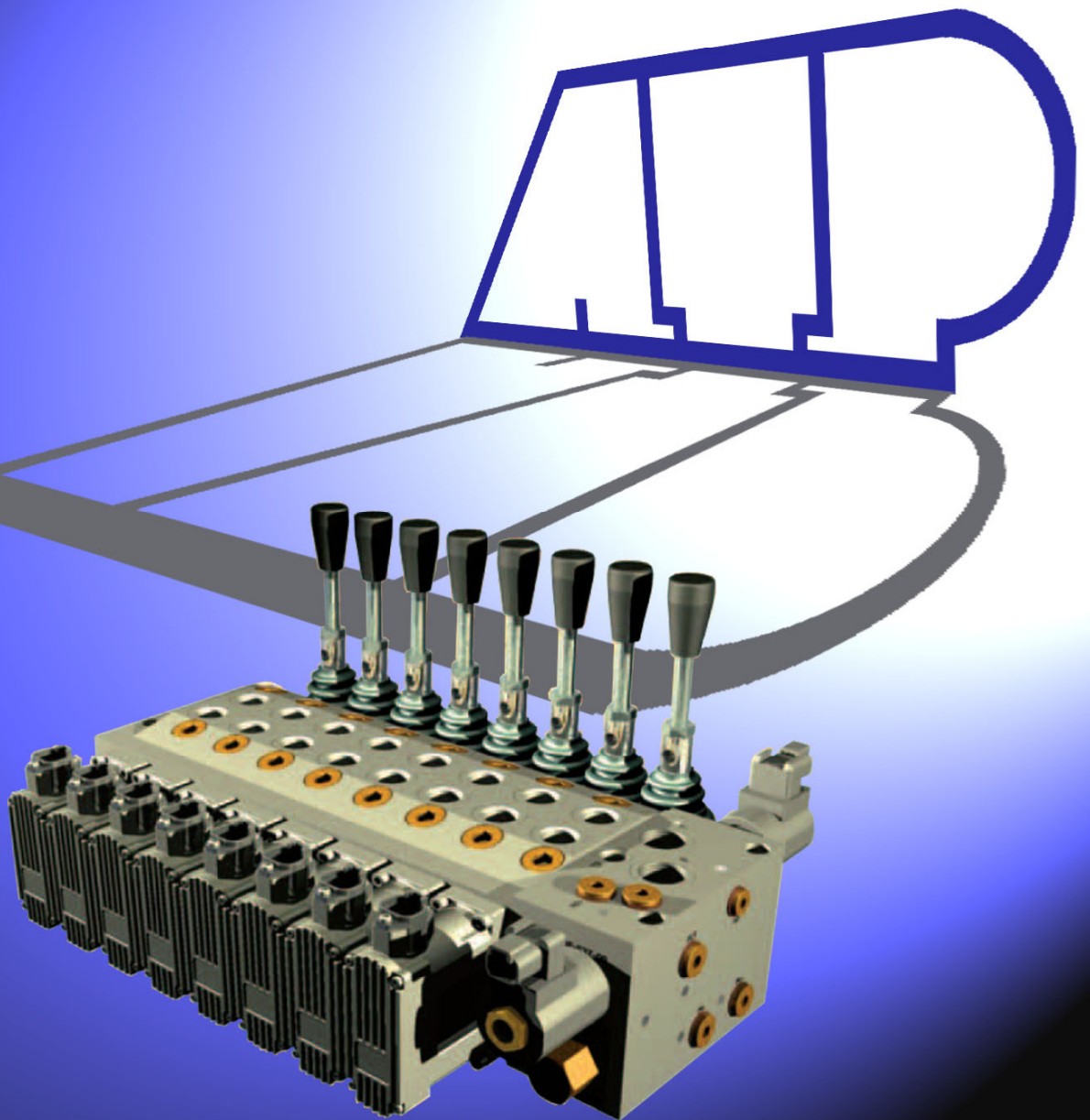




ATP HYDRAULIK AG

TDV 100

Directional Proportional
Control Valve System





ATP HYDRAULIK AG

Seit über 30 Jahren der richtige Partner



- Engineering

- Produktion

- Kundendienst

- Handel

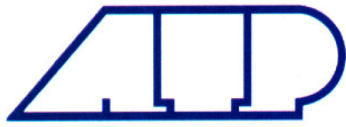
ATP Hydraulik AG
Aahusweg 8
CH-6403 Küssnacht

Tel. +41 (0)41 799 49 49
Fax +41 (0)41 799 49 48
info@atphydraulik.ch

TDV 100

Directional Proportional Control Valve System

Stackable Directional Control Valve System	2
Manual and Electro-hydraulic Controls	2
Specifications	2
Product Features and Benefits	3
TDV 101 – Inlet Sections	4
TDV 102 – MLM Spool section with manual control lever	4
TDV 102 – MOP Spool section with manual control lever and ON-OFF solenoid - operated pilot pressure control	5
TDV 102 – MLT Spool section with manual control lever and ON-OFF solenoid - operated pilot pressure control	5
TDV 102 – MPP Spool section with open loop / non-feedback proportional pilot pressure control	6
Inlet and Sections Assembly Options - Designation	7
Spool Section Assembly Options – Designation	8
Sectional Valve Assembly Options – Designation example (ordering code)	9
Comprehensive Range of Remote Control Electronics	10



Stackable Directional Control Valve System

The TDV100 is a closed center, load sensing, sectional control valve with pre-compensation.

