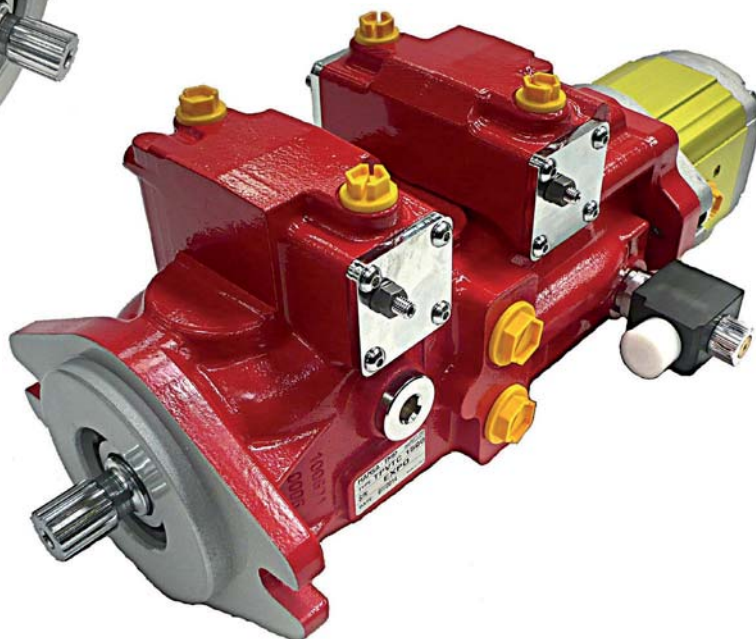




THE PRODUCTION LINE OF HANSA-TMP

**Variable Displacement Closed Loop System
Axial Piston Pump
TPV 1500**



TECHNICAL SPECIFICATIONS

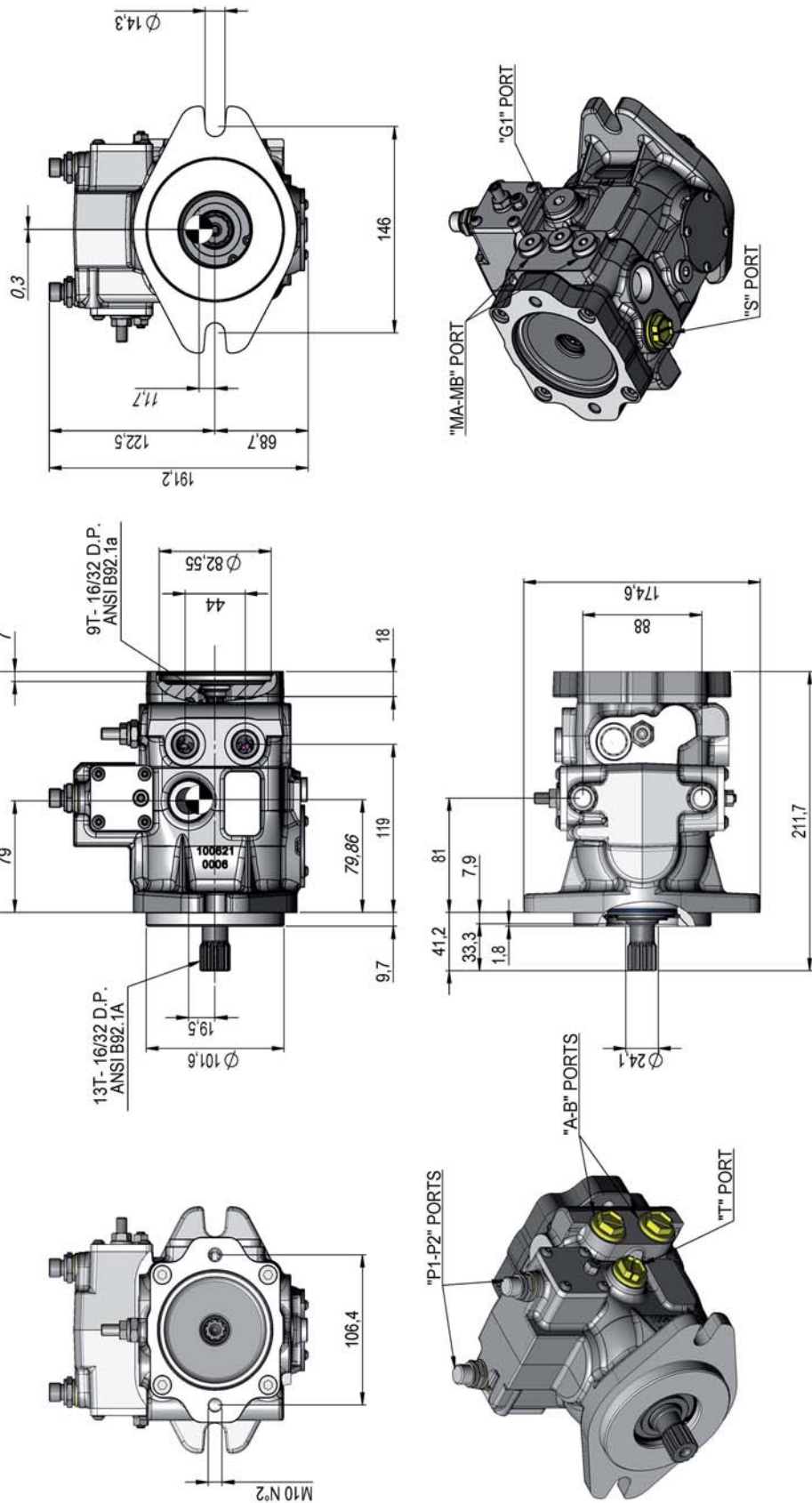
Pump model		TPV 17-9	TPV 18-9	TPV 19-9	TPV 21-9
Max. displacement	cm ³ /n	17,6	18,7	19,9	21,1
Flow rating ⁽¹⁾	lt/min.	59,6	63,3	67,4	73,6
Power rating ⁽¹⁾	kW	32	34	36	38
Boost pump displacement	cm ³ /n	5,8			
Rated pressure	bar	300			
Max. pressure	bar	350			
Max. relief valve setting	bar	400			
Standard boost pressure ⁽²⁾	bar	20			
Suction pressure	bar (absolute)	>= 0,8			
Max. case pressure	bar	2,0			
Min. inlet shaft speed	n/min.	500			
Max. speed	n/min.	3.600			
Max. oil temperature	°C	80			
Oil viscosity	mm ² /sec.	16-36			
Fluid contamination		18/15/12 ISO 4406 (NAS 9)			
TPV Mass (single pump) ⁽³⁾	kg	SEI 14,5		SHI 13	
TPVTC Mass (tandem pump) ⁽³⁾	kg	SEI 23,2		SHI 21,3	

