

TECNORD

SERVOCOMANDI E REGOLAZIONE

TRANSMISSION AND PILOT CONTROL VALVES

Slip-in configuration

STD CAVITY RANGE

Proportional Pressure Reducing-Relieving Valves
Direct Acting

MID RANGE

Proportional Pressure Reducing-Relieving Valves
Direct Acting High Performance Design

HIGH RANGE

Proportional Pressure Reducing & ON-OFF Valves
Pilot Operated



UNI EN ISO 9001:2015
UNI EN ISO 14001:2015

**Manufacturers of Hydraulics
and Electronic Management Systems**

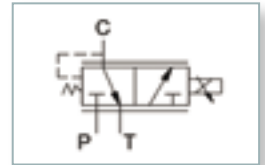
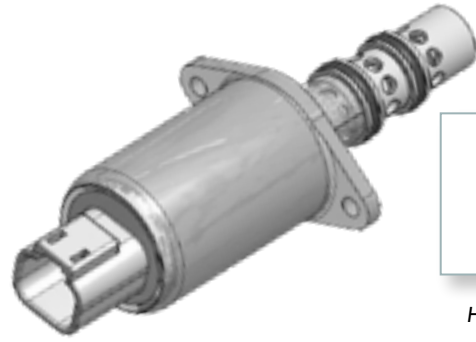
DESCRIPTION

Proportional Pressure Reducing Valves are used to generate a variable pressure in response to a PWM (Pulse Width Modulated) current signal.

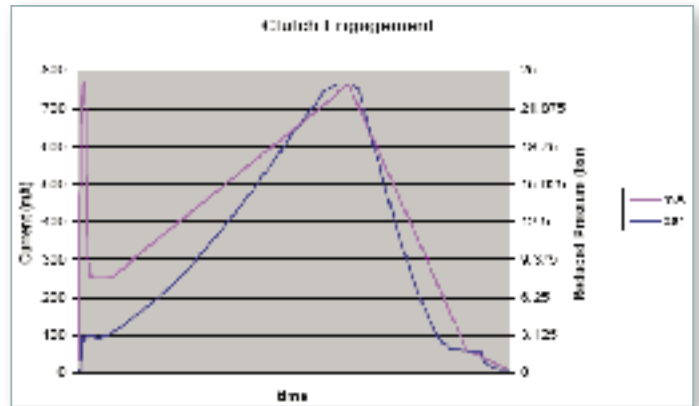
PRINCIPLE OF OPERATION

QUICK FILL-UP: a high current peak fed to the proportional solenoid of the PPRV, generates a quick shifting of the valve spool to fill up the gap between clutch discs in the shortest possible time. Clutch discs enter in touch with each other to begin to transfer torque and speed (= power) from the INPUT to the OUTPUT shaft.

SOFT ENGAGEMENT: the PWM current signal is quickly reduced to a minimum value in order to let pressure start from the “kiss point” (2 bar) and then ramp up smoothly to a “high end” (16-18 bar) during which the torque is gradually transmitted to the driven shaft.