The TDV100 can be configured with 1 to 10 working sections and can be used with fixed displacement or with pressure/flow compensated variable displacement pumps.

When multiple functions are selected, the TDV100 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.

Each TDV100 sectional valve is crossed by a pilot pressure supply line and a return rail to feed 16-20 bar to the MULTIDROM* electro-hydraulic actuators system.

Manual and Electro-hydraulic Controls

- MLM - Multi-function / Manual control lever
- MLT - Multi-function / Manual control lever and MLT/FD5 feedback (closed loop) type electro-hydraulic proportional actuators
- MPP - Multi-function / Double-sided proportional non feedback (open loop) pilot pressure control actuators with screw type manual overrides
- MOP - Multi-function / Manual control lever and ON-OFF actuators
- SPO - Single function ON-OFF selection with pressure compensated 3-way proportional meter-in control of pump flow with manual overrides.

Specifications

Max. operating flow:	90 lt/min
Max. flow per section:	70 lt/min
Max. working pressure:	280 bar
Min. stand-by & pilot pressure:	14 bar
Spool stroke:	+/- 6.5 mm
Section width:	39 mm
P & T Ports:	3/4" - BSP (1.1/16"-UNF)
Work ports (A & B):	1/2" - BSP (7/8"-UNF)
Fluid:	Mineral based oil
Fluid temperature range:	-25°C/+115°C
Optimum fluid viscosity range:	3<cSt<648
Max. fluid contamination level:	19/16 (ISO 4406)
Seals:	BUNA-N (Std) / Viton (optional)

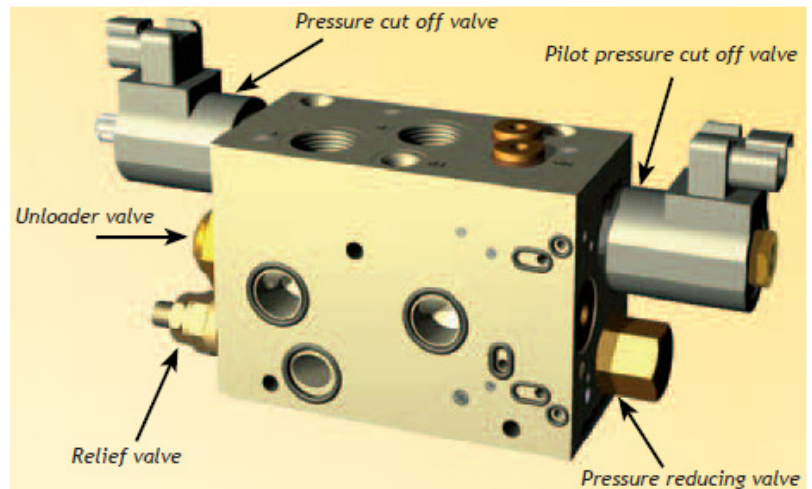


Product Features and Benefits

- Load-independent simultaneous control of two or more functions, within pump's flow saturation limits
- Proportional flow control extended to 95% of spool stroke
- Special "craning" spool configuration for overhung load control in conjunction with counterbalance valves
- MLT/FD5 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

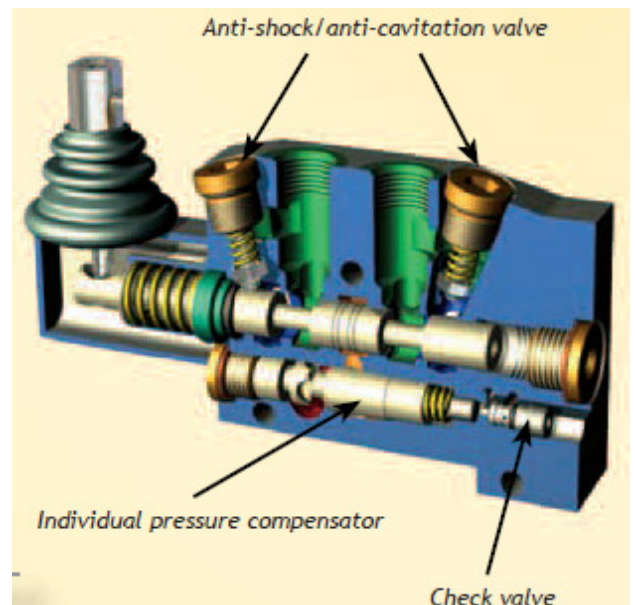
TDV 101 – Inlet Sections

- Inlet comes standard with 1/2" or 3/4" BSP inlet P and outlet T ports.
- Inlet comes standard with a load sense relief valve cavity
- **TDV 101-IFC** version for fixed displacement pumps incorporates an unloader valve with a 15 bar bias spring to create a pump-to-LS differential pressure
- **TDV 101-IV0** version for variable displacement pumps incorporates a pilot-operated system relief valve
- **TDV 101-IFC-EH** versions incorporate a mechanical pressure reducing valve and a 3w-2p, solenoid operated cut-off valve for pilot pressure control of electrohydraulic actuators MLT or MPP