(1) 3.600 n/min. 300 bar for single section

(2) 1000 n/min.

(3) Indicative values, weight varies depending on configuration and optionals

Integrated Hydraulic Remote Servo Control - SHI
TPV Single Pump

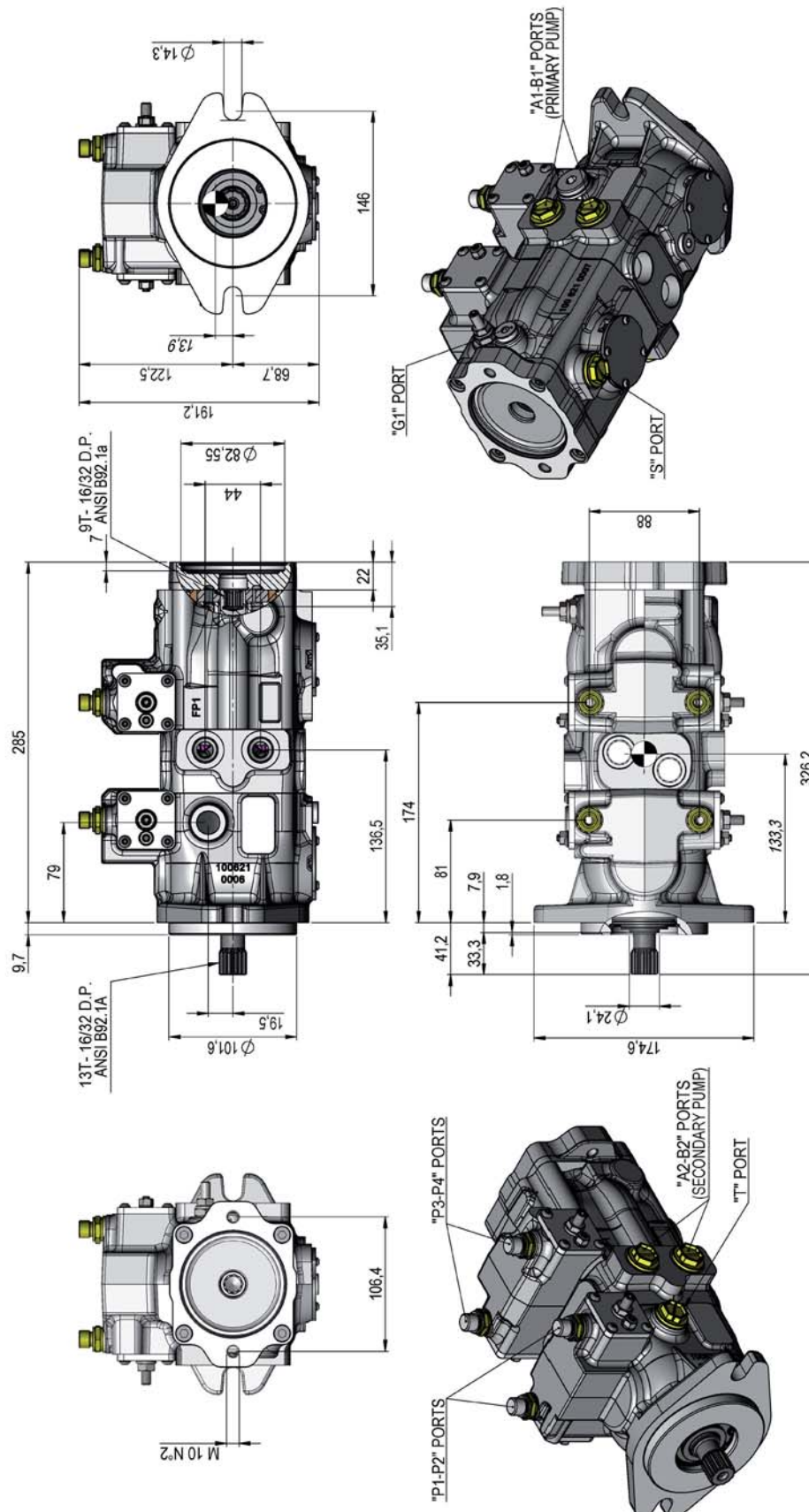


PIPE CONNECTIONS		
A-B	MAIN PORTS	1/2" BSPP
T	DRAIN PORT	1/2" BSPP
S	SUCTION	1/2" BSPP
G1	CHARGE PRESSURE	1/4" BSPP
P1-P2	PILOT PRESSURE PUMP (MALE)	1/4" BSPP
MA-MB	MAIN PRESSURE CONNECTION	1/4" BSPP

