

ADDIDRIVE ASSIST

TRAILERS

T E C H N I C A L C A T A L O G

PH
POCLAIN HYDRAULICS

Poclain

Methodology :

This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain Hydraulics products and specifies installation conditions that will ensure optimum operation.

This document includes important comments concerning safety. They are indicated in the following way:



Safety comment.

This document also includes essential operating instructions for the product and general information. These are indicated in the following way:



Essential instructions.



General information .



Information on the model number. Information on the model code.



Weight of component without oil.



Volume of oil.



Units.



Tightening torque.



Screws.



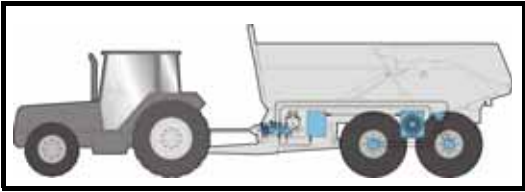

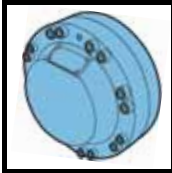









Information intended for Poclain-Hydraulics personnel.

The views in this document are created using metric standards.

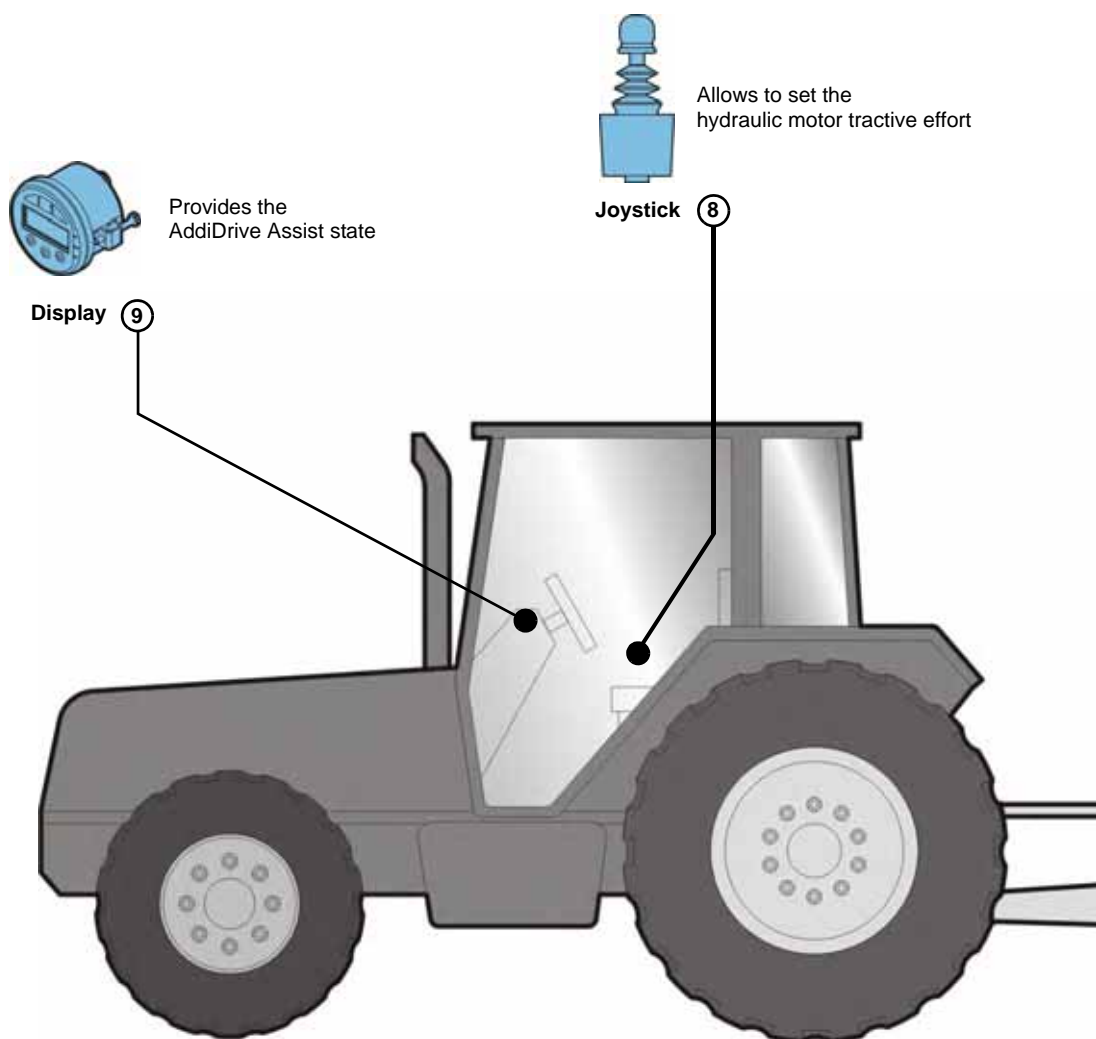
The dimensional data is given in mm and in inches (inches are between brackets and italic)