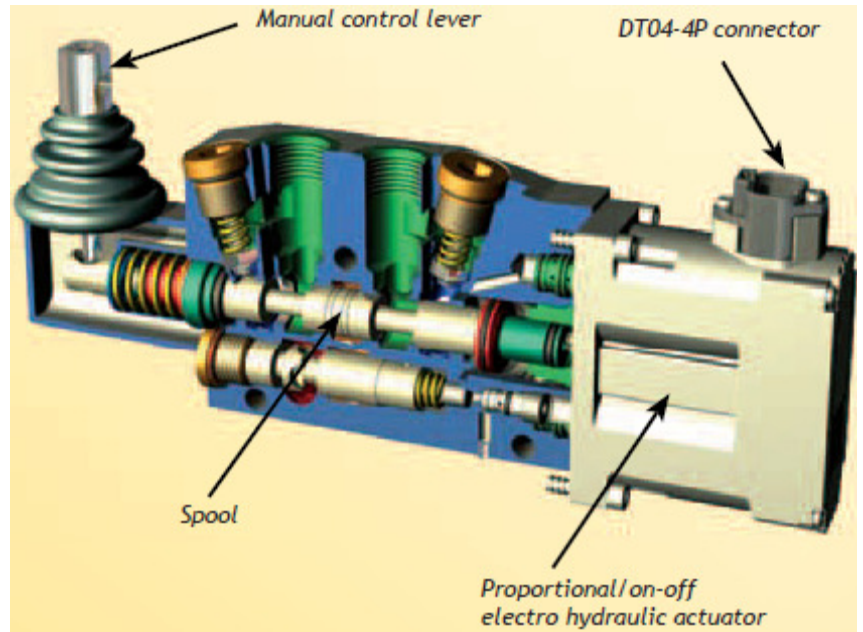
TDV 102 – MLM Spool section with manual control lever

- Closed center configuration for proportional flow control extended to 95% of spool stroke
- Individual pressure compensator for load-independent simultaneous control of two or more functions
- LS Relief valve
- Anti-shock / Anti-cavitation checks on A and B ports



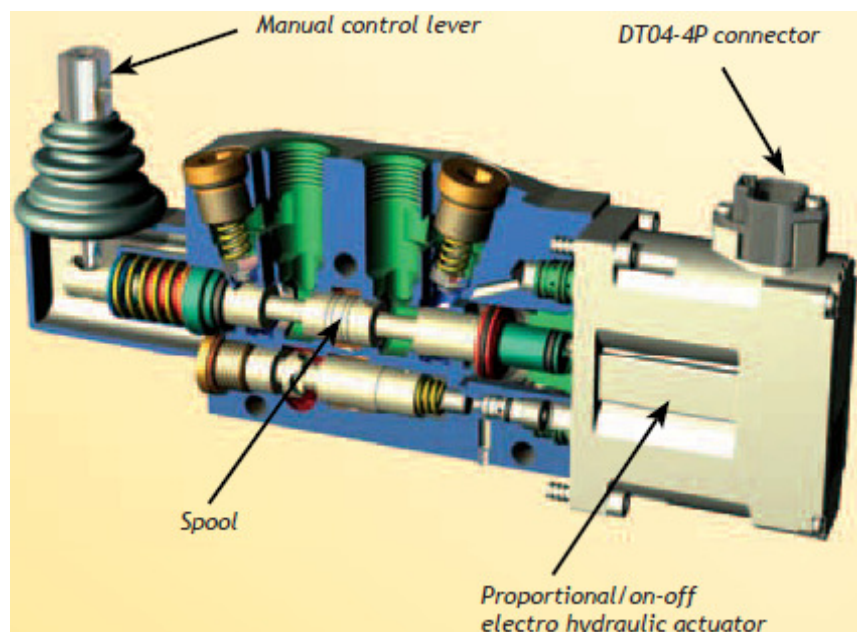
TDV 102 – MOP Spool section with manual control lever and ON-OFF solenoid - operated pilot pressure control

- Single-sided dual ON-OFF cartridge valves for bidirectional control of a built-in servo-piston



