

TECNORD

SERVOCOMANDI E REGOLAZIONE

TDV 100 Directional Proportional Control Valve System



STACKABLE DIRECTIONAL CONTROL VALVE SYSTEM

The **TDV 100** is a closed center, load sensing, sectional control valve with pre-compensation. The **TDV 100** can be configured with 1 to 10 working sections and can be used either with fixed displacement or with pressure/flow compensated variable displacement pumps.

When multiple functions are selected, the **TDV 100** will automatically resolve the highest function load pressure which is then transmitted to the pump or inlet unloader/by-pass compensator and drained to tank once all spools are returned to neutral.

The load sensing system maintains the delta P constant through spool control notches by means of the pressure compensation principle (spool sections are equipped with local 2 ways pressure compensator).

Each **TDV 100** sectional valve is crossed by a pilot pressure supply line and a return rail to feed around 20-25 bar to the MULTIDROM electro-hydraulic actuators system or proportional pilot pressure valves.

MANUAL AND ELECTRO-HYDRAULIC CONTROLS

- MLM** MLM - Multi-function / Manual control lever.
- MLT** Multi-function / MULTIDROM feedback (closed loop) type electro-hydraulic proportional actuators and manual control lever.
- MPP** Multi-function / Double-sided proportional non feedback (open loop) pilot pressure control actuators.
- MPM** Same as MPP with manual lever.
- MOP** Multi-function / ON-OFF actuators and manual control lever.
- SPO** Single function ON-OFF selection with pressure compensated 3-way proportional meter-in control of pump flow with manual overrides.

SPECIFICATIONS

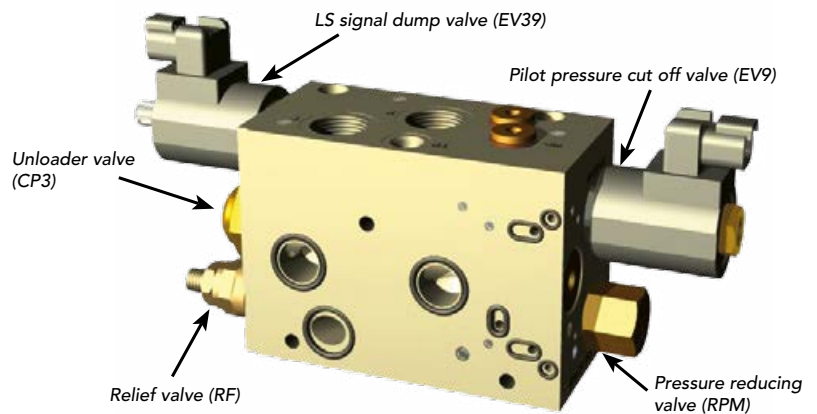
- Max. operating flow90 lt/min
- Max. flow per section.....80 lt/min
- Max. working pressure.....320 bar
- Min. stand-by & pilot pressure.....14 bar
- Spool stroke± 6.5 mm
- Section width.....39 mm
- P & T Ports3/4" - BSP
- Work ports (A & B)1/2" - BSP (SAE port available on request)
- Fluid.....Mineral based oil
- Fluid temperature range-25°C/+95°C
- Optimum fluid viscosity range3<cSt<648
- Max. fluid contamination level18/15/10 (ISO 4406)
- SealsBuna-N (Std) / Viton (Opt.)

PRODUCT FEATURES AND BENEFITS

- Load-independent simultaneous control of two or more functions, within pump's flow saturation limits.
- Proportional flow control extended to 95% of spool stroke.
- MULTIDROM proportional actuators have built-in electronics requiring only variable voltage signals from a joystick.
- Internal closed loop position control configuration makes the valve spool achieving the desired position with accuracy levels approaching the performance of a servo-valve.
- Built-in CANbus interface working on SAE J1939 protocol.
- Non-feedback proportional and ON-OFF pilot pressure control actuators available.
- Electro-hydraulic, pressure compensated meter-in control of pump flow is available for cost-effective applications.
- Special "craning" spool configuration for overhung load control in conjunction with counterbalance valves.

