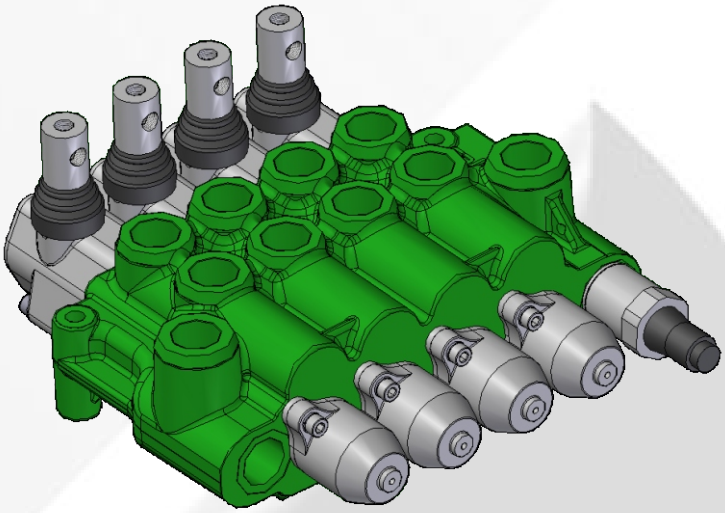
# MONOBLOCK VALVE

# VDM09

## Technical catalogue



E0.13.0610.02.00

COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
=ISO 9001/2000=

salami™

# INDEX



**E0.13.0610.02.00**

# GENERAL FEATURES

Among all hydraulic directional control valves used in the field of mobile equipment applications, the spool valve is the most popular.
The monoblock valve type offers an excellent performance price ratio.

**FEATURES**

VDM09 directional control valve has the following:
- cast-iron monoblock construction up to 6 spools
- parallel circuit, load check valve protection on down-stream of the pressure "P" line
- possibility of power beyond
- spool construction in steel, hardened and nichel-plated to obtain a higher surface hardness and a better corrosion resistance
- several types of spool: double, single acting, spool motor, float position etc.
- minimum tolerance between the spools and the body to obtain a minimum internal leakage
- interchangeabilty of all the spools
- several spool control devices and spool positioning devices

**VALVE AND DEVICE TYPES**

In order to meet the most stringent demands and to offer a wider range of applications, the following types of valves and devices are available:

**Valves**
- direct main relief valve: controls the maximum pressure in the circuit when one or more spools are on end stroke located on "A" port side, can be:
  direct type version up to 280 bar - *4060 psi*
- check valve avoids the returnof the fluid to the pump
- flow restrictor: directly fitted on the "A/B" ports orifice
- double-single acting conversion valve CV: this manual selector changes the working section from double to single acting (A ports).

**Devices**
- handle controls
- cross lever: allows to acting two spools with one manual joystick
- cable remote control
- control device for microswitches: for the operation with electric d.c. motor driven pumps at one or more rotation speeds
- hydraulic kick-out: returns the spool automatically to the neutral position when the pre-set pressure of port "A" or "B" is exceeded
- pneumatic proportional control available also with float position
- electropneumatic control
- hydraulic proportional control
- several spool positionings device to return the spool to neutral position or to lock the spool on working position

## TECHNICAL DATA

| | | | |
|---|---|---|---|
| Spools | from 1 to 6 | | |
| Nominal flow | Q | 75 l/min | ( *20 gpm US* ) |
| ☞ Max flow | | 90 l/min | ( *24 gpm US* ) |
| Max pressure | port P | 280 bar | ( *4060 psi* ) |
| | ports A/B | 280 bar | ( *4060 psi* ) |
| | ☞ port T | 25 bar | ( *363 psi* ) |
| Internal leakage at 160 bar ( *2285 psi* ) | ports A/B → T | 30 ÷ 45 $cm^3$/min | ( *1.8 ÷ 2.74 cu.in./min* ) |
| For lower leakage please contact our sales dept. | | | |
| Spool stroke (positions 1 and 2) | | ± 8 mm | ( *0,315 in.* ) |
| Spool stroke (position 4, float or regenerative) | | ± 7.5 + 4.5 mm | ( *0.295 + 0.177 in.* ) |

☞ In case you need flows from 75 l/min to 90 l/min please contact our sales dept.

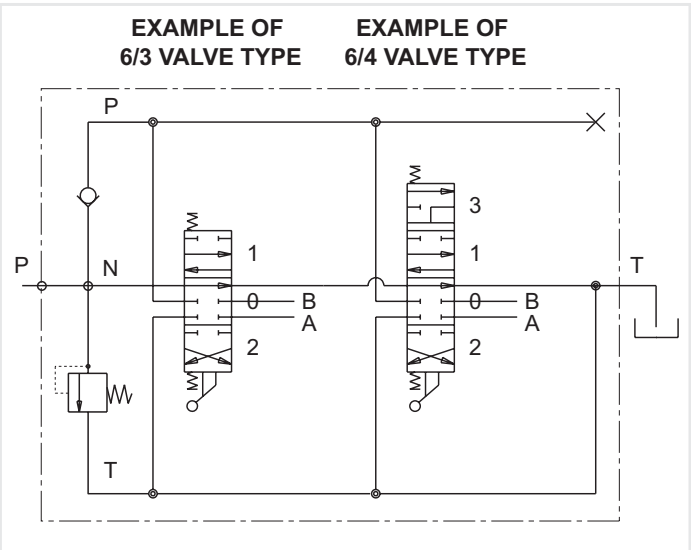
☞ For higher back pressure please contact our sales dept.

All technical data carried out using mineral oil with viscosity of 16 cSt and contamination level 19/16 as ISO 4406.

