

# TRANSMISSION VALVES



FARM TRACTORS

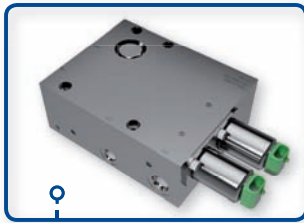


WHEEL LOADERS

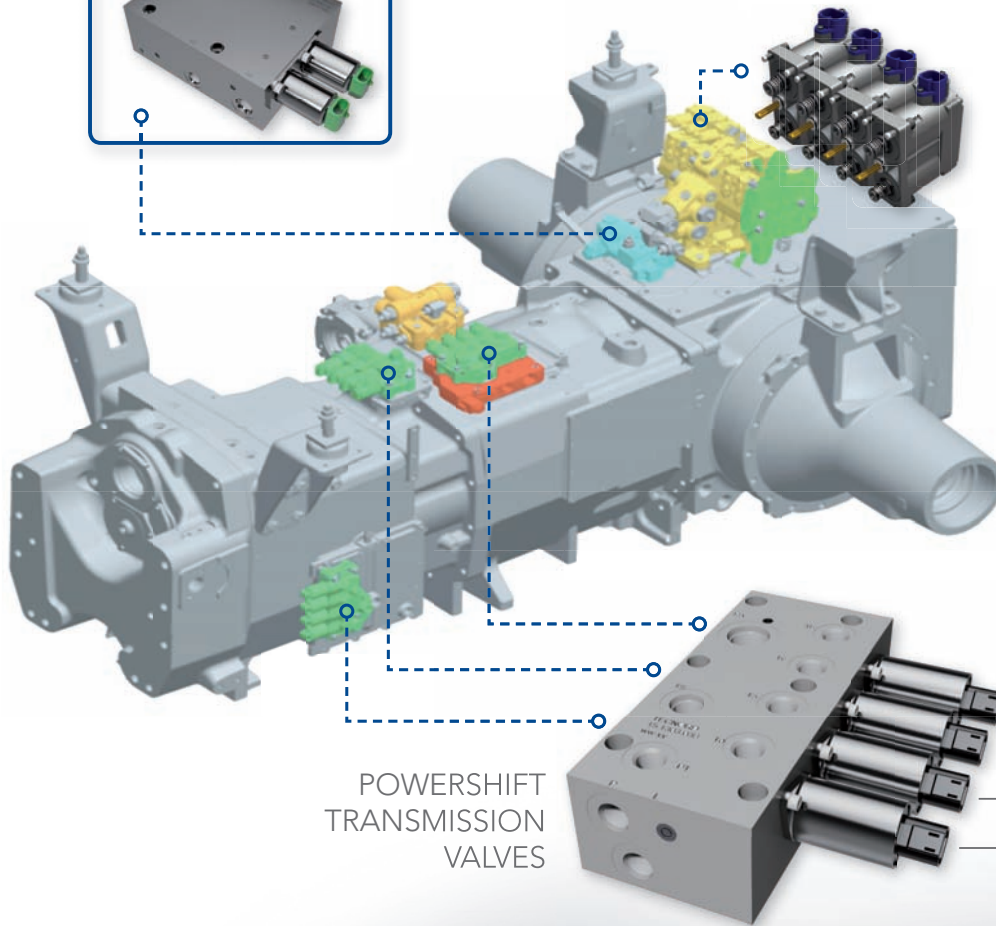


DOZERS

## INCHING VALVES



MLT/FD5  
CLOSED LOOP  
ELECTRO HYDRAULIC PROPORTIONAL  
ACTUATORS FOR REMOTE VALVE BANK

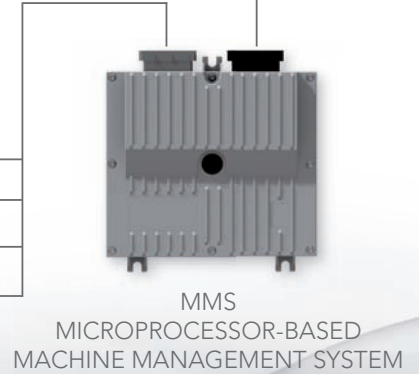


POWERSHIFT  
TRANSMISSION  
VALVES

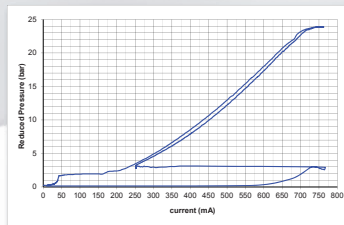
## GRAPHIC DISPLAY



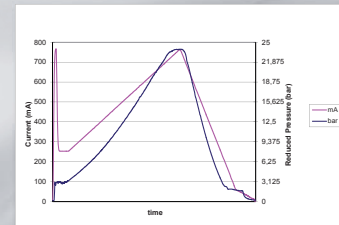
IN-CABIN  
MULTI-FUNCTION  
JOYSTICK



MMS  
MICROPROCESSOR-BASED  
MACHINE MANAGEMENT SYSTEM



Pressure (bar)  
vs. PWM Current  
(mA) diagram  
for quick fill-up  
and soft  
engagement  
of a wet-disc  
clutch