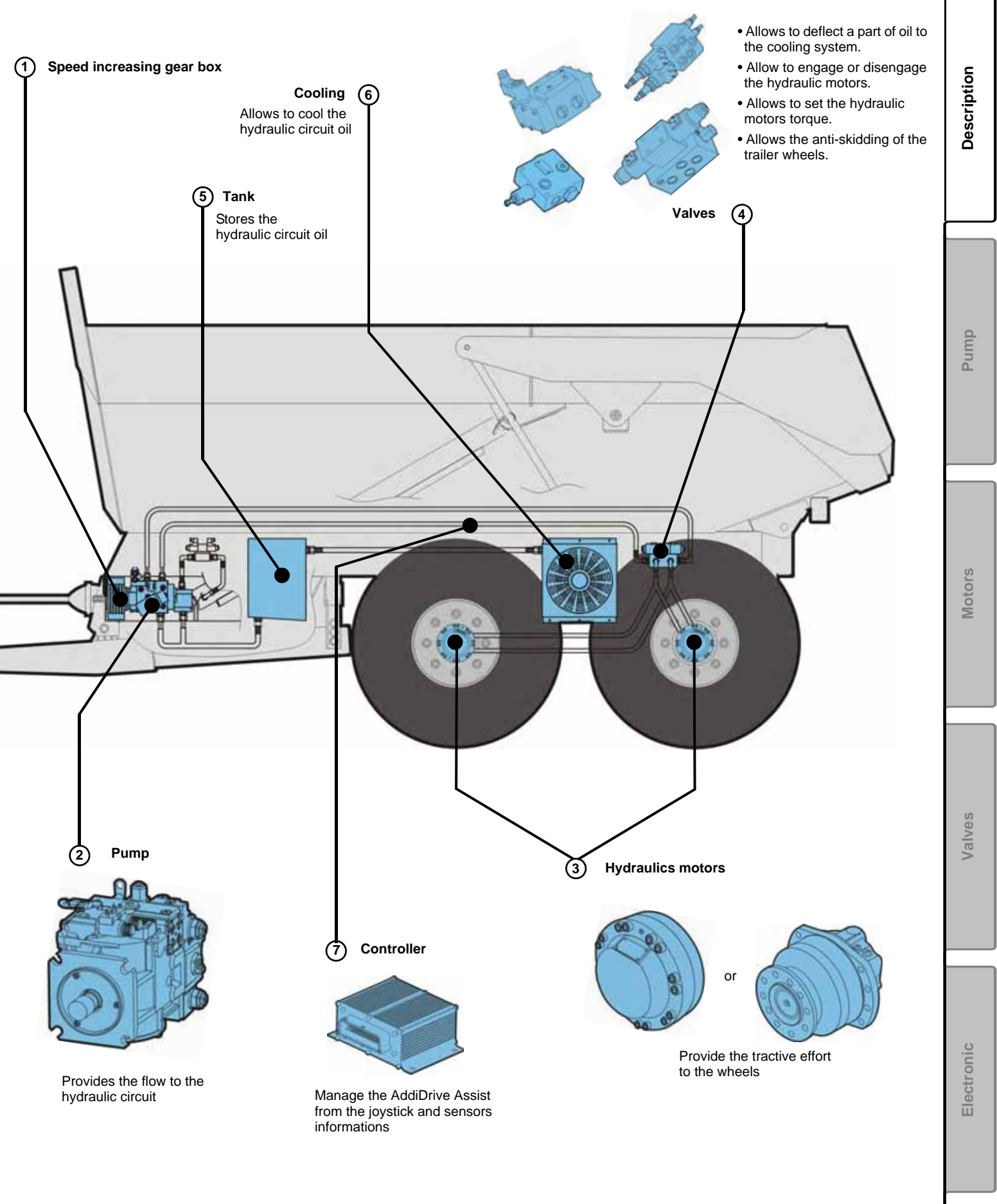
CONTENT

	DESCRIPTION	4	Description
	PUMP Pump P90	8 8	Pump
 	MOTORS MF Motor MS motors	10 10 11	Motors
   	VALVES Exchange valve Torque control valve Flow divider Free-wheeling valves	12 12 13 14 16	Valves
   	ELECTRONIC Controller Joystick Display Speed sensor	18 18 19 20 21	Electronic

DESCRIPTION



Mark	Designation	Quantity
1	Speed increasing gear box	1
2	Pump	1
3	Rigid powered axle	1 or 2
	Hydraulics motors	2 or 4
	Flushing valve	1
4	Free-wheeling valves	1
	Torque control valve	1
	Flow divider	1
5	Tank	1
6	Cooling system	1
7	Controller + Software	1
8	Joystick	1
9	Display	1

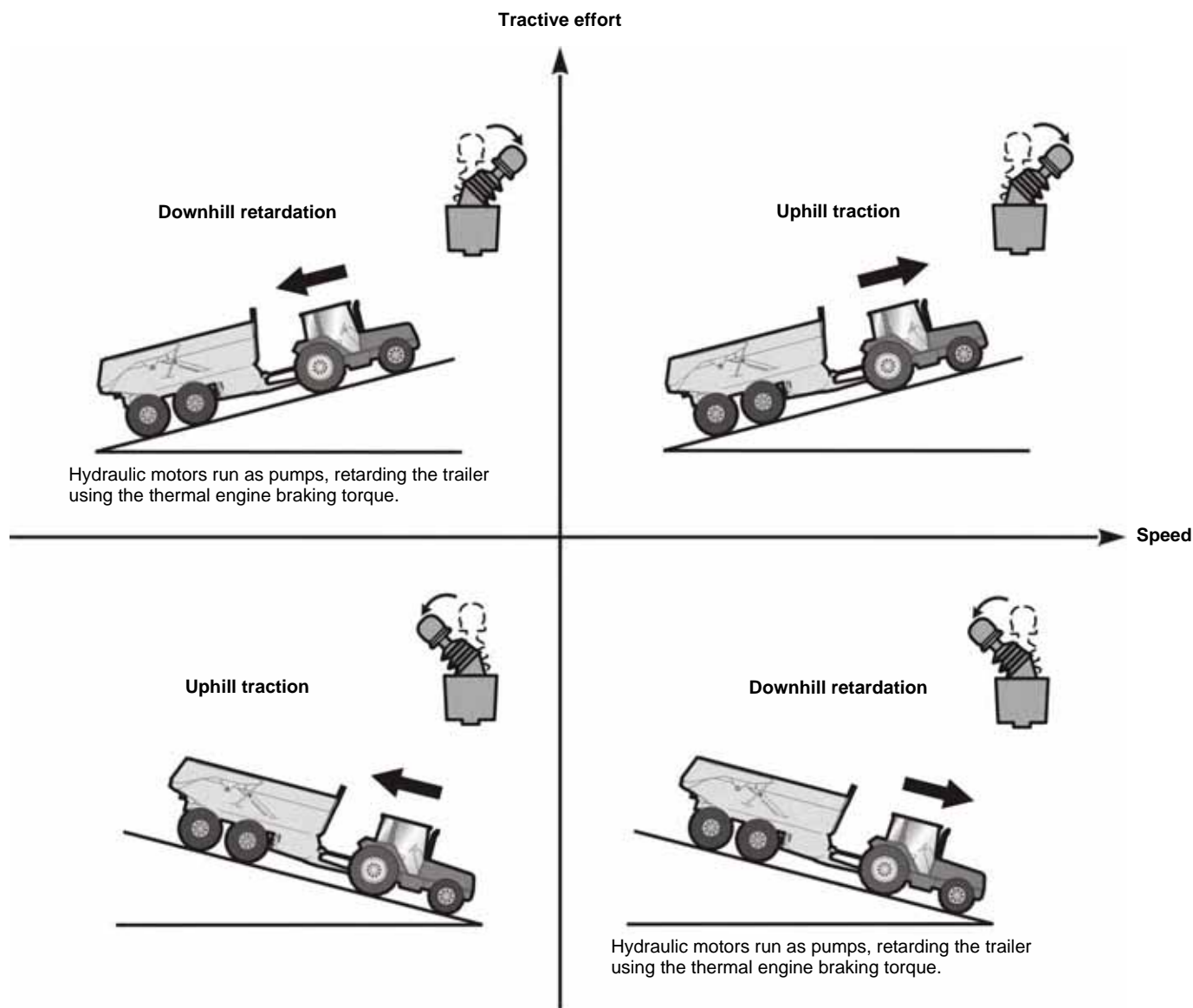


Principle of use

AddiDrive Assist only uses the tractor Power Take Off (PTO) as power supply. The pump is connected to the PTO and provides the hydraulic flow to the hydraulic motors. The trailer can be easily coupled and uncoupled to any tractor.