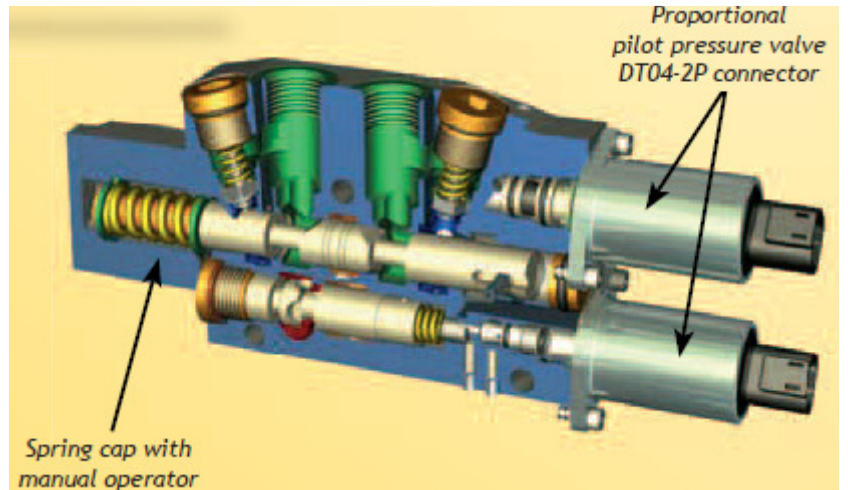
TDV 102 – MLT Spool section with manual control lever and ON-OFF solenoid - operated pilot pressure control

- Proportional remote control requires a variable voltage signal for a MLT/FD5 D/A versions or CAN H/L connections for D/CAN versions (consult ATP HYDRAULIK AG engineering dpt for details)



TDV 102 – MPP Spool section with open loop / non-feedback proportional pilot pressure control

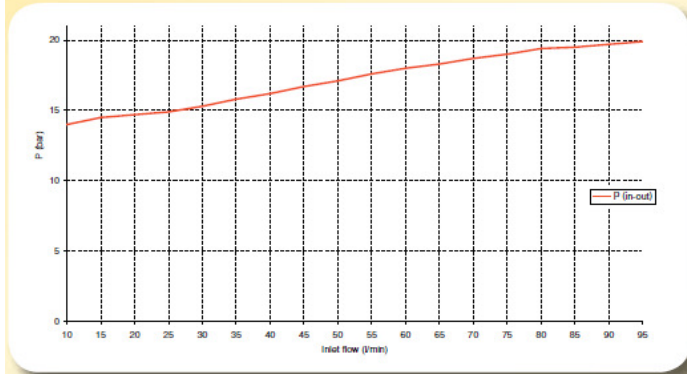
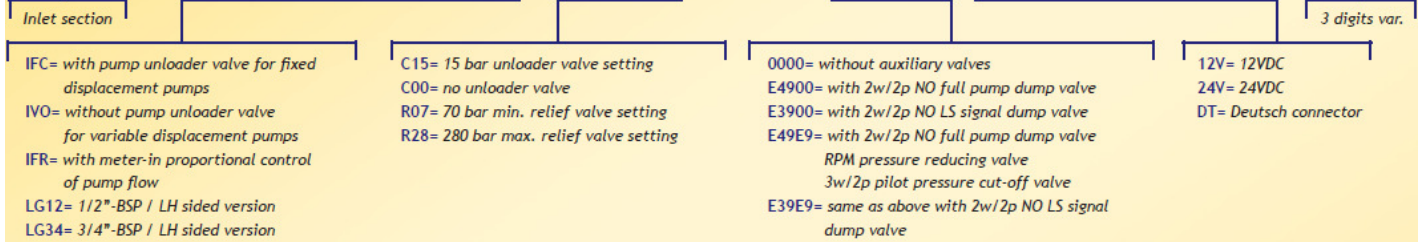
- Double-sided screw-type manual overrides in lieu of bidirectional manual lever control Proportional remote control requires PWM external drivers