TDV 101 - INLET SECTIONS

- **TDV 101-IFCL** version for fixed displacement pumps incorporates an unloader valve with a 15 bar bias spring to create a pump-to-LS differential pressure. LS signal dump valve and pilot pressure cut off valve as optional.
- **TDV 101-IVOL** version for variable displacement pumps incorporates a pilot-operated system relief valve. LS signal dump valve and pilot pressure cut off valve as optional.
- **TDV 101-IFRL A/B** version incorporates a proportional flow control valve to perform a pump flow. A=0-20 l/min, B=0-50 l/min.



TDV 102 - SPOOL SECTIONS

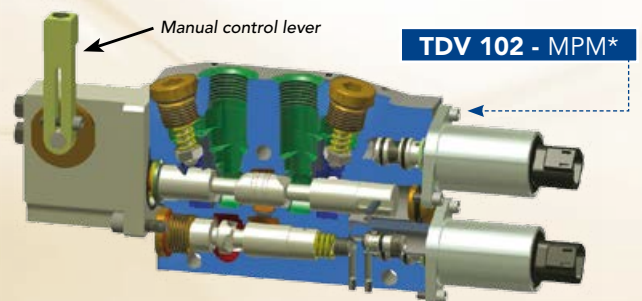
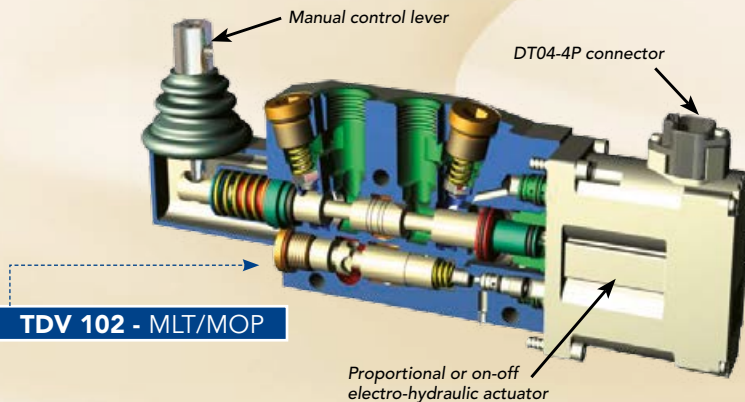
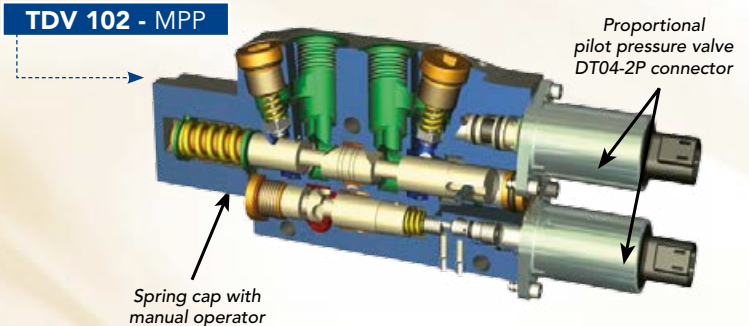
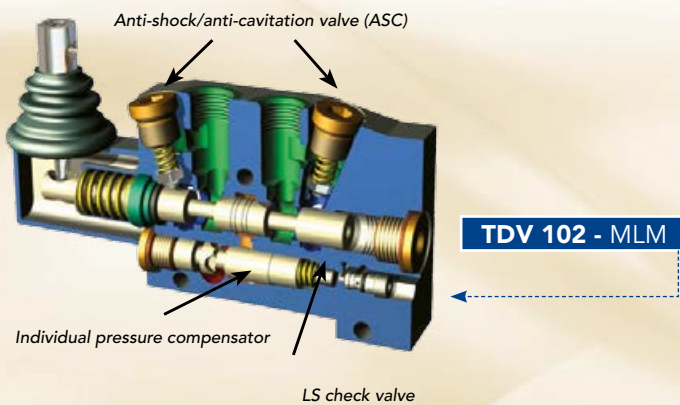
- **TDV 102-MLM** Spool section with manual control lever
Manual flow control extended to 95% of spool stroke. Individual pressure compensator for load-independent simultaneous control of two or more functions. Optional anti-shock / anti-cavitation valves on A and B ports.
- **TDV 102-MOP** Spool section ON-OFF solenoid operated pilot pressure control and manual control lever
Single-sided dual ON-OFF cartridge valves for bidirectional control of a built-in servo-piston.

