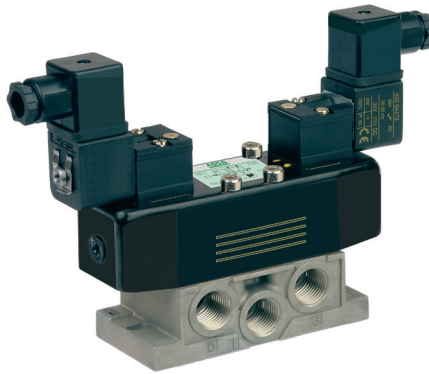




Spool valve ISO 5599/1 size 1
solenoid air operated



Spool valve ISO 5599/1 size 2
solenoid air operated



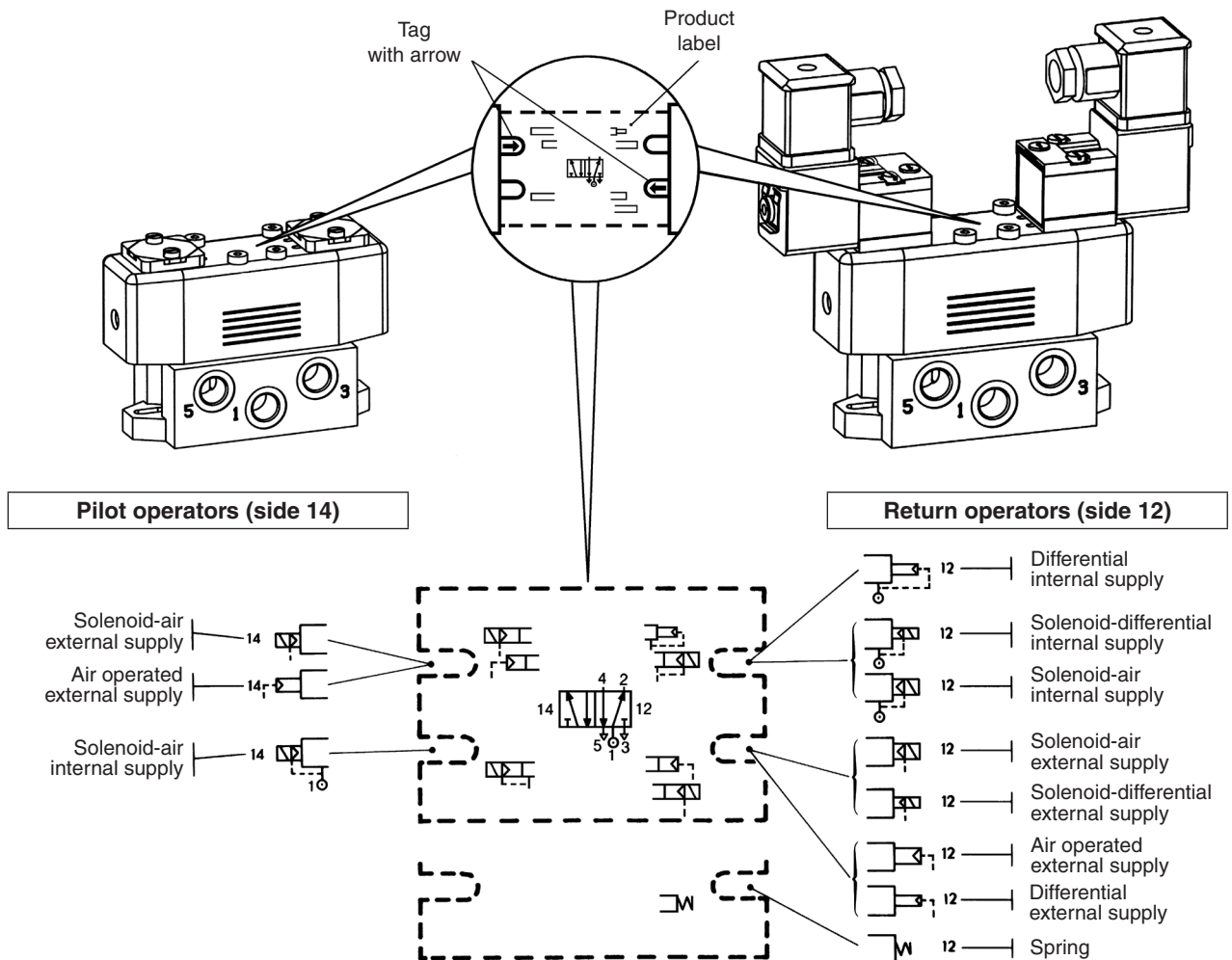
Spool valve ISO 5599/1 size 3
solenoid air operated

