

TRAILER BRAKE VALVE

- **Mechanically actuated trailer brake valve**
- **Pressure actuated trailer brake valve**
- **Open centre trailer brake valve**
- **Load sensing trailer brake valve**
- **Plug & Brake trailer brake valve**



010 – INTRODUCTION AND GENERAL FEATURES

- 010.010 – INTRODUCTION – FUNCTIONING – INSTALLATION NOTE
- 010.020 – TRAILER BRAKE VALVE FOR TRACTOR WITH MECHANICAL BRAKES
- 010.030 – TRAILER BRAKE VALVE FOR TRACTOR WITH HYDRAULIC BRAKES
- 010.030 – PLUG & BRAKE® TRAILER BRAKE VALVE

020 – STANDARD TRAILER BRAKE VAE FOR OPEN CENTRE SYSTEM

- 020.010 – MECHANICALLY ACTUATED TRAILER BRAKE VALVE
- 020.020 – MINERAL OIL PRESSURE ACTUATED TRAILER BRAKE VALVE
- 020.030 – BRAKE FLUID PRESSURE ACTUATED TRAILER BRAKE VALVE
- 020.040 – DOUBLE PILOTING RATIO MANUALLY SELECTABLE TRAILER BRAKE VALVE
- 020.050 – DOUBLE PILOTING RATIO ELECTRICALLY SELECTABLE TRAILER BRAKE VALVE

030 – STANDARD TRAILER BRAKE VAE FOR LOAD SENSING SYSTEM

- 030.010 – MINERAL OIL PRESSURE ACTUATED TRAILER BRAKE VALVE
- 030.020 – BRAKE FLUID PRESSURE ACTUATED TRAILER BRAKE VALVE

040 – PLUG & BRAKE TRAILER BRAKE VAE FOR OPEN CENTRE SYSTEM

- 040.010 – MECHANICALLY ACTUATED TRAILER BRAKE VALVE
- 040.020 – MINERAL OIL PRESSURE ACTUATED TRAILER BRAKE VALVE
- 040.030 – BRAKE FLUID PRESSURE ACTUATED TRAILER BRAKE VALVE

050 – PLUG & BRAKE TRAILER BRAKE VAE FOR LOAD SENSING SYSTEM

- 050.010 – MINERAL OIL PRESSURE ACTUATED TRAILER BRAKE VALVE
- 050.020 – BRAKE FLUID PRESSURE ACTUATED TRAILER BRAKE VALVE
- 050.030 – MINERAL OIL PRESSURE ACTUATED TRAILER BRAKE VALVE (CLOSE CENTRE SYSTEM ONLY)

060 – SPECIAL TRAILER BRAKE VALVE

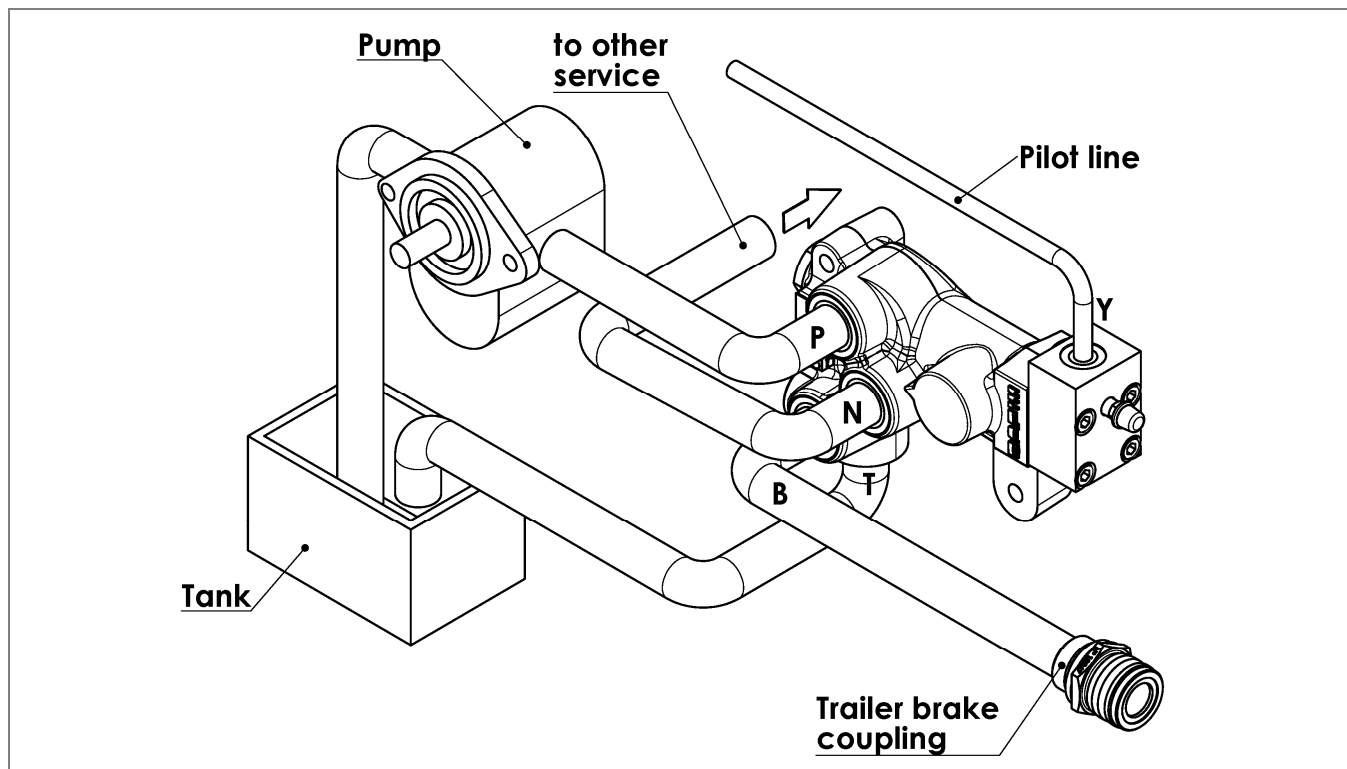
- 060.010 – DIRECTIONAL VALVE FLANGED ASSEMBLING TRAILER BRAKE VALVE
- 060.020 – MASTER PRIORITY VALVE FLANGED ASSEMBLING TRAILER BRAKE VALVE
- 060.030 – MINERAL OIL PRESSURE ACTUATED TRAILER BRAKE VALVE FOR ITALIAN MARKET
- 060.040 – BRAKE FLUID PRESSURE ACTUATED TRAILER BRAKE VALVE FOR ITALIAN MARKET

070 – ACCESSORIES

- 070.010 – PRESSURE EMITTER FOR TRAILER BRAKE PILOTING
- 070.010 – QUICK-RELEASE MALE COUPLING
- 070.020 – SELECT VALVE
- 070.020 – INVERSE SELECT VALVE

INTRODUCTION – PRINCIPLE OF OPERATION

The trailer brake valve is a device that controls the trailer braking in synchrony with the tractor braking. The valve is usually placed on the tractor and integrated in the feeding line of the hydraulic lift and the directional valves.



The trailer brake valve is operated directly by the tractor brake pressure.

Without pressure in the pilot circuit Y (tractor brake circuit) B is connected to T (tank) and P is connected to N (exceeding flow).

When pressure in Y increases, at first the pilot overcomes the return spring force, then it closes the connection between B and T and opens the connection between B and P. If necessary it reduces the flow between P and N to generate pressure in B.

In the Load Sensing valve the LS port is connected to B port.

The reaction surface works against the pilot force.

A mechanical stop device limits the maximum trailer brake pressure to 140 ± 10 Bar.

During the first part of the braking, the valve can convey all the pump flow to the trailer brakes, therefore the service connected to N port can stay without feeding for a short time.

INSTALLATION NOTE

The trailer brake valve is a safety component and is on a priority level with respect to the service.

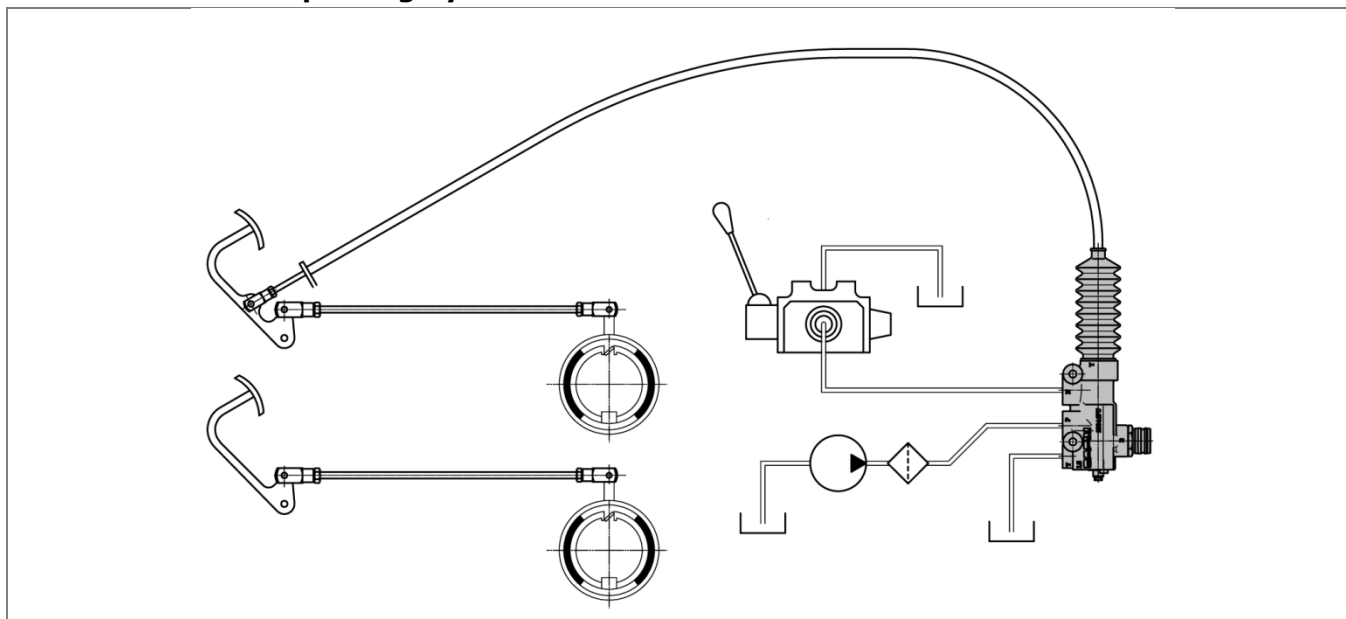
Don't connect the valve before other safety components (ex. steering).

Usually the valve is assembled between the pump (fixed displacement pump or Load Sensing pump) and the directional valve without any other safety valve connected to the same circuit.

TRAILER BRAKE VALVE FOR TRACTOR WITH MECHANICAL BRAKES

When the tractor is provided by mechanical brakes, the trailer brake valve piloting can be done in two ways:

1. Mechanical piloting by cable

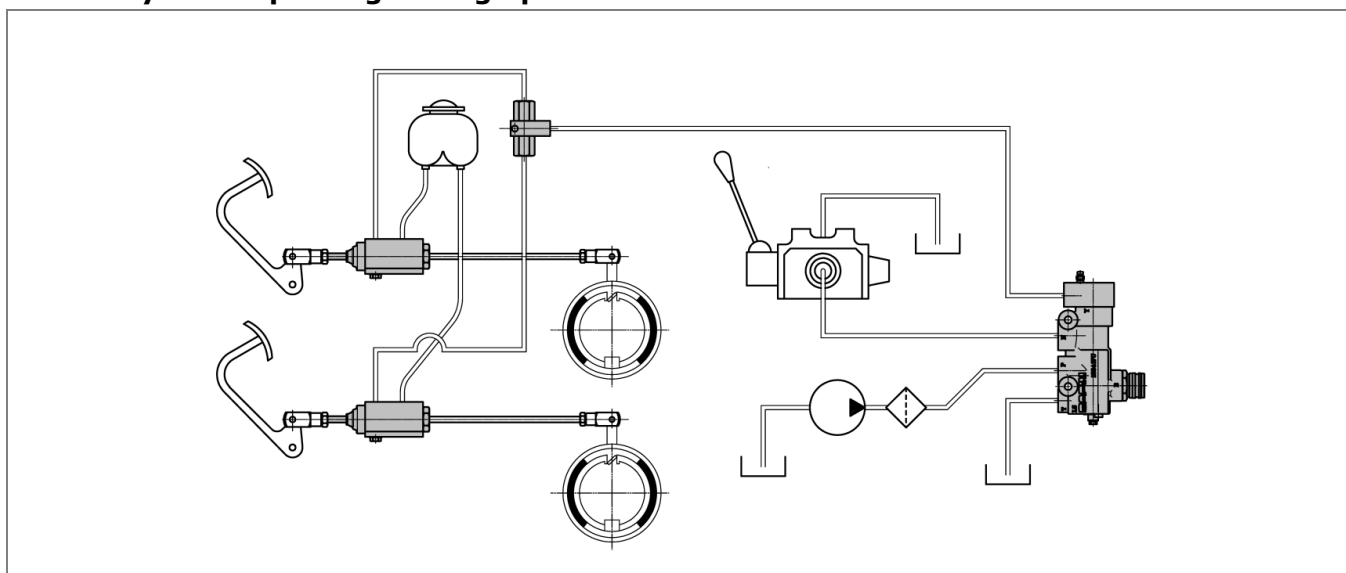


The trailer brake valve with mechanical piloting is actuated by a tie rod or cable from the pedal assembly. Using the valve code 202104 a tie rod stroke compensator system must be considered in order to allow the full pedal stroke while the trailer brake valve is at the end of his stroke .

