C Spool for ON/OFF electric control page 32

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **For without emergency lever control** | | |
| Double acting with A and B closed in neutral position: | | |
| **S102** | 3CU6810102 | 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B closed in neutral position, regenerative: | | |
| **S801** | 3CU6861000 | Regenerative in pos. 1, with spool in; 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B to tank in neutral position: | | |
| **S201** | 3CU6825201 | 40 l/min *(10.5 US gpm)* flow |
| **For with emergency lever control** | | |
| Double acting with A and B closed in neutral position: | | |
| **SHC102** | 3CU6810102HC | 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B to tank in neutral position: | | |
| **SHC201** | 3CU6825201HC | 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B partially to tank in neutral position: | | |
| **SHC2H01** | 3CU68252H1HC | 40 l/min *(10.5 US gpm)* flow |

#### 4 "A" side control kit page 34

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **7FT** | 5V07407000 | With friction and neutral pos. notch |
| **7FTN** | 5V07407010 | As 7FT, friction regulation with spring |
| **8** | 5V08107000 | 3 pos., spring return to neutral pos. |
| **8MC** | 5V08207000 | As type 8, with hard spring type C |
| **8MD** | 5V08307000 | As type 8. with extra-hard spring type D |
| **8F2** | 5V08107100 | Spool stroke limiter on B port |
| **8D** | 5V08107200 | External pin with M6 female thread |
| **8D2** | 5V08107220 | External pin with M8 male thread |
| **8TL** | 5V08107310 | Arrangement for double control |
| **8RM2-12VDC** | 5V08107590 | Electromagnetic detent in pos.2 |
| **8MG3(NO)** | 5V08107660 | With micro in postions 1 and 2, NO contact |
| **8MG3(NC)** | 5V08107662 | With micro in postions 1 and 2, NC contact |
| **8MG1(NO)** | 5V08107670 | With micro in postion 1, NO contact |
| **8MG2(NO)** | 5V08107680 | With micro in postion 2, NO contact |
| **8PP** | 5V08107700 | Proportional pneumatic control |
| **8PNB** | 5V08107718 | ON/OFF waterproof pneumatic control |
| **8EPNB3-12VDC** | 5V08107742 | ON/OFF electropneumatic control |
| **8EPNB3-24VDC** | 5V08107743 | As previous one |
| **8K-12VDC** | 5V08707112 | Solenoid detent in neutral position |
| **8K-24VDC** | 5V08707124 | Solenoid detent in neutral position |
| **9B** | 5V09207000 | Detent in position 1 |
| **10B** | 5V10207000 | Detent in position 2 |
| **11B** | 5V11207000 | Detent in positions 1 and 2 |
| For floating circuit (spool type 501/503) | | |
| **13N** | 5V13307005 | 4 positions, detent in 4th position with spring return to neutral position |
| **13F** | 5V13507000 | 4 positions, spring return to neutral position |

#### 5 "B" side control kit page 40

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **L** | 5LEV107000 | Standard lever box |
| **LSG** | 5LEV107000S | As type L, water-proof type |
| **LF1** | 5LEV107100 | Spool stroke limiter on A port |
| **LSGF1** | 5LEV107100S | As type LF1, water-proof type |
| **LB3** | 5LEV307000 | Open lever in steel and cast iron |
| **SLP** | 5COP107010 | Without lever with dust-proof plate |
| **SLC** | 5COP207000 | Without lever with endcap |
| **TQ** | 5TEL102100 | Flexible cable connection |
| **LCA1-4** | 5CLO207010 | Joystick for 2 section operation: type 1 and 4 configurations |
| **LCA2-3** | 5CLO207011 | As previous one: type 2-3 configurations |

#### 6 Proportional hydraulic control* page 43

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **8IM-SAE** | 5IDR207700 | With upper ports, spring return to neutral position |
| **8IMS-SAE** | 5IDR207720 | As type 8IM, with side ports |
| **8IMF3-SAE** | 5IDR207710 | AS type 8IM, with spool stroke limiter |
| For floating circuit (spool type I504) | | |
| **13IMS-SAE** | 5IDR207750 | With side ports, spring return to neutral position |

#### 7 ON/OFF electric control page 45

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **8ES1-8ES2** | 5CAN08028 | Single acting on A or B port |
| **8ES3** | 5CAN08029 | Double acting |
| **8ES3LHC** | 5CAN08047 | Double acting with spool stroke limiter |

Note (*) - Codes are referred to **UN-UNF** thread

## Parts ordering codes

### For valve with mechanical, proportional hydraulic, ON/OFF electric controls

#### 8 Port valves page 52

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **UT** | XTAP522441 | Valve blanking plug |
| **C** | 5KIT410000 | Anticavitation valve |

**Fixed setting antishock and anticavitation valves:**
setting is referred to 10 l/min *(2.6 US gpm)*
TYPE: **U100** CODE: 5KIT330100
└ setting (bar) └ setting (bar)
SETTING:

| | | |
|---|---|---|
| 25 bar *(363 psi)* | 30 bar *(435 psi)* | 40 bar *(580 psi)* |
| 50 bar *(725 psi)* | 63 bar *(914 psi)* | 80 bar *(1150 psi)* |
| 100 bar *(1450 psi)* | 110 bar *(1590 psi)* | 125 bar *(1800 psi)* |
| 140 bar *(2050 psi)* | 150 bar *(2150 psi)* | 160 bar *(2300 psi)* |
| 175 bar *(2550 psi)* | 190 bar *(2750 psi)* | 200 bar *(2900 psi)* |
| 210 bar *(3050 psi)* | 220 bar *(3190 psi)* | 230 bar *(3350 psi)* |
| 240 bar *(3500 psi)* | 250 bar *(3600 psi)* | 260 bar *(3750 psi)* |
| 270 bar *(3900 psi)* | 280 bar *(4050 psi)* | 290 bar *(4200 psi)* |
| 300 bar *(4350 psi)* | 310 bar *(4500 psi)* | 320 bar *(4650 psi)* |
| 340 bar *(4950 psi)* | 360 bar *(5200 psi)* | 400 bar *(5800 psi)* |
| 420 bar *(6100 psi)* | | |

#### 9 Coil

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **12VDC** | 4SOL412012 | 12VDC, type D12, ISO4400 connector |

For **D12** coils list, see page 58

#### 10 Outlet circuit* page 54

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **F** | 3XTAP826160 | T1 side and T upper ports plugged; require n. 2 SAE10 plugs |
| **TA** | 3XTAP826160 | T side open and T1 side ports plugged; require n. 1 SAE10 plug |
| **TL** | 3XTAP826160 | T1 side open and T upper ports plugged; require n. 1 SAE10 plug |
| **AE** | 3XTAP826160 +4TAP314010 | Continuation of the pressure line on T upper port (carry-over), require nr. 1 M14x1,5 conic plug on T upper port and n. 1 SAE10 plug on T1 side port |
| **AEK** | 3XTAP826160 +4TAP314010 | Closed center; T1 side and T upper ports plugged, require nr. 1 M14x1,5 conic plug + nr. 1 SAE10 plug on T upper port and nr. 1 SAE10 plug on T side port |

#### 11 Section threading

Only specify if it is different from BSP standard (see page 5).

#### 12 Plug for single acting spool*

| CODE | DESCRIPTION |
|---|---|
| 3XTAP817130 | SAE6 plug |
| 3XTAP822150 | SAE8 plug |

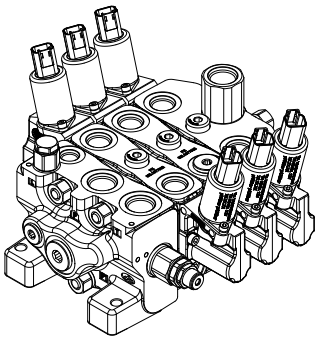
#### 13 Secondary aux valve block* page 53

TYPE: **BP3A-SAE8** CODE: 611007102
DESCRIPTION: Double valve block on A and B ports
TYPE: **BP1A-BP2A-SAE8** CODE: 611007111
DESCRIPTION: Single valve block on A or B ports

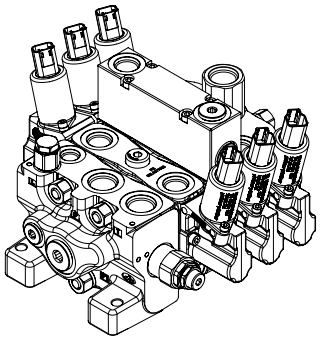
Note (*) - Codes are referred to **UN-UNF** thread

## Parts ordering codes

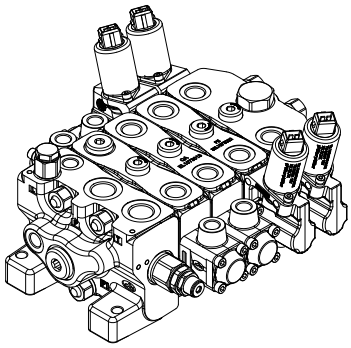
### For valve with electro-hydraulic/mixed controls



Standard configuration



Configuration with secondary aux valve block



Mixed configuration with
cross pilot lines working section

### Standard section with electro-hydraulic control:

**Working section**

Valve setting (bar): A.....B port

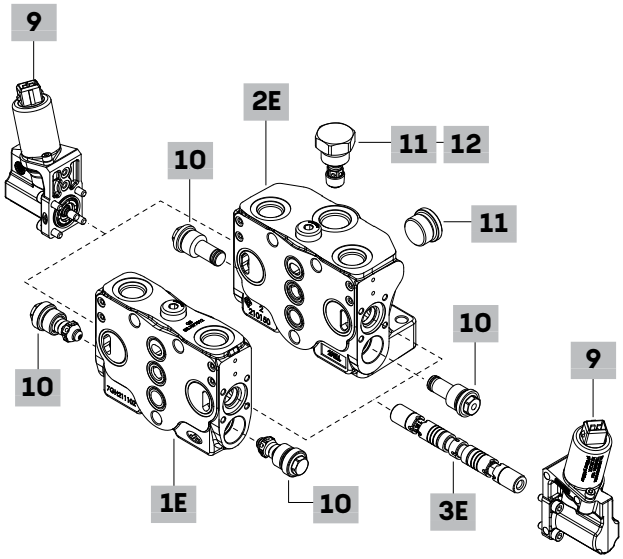
SDS100/PE-ET101-8EB3T.U100U100-12VDC-SAE

1E 3E 9 10 9 13

**Outlet working section**

SDS100/RPE-ET101-8EB3T.UTUT-VRC-F-12VDC-SAE

2E 3E 9 10 12 11 9 13




### Standard section with cross pilot lines, mechanical control:

**Working section**

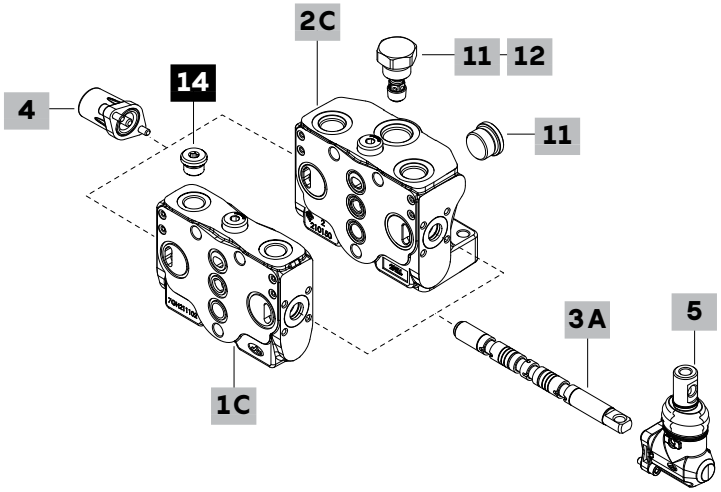
SDS100 / QA - 401 - 8 L - SAE

1C 3A 4 5 13

**Outlet working section**

SDS100/RPA - 101 - 8 L - VRC - F - SAE

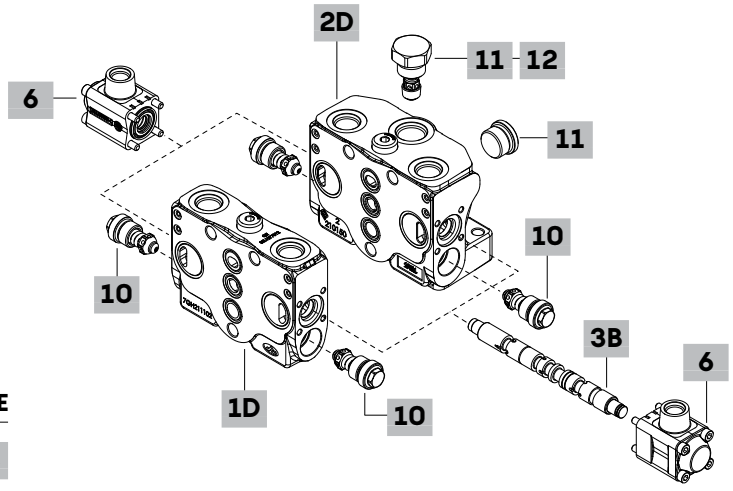
2C 3A 4 5 12 11 13



## Parts ordering codes

### For valve with electro-hydraulic/mixed controls

**Standard section with cross pilot lines, prop. hydraulic control:**




**Working section**

SDS100 / PA - I112 - 8IM . U100U100 - SAE

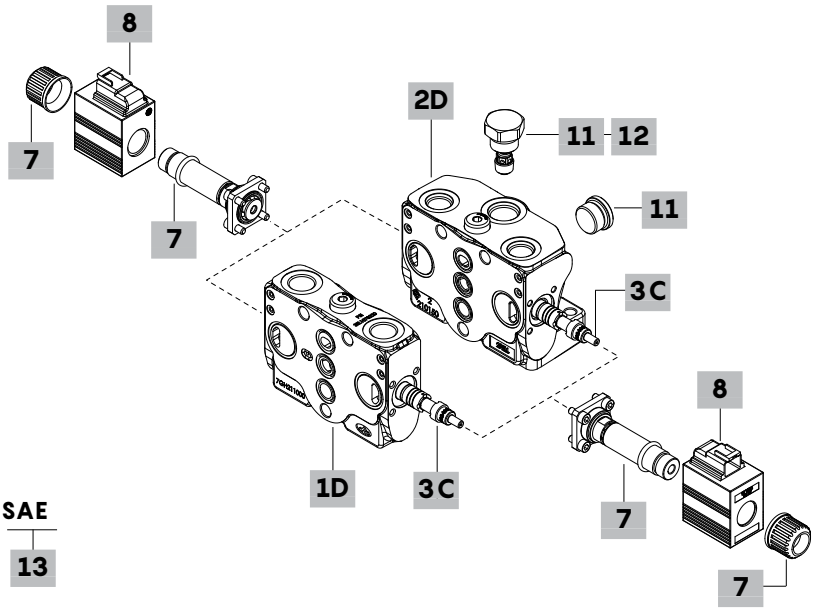
1D 3B 6 10 13

**Outlet working section**

SDS100/RPA-I112-8IM.U100U100-VRC-F-SAE

2D 3B 6 10 12 11 13

**Standard section with cross pilot lines, ON/OFF electric control:**




**Working section**

SDS100 / PA - S102 - 8ES3 - 12VDC - SAE

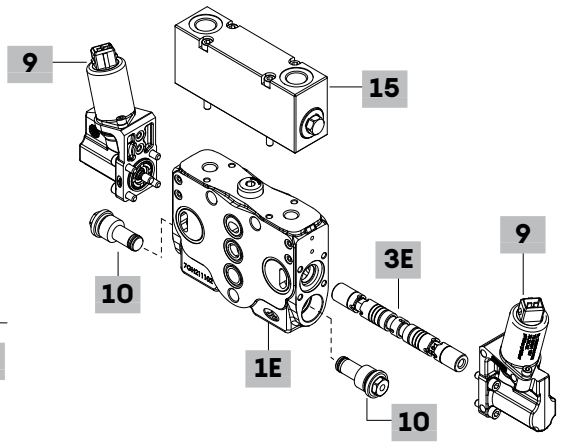
1D 3C 7 8 13

**Outlet working section**

SDS100/RQA-S102-8ES3-VRC-F-12VDC-SAE

2D 3C 7 12 11 8 13

**Section with secondary aux valve block arrangement, electro-hydraulic control:**




**Working section**

SDS100/PE-PU-ET101-8EB3T.UTUT.BP3A-12VDC-SAE

1E 3E 9 10 15 9 13

## Parts ordering codes

### For valve with electro-hydraulic/mixed controls

Unless otherwise specified, the working section are intended for valve with standard left inlet and right inlet.

### 1C Working section with cross pilot lines* page 29

**For mechanical control**

Without port valve arrangement:

TYPE: **SDS100/QA-SAE8** CODE: 5EL1077013
DESCRIPTION: For parallel circuit
TYPE: **SDS100/QA-SAE6** CODE: 5EL1078011
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/SQA-SAE8** CODE: 5EL3077013
DESCRIPTION: For series/parallel-series circuits

With port valve arrangement:

TYPE: **SDS100/PA-SAE8** CODE: 5EL1077003
DESCRIPTION: For parallel circuit
TYPE: **SDS100/PA-SAE6** CODE: 5EL1078012
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/SPA-SAE8** CODE: 5EL3077003
DESCRIPTION: For series/parallel-series circuits
TYPE: **SDS100/P5A-SAE8** CODE: 5EL1077203
DESCRIPTION: Type PA for floating circuit. Only for standard left inlet

### 1D Working section with cross pilot lines* page 29

**For proportional hydraulic and ON/OFF electric controls**

Without port valve arrangement:

TYPE: **SDS100/QA-(IM-ES)-SAE8** CODE: 5EL1077013A
DESCRIPTION: For parallel circuit
TYPE: **SDS100/QA-(IM-ES)-SAE6** CODE: 5EL1078011A
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/SQA-(IM-ES)-SAE8** CODE: 5EL3077013A
DESCRIPTION: For series/parallel-series circuits

With port valve arrangement:

TYPE: **SDS100/PA-(IM-ES)-SAE8** CODE: 5EL1077003A
DESCRIPTION: For parallel circuit
TYPE: **SDS100/PA-(IM-ES)-SAE6** CODE: 5EL1078012A
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/SPA-(IM-ES)-SAE8** CODE: 5EL3077003A
DESCRIPTION: For series/parallel-series circuits

### 1E Working section* page 29

**For electro-hydraulic control**

Without port valve arrangement:

TYPE: **SDS100/QE-SAE8** CODE: 5EL1077012
DESCRIPTION: For parallel circuit
TYPE: **SDS100/QE-SAE6** CODE: 5EL1078013
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/SQE-SAE8** CODE: 5EL3077012
DESCRIPTION: For series/parallel-series circuits
TYPE: **SDS100/Q5E-SAE8** CODE: 5EL1077212
DESCRIPTION: Type Q for floating circuit. Only for standard left inlet

With port valve arrangement:

TYPE: **SDS100/PE-SAE8** CODE: 5EL1077002
DESCRIPTION: For parallel circuit
TYPE: **SDS100/PE-SAE6** CODE: 5EL1078014
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/PE-PU-SAE8** CODE: 5EL1079001
DESCRIPTION: Type P, with secondary aux valve block arrangement
TYPE: **SDS100/SPE-SAE8** CODE: 5EL3077002
DESCRIPTION: For series/parallel-series circuits
TYPE: **SDS100/PRE-SAE6** CODE: 5EL1578001
DESCRIPTION: For series/parallel-series circuits, in combination with outlet working sections type **RQS** or **RPS**, with SAE6 ports
TYPE: **SDS100/P5E-SAE8** CODE: 5EL1077202
DESCRIPTION: Type PE for floating circuit. Only for standard left inlet
TYPE: **SDS100/P5E-SAE6** CODE: 3EL1078201
DESCRIPTION: Type PE for floating circuit. Only for right inlet, with SAE6 ports

### 2C Outlet working sec. with cross pilot lines* page 31

**For mechanical control**

Without port valve arrangement:

TYPE: **SDS100/RQA-SAE8** CODE: 5FIA207714
DESCRIPTION: For parallel circuit

With port valve arrangement:

TYPE: **SDS100/RPA-SAE8** CODE: 5FIA207706
DESCRIPTION: For parallel circuit

### 2D Outlet working sec. with cross pilot lines* page 31

**For proportional hydraulic and ON/OFF electric controls**

Without port valve arrangement:

TYPE: **SDS100/RQA-(IM-ES)-SAE8** CODE: 5FIA207716A
DESCRIPTION: For parallel circuit

With port valve arrangement:

TYPE: **SDS100/RPA-(IM-ES)-SAE8** CODE: 5FIA207706A
DESCRIPTION: For parallel circuit8

### 2E Outlet working section* page 31

**For electro-hydraulic control**

Without port valve arrangement:

TYPE: **SDS100/RQE-SAE** CODE: 5FIA207712
DESCRIPTION: For parallel circuit
TYPE: **SDS100/RQE-SAE6** CODE: 5FIA207814
DESCRIPTION: For parallel circuit with SAE6 ports

With port valve arrangement:

TYPE: **SDS100/RPE-SAE8** CODE: 5FIA207702
DESCRIPTION: For parallel circuit
TYPE: **SDS100/RPE-SAE6** CODE: 5FIA207815
DESCRIPTION: For parallel circuit with SAE6 ports
TYPE: **SDS100/RPSE-SAE8** CODE: 5FIA207708
DESCRIPTION: For series/parallel-series circuits. Requires **QRE** or **PRE** section upstream
TYPE: **SDS100/RP5E-SAE8** CODE: 5FIA207707
DESCRIPTION: Type RPE for floating circuit. Only for standard left inlet.