MULTIFUNCTION

Multifunction valves are equipped with 2 pilot selector seals on the top face, on both pilot and return sides. Each selector seal can be set on 2 positions, allowing internal or external supply to the pilot or return operators, in both versions (pneumatic and electropneumatic). External supply allows the valves to operate with a supply pressure ranging from 0 to 12 bar and under vacuum pressure. Each seal includes a tag with an arrow to be set onto the notch corresponding to the required pilot function (see below). Modifications of the function are very simple. The valves are delivered pre-set according to the valve code selected on your order.

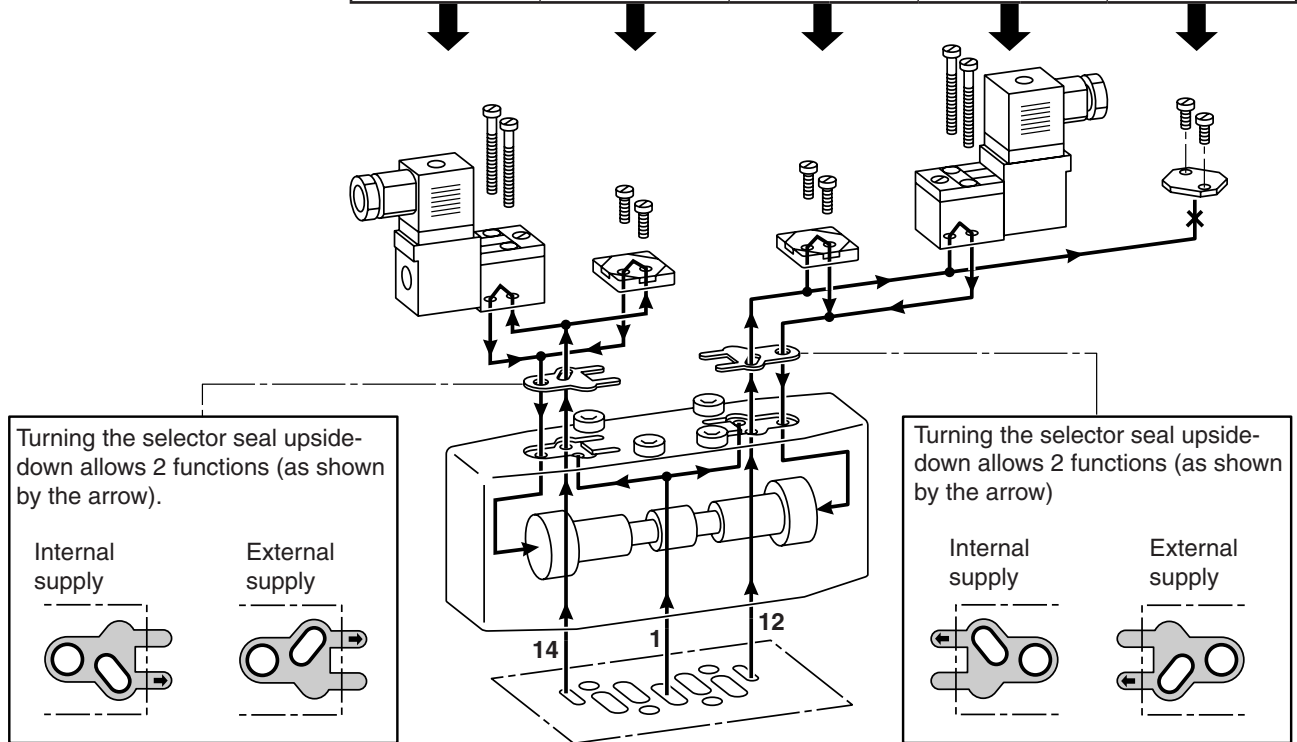
Air operated spool valve

Solenoid air operated spool valve



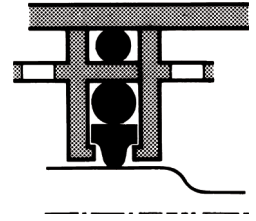
The diagram below shows the accessories (delivered with the valves) and/or the solenoid valves appropriate for each function. These components may be separately supplied when changing the function of the valve.