TPV Mass: 13 Kg

Integrated Hydraulic Remote Servo Control - SHI TPVTC Tandem Pump

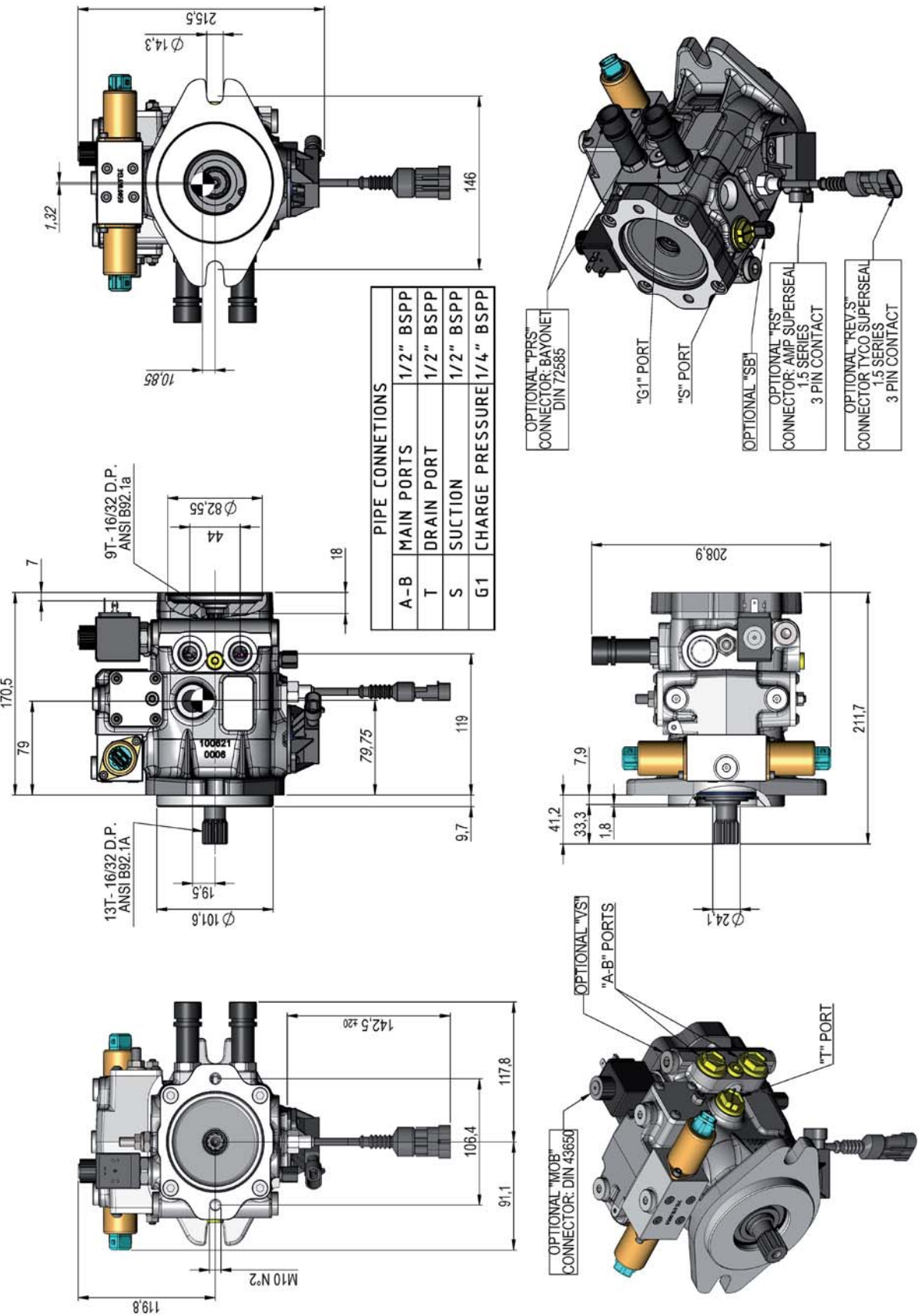
TPVTC Mass: 21,3 Kg



PIPE CONNECTIONS	
A1-B1	MAIN PORTS
A2-B2	MAIN PORTS
T	DRAIN PORT
S	SUCTION
G1	CHARGE PRESSURE
P1-P2	PILOT PRESSURE PUMP (MALE)
P3-P4	PILOT PRESSURE PUMP (MALE)