### 3A Spool for mechanical control

For available spool list, see page 22

### 3B Spool for prop. hydraulic control

For available spool list, see page 22

### 3C Spool for ON/OFF electric control

For available spool list, see page 22

Note (*) - Codes are referred to **UN-UNF** thread

## Parts ordering codes

## For valve with electro-hydraulic/mixed controls

### 3E Spool for electro-hydraulic control page 32

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| Double acting with A and B closed in neutral position: | | |
| **ET103** | 3CU67IE103 | 60 l/min *(16 US gpm)* flow |
| **ET101** | 3CU67IE101 | 40 l/min *(10.5 US gpm)* flow |
| **ET102** | 3CU67IE102 | 20 l/min *(5.3 US gpm)* flow |
| **ET1S01** | 3CU6712000 | For seres circuit, 20÷40 l/min *(5.3÷10.5 US gpm)* flow |
| **ET1S02** | 3CU6712002 | For seres circuit, 40÷60 l/min *(10.5÷16 US gpm)* flow |
| **ET801** | 3CU676E801 | Regenerative in pos. 2 with spool in; 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B to tank in neutral position: | | |
| **ET204** | 3CU672E204 | 60 l/min *(16 US gpm)* flow |
| **ET201** | 3CU672E201 | 40 l/min *(10.5 US gpm)* flow |
| **ET203** | 3CU672E203 | 20 l/min *(5.3 US gpm)* flow |
| Double acting with A and B partially to tank in neutral position: | | |
| **ET2H03** | 3CU672E211 | 60 l/min *(16 US gpm)* flow |
| **ET2H01** | 3CU672E209 | 40 l/min *(10.5 US gpm)* flow |
| Double acting with A and B closed in neutral pos., 4 pos, floating in 4th pos. with spool in; type 13EB positioner and P5E or Q5E working section is required | | |
| **ET503** | 3CU674E503 | 60 l/min *(16 US gpm)* flow |
| **ET501** | 3CU674E501 | 30 l/min *(7.92 US gpm)* flow |
| **ET502** | 3CU674E502 | 20 l/min *(5.3 US gpm)* flow |
| Single acting on A, B plugged: SAE6 or SAE8 plug is required | | |
| **ET303** | 3CU673E303 | 60 l/min *(16 US gpm)* flow |
| **ET301** | 3CU673E301 | 40 l/min *(10.5 US gpm)* flow |
| **ET302** | 3CU673E302 | 20 l/min *(5.3 US gpm)* flow |

Note - The respective versions ET401, ET402, ET403 with single acting on B is obtained by turning the spool

### 4 "A" side control kit

For available A side control list, see page 22

### 5 "B" side control kit

For available B side control list, see page 22

### 6 Proportional hydraulic control*

For available hydraulic control list, see page 22

### 7 ON/OFF electric control

For available hydraulic control list, see page 22

### 8 Coil

For available coil list, see page 58

### 14 Plug for single acting spool*

| CODE | DESCRIPTION |
|---|---|
| 3XTAP817130 | SAE6 plug |
| 3XTAP822150 | SAE8 plug |

### 15 Secondary aux valve block*

For available valve list, see page 23

### 9 Electro-hydraulic control page 46

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| Without lever control: | | |
| **8EB3T-12VDC** | 5IDR904214 | With AMP connector, 12VDC |
| **8EB3T-24VDC** | 5IDR904222 | As previous one, 24VDC |
| **8EB34T-12VDC** | 5IDR904236 | With Deutsch connector, 12VDC |
| **8EB34T-24VDC** | 5IDR904237 | As previous one, 24VDC |
| **8EB3TF3-12VDC** | 5IDR904217 | With AMP conn., spool stroke limiter 12VDC |
| **8EB3TF3-24VDC** | 5IDR904224 | As previous one, 24VDC |
| **8EB34TF3-12VDC** | 5IDR904235 | With Deutsch conn., spool stroke limiter, 12VDC |
| **8EB34TF3-24VDC** | 5IDR904237 | As previous one, 24VDC |
| Without lever control, with spool position sensor: | | |
| **8EB3TSPSD-12VDC** | 5IDR904233 | With AMP conn. and digital sensor 12VDC |
| **8EB3TSPSD-24VDC** | 5IDR904226 | As previous one, 24VDC |
| Without lever control: for floating circuit (spool type ET5..): | | |
| **13EB3T-12VDC** | 5IDR917729 | With AMP connector, 12VDC |
| **13EB3T-24VDC** | 5IDR917730 | As previous one, 24VDC |
| **13EB34T-12VDC** | 5IDR904236 | With Deutsch connector, 12VDC |
| **13EB34T-24VDC** | 5IDR917734 | As previous one, 24VDC |
| With lever control: | | |
| **8EB3TLH-12VDC** | 5IDR904215A | With AMP connector, 12VDC |
| **8EB3TLH-24VDC** | 5IDR904228A | As previous one, 24VDC |
| **8EB34TLH-12VDC** | 5IDR904219A | With Deutsch connector, 12VDC |
| **8EB34TLH-24VDC** | 5IDR904239A | As previous one, 24VDC |
| **8EB3TLHF3-12VDC** | 5IDR904229A | With AMP conn., spool stroke limiter 12VDC |
| **8EB3TLHF3-24VDC** | 5IDR904218A | As previous one, 24VDC |
| **8EB34TLHF3-12VDC** | 5IDR904240A | With Deutsch conn., spool stroke limiter, 12VDC |
| **8EB34TLHF3-24VDC** | 5IDR904241A | As previous one, 24VDC |
| With lever control and spool position sensor: | | |
| **8EB3TLHSPSD-12VDC** | 5IDR904234A | With AMP conn. and digital sensor 12VDC |
| **8EB3TLHSPSD-24VDC** | 5IDR904232A | As previous one, 24VDC |
| **8EB3TLHF3SPSL-0.5(A)-4.5(B)-12VDC** | 5IDR904259A | With AMP conn., spool stroke limiter and analogic sensor, 12VDC |
| **8EB3TLHF3SPSL-0.5(A)-4.5(B)-24VDC** | 5IDR904247A | As previous one, 24VDC |
| With lever control: for floating circuit (spool type ET5..): | | |
| **13EB3TLH-12VDC** | 5IDR917728A | With AMP connector, 12VDC |
| **13EB3TLH-24VDC** | 5IDR917725A | As previous one, 24VDC |
| **13EB34TLH-12VDC** | 5IDR917731A | With Deutsch connector, 12VDC |
| **13EB34TLH-24VDC** | 5IDR917732A | As previous one, 24VDC |

### 10 Port valves

For available aux valve list, see page 23

### 11 Outlet circuit* page 55

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **F** | 3XTAP826160 | T1 side and T upper ports plugged; require n. 2 SAE10 plugs |

### 12 Back pressure valve* page 55

| TYPE | CODE | DESCRIPTION |
|---|---|---|
| **VRC-SAE10** | 5GIU511380 | Back pressure valve, 12 bar *(174 psi)* |
| **VRC(21)-SAE10** | 5GIU511381 | Back pressure valve, 21 bar *(304.5 psi)* |
| **VRE-SAE10** | 5GIU532610 | Back pressure valve, 8 bar *(174 psi)* Continuation of the pressure line (carry-over) |

### 13 Section threading

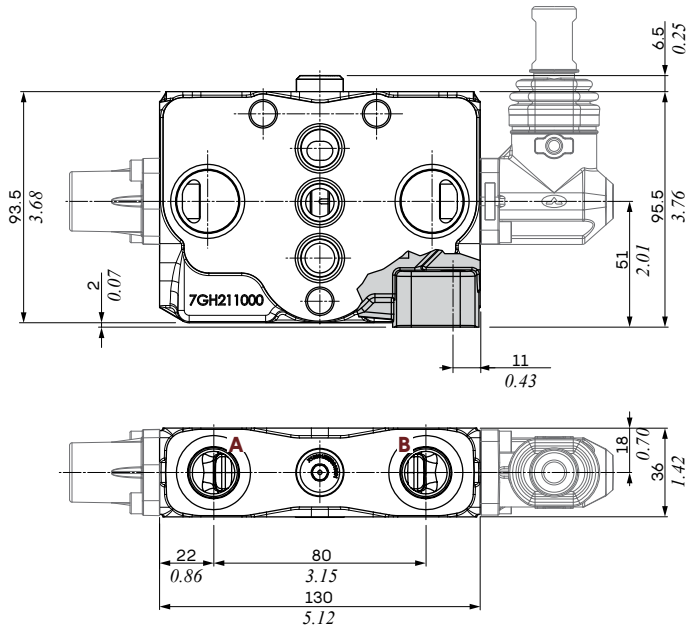
Only specify if it is different from BSP standard (see page 5).

Note (*) - Codes are referred to **UN-UNF** thread

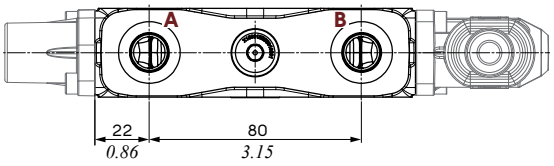
## Dimensional data and hydraulic circuit

### Working section for mechanical, proportional hydraulic, ON/OFF electric controls

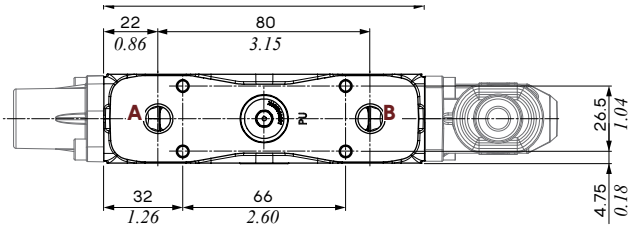
**Type Q/P-SAE**
(counterbore side)



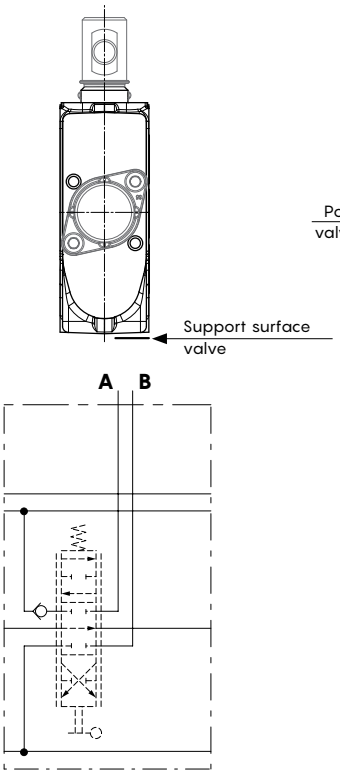

**With SAE6 ports**



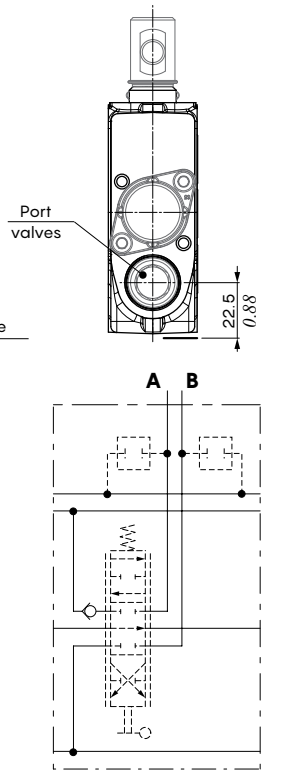

**Type P with secondary aux valve block arrangement(*)**



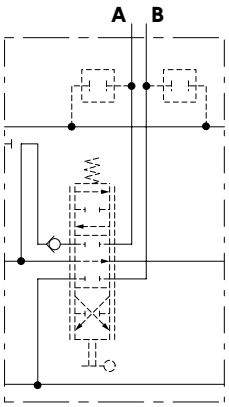

**Type Q/Q5-SAE**
Without port valves arrangement
(type Q5 for floating circuit)



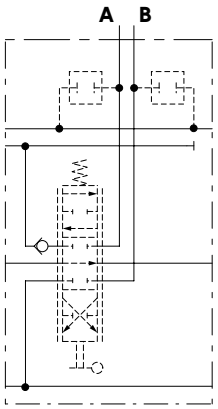

**Type P/P5-SAE**
With port valves arrangement
(type P5 for floating circuit)




**Type SQ/SP-SAE**
As Q/P, for series or tandem circuits




**Type QR/PR-SAE**
For series or tandem circuits on penultimate section



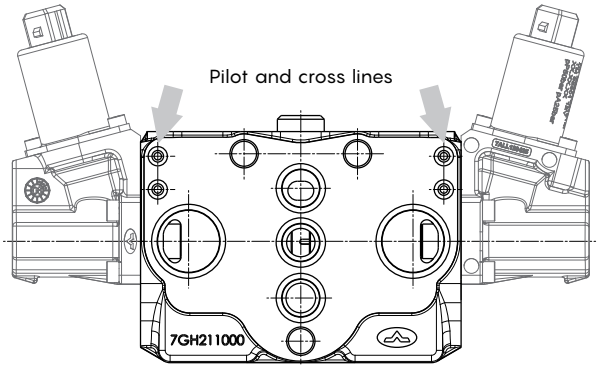

Note (*) - For dimensions and circuits of valve block, see page 53

## Dimensional data and hydraulic circuit

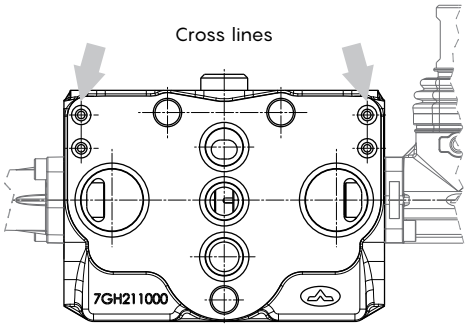
### Working section for electro-hydraulic/mixed controls

The dimensions of electrohydraulic control section, are the same as Q and P mechanical control section

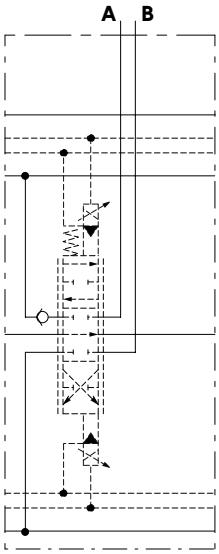
**Type QE/PE-SAE**
(counterbore side)



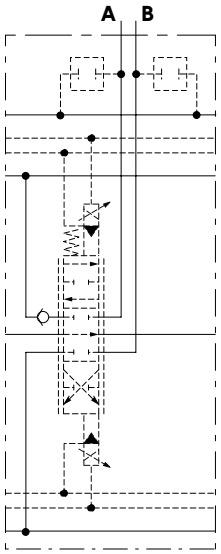

**With cross lines, type QA/PA-SAE and mechanical control**
(counterbore side)



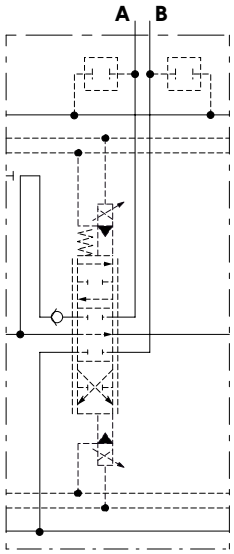

**Type QE/Q5E-SAE**
Without port valves arrangement
(type Q5E for floating circuit)



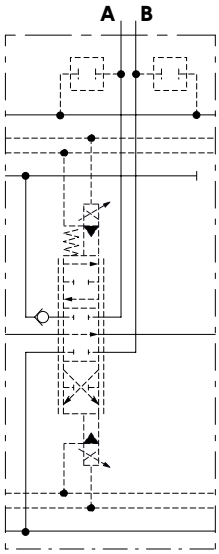

**Type PE/P5E-SAE**
With port valves arrangement
(type P5E for floating circuit)




**Type SQE/SPE-SAE**
As QE/PE, for series or tandem circuits



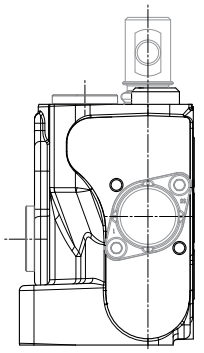

**Type PRE-SAE**
For series or tandem circuits on penultimate section

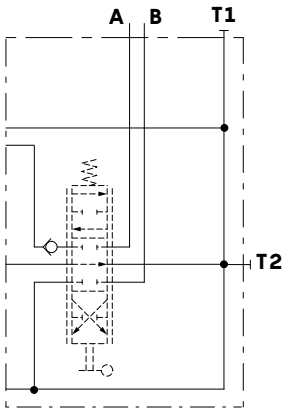


## Dimensional data and hydraulic circuit

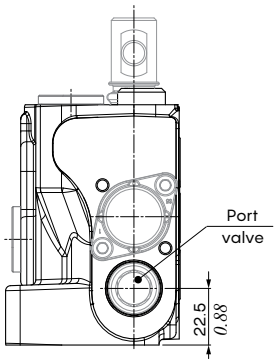
### Outlet working section for mechanical, proportional hydraulic, ON/OFF electric controls

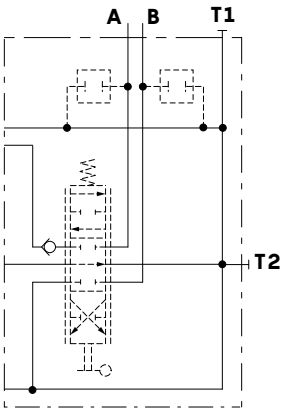
**Type RQ/RQ5-SAE**
Without port valves arrangement
(type RQ5 for floating circuit)