All the AddiDrive Assist components are embedded on the trailer. The human/machine interface (display, joystick) is carried off in the cab by a cable.

From the cab interface, the driver can engage or disengage the assist drive on the fly. With the joystick, the driver can select the drive direction, increase traction or retardation.



In case of braking:

- In traction mode, the assist drive is disengaged,
- In retardation mode, the assist drive is maintained to use the hydrostatic braking.

As an option, a hydraulic differential locking system, using a flow divider, can be added to help synchronising the trailer wheels.

Benefits

The benefits of the AddiDrive Assist to end users include:

- **Greater off-road capacity**

By increasing the driveability of fully loaded trailers on rugged, muddy or slopping terrain.

- **Greater safety**

By guaranteeing the trajectory of the trailer during descents and thus its safety thanks to the hydraulic assistance's restraining capacity.

- **Greater productivity / Savings**

The assistance enables operators to achieve savings in fuel and to reduce their investments:

- by increasing the trailer's payload without increasing the tractor's power,
- by enabling the same payload to be shifted while reducing the required power of the tractor.

AddiDrive Assist components

Pump



- P90 / 055
- P90 / 075

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Motors



- MFE 08

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- MS 05
- MSE05
- MS 08
- MS E08
- MS 11
- MS 18

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Flow divider



- FDB 20
- FDB 25

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Torque control valve



- VMPL

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Free-Wheeling valve



- VDF H15
- VDF H25

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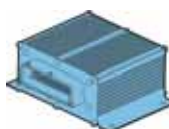
Exchange valve



- VE 60

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Controller + software



- SmartDrive Easy Plus

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Speed Sensor



- Speed sensor T4

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Joystick



- Joystick

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Display



- SD Display 1.5

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Description

Pump

Motors

Valves

Electronic

PUMP P90



✓ P90 055

✓ P90 075

Function

Provides the flow to the hydraulic circuit.

Features

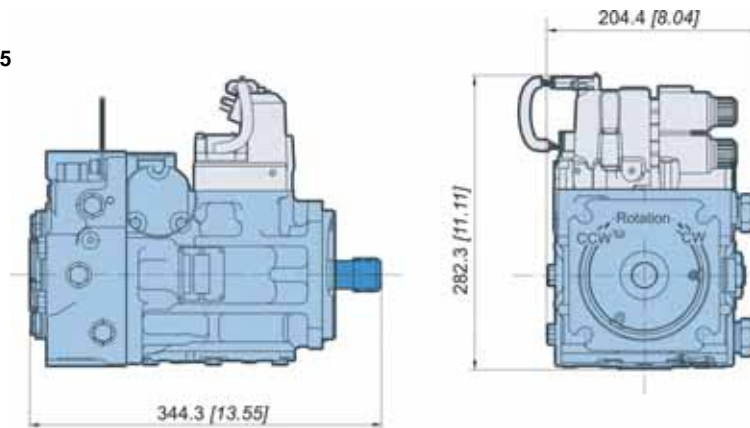
	Unit	Pump size	
		055	075
Displacement	cm³/rev [in³/rev.]	55 [3.35]	75 [4.58]
Flow at rated speed (theoretical)	L/min [US gal/min]	215 [57]	270 [71]
Torque at maximum displacement (theoretical)	N.m/bar [lbf.in/1000 PSI]	0.88 [530]	1.19 [730]
Weight (with control opt. SA or SB)	kg [<i>lb</i>]	40 [<i>88</i>]	49 [<i>108</i>]
Rotation	Clockwise or Counterclockwise		
Shafts	Splined, straight keyed, and tapered shafts available.		
Input speed			
Minimum	min ⁻¹ (rpm)	500	
Continuous		3900	3600
Maximum		4250	3950
System pressure			
Rated	420 [<i>6000</i>]		
Maximum	bar [<i>PSI</i>]	480 [<i>7000</i>]	
Minimum low loop	10 [<i>145</i>]		
Inlet pressure (charge inlet)			
Minimum (continuous)	bar (abs.)	0.7 [<i>9</i>]	
Minimum (cold start)	[<i>in. Hg vac.</i>]	0.2 [<i>24</i>]	
Case pressure			
Continuous	bar [<i>PSI</i>]	3 [<i>43</i>]	
Maximum (cold start)		5 [<i>73</i>]	

Control

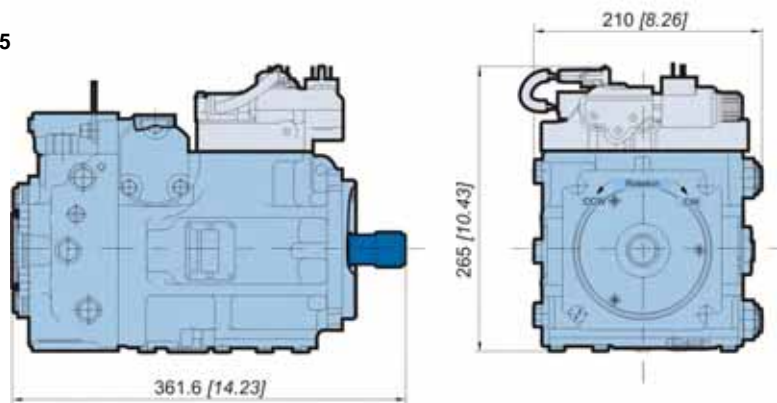
Proportional electronic control driven by the Poclain Hydraulics electronic boxes.

- Our electronic control boxes control the displacement and the direction of the flow while monitoring permanently the functioning parameters of the engine and of the complete hydraulic system.
- Two contamination resistant solenoid valves controls the displacement and the direction of the flow.
- A sensor linked to the swash plate monitors permanently the actual displacement setting.

Dimensions

Size 055

Size 075



Model code specifications

[illegible]

See technical catalogue N°A18586C for further informations.

MF MOTOR



✓ MFE 08

Function

Provide the tractive effort to the wheels.

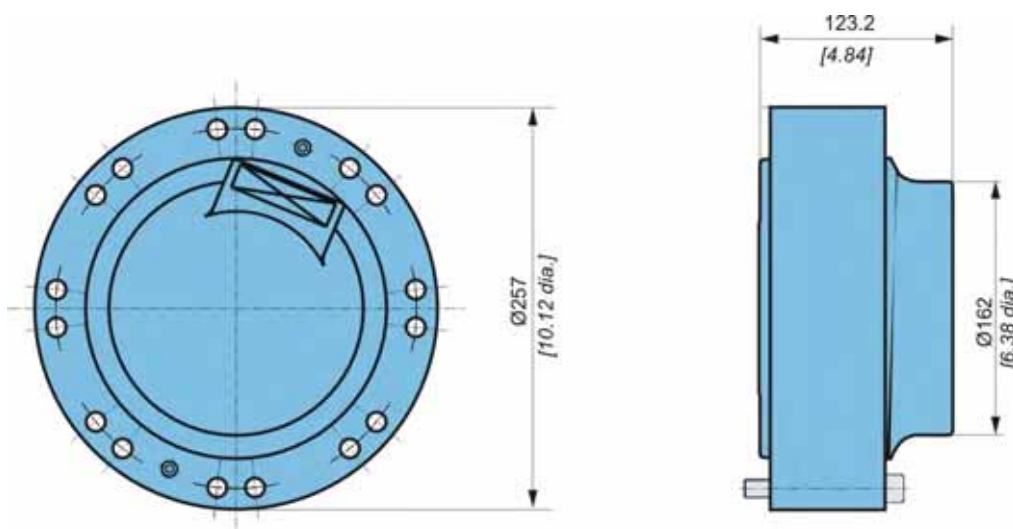


This motor is designed to be integrated on a customise axle. For further information do not hesitate to contact your application engineer.