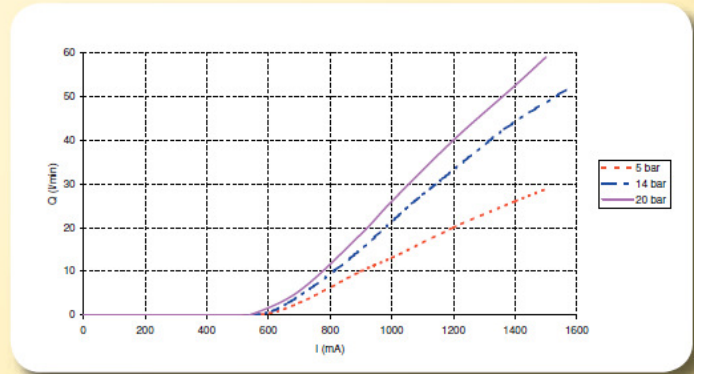


Inlet and Sections Assembly Options - Designation

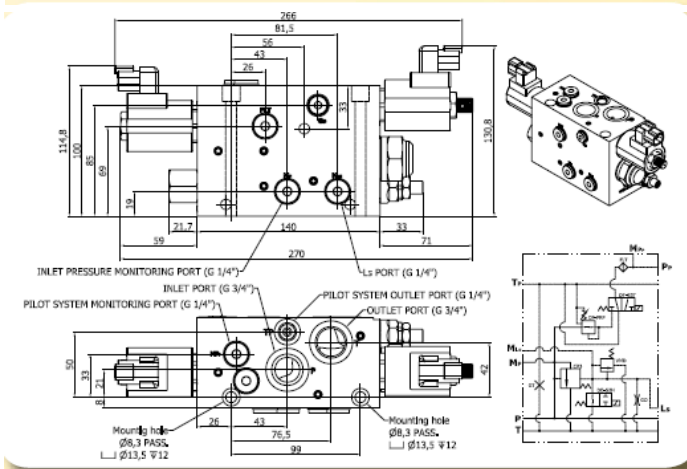
TDV 101 - IFCLG34 - C15R28 - E49E9 - 12VDT - NNN



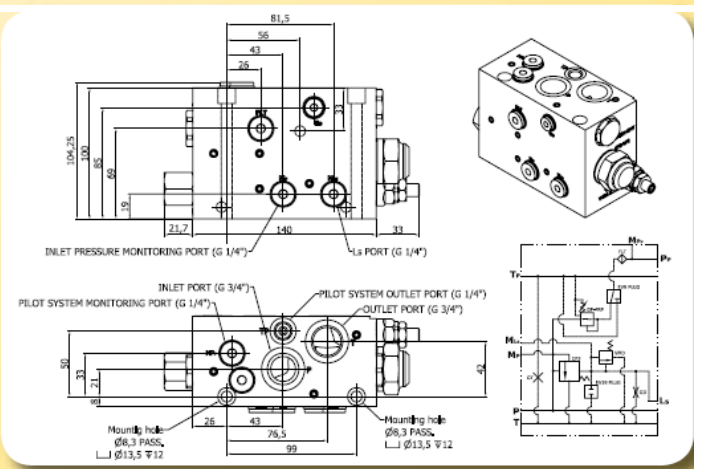
Inlet to outlet stand-by differential pressure (bar) vs. pump flow (l/min)



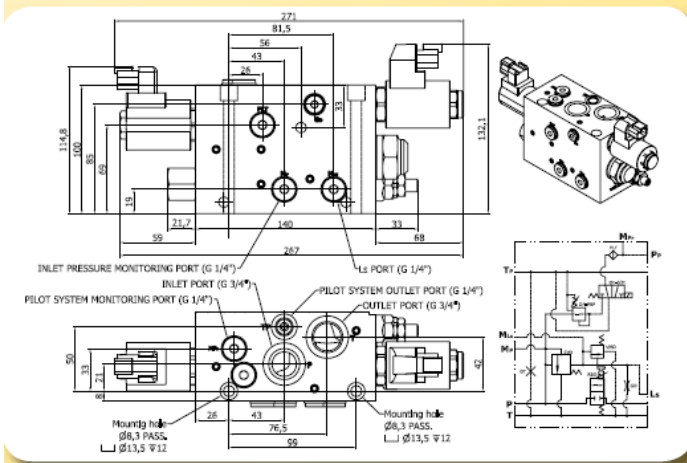
Meter-in prop. control characteristic (IFR version) at various compensator settings



IFC/IVO inlet section with auxiliary valves



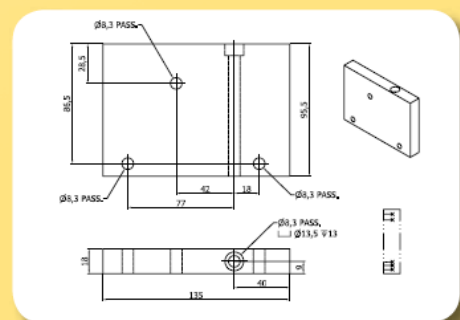
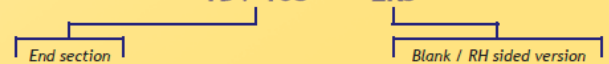
IFC/IVO inlet section without auxiliary valves