Integrated Electric Proportional Remote Servo Control - SEI

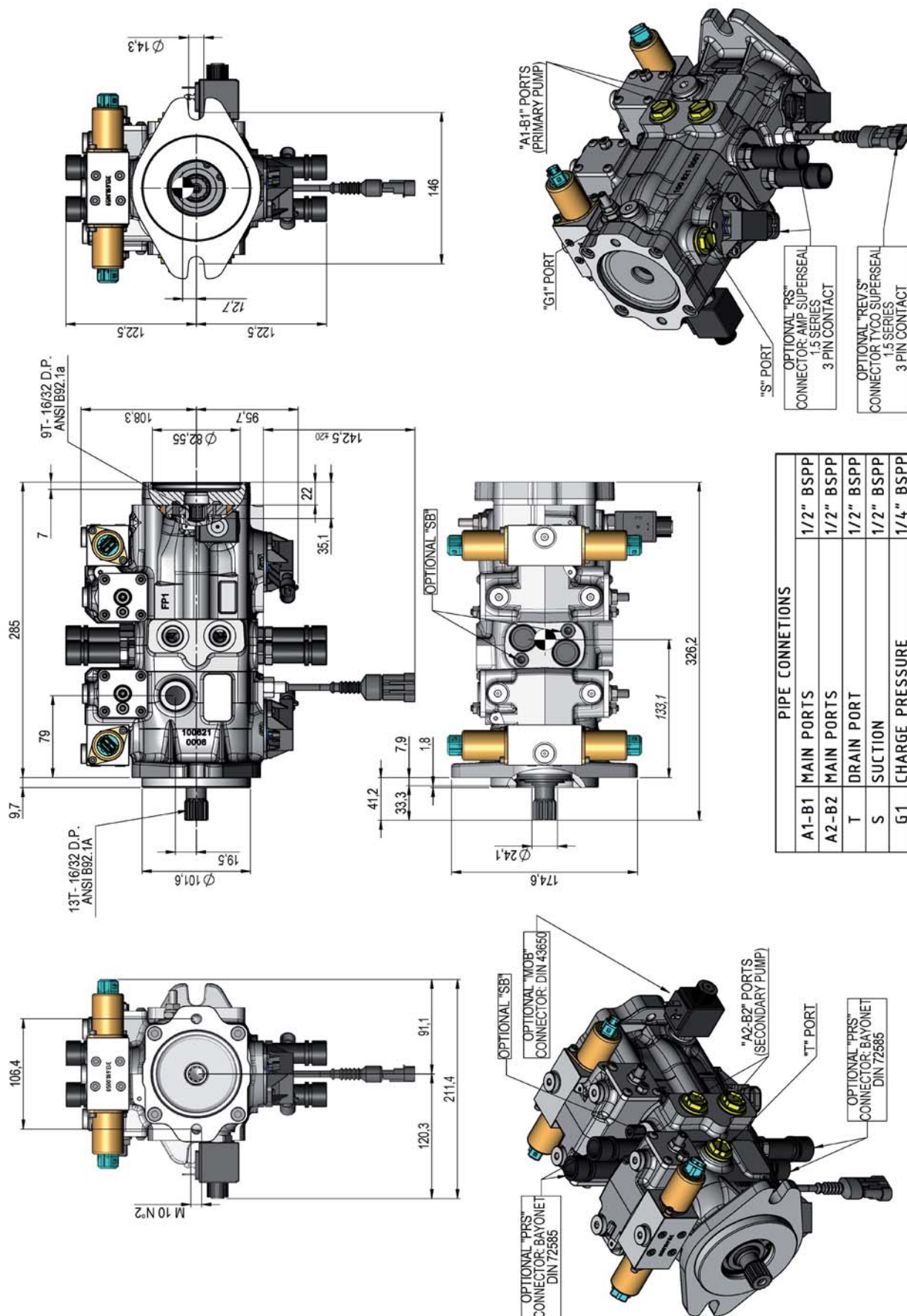
TPV Single Pump



TPV Mass: 14,5 Kg

Integrated Electric Proportional Remote Servo Control - SEI
TPVTC Tandem Pump

TPVTC Mass: 23,2 Kg

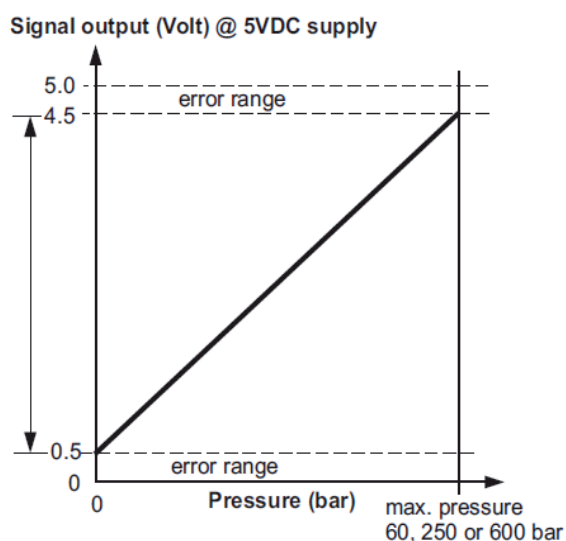


OPTIONAL PRS: PRESSURE SENSOR

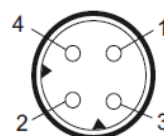


Pressure range:	0-600 bar
Over pressure, max permitted:	1200 bar
Burst pressure:	2400 bar
Powersupply U_B:	5.0 ± 0.5 Volt DC
Signal output, ratiometric @5V:	min. 0.5 - max 4.5 Volt DC
Error levels, signal output:	< 0.5 V and > 4.5 volt
Response time:	< 2 ms
Accuracy (IEC 61298-2):	better than 1%, incl. non-linearity, hysteresis, repeatability, zero point & full scale error
Max. load, R_A:	> 4.5 kOhm
Temperature range:	
- ambient, operating	-40 to + 100 °C
- hydraulic oil inlet	-40 to +125 °C
- storage	-40 to +120 °C
CE conformity acc. To:	89/336/EEC; EN 61326
Mechanical shock:	500 g (IEC60068-2-27)
Vibration resonance:	20 g (IEC60068-2-6)
IP protection class:	IP 69K
Weight:	70 gr.
Electric connector:	O-ring sealed bayonet 4-way, DIN 72585 97/23/EG
Hydraulic connection:	G 1/4A, DIN 3852-E, sealing ring 16.5x11.6x1.5

Signal output range

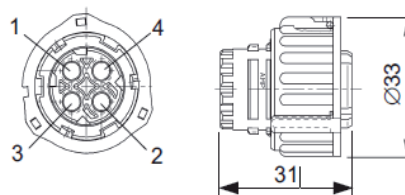


Electric connector pin location



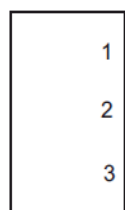
Pin No.	Designation	Function
1	U_B+	Supply voltage +5V
2	0 V	GND
3	S+	Signal +/- 0.5 - 4.5 V
4	not used	-

Mating connector - Bayonet DIN 72585



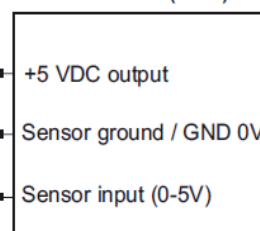