## WORKING CONDITIONS

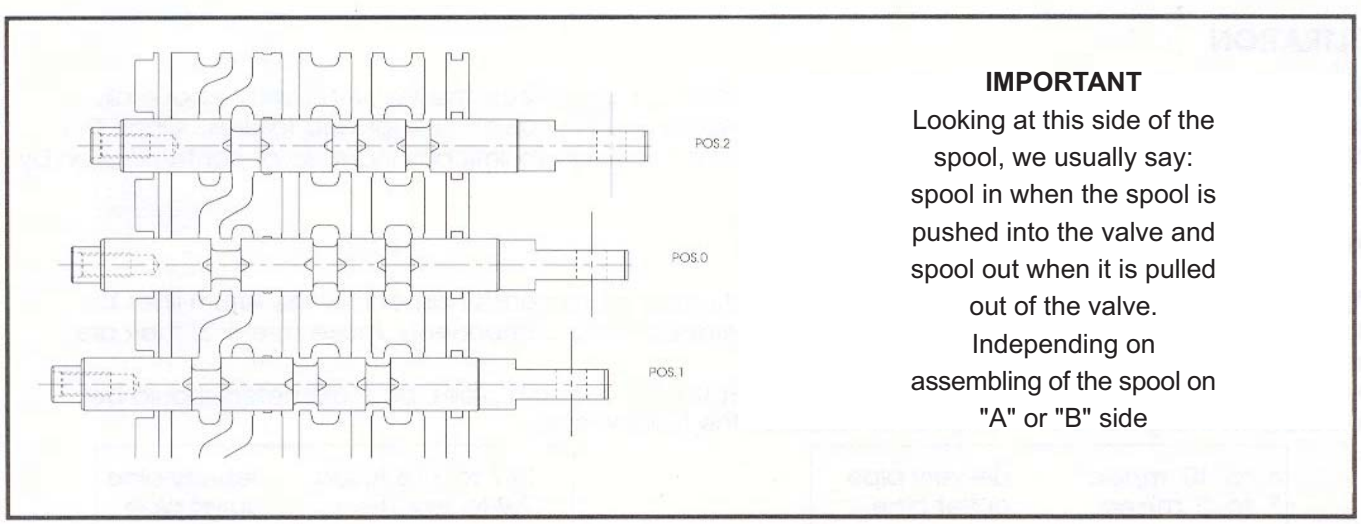
| | | | |
|---|---|---|---|
| Hydraulic fluid | mineral oil according to DIN 51524 | | |
| Viscosity | | | |
| | viscosity range | 10...400 $mm^2$/sec | ( *0.15...7.13 sq.in./sec* ) |
| | optimal viscosity | 12...75 $mm^2$/sec | ( *0.19...1.16 sq.in./sec* ) |
| Temperature | | | |
| | fluid range temperature | -20...85 °C | ( *-4...185 °F* ) NBR seals |
| | suggested range | 30...60 °C | ( *86...140 °F* ) NBR seals |
| Maximum contamination level | | NAS 1683: class 9 | ISO 4406: 19/16 |
| Room temperature | | -30...60 °C | ( -22...140 °F ) |
| Working limits | | see diagrams at page 6 | |
| Pressure drop | | see diagrams at page 7 | |
| For operation with fire resistant fluid, please contact our sales department | | | |

## OPERATING PRINCIPLE




Salami directional control valves belong to the 6/3 (or 6/4) type; they can control 6 gallery in 3 (or 4) spool positions simultaneously.
They are open circuit types: when the spool is in neutral position, the fluid flows directly to the tank with minimum internal pressure drops (approximatively 1 bar / 14.5 psi for each spool at nominal flow).
When the spool is moved from this position, the neutral gallery is gradually throttled and the connection between pump and actuator, through the corresponding port, is made.
When pressure exceeds the value of the pressure existing in port A or B, the fluid flows through the load check valve to the actuator.

There are 3 characteristic phases in the spool stroke:




**IMPORTANT**
Looking at this side of the spool, we usually say: spool in when the spool is pushed into the valve and spool out when it is pulled out of the valve.
Independing on assembling of the spool on "A" or "B" side

There are two characteristic phases in the spool stroke (8 mm - 0,315 in.):
a) the overlap phase (about 18% of the stroke) guarantees minimum internal leakages in neutral position;
b) the progressive flow regulation phase (82% of the stroke).
Both pictures show a 6/3 valve type with double acting spool only as principle of functioning.
Salami VDM09 is available in different solutions.

## INSTALLATION

When proceeding to mount the unit on the structure and to connect fittings to work ports, it is necessary to comply with the values of tightening torques.
The attachment of linkages to spools should not affect their operation. The mounting position can be vertical with inlet module on the top or horizontal.

**Standard tightening torques - Nm / *lbft***

| FITTING TYPE | P and PL ports | A and B ports | T and TL ports |
|---|---|---|---|
| BSP (ISO 228/1) | G 3/4 | G 1/2 | G 3/4 |
| with o-ring seal | **60 / *44.2*** | 50 / *36.9* | **60 / *44.2*** |
| with copper washer | 70 / *51.6* | 60 / *44.3* | 70 / *51.6* |
| with steel washer | 70 / *51.6* | 60 / *44.3* | 70 / *51.6* |
| SAE | **SAE 10 (7/8-14 UNF)** | SAE 10 (7/8-14 UNF) | SAE 12 (1 1/16-12 UN) |
| with o-ring seal | **60 / *44.2*** | 60 / *44.2* | 95 / *70.1* |

## FILTRATION

The contamination of the fluid in the system greatly affects the life of the unit. Above all, contamination may result in irregular operation, wear of seals in valve housings and failures. Once the initial contamination level of the system has been reached, it is necessary to limit any increase of contamination installing an efficient filtration system (see working conditions page 3).

## PIPES

Pipes should be as short as possible, without restrictions or sharp bends (especially the return lines). Before connecting pipes to the fittings of the corresponding components, make sure that they are free from burrs and other contamination.
As a first approximation, for a mobile machine with standard length pipes, their width should guarantee the following values of fluid speed*:

| | |
|---|---|
| 6 ÷ 10 m/sec | inlet pipe |
| 3 ÷ 5 m/sec | outlet pipe |

| | |
|---|---|
| 19,7 ÷ 32,8 ft/sec | inlet pipe |
| 9,9 ÷ 16,4 ft/sec | outlet pipe |

the lowest values of fluid speed are required in case of wide temperature range and/or for continuous duty.

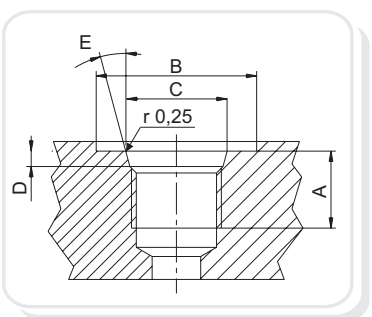
* $[v = \frac{21{,}2 \times Q}{d^2}$ v = fluid speed [m/sec], Q = flow [l/min], d = pipe internal diameter [mm]

## HYDRAULIC FLUIDS

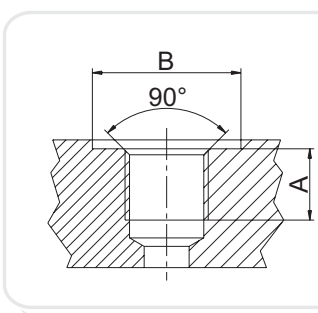
Usually a mineral-base oil with a good viscosity index should be used, preferably with good lubricating properties and corrosion, oxidation and foaming resistant.
Sometimes the fluids supplied by the manufacturers do not satisfy purity requirements (see page 3 WORKING CONDITIONS). It is therefore necessary to filter the fluid carefully before filling. Your supplier can give you the information about NAS class of its fluids. To maintain the proper purity class, the use of filters of high dirt capacity with clogging indicator is recommended.
Under humidity conditions it is necessary to use hygroscopic salts.
For operation with fire resistant and ecological fluids, please contact our technical department.