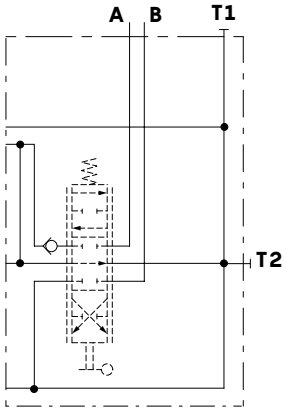



**Type RP/RP5-SAE**
With port valves arrangement
(type RP5 for floating circuit)

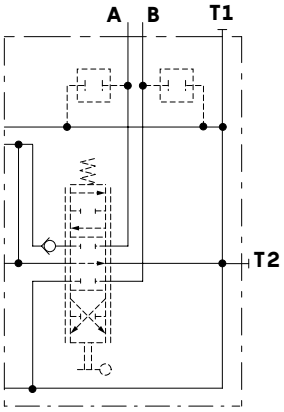


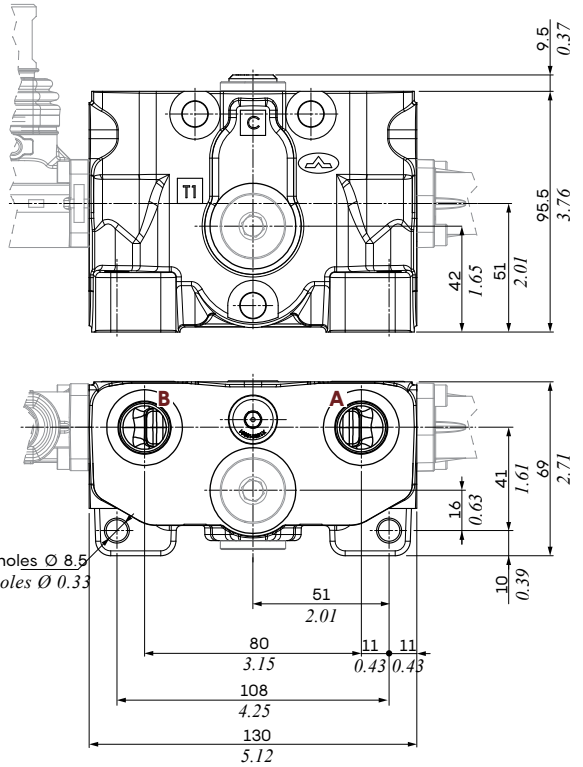

**Type RQS-SAE**
As RQ, for series or tandem circuits



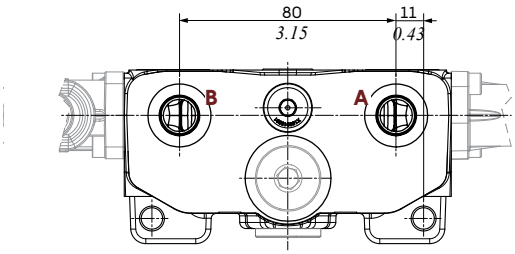

**Type RPS-SAE**
As RP, for series or tandem circuits




**Type RQ/RP-SAE**



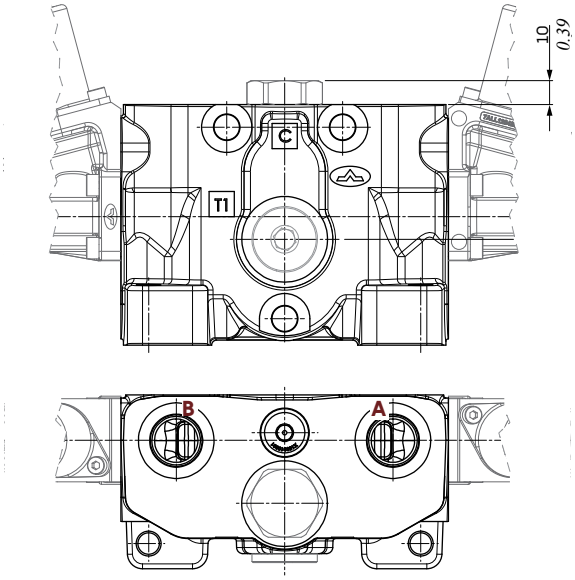

**With SAE6 ports**



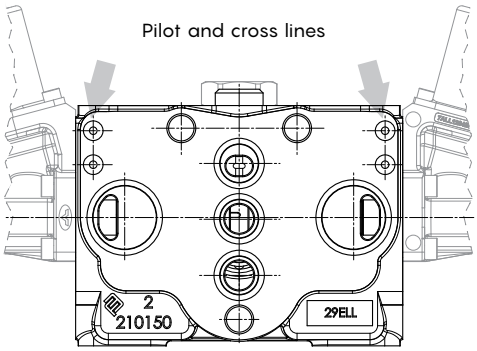
## Dimensional data and hydraulic circuit

### Outlet working section for electro-hydraulic/mixed controls

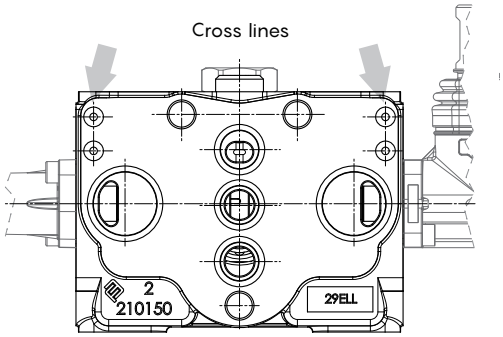
**Type RQE/RPE/RP5E-SAE**
Unlisted dimensions are the same as inlet section type RQ/RP
(type RP5E for floating circuit)



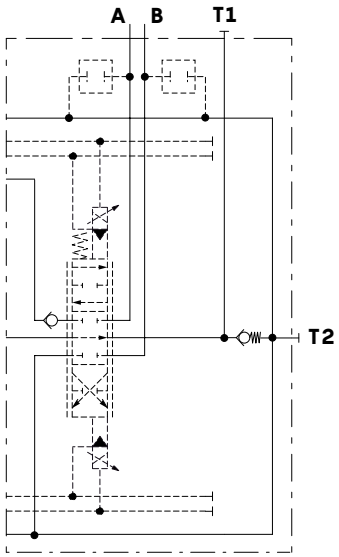

**Type RQE/RPE-SAE**
(counterbore side)



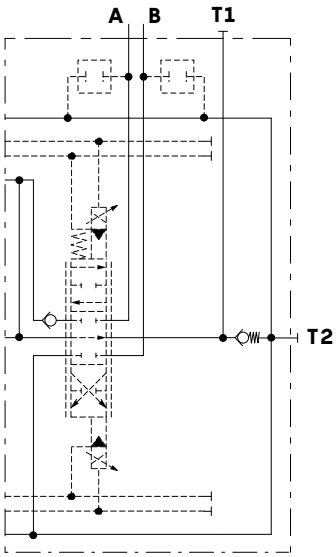

**With cross lines, type RQA/RPA-SAE and mechanical control**
(counterbore side)



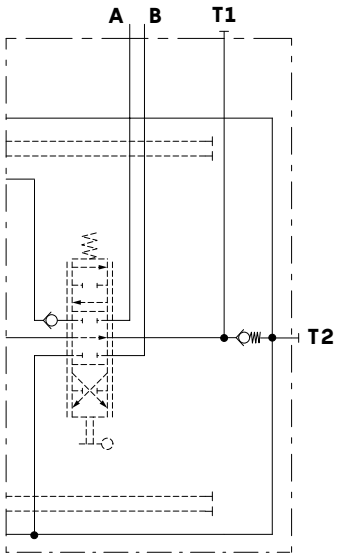

**Type RQE/RPE/RP5E-SAE**
As RQ/RP/RP5
(type RP5E for floating circuit)




**Type RPSE-SAE**
As RPE, for series or tandem circuits



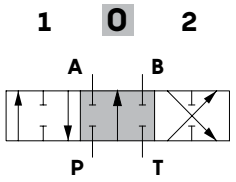

**Type RQA/RPA-SAE**
As RQ/RP,
for cross lines circuits



## Spool

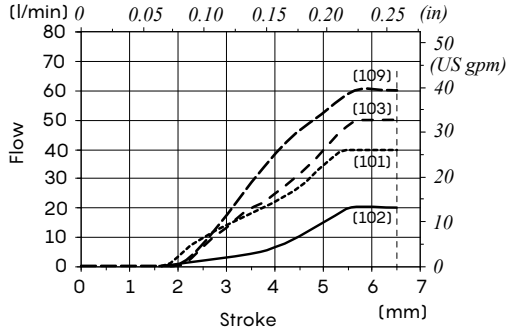
### Type 1-I1-ET1
**(101/102/103/107/109/I112/I117/I118 /S102/SHC102/ET101/ET102/ET103)**

A and B closed in neutral position




**Stroke**
**(101/102/103/107/109/I112/I117 /I118/ET101/ET102/ET103)**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*
**(S102)**
position 1: + 3,3 mm *(+ 0.13 in)*
position 2: - 3,3 mm *(- 0.13 in)*
**(SHC102)**
position 1: + 3,4 mm *(+ 0.14 in)*
position 2: - 3,4 mm *(- 0.14 in)*

### Metering spool type 1
**P→A(B)→B(A)→T**




**Spool type 107**
$Q_{in}$ = 15 l/min *(3.96 US gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*

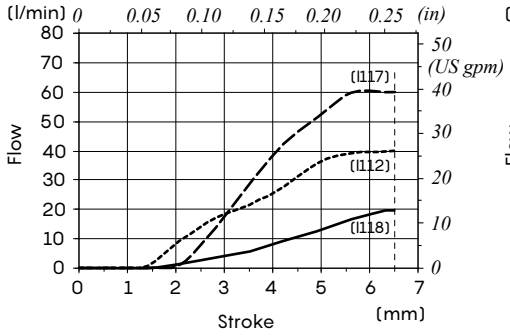
**Spool type 101/I112/ET101**
$Q_{in}$ = 40 l/min *(10.5 US gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*

**Spool type 102/I118/ET102**
$Q_{in}$ = 20 l/min *(5.28 US gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*

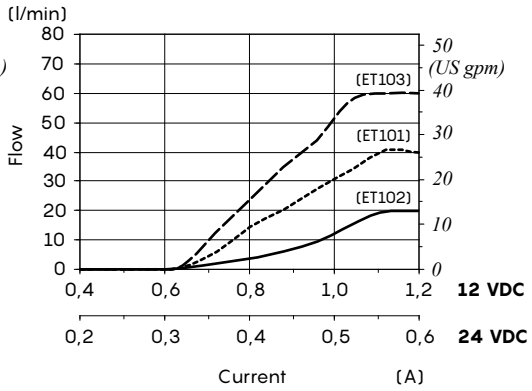
**Spool type 103**
$Q_{in}$ = 50 l/min *(13.2 gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*

**Spool type 109/I117/ET103**
$Q_{in}$ = 60 l/min *(15.8 US gpm)*
$P_{(on\ ports)}$ = 100 bar *(1450 psi)*

### Metering spool type I1
**P→A(B)→B(A)→T**

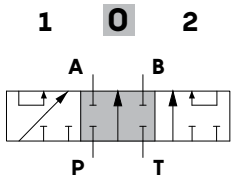



### Metering spool type ET1
**P→A(B)→B(A)→T**



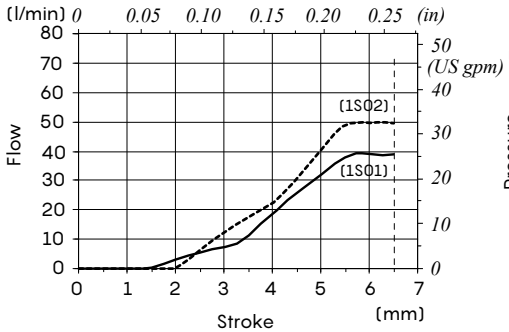

### Type 1S-ET1S
**(1S01/1S02/ET1S01/ET1S02)**

A and B closed in neutral position, for series circuit

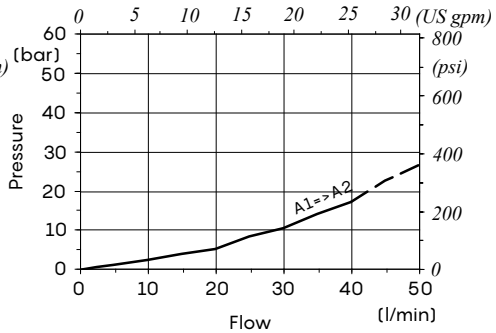



**Stroke**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*

### Metering spool type 1S
**P→A(B)→B(A)→T**




### Pressure drop spool type 1S (1S02)




**Spool type 1S01/ET1S01**

$Q_{in}$ = 20÷40 l/min *(5.28÷10.5 US gpm)* - $P_{(on\ port)}$ = 100 bar *(1450 psi)*

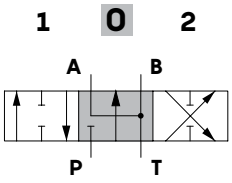
**Spool type 1S02/ET1S02**

$Q_{in}$ = 40÷60 l/min *(10.5÷15.8 US gpm)* - $P_{(on\ port)}$ = 100 bar *(1450 psi)*

## Spool

### Type 2-I2-S2-SHC2-ET2
**(201/I203/S201/SHC201 /ET201/ET203/ET204)**

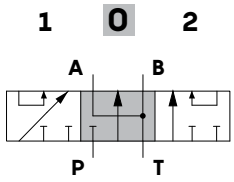
A and B to tank in neutral position




**Stroke**
**(201/I203/ET201/ET203/ET204)**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*
**(S201)**
position 1: + 3,3 mm *(+ 0.13 in)*
position 2: - 3,3 mm *(- 0.13 in)*
**(SHC201)**
position 1: + 3,4 mm *(+ 0.14 in)*
position 2: - 3,4 mm *(- 0.14 in)*

### Type 2S01

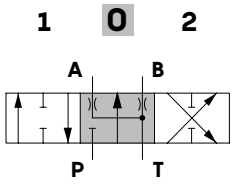
A and B to tank in neutral position, for series circuit




**Stroke**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*

### Type 2H-SHC2H-ET2H
**(2H01/SHC2H01/ET2H01/ET2H03)**

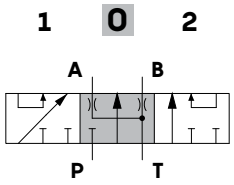
A and B partially to tank in neutral position




**Stroke**
**(2H01/ET2H01/ET2H03)**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*
**(SHC2H01)**
position 1: + 3,4 mm *(+ 0.14 in)*
position 2: - 3,4 mm *(- 0.14 in)*

### Type 2SH01

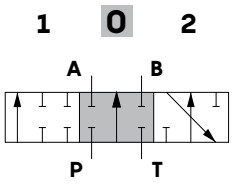
A and B partially to tank in neutral position, for series circuit




**Stroke**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*

### Type 3-I3-ET3
**(301/I301/ET301/ET302/ET303)**

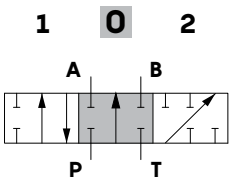
Single acting on A, B plugged




**Stroke**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*

### Type 4-I4-ET4
**(401/I401/ET401/ET402/ET403)**

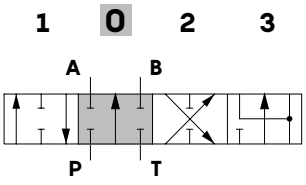
Single acting on B, A plugged




**Stroke**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*

### Type 5-I5-ET5
**(501/503/I504/ET501/ET502/ET503)**

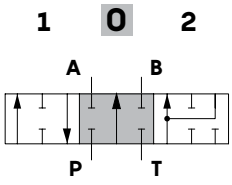
A and B closed in neutral position, floating in 4th position




**Stroke**
position 1: + 6 mm *(+ 0.23 in)*
position 2: - 6 mm *(- 0.23 in)*
position 3: - 10.5 mm *(- 0.41 in)*

### Type 8-S8-ET8
**(801/802/S801/ET801)**

A and B closed in neutral position, regenerative



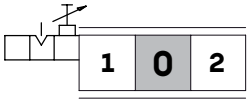

**Stroke**
position 1: + 6,5 mm *(+ 0.26 in)*
position 2: - 6,5 mm *(- 0.26 in)*

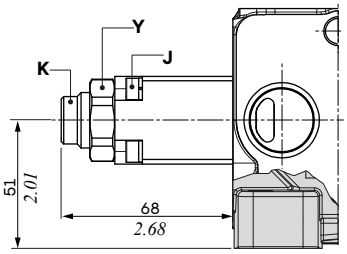
## Mechanical control

### "A" side control kit

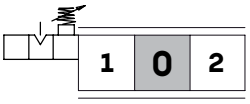
#### With friction

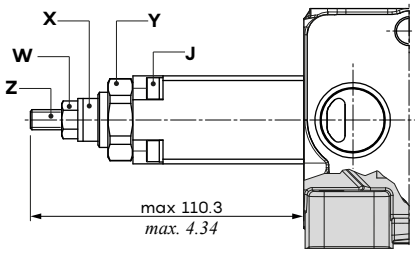
**Type 7FT**




**Type 7FTN**
With spring regulation

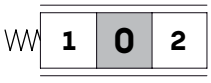


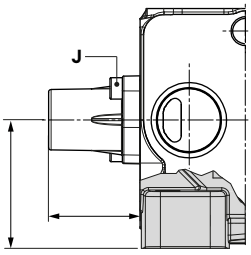




**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
K = allen wrench 6
X = wrench 17
Y = wrench 30, manual tightening
Z = allen wrench 4
W = wrench 13 - 24 Nm *(17.7 lbft)*

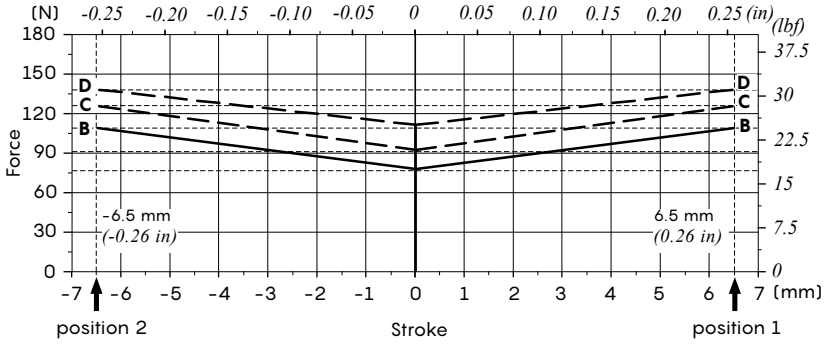
#### With spring return in neutral position

**Types 8/8MC/8MD**
Standard/hard/extra-hard spring




**Force vs. Stroke diagram**



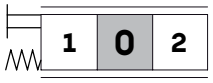

**Legenda**
Spring type B: from 76 N to 108,5 N *(17 lbf to 24.3 lbf)*
Spring type C: from 91 N to 126 N *(20.4 lbf to 28.3 lbf)*
Spring type D: from 110,9 N to 138,9 N *(24.9 lbf to 31.2 lbf)*

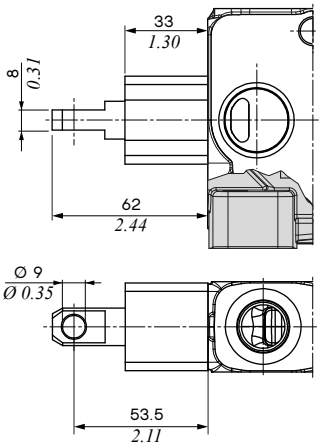
**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Z = wrench 9

## "A" side control kit

### With spring return in neutral position

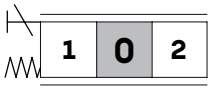
**Type 8TL(*)**
Arrangement for double control

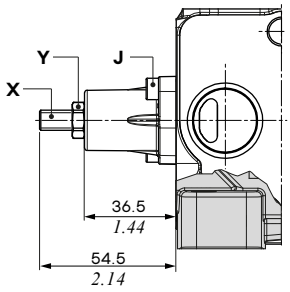


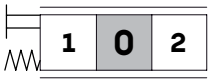

(*) For connect the kit 8TL to flexible cable always ask the following kits:
- kit type **CP50** code 5TEL405005, with fixed cap for CG cables with revolving end;
- kit type **TQ50** code 5TEL105110, with revolving cap for CD cables with fixed end.