The valve with mechanical piloting cod. 203440 have already the stroke compensator integrated into the valve.

The braking synchronization between the tractor and the trailer can be obtained by changing the piloting lever ratio.

2. Hydraulic piloting through pressure emitter



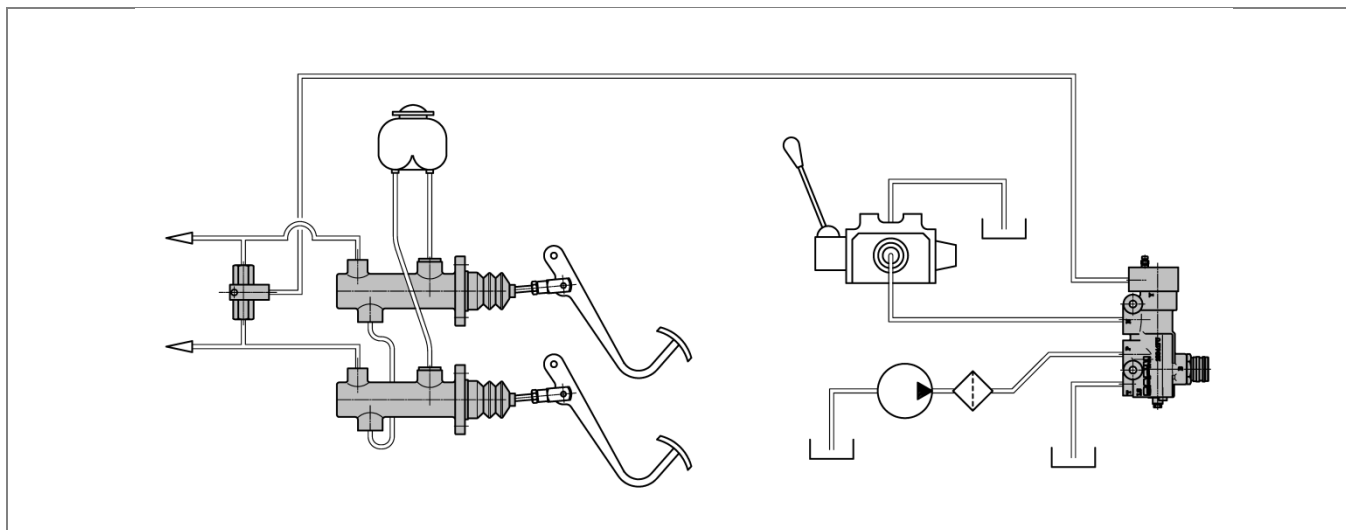
In this case is used a trailer brake valve with hydraulic piloting combined with a pressure emitter.

The pressure emitter is a device installed on the tie rod to actuates the tractor mechanical brakes and it creates an oil pressure into the pilot circuit, proportional to the load received. The braking synchronization between the tractor and trailer can be obtained by changing the trailer brake valve piloting ratio. The piloting ratio is defined by the diameter of the pilot piston.

TRAILER BRAKE VALVE FOR TRACTOR WITH HYDRAULIC BRAKES

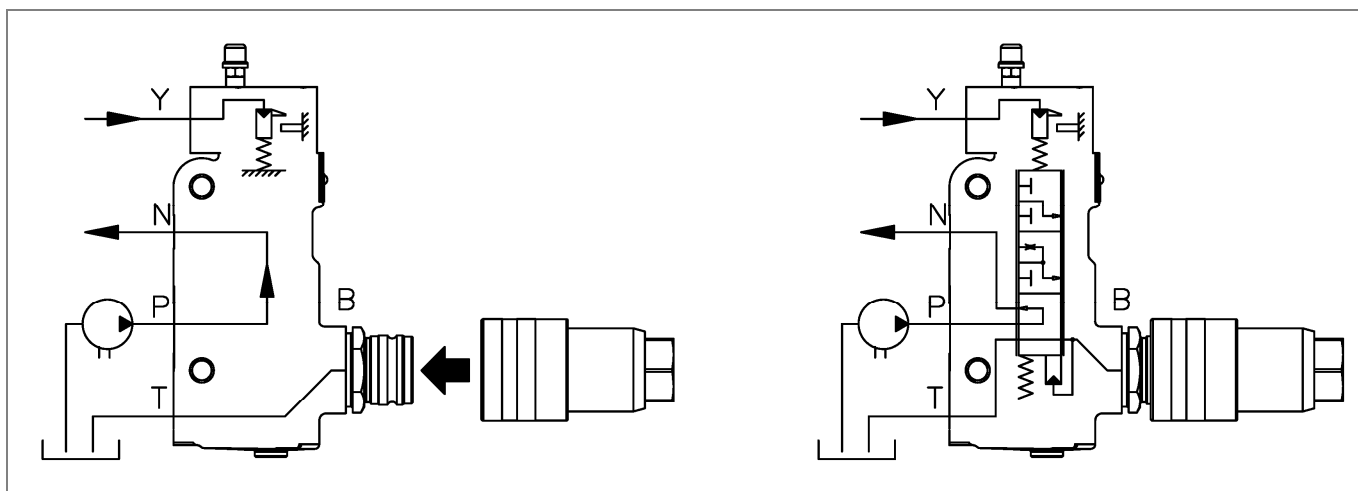
When the tractor is provided by hydraulic brakes, is used a trailer brake valve with hydraulic piloting.

The braking synchronization between the tractor and trailer can be obtained by changing the trailer brake valve piloting ratio. The piloting ratio is defined by the diameter of the pilot piston.



PLUG & BRAKE® TRAILER BRAKE VALVE

The "Plug & Brake®" trailer brake valve is equipped with a device that exclude the valve brake function when the trailer is not towed from the tractor.

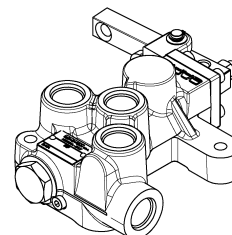
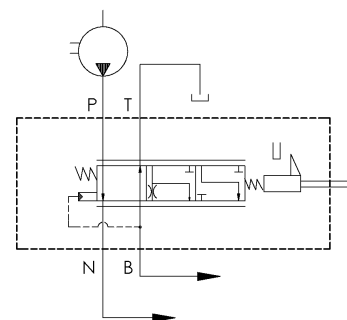
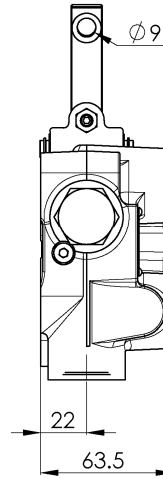


If the trailer quick coupling is not connected to the valve the inside movement of the flow spool is locked. The cross channel between P and N is fully open and the B port is connected to the tank through T port.

The benefits obtained by using the "P&B®" are several as: relevant energy saving; minimized oil eating and reduced wear out of inner parts of the valve because not operated when not required.

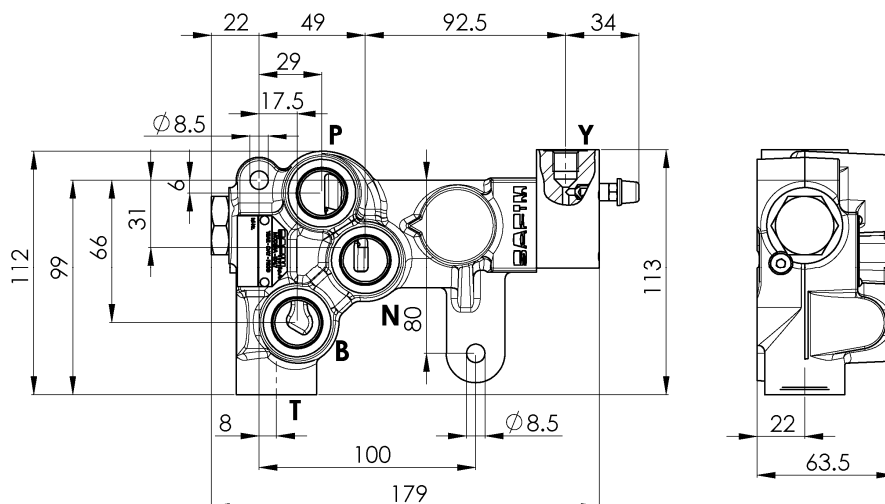
The Plug & Brake® valve have the quick coupling integrated, so it must be assembled on the tractor in a position that satisfy the laws related to the coupling position for the braking of the agricultural trailer.

Mechanically actuated trailer brake valve for open centre system



cod. 203273MN

Mineral oil pressure actuated trailer brake valve for open centre system



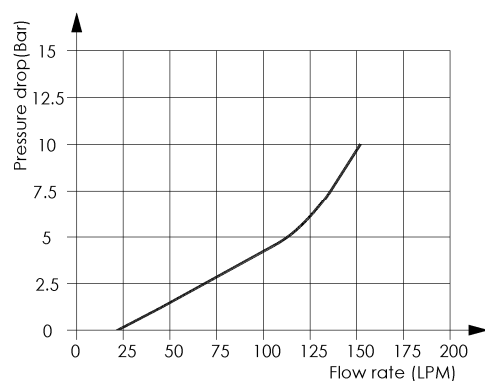
CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar (*)
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9

P-N PRESSURE DROP



PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
08 mm	0.2 cm ³	1.8
10 mm	0.4 cm ³	2.8
12 mm	0.6 cm ³	4.0
14 mm	0.8 cm ³	5.4
16 mm	1.0 cm ³	7.1
18 mm	1.2 cm ³	9.0
20 mm	1.5 cm ³	11.1
22 mm	1.8 cm ³	13.4

ORDER PART NUMBER

20 3273 MN / 08

Pilot piston diameter (mm)
08 – 10 – 12 – 14 – 16 – 18 – 20 – 22

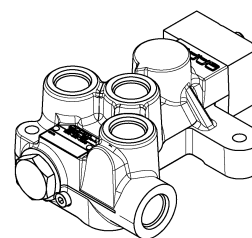
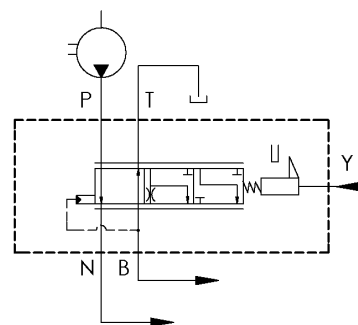
MN: Piloting oil type (Mineral oil)