IFR inlet section with meter-in proportional control of pump flow

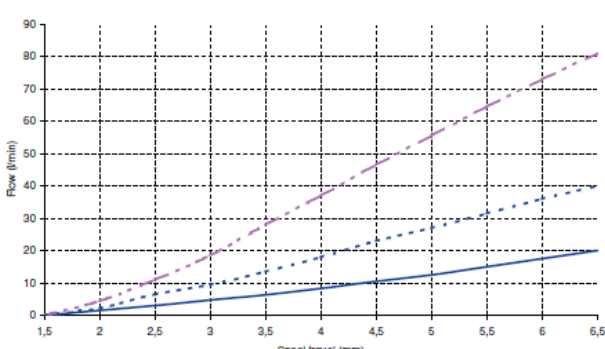
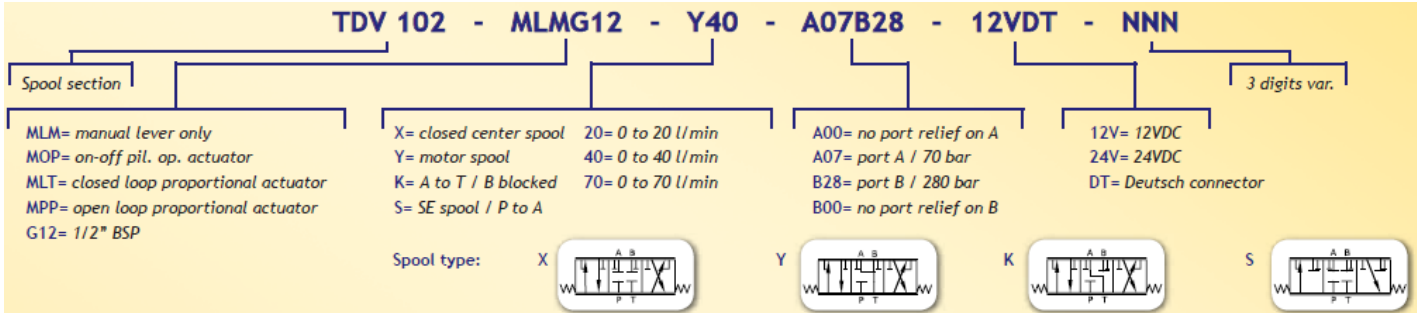
End section designation

TDV 103 - ERS

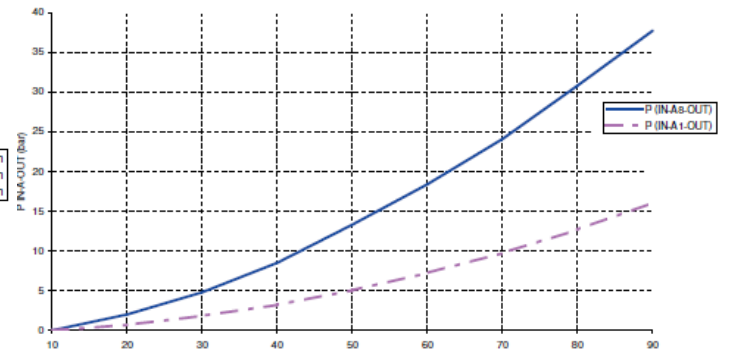




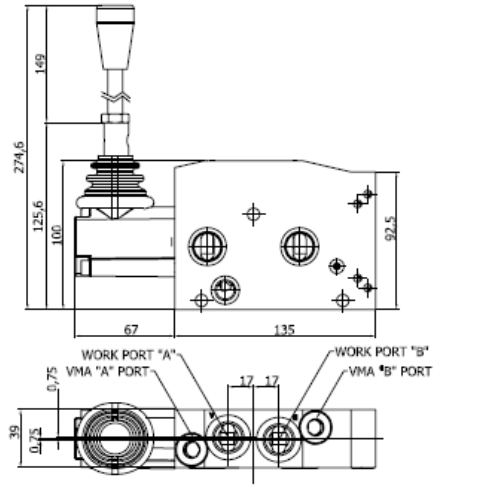
Spool Section Assembly Options – Designation



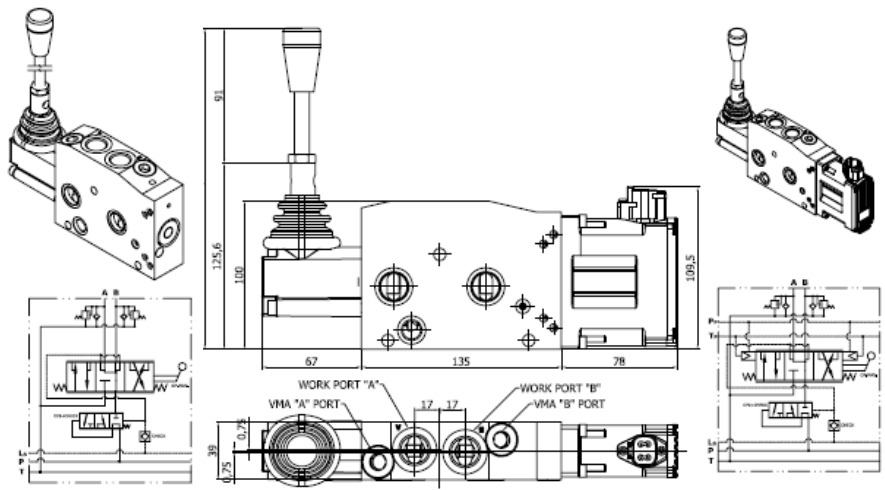
Work port flow (l/min) vs. spool travel (mm)