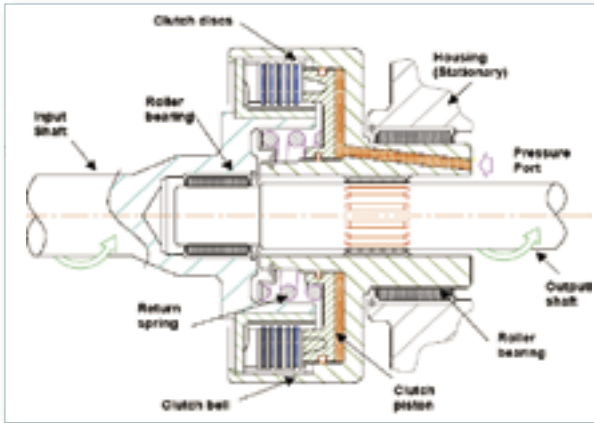
Hydraulic Schematic



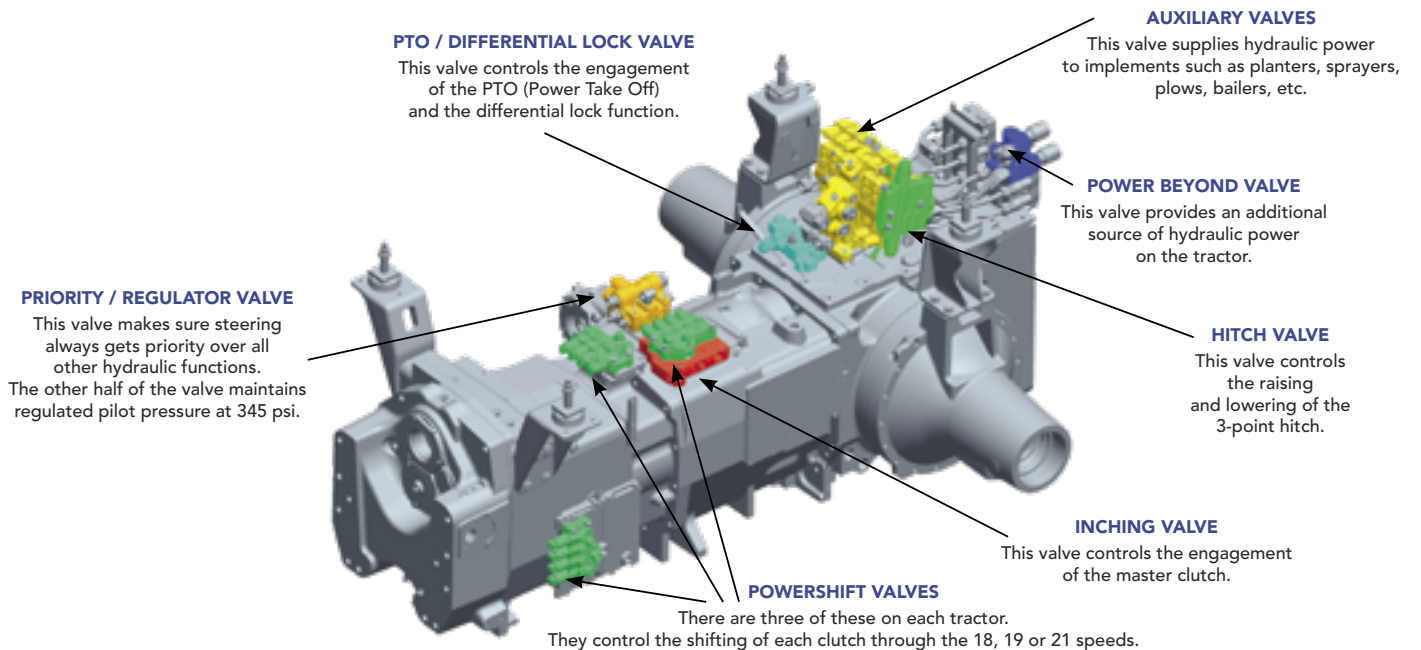
Typical clutch cycle

- Preliminary “quick fill-up” phase at top current until pressure begins to raise within the clutch piston chamber.
- Modulated current ramp to generate a “soft engagement” of clutch discs