3273: Open centre trailer brake valve

20: Product class

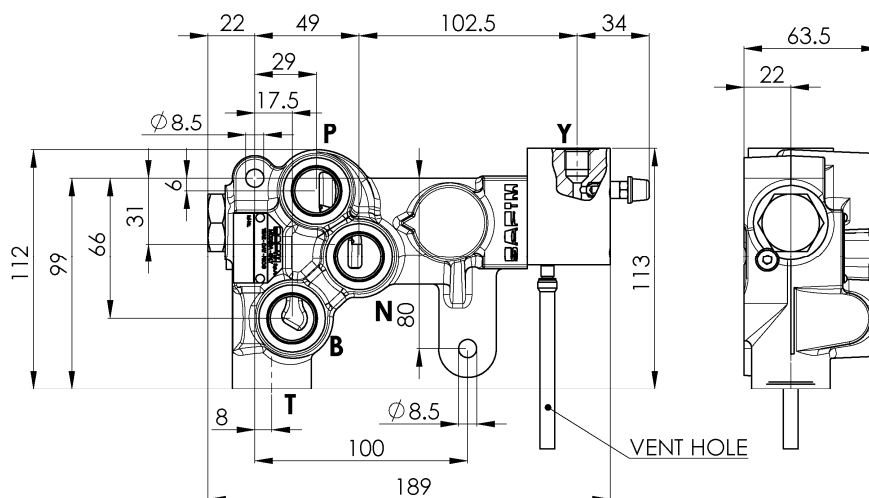
(*): Available on request the valve for feeding pressure up to 280 Bar

HYDRAULIC SCHEMATIC



cod. 203273FN

Brake fluid pressure actuated trailer brake valve for open centre system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar (*)
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T ports)	Mineral oil
Oil type (in Y port)	Brake fluid (DOT 3-4)
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
08 mm	0.2 cm ³	1.8
10 mm	0.4 cm ³	2.8
12 mm	0.6 cm ³	4.0
14 mm	0.8 cm ³	5.4
16 mm	1.0 cm ³	7.1
18 mm	1.2 cm ³	9.0
20 mm	1.5 cm ³	11.1
22 mm	1.8 cm ³	13.4

ORDER PART NUMBER

20 **3273** **FN** / **08**
Pilot piston diameter (mm)

08 – 10 – 12 – 14 – 16 – 18 – 20 – 22

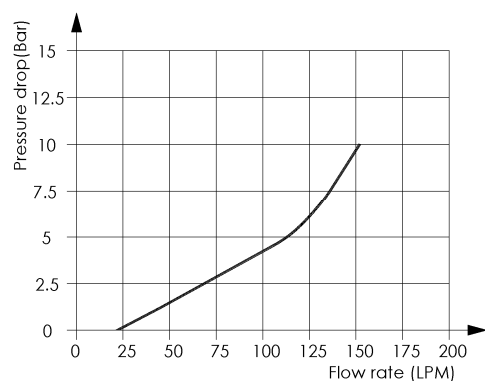
FN: Piloting oil type (Brake fluid – DOT 3-4)

3273: Open centre trailer brake valve

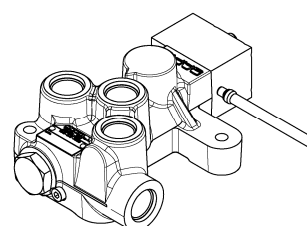
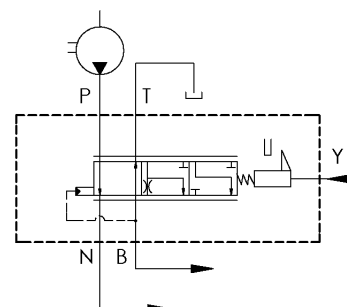
20: Product class

(*) : Available on request the valve for feeding pressure up to 280 Bar

P-N PRESSURE DROP

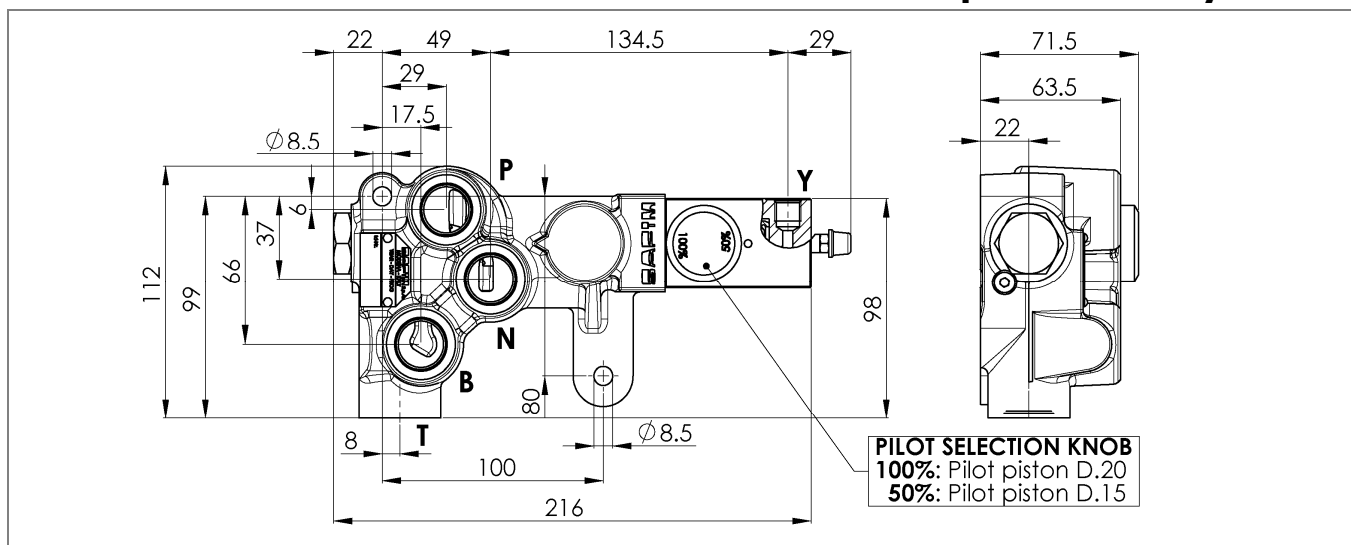


HYDRAULIC SCHEMATIC



cod. 203464MN

Double piloting ratio manually selectable trailer brake valve for open centre system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
Y	Pilot signal	M12x1 DIN 74235

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar (*)
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9

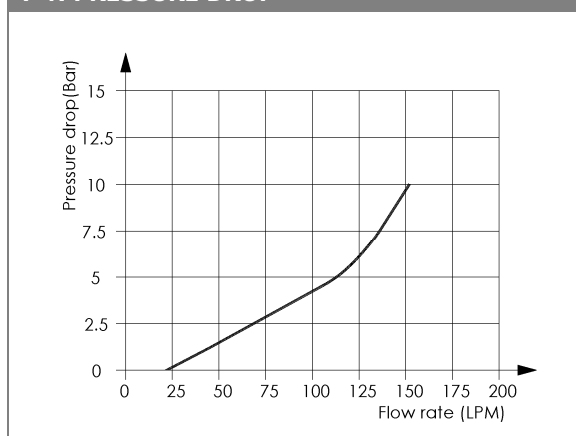
PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
15 mm	0.8 cm ³	6.3
20 mm	1.5 cm ³	11.1

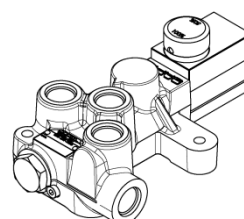
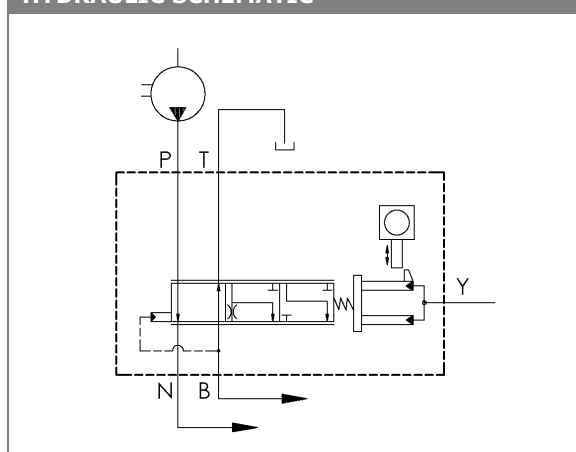
ORDER PART NUMBER

20	3464	MN	/	20-15
Pilot piston diameter (mm) 20-15				
MN: Piloting oil type (Mineral oil)				
3464: Open centre trailer brake valve				
20: Product class				

P-N PRESSURE DROP



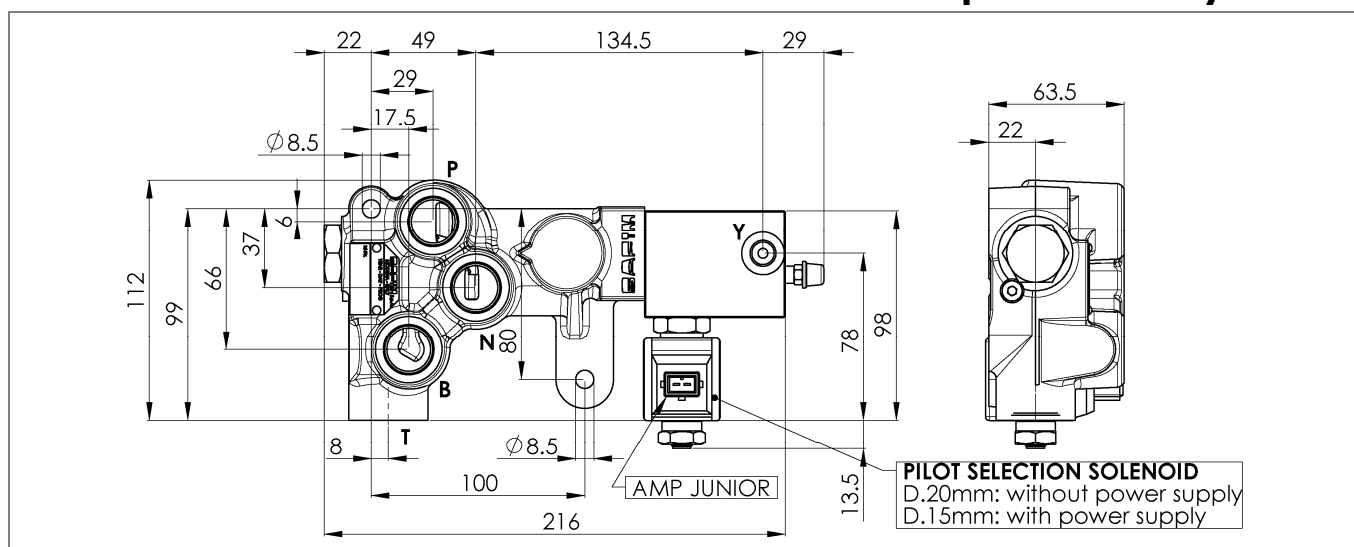
HYDRAULIC SCHEMATIC



(*): Available on request the valve for feeding pressure up to 280 Bar

cod. 203914MN

Double piloting ratio electrically selectable trailer brake valve for open centre system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
Y	Pilot signal	M12x1 DIN 74235

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar (*)
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9
Solenoid voltage	12 Volt

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
10 mm	0.4 cm ³	2.8
14 mm	0.8 cm ³	5.4
15 mm	0.8 cm ³	6.3
20 mm	1.5 cm ³	11.1

ORDER PART NUMBER

20	3914	MN	/	14-10
-----------	-------------	-----------	----------	--------------

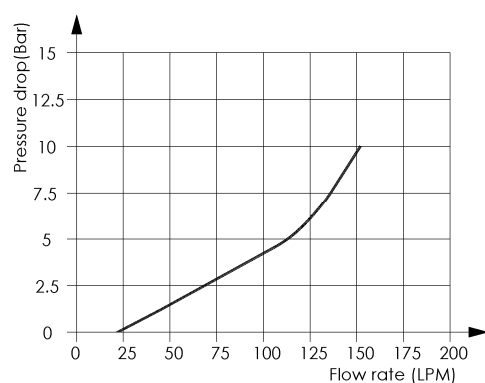
Pilot piston diameter (mm)
14-10
20-15

MN: Piloting oil type (Mineral oil)

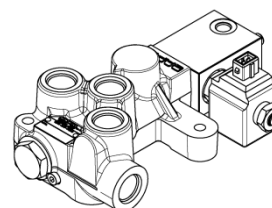
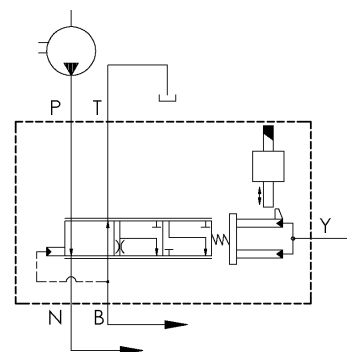
3914: Open centre trailer brake valve