- **TDV 102-MLT** Spool section closed loop control with electro-hydraulic proportional actuator, position sensor, built-in electronics and manual control lever

MULTIDROM actuators type available:

1. MLT/FD5 digital (standard), controlled by potentiometer or CANbus. Feedback on spool position available (optional).
2. Optional: MLT/FD5-A analog (adjustable through trimmers) (consult Tecnomat engineering dept for details).

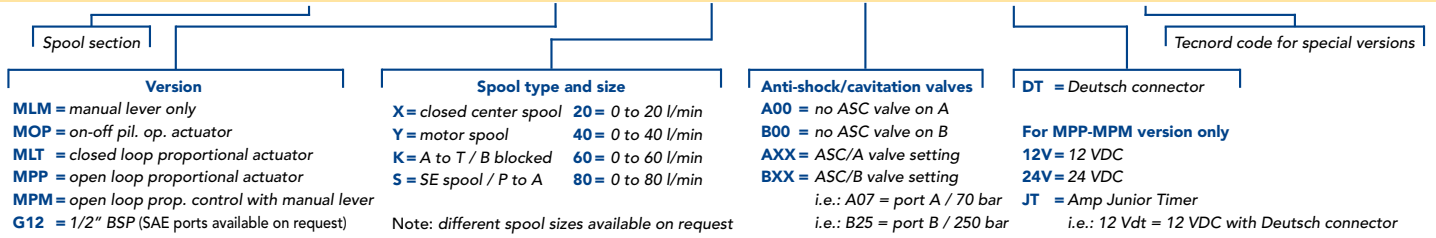
- **TDV 102-MPP/MPM** Spool section with open loop /non-feedback proportional pilot pressure control
Proportional remote control requires PWM external drivers. Version with manual lever control available.



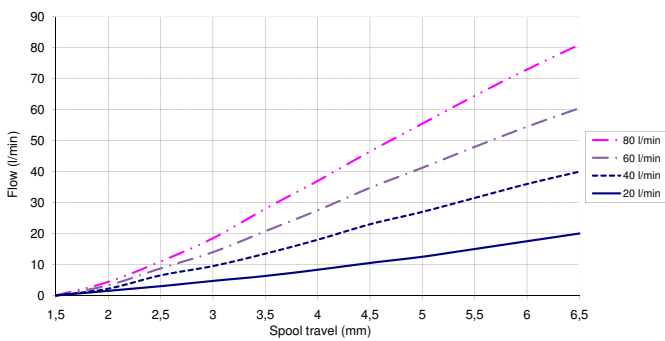
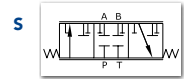
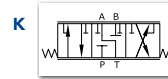
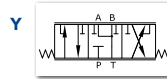
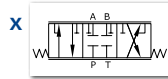
* MPM: same as MPP with manual lever control.

WORK SECTION DESIGNATION

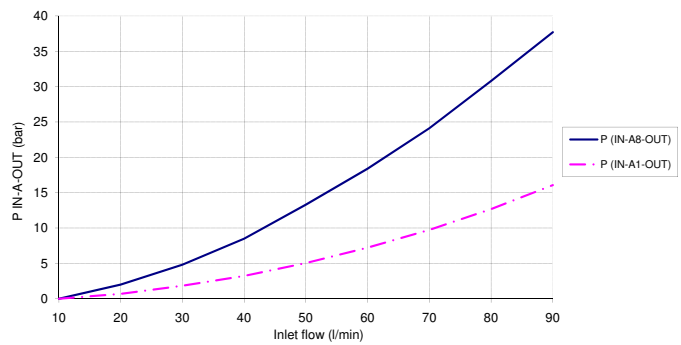
(example) TDV 102 - MLTG12 - Y40 - A07B25 - DT - NNNN