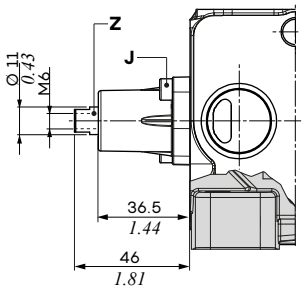
**Type 8F2**
With stroke limiter on B port



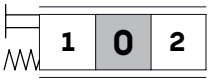



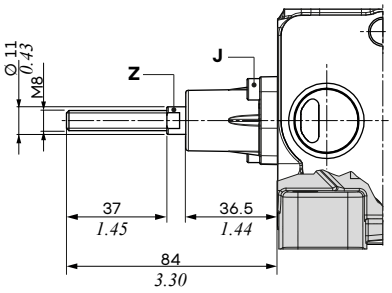

**Type 8D**
External pin with M6 female thread




**Type 8D2**
External pin with M8 male thread



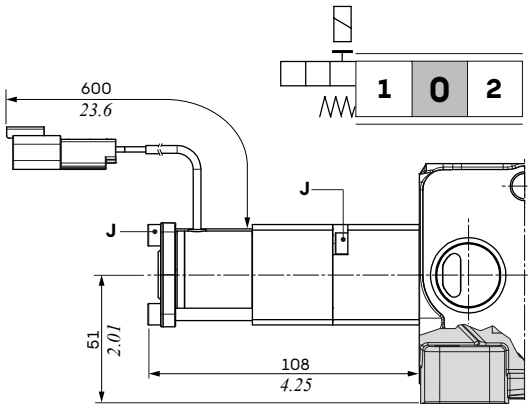

**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
X = allen wrench 4
Y = wrench 13 - 24 Nm *(17.7 lbft)*
Z = wrench 9

## Mechanical control

### "A" side control kit

#### With electromagnetic detent in position 2

**Type 8RM2**



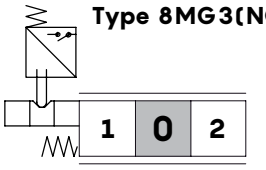

**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

**Features**

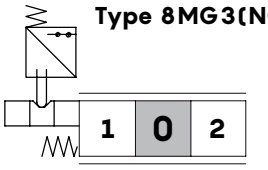
Nominal voltage.....: 12 VDC ± 10%
Nominal power.....: 5.5 W
Min detent release.....: 200 N *(45 lbf)*
Coil resistance (@ 20°C - *68°F*).....: 26.2 Ohm
Coil insulance.....: Class H (180°C - *356°F*)
Insertion.....: 100%
Connector.....: Deutsch DT04-2P
Mating connector.....: Deutsch DT06-2S, code 5CON140046

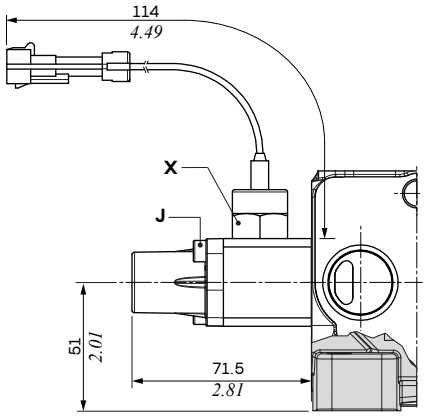
#### With microswitch for spool check in positions 1 and 2

**Type 8MG3(NO)**




**Type 8MG3(NC)**




**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
X = wrench 22 - 24 Nm *(17.7 lbft)*

**Features**

Switch mechanical life.....: $5x10^5$ cycles
Switch electric life.....: $10^5$ cycles @ 7 A - 13.5 VDC, resistive load
$5x10^4$ cycles @ 10 A - 12 VDC, resistive load
$5x10^4$ cycles @ 3 A - 28 VDC, resistive load
Connctor.....: Packard Weather-Pack
Mating connector.....: Packard Weather-Pack, code 5CON001

| Complete controls | | | |
|---|---|---|---|
| | Microswitch operation | | |
| | position 1 | position 2 | position 1, 2 |
| **Circuit** | **8MG1** | **8MG2** | **8MG3** |
| **(NO)** | 5V08107670 | 5V08107680 | 5V08107660 |
| **(NC)** | - | - | 5V08107662 (*) |

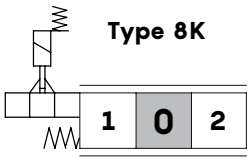
Note (*) - With integrated connector

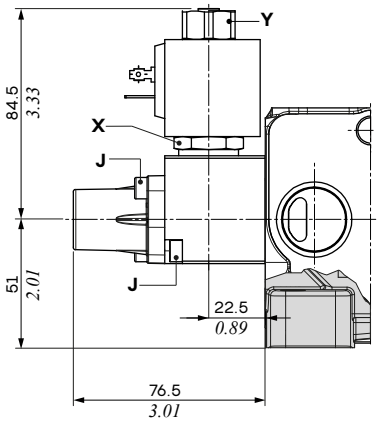
## Mechanical control

### "A" side control kit

### Solenoid detent in neutral position

**Type 8K**



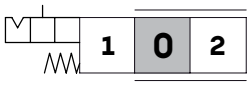

**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
X = wrench 24 - 9.8 Nm *(7.2 lbft)*
Y = wrench 21 - 6.6 Nm *(4.9 lbft)*

| | Complete controls | | |
|---|---|---|---|
| | Coil connector | | |
| **Voltage** | IS0 4400 | Packard M-Mack | Deutsch DT04 |
| **12 VDC** | 5V08707112 | 5V08707613 | 5V08707412 |
| **24 VDC** | 5V08707124 | 5V08707124 | 5V08707424 |

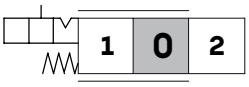
For coil features type **BE** see page 58.

### With detent and spring return in neutral position

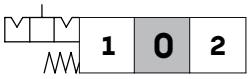
**Type 9B**
Detent in position 1
(A curve)



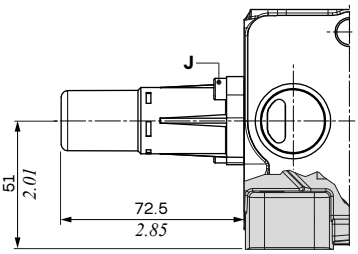

**Type 10B**
Detent in position 2
(B curve)



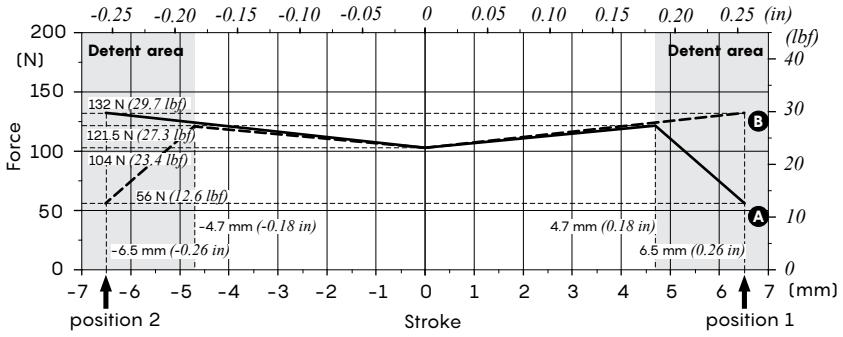

**Type 11B**
Detent in positions
1 (A curve) and 2 (B curve)




**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*




**Force vs. Stroke diagram**



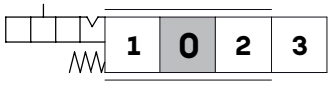

Release force 160 N ± 10 N *(36 lbf ± 2.2 lbf)*

## Mechanical control

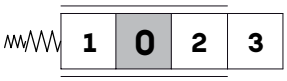
### "A" side control kit

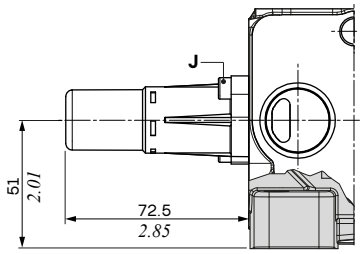
### With detent and spring return in neutral position, for floating circuit

**Type 13N**
Detent in position 3



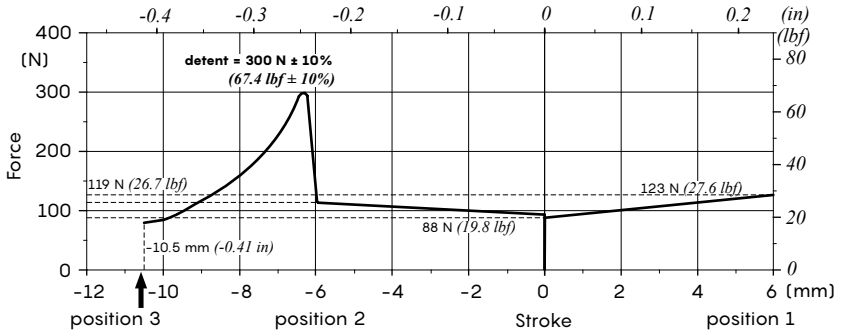

**Type 13F**
Additional spring in position 3



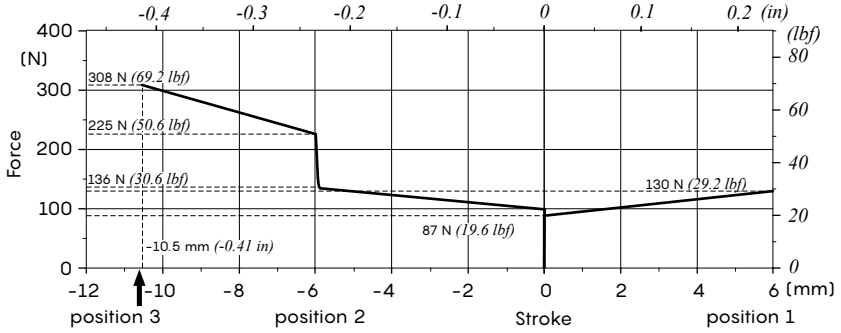

**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

**Type 13N: Force vs. Stroke diagram**



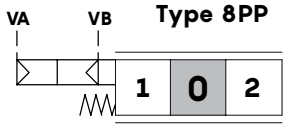

Release force from position 3: 250 N ± 10% *(56.2 lbf ± 10 %)*

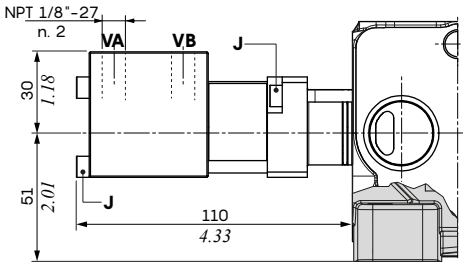
**Type 13F: Force vs. Stroke diagram**

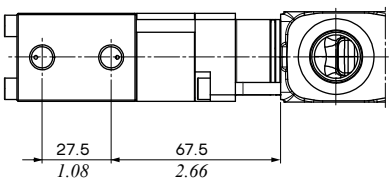



### Proportional pneumatic control

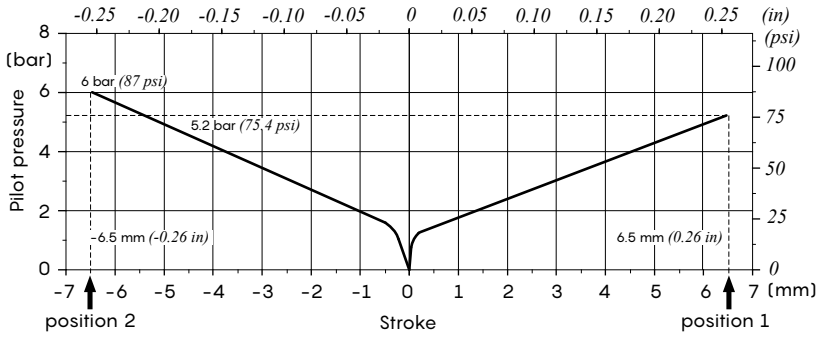
**Type 8PP**




**Stroke vs. Pilot pressure(*)**




(*) The curves are performed without the passage of oil.

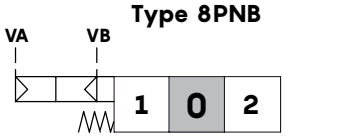
**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

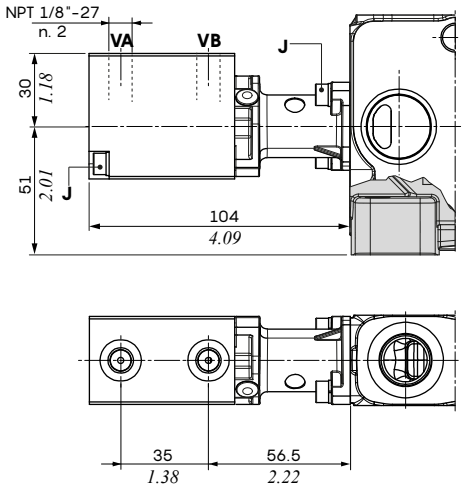
## Mechanical control

### "A" side control kit

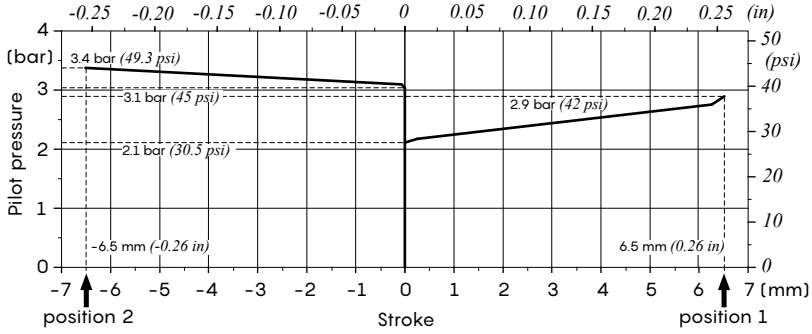
### ON/OFF pneumatic control

**Type 8PNB**



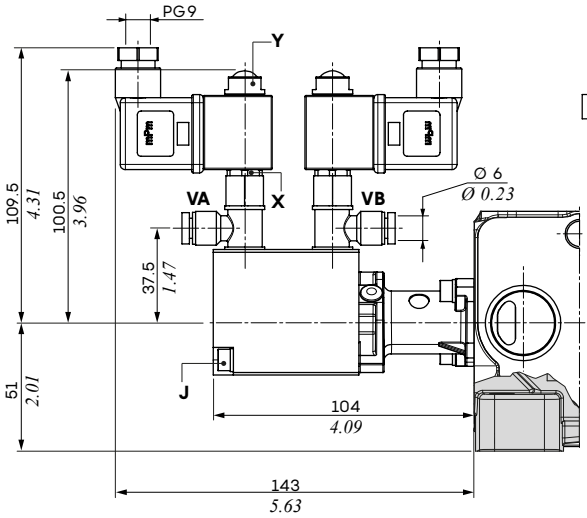

**Stroke vs. Pilot pressure(*)**



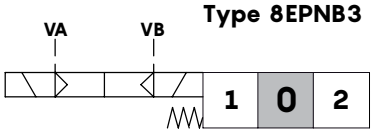

(*) The curves are performed without the passage of oil.

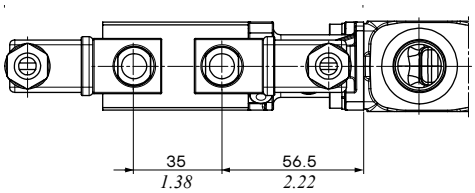
**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

### ON/OFF electropneumatic control




**Type 8EPNB3**




**Features**
Pilot pressure.....: 6 bar (max. 15 bar)
*87 psi (max. 218 psi)*

For coil features type **BPV** see page 58

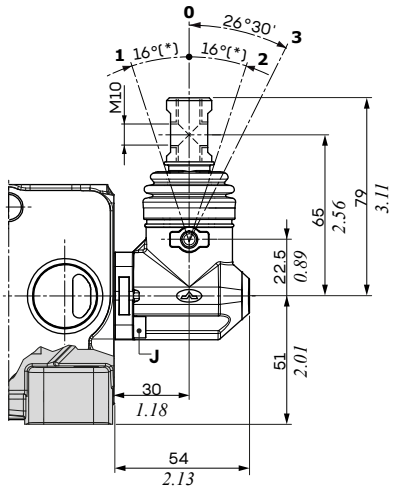
**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
X = wrench 15 - 6.6 Nm *(4.9 lbft)*
Y = wrench 13 - manual tightening

## Mechanical control

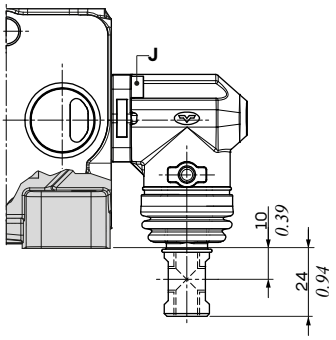
### "B" side control kit

### With lever box

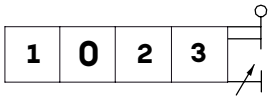
**Type L**

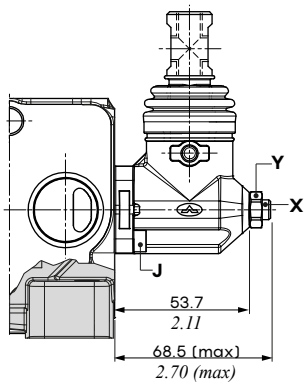




L180 configuration



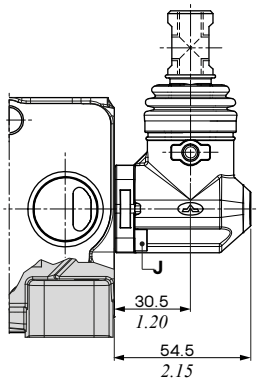

**Type LF1**
Spool stroke limiter
on A port



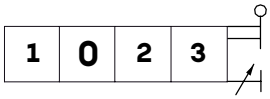



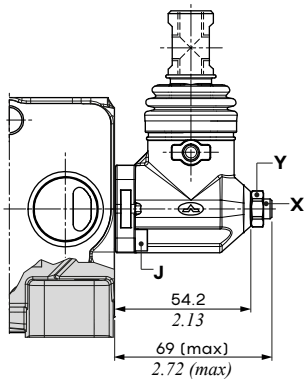

**Angle (*)**
16° with type 8.. controls
15° with type 13.. controls

**Type LSG**
As type L, water-proof

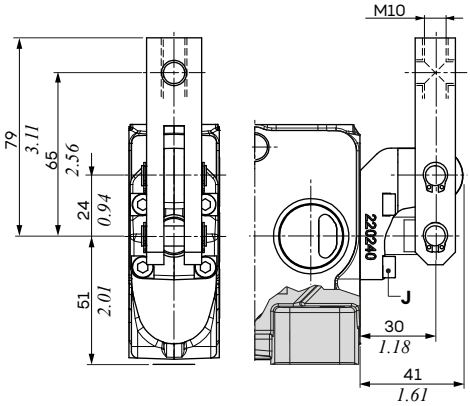




**Type LSGF1**
As type LF1, water-proof




**Type LB3**
Open lever

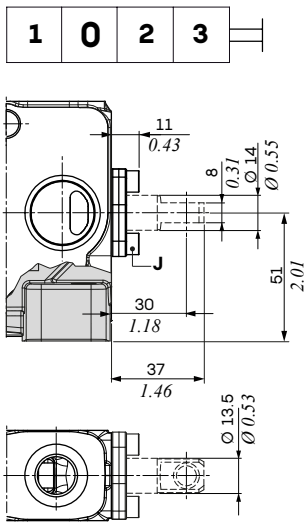

**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
X = allen wrench 4
Y = wrench 13 - 24 Nm *(17.7 lbft)*

## Mechanical control

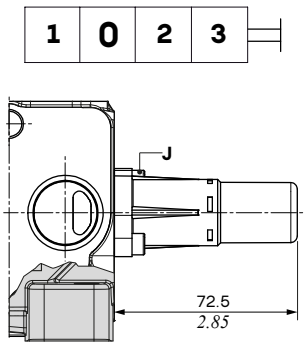
### "B" side control kit

### Without lever box

**Type SLP**
With dust-proof plate

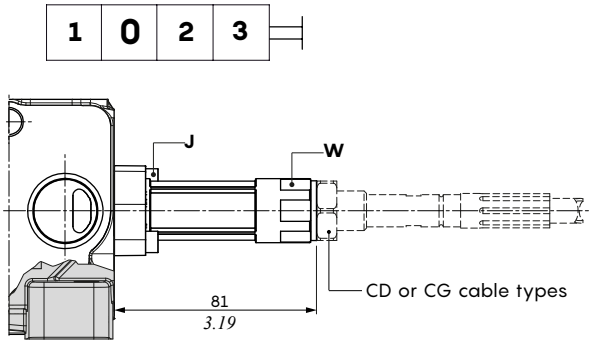



**Type SLC**
With endcap




**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
W = wrench 24

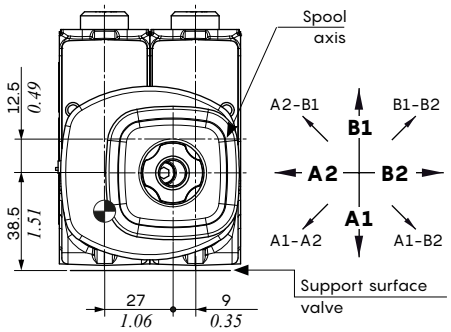
**Type TQ**
Flexible cable connection



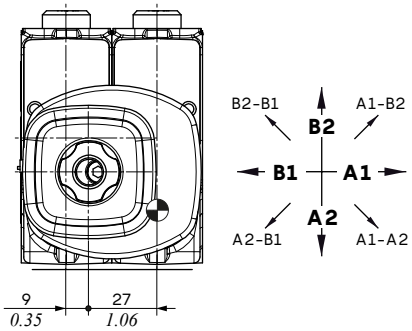
## Proportional hydraulic control

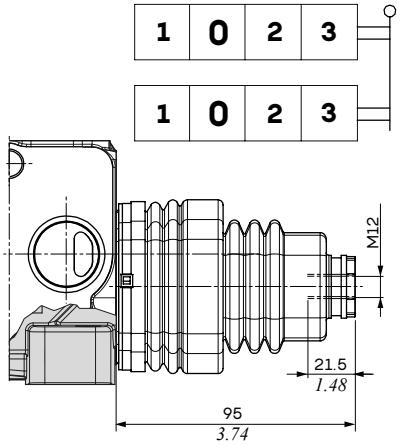
### With spring return in neutral position, for floating circuit