Features

- Hydraulic assist drive for on road and off road applications.
- Rotating cam motor with integrated free wheeling system
- From 833 to 1248 cm³/tr [50.8 to 76.1 cu.in/rev.]
- Max. free-wheeling speed: 500 tr/min [RPM]

Dimensions



See technical catalogue N°A12803R for further informations.

MS MOTORS



- ✓ MS 05 / MSE05
- ✓ MS 08 / MSE 08
- ✓ MS 11
- ✓ MS 18

Function

Provide the tractive effort to the wheels.

Features

- From 260 to 2099 cm³/tr [15.9 to 128 cu.in/rev.].
- Up to 450 bar pressure [6 530 PSI].
- Up to 265 tr/min [RPM].
- Single displacement.
- Drum break.

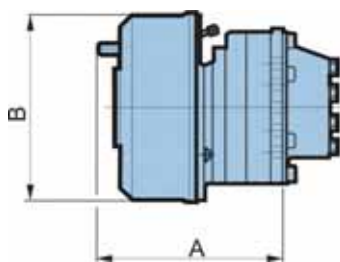


The customer must verify if the brake comply with the national legislation in force.

Max. free-wheeling speed (tr/min [RPM])

MS05	422	1 bar [14.5 PSI] case pressure for 5G.
MSE05	437	
MS08	379	
MSE08	399	
MS11	341	
MS18	318	

Dimensions



		MS/MSE 05	MS/MSE 08	MS11	MS18
A	mm	209	238.3	294.6	361.9
	[in]	[8.23]	[9.38]	[11.60]	[14.25]
B	mm	276	344	354	461.5
	[in]	[10.87]	[13.54]	[13.94]	[18.17]

Model code specifications

C					D			F			P				S					
1					1 2 3			1 2 3			1 2 3 4				1 2 3 4 5 6					
[]					1 2 []			A [] []			1 H 3 []				2 4 [] [] [] [] for one motor					
or					or			or			or				and					
M S 0 8					1 C []			R [] []			1 J 3 []				4 8 [] [] [] [] for the other motor					
or								or			or				or					
M S 1 1								D [] []			1 K 3 []				2 5 F J [] [] for one motor					
or											or				and					
M S 1 8											1 L 3 []				5 8 [] [] [] [] for the other motor					
											or									
											1 P 3 []									
											or									
											1 Q 3 []									



See technical catalogues N°801478188B and N° 801478189C for further informations.

EXCHANGE VALVE



✓ VE 60

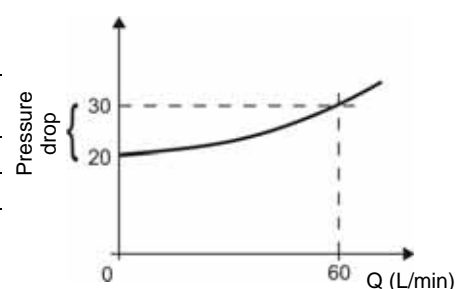
Function

Exchange valves are for use in bleeding hot oil from the low pressure side of a hydrostatic transmission circuit. The hot oil can be cooled, filtered or used as a source of oil for flushing other pump and motor case.

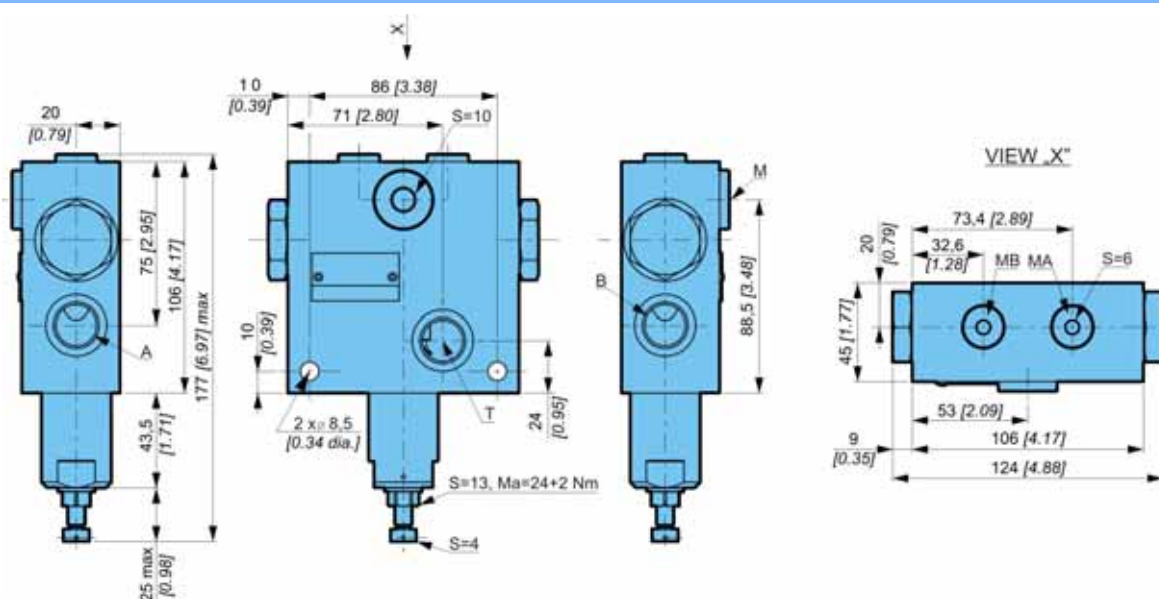
Features

Example: relief valve set at 20 bar

Max. pressure	450 bar [6 527 PSI]
Exchange Relief valve adjustment range	12 to 30 bar [174 to 435 PSI]
Low pressure selector spool operating pressure	8 bar [116 PSI]
Exchange Flow (10 bar ΔP)	60 L/min [15.85 GPM] (ΔP A \rightarrow T or B \rightarrow T)
Exchange Direction	Forward and/or reverse
Weight	3.8 kg [8.38 lb]



Dimensions



See technical catalogue N°A01887B for further informations.