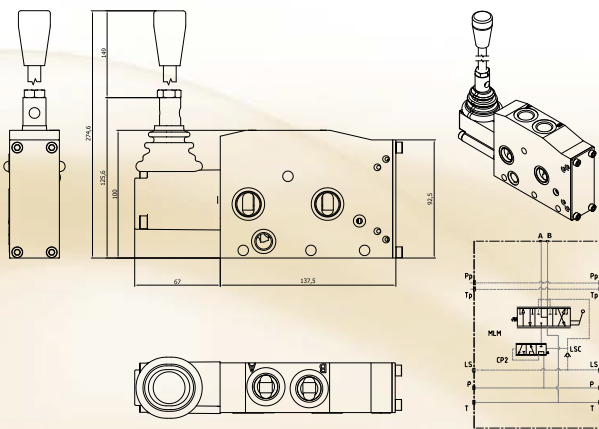
Spool type:



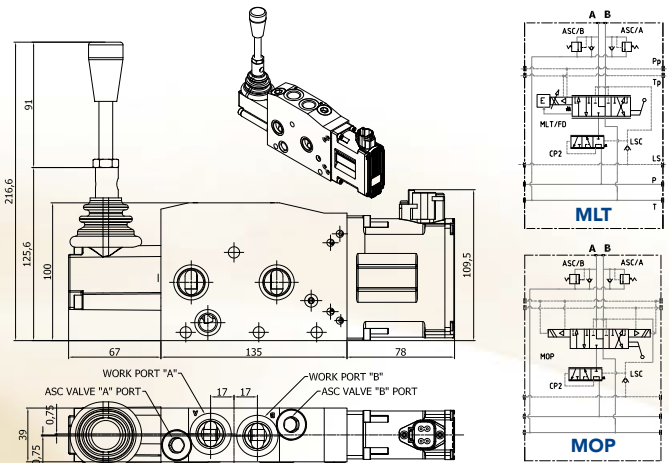
Work port flow (l/min) vs. spool travel (mm)



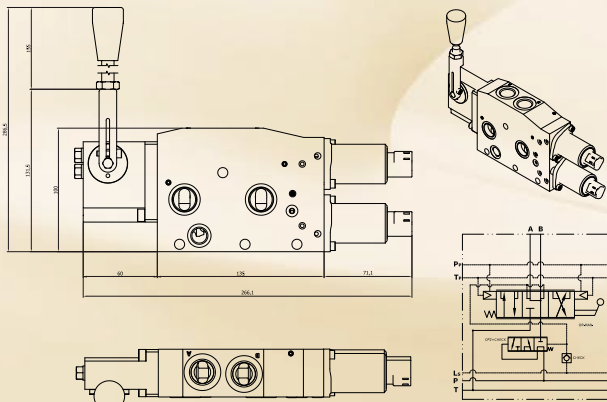
Inlet (P) to outlet (T) pressure drop at full flow through work port A&B of section 1 and 8



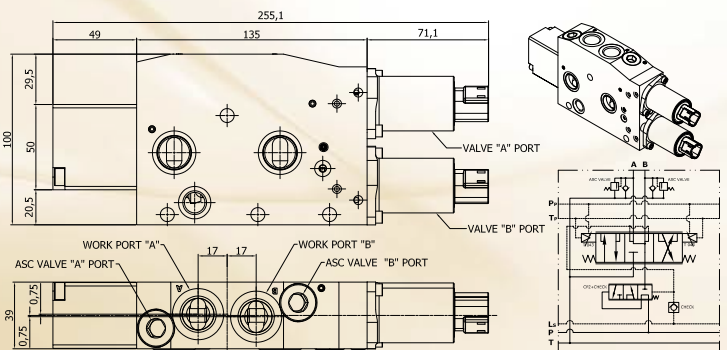
TDV 102 - MLM manual lever control



TDV 102 - MLT closed loop proportional actuator with built-in electronics
 TDV 102 - MOP on-off type pilot pressure control