**Type LCA1-4**
LCA1 configuration

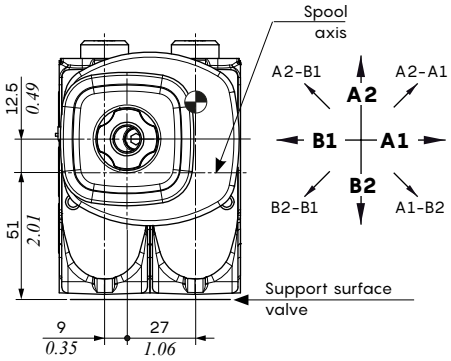



**Type LCA2-3**
LCA2 configuration

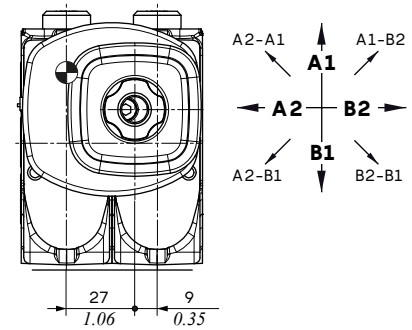


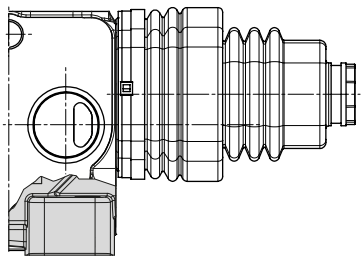




LCA4 configuration

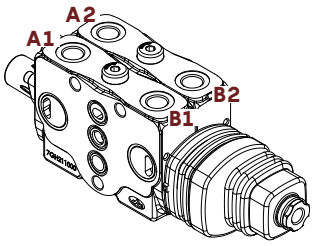



LCA3 configuration



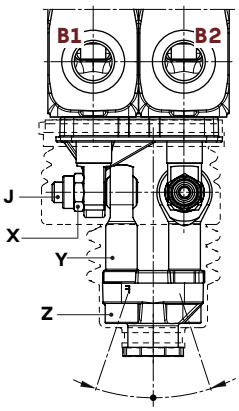



**LCA1 configuration example**

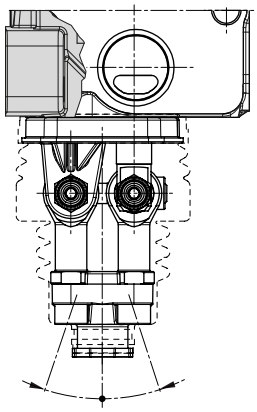



**Working angles**

Horizontal axis




Vertical axis

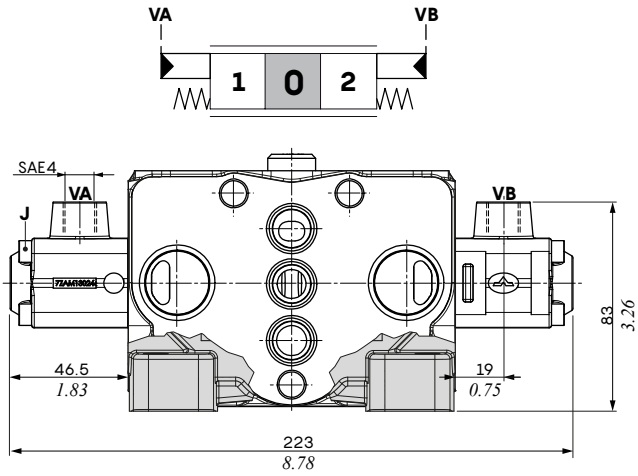


**Wrenches and tightening torques**
J = allen wrench 4 - 9.8 Nm *(7.2 lbft)*
Y = wrench 24
X = wrench 13 - 9.8 Nm *(7.2 lbft)*
Z = allen wrench 6 - 9.8 Nm *(7.2 lbft)*

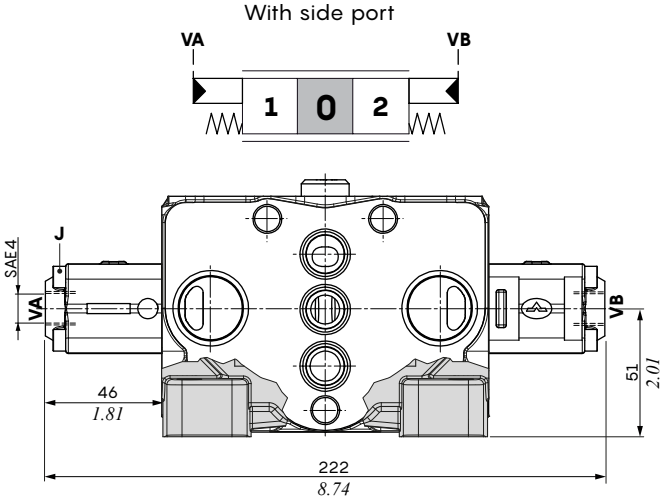
| Max. working angles | Horizontal axis | Vertical axis |
|---|---|---|
| Single action operation | 15°4' | 15°4' |
| Single action operation with floating | 25°2' | 25°2' |
| Two section operation | 15°52' | 15°52' |
| Two section operation with floating | 18°3' | 18°3' |

## With spring return in neutral position

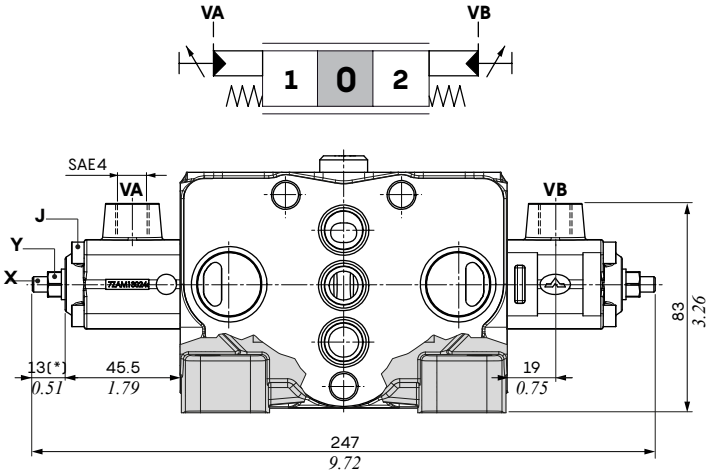
### Type 8IM
With upper port




### Type 8IMS
With side port




### Type 8IMF3
With upper port
and spool stroke limiter




(*): Minimum distance for no adjustment

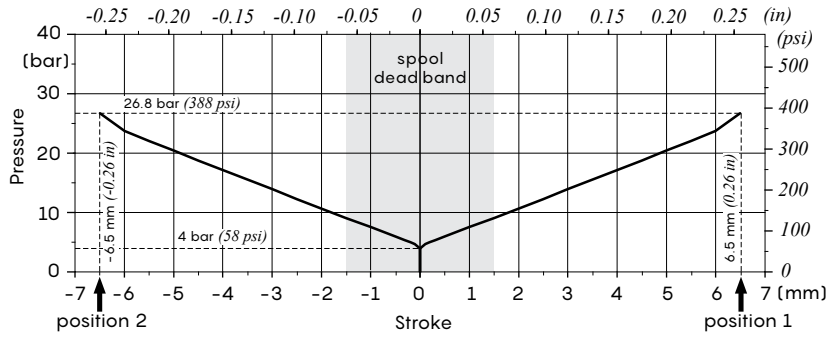
**Features (all types)**

Max. pressure.....: 70 bar *(1015 psi)*

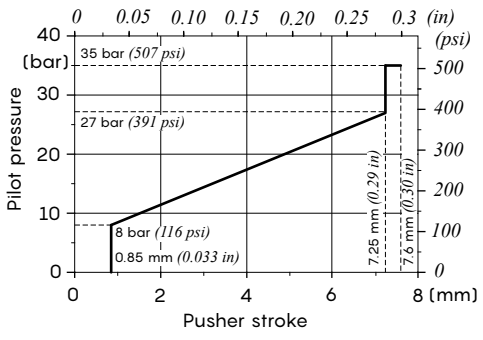
**Wrenches and tightening torques**

J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
Y = wrench 10 - 9.8 Nm *(7.2 lbft)*
X = allen wrench 3

**Pressure vs. Stroke diagram**



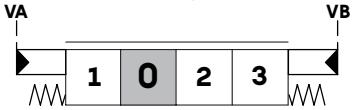

**Suggested pressure control curve: type 088**

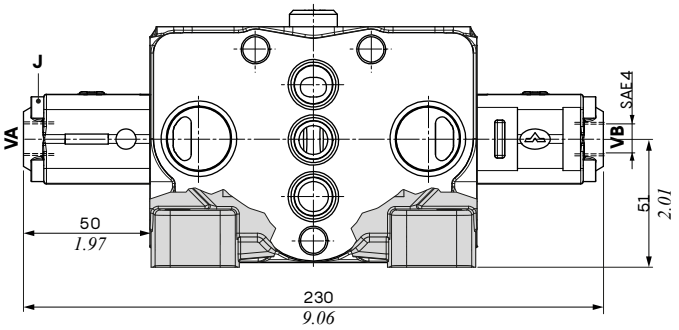


## Proportional hydraulic control

### With spring return in neutral position, for floating circuit

**Type 13IMS**
With side port
for floating circuit



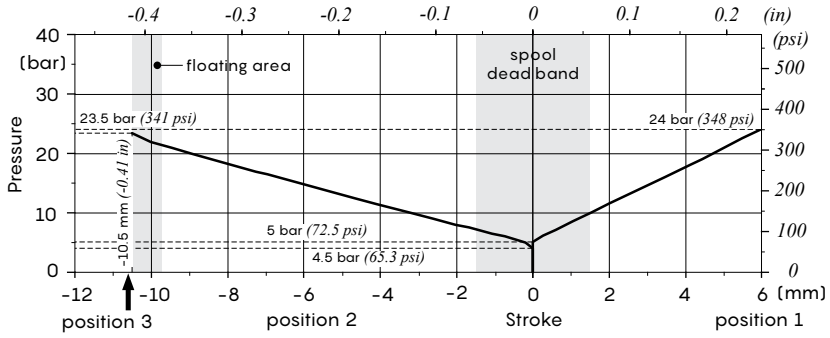

**Features**

Max. pressure.....: 70 bar *(1015 psi)*

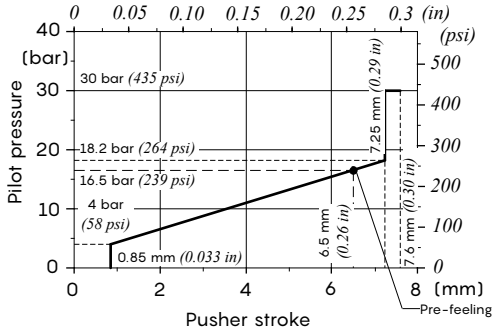
**Wrenches and tightening torques**

J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

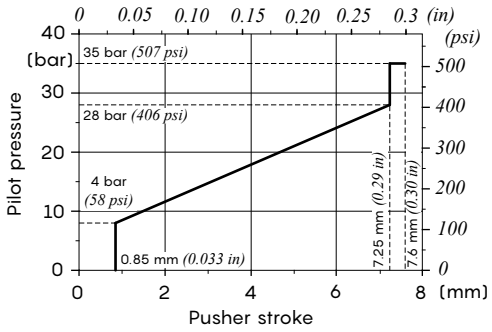
**Pressure vs. Stroke diagram**




**Suggested pressure control curve on VB port: type 086**




**Suggested pressure control curve on VA port: type 089**



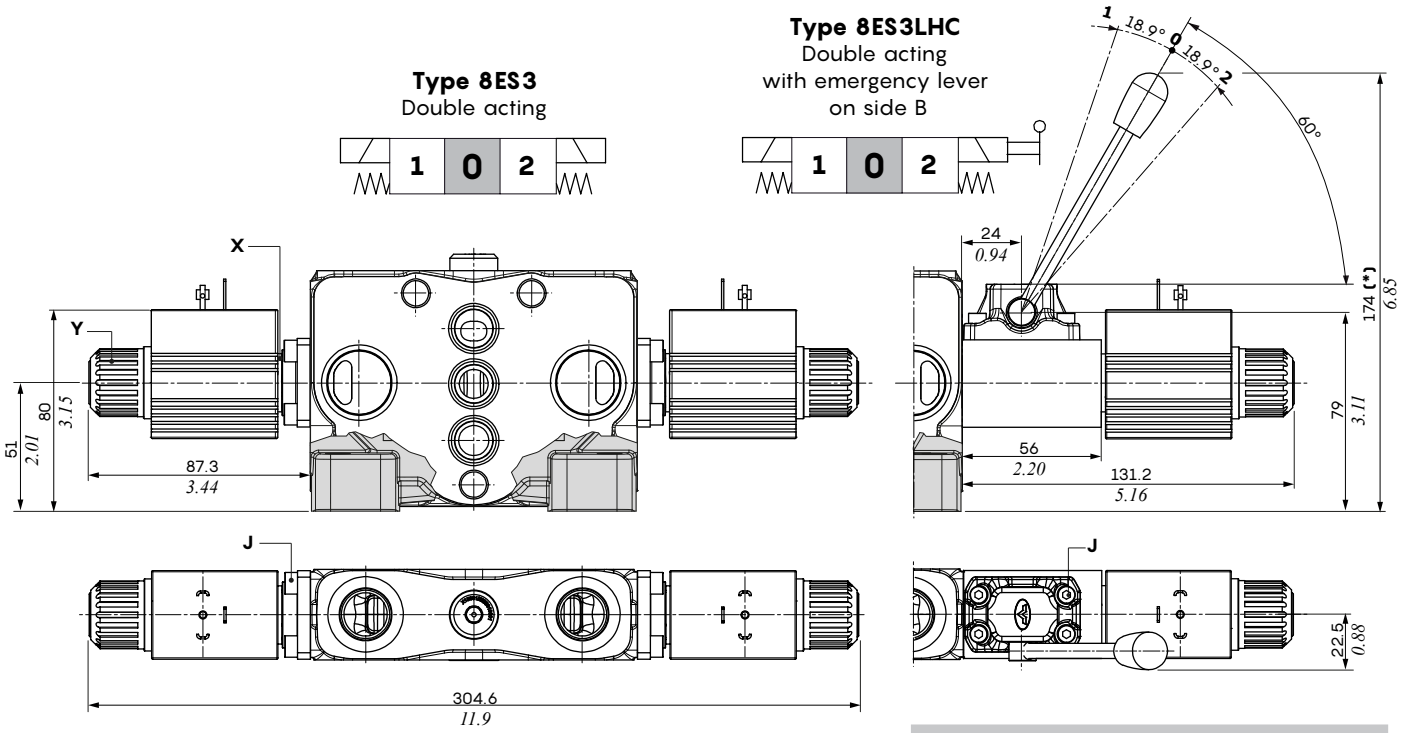
## With spring return in neutral position

**Type 8ES3**
Double acting




**Type 8ES3LHC**
Double acting
with emergency lever
on side B



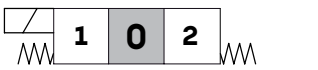

| Type | Lever lengths | Dimension (*) |
|---|---|---|
| | mm - *in* | mm - *in* |
| YAST290610A | 100 - *3.93* | 174 - *6.85* |
| YAST290615 | 150 - *5.90* | 215 - *8.46* |

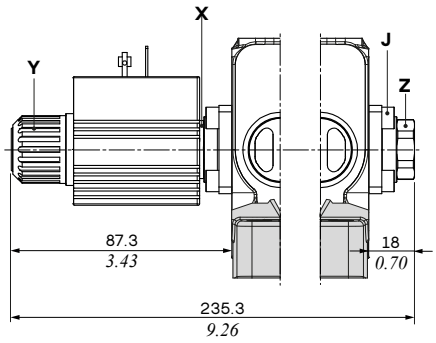
IMPORTANT: lever to be used only for emergency operation, not for continuative use.

**Features**
Max. flow on working ports.....: 60 l/min *(16 US gpm)*
Internal leakage A(B)⇒T.....: 10 cm³/min @ 100 bar and 40°C
*(0.61 cm³/min @ 1450 psi and 104°F)*

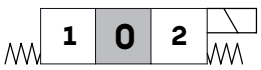
For features coil type **D12** see page 58

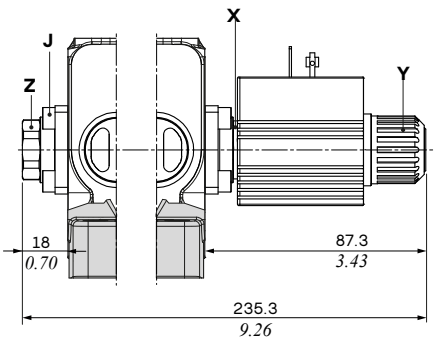
**Type 8ES1**
Single acting in A



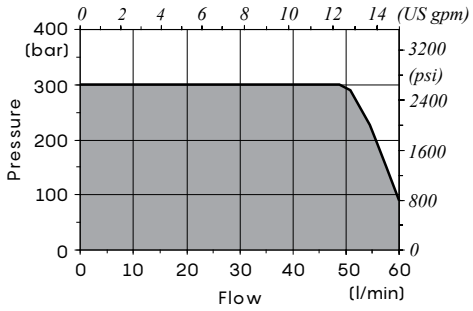




**Type 8ES2**
Single acting in B




**Operating conditions**




**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
X = wrench 17 - 24 Nm *(17.7 lbft)*
Y = special wrench - 6.6 Nm *(4.9 lbft)*
Z = wrench 22 - 24 Nm *(17.7 lbft)*

## Electro-hydraulic control

### Main features

Following specifications are measured with:
- mineral oil of 46 mm2/s (46 cSt) viscosity at 40°C (104°F) temperature
- standard spools, connecting P⇒A⇒B⇒T ports without flow multiplication
- 12 VDC and 24 VDC nominal voltage with ± 10% tolerance.

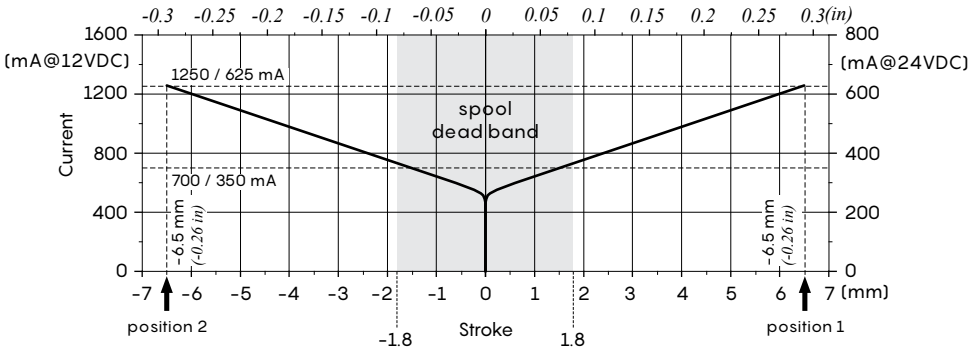
Following electrohydraulic controls need CED400W electronic unit; for information please contact Sales Department.

| Specifications | | Spool control type | |
|---|---|---|---|
| | | 8EB3T | 13EB3T |
| **Electric specifications** | | | |
| Coil impedance | 12 VDC | 4.72 Ω | 4.72 Ω |
| | 24 VDC | 20.8 Ω | 20.8 Ω |
| Max. operating current | 12 VDC | 1.5 A | 1.5 A |
| | 24 VDC | 0.75 A | 0.75 A |
| No load current consumption | | 0 | 0 |
| Hysteresis max. (1) | external drain | 3%<br>5% with lever | 4%<br>7% with lever |
| | internal drain | 4%<br>6% with lever | 6%<br>9% with lever |
| Time response | from 0 ⇒ 100% and<br>from 100% ⇒ 0 of stroke | < 50 ms | < 55 ms |
| Min. flow control signal | 12 VDC | 700 mA | 440 mA |
| | 24 VDC | 350 mA | 220 mA |
| Flow control signal | 12 VDC | 1250 mA | 760 mA |
| | 24 VDC | 625 mA | 380 mA |
| Max. float flow control signal | 12 VDC | | 880 mA |
| | 24 VDC | | 440 mA |
| Dither frequency | low frequency | 150 Hz | |
| | high frequency | 180 Hz - 200 mA | |
| Insertion | | 100% | |
| Coil insulance | | Class H (180°C - *356°F*) | |
| Connector type | | AMP JPT - Deutsch DT | |
| Weather protection (connector) | | IP65 (JPT type) - IP69K (DT type) | |
| **Hydraulic specifications** | | | |
| Max. pressure | | 40 bar *(580 psi)* | |
| Max. back pressure | | 10 bar *(145 psi)* | |

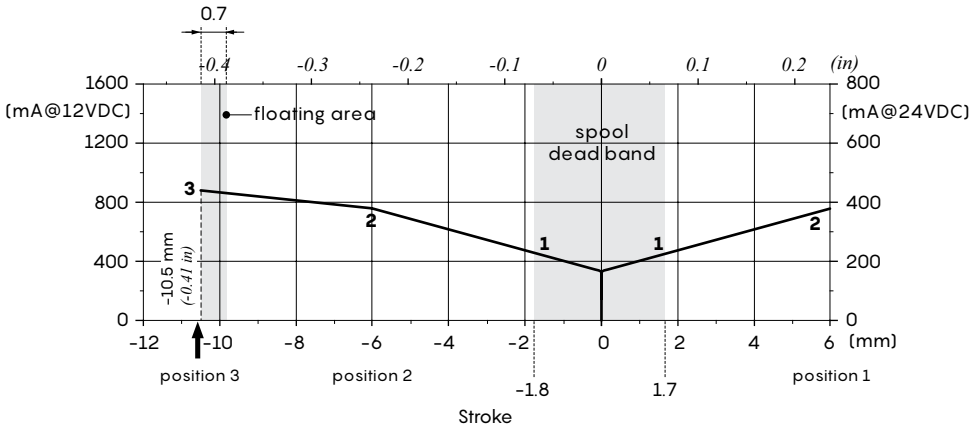
Note (1): Hysteresis is indicated at nominal supply voltage and f = 0.008 Hz for one cycle (one cycle = neutral ⇒ full A ⇒ neutral ⇒ full B ⇒ neutral).
For the calculation rules see "Appendix A" on page 62

## Main features

### Type 8EB3T: Stroke vs. Current diagram




### Type 13EB3T: Stroke vs. Current diagram




**13EB3T control**
**1** = 440 mA @ 12 VDC - 220 mA @ 24 VDC
**2** = 760 mA @ 12 VDC - 380 mA @ 24 VDC
**3** = 880 mA @ 12 VDC - 440 mA @ 24 VDC

## Electro-hydraulic control

### Spool position sensor

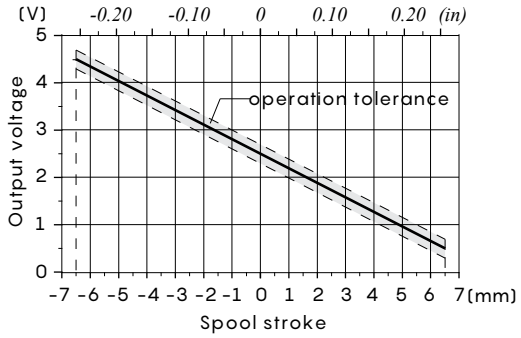
The sensor can be ordered exclusively through the electro-hydraulic EB type controls; see pages 27 for available control list.