TORQUE CONTROL VALVE

	Part number
12 V	A30109C
24 V	A25213F

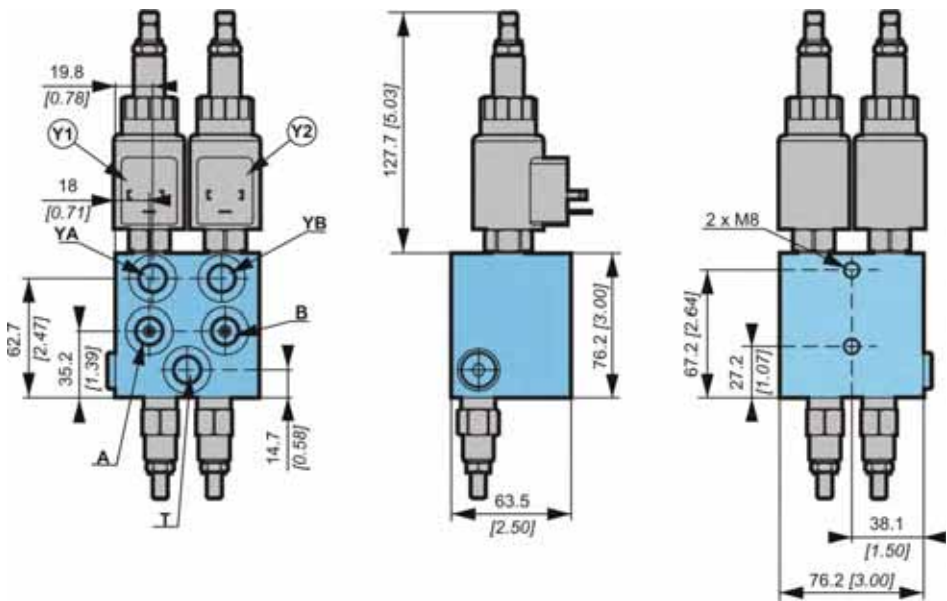


✓ VMPL

Function

Allows to set the hydraulic motors torque.

Dimensions



Installation

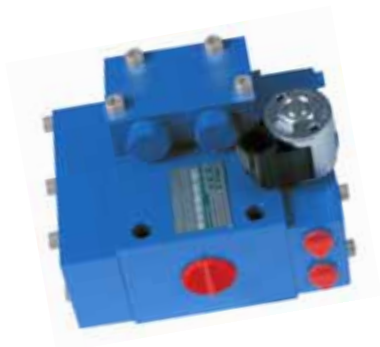
Hydraulic connections :

Port	Function	Connection	Max pressure bar [PSI]
A	Forward direction	9/16-18UNF-2B	350 [5 076]
B	Reverse direction		
YA	Forward direction control		
YB	Reverse direction control		
T	Return		

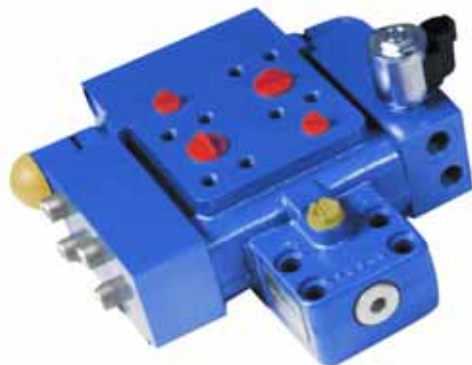
Electric connections :

Port	Function	Connection
Y1	Forward direction	Hirschmann
Y2	Reverse direction	

FLOW DIVIDER



✓ FDB 20



✓ FDB 25

Function

The bidirectional flow divider controls the speed between wheels of the same axle or between different axles by dividing or combining the flow. The flow divider is equipped with an electric or hydraulic controlled by-pass and can be used in open or closed loop circuits.



If you have to add a flushing valve in a closed loop circuit equipped with a flow divider, you have to install the flushing valve between the pump and the flow divider.

Features

		FDB 20		FDB 25	
Mass	without valves	8.50 kg	[18.74 lb]	14.0 kg	[30.86 lb]
	with HP valve	9.00 kg	[19.84 lb]	15.0 kg	[33.06 lb]
	with HP valve and 3 solenoid valves	11.2 kg	[24.70 lb]	18.2 kg	[40.12 lb]
Max. pressure.		450 bar	[6 527 PSI]	450 bar	[6 527 PSI]
Max. input flow (Q _{p,c})*	Ratio 50/50	150 L/min	[39.62 GPM]	300 L/min	[79.25 GPM]
	Ratio 70/30**	110 L/min	[29.05 GPM]	215 L/min	[56.79 GPM]
	Ratio 80/20**	95 L/min	[25.09 GPM]	190 L/min	[50.19 GPM]

* Input flow in P in by-pass mode

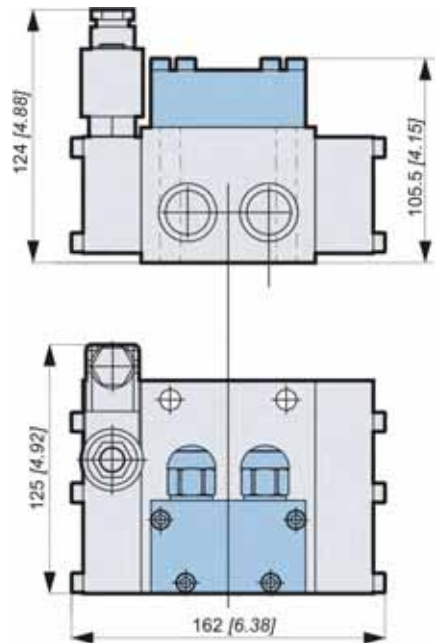
** The max. flow go through connection A



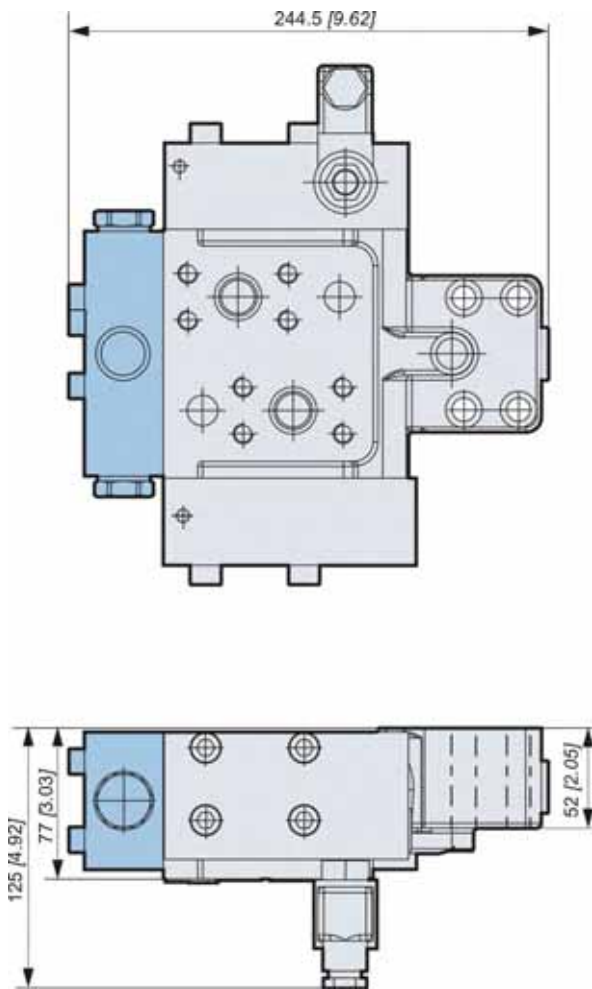
See technical catalogue N°A19350H for further informations.