## PORTS

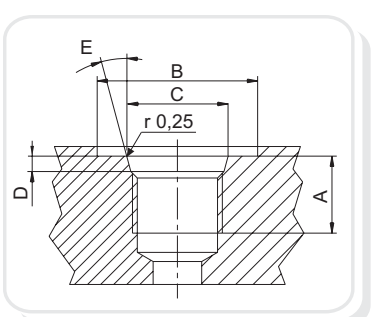
Following are standard ports. For different port types, please contact our sales department.




| SAE UN-UNF (ISO 725) | | | | | | |
|---|---|---|---|---|---|---|
| Dimensions | | 7/8 -14 UNF SAE10 | | 1”1/16 -12 UN SAE12 | | 1”5/16 -12 UN SAE16 | |
| mm | In. | | | | | | |
| A | | 17 | 0,67 | 20 | 0,79 | 20 | 0,79 |
| B | | 34 | 1,34 | 41 | 1,61 | 49 | 1,92 |
| C | | 23,9 | 0,94 | 29,2 | 1,15 | 35,5 | 1,40 |
| D | | 2,5 | 0,10 | 3,3 | 0,13 | 3,3 | 0,13 |
| E | | 15° | | 15° | | 15° | |




| BSP (ISO 228) | | | | | | |
|---|---|---|---|---|---|---|
| Dimensions | | G1/2 | | G3/4 | | G1 | |
| mm | In. | | | | | | |
| A | | 16 | 0,63 | 18 | 0,71 | 20 | 0,79 |
| B | | 27 | 1,06 | 33 | 1,30 | 40 | 1,57 |




| METRIC (ISO 262 - ISO 6149)* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dimensions | | M22 x 1.5 | | | | M27 x 2 | | | |
| mm | In. | ISO 262 | | ISO 6149 | | ISO 262 | | ISO 6149 | |
| A | | 16 | 0.63 | 16 | 0,63 | 18 | 0,71 | 19 | 1,75 |
| B | | 31,5 | 1.24 | 34 | 1,34 | 37,7 | 1,48 | 40 | 1,57 |
| C | | | | 23,8 | 0,94 | | | 29,4 | 1,16 |
| D | | | | 2,4 | 0.09 | | | 3,1 | 0,12 |

*Available for quantity, please contact our sales dept.

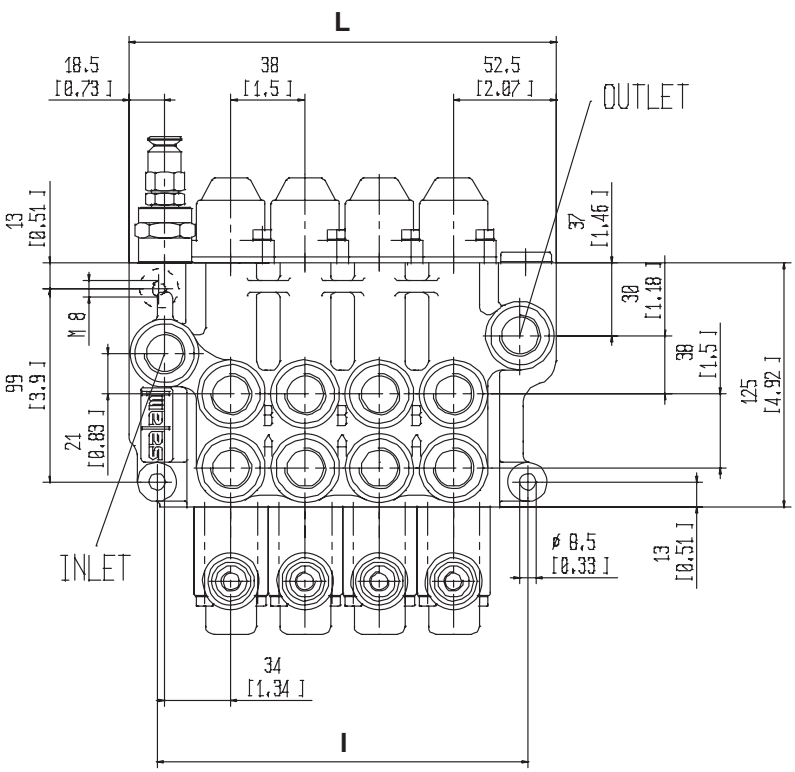
## DIMENSIONS FROM 1 TO 6 SECTIONS MONOBLOCK

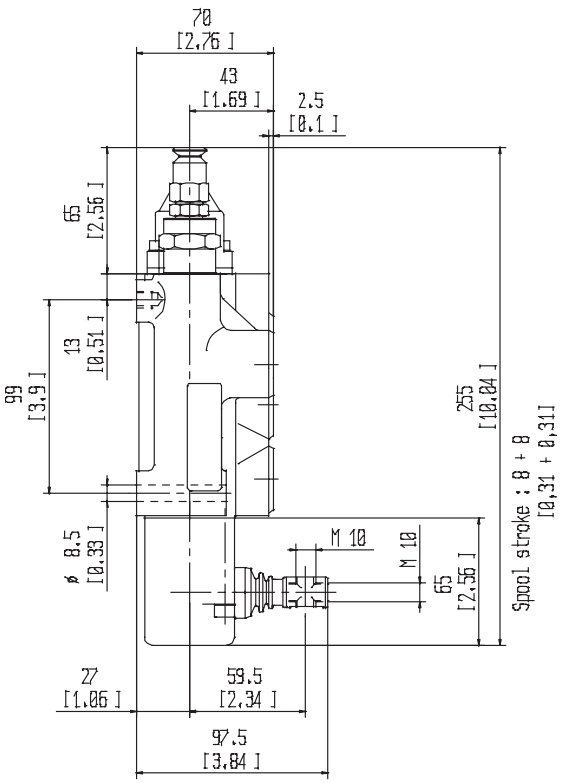
Nominal flow: 75 l/min.
Pressure on P port: 280 bar
Pressure on A/B port: 315 bar