WET DISC CLUTCH SECTIONAL VIEW



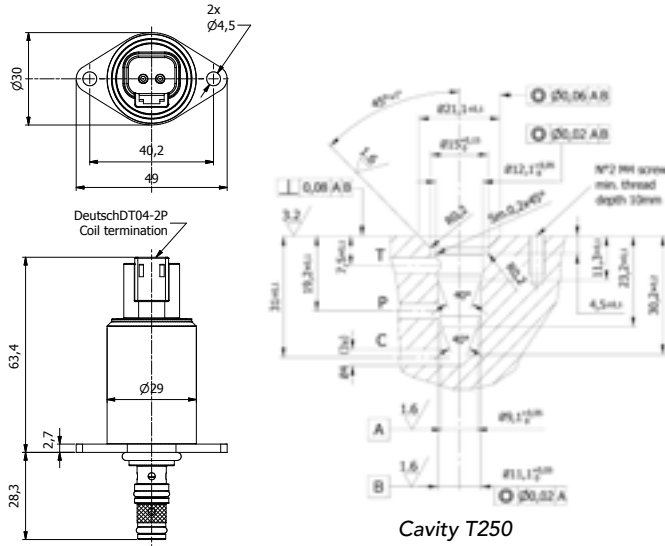
TYPICAL LAY-OUT OF POWERTRAIN CONTROL HYDRAULICS FOR AGRICULTURAL TRACTORS



IP-DAR-250

Hydraulic Specifications

Configuration Direct acting / Slip-in type
 Max. Input Pressure 50 bar (Std)
 Max. Output Flow 4 lt/min @ 6 bar Delta-P
 Control Pressure Range See Graph
 Typical Internal Leakage at Rest 15 cc/min
 Max. Back Pressure at T Port 50 bar
 Media Operating Temp. Range -30°C / +115°C
 Oil Viscosity Range 3 cSt / 400 cSt
 Max. Contamination Level 18/15 (ISO 4406)
 Cavity Tool TCN T250



Electrical Specifications

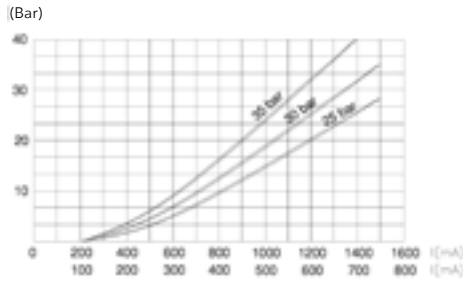
Coil Resistance 4.8 Ohm (12 VDC)
 20 Ohm (24 VDC)
 Current Supply Characteristics PWM (See Graph)
 Superimposed Dither Frequency 100 / 150 Hz
 Coil Terminations Amp Junior Timer
 Deutsch DT04
 Environmental Protection Rating up to IP69K
 Duty Cycle 100% EDI

Deutsch DT04 Connector

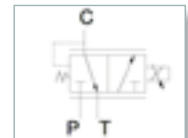
AMP Junior Timer Connector



Pressure (bar) vs. Current (mA) Characteristic
 12 VDC coil / 4.8 Ohm / 46cSt @ 45°C / PWM100Hz



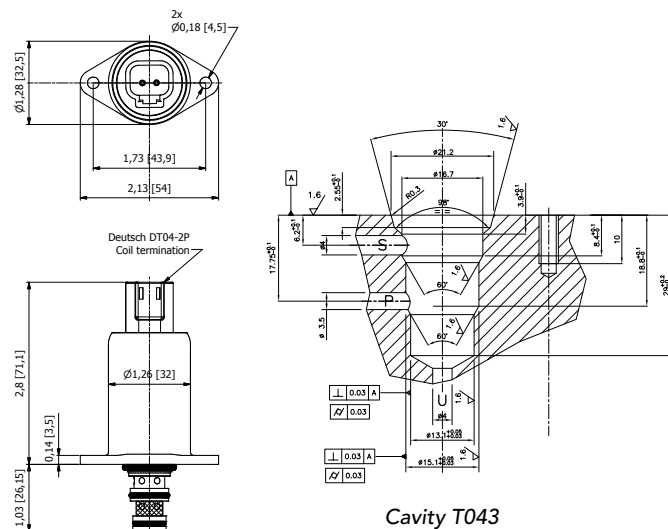
Hydraulic Schematic



IP-DAR-043

Hydraulic Specifications

Configuration Direct acting / Slip-in type
 Max. Input Pressure 50 bar (Std) / 350 bar (Opt)
 Max. Output Flow 4 lt/min @ 6 bar Delta-P
 Control Pressure Range See Graph
 Typical Internal Leakage at Rest 15 cc/min
 Max. Back Pressure at T Port 50 bar
 Media Operating Temp. Range -30°C / +115°C
 Oil Viscosity Range 3 cSt / 400 cSt
 Max. Contamination Level 18/15 (ISO 4406)
 Cavity Tool TCN T043