20: Product class

P-N PRESSURE DROP



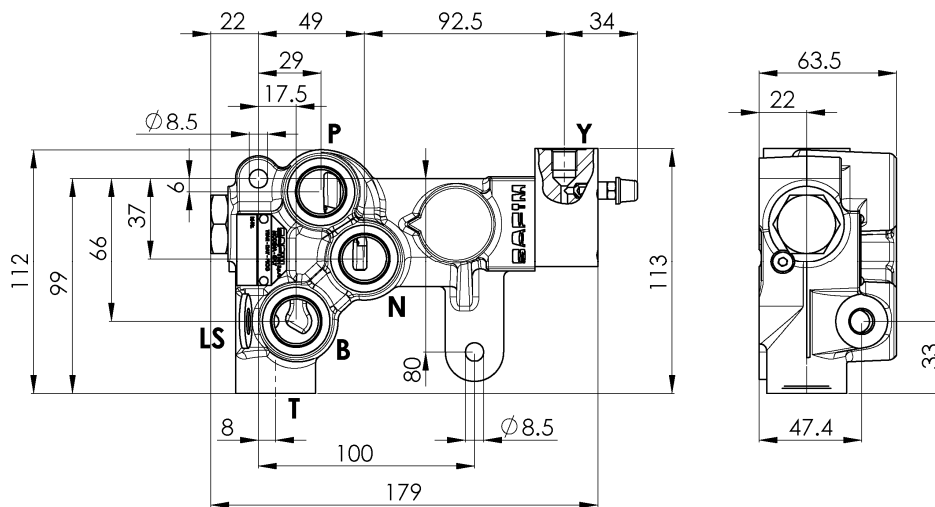
HYDRAULIC SCHEMATIC



(*): Available on request the valve for feeding pressure up to 280 Bar

cod. 203274MN

Mineral oil pressure actuated trailer brake valve for load sensing system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
LS	Load sensing signal	M12x1.5 DIN 3852-1X
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar (*)
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,LS,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
08 mm	0.2 cm ³	1.8
10 mm	0.4 cm ³	2.8
12 mm	0.6 cm ³	4.0
14 mm	0.8 cm ³	5.4
16 mm	1.0 cm ³	7.1
18 mm	1.2 cm ³	9.0
20 mm	1.5 cm ³	11.1
22 mm	1.8 cm ³	13.4

ORDER PART NUMBER

20 3274 MN / 08

Pilot piston diameter (mm)
08 – 10 – 12 – 14 – 16 – 18 – 20 – 22

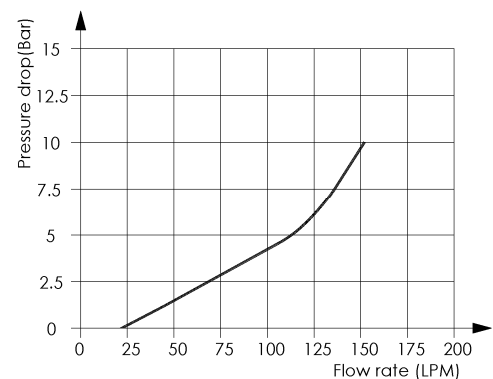
MN: Piloting oil type (Mineral oil)

3274: Open centre trailer brake valve

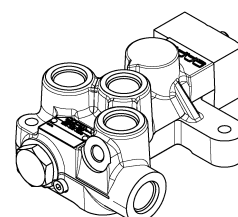
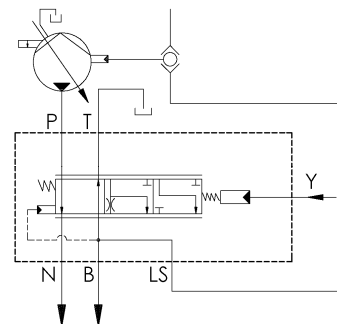
20: Product class

(*):Available on request the valve for feeding pressure up to 280 Bar

P-N PRESSURE DROP

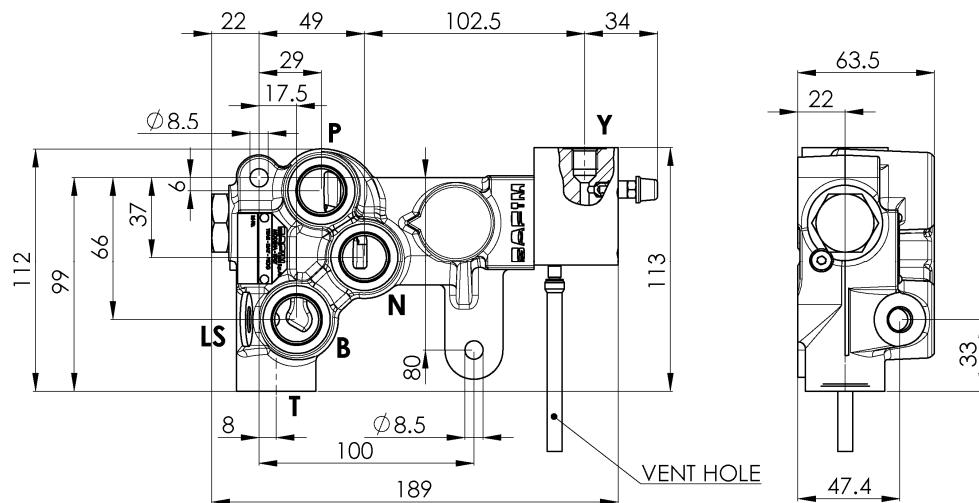


HYDRAULIC SCHEMATIC



cod. 203274FN

Brake fluid pressure actuated trailer brake valve for load sensing system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
LS	Load sensing signal	M12x1.5 DIN 3852-1X
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar (*)
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,LS ports)	Mineral oil
Oil type (in Y port)	Brake fluid (DOT 3-4)
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
08 mm	0.2 cm ³	1.8
10 mm	0.4 cm ³	2.8
12 mm	0.6 cm ³	4.0
14 mm	0.8 cm ³	5.4
16 mm	1.0 cm ³	7.1
18 mm	1.2 cm ³	9.0
20 mm	1.5 cm ³	11.1
22 mm	1.8 cm ³	13.4

ORDER PART NUMBER

20	3274	FN	/	08
----	------	----	---	----

Pilot piston diameter (mm)

08 – 10 – 12 – 14 – 16 – 18 – 20 – 22

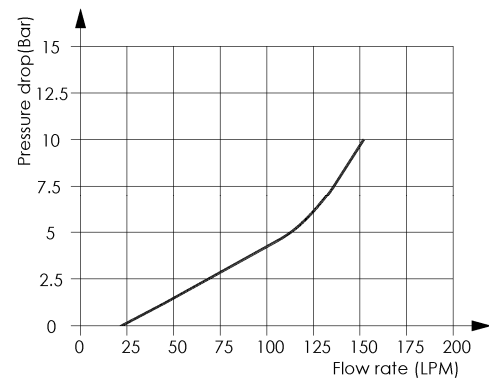
FN: Piloting oil type (Brake fluid – DOT 3-4)

3274: Load sensing trailer brake valve

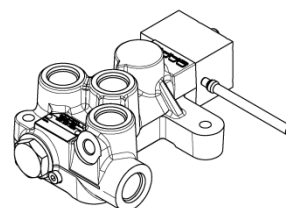
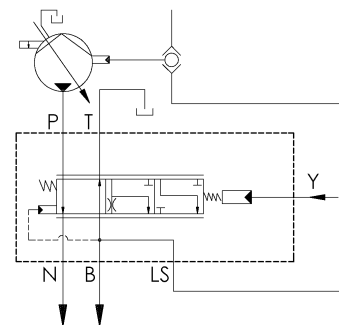
20: Product class

(*) : Available on request the valve for feeding pressure up to 280 Bar

P-N PRESSURE DROP

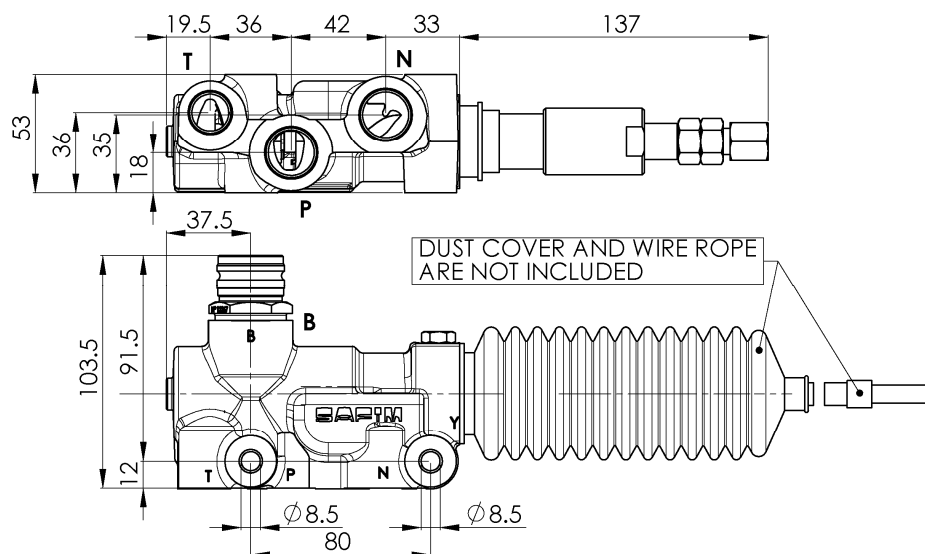


HYDRAULIC SCHEMATIC



cod. 203440

"Plug & Brake®" mechanically actuated trailer brake valve for open centre system



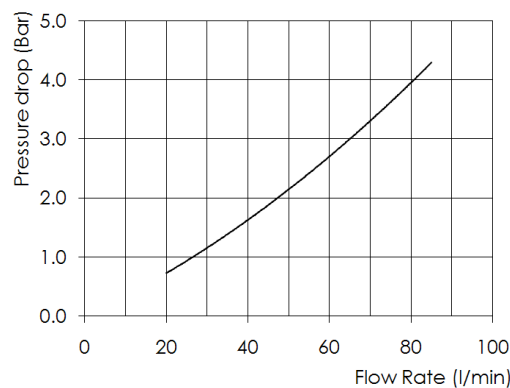
CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	Male quick-release ISO 5676
T	Tank	M18x1.5 ISO 6149

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 70 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9
Working piloting stroke	8.5±0.5 mm
Max piloting over stroke	15±1 mm
Min force to obtain full braking	40 daN

P-N PRESSURE DROP



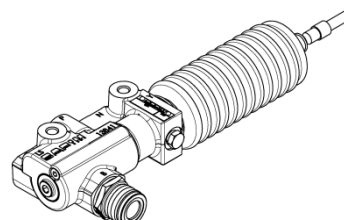
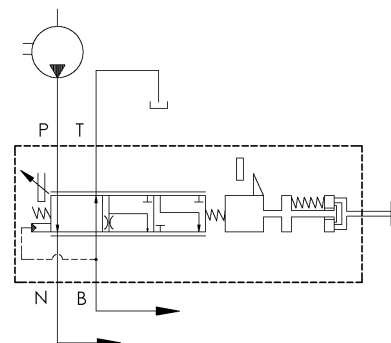
ORDER PART NUMBER