Nominal flow: 21 gpm US
Pressure on P port: 4000 psi
Pressure on A/B port: 4560 psi

| Ports | P | T | A - B |
|---|---|---|---|
| BSP ISO 228 | 1/2 | 1/2 | 1/2 |
| *METRICA ISO 6149 | M 22X1.5 | M 22X1.5 | M 22X1.5 |
| SAE ISO 725 | 7/8 - 16 UNF | 7/8 - 16 UNF | 7/8 - 16 UNF |

* Available on request



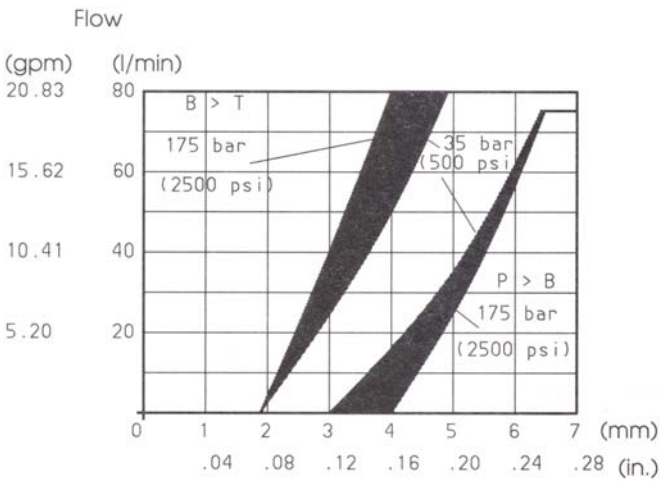

| Spool | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| I | mm. | 76 | 114 | 152 | 190 | 228 | 266 |
| | in. | 2.90 | 4.48 | 5.98 | 7.48 | 8.98 | 10.47 |
| L | mm. | 105 | 143 | 181 | 219 | 257 | 295 |
| | in. | 4.13 | 5.62 | 7.12 | 8.62 | 10.12 | 11.61 |
| M | kg | 4.2 | 6.5 | 8.9 | 11.3 | 13.7 | 16.1 |
| | lb | 9.24 | 14.3 | 19.58 | 24.86 | 30.14 | 35.42 |

## PERFORMANCE DATA

Performance curves carried out with oil viscosity at 16cSt

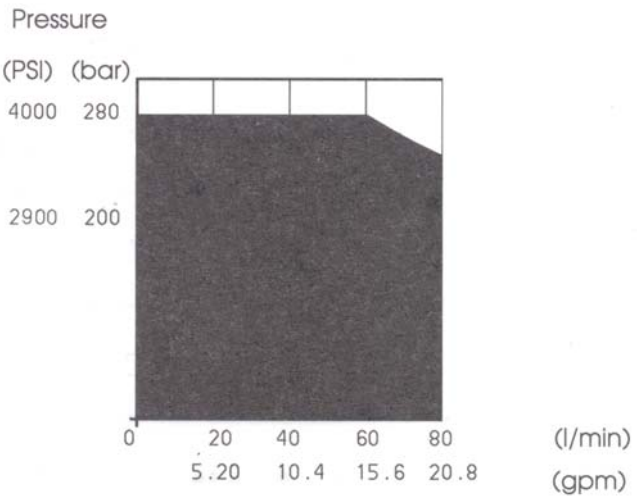
Internal leakages
A/B → T **35** $cm^3$/min. (0.92 cu. in./min.)
at 200 bar (2900 psi)