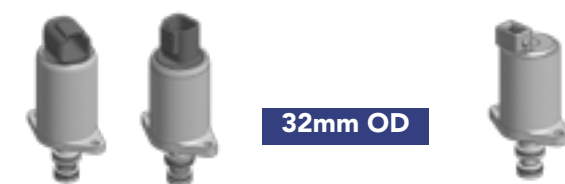


Electrical Specifications

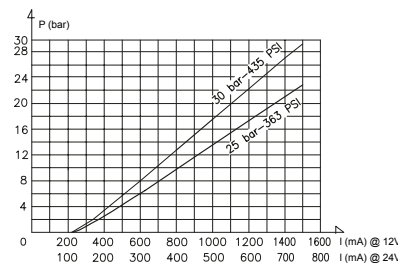
Coil Resistance 5.4 Ohm (12 VDC)
 22 Ohm (24 VDC)
 Current Supply Characteristics PWM (See Graph)
 Superimposed Dither Frequency 100 / 150 Hz
 Coil Terminations Amp Junior Timer
 Deutsch DT04
 Environmental Protection Rating up to IP69K
 Duty Cycle 100% EDI

Deutsch DT04 Connector

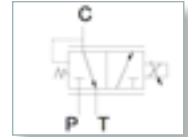
AMP Junior Timer Connector



Pressure (bar) vs. Current (mA) Characteristic
 12 VDC coil / 5.4 Ohm / 46cSt @ 45°C / PWM100Hz



Hydraulic Schematic



IP-RDS-216/222

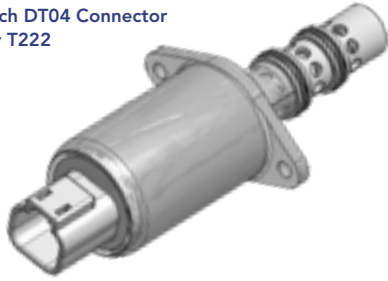
Hydraulic Specifications

Configuration	Direct acting High Performance
Max. Input Pressure	60 bar
Max. Output Flow	30 lt/min @ 4 bar Delta-P
Control Pressure Range	See Graph
Typical Internal Leakage at Rest	15 cc/min
Max. Back Pressure at T Port	25 bar (Std)
Media Operating Temp. Range	-30°C / +115°C
Oil Viscosity Range	3 cSt / 647 cSt
Max. Contamination Level	18/15 (ISO 4406)
Cavity Tool	TCN T216 / T222

Electrical Specifications

Coil Resistance	5.4 Ohm (12 VDC)
	12.8 Ohm (24 VDC)
Current Supply Characteristics	PWM (See Graph)
Superimposed Dither Frequency	100 / 150 Hz
Coil Terminations	Deutsch DT04
	Metpack MP 150
Environmental Protection Rating	IP69K
Duty Cycle	100% EDI

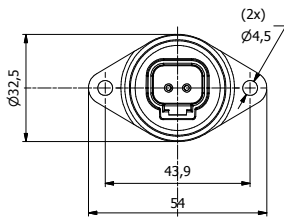
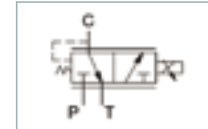
Deutsch DT04 Connector
Cavity T222