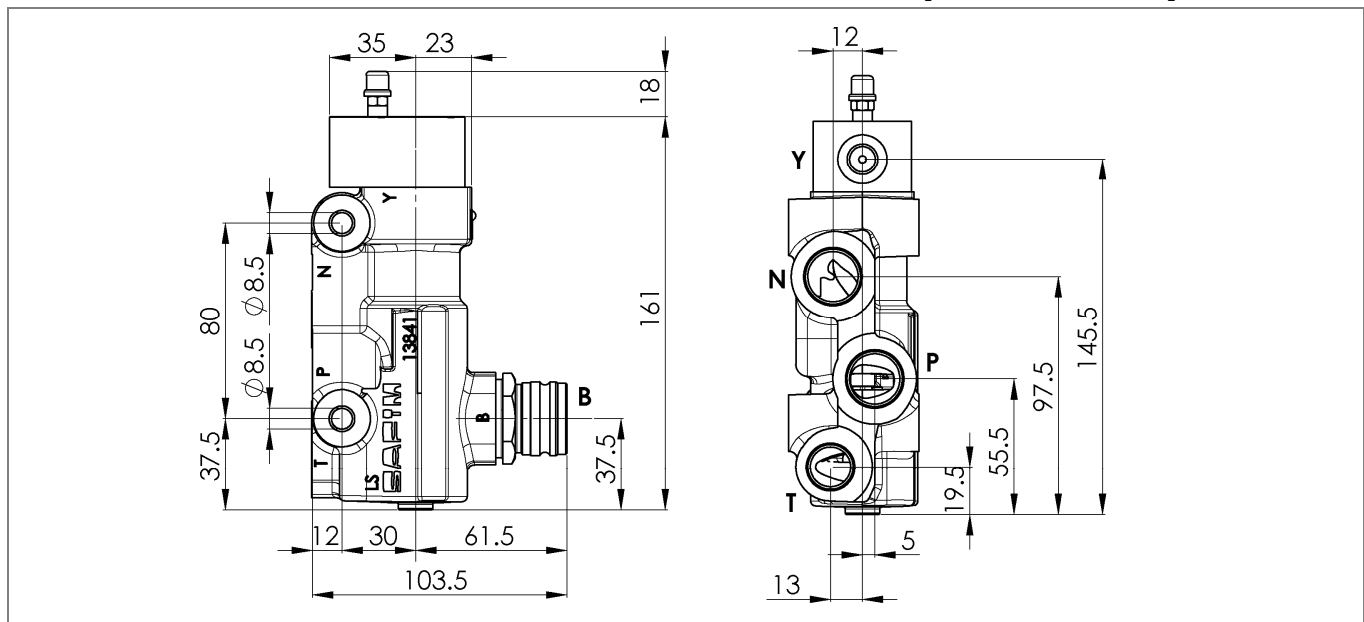
20 3440

3440: Plug & Brake open centre trailer brake valve

20: Product class

HYDRAULIC SCHEMATIC



cod. 202794MN**"Plug & Brake®" mineral oil pressure actuated trailer brake valve for open centre system****CONNECTION**

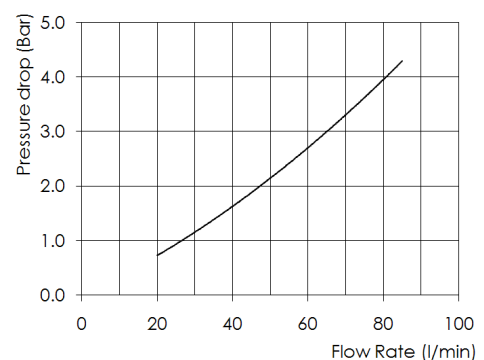
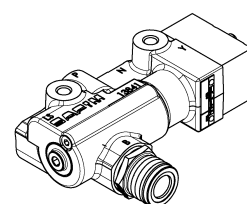
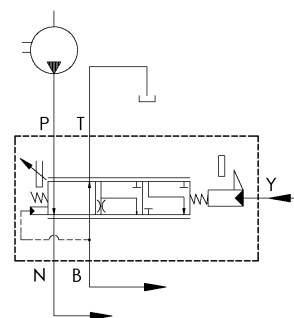
P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	Male quick-release ISO 5676
T	Tank	M18x1.5 ISO 6149
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

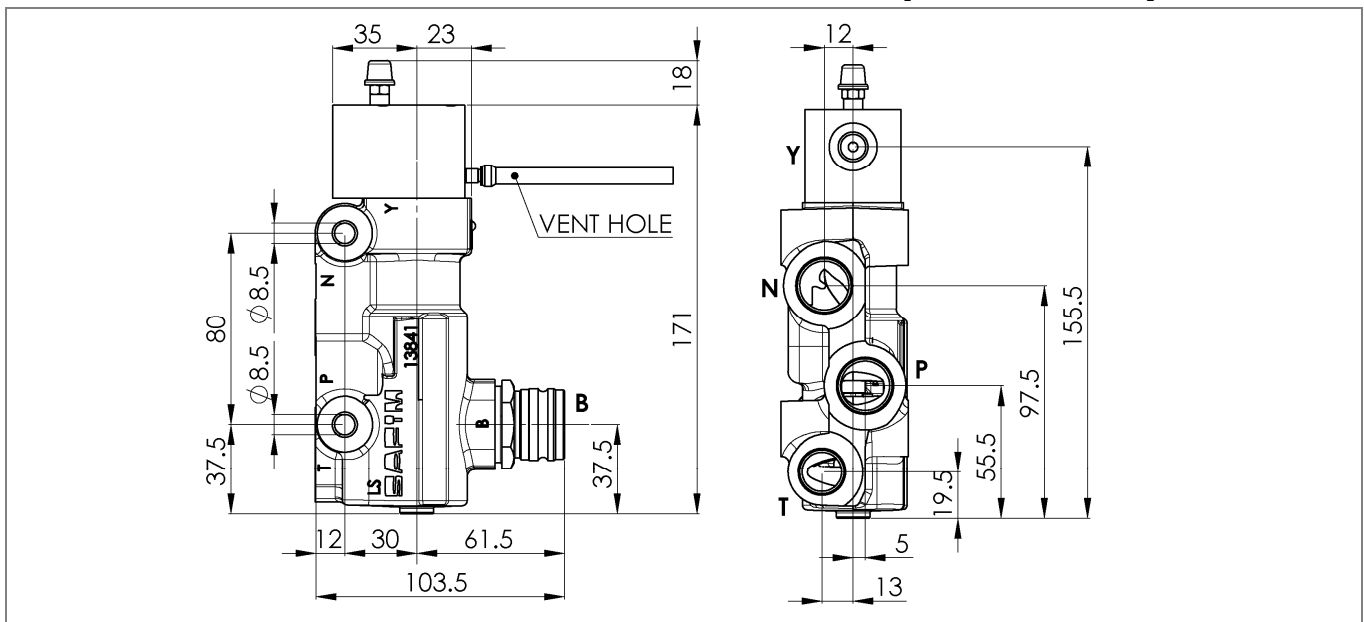
Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 70 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
12 mm	0.6 cm ³	5.8
14 mm	0.8 cm ³	7.8
16 mm	1.0 cm ³	10.2
18 mm	1.2 cm ³	13.0
20 mm	1.5 cm ³	16.0
22 mm	1.8 cm ³	19.4

ORDER PART NUMBER**20 2794 MN / 12**
Pilot piston diameter (mm)
 12 -14 - 16 -18 -20 -22
MN: Piloting oil type (Mineral oil)**2794:** Plug & Brake open centre trailer brake valve**20:** Product class**P-N PRESSURE DROP****HYDRAULIC SCHEMATIC**

cod. 202794FN "Plug & Brake®" brake fluid pressure actuated trailer brake valve for open centre system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	Male quick-release ISO 5676
T	Tank	M18x1.5 ISO 6149
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 – 70 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T ports)	Mineral oil
Oil type (in Y port)	Brake fluid (DOT 3-4)
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
12 mm	0.6 cm ³	5.8
14 mm	0.8 cm ³	7.8
16 mm	1.0 cm ³	10.2
18 mm	1.2 cm ³	13.0
20 mm	1.5 cm ³	16.0
22 mm	1.8 cm ³	19.4

ORDER PART NUMBER

20	2794	FN	/	12
----	------	----	---	----

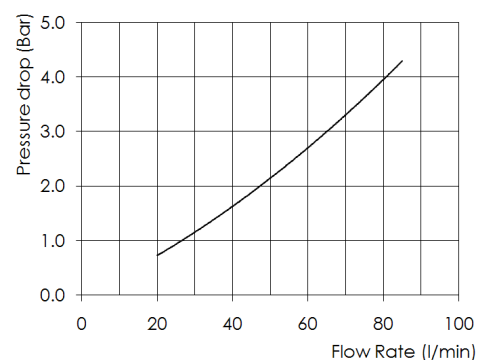
Pilot piston diameter (mm)
12 -14 - 16 -18 -20 -22

FN: Piloting oil type (Brake fluid - DOT 3-4l)

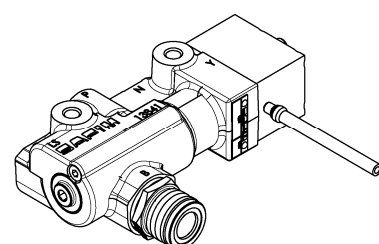
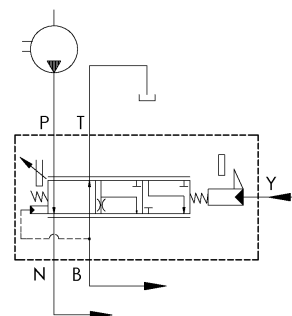
2794: Plug & Brake open centre trailer brake valve

20: Product class

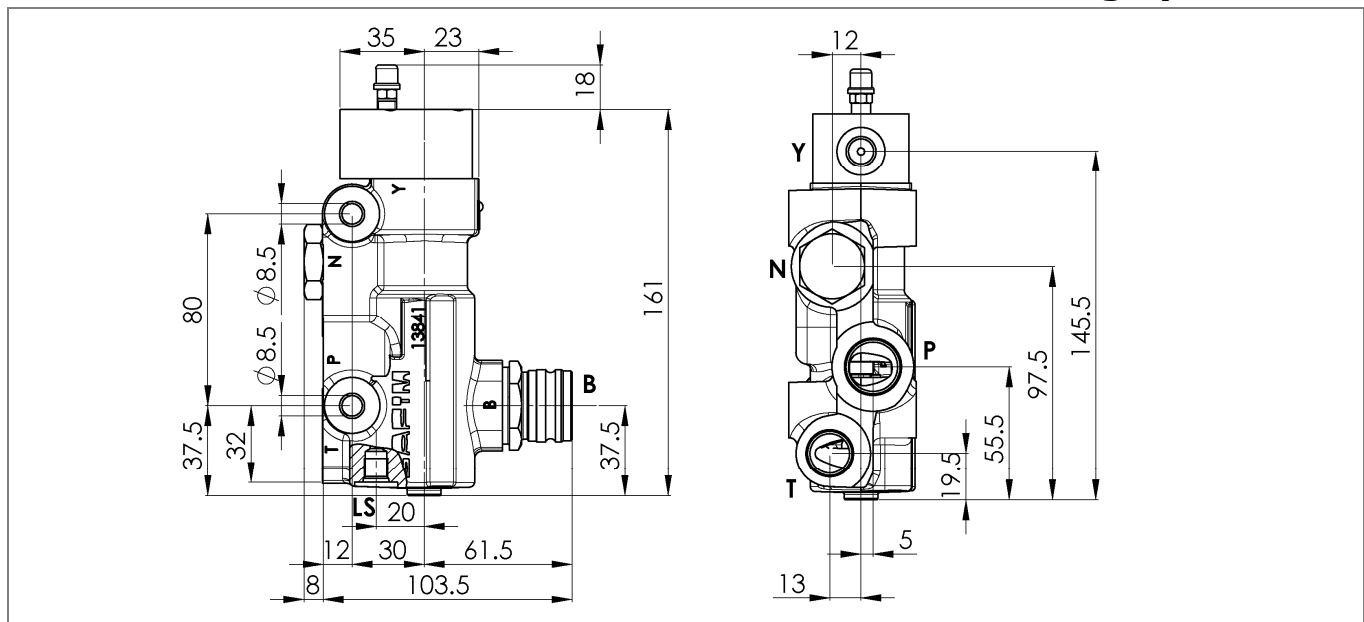
P-N PRESSURE DROP



HYDRAULIC SCHEMATIC



cod. 202800MN "Plug & Brake®" mineral oil pressure actuated trailer brake valve for load sensing system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	Male quick-release ISO 5676
T	Tank	M18x1.5 ISO 6149
LS	Load sensing signal	M10x1 ISO 6149
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 - 70 L/min
Max pressure in N port	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,LS,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
12 mm	0.6 cm ³	5.8
14 mm	0.8 cm ³	7.8
16 mm	1.0 cm ³	10.2
18 mm	1.2 cm ³	13.0
20 mm	1.5 cm ³	16.0
22 mm	1.8 cm ³	19.4