### Meetering



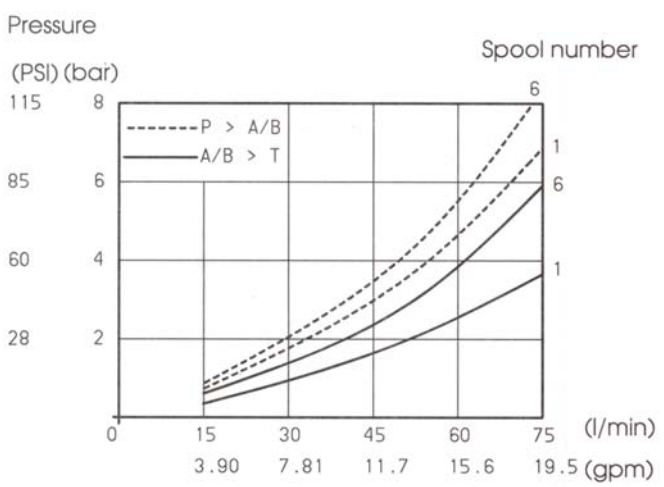

Stroke

### Working limits



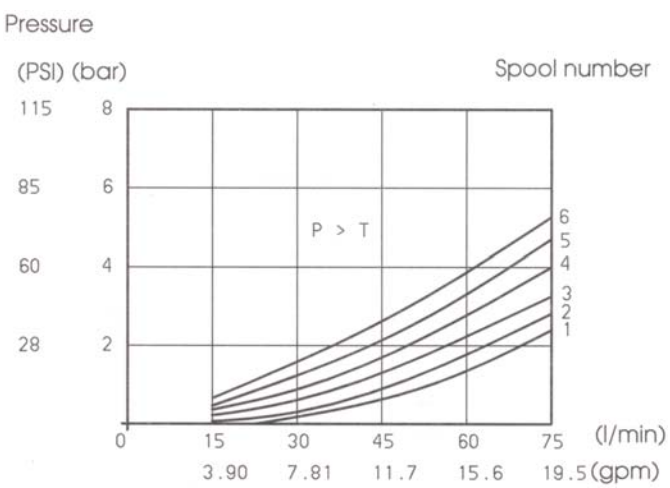

Flow

### Pressure drop




Flow

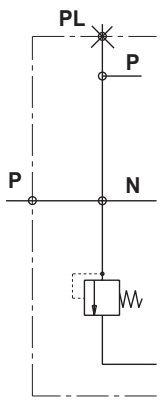
### Pressure drop



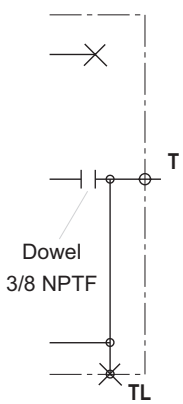

Flow

## INLET AND OUTLET TYPES

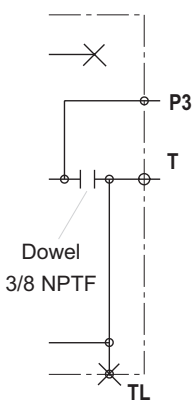
Top port side port plugged **01**



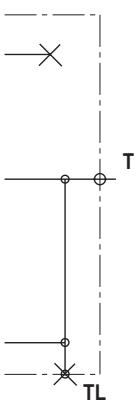

Closed center configuration **U7**



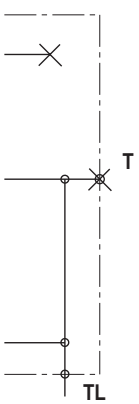

Power beyond configuration (side P3) **U5**



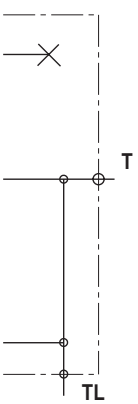

Top port side port plugged **U4**



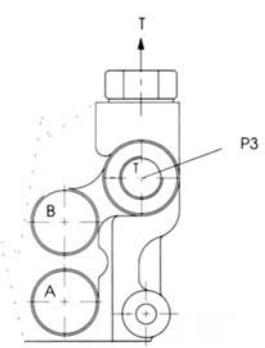

Side port top port plugged **U3**




Top and side ports **U2**




**code U5**

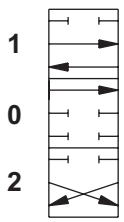



U5 configuration is achieveable by U2 - U3 - U4 with the power beyond kit.

## CIRCUIT AND SPOOL TYPES

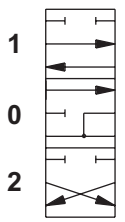
**As you can read at page xx, the spools can be types "A" nominal flow or "C" 2/3 of nominal flow.**

**01**



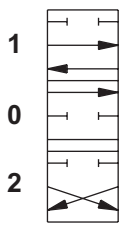

Double acting spool

Double acting
motor spool



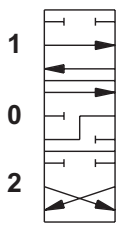

**02**

**03**



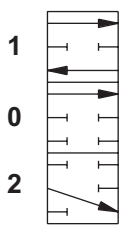

Double acting
motor spool
("B" port blocked)

Double acting
motor spool
("A" port blocked)



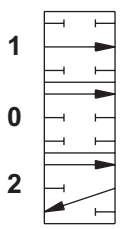

**04**

**05**



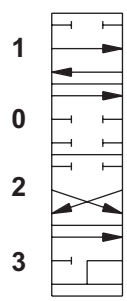

Single acting spool
"A" working port

Single acting spool
"B" working port



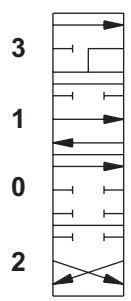

**06**

**11**



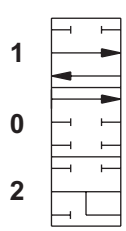

Double acting spool with
float function
in 3rd position (spool in)

Double acting spool with
float function
in 3rd position (spool out)




**12**

**17**

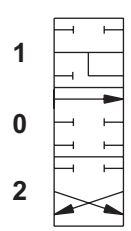



Double acting spool with
regenerative function
in position 2 (spool in)

With this type of spool
a special machining of
the body is required

Double acting spool with
regenerative function
in position 1 (spool out)

With this type of spool
a special machining of
the body is required

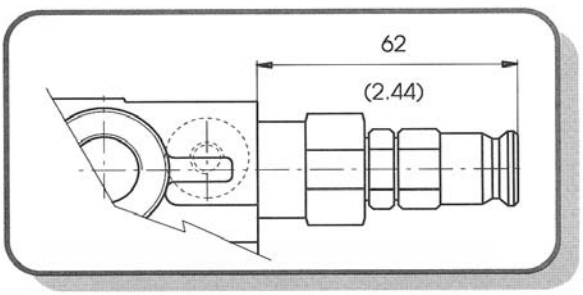


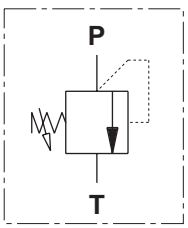

**18**

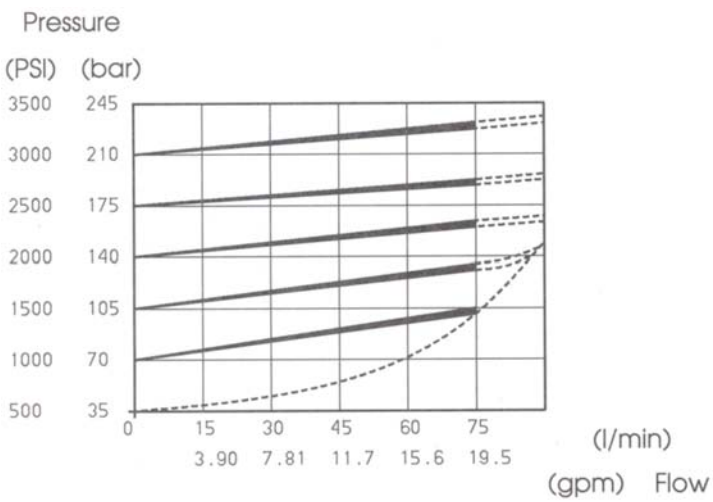
## MAIN RELIEF VALVE

MAIN RELIEF VALVE DIRECT OPERATED
(setting range from 40 to 280 bar - *580 to 4060 psi*)

**D**

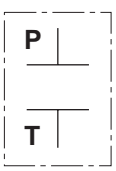


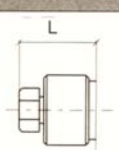
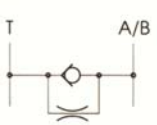
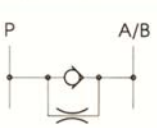




PLUG FOR MAIN RELIEF SEAT
WITHOUT VALVE

**W**

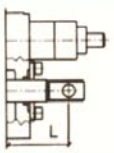
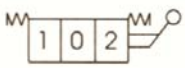
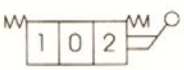
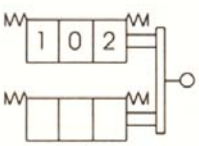
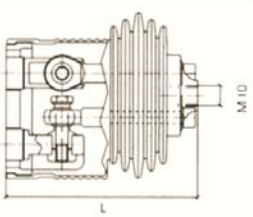
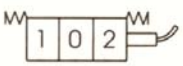
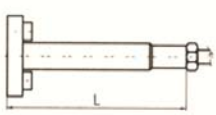
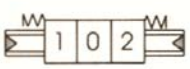
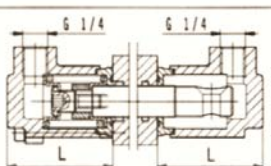
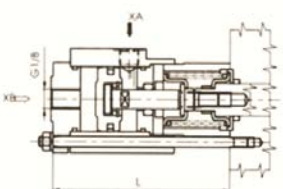
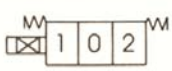