Dimensions

FDB 20 with HP valve and electric by-pass



FDB 25 with HP valve and electric by-pass



Description

Pump

Motors

Valves

Electronic

FREE-WHEELING VALVES



✓ VDF H15



✓ VDF H25

Function

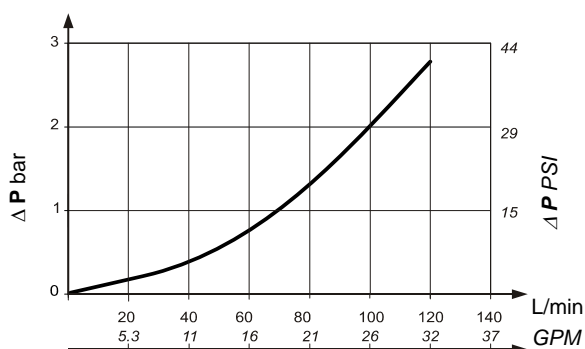
Allow to engage or disengage the hydraulic motors.

Features

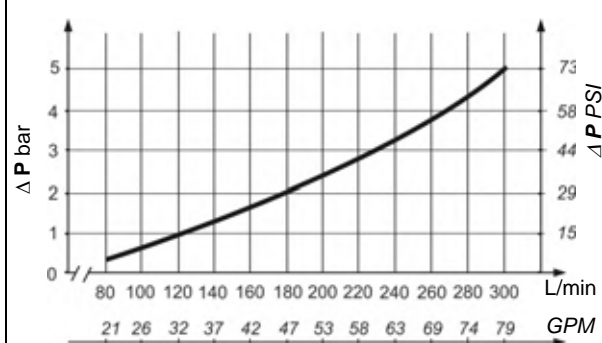
	VDF H15	VDF H25
Mass	18.6 kg [41 lb]	22 kg [48.5 lb]
Flow	120 L/min [31.7 GPM]	260 L/min [70 GPM]
Control pressure	6 to 9 bar [90 to 130 PSI]	7 to 10 bar [100 to 145 PSI]
Max. pressure	450 bar [6 527 PSI]	

Pressure drop

VDF H15

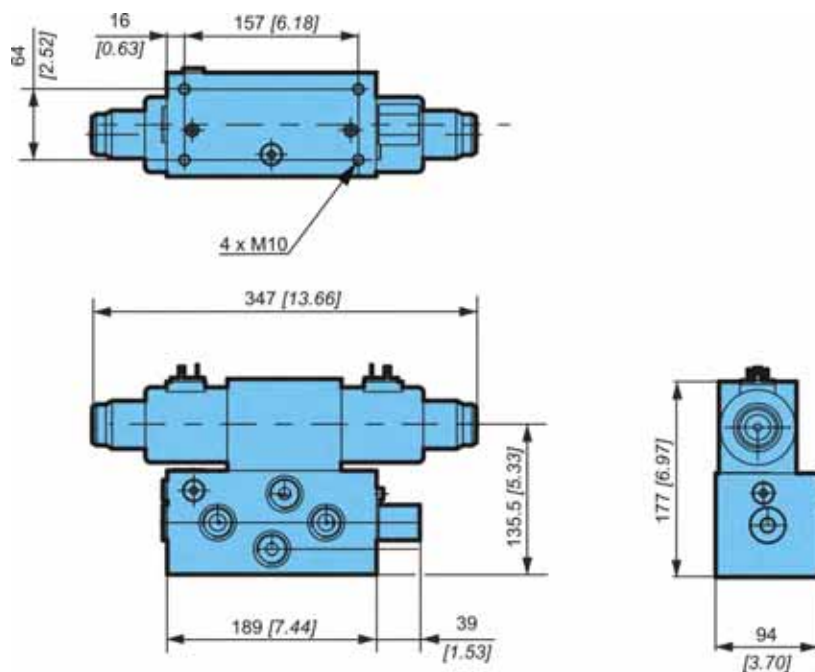


VDF H25

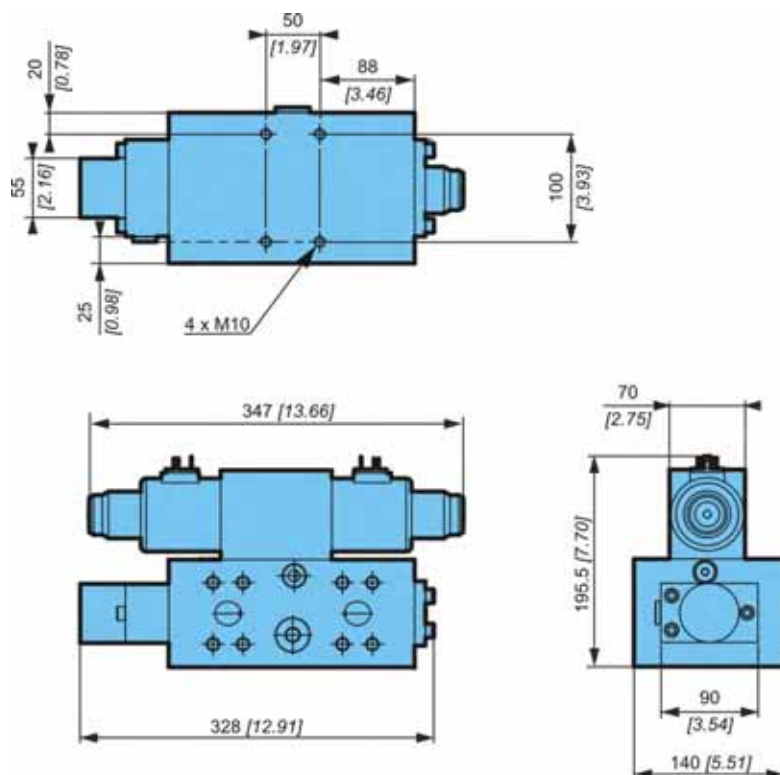


Dimensions

VDF H15



VDF H25



See technical catalogue N°A01887B for further informations.