#### SPSL sensor

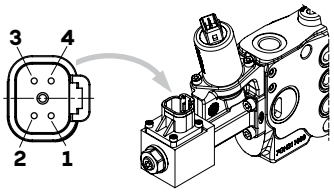
The SPSL position sensor converts the spool movements into a voltage linear signal.

| Working conditions | | |
|---|---|---|
| Voltage supply | | 5 VDC |
| Current absorption | | < 10 mA (no load) |
| Mechanical life | | 3x10⁶ |
| Connector type | | Deutsch DT04-4P |
| Weather protection | | IP67 / IP69K |
| Working temperature | | from -40°C to 105°C *(from -40°F to 221°F)* |
| Working pressure | | 350 bar *(5100 psi)* |
| Max. electrical stroke | | ±10 mm *(±0.39 in)* |
| Max. mechanical stroke | | ±10 mm *(±0.39 in)* |
| Output signal | range | from 0.5 to 4.5 V |
| | linearity | ± 5% |
| | spool in neutral | 2,5 ± 0,2 V |
| | max. current | 1 mA |
| EMC compatibility | | ISO 13766 / ISO 14982 |
| Mechanical vibrations, shock, bumps | | IEC 68-2-6,-27,-29 |

**SPSL sensor output signal**




| Deutsch DT04-4P connector | |
|---|---|
| Pin | Function |
| 1 | + 5V |
| 2 | not connected |
| 3 | GND |
| 4 | signal OUT |



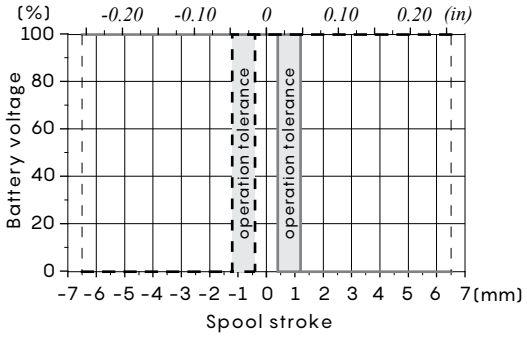

Deutsch DT06-4S mating connector, code 5CON140072

#### SPSD sensor

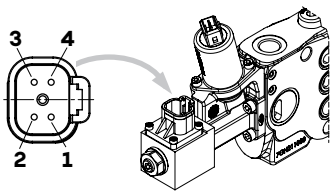
The SPSD position sensor converts the spool movements into an electric digital signal.

| Working conditions | | |
|---|---|---|
| Voltage supply | | from 9 to 32 VDC |
| Current absorption | | < 10 mA (no load) |
| Mechanical life | | 3x10⁶ |
| Connector type | | Deutsch DT04-4P |
| Weather protection | | IP67 / IP69K |
| Working temperature | | from -40°C to 105°C *(from -40°F to 221°F)* |
| Working pressure | | 350 bar *(5100 psi)* |
| Max. electrical stroke | | ±10 mm *(±0.39 in)* |
| Max. mechanical stroke | | ±10 mm *(±0.39 in)* |
| Output signal | type | PNP |
| | max. current. | 6 mA |
| EMC compatibility | | ISO 13766 / ISO 14982 |
| Mechanical vibrations, shock, bumps | | IEC 68-2-6,-27,-29 |

**SPSD sensor output signal**




| Deutsch DT04-4P connector | |
|---|---|
| Pin | Function |
| 1 | Out A |
| 2 | GND |
| 3 | VB + |
| 4 | Out B |




Deutsch DT06-4S mating connector, code 5CON140072

**Type controls**

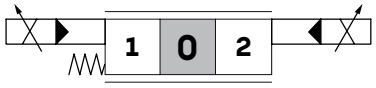
1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003

2 : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

## Without lever control, spring return in neutral position

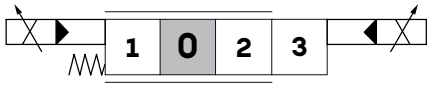
**Type 8EB3T**
With AMP connector

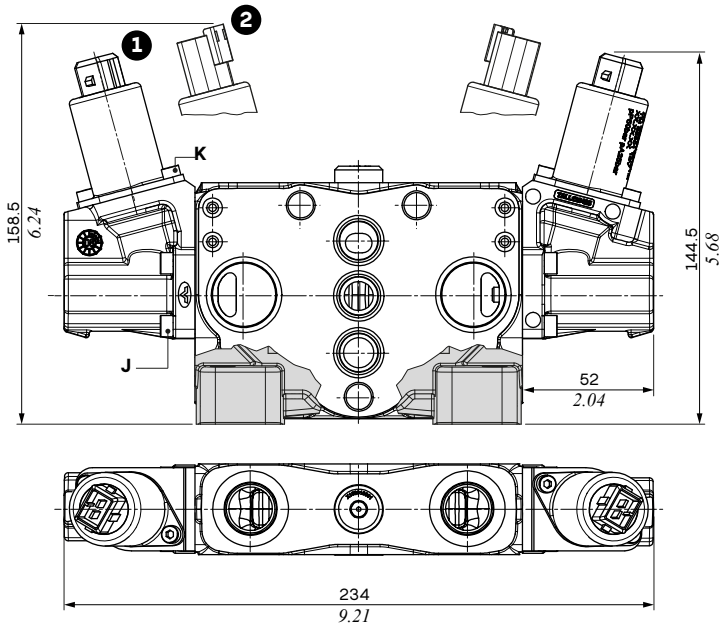
**Type 8EB34T**
With Deutsch connector




**Type 13EB3T**
With AMP connector
for floating circuit

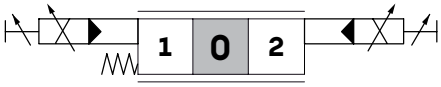
**Type 13EB34T**
With Deutsch connector
for floating circuit

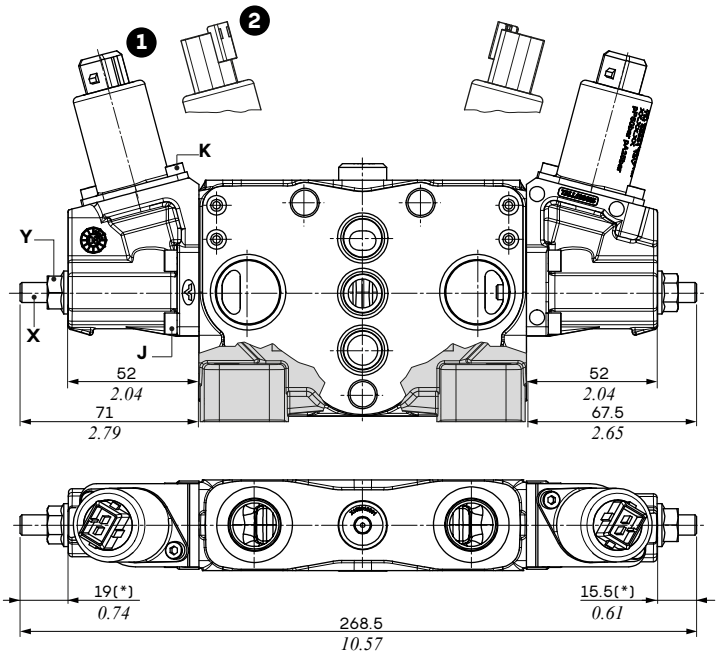



**Type 8EB3TF3**
With AMP connector
and spool stroke limiter

**Type 8EB34TF3**
With Deutsch connector
and spool stroke limiter




**Wrenches and tightening torques**

J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*

K = allen wrench 3 - 5 Nm *(3.6 lbft)*

X = allen wrench 3

Y = wrench 10 - 9.8 Nm *(7.2 lbft)*

(*): Minimum distance for no adjustment

## Electro-hydraulic control

**Type controls**

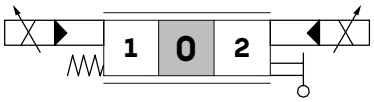
1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003

2 : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

## With lever control, spring return in neutral position

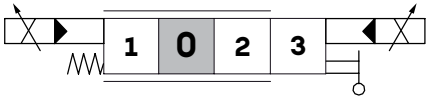
**Type 8EB3TLH**
With AMP connector

**Type 8EB34TLH**
With Deutsch connector

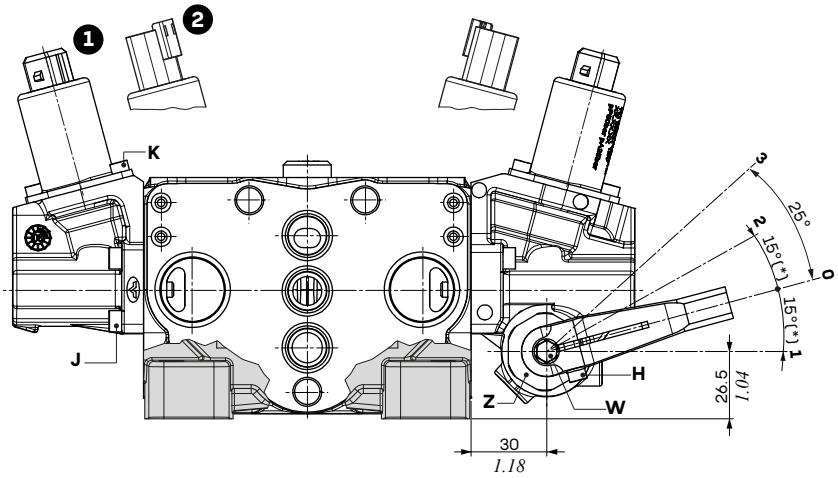


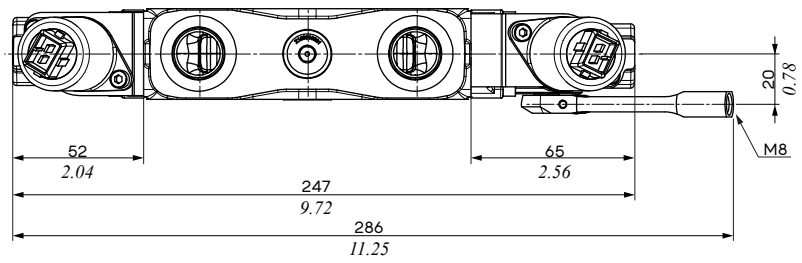

**Type 13EB3TLH**
With AMP connector
for floating circuit

**Type 13EB34TLH**
With Deutsch connector
for floating circuit



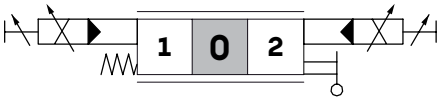

**Angle (*)**
15° with 8EB3.. type controls
14° with 13EB3.. type controls

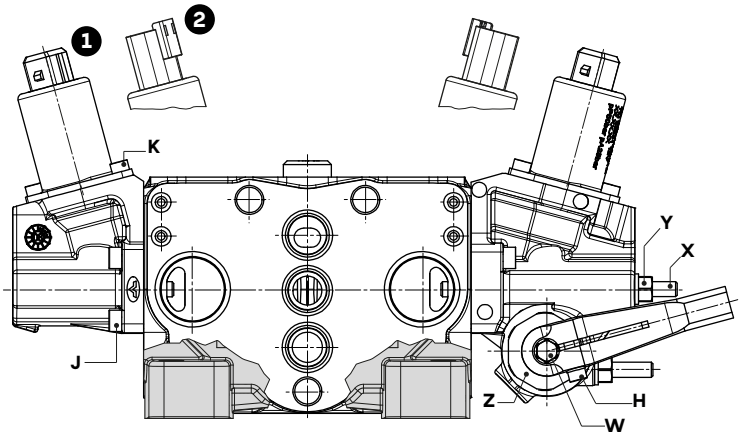


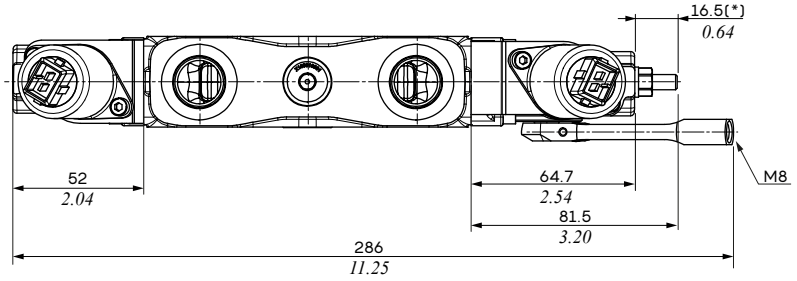




**Type 8EB3TLHF3**
With AMP connector
and spool stroke limiter

**Type 8EB34TLHF3**
With Deutsch connector
and spool stroke limiter




**Wrenches and tightening torques**
H = allen wrench 3 - 6.6 Nm *(4.9 lbft)*
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
K = allen wrench 3 - 5 Nm *(3.7 lbft)*
X = allen wrench 3
Y = wrench 10 - 9.8 Nm *(7.2 lbft)*
Z = wrench 29 - 24 Nm *(17.7 lbft)*
W = wrench 8

(*): Minimum distance for no adjustment

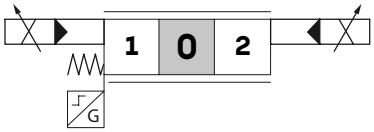
**Type controls**

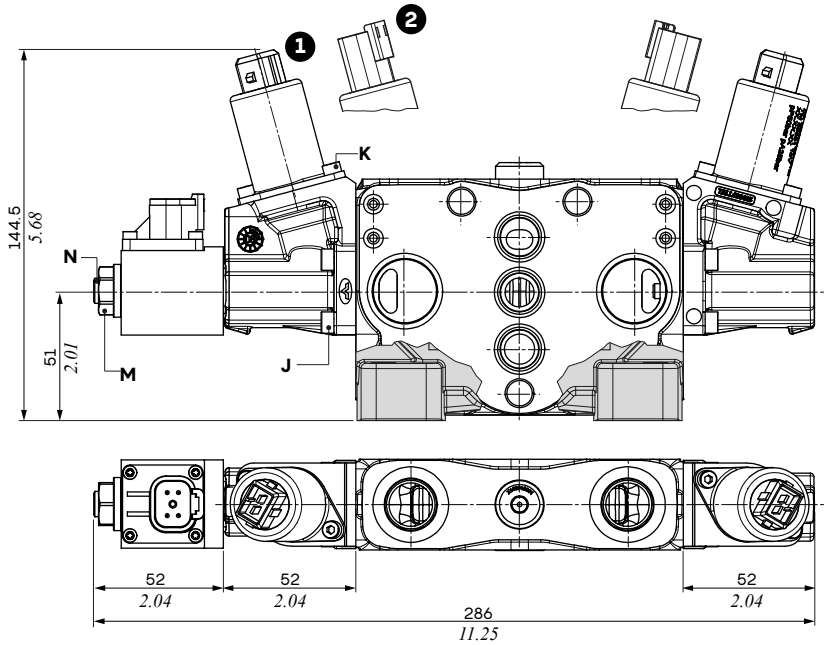
1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003

2 : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

## Without lever control, with spool position sensor

**Type 8EB3TSPSD**
Digital output sensor
and AMP connector



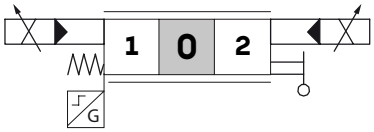




**Wrenches and tightening torques**
J = allen wrench 4 - 6.6 Nm *(4.9 lbft)*
K = allen wrench 3 - 5 Nm *(3.7 lbft)*
M = wrench 4 - 9.8 Nm *(7.2 lbft)*
N = wrench 10 - 9.8 Nm *(7.2 lbft)*

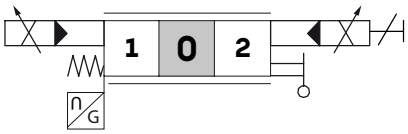
## With lever control, with spool position sensor

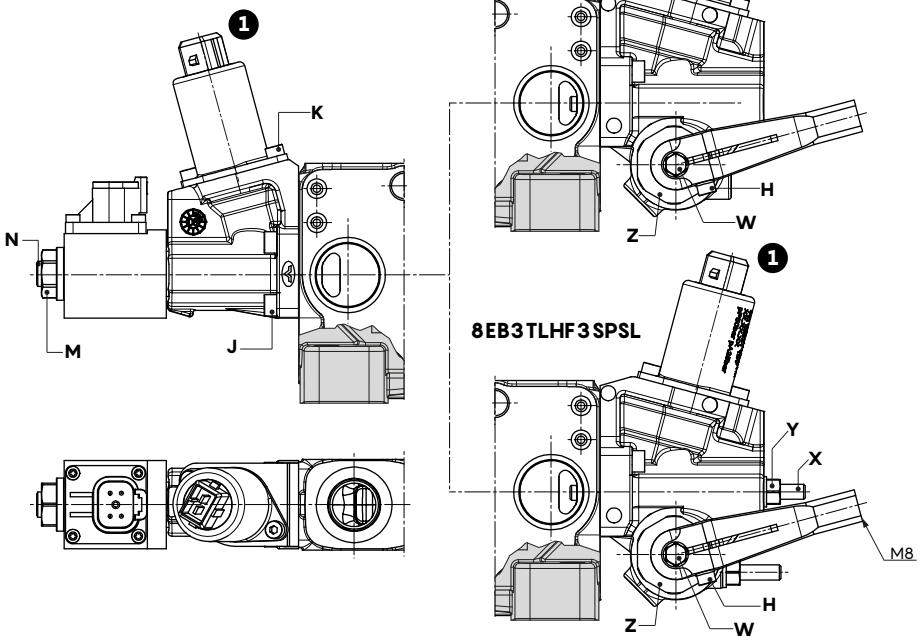
Note - For more dimensions
see previous pages