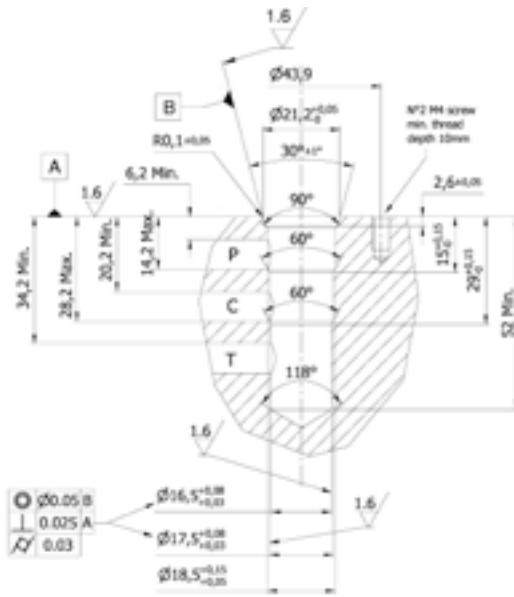
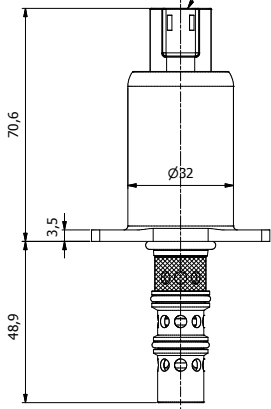
Metpack MP 150 Connector
Cavity T216



Hydraulic Schematic



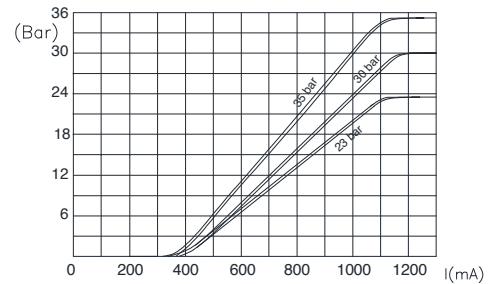
Deutsch DT04-2P
Coil termination



Cavity T222

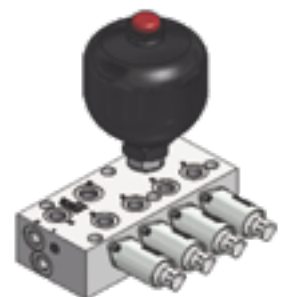
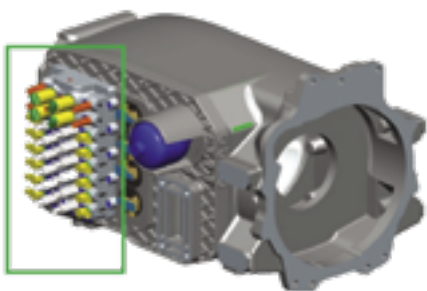
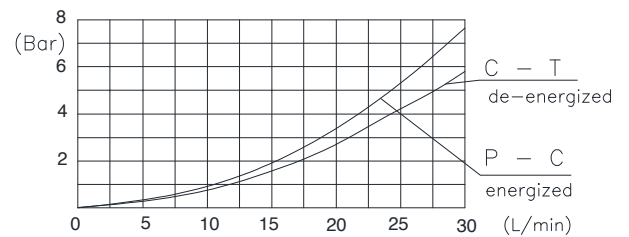
Pressure (bar) vs. Current (mA) Characteristic