Clutch  
Engagement

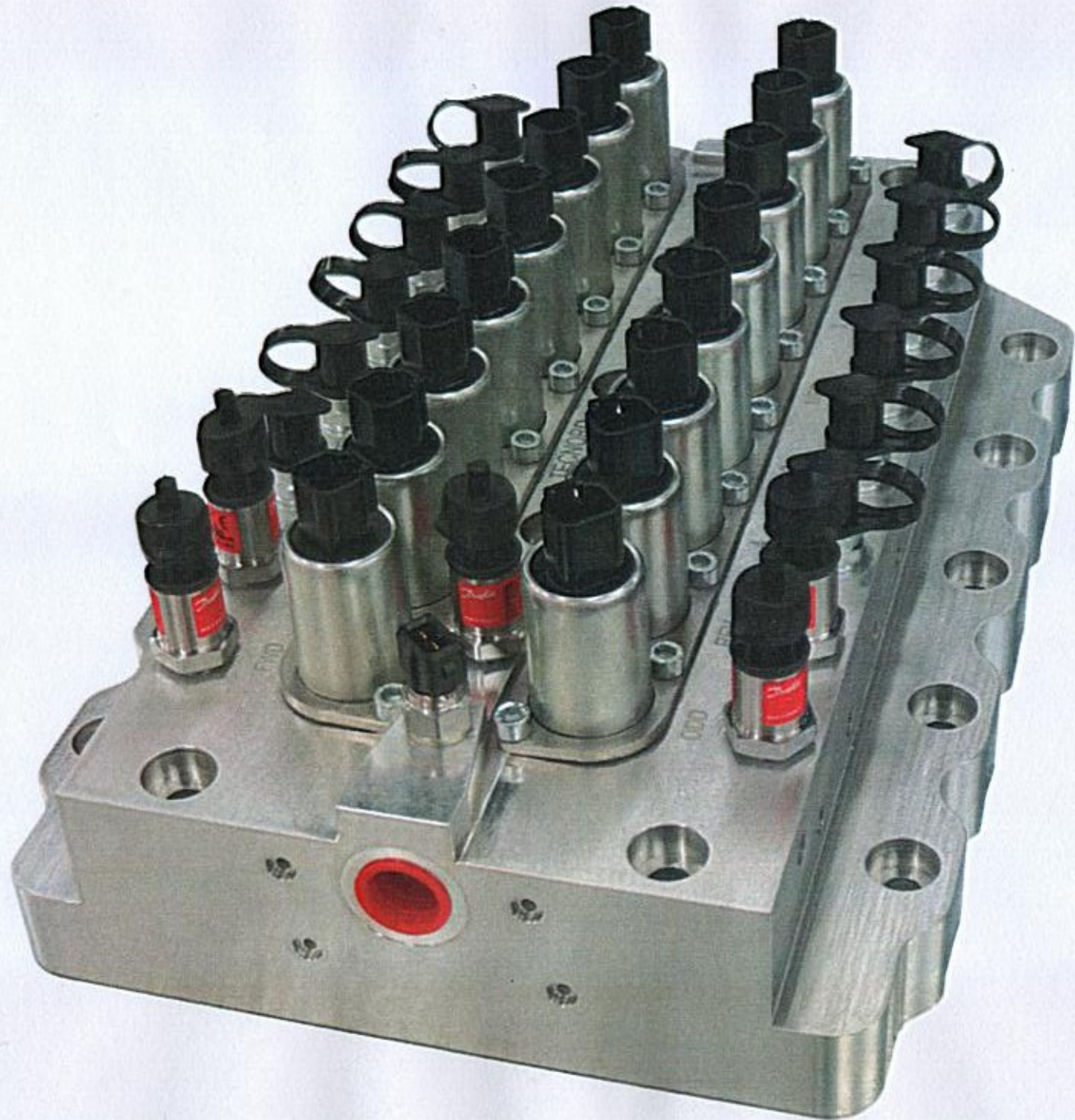
**TECNORD**

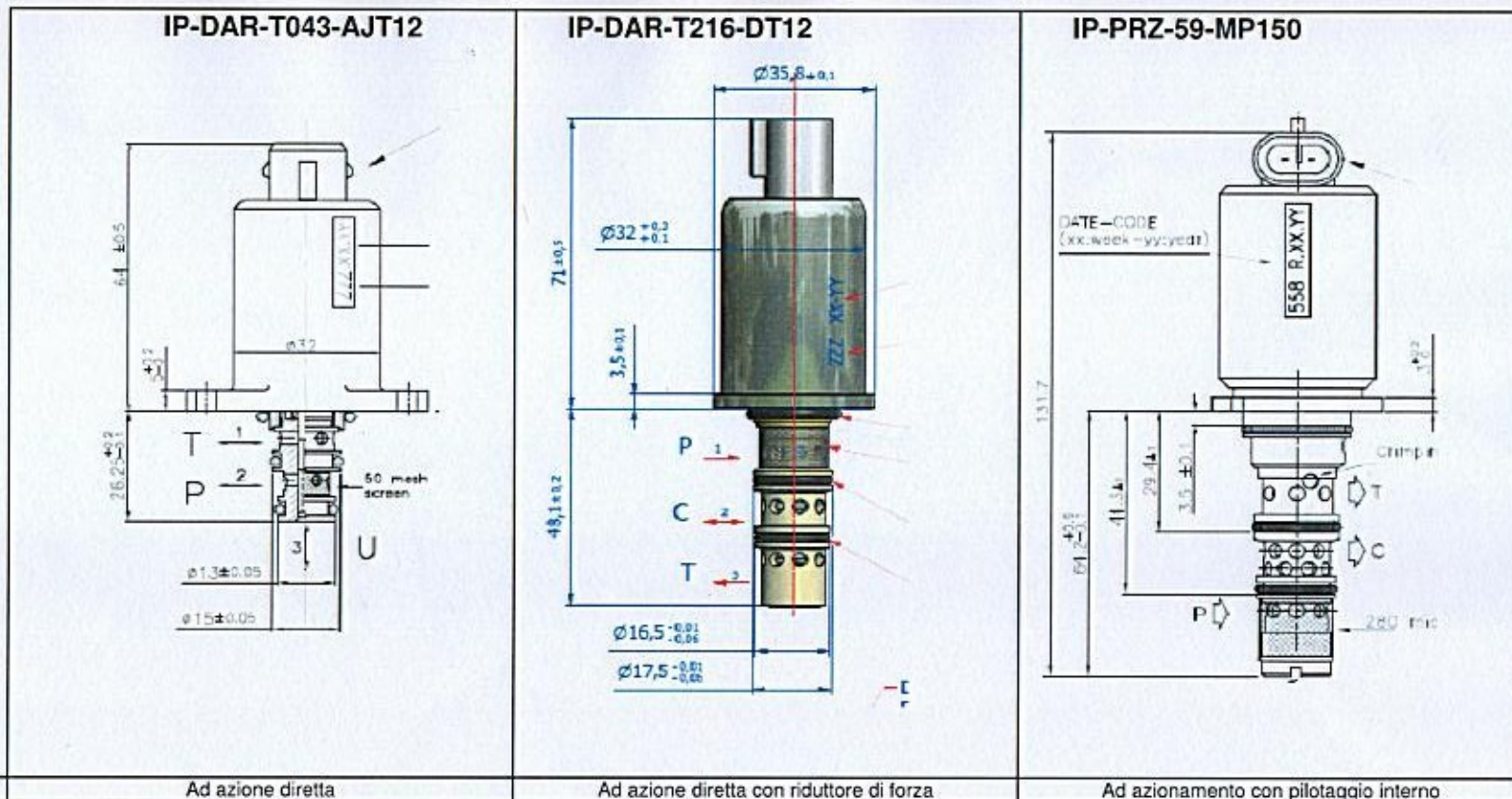
a Delta Power Company

*... commitment to electro-hydraulics*



TRANSMISSION VALVES





# C1 — TECNORD Mod. RPP-T043

## Direct acting Proportional Pressure Reducing Valve for non-feedback Single or Double Effect Proportional Actuators

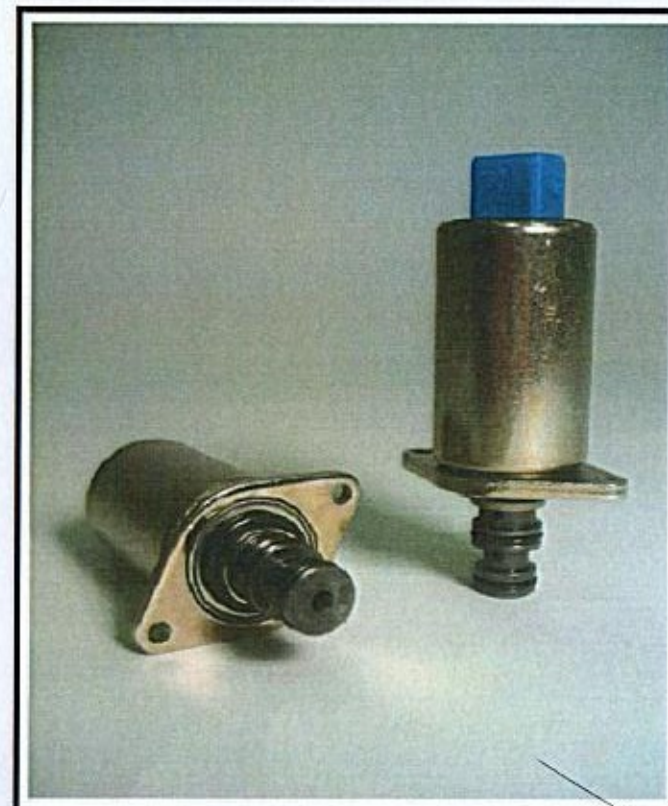
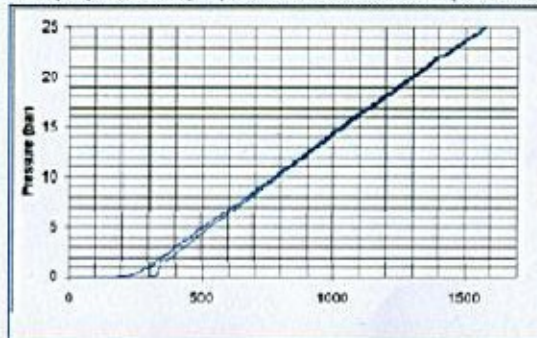
### Hydraulic Specifications

. Configuration:	T043 cavity size threadless / slip-in cartridge
. Max. output flow:	4 l/m in
. Max. inlet pressure:	350 bar
. Controlled pressure range:	See Graph
. Typical internal leakage at 35 bar:	< 10 cc/min
. Max back-pressure at T port:	50 bar
. Media operating temperature range:	-30°C/+115°C
. Oil viscosity range:	3 cSt / 400 cSt
. Max. contamination level:	18/15 (ISO 4406)
. Cavity tool:	T043

### Electrical Specifications

. Coil configuration:	100% EDI continuous duty
. Coil resistance:	5.4 Ohm (12 VDC coil) / 22 Ohm (24 VDC coil)
. Connections:	2-way Amp Junior Timer connector
. Current supply characteristic:	PWM (Pulse Width Modulated)
. Superimposed dither frequency:	100 to 150 Hz

Pressure (bar) vs. Current (mA) curve for P/N 14.0103.046 (12 VDC version)