Description

Pump

Motors

Valves

Electronic

CONTROLLER



✓ **SmartDrive Easy Plus**

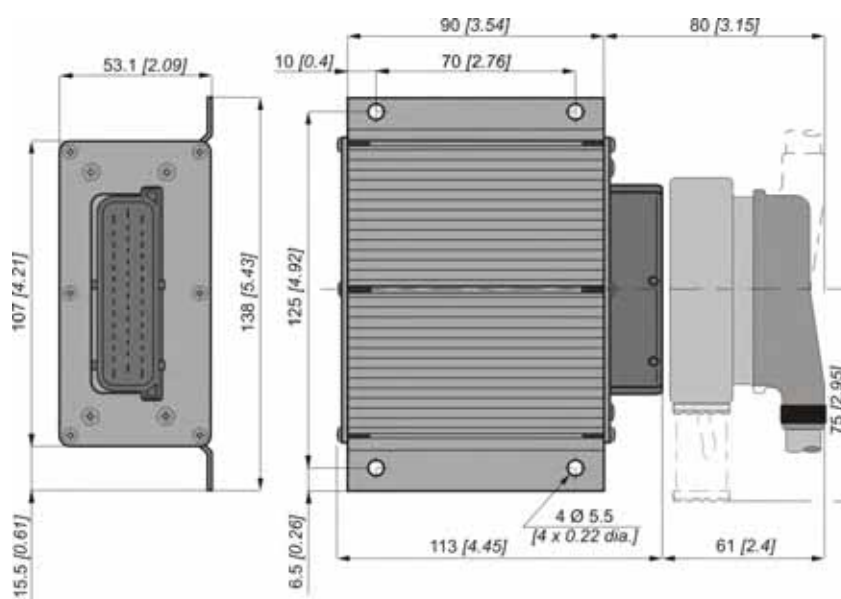
Functions

- Manages the addidrive assist tractive effort in traction or retardation mode, according to the joystick direction and angle.
- Manages the engagement and the disengagement of the addidrive assist.

Features

Supply voltage	12 V DC / 24 V DC
Operating temperature	- 40°C à 85°C [-40 °F à 185°F]
Overall dimensions	See below
Material	Aluminum
Mass	0.5 kg [1.1 lb]
Mounting	4 x Ø 5.5 mm 4 x [0.22" dia.]
ECU protection index with its connectors	IP 65 (weather proofing)
Maximum current	14 A
Electrical protection	Excess voltage, reverse polarity, short circuit
ECU programming	Programming with a PC using the PHASES™ software application
ECU set-up	Set-up with the software PHASES™ or the HHT

Dimensions



See technical catalogue N°A05609W for further informations.

JOYSTICK



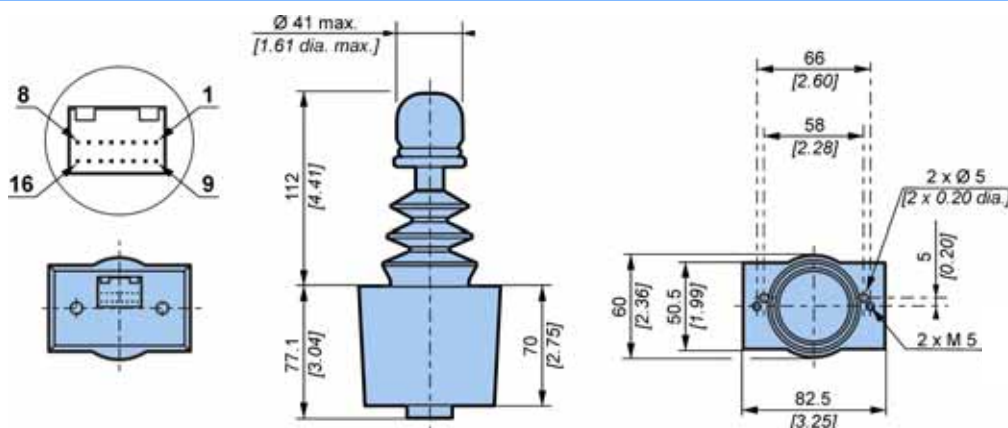
Function

Allows to set the hydraulic motor tractive effort.

Features

Supply voltage	5 V
Output signal	10% to 90% of supply voltage
Resistance	2k ohm Tolerance $\pm 20\%$
Mass	560 g [1.23 lb] with HKN handle fitted
Expected service life	500.000 cycles
Electrical angle of movement	$\pm 32^\circ$
Mechanical angle of movement	$\pm 35^\circ$
Maximum applied force	300 N full deflection, 130 mm from flange
Operating force	17.8 N full deflection, 55 mm from flange
Breakout force	6.2 N, 55 mm from flange
Operating temperature range	- 25 °C to + 70 °C [- 13 °F to 158 °F]
Environmental sealing	IP 65
Direction switch gap	$5^\circ \pm 1^\circ$ either side of center
Direction switch max load current	200 mA resistive

Dimensions



See technical catalogue N°A01889D for further informations.

DISPLAY



✓ SD Display 1.5

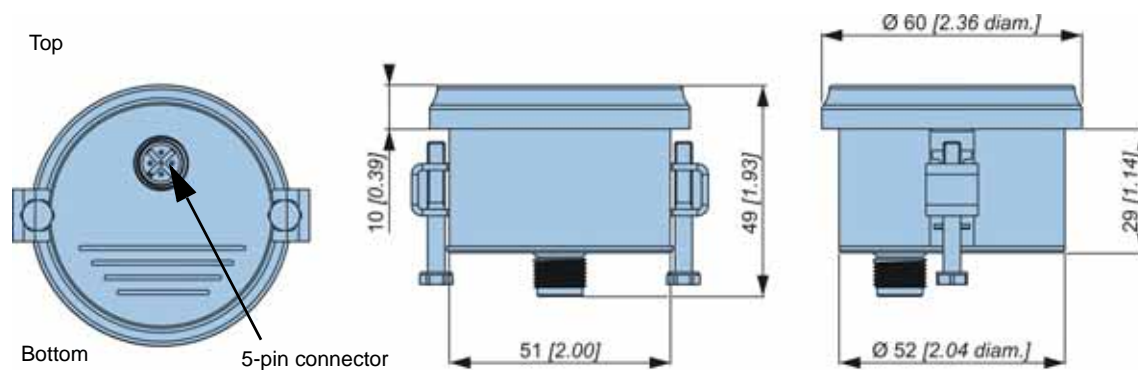
Function

Provides the AddiDrive Assist state

Features

Electrical data	DC power supply	9 to 60 V
	Current consumption at 24 V	<100 mA
	Program flash memory	96 kB
	EEPROM memory	64 kB + 1 kB
	SRAM memory	3.3 kB
	Screen	Backlighted
	Display type	LCD, 2 x 8 characters
	Keys	3 (illuminated)
	Light indicators	3
Mechanical data	Operating temperature	- 20 °C to + 70 °C [-4 °F to 158 °F]
	Weight	63 g
	Mounting	Mounting hole
	Degree of protection	IP 65 at the front
Interfaces/Protocols	CAN	1 (ISO 11898, 2.0B)
	Layer 2, CANopen, J1939	✓

Dimensions



See technical catalogue N° A25522R for further informations.