	functions		pilot		return		
	symbols	pilot (14) return (12)					
5/2		Air operated Spring return		●			●
		Air operated Differential return		●	●		
		Air operated Air		●	●		
		Solenoid air operated Spring return	●				●
		Solenoid air operated Differential return	●		●		
		Solenoid air operated Air return	●		●		
		Solenoid air operated Solenoid differential return	●			●	
		Solenoid air operated pilot and return	●			●	
5/3		Air operated W1-W2-W3		●	●		
		Solenoid air operated W1-W2-W3	●			●	
			solenoid valves 189-190 or 192	interface 88100074	interface 88100074	solenoid valves 189-190 or 192	blanking plate 88100073



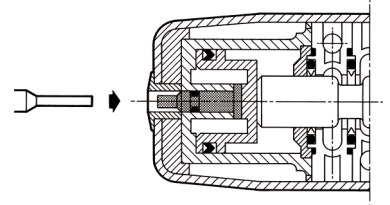
USE WITH NON LUBRICATED AIR

The ISO valves will operate satisfactorily with lubricated or non lubricated air, even with dry air due to a patented sealing system : a "T" seal backed with a cushioning or compensation seal. This arrangement of seals maintains minimum pilot pressure which remains constant even after the valve has been switched off for a long period of time. When restarting, the performance of the valve will be the same as during continuous operating conditions. This characteristic ensures good performance in both re-start and continuous operation conditions.

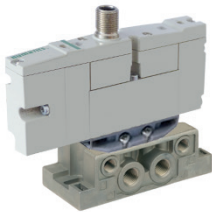


MANUAL TESTERS INDICATING THE POSITION OF THE SPOOL

On request, spool valves can be delivered equipped with manual testers so that the spool position can be checked or moved by manual override.



M12 ELECTRICAL CONNECTION (3-pin)



Spool valve ISO 15407-1 (26 mm),
M12 electrical connection,
with adapter ISO 5599/1 size 1



Spool valve ISO 5599/1 size 2
with M12 electrical connection



Spool valve ISO 5599/1 size 3
with M12 electrical connection

Pad mounting spool valves with M12 connector by 3-contact. This system has the following advantages:

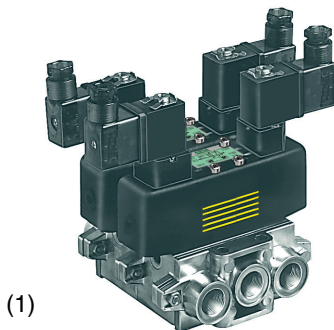
- Smaller dimensions (503 pilot or mini-solenoid valve - pilot series 302)
- Shorter connection time
- Built-in electrical display and protection
- Instantaneous electrical disconnection

EASY INSTALLATION

ASCO Numatics markets a complementary range of components simplifying the installation of valves ISO:






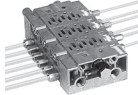
- [Single subbase with side ports or bottom ports](#)
- [Joinable subbases with bottom ports \(1\)](#)

[Numerous accessories complete these systems](#)



(1)

SUMMARY

Products	Illustration	Series	Page
Multifonction spool valves		541 542 543	75 77 (ATEX)
Spool valves with M12 electrical connection		503 542 543	79
Single subbases with side ports, ISO sizes 1, 2, 3		541 542 543	81
Single subbases with bottom ports, ISO sizes 1 and 2		541 542 543	81
Metallic joinable subbases with bottom ports ISO sizes 1, 2, 3		541 542 543	81
Metallic joinable subbases with side ports ISO sizes 1 and 2		355	86
Accessories ISO sizes 1, 2, 3		346	90

FEATURES

- *Reliability: long service life of 30 million cycles*
- *Choice of internal/external supply with selector seals (vacuum use to -0,950 bar)*
- *Modular assembly with joinable subbases*
- *Subbases with side or bottom ports*