## AUXILIARY VALVES

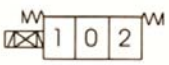
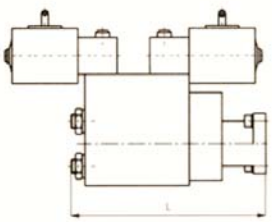
| Code | Hydraulic symbol | Description | |
|---|---|---|---|
| CV |   | Double-single acting conversion valve<br>Only on B side |   |
| ST |   | Flow restrictor |  |
| SP |   | Flow restrictor | |

Note: the port valves for monoblock are optional and need a modification to the cast-iron body

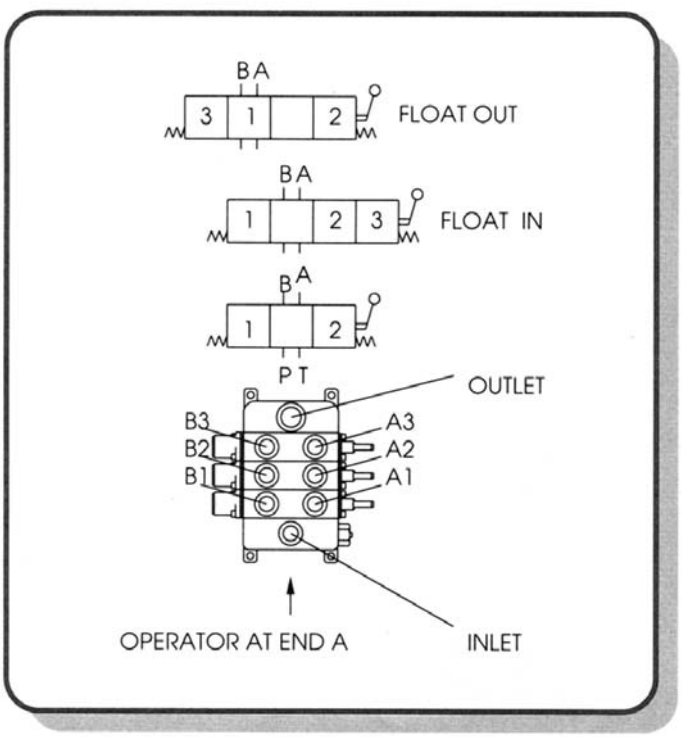
## SPOOL CONTROLS

| Code | Hydraulic symbol | Description | |
|---|---|---|---|
| SL |  | Without lever |  |
| NL |  | With protected lever |  |
| MP |  | With protected clamp lever |  |
| L1 |  | Cross lever for 2 spools with fulcrum on up-stream spool |  |
| L2 | | Cross lever for 2 spools with fulcrum on down-stream spool | |
| TC |  | Cable control (with mounting kit on directional control valve) |  |
| IP |  | Hydraulic proportional min: 57 psi (4 bar) max 357 psi (25 bar) |  |
| PP |  | Pneumatic proportional min: 35 psi (2,5 bar) max 85 psi (6 bar) |  |
| PO |  | Pneumatic ON-OFF min: 50 psi (3,5 bar) | |

## SPOOL CONTROLS

| Code | Hydraulic symbol | Description | |
|---|---|---|---|
| P1 |  | Electric pneumatic ON-OFF 12V c.c. (max 9 bar/130 psi) (induced current = 1,5A absorbed power = 18W) |  |
| P2 | | Electric pneumatic ON-OFF 24V c.c. (max 9 bar/130 psi) (induced current = 0,75A absorbed power = 18W) | |

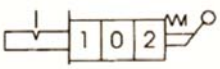
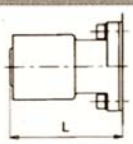
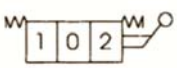
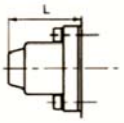
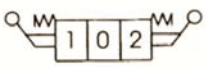
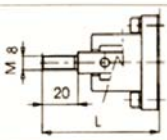
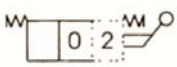
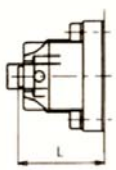
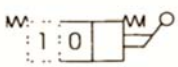
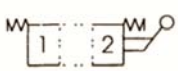
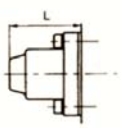
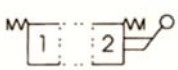
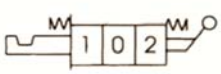
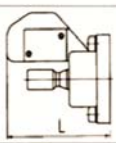
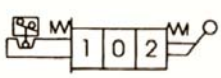
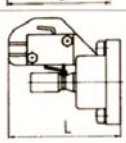
## SPOOL CONTROL LOCATION SCHEMATIC VIEW



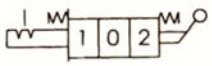
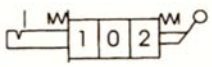
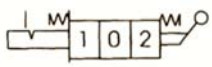
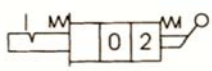
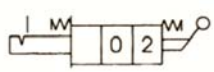
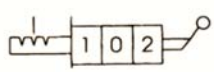
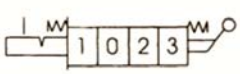
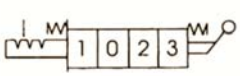
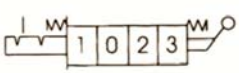
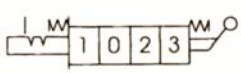

Positioning levers on B port is not standard but is possible using special spools.

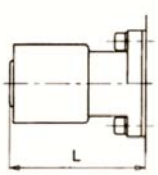
The electric, pneumatic and electro-pneumatic actings are usually on the B port side.

## SPOOL POSITIONINGS

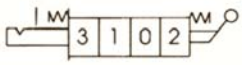
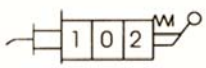
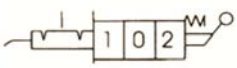
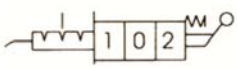
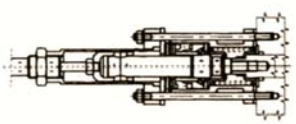
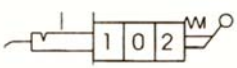
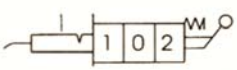
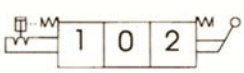
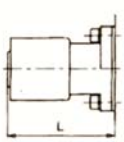
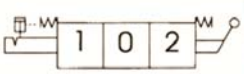
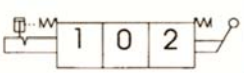
| Code | Hydraulic symbol | Description | |
|---|---|---|---|
| C0 |  | With friction on each position |  |
| C2 |  | Spring centered to NEUTRAL |  |
| C3 |  | Spring centered to NEUTRAL with double control (screw tap) |  |
| C5 |  | Two positions (NEUTRAL/spool-IN) with spring return in neutral |  |
| C6 |  | Two positions (NEUTRAL/spool-OUT) with spring return in neutral | |
| C7 |  | Two positions-spool IN/spool OUT with spring return in spool OUT |  |
| C8 |  | Two positions-spool IN/spool OUT with spring return in spool IN | |
| CE |  | Pre-arrangement for electrical device |  |
| CM |  | Microswitch to start an electric motor (Max current = 10A at 250 Vca) |  |
| PE | | Prearrangement for electrical/potentiometer device | |
| PM | | Microswitch to start an electric motor and potentiometer device (Max current = 10A at 250 Vca) | |