12 VDC coil / 5.4 Ohm / 46cSt @ 45°C / PWM100hz



Pressure Drop

46cSt @ 45°C



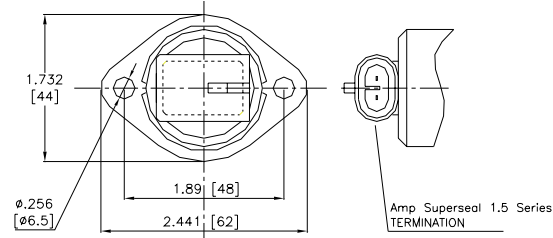
IP-PRZ-59

Hydraulic Specifications

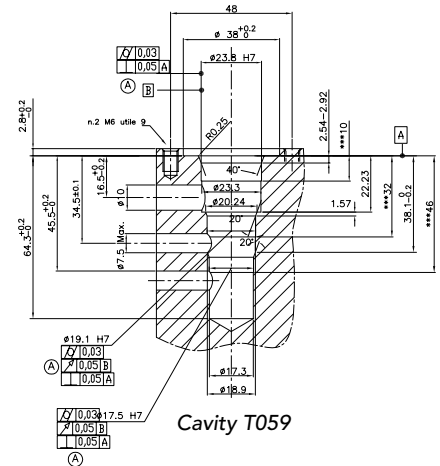
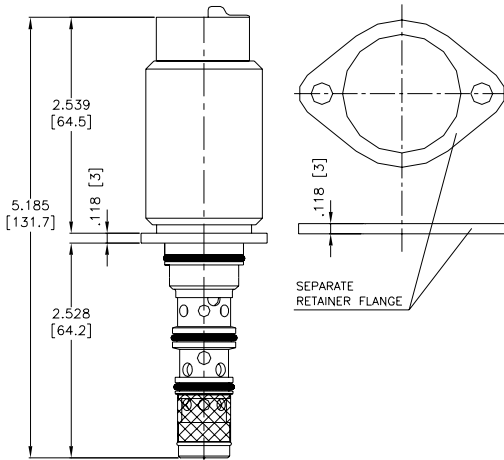
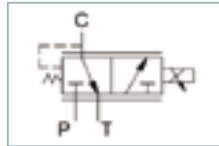
ConfigurationPilot Operated
 Max. Input Pressure50 bar
 Max. Output Flow40 lt/min @ 4 bar Delta-P
 Control Pressure RangeSee Graph
 Typical Internal Leakage at Rest450 cc/min
 Max. Back Pressure at T Port25 bar (Std) / 350 bar (Opt)
 Media Operating Temp. Range-30°C / +115°C
 Oil Viscosity Range3 cSt / 647 cSt
 Max Contamination Level18/15 (ISO 4406)
 Cavity ToolTCN T059

Electrical Specifications

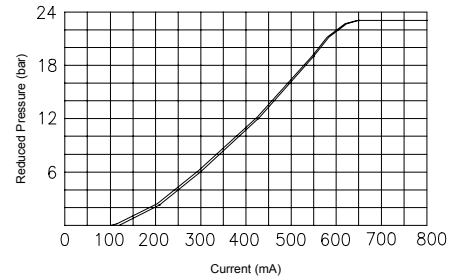
Coil Resistance9.9 Ohm (12 VDC)
 Current Supply CharacteristicsPWM (See Graph)
 Superimposed Dither Frequency120 Hz ±15%
 Coil TerminationsPackard MP150
 (Amp Superseal Compatible)
 Environmental Protection RatingIP69K
 Duty Cycle100% EDI



Hydraulic Schematic

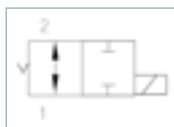
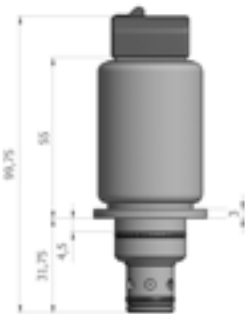


Pressure (bar) vs. Current (mA) Characteristic
 12 VDC coil / 9.9 Ohm / 46cSt @ 45°C / PWM100hz



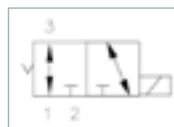
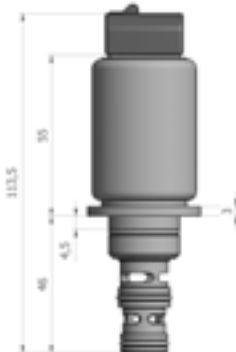
HIGH RANGE ON-OFF Directional Control Valves

IE-S2H-056



2way-2pos

IF-S3A-057



3way-2pos

IG-S4A-058



4way-2pos / Criss-Cross



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