### Hydraulic specifications

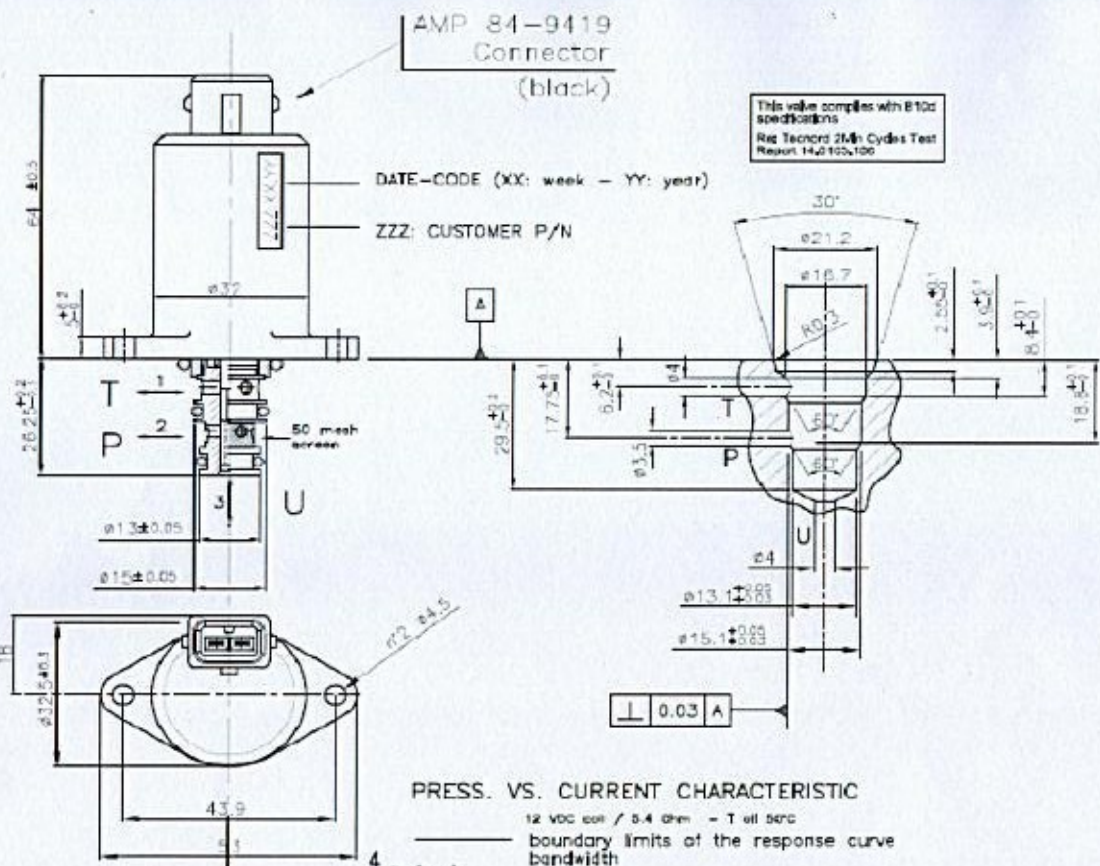
NOMINAL FLOW RATE	4 l/min (1 GPM)
MAXIMUM INLET PRESSURE	35 bar (500 psi)
CONTROLLED PRESSURE RANGE	See Graph
LEAKAGE AT REST	15cc/min @ Pin=35bar @ 60°C
RESPONSE TIME	< 40 ms
MEDIA OPERATING TEMPERATURE RANGE	da -20°C a +105 °C
OIL VISCOSITY RANGE	2.8 - 380 cSt
FLUID FILTRATION	18/15 (ISO 4406)
REDUCED PRESSURE TOLERANCE	+/- 5%
CAVITY TOOL	TCN T043
MOUNTING SCREW	M4x12 mm Long

### Electrical Specifications

COIL RESISTANCE	12 VDC coil 5.4 ohm
CURRENT SUPPLY CHARACTERISTICS	PWM
RATED CURRENT RANGE	12VDC coil 150-1500 mA
PWM OR SUPERIMPOSED DITHER FREQ.	200 Hz
COIL TERMINATION	Amp Junior timer

TECNORD
SCALE DATA Fogli/ di 1:1 12.11.09 1/1

DESIGNO N°  
C-14.0103.134 /.



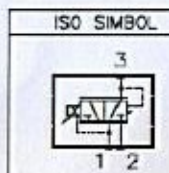
**PRESS. VS. CURRENT CHARACTERISTIC**  
12 VDC coil / 5.4 ohm - T oil 50°C  
boundary limits of the response curve bandwidth



SEAL KIT P/N : 21.0902.041

O-RING 2-114 HNBR	Q.TY 1
O-RING 2-013 HNBR	Q.TY 1
O-RING 2-012 HNBR	Q.TY 1

SPL	MM 3,4
FLT	MS 50
CL	R 5,4



DENOMINAZIONE TECNORD direct acting proportional pressure reducing valve Mod. IP-DAR-43-C-L25-A/T12-FO		SOSTITUIRE il N°	
LOW pressure version with screen		SOSTITUIRE il N°	
Tratt.Termico:			
MATERIALE	DIS.	CONTR.	APPROV.
TECNOLOGIA	Q.S.	Valpi A	
POWER H.			
DIRETTORE TECNORD di 1 a 85: 20,1 di 90 a 200: 20,15 di 200 a 300: 20,2 di 300 a 900: 20,3			

## Mod. IP - DAR - 43 - L

Direct acting proportional pressure reducing valve

Test Data & Response Curves (Cont'd)

### Test conditions:

Input pressure:	90 bar	Voltage supply:	12VDC (See NOTE*)
Oil temperature:	50 °C	Control current:	PWM
Oil viscosity:	40 cSt	Superimposed dither:	100 Hz
Return line pressure:	< 0.2 bar	Coil P/N:	(1) ±VDC

### Pressure response to 20 mA multi - steps current increments & decrements

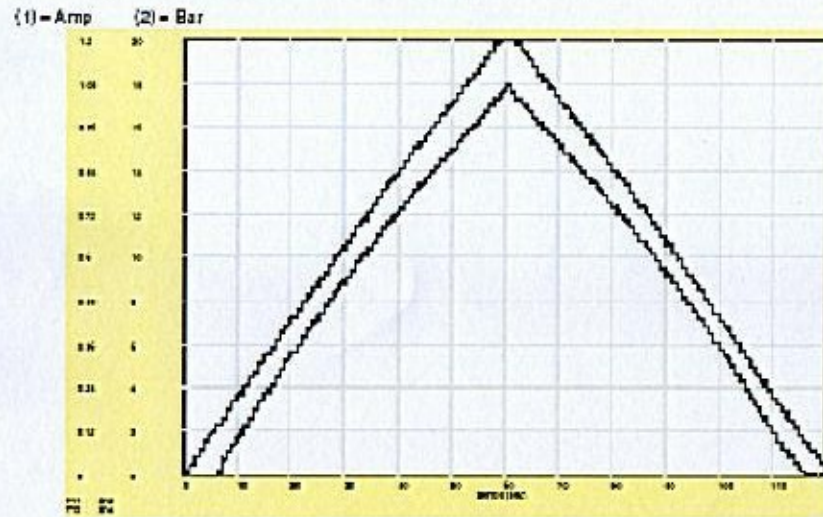
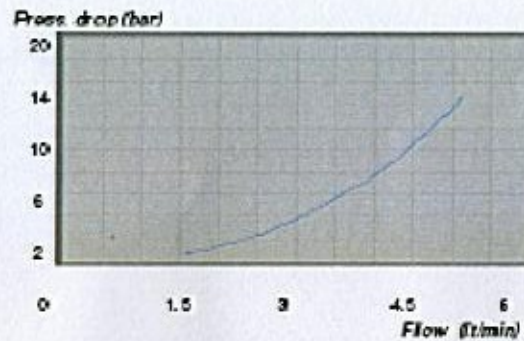
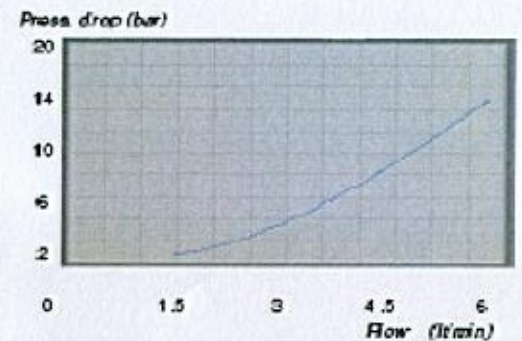