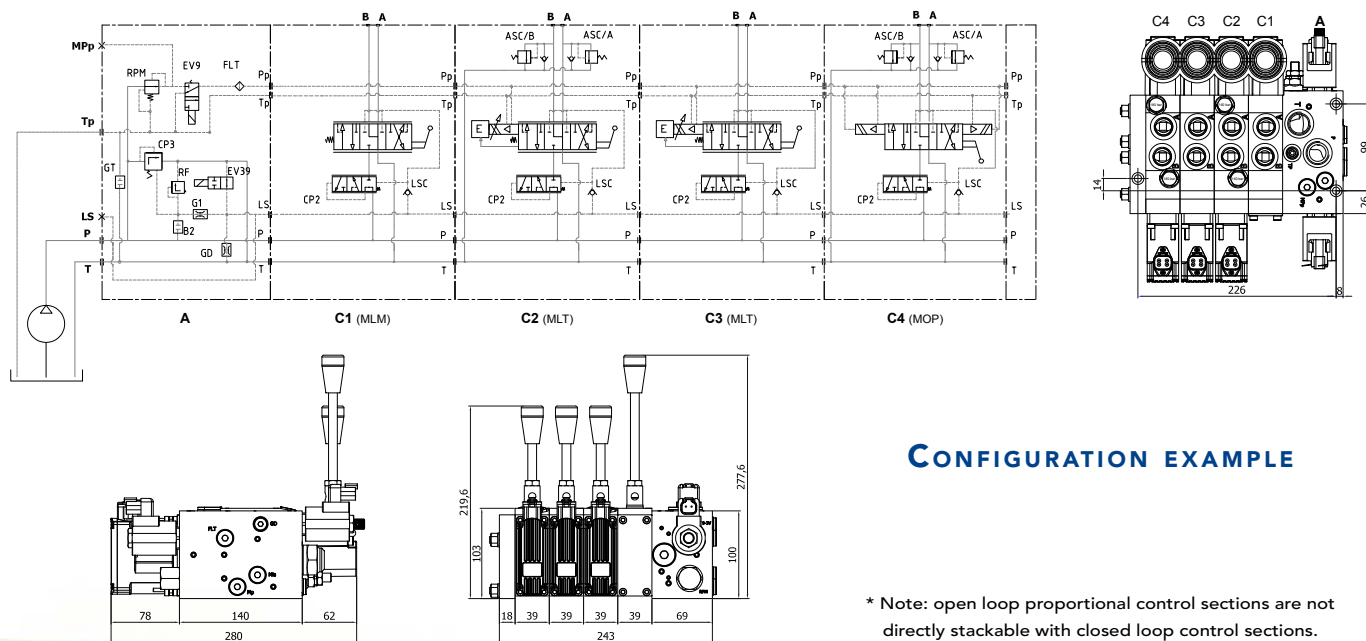
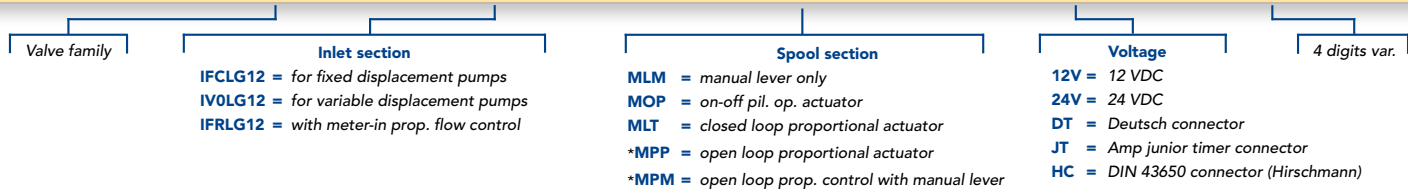
TDV 102 - MPM open loop non feedback proportional pilot pressure control with manual lever



TDV 102 - MPP open loop non feedback proportional pilot pressure control

SECTIONAL VALVE DESIGNATION EXAMPLE (ORDERING CODE)

TDV 100 - IFCLG12 - 1MLM/2MLT/1MOP - 12VDT - NNNN



CONFIGURATION EXAMPLE

* Note: open loop proportional control sections are not directly stackable with closed loop control sections.