**Type 8EB3TLHSPSD**
Digital output sensor
and AMP connector



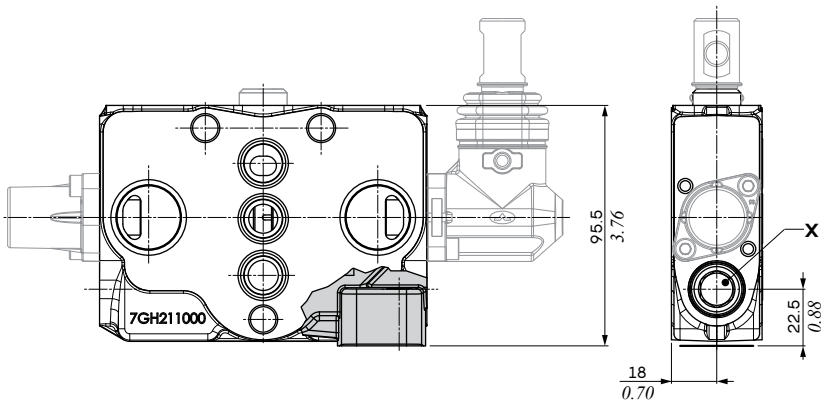

**Type 8EB3TLHF3SPSL**
Analog output sensor, AMP connector
and spool stroke limiter



## Port valves

### Dimensional data, hydraulic circuit and performance data




**Type U**
Antishock valves with prefill

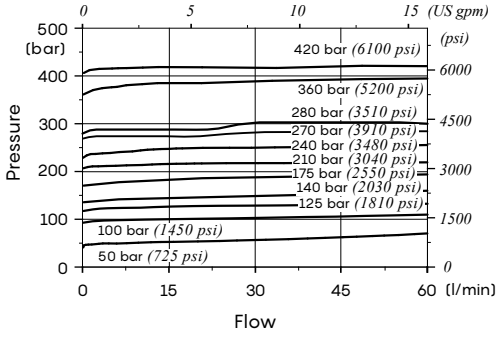
**Type C**
Anticavitation valves

**Type UT**
Valve blanking plug

**Wrenches and tightening torques**
X = wrench 13 - 24 Nm *(17.7 lbft)*

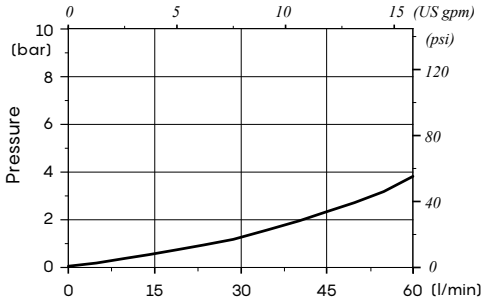
**Type U: antishock valves with prefill**

**Setting example**
(10 l/min - *2.6 Us gpm*)

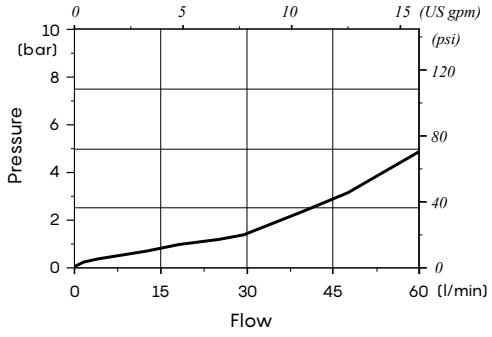



**Type C: anticavitation valves**

**Pressure drop**



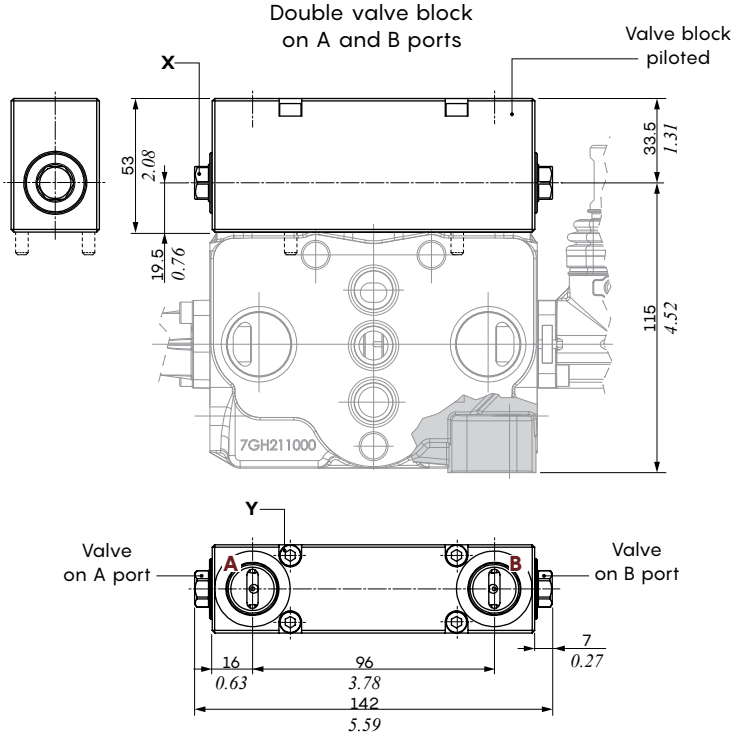

**Pressure drop**
(in anticavitation)

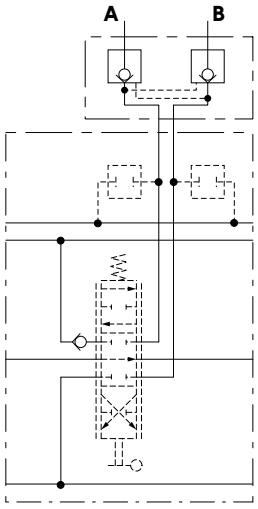


## Secondary aux valve block

### Dimensional data and hydraulic circuit

**Type BP3A-SAE8**
Double valve block
on A and B ports

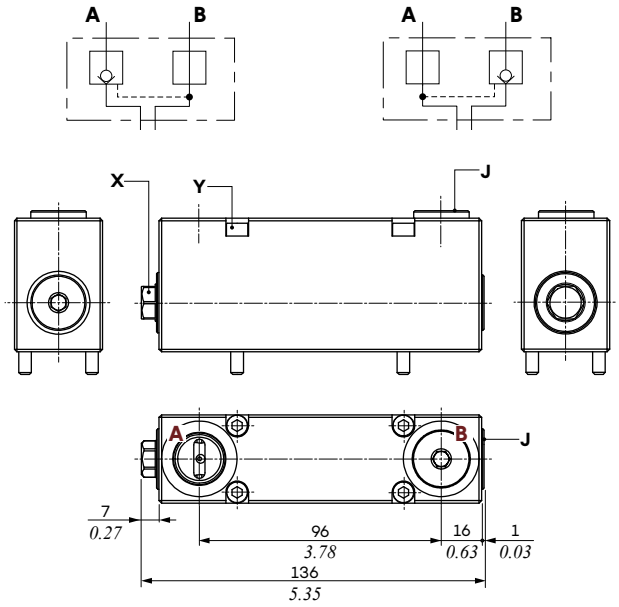


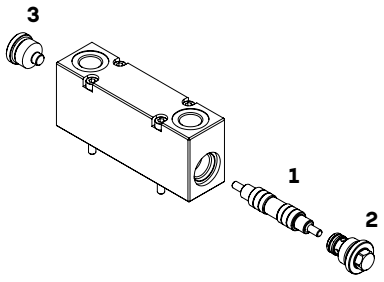




**Wrenches and tightening torques**
X = wrench 13 - 42 Nm *(31 lbft)*
Y = allen wrench 4 - 9.8 Nm *(7.2 lbft)*
J = allen wrench 6 - 24 Nm *(17.7 lbft)*

**Type BP1A-SAE8**
Single valve block
on A port

**Type BP2A-SAE8(*)**
Single valve block
on B port



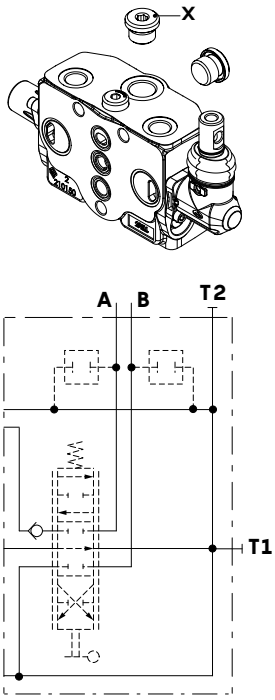

| Spare parts | | |
|---|---|---|
| | Description | Code |
| 1 | Piston | 3PIS214820 |
| 2 | BP Cartridge | X209310000 |
| 3 | Valve blanking plug | XTAP822220 |

Note (*) - Drawings are referred to valve block type BP1A. For type BP2A mount the plug on A port.

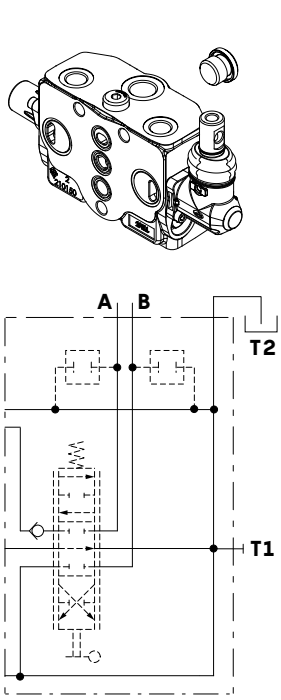
## Outlet circuit

### Outlet working section for mechanical, proportional hydraulic, ON/OFF electric controls

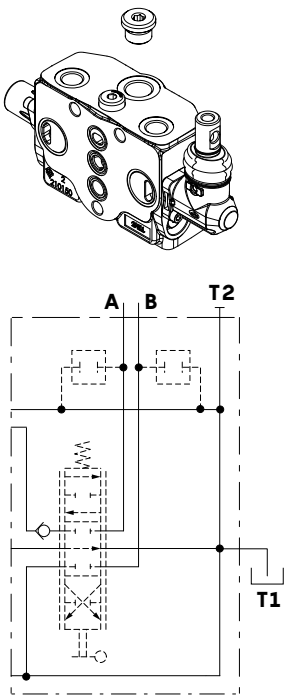
**Type F**
T2 and T1 ports plugged



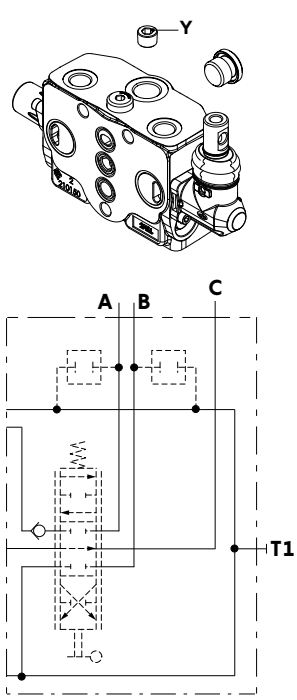

**Type TA**
T2 port open and
T1 port plugged



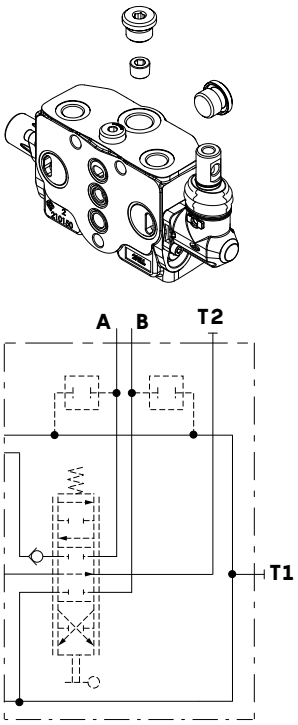

**Type TL**
T2 port plugged and
T1 port open




**Type AE**
Carry-over on T2 port
and T1 port plugged




**Type AEK**
T2 and T1 ports plugged
for closed circuit



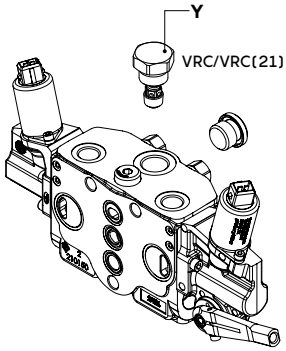

| Circuit configuration | | | | |
|---|---|---|---|---|
| **Type** | **T2 port** | **T1 port** | **Carry-over** | **Note** |
| **F** | plugged | plugged | - | outlet is on port T of inlet section |
| **TA** | open | plugged | - | it's necessary to plug T port on inlet section |
| **TL** | plugged | open | - | it's necessary to plug T port on inlet section |
| **AE** | open | plugged | open | outlet is on port T of inlet section |
| **AEK** | plugged | plugged | plugged | outlet is on port T of inlet section |

**Wrenches and tightening torques**
X = allen wrench 8 - 42 Nm *(31 lbft)*
Y = allen wrench 7 - 24 Nm *(17.7 lbft)*

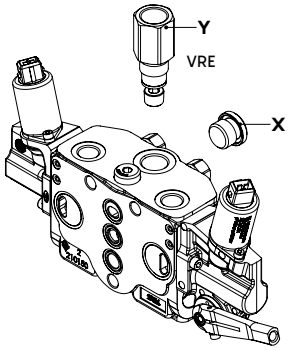
## Outlet working section for electrohydraulic/mixed controls

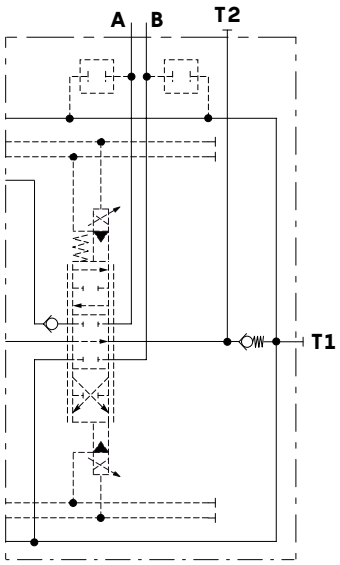
**Type F**
T2 and T1 ports plugged

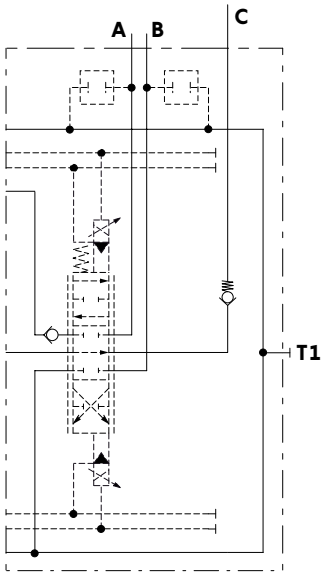
With back pressure valve
**VRC/VRC21**



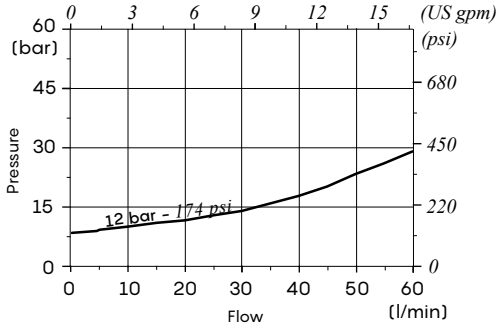

With back pressure valve
**VRE** (carry-over function)



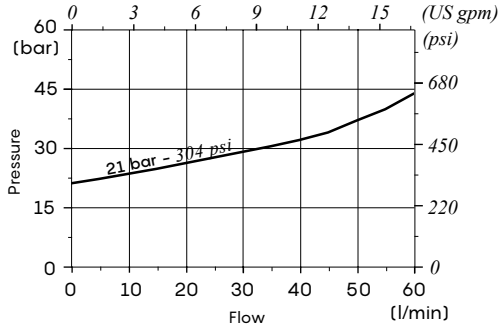



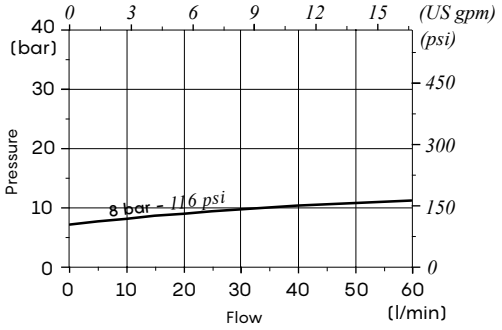

**Valve type VRC**
**Pressure drop**




**Valve type VRC(21)**
**Pressure drop**




**Valve type VRE**
**Pressure drop**




**Wrenches and tightening torques**
X = allen wrench 8 - 42 Nm *(31 lbft)*
Y = wrench 27 - 24 Nm *(17.7 lbft)*

## Intermediate inlet section type EI2

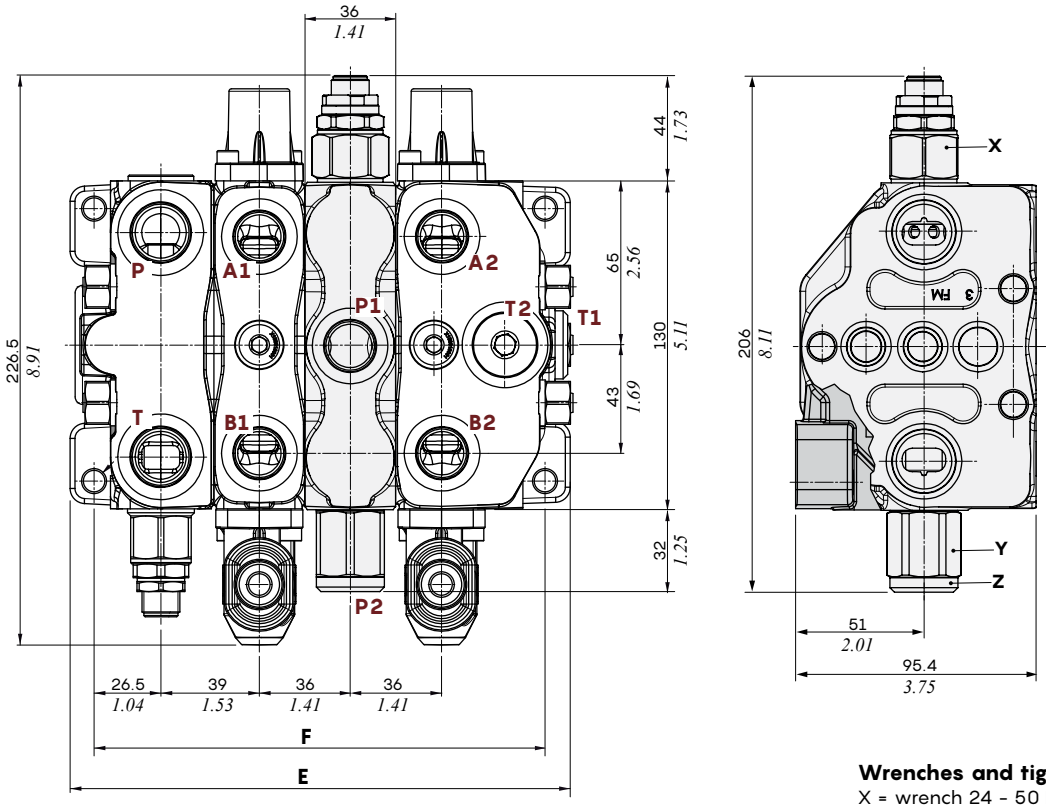
### Dimensional data and hydraulic circuit

Section with secondary pressure relief valve (VMP) and arrangement for a second inlet (P1 o P2).