GENERAL

	ISO 1	ISO 2	ISO 3
Fluid	Air or neutral gas, filtered, lubricated or not		
Operating pressure	+3 to +10 bar (with internal supply to pilot) -0,950 to +12 bar (with external supply to pilot) Can be used with vacuum -0,950 bar max.		
Pilot pressure	See specifications tables		
Ambient temperature	-10°C to +60°C		
Flow (Qv at 6 bar)	1400 l/min (ANR)	2800 l/min (ANR)	4200 l/min (ANR)
Flow coefficients	C = 5,8 x 10 ⁻⁸ m ³ /s.Pa (sonic conductance) b = 0,28 (absolute static pressure)		
Response time	See tables choice of equipment		
Life	30 millions of cycles		
Base	ISO 5599/1 sizes 1-2-3 - AFNOR NF E49080		
Subbase	Single subbase ISO/AFNOR NF E49085 Joinable subbase ISO/VDMA 24345 Joinable subbase with integrated functions		



CONSTRUCTION

Cover	Painted steel
Pilot and return assembly	POM (polyacetal)
Seals	NBR (nitrile) and PUR (polyurethane)
Internal parts	POM (polyacetal), light alloy

ELECTRICAL CHARACTERISTICS

pilot	voltage	consumption		insulation class	protection degree	electrical connection
		inrush	hold			
series 189	~ 24V-48V-115V-230V/50Hz	6 VA	3,5 VA (2,5 W)	F	IP 65	spade plug size 22 connector, DIN 43650, 11 mm, industry standard B, rotatable by 180°
	= 24V-48V	2,5 W				
series 190	~ 24V-48V-115V-230V/50 Hz	9 VA	4 VA (3 W)	F	IP 65	spade plug size 30 connector, ISO4400/EN175301-803, form A, rotatable by 90°
	= 24V-48V	3 W				

The solenoid valve 190 is dual-voltage (24V~, 12V=) (48V~, 24V=) (115V~, 48V=) (230V~, 110V=)

SPECIFICATIONS 5/2

function 5/2 symbol	operators pilot (14) solenoid air operated return (12)	size	response time (1) (ms)		pilot pressure (bar)		2 catalogue numbers		
			ener-gized	de-ener-gized	min.	max.	valve	+ solenoid pilot quantity & catalogue number with standard connector	(M)
	spring return	ISO 1	25	66	3	10	54191023	+ 1x { 18900001 - 19000005 19000006 19000017	● × ● ▼
		ISO 2	19	68	2,5		54292023		
		ISO 3	45	130	3		54391023		
	differential return	ISO 1	41	45	3	10	54191024	+ 1x { 18900001 - 19000005 19000006 19000017	● × ● ▼
		ISO 2	32	49	2		54292024		
		ISO 3	71	82	3		54391024		
	air return	ISO 1	21	-	1,5	10	54191025	+ 1x { 18900001 - 19000005 19000006 19000017	● × ● ▼
		ISO 2	16	-	1,5		54292025		
		ISO 3	28	-	1,5		54391025		
	solenoid differential return	ISO 1	16	18	3	10	54191026	+ 2x { 18900001 - 19000005 19000006 19000017	● × ● ▼
		ISO 2	15	16	2		54292026		
		ISO 3	21	23	3		54391026		
	Solenoid air operated return	ISO 1	17	16	1,5	10	54191027	+ 2x { 18900001 - 19000005 19000006 19000017	● × ● ▼
		ISO 2	16	15	1,5		54292027		
		ISO 3	26	25	1,5		54391027		

(M) Type of manual operator on pilot(s): × : without ● : maintained ▼ : impulse

(1) With solenoid valve series 190

SPECIFICATIONS 5/3

function 5/3 symbol	operators pilot (14) return (12) solenoid air operated	size	response time (1) (ms)		pilot pressure (bar)		2 catalogue numbers		
			ener- gized	de-ener- gized	min.	max.	valve	+ solenoid pilot quantity & catalogue number	(M)
	pressure held W1	ISO 1	16	17	3	10	54191028	+ 2x {	18900001 ● 19000005 × 19000006 ● 19000017 ▼
		ISO 2	16	16			54292028		
		ISO 3	27	26			54391028		
	pressure applied W2	ISO 1	44	18	3	10	54191030		
		ISO 2	54	18			54292030		
		ISO 3	93	27			54391029		
	pressure release W3	ISO 1	17	47	3	10	54191029		
		ISO 2	19	61			54292029		
		ISO 3	29	28			54391030		

(M) Type of manual operator on pilot : × : without ● : maintained ▼ : impulse
 (1) With solenoid valve series 190