Hydraulic and electrical characteristics of operating parts

Mnemonic code	IFCL / IFVL	IFRLA/B	MLM	MLT	MPP/MPM	MOP
Part description	Inlet section	Inlet section	Spool section	Spool section	Spool section	Spool section
Hydraulic configuration	Fixed or variable displacement pump	Proportional meter-in ctrl of pump flow	Manual lever control	X/Y/K/S spool proportional actuator	X/Y/K/S spool proportional actuator	X/Y/K/S spool on-off actuator
Operating flow rate	90 l/min	90 l/min	20/40/60/80 l/min	20/40/60/80 l/min	20/40/60/80 l/min	20/40/60/80 l/min
Max. work pressure	320 bar	320 bar	320 bar	320 bar	320 bar	320 bar
Pressure compensator setting	16 bar @ 40 l/min	16 bar	13 bar	13 bar	13 bar	13 bar
Servo actuator pilot flow requirement	//	//	//	0.2 l/min	0.2 l/min	0.2 l/min
Servo actuator pressure requirement	//	//	//	20-25 bar	20-25 bar	20-25 bar
BSP (Gas) port threads	3/4"	1/2" - 3/4"	1/2"	1/2"	1/2"	1/2"
UNF port threads (optional)	1" 1/16	1" 1/16	7/8"	7/8"	7/8"	7/8"
Number of sections in the assembly	1	1	1-8	1-8	1-8	1-8
Electrical configuration	Electro-hydraulic	Proportional	Manual lever control	Closed loop ctrl with built-in electronics	Open loop proportional control	On-off pilot pressure control
Supply voltage	12-24 VDC	12-24 VDC	12-24 VDC	//	12-24 VDC	12-24 VDC
Max. current consumption	4 A @ 12 VDC	4 A @ 12 VDC	//	0.75 A	1.5 A	1.2 A @ 12 VDC
Analogical input impedance	//	//	//	< 40 kΩ	//	//
Analogical input signal	//	//	//	0.9<2.5<4.1 V	//	//
Current command ctrl	//	0.4-1.5 A/PWM dither: 100 Hz	//	//	0.2-1.5 A/PWM dither: 100-200 Hz	//
Typical control potentiometer resistance	//	1-10 kΩ	//	1-10 kΩ	1-10 kΩ	//
DT04 pin connection #1	//	//	//	(+) power source	//	(+) 12-24 VDC/coil A
DT04 pin connection #2	//	//	//	Auxiliary 5 V out	//	(-) ground
DT04 pin connection #3	//	//	//	Var. ctrl signal	//	(+) 12-24 VDC/coil B
DT04 pin connection #4	//	//	//	(-) power source	//	(-) ground

TECNORD COMPREHENSIVE RANGE OF REMOTE CONTROL ELECTRONICS



EC-PWM-A1-MPC1

Microprocessor – based PWM electronic drivers



FINGERTIP PROPORTIONAL LEVERS

Potentiometric and hall effect single-axis control levers and roller switches



ERGONOMIC GRIPS

Multi-function ergonomic grips with on-off and proportional switches



HEAVY DUTY JOYSTICKS

Potentiometric and hall effect multi-axes control joysticks



EC MMS

Microprocessor-based Machine Management Systems for the integrated control of electro-hydraulic and safety functions



ECOMATIC

GPS ground-speed oriented salt spreader control systems



RC - DBR

Combined on-off and proportional radio control system with single hand wander



RC - TRL

Multi-function proportional Radio Control with shoulder-strap Receiver with CANbus interface



ARM-REST CONTROLLER

Arm-rest control unit for Hedge Cutter



TECNORD

Via Malavolti, 36 - 41122 Modena - Italy - Tel. +39-059-254895 - Fax +39-059-253512
 tecnord@tecnord.com - www.tecnord.com