**Configuration example:**

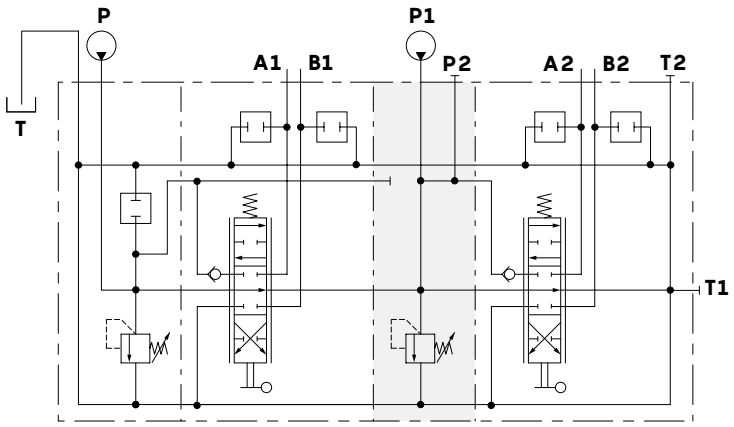
**SDS100/2/CN(TVGW3-175)/P-101-8L.UTUT/EI2(TVGW3-125\GF-T)/RP-101-8L.UTUT-F/...**

| Nr of working section | Inlet section | Working section | Intermediate inlet section with plugged auxiliary inlet | Outlet working section |
|---|---|---|---|---|




**Wrenches and tightening torques**
X = wrench 24 - 50 Nm *(36.8 lbft)*
Y = wrench 27 - 24 Nm *(17.7 lbft)*
Z = allen wrench 8 - 42 Nm *(31 lbft)*

| TYPE | E | | F | |
|---|---|---|---|---|
| | mm | *in* | mm | *in* |
| **SDS100/2+EI2** | 200.1 | *7.87* | 178.5 | *7.02* |
| **SDS100/3+EI2** | 236.1 | *9.30* | 214.5 | *8.44* |
| **SDS100/4+EI2** | 272.1 | *10.71* | 250.5 | *9.86* |
| **SDS100/5+EI2** | 308.1 | *12.13* | 286.5 | *11.28* |
| **SDS100/6+EI2** | 344.1 | *13.54* | 322.5 | *12.69* |
| **SDS100/7+EI2** | 380.1 | *14.96* | 358.5 | *14.11* |
| **SDS100/8+EI2** | 416.1 | *16.38* | 394.5 | *15.53* |
| **SDS100/9+EI2** | 452.1 | *17.80* | 430.5 | *16.94* |




Note - Drawings and dimensions are referred to **UN-UNF** thread

## Intermediate outlet manifold type CS1

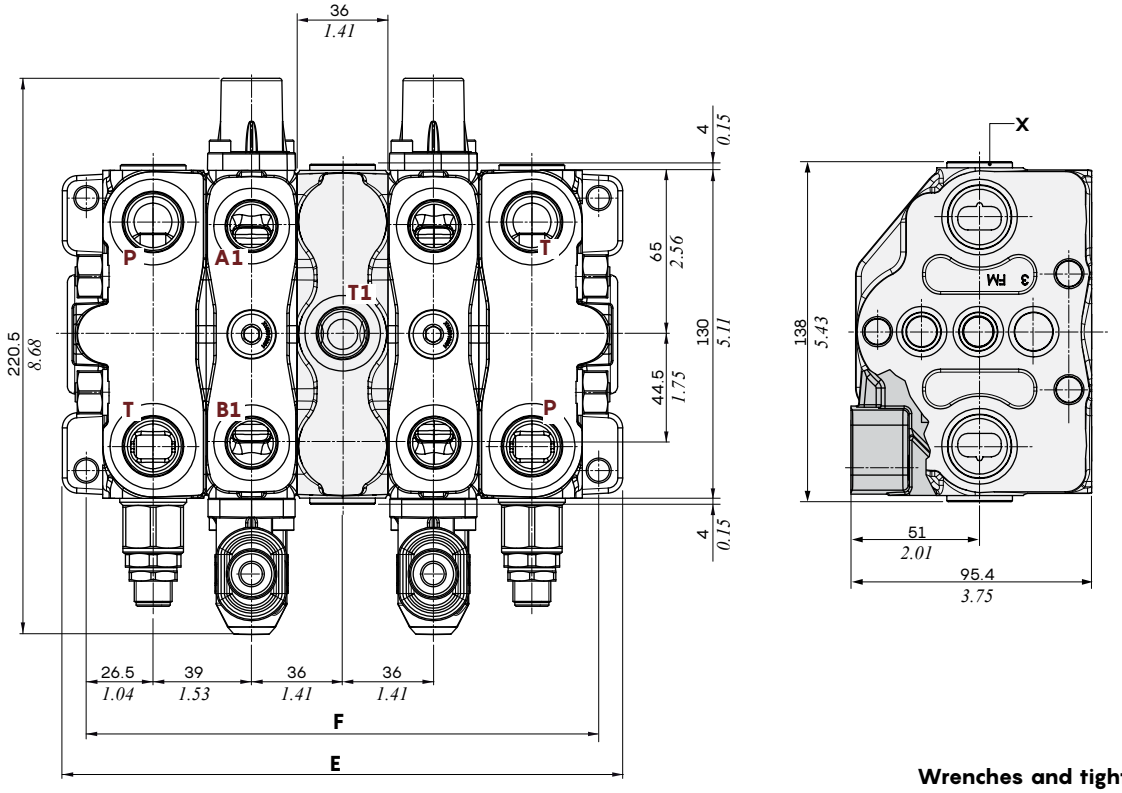
### Dimensional data and hydraulic circuit

Outlet manifold for distributor configured with 2 side inlet and single common T outlet.

**Configuration example:**

**SDS100/2/CN(TVGW3-175)/P-101-8L.UTUT/CS1/P-ED-101-8L.UTUT/BN(TVGW3-175)-....**

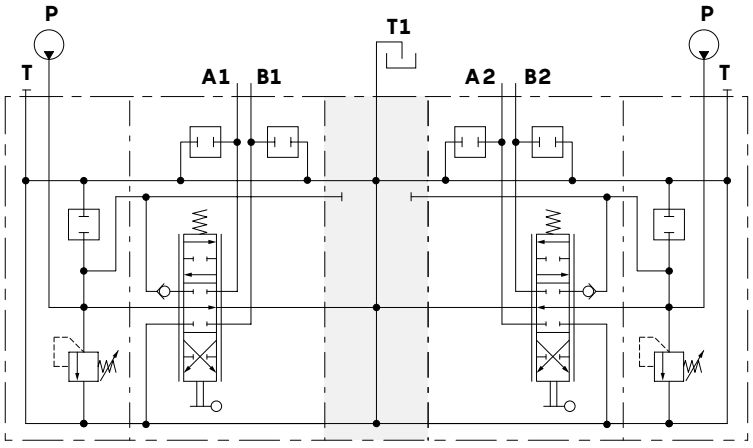
| Nr of working section | Inlet section | Working section | Intermediate outlet manifold | Working section | Inlet section |
|---|---|---|---|---|---|




**Wrenches and tightening torques**
X = allen wrench 8 - 24 Nm *(17.7 lbft)*

Note (*) - For right inlet configuration with CS1 manifold, contact Sales Dpt.

| TYPE | E | | F | |
|---|---|---|---|---|
| | mm | *in* | mm | *in* |
| **SDS100/2+CS1** | 222 | *8.74* | 203 | *7.99* |
| **SDS100/3+CS1** | 258 | *10.15* | 239 | *9.41* |
| **SDS100/4+CS1** | 294 | *11.57* | 275 | *10.82* |
| **SDS100/5+CS1** | 330 | *12.99* | 311 | *12.24* |
| **SDS100/6+CS1** | 366 | *14.41* | 347 | *13.66* |
| **SDS100/7+CS1** | 402 | *15.82* | 383 | *15.07* |
| **SDS100/8+CS1** | 438 | *17.24* | 419 | *16.49* |
| **SDS100/9+CS1** | 474 | *18.66* | 455 | *17.91* |
| **SDS100/10+CS1** | 510 | *20.07* | 491 | *19.33* |




Note - Drawings and dimensions are referred to **UN-UNF** thread

## Coil and connector

### Dimensional data and features

| Coil type | Voltage | Connectors | | | | | |
|---|---|---|---|---|---|---|---|
| | | ISO4400 | Deutsch DT | AMP JPT | Packard Weatherpack | Packard Metri-pack | Flying leads (without conn.) |
| BER | 10 VDC | 4SLE001000A | - | - | - | - | - |
| | 12 VDC | 4SLE001200A<br>4SLE001217A(3) | 4SLE001201A(5)<br>4SLE001209A(3-5)<br>4SLE001202A(6)<br>4SLE001216B(3-6)<br>4SLE001206A(2) | 4SLE001203A(5)<br>4SLE001211A(3-5) | 4SLE001210A(2) | 4SLE001214A(2) | 4SLE001207A |
| | 14 VDC | - | 4SLE001400A(6)<br>4SLE001401A(3-6)<br>4SLE001402A(3-5) | 4SLE001403A(3-5) | - | - | - |
| | 24 VDC | 4SLE002400A<br>4SLE002408A(3)<br>4SLE302400A(1) | 4SLE002401A(5)<br>4SLE002407A(3-5)<br>4SLE002402A(6) | 4SLE002403A(5) | - | - | 4SLE002404A |
| | 28 VDC | - | 4SLE002802A(6) | 4SLE002800A(5) | - | - | - |
| | 48 VDC | 4SLE004800A<br>4SLE304800A(1) | - | - | - | - | - |
| | 110VDC | 4SLE011000A<br>4SLE311000A(1) | - | - | - | - | - |
| | 220 VDC | 4SLE022000A<br>4SLE322000A(1) | - | - | - | - | - |
| BPV | 12 VDC | 4SLA001200 | - | - | - | - | - |
| | 24 VDC | 4SLA002403 | - | - | - | - | - |
| BE | 12 VDC | 4SL1000120A | 4SL1000123B(6)<br>4SL1000140(3-6)<br>4SL1000123B(2) | - | - | - | 4SL1000122B |
| | 24 VDC | 4SL1000240B<br>4SL1030240(1) | 4SL1002401(6) | - | - | - | - |
| | 48 VDC | 4SL1010480 | - | - | - | - | - |
| | 110 VDC | 4SL1011100<br>4SL1031100(1) | - | - | - | - | - |
| | 220 VDC | 4SL1022200<br>4SL1032200(1) | - | - | - | - | - |
| D12 | 10,5 VDC | 4SOL412011 | 4SOL412111(2) | - | - | - | - |
| | 12 VDC | 4SOL412012<br>4SOL412016(3) | 4SOL412013(6)<br>4SOL412112(2)<br>4SOL412015(3-6)<br>4SOL412113(2-3) | - | - | - | 4SOL412017(3) |
| | 24 VDC | 4SOL412024 | 4SOL412025(6)<br>4SOL412124(2)<br>4SOL412027(3-6) | 4SOL412224(2) | - | - | - |

### Mating connectors

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Standard** | | 4CN1009995 | 5CON140031 | 5CON003 | 5CON001 | 5CON017 | - |
| **With rectifier** | see following table | | | | | | |

Notes: (1) supply with AC and use only with rectifier connector - (2) with flying leads - (3) with bidirectional diode - (4) with unidirectional diode - (5) integrated perpendicular type - (6) integrated parallel type

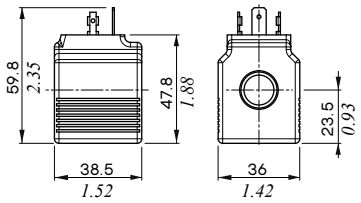
| Voltage | ISO 4400 mating connector with rectifier | | | |
|---|---|---|---|---|
| | type **BER** coil | type **BE** coil | type **BPV** coil | type **D12** coil |
| **24 VDC** | 4CN1010240 | 4CN3010240 | - | - |
| **48 VDC** | 4CN1010480 | 4CN3010480 | - | - |
| **110 VDC** | 4CN1011100 | 4CN3011100 | - | - |
| **220 VDC** | 4CN1012200 | 4CN3012200 | - | - |

## Coil and connector

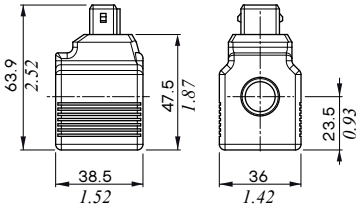
### Dimensional data and features

#### Type BER

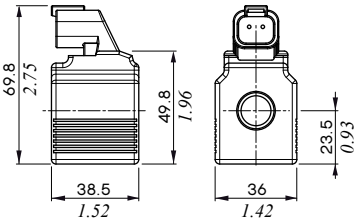
**With ISO4400 connector**



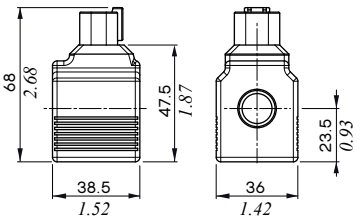

**With AMP JPT connector**




**With DEUTSCH DT04 connector**
(parallel type)




**With DEUTSCH DT04 connector**
(perpendicular type)




**Features**

Nominal voltage tolerance: ±10%

Power rating.....: 19,2 W - 12/24 VDC - 48 RAC
: 19,1 W - 28 VDC
: 19 W - 10/14/48/110/220 VDC
24/110/220 RAC

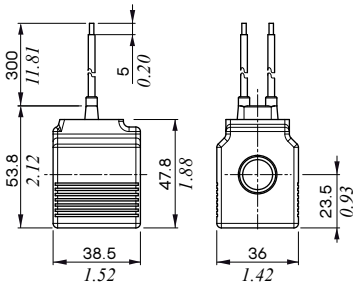
Max. operating current.....: 1,90 A - 10 VDC
: 1,60 A - 12 VDC
: 1,36 A - 14 VDC
: 0,80 A - 24 VDC
: 0,68 A - 28 VDC
: 0,40 A - 48 VDC
: 0,17 A - 110 VDC
: 0,09 A - 220 VDC
: 0,89 A - 24 RAC
: 0,45 A - 48 RAC
: 0,19 A - 110 RAC
: 0.09 A - 220 RAC

Coil insulance.....: Class H (180°C - *356°F*)

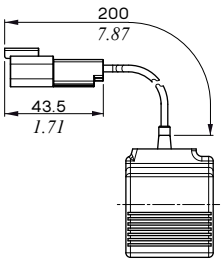
Weather protection.....: IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack

Insertion.....: 100%

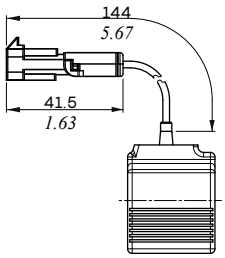
**With flying leads**



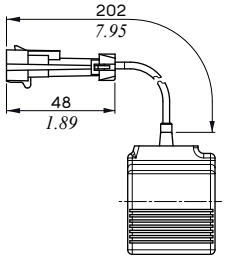

**With flying leads and DEUTSCH DT04 connector**




**With flying leads and PACKARD WEATHER-PACK connector**

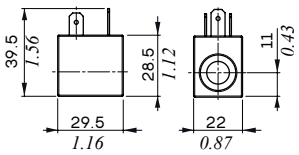



**With flying leads and PACKARD METRI-PACK connector**




#### Type BPV

**With ISO4400 connector**




**Features**

Nominal voltage tolerance: ±10%

Power rating.....: 8 W - 12/24 VDC

Max. operating current.....: 0,67 A - 12 VDC
: 0,33 A - 24 VDC

Coil insulance.....: Class H (180°C - *356°F*)

Weather protection.....: IP65 - ISO4400

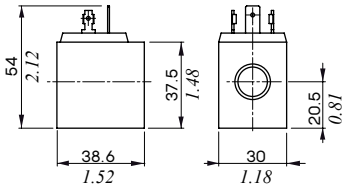
Insertion.....: 100%

## Coil and connector

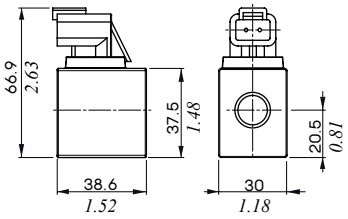
### Dimensional data and features

#### Type BE

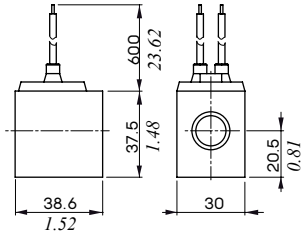
**With ISO4400 connector**



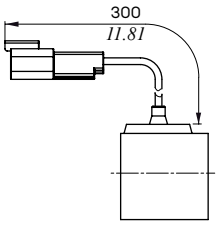

**With DEUTSCH DT04 connector**
(parallel type)




**With flying leads**




**With flying leads and DEUTSCH DT04 connector**

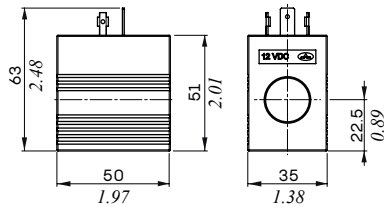



**Features**

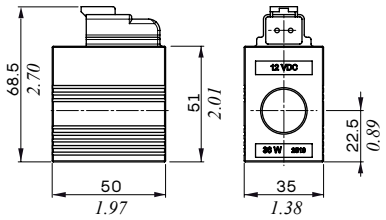
Nominal voltage tolerance: ±10%
Power rating.....: 18,7 W - 12 VDC
: 18,6 W - 24 VDC
: 17,3 W - 110 VDC
: 15,7 W - 220 VDC
: 18,3 W - 24 RAC
: 16 W - 110 RAC
: 16 W - 220 RAC
Max. operating current.....: 1,56 A - 12 VDC
: 0,77 A - 24 VDC
: 0,157 A - 110 VDC
: 0,08 A - 220 VDC
: 0,85 A - 24 RAC
: 0,16 A - 110 RAC
: 0,08 A - 220 RAC
Coil insulance.....: Classe F (155°C)
Weather protection.....: IP65 - ISO4400
: IP69K - Deutsch DT
Insertion.....: 100%

#### Type D12

**With ISO4400 connector**



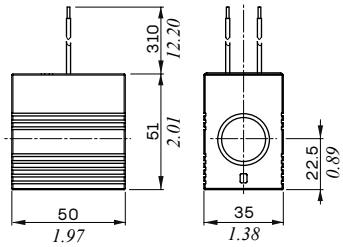

**With DEUTSCH DT04 connector**
(parallel type)



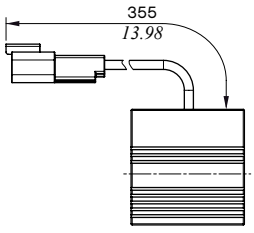

**Features**

Nominal voltage tolerance: ±10%
Power rating.....: 36 W - 10,5/12/24 VDC
Max. operating current.....: 3,43 A - 10,5 VDC
: 3 A - 12 VDC
: 1,5 A - 24 VDC
Coil insulance.....: Classe H (180°C)
Weather protection.....: IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
Insertion.....: 100%

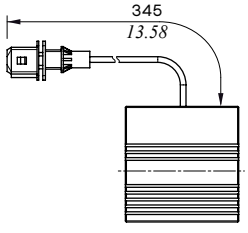
**With flying leads**




**With flying leads and DEUTSCH DT04 connector**



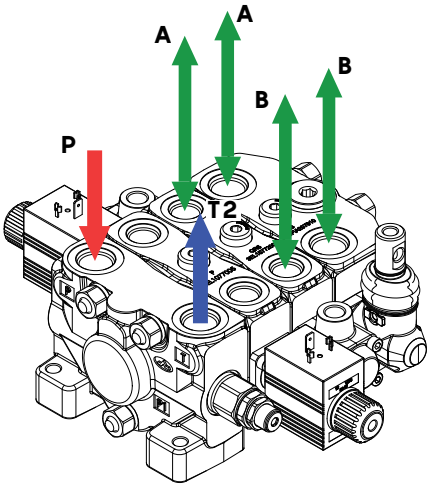

**With flying leads and AMP JPT connector**

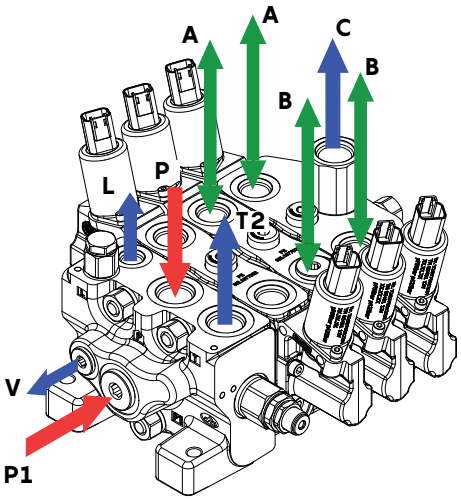


## Main rules

The SDS100 series valves are assembled and tested as per the technical specifications of this catalogue.
Before the final installation on your equipment, please follow the below recommendations:

- the valve can be assembled in any position; in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the spool control kit, do not use high pressure washdown directly on the valve;
- prior to painting, ensure plugs on normally open ports are tightly in place.




| FITTING TIGHTENING TORQUE – Nm / *lbft* | | | | | |
|---|---|---|---|---|---|
| THREAD TYPE | **P and P1 ports** | **A and B ports** | | **T, T1, T2 and C ports** | **V and L ports** |
| **BSP** | G1/2 | G3/8 | G1/2 | G1/2 | G1/4 |
| With O-Ring seal | 50 / *36.9* | 35 / *35.8* | 50 / *36.9* | 50 / *36.9* | 25 / *18.4* |
| With copper washer | 60 / *44.3* | 40 / *29.5* | 60 / *44.3* | 60 / *44.3* | 30 / *22.1* |
| With steel and rubber washer | 60 / *44.3* | 30 / *22.1* | 60 / *44.3* | 60 / *44.3* | 16 / *11.8* |
| **UN-UNF** | 7/8-14 (SAE 10) | 3/4-16 (SAE 8) | 7/8-14 (SAE 10) | 7/8-14 (SAE 10) | 9/16-18 (SAE 6) |
| With O-Ring seal | 90 / *66.4* | 35 / *35.8* | 90 / *66.4* | 90 / *66.4* | 30 / *22.1* |

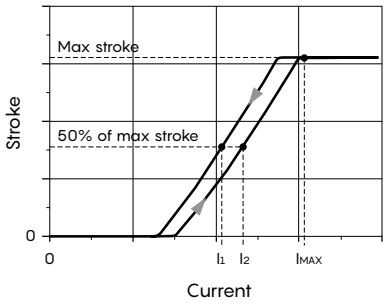
Note - These torques are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

## Appendix A

### Electro-hydraulic controls: hysteresis calculation rule

Hysteresis is calculated as the difference between control currents ($I_2$-$I_1$) needed to reach 50% of nominal spool stroke, referred to maximum control current IMAX, needed to reach 100% of spool stroke.
I2 is determined on spool stroke increase line, I1 is determined on spool stroke decrease line.

**Example diagram for data detection**




$$\text{Hysteresis } \% = \frac{I_2 - I_1}{I_{MAX}} \times 100$$

## Notes

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