ORDER PART NUMBER

20 2800 MN / 12

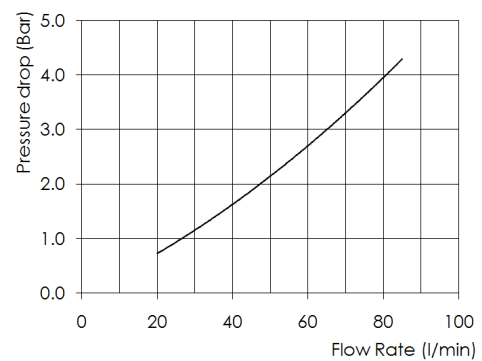
Pilot piston diameter (mm)
12 -14 - 16 -18 -20 -22

MN: Piloting oil type (Mineral oil)

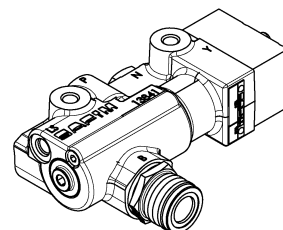
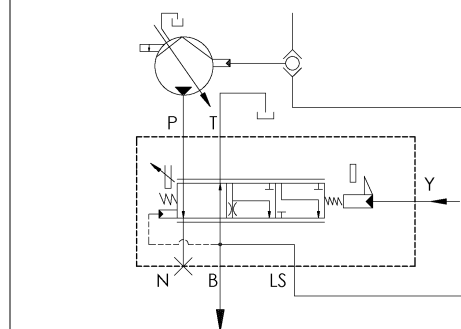
2800: Plug & Brake load sensing trailer brake valve

20: Product class

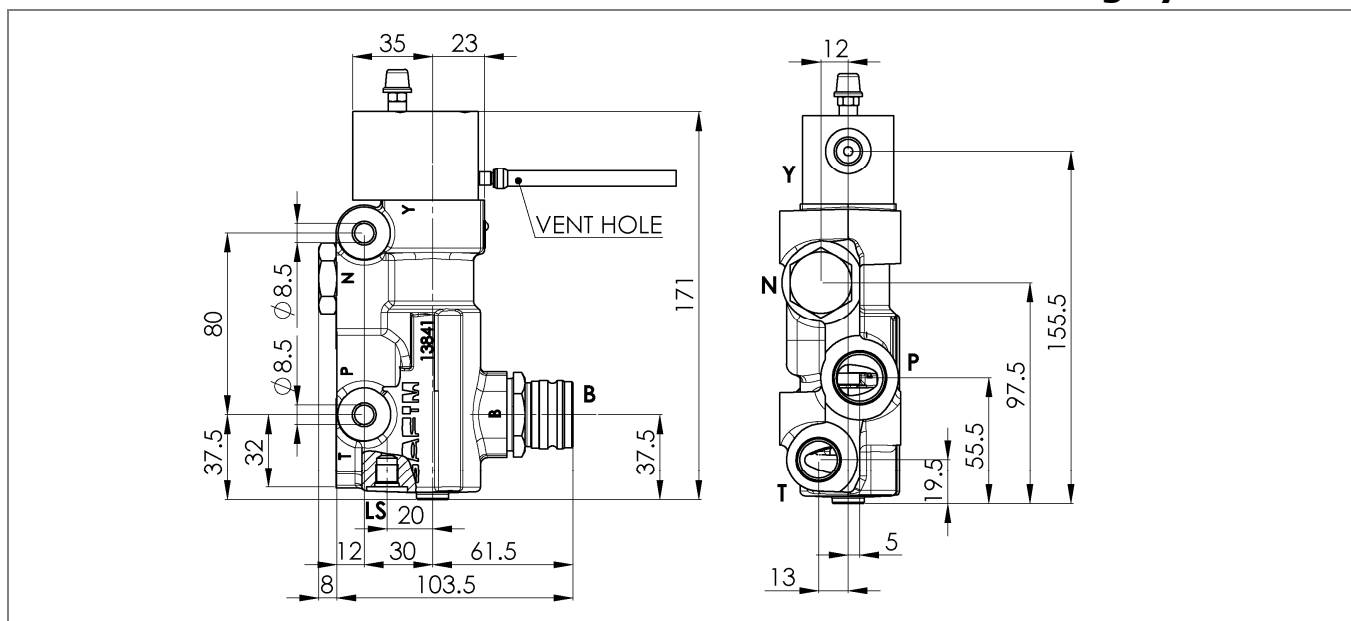
P-N PRESSURE DROP



HYDRAULIC SCHEMATIC



cod. 202800FN "Plug & Brake®" brake fluid pressure actuated trailer brake valve for load sensing system



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	Male quick-release ISO 5676
T	Tank	M18x1.5 ISO 6149
LS	Load sensing signal	M10x1 ISO 6149
Y	Pilot signal	M12x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 - 70 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,LS ports)	Mineral oil
Oil type (in Y port)	Brake fluid (DOT 3-4)
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
12 mm	0.6 cm ³	5.8
14 mm	0.8 cm ³	7.8
16 mm	1.0 cm ³	10.2
18 mm	1.2 cm ³	13.0
20 mm	1.5 cm ³	16.0
22 mm	1.8 cm ³	19.4

ORDER PART NUMBER

20 2800 FN / 12

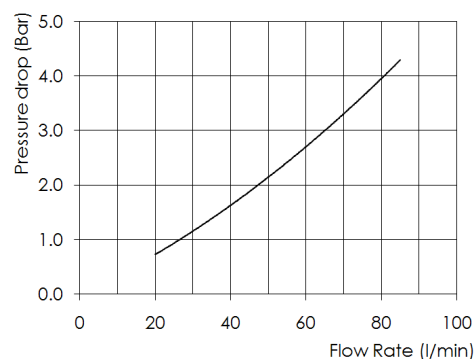
Pilot piston diameter (mm)
12 -14 - 16 -18 -20 -22

FN: Piloting oil type (Brake fluid - DOT 3-4I)

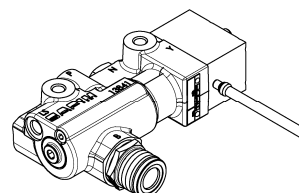
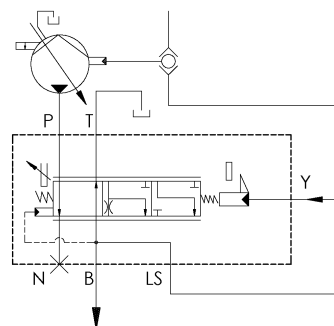
2800: Plug & Brake load sensing trailer brake valve

20: Product class

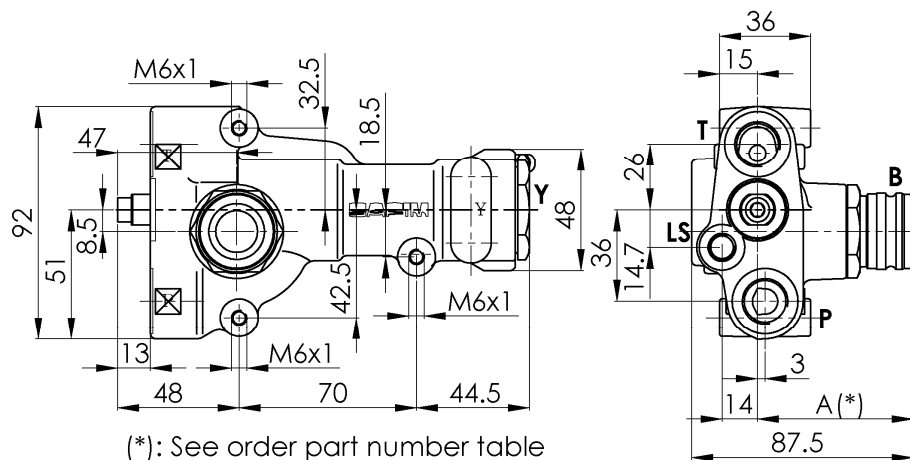
P-N PRESSURE DROP



HYDRAULIC SCHEMATIC



cod. 202438MN "Plug & Brake®" mineral oil pressure actuated trailer brake valve for load sensing system (Close centre system only)



CONNECTION

P	Feeding pump	M18x1.5 DIN 3852-1X
B	Trailer brake	Male quick-release ISO 5676
T	Tank	M18x1.5 DIN 3852-1X
LS	Load sensing signal	M10x1 DIN 3852-1X
Y	Pilot signal	M14x1.5 DIN 3852-1X

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Max pressure in P port	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
10 mm	0.4 cm ³	4.0
12 mm	0.6 cm ³	5.8
14 mm	0.8 cm ³	7.8
16 mm	1.0 cm ³	10.2

ORDER PART NUMBER

20	2438	MN	/	12
----	------	----	---	----

Pilot piston diameter (mm)
10 -12 - 14 -16

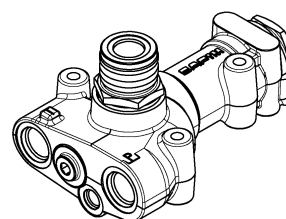
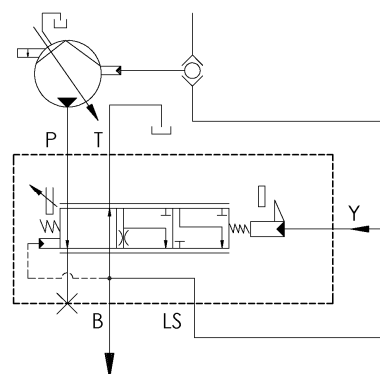
MN: Piloting oil type (Mineral oil)

2438: A=61.5mm (See drawing)

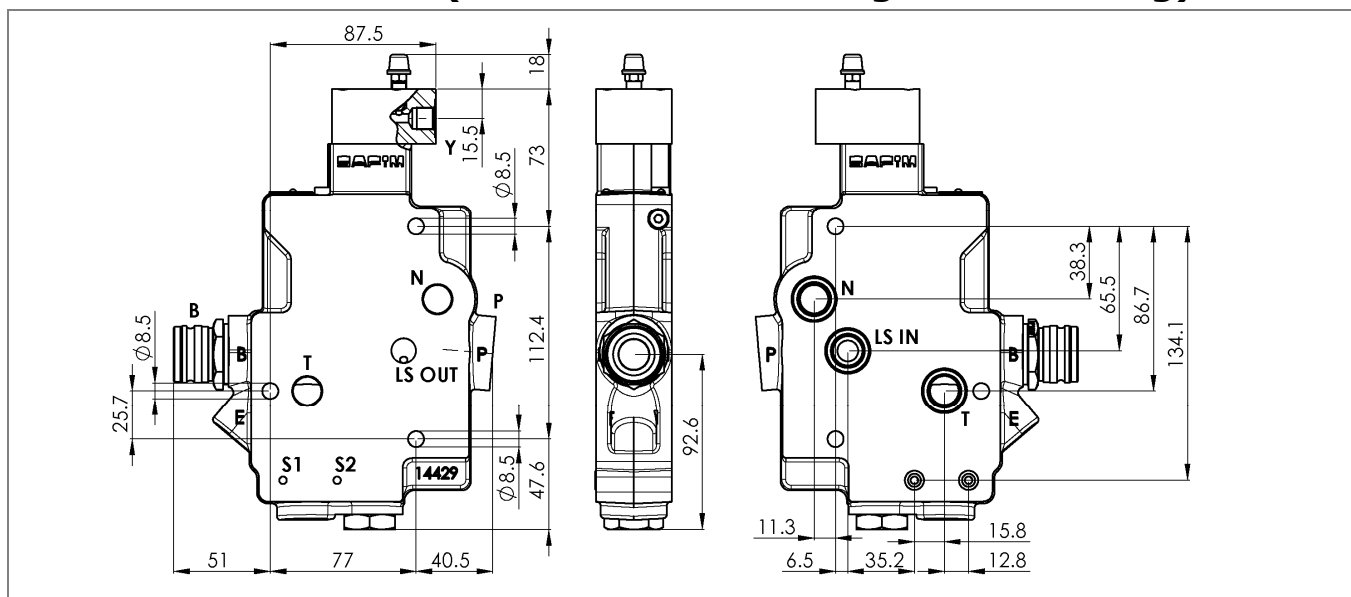
2583: A=131mm (See drawing)

20: Product class

HYDRAULIC SCHEMATIC



cod. 203070MN "Plug & Brake®" mineral oil pressure actuated trailer brake valve for load sensing system (directional valve flanged assembling)



CONNECTION

P	Feeding pump	M27x2 DIN 3852-1X
B	Trailer brake	Male quick-release ISO 5676
T	Tank	On flange ports
N	Other services	On flange ports
LS IN	Load sensing signal from directional valve	On flange port
LS OUT	Load sensing signal to pump	On flange port
Y	Pilot signal	M12x1 DIN 74235
S1,S2	Auxiliary services	On flange ports