OPTIONS

- Solenoid valve pilot 3/2 series 192 in 3 versions
- Equipment with manual testers so that the spool position can be checked
- Material and solenoid pilot valve for use in potentially **explosive atmospheres** caused by gases or dusts - ATEX directive 2014/34/EU (See following pages)
- Connector with cable 2m long (see "Coils and accessories" section)
- Connector with transil protection (see "Coils and accessories" section)
- Solenoid valve with plug and built-in visual control and protection :

Solenoid valve **without** connector + Connector with built-in visual control and VDR/RC protection

type of valve	(M)	catalogue number solenoid valve without connector	catalogue number (~ / =)			
			24V	48V	115V	230V
189 NC	●	18900002	88122405	88122406	88122407	88122410
190 NC	×	19000013				
	●	19000014				
	▼	19000018				
192 NC (2)	×	19200022	88122603	88122604	88122605	88122608
	●	19200023				
	▼	19200024				

(M) Type of manual operator on pilot(s) : × : without ● : maintained ▼ : impulse
 (2) Solenoid valve series 192 - 3/2 NC - Ø 2,1mm with exhaust in base

SUBBASES AND ACCESSORIES : see catalogue pages



Spool valves intended for use in potentially explosive atmospheres caused by gases, vapours, mists and/or dusts (ATEX directive 2014/34/EU)

CLASSIFICATION (ISO 1-2-3): II 2 GD IIC Ta 60°C T6 (T85°C)

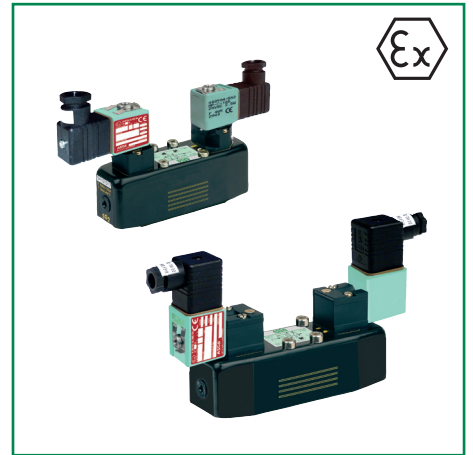
Temperature range: -10°C ≤ Ta ≤ +60°C

Compliance with the Essential Health and Safety Requirements has been assured by compliance with European Standards EN 13463-1.

Pilots: 189 (PV) / 189 (SG) / 190 (R314/LPKF)

ELECTRICAL CHARACTERISTICS

Standard voltages	DC (=): 24V - 48V
(Other voltages on request)	AC (~): 24V - 48V - 115V - 230V/50-60 Hz



COIL TEMPERATURE CLASSIFICATION TABLES

Solenoid operators for potentially explosive atmospheres

Allowable minimum ambient temperature: -10°C.

TYPE 01: PV (189 pilot)

encapsulated, II 2G Ex mb IIC T5..T3 Gb / II 2D Ex mb IIIC T100°C..T200°C Db IP67

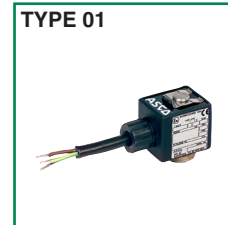
moulded enclosure with integrated cable

AC solenoids (~)

DC solenoids (=)

Pn (watt)	maximum ambient °C surface temperature			
	T6 85°C	T5 100°C	T4 135°C	T3 200°C
insulation class F (155°C) 100% E.D.				
4,0	-	-	60	-

Pn (watt)	maximum ambient °C surface temperature			
	T6 85°C	T5 100°C	T4 135°C	T3 200°C
insulation class F (155°C) 100% E.D.				
3,0	-	40	60	60



TYPE 02/03: SG (189/190 pilots)

For dust applications - II 3 D Ex tc IIIC T115°C Dc IP65X

The assembly consisting of the coil and connector has IP65 protection

Spade plug [189 Series: cable Ø 4,5-7 mm / 190 Series: (cable Ø 4,5-10 mm)]

max. AC power (W)	max. DC power (W)
17,1	11,6

	surface temperature	min. ambient temperature	max. ambient temperature	E.D. ⁽¹⁾
SG	115°C	-10°C	+50°C	100%

⁽¹⁾ Duty factor.