Fig. 3

PRESSURE DROP (bar) vs. FLOW (l/min)  
(from P port to RP port)

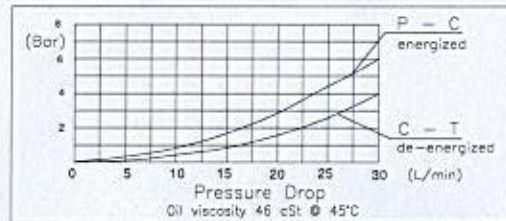
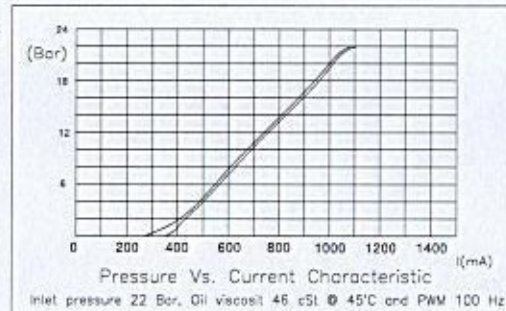
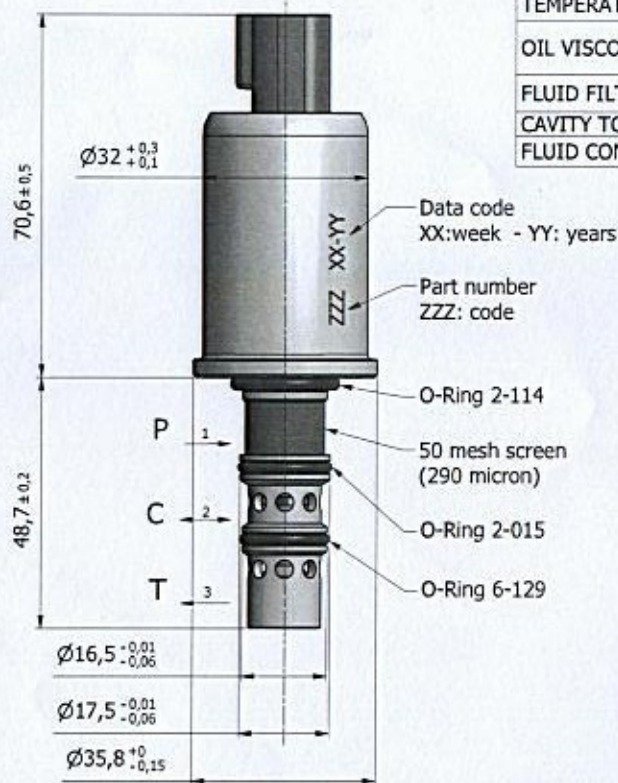


PRESSURE DROP (bar) vs. FLOW (l/min)  
(from RP port to T port)

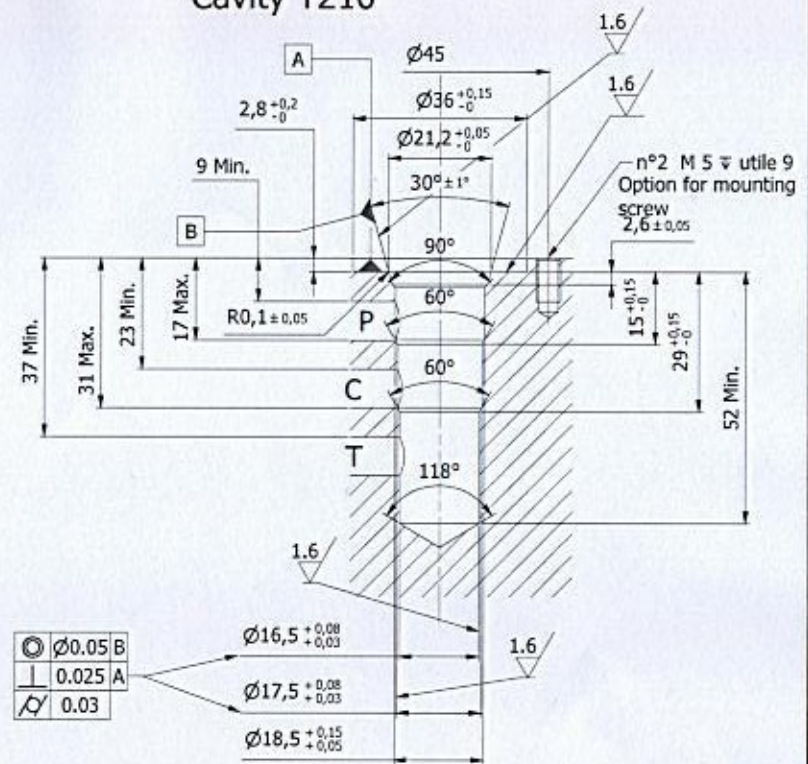


Electrical Specifications	
COIL RESISTANCE	12 Vd.c. Coil: 5,4 Ohms at 20°C
CURRENT SUPPLY CHARACTERISTICS	PWM
RATED CURRENT RANGE 12 V DC Coil	350-1500 mAmps
PWM OR SUPERIMPOSED DITHER FREQ.	100 ÷ 130 Hz Full amplitude
COIL TERMINATION	Deutsch Conn. DT04-2P

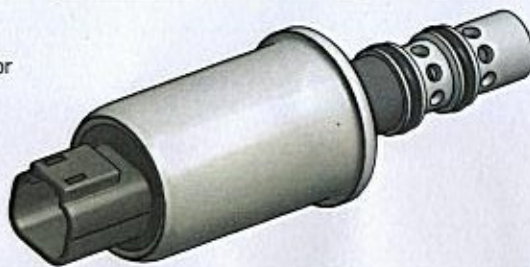
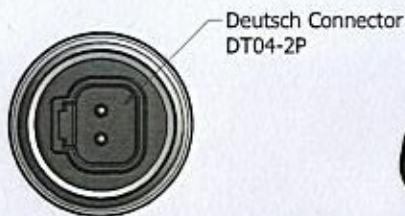
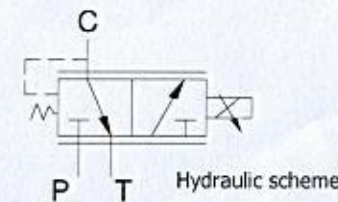
Hydraulic Specifications	
NOMINAL FLOW RATE	30 lt/min (8 gpm)
MAXIMUM INLET PRESSURE	60 bar (870 psi)
CONTROLLED PRESSURE RANGE	22 Bar @ 75% max current.
LEAKAGE AT REST	< 25 cc/min @ Pin=22 bar (< 1.5 cu.in. / min. @ Pin= 320 psi)
RESPONSE TIME (0 - 1200 mA)	< 40 ms @ 45°C oil temperature
HYSTERESIS @ 100 Hz PWM and 45°C oil temperature	< 3,5% of 22 bar (0.75 bar) over 450 mAmps ( 3 bar)
MEDIA OPERATING TEMPERATURE RANGE	-30°C ÷ +120°C (-22°F ÷ +248°F)
OIL VISCOSITY RANGE	36 SSU ÷ 3000 SSU (3 ÷ 647 cSt)
FLUID FILTRATION	20/18/15 (ISO 4406) or better
CAVITY TOOL	T216
FLUID COMPATIBILITY	AMBRA MULTI G (MAT 3525)



### Cavity T216



For ENS0100 (87556309) component cleanliness to be class Y3  
La pulizia deve essere di classe Y3 secondo Std. ENS0100 (87556309)