## SPOOL POSITIONINGS

| Code | Hydraulic symbol | Description |
|---|---|---|
| R2 |  | Detent on spool IN-OUT position with spring return in NEUTRAL |
| R4 |  | Detent on spool OUT position with spring return in NEUTRAL |
| R5 |  | Detent on spool IN position with spring return in NEUTRAL |
| R6 |  | Detent on spool IN, 2 positions with spring return in NEUTRAL |
| R7 |  | Detent on spool OUT, 2 positions with spring return in NEUTRAL |
| R9 |  | Detent on spool IN-NEUTRAL-OUT, 3 positions without spring |
| F1 |  | Detent on float spool IN, with spring return in NEUTRAL |
| F2 |  | Detent on spool FLOAT-IN-OUT, position with spring return in NEUTRAL |
| F3 |  | Detent on spool FLOAT-OUT, position with spring return in NEUTRAL |
| F4 |  | Detent on spool FLOAT-IN, position with spring return in NEUTRAL |



## SPOOL POSITIONINGS

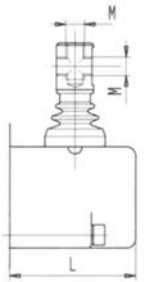
| Code | Hydraulic symbol | Description | |
|---|---|---|---|
| F5 |  | Detent on spool float OUT position with spring return in neutral |  |
| D1 |  | Cable remote control cap side | |
| D2 |  | Cable remote control and detent on spool IN-OUT position | |
| D3 |  | Cable remote control and detent on spool IN-NEUTRAL-OUT position |  |
| D4 |  | Cable remote control and detent on spool OUT position | |
| D5 |  | Cable remote control and detent on spool IN position | |
| G2 |  | Detent on spool IN-OUT position with hydraulic kick-out |  |
| G4 |  | Detent on spool OUT position with hydraulic kick-out | |
| G5 |  | Detent on spool IN position with hydraulic kick-out | |

## DETENT IN/OUT EFFORT

| | Detent IN | Detent OUT |
|---|---|---|
| 1st and 2nd positions | 250N/56,2 $lb_f$ | 33,72 $lb_f$ (min) 150N (min) |
| 3rd position | 350N/78,7 $lb_f$ | 33,72 $lb_f$ (min) 150N (min) |

## CLAMP LEVERS CODE NL - MP - SS

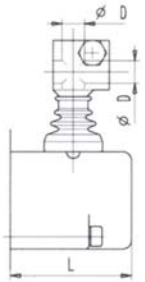
Protected lever




**code NL**

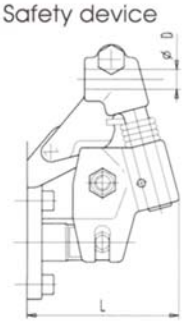
Protected lever NL

Protected clamp lever




**code MP**

Safety device




**code SS**

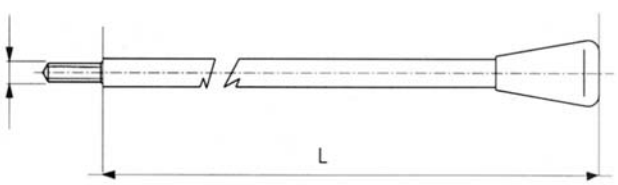
This code is not included in the codification: if requested, please add to the order

## STANDARD SHAFTS FOR PROTECTED LEVERS CODE NL

| | VDM07 | VDM09 |
|---|---|---|
| M | M8 | M10 |
| L | 180 mm-7,1" | 240 mm-9,5" |

**code LA**

M




This code is not included in the codification: if requested, please add to the order

## STANDARD SHAFTS FOR LEVERS CODE MP - SS

| | VDM07 | VDM09 |
|---|---|---|
| D | 8 mm-0,31" | 10 mm-0,39" |
| L | 180 mm-7,1" | 240 mm-9,5" |

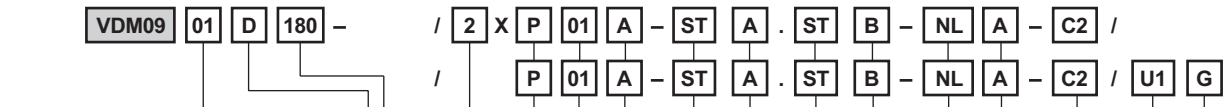
**code LB**

D


This code is not included in the codification: if requested, please add to the order

# How to order/VDM09

## DIRECTIONAL CONTROL VALVE MONOBLOCK TYPE




| INLET CONFIGURATION |
|---|
| See page 9 |

| MAIN RELIEF VALVE (PAG. 11) | |
|---|---|
| D | Direct main relief valve |
| W | Without main relief valve |

| MAIN RELIEF VALVE SETTING (bar) |
|---|
| See page 11 |

| NUMBER OF IDENTICAL CONSECUTIVE SECTIONS |
|---|

| PARALLEL CIRCUIT |
|---|

| SPOOL TYPES (PAG. 10) | |
|---|---|
| 01 | Double acting spool |
| 02 | Double acting motor spool |
| 03 | Double acting motor spool ("B" port blocked) |
| 04 | Double acting motor spool ("A" port blocked) |
| 05 | Single acting spool "A" working port |
| 06 | Single acting spool "B" working port |
| 11 | Double acting spool with float function in 3rd pos. (spool in) |
| 12 | Double acting spool with float function in 3rd pos. (spool out) |
| 17 | Double acting spool with regenerative function in position 2 (spool in) |
| 18 | Double acting spool with regenerative function in position 1 (spool out) |

| SPOOL CHOICE ACCORDING TO THE INLET FLOW (PAG. 10) | |
|---|---|
| A | Nominal flow |
| C | 2/3 of the nominal flow |