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Feed flow	20 - 100 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type	Mineral oil
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

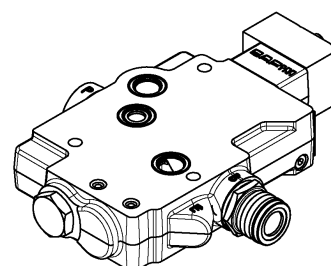
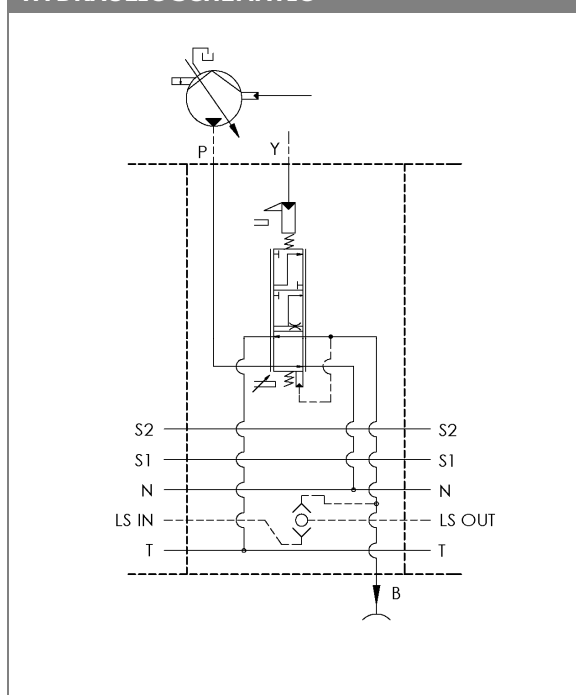
Pilot piston diameter	Displacement	Pressure ratio
20 mm	1.5 cm ³	11.1

ORDER PART NUMBER

20	3070	MN	/	20
				Pilot piston diameter (mm) 20
				MN: Piloting oil type (Mineral oil)
				3070: Plug & Brake load sensing trailer brake valve
				20: Product class

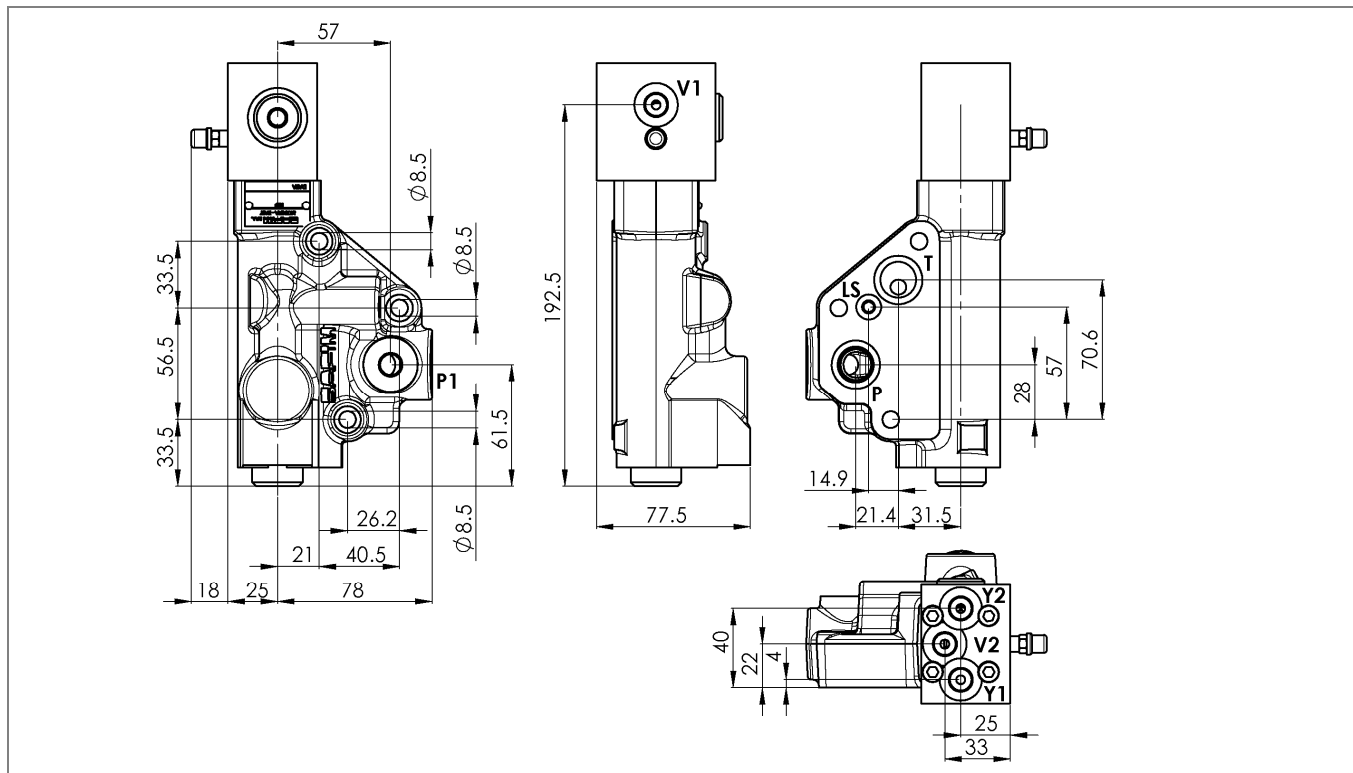
Available on request in version for Italian market

HYDRAULIC SCHEMATIC



cod. 203433

Mineral oil pressure actuated trailer brake valve for load sensing system (Master priority valve 404806 flanged assembling)

**CONNECTION**

P	Feeding pump	On flange port
P1	Pump pressure gauge	M12x1.5
B	Trailer brake	Male quick-release ISO 5676
T	Tank	On flange port
LS	Load sensing signal	On flange port
Y1,Y2	Pilot signals	M12x1 DIN 74235
V1,V2	Auxiliary pilot signals	M12x1 DIN 74235

GENERAL TECHNICAL FEATURES

Trailer brake pressure (B port)	140±10 Bar
Max pressure in P port	220 Bar
Working temperature	-20°C / + 100°C
Oil type	Mineral oil
Filtering level	NAS 1638 CLASS 9

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
16 mm	0.9 cm ³	7.1
22 mm	1.6 cm ³	13.4

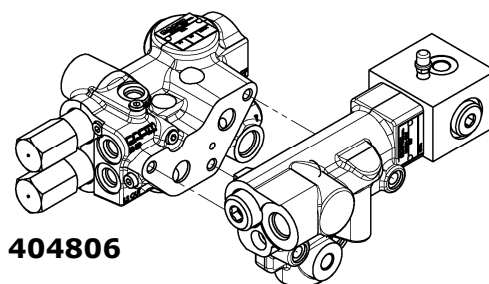
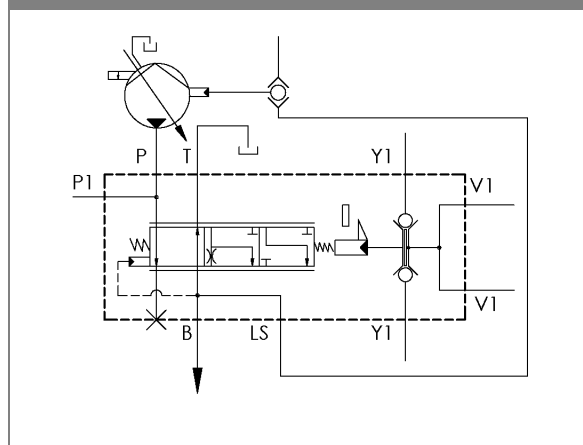
ORDER PART NUMBER

20	3433	/	16
-----------	-------------	----------	-----------

Pilot piston diameter (mm)
16 - 22

3433: Load sensing trailer brake valve

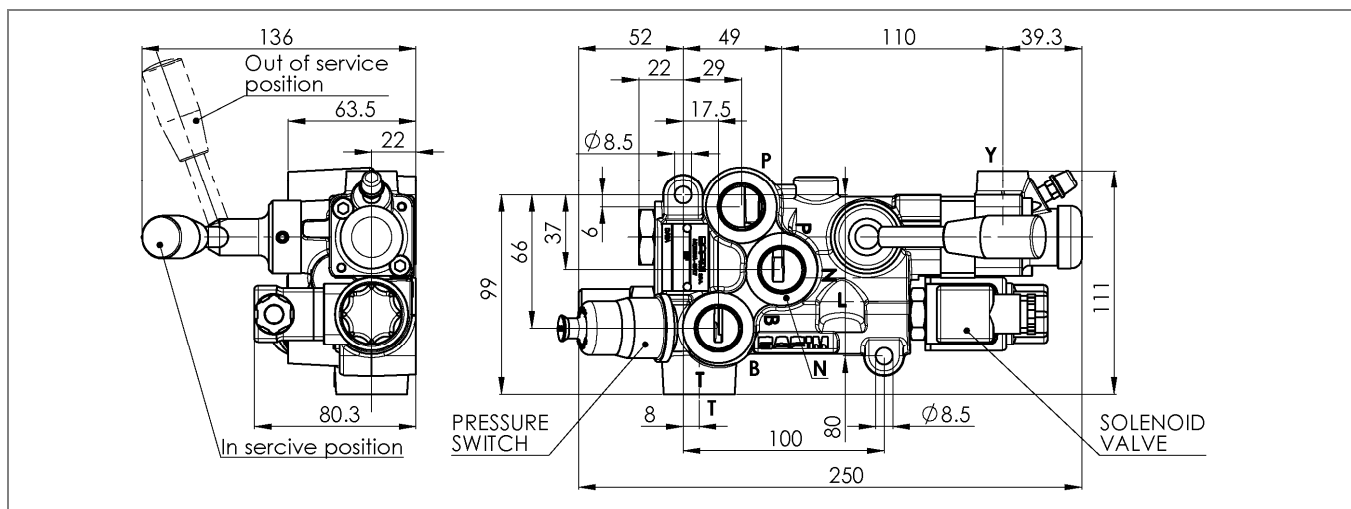
20: Product class

HYDRAULIC SCHEMATIC

404806

cod. 203917MN

Mineral oil pressure actuated trailer brake valve for Italian market



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
Y	Pilot signal	M12x1.25

GENERAL TECHNICAL FEATURES

Max Trailer brake pressure (B port)	140±10 Bar
Trailer constant pressure (B port)	12.5±2.5 Bar
Feed Flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T,Y ports)	Mineral oil
Filtering level	NAS 1638 CLASS 9
Solenoid valve voltage	12 Volt
Pressure switch setting	10 Bar
Pressure switch contact type	Normally close

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
08 mm	0.2 cm ³	1.8
10 mm	0.3 cm ³	2.8
12 mm	0.4 cm ³	4.0
14 mm	0.6 cm ³	5.4
16 mm	0.7 cm ³	7.1
18 mm	0.9 cm ³	9.0
20 mm	1.1 cm ³	11.1
22 mm	1.4 cm ³	13.4

ORDER PART NUMBER

20 3917 MN / 08
Pilot piston diameter (mm)

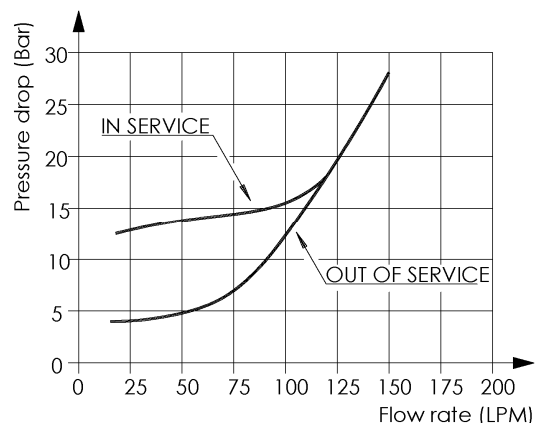
08 – 10 – 12 – 14 – 16 – 18 – 20 – 22

MN: Piloting oil type (Mineral oil)