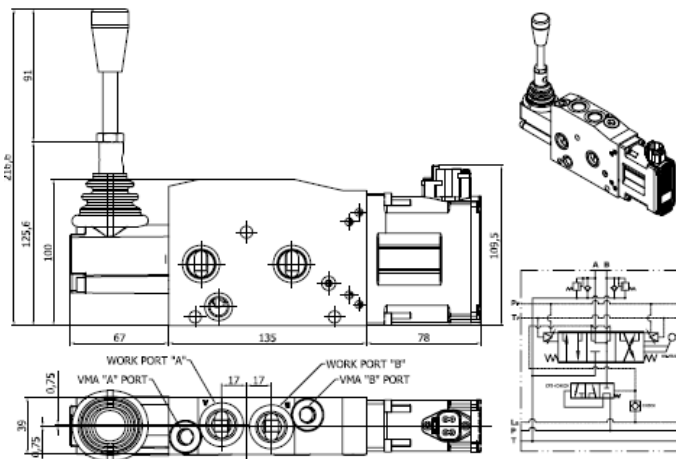
Inlet (P) to outlet (T) pressure drop at full flow through work port A&B of section 1 and 8



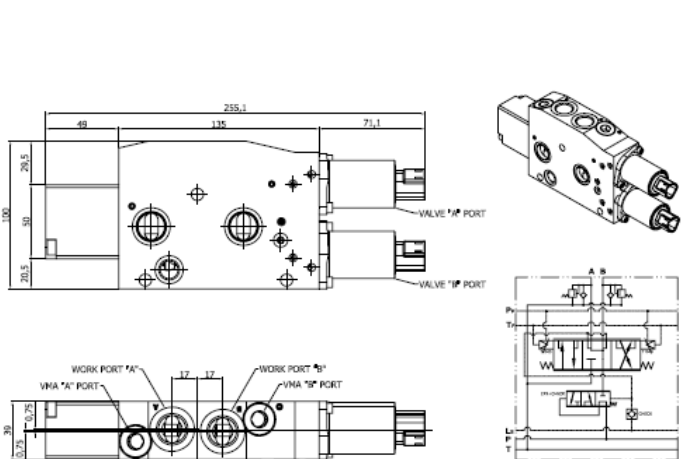
TDV 102 – MLM manual lever control



TDV 102 – MOP on-off type pilot pressure control



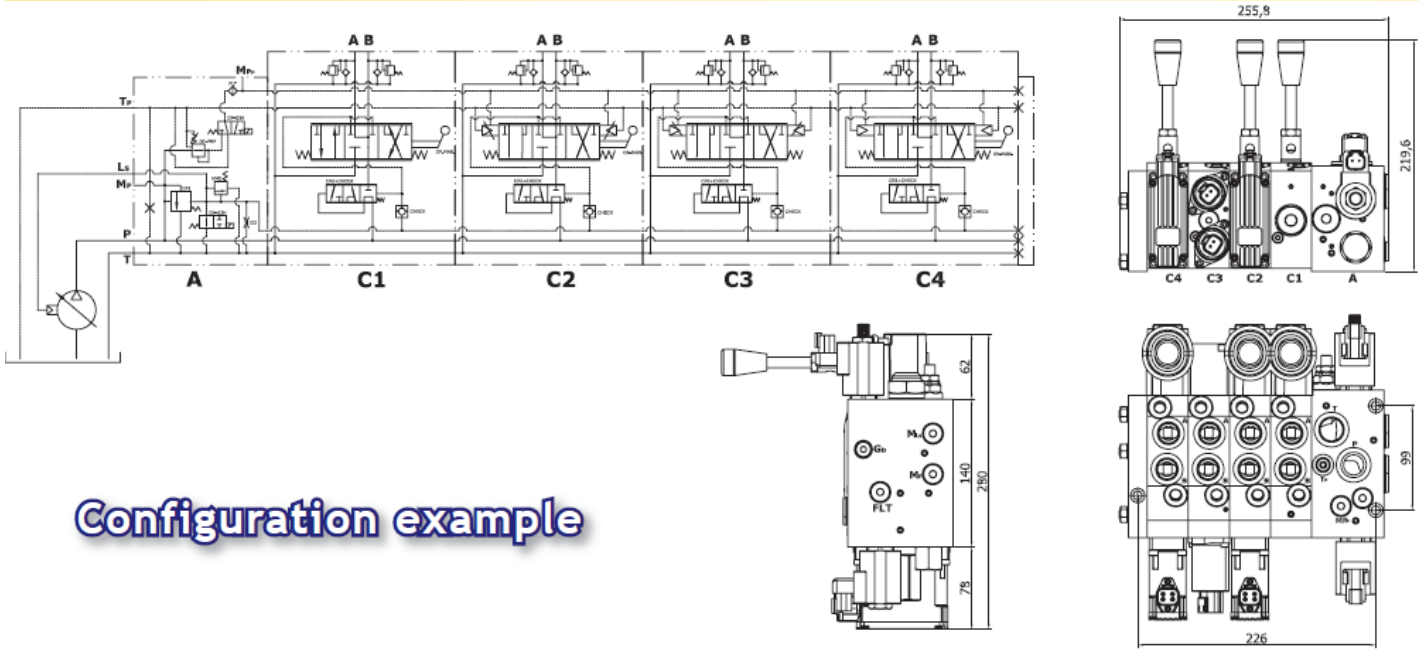
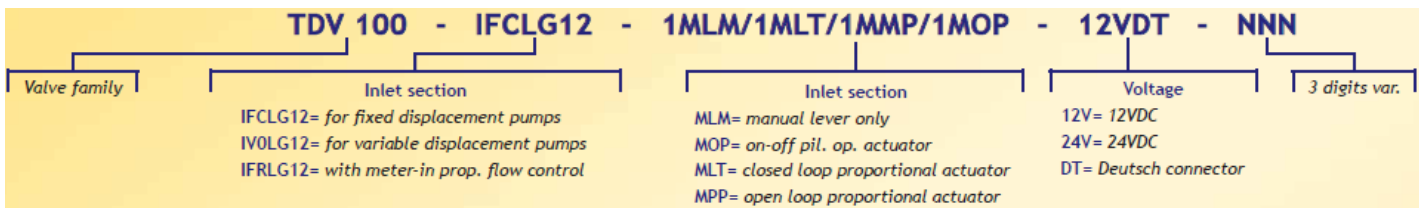
TDV 102 – MLT closed loop proportional actuator with built-in electronics