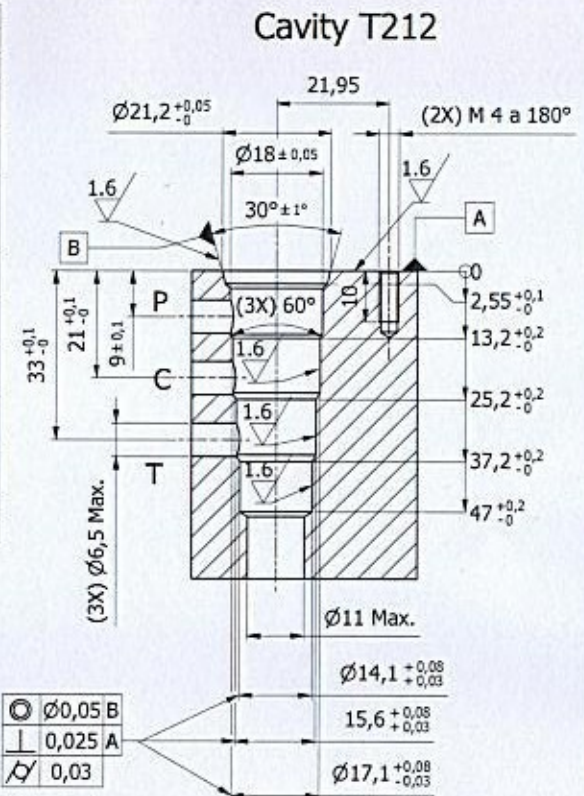
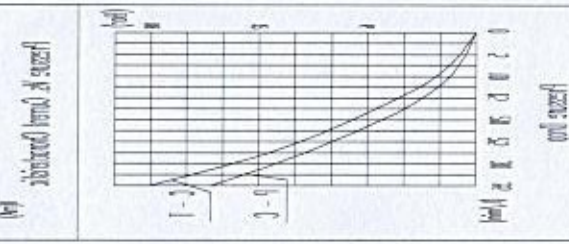
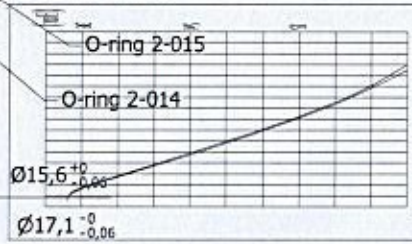
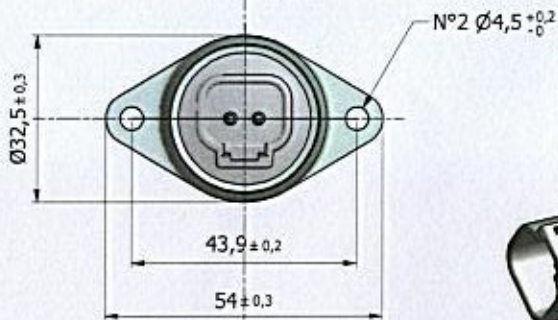
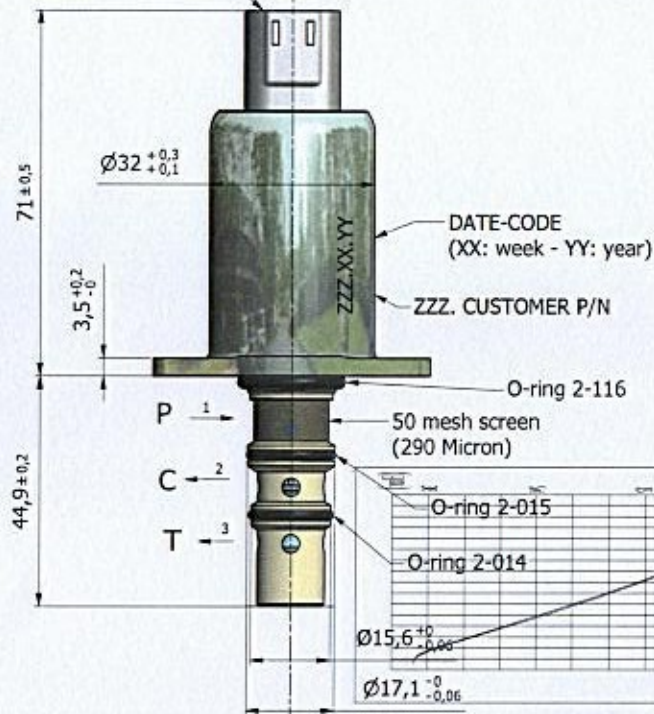
DENOMINAZIONE: Proportional Pressure reducing/relieving Valve Special cavity T216 IP-RDA-216-DI12-A23-HS		SOSTITUISCE IL: C_14.0103.166/00		MODIFICHE APPROVATE	
TRATT. SUPERFICIALE: -		SOSTITUITO DA: -		TECNORD	
TRATT. TERMICO: -		NOME FILE: C_14.0103.166_02.dwg		SERVOCOMANDE E REGOLAZIONE	
MATERIALE: -		SCALA: 1:1		DATA: 11/06/2012	
CLIENTE: -		COMPLESSIVO: -		N° FOGLIO: 1/1	
DESIGNATO: DD		CONTR.: -		APPROV.: DD	
QUOTE SENZA TOLLERANZA: $\varnothing 9 \pm 0,05$		$\varnothing 1 \pm 0,1$		$\varnothing 80 \pm 0,15$	
		$\varnothing 200 \pm 0,2$		$\varnothing 300 \pm 0,3$	
MATERIALE: -				SF .1444.TCN	
				CODICE	
				C_14.0103.166/02	



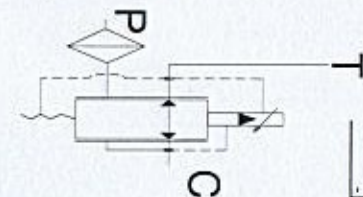
Electrical Specifications	
COIL RESISTANCE	12 Vd.c. Coil: 5,4 Ohms
CURRENT SUPPLY CHARACTERISTICS	PWM
RATED CURRENT RANGE	12 Vd.c. Coil: 150 - 1500 mAmps
PWM OR SUPERIMPOSED DITHER FREQ.	100 ÷ 200 Hz
COIL TERMINATION	Deutsch Conn. DT04-2P

Hydraulic Specifications	
NOMINAL FLOW RATE	25 lt/min (6 gpm)
MAXIMUM INLET PRESSURE	60 bar (870 psi)
CONTROLLED PRESSURE RANGE	From 0 to 100% of input pressure
LEAKAGE AT REST	< 50 cc/min @ Pin=35 bar (< 3 cu.in. / min. @ Pin=500 psi)
RESPONSE TIME (0 -1200 mA)	< 40 ms
MEDIA OPERATING TEMPERATURE RANGE	-30°C ÷ +125°C (-22°F ÷ +257°F)
OIL VISCOSITY RANGE	36 SSU ÷ 3000 SSU (3 ÷ 647 cSt)
FLUID FILTRATION	20/18/15 (ISO 4406) or better
REDUCED PRESSURE TOLERANCE	± 5%
CAVITY TOOL	T212
MOUNTING SCREW	M4x12 mm Long

Deutsch Connector DT04-2P



Hydraulic scheme:

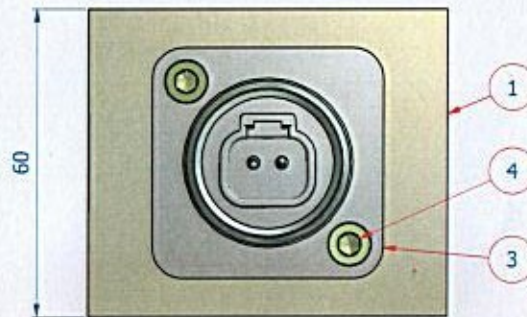
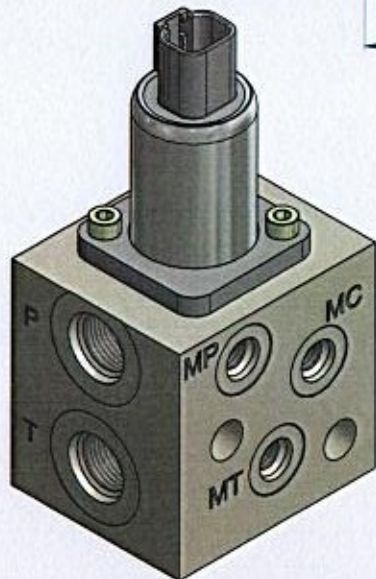
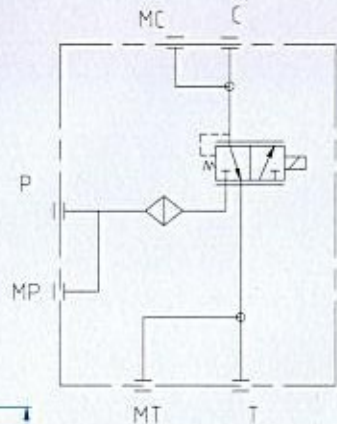
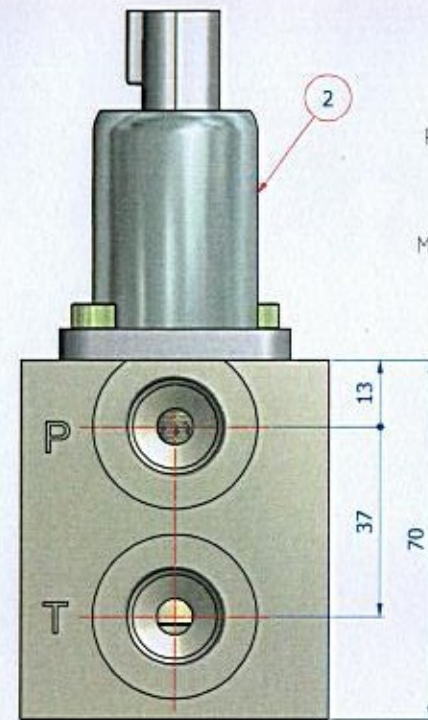
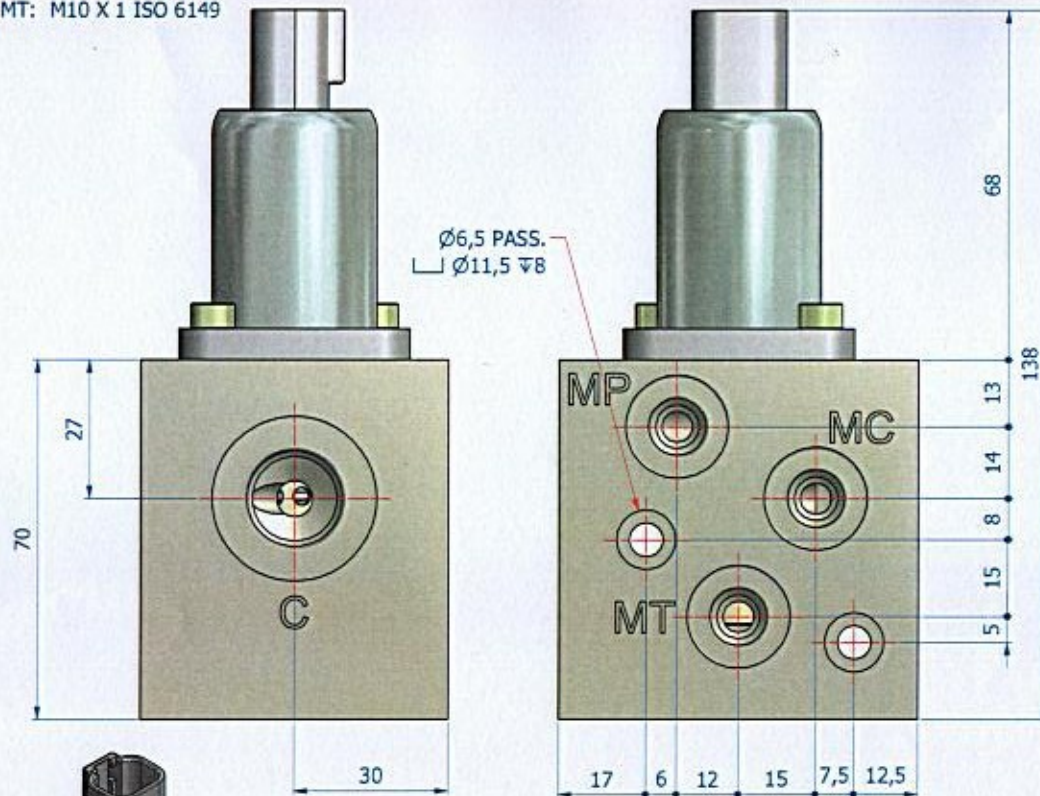


DENOMINAZIONE: Proportional Pressure reducing/relieving Valves Special cavity T212		SOSTITUISCE IL: -		MODIFICHE APPROVATE	
TRATT. SUPERFICIALE: -		SOSTITUITO DA: -		TECNORD SERVOCOMANDI E REGOLAZIONI	
TRATT. TERMICO: -		NOME FILE: SF.1444.001_00_00		SCALA DATA N° FOGLIO 1:1 11/06/2012 1/1	
MATERIALE: -		SF SF.1444.TCN		CODICE	
CLIENTE: -		COMPLESSIVO: -		EISEGNATO: DD	
CONTR.: -		APPROV.: -		-	
QUOTE SENZA TOLLERANZA: da 0 a 1: ±0.25 da 1 a 9: ±0.1 da 10 a 200: ±0.15 da 200 a 300: ±0.2 da 300 a 600: ±0.3					
				SF.1444.001 / 00	

**PORTS SIZE :**

P, T, C: M18 X 1,5 ISO 6149

MP, MC, MT: M10 X 1 ISO 6149



Q

For ENS0100 (87556309) component cleanliness to be class Y3  
La pulizia deve essere di classe Y3 secondo Std. ENS0100 (87556309)

4	Screw TCEI M5x14	2	60.1002.047
3	Fixing flange	1	13.2501.101
2	Proportional pressure reducing/relieving valves	1	14.0103.166
1	Test manifold for IP-RDA-216	1	13.1011.212
POS.	DESCRIZIONE	QTÀ	CODICE


DESCRIZIONE:		SOSTITUISCE IL:		TECNORD	
Test manifold for Proportional pressure reducing/relieving Valves IP-RDA-216 -		-		SERVIZIO MANIFOLTE E RIGENERAZIONE	
TRATT. SUPERFICIALE:		SOSTITUITO DA:		IL PRODOTTO DEVE ESSERE USATO IN CONFORMITÀ CON LE CONDIZIONI D'USO E LE PRECAUZIONI D'USO INDICATE NELLA DOCUMENTAZIONE TECNICA E NEI LIBRI DI MANUTENZIONE. È vietata la ristampa o l'uso non autorizzato di questo documento senza permesso scritto dalla TECNOLOGIA.	
TRATT. TERMICO:		NOME FILE:		SCALA	
-		15.1707.007.00h		10/09/2012	
MATERIALE:		MASSA: N/A		SF. 1/1	
CLIENTE:		APPROV.:		CODICE	
-		G.S.		15.1707.007 /	

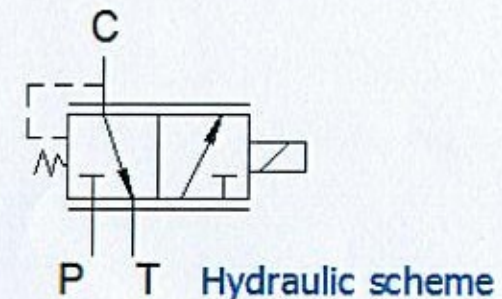
QUOTE SENZA TOLLERANZA: da 0 a 1: ±0,05 da 1 a 80: ±0,1 da 80 a 200: ±0,15 da 200 a 300: ±0,2 da 300 a 600: ±0,3