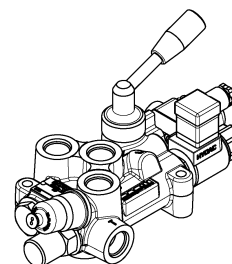
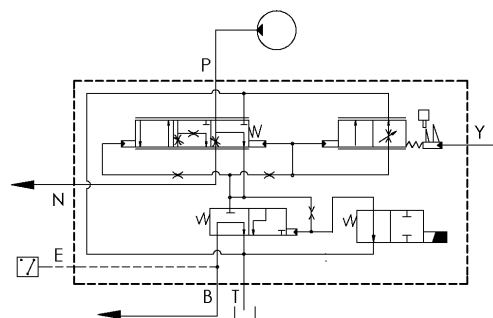
3917: Open centre trailer brake valve

20: Product class

P-N PRESSURE DROP

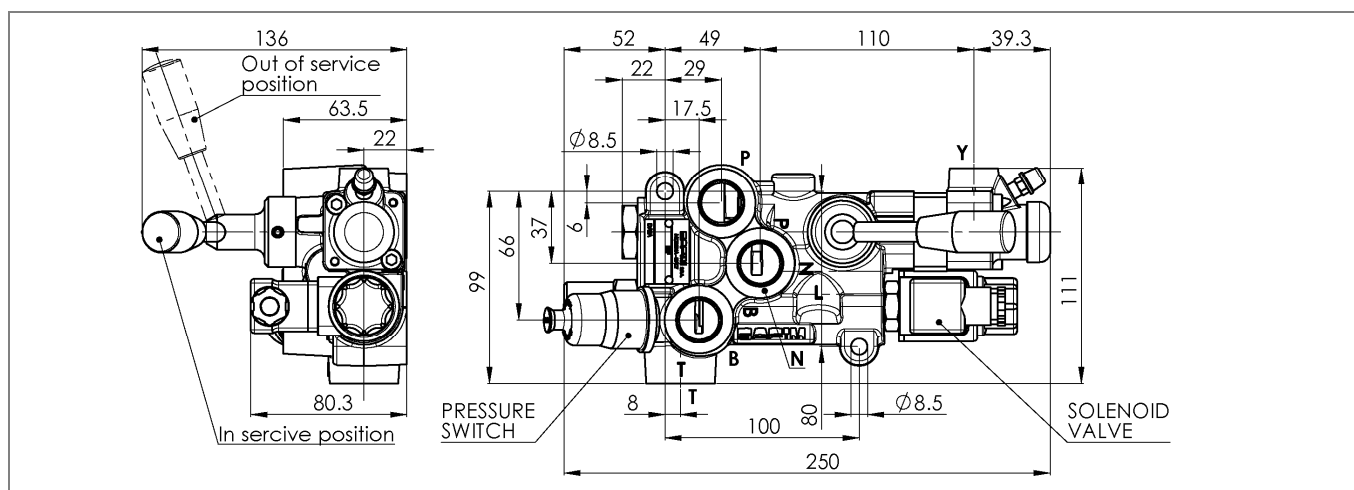


HYDRAULIC SCHEMATIC



cod. 203917FN

Brake fluid pressure actuated trailer brake valve for Italian market



CONNECTION

P	Feeding pump	M22x1.5 ISO 6149
N	Other services	M22x1.5 ISO 6149
B	Trailer brake	M22x1.5 ISO 6149
T	Tank	M22x1.5 ISO 6149
Y	Pilot signal	M12x1.25

GENERAL TECHNICAL FEATURES

Max Trailer brake pressure (B port)	140±10 Bar
Trailer constant pressure (B port)	12.5±2.5 Bar
Feed Flow	20 – 100 L/min
Max pressure in P,N ports	220 Bar
Working temperature	-20°C / + 100°C
Oil type (in P,N,B,T ports)	Mineral oil
Piloting oil type (Y port)	Brake fluid (DOT 3-4)
Filtering level	NAS 1638 CLASS 9
Solenoid valve voltage	12 Volt
Pressure switch setting	10 Bar
Pressure switch contact type	Normally close

PILOTING TECHNICAL FEATURES

Pilot piston diameter	Displacement	Pressure ratio
08 mm	0.2 cm ³	1.8
10 mm	0.3 cm ³	2.8
12 mm	0.4 cm ³	4.0
14 mm	0.6 cm ³	5.4
16 mm	0.7 cm ³	7.1
18 mm	0.9 cm ³	9.0
20 mm	1.1 cm ³	11.1
22 mm	1.4 cm ³	13.4

ORDER PART NUMBER

20	3917	FN	/	08
----	------	----	---	----

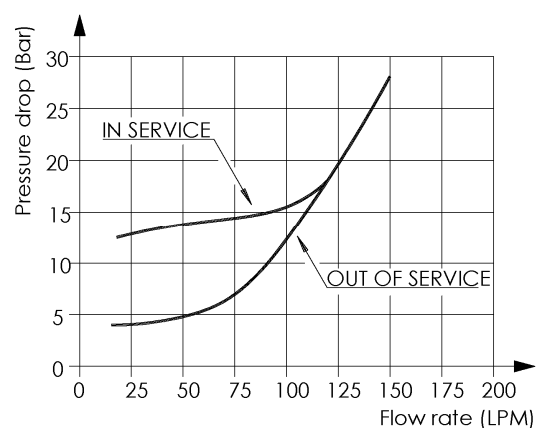
Pilot piston diameter (mm)

08 - 10 - 12 -14 - 16 -18 -20 -22

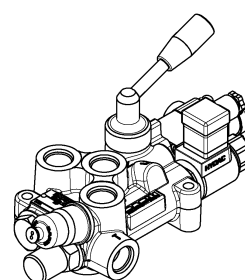
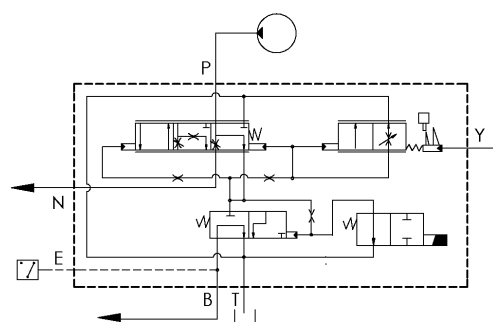
FN: Piloting oil type (Brake fluid – DOT 3-4)

3917: Open centre trailer brake valve

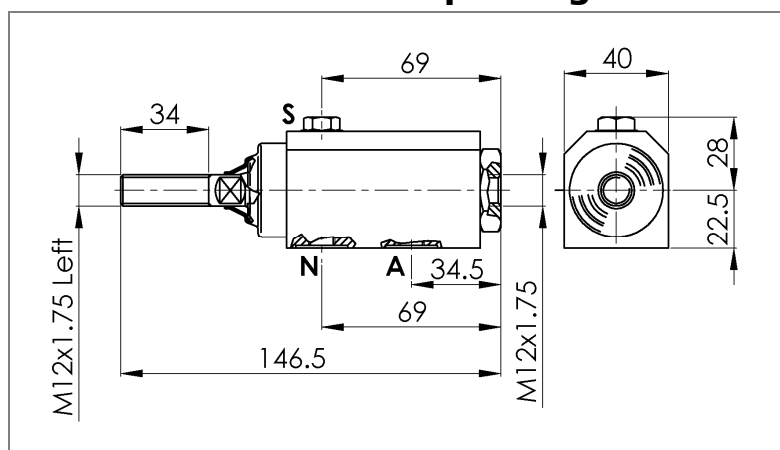
20: Product class



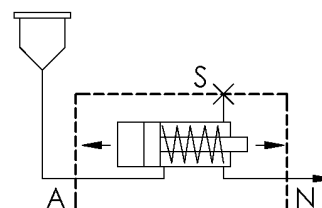
HYDRAULIC SCHEMATIC



cod. 032444MN Pressure emitter for trailer brake valve piloting



HYDRAULIC SCHEMATIC



CONNECTION

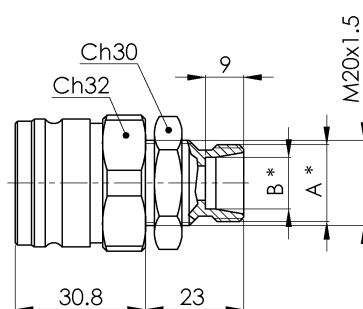
A	Reservoir	M10x1 DIN 3852-1X
N	Pilot signal	M10x1 DIN 3852-1X
S	Bleeding (plugged)	M10x1 DIN 3852-1X

TECHNICAL FEATURES

Stroke	10.5 mm
Displacement	3.5 cm ³
Piston diameter	20.7 mm
Max pressure (in N,S ports)	120 Bar
Max pulling force	400 daN
Oil type (in N,A,S ports)	Mineral oil
Working temperature	-20°C / + 100°C
Filtering level	NAS 1638 CLASS 9

ORDER PART NUMBER

03	2444	FN
		MN: Oil type (Mineral oil)
	2444: Pressure emitter	
03: Product class		

cod. RO15869 – RO15506 Quick-release male coupling

(*): See order part number table

TECHNICAL FEATURES

Flow rate (pressure drop 2 Bar)	40 L/min
Force to connect	10 daN
Max working pressure	22 Bar
Working temperature	-25°C / +125°C

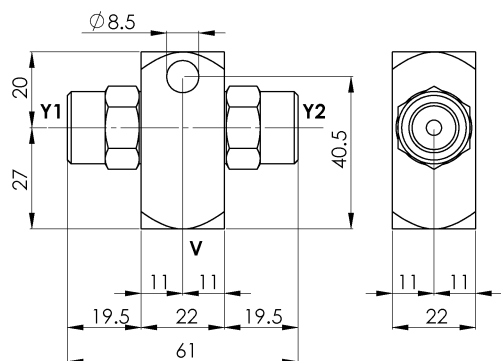
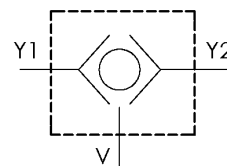
ORDER PART NUMBER

RO	15869
-----------	--------------

15869: A=M18x1.5 ISO 8434-1-L
B=Ø12.15

15506: A=M20x1.5 ISO 8434-1-S
B=Ø13.5

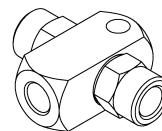
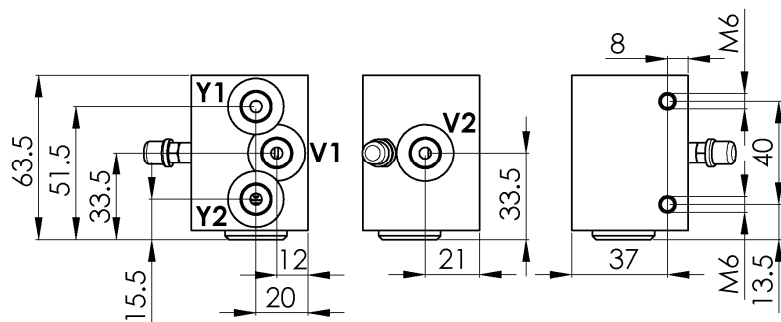
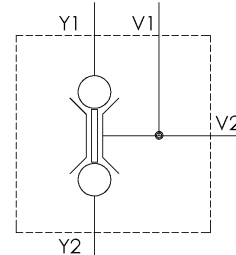
RO: Product class

cod. 201541**Select valve****HYDRAULIC SCHEMATIC****CONNECTION**

Y1,Y2	Pilot signals	G ¼ DIN 3852-2X
V	Output signal	G ¼ DIN 3852-2X

TECHNICAL FEATURES

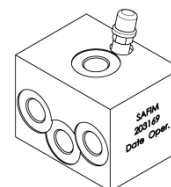
Max operating pressure	220 Bar
Working temperature	-20°C / + 100°C
Oil type	Mineral oil – Brake fluid
Filtering level	NAS 1638 CLASS 9

ORDER PART NUMBER**20 1541****1541:** Select valve**20:** Product class**cod. 203169****Inverse select valve****HYDRAULIC SCHEMATIC****CONNECTION**

Y1,Y2	Pilot signals	M12x1 DIN 74235-FL
V1,V2	Output signal	M12x1 DIN 74235-FL

TECHNICAL FEATURES

Max operating pressure	100 Bar
Working temperature	-20°C / + 100°C
Oil type	Mineral oil
Filtering level	NAS 1638 CLASS 9

ORDER PART NUMBER**20 3169****3169:** Inverse select valve**20:** Product class

SAFIM S.p.A.

Via Livingstone 6

41100 MODENA - ITALY

www.safim.it

info@safim.it