TYPE 04: R314/LPKF

flameproof enclosure - II2G Ex d IIB+H2 Gb T6..T4, II2D Ex tb IIIC Db IP66/IP67

aluminium enclosure, ISO 15218 (CNOMO, size 30) interface

AC solenoids (~)

DC solenoids (=)

Un (V)	Pn (watt)	solenoid size M6	maximum ambient °C ⁽⁴⁾ surface temperature		
			T6 85°C	T5 100°C	T4 135°C
insulation class F (155°C) 100% E.D.					
24	5,4	●	40	-	60
48	5,8	●	40	-	60
115	7,1	●	-	40	60
230	7,4	●	-	40	60

Un (V)	Pn (watt)		solenoid size M6	maximum ambient °C ⁽⁴⁾ surface temperature		
	hot/cold			T6 85°C	T5 100°C	T4 135°C
insulation class F (155°C) 100% E.D.						
24	5,9	7,5 ⁽³⁾	●	-	40	60
48	6	7,6 ⁽³⁾	●	-	40	60

⁽²⁾ Rectified coil construction.

⁽³⁾ Maximum cold wattage.

⁽⁴⁾ For the layout of the control circuit, see the installation and maintenance instructions at: www.asco.com



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SPECIFICATIONS

When ordering, please specify: the standard spool valve code and its ATEX option and the solenoid pilot code

5/2 symbols	function solenoid air pilot (14) return (12)	size	response time (ms)		pilot pressure (bar)		2 codes		(M)				
			energized	de-energized	min.	max.	spool valve	+ solenoid pilot quantity and code					
	spring return	ISO 1	25	66	3	10	54191023	+ 1x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01					
		ISO 2	19	68	2,5					54292023			
		ISO 3	45	130	3					54391023			
	differential return	ISO 1	41	45	3	10	54191024		+ 1x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01				
		ISO 2	32	49	2						54292024		
		ISO 3	71	82	3						54391024		
	air return	ISO 1	21	-	1,5	10	54191025			+ 2x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01	X		
		ISO 2	16		1,5							54292025	
		ISO 3	28		1,5							54391025	
	solenoid-differential return	ISO 1	16	18	3	10	54191026				+ 2x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01	X	
		ISO 2	15	16	2								54292026
		ISO 3	21	23	3								54391026
	solenoid air return	ISO 1	17	16	1,5	10	54191027	+ 2x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01				●	
		ISO 2	16	15	1,5								54292027
		ISO 3	26	25	1,5								54391027

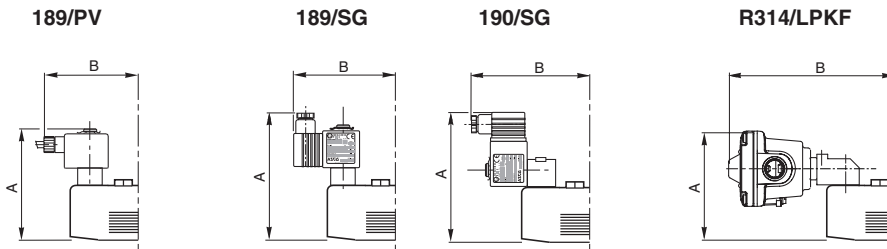
5/3 symbols	function solenoid air pilot (14) solenoid air return (12)	size	response time (ms)		pilot pressure (bar)		2 codes		(M)			
			energized	de-energized	min.	max.	spool valve	+ solenoid pilot quantity and code				
	W1 closed centre position	ISO 1	16	17	3	10	54191028	+ 2x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01	●			
		ISO 2	16	16						54292028		
		ISO 3	27	26						54391028		
	W2 centre open to pressure	ISO 1	44	18	3	10	54191030		+ 2x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01	X		
		ISO 2	54	18							54292030	
		ISO 3	93	27							54391029	
	W3 centre open to exhaust	ISO 1	17	47	3	10	54191029			+ 2x PV18900001 SG18900001 SG19000005 SG19000006 SG19000017 R314K311GNN00 R314K311GNN01	X	
		ISO 2	19	61								54292029
		ISO 3	29	28								54391030

(M) Type of manual operator on pilot(s): X : without ● : maintained ▼ : impulse

OPTIONS

- Equipment with manual testers so that the spool position can be checked.

DIMENSIONS (mm)



size	A			B		
	541	542	543	541	542	543
PV/189	92	94	109	82	112	-
SG/189	91	93	108	105	135	-
SG/190	118	120	135	108	118	-
R314	93	94	170	137	167	118

543 Series (R314/LPKF pilot):
Intermediate subbase code: **88119104** (required for mounting)