## SF.1444.TCN

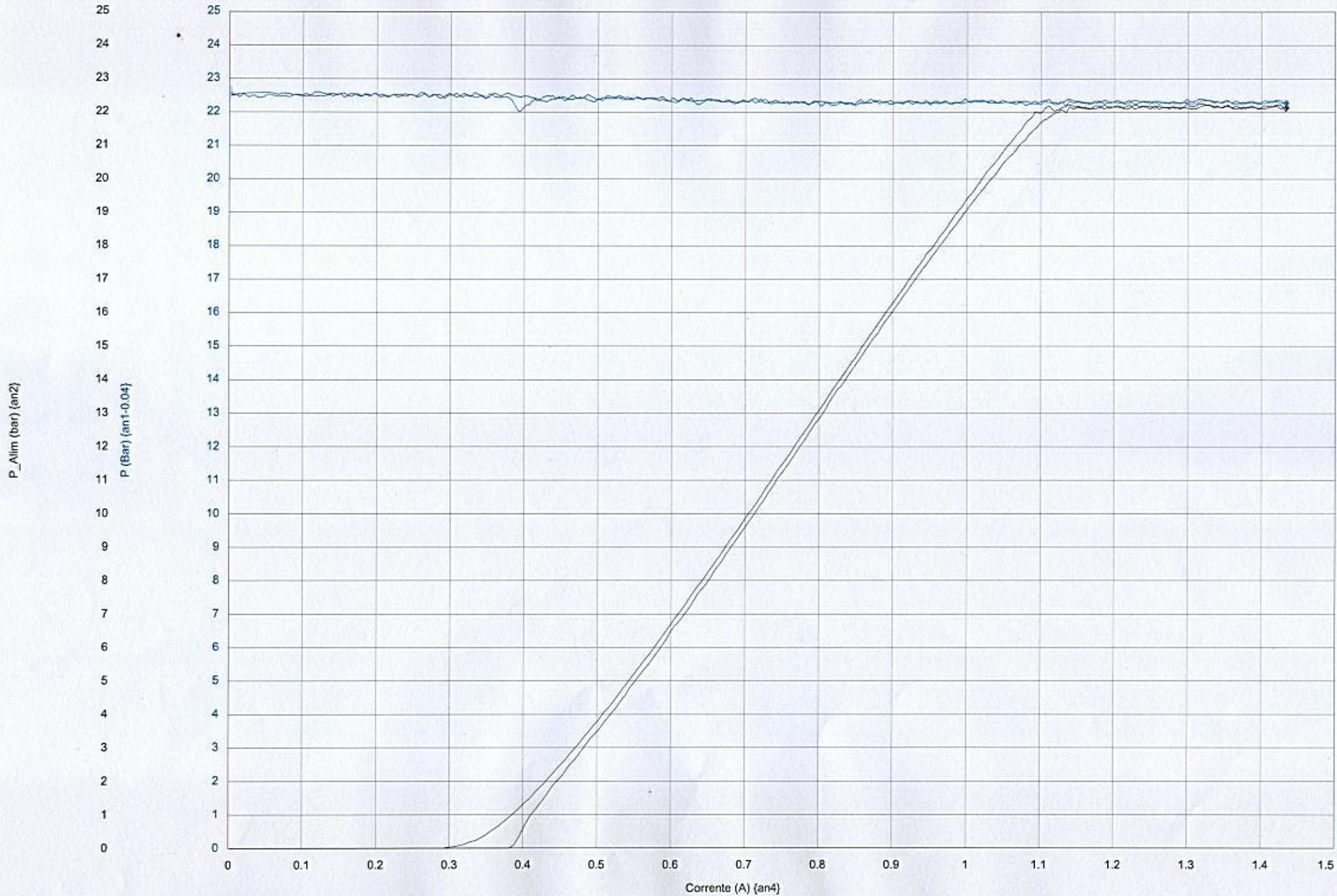
### Proportional pressure reducing valve for clutch applications

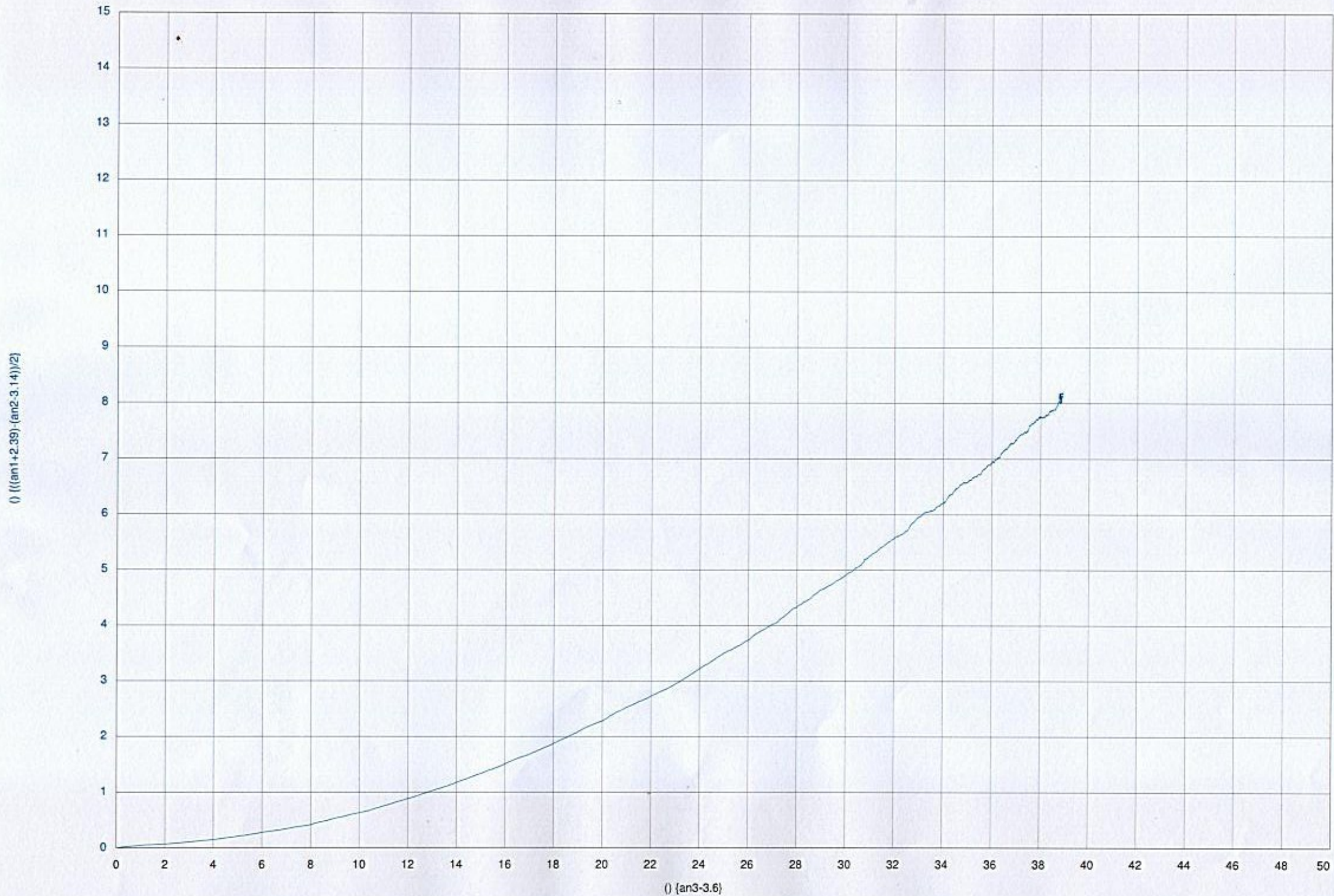
IP-RDA-216-DI12-A23-HS  
P/N 14.0103.166