| AUXILIARY VALVES (PAG. 11) | |
|---|---|
| CV | Conversion valve from double to single acting circuit |
| ST | Flow restrictor P ® A/B |
| SP | Flow restrictor A/B ® T |

| PORTS (PAG. 7) | |
|---|---|
| G | GAS threaded |
| S | SAE threaded |
| M* | METRIC threaded |

| OUTLET CONFIGURATION |
|---|
| See page 9 |

| SPOOL POSITIONINGS |
|---|
| Page 14<br>C0 - C2 - C3 - C5 - C6 - C7 - C8 - CE - CM - PE - PM |
| Page 15<br>R2- R4 - R5 - R6 - R7 - R9 - F1 - F2 - F3 - F4 |
| Page 16<br>F5 - D1 - D2 - D3 - D4 - D5 - G2 - G4 - G5 |

| CONTROL SIDE (PAGE 13) |
|---|

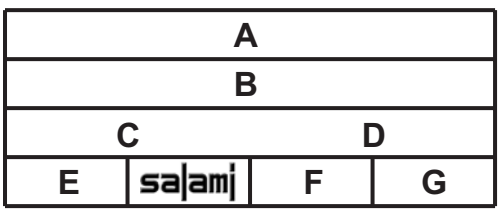
| SPOOL CONTROLS (PAGE 12 - 13) |
|---|
| Without lever box - SL |
| Handle controls<br>NL - MP - SS - L1/L2 |
| Devices for cable remote control<br>TC |
| Hydraulic control<br>IP |
| Pneumatic and electro-pneumatic controls<br>PP/P0 - P1/P2 |

| PORT ON WHICH THE VALVE IS MOUNTED |
|---|

*Available for quantity, please contact our sales dept.

## DESCRIPTION OF THE NEW PRODUCT IDENTIFICATION LABEL

Based on the firm certification ISO 9001 - UNI EN 29001, section 4.8 (identification and tracebility of the product), we have adopted a new identification label starting from the 1st march 1995. Pls, see following example:




**A = Product short descritpion (eg. VD8A/FDD/U4G).**

**B = Customer part number.**

**C = Salami part number (eg. 6235 0025 0).**

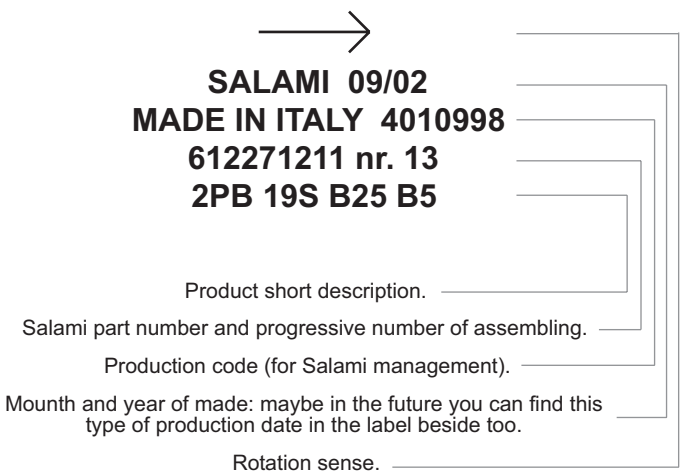
**D = Production code (for Salami management)**

**E = Rotation sense (only for pumps).**

**F = Production date (see data sheet here below)**

**G = Progressive number of assembling.**

Only for pumps 2PB and 2PZ (except triple 2PB) the identification product is marked on the top of the pump body as shown here below:




| ASSEMBLED | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JANUARY | 7A | 8M | 9M | 0M | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 08M | 09M | 10M | 11M | 12M |
| FEBRUARY | 7B | 8N | 9N | 0N | 1N | 2N | 3N | 4N | 5N | 6N | 7N | 08N | 09N | 10N | 11N | 12N |
| MARCH | 7C | 8P | 9P | 0P | 1P | 2P | 3P | 4P | 5P | 6P | 7P | 08P | 09P | 10P | 11P | 12P |
| APRIL | 7D | 8Q | 9Q | 0Q | 1Q | 2Q | 3Q | 4Q | 5Q | 6Q | 7Q | 08Q | 09Q | 10Q | 11Q | 12Q |
| MAY | 7E | 8R | 9R | 0R | 1R | 2R | 3R | 4R | 5R | 6R | 7R | 08R | 09R | 10R | 11R | 12R |
| JUNE | 7F | 8S | 9S | 0S | 1S | 2S | 3S | 4S | 5S | 6S | 7S | 08S | 09S | 10S | 11S | 12S |
| JULY | 7G | 8T | 9T | 0T | 1T | 2T | 3T | 4T | 5T | 6T | 7T | 08T | 09T | 10T | 11T | 12T |
| AUGUST | 7H | 8U | 9U | 0U | 1U | 2U | 3U | 4U | 5U | 6U | 7U | 08U | 09U | 10U | 11U | 12U |
| SEPTEMBER | 7I | 8V | 9V | 0V | 1V | 2V | 3V | 4V | 5V | 6V | 7V | 08V | 09V | 10V | 11V | 12V |
| OCTOBER | 7J | 8Z | 9Z | 0Z | 1Z | 2Z | 3Z | 4Z | 5Z | 6Z | 7Z | 08Z | 09Z | 10Z | 11Z | 12Z |
| NOVEMBER | 7K | 8X | 9X | 0X | 1X | 2X | 3X | 4X | 5X | 6X | 7X | 08X | 09X | 10X | 11X | 12X |
| DECEMBER | 7L | 8Y | 9Y | 0Y | 1Y | 2Y | 3Y | 4Y | 5Y | 6Y | 7Y | 08Y | 09Y | 10Y | 11Y | 12Y |

## WARRANTY

- We warrant products sold by us to be free from defects in material and workmanship.

- Our sole obligation to buyer under this warranty is the repair or replacement, at our option, of any products or parts thereof which, under normal use and proper maintenance, have proven defective in material or workmanship, this warranty does not cover ordinary wear and tear, abuse, misuse, averloading, alteration.

- No claims under this warranty will be valid unless buyer notifies SALAMI in writing within a reasonable time of the buyer's discovery of such defects,but in no event later than twelve (12) mounths from date of shipment to buyer.

- Our obligation under this warranty shall not include any transportation charges or cost of installation, replacement, field repair, or other charges related to returning products to us; or any liability for directs, indirects or consequential damage or delay.If requested by us, products or parts for which a warranty claim is made are to be returned transportation prepaid to our factory. The risk of loss of any products or parts thereof returned to SALAMI will be on buyer.

- No employee or representative is authorized to change any warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of SALAMI.

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