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



Sectional Valve Assembly Options – Designation example (ordering code)



Configuration example

Hydraulic and electrical characteristics of operating parts

Position	A/1	A/2	C1	C2	C3	C4
Mnemonic code	IFC / IFV	IFR	MLM	MLT	MPP	MPO
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
Typical flow rate	90 l/min	90 l/min	20/40/70 l/min	20/40/70 l/min	20/40/70 l/min	20/40/70 l/min
Max. work pressure	280 bar	280 bar	280 bar	280 bar	280 bar	280 bar
Pressure compensator setting	15 bar @ 40 bar	15 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	//	//	//	15-18 bar	15-18 bar	15-18 bar
BSP (Gas) port threads	1/2" - 3/4"	1/2" - 3/4"	3/8" - 1/2"	3/8" - 1/2"	3/8" - 1/2"	3/8" - 1/2"
UNF port threads	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	12-24 VDC
Max. current consumption	4A @ 12VDC	4A @ 12VDC	//	0,75A	1,5A	1,2A @ 12VDC
Analogical input impedance	//	//	//	< 40 Kohm	//	//
Analogical input signal	//	//	//	0-5V	//	//
Current command ctrl	//	0.2-1.5A/PWM dither:100Hz	//	//	0.2-1.5A/PWM dither:100Hz	//
Typical control potentiometer resistance	//	1-10 Kohm	//	1-10 Kohm	1-10 Kohm	//
DT04 pin connection #1	(+)12-24 VDC	PWM / 1	//	(+) power source	PWM / 1	(+)12-24 VDC
DT04 pin connection #2	(-) ground	PWM / 2	//	+5V output V to pot.	PWM / 2	(-) ground
DT04 pin connection #3	//	//	//	Var. ctrl signal	//	//
DT04 pin connection #4	//	//	//	(-) power source	//	//

Comprehensive Range of Remote Control Electronics



EC – PWM – A1 – MPC1
Microprocessor – based PWM electronic driver



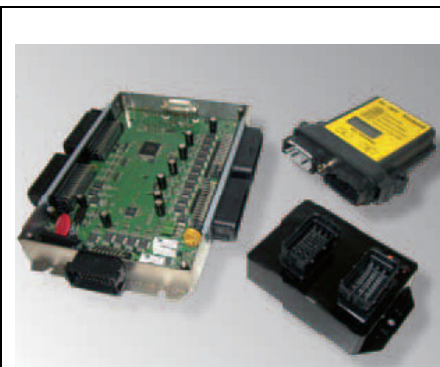
Fingertip proportional levers
Potentiometric and hall effect single-axis control levers and roller switches



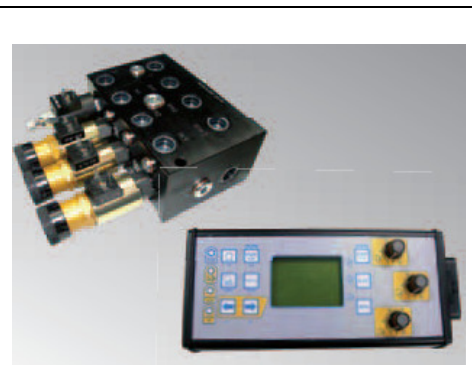
Ergonomic grips
Multi-function ergonomic grips with on-off and proportional switches



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 – PCM
Multi-function proportional radio control system with shoulder-strap transmitter



Customized control units
Customized microprocessor-based, multi-functions control units