Electric connection to control unit

Pressure sensor



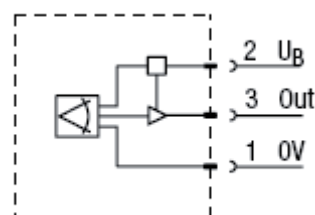
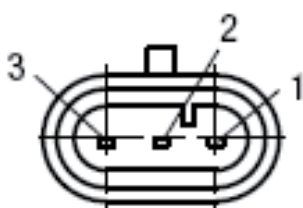
U_B+
GND/ 0V
Signal +

Control unit (ECU)

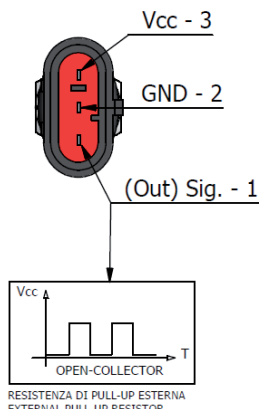


OPTIONAL RS: ANGLE SENSOR

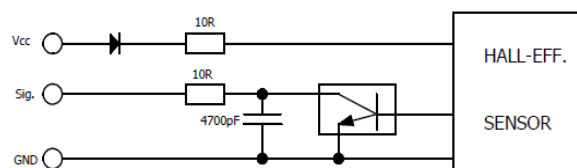
Operating voltage:	10-30V DC
Output signal:	0.5-4.5 V
Current consumption:	12V -> 10 mA
Angular range:	±25°
Resolution (20°C):	0.1°
Linearity error (20°C):	±0.4°
Load resistance:	> 20 kΩ
Centre position:	type 2.5 V
Reverse connection protected:	Yes
Delay time of output signal:	approx. 3 ms
Temperature range:	-40 / +85°C
Offset temperature drift:	0.3 mV/°C – 1.2 μA/°C
IP protection class:	IP 67

**OPTIONAL REV.S: RPM SENSOR**

Operating voltage:	4.5-30V DC
Output current:	Max 25 mA
Maximum target:	15 kHz
Internal resistance:	140 ±30 Ω
Insulation resistance:	145 MΩ (500V)
Protected by polarity inversion:	yes
Output signal (freq):	open collector (NPN)
Mechanical shock:	4g (1mm/80Hz)
Electro magnetic compatibility:	B.C.I. – class "C" 100mA, 1÷400 MHz
Reverse polarity protection:	-30Vdc for 1h
Overload protection:	30 mA for 5'
Overvoltage protection:	36V for 5'
Shortcircuit protection:	to ground for 5' to Vcc for 5'
Output transient voltage protection:	V _{br} min 31,35 MAX 34.65
Temperature range:	-40 / +150°C
IP protection class:	IP 67
Tightening torque:	25 Nm
Output pins are protected against 2000V electrostatic discharge according to HBM (rif. MIL-STD-883; method 3015)	