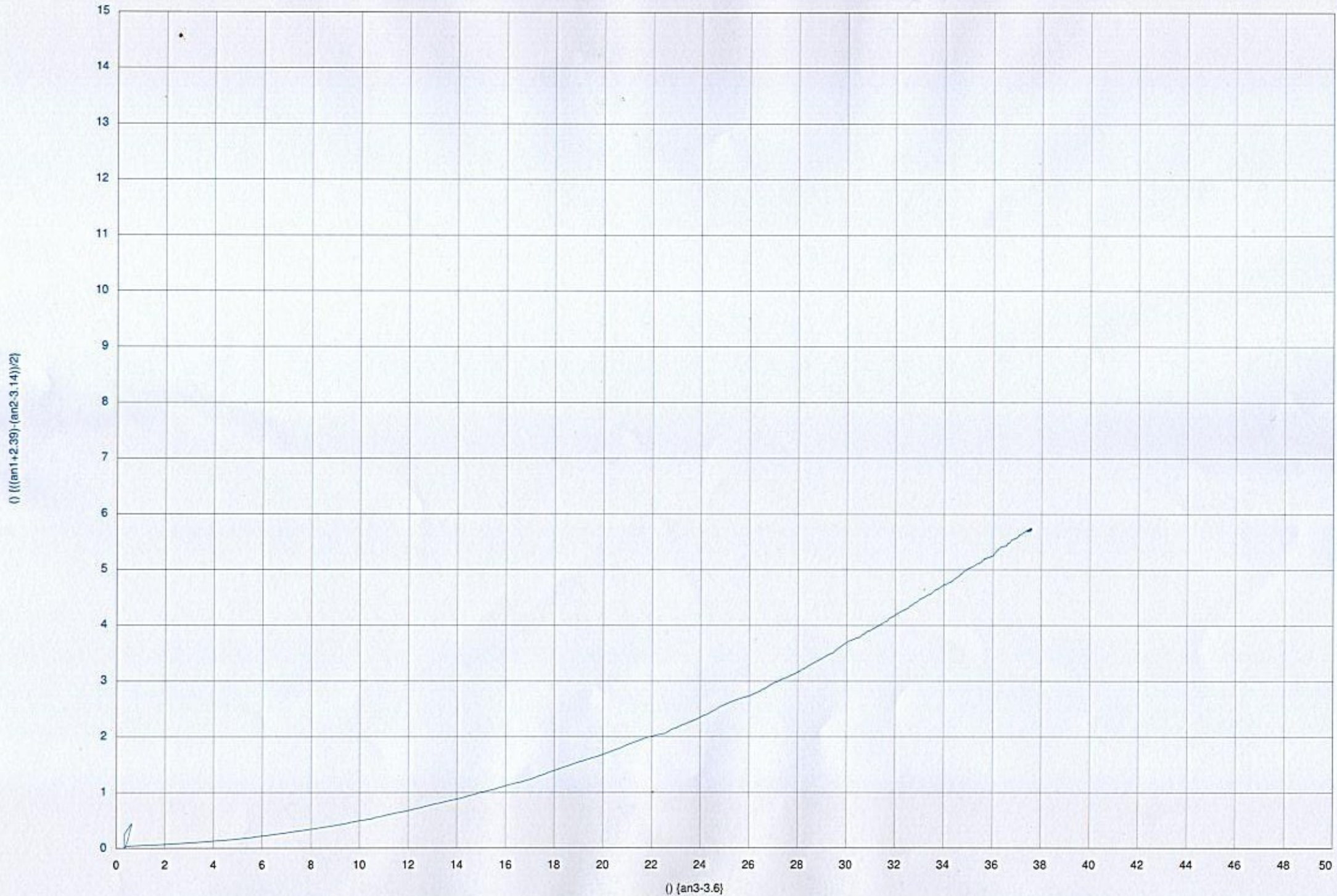
Direct acting, normally closed proportional pressure reducing valves are used to electronically reduce the inlet pressure in the hydraulic circuit in order to control the clutch engagement of DCT transmissions .

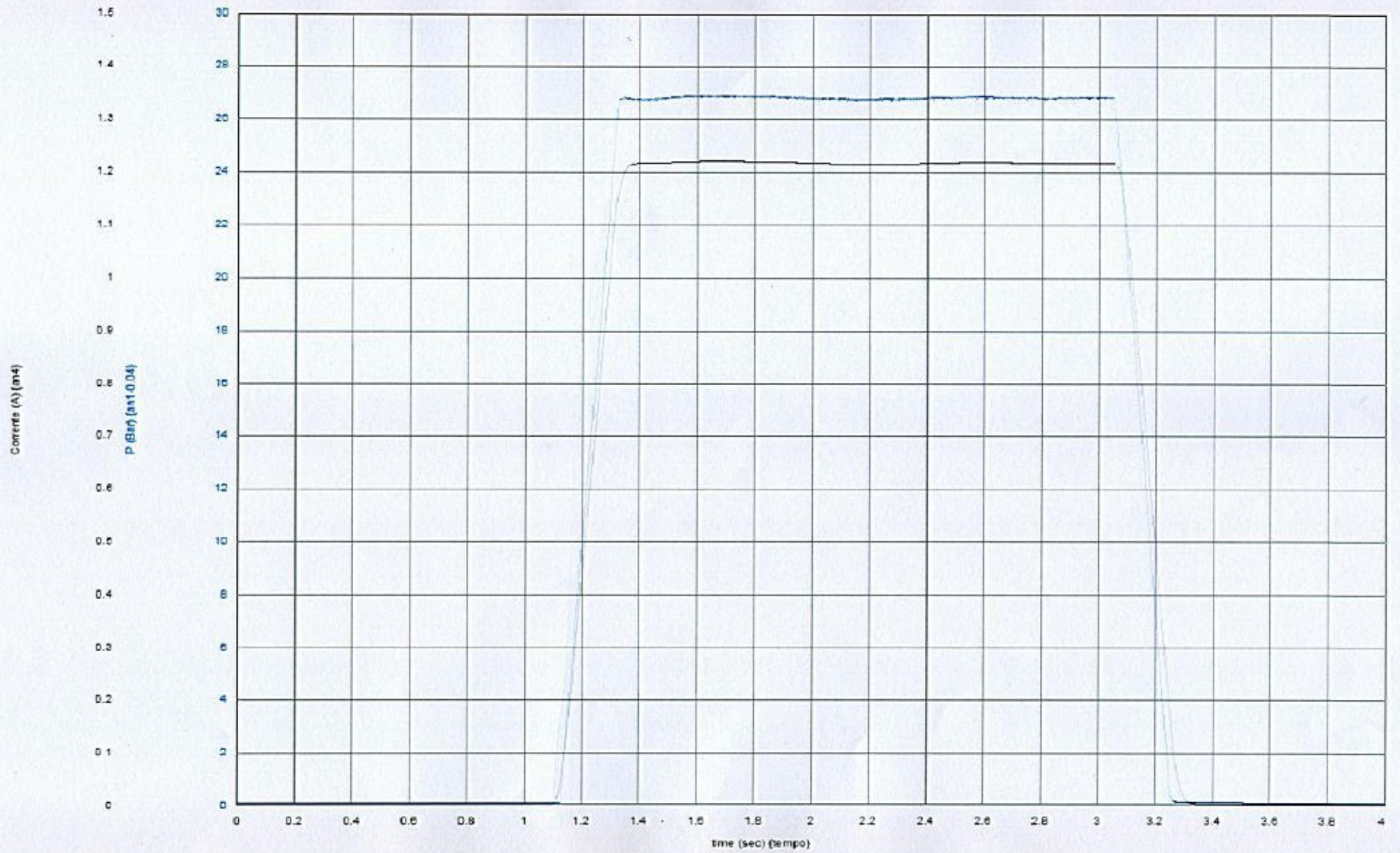


### INTERNAL REPORT



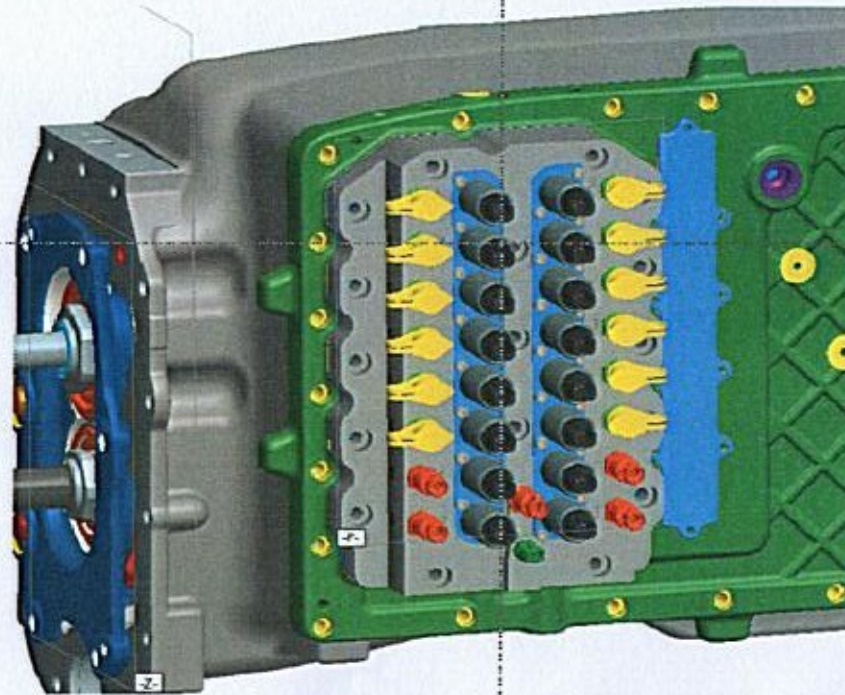






Prova effettuata il 12/11/2012 alle 12:47 - File: C:\Users\gmorselli\Desktop\Riduttrice T216\Preserie di 2 pz 13-11-2012\Ev 1 Tempo risposta camera chiusa energizzata 1200ma 120 HZ olio 42 °C.dat

## Tear Down DCT valve - Tecnord





## Nessun orientamento della valvola