SPEED SENSOR



✓ Speed Sensor T4

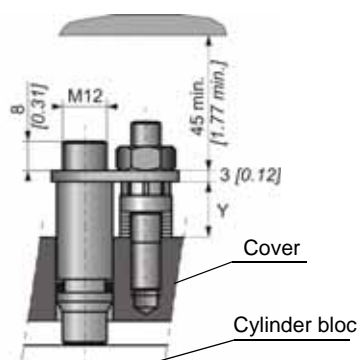
Function

Features

Maximum range	1.15 mm [0.045"]
Supply voltage	8 - 30 V
Current consumption	20 mA max.
Output type	- 1 push-pull square frequency signal - Maximum load current: 20 mA - Voltage at low state: < 1.5 V - Voltage at high state: > (power supply voltage - 3.5 V)
Frequency range	0 to 15 kHz
Operating temperature	- 40°C to + 125°C [- 40°F to 257°F]
Protection rating	IP68
Material	Stainless steel

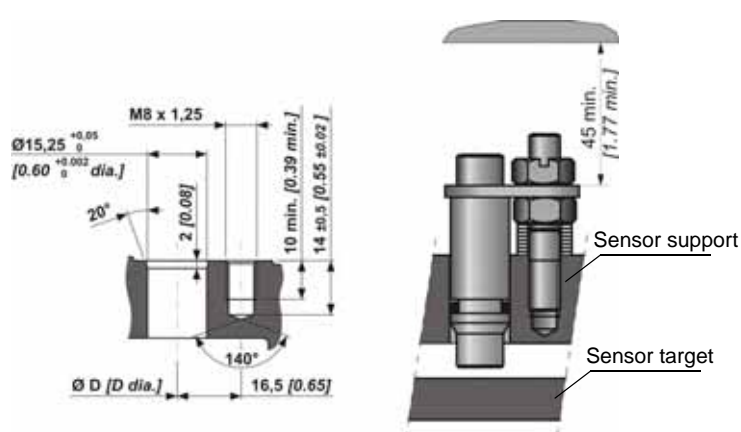
Layout

MS Motors



Motor	Y max.
MS/MSE 05	20.7
MS/MSE 08	21.1
MS11	20.9
MS18	17.6

MF Motors



Target installation

Hole dimension	Distance between 2 holes
Ø 6.5 mm / 1.75 mm deep	> 2.03 mm
Ø 4.5 mm / 1.75 mm deep	> 1.5 mm

Description

Pump

Motors

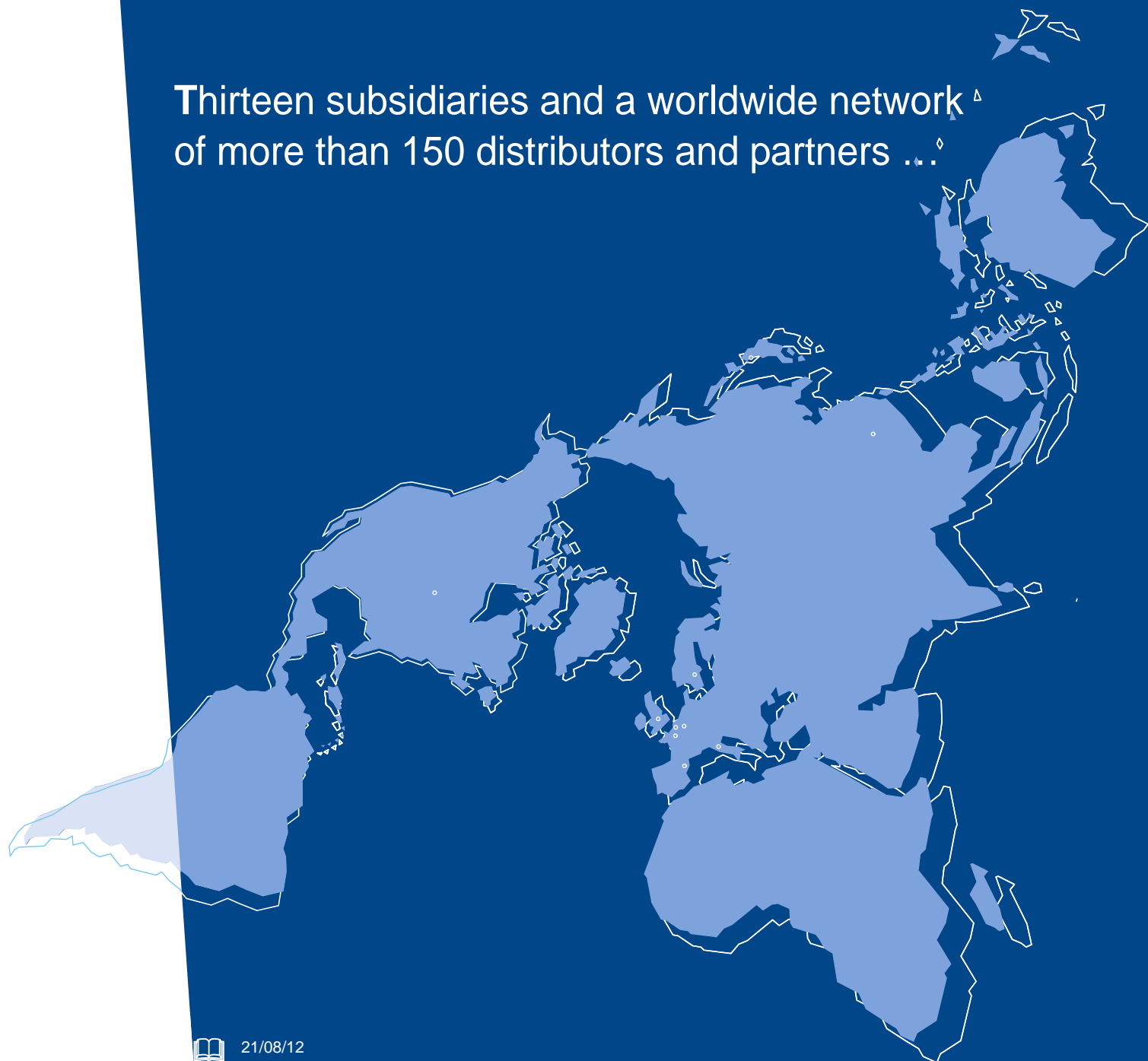
Valves

Electronic



See technical catalogue N°A01889D for further informations.

Thirteen subsidiaries and a worldwide network
of more than 150 distributors and partners ...



21/08/12



A31037L



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More information on