SENSOR FUNCTIONAL SCHEME



ORDER CODE

1500	TPV	17-9	CR	SS3	F2	SHI	OA	10	06	SA-R	000	1	00
0	1	2	3	4	5	6	7	8	9	10	11	12	13

0 - Pump series
1500 = TPV pump 1500

1 - Pump model
TPV = Closed loop circuit single pump
TPVTC = Closed loop circuit tandem compact pump

2 - Primary or secondary pump displacement
17-9 = 17,6 cm³/n 18-9 = 18,7 cm³/n 19-9 = 19,9 cm³/n 21-9 = 21,1 cm³/n

3 - Rotation
CR = Clockwise rotation (right)
CC = Counter-clockwise rotation (left)

4 - Shaft (mounting side)
SS3 = Splined shaft (ANSI B92.1A - 13T - 16/32 D.P.)

5 - Mounting flange
F2 = SAE-B 2 holes - pilot diam. 101,6 mm.

6 - Primary pump controls
SHI = Integrated hydraulic remote servo control
SEI1.3 = Integrated electric proportional remote servo control 12V DC (Connector AMP Junior Timer)
SEI2.3 = Integrated electric proportional remote servo control 24V DC (Connector AMP Junior Timer)
SEI1.3D = Integrated electric proportional remote servo control 12V DC (Connector Deutsch)
SEI2.3D = Integrated electric proportional remote servo control 24V DC (Connector Deutsch)

7 - Primary or secondary pump control devices position
OA = Position A (without lever)

8 - Primary pump relief valve pressure setting
10 = 100 bar 15 = 150 bar 18 = 180 bar 20 = 200 bar
25 = 250 bar 30 = 300 bar 35 = 350 bar 40 = 400 bar

9 - Charge pump
00 = Without charge pump
06 = Standard pump (5,8 cm³/n)
Standard setting: 20 bar (hydraulic / electric servo control) at 1.000 n/min.
06(xx) = Other pressure settings on request (between 20 and 30 bar, contact our Technical Department).

10 - Auxiliary rear pump mounting flange option
SA-R = SAE-A 2 holes female shaft standard (ANSI B92.1a - 9T - 16/32 D.P.)

11 - Auxiliary gear pump group 2 (SAE-A) displacement
000 = Without pump
204 = 4,2 cm³/n 206 = 6,0 cm³/n 209 = 8,4 cm³/n 211 = 10,8 cm³/n 214 = 14,4 cm³/n
217 = 16,8 cm³/n 219 = 19,2 cm³/n 222 = 22,8 cm³/n 226 = 26,2 cm³/n 230 = 30,0 cm³/n
234 = 34,2 cm³/n 240 = 39,6 cm³/n

12 - Power Supply Voltage
0 = Without power supply voltage
1 = 12V DC
2 = 24V DC

13 - Optional
00 = Without optional
VS = Purge valve
SB = Screw by-pass
FLT = Filter without clogging indicator (only for TPV pump model)
FLTI = Filter with clogging indicator (only for TPV pump model)
MOB = Man on board
RS = Angle sensor
REV.S = RPM sensor
PRS = Pressure sensor
X(xx) = Servo control special devices (see table) - Example: G08

SHI/SEI - Control Devices				
STANDARD	Servo Control Fittings		Flow Restrictor	
	G	1/4" BSPP	-	No Restrictor
ON	J	JIC	06	Diameter hole restrictor ø 0,6 mm
REQUEST	M	METRIC	07	Diameter hole restrictor ø 0,7 mm
			08	Diameter hole restrictor ø 0,8 mm
			10	Diameter hole restrictor ø 1,0 mm
			12	Diameter hole restrictor ø 1,2 mm
			16	Diameter hole restrictor ø 1,6 mm
			20	Diameter hole restrictor ø 2,0 mm

As HANSA-TMP has a very extensive range of products and some products have a variety of applications, the information supplied may often only apply to specific situations.

If the catalogue does not supply all the information required, please contact HANSA-TMP.

In order to provide a comprehensive reply to queries we may require specific data regarding the proposed application.

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