Series 542/PH

MULTIFUNCTION SPOOL VALVE
air and solenoid air operated
ISO 5599/01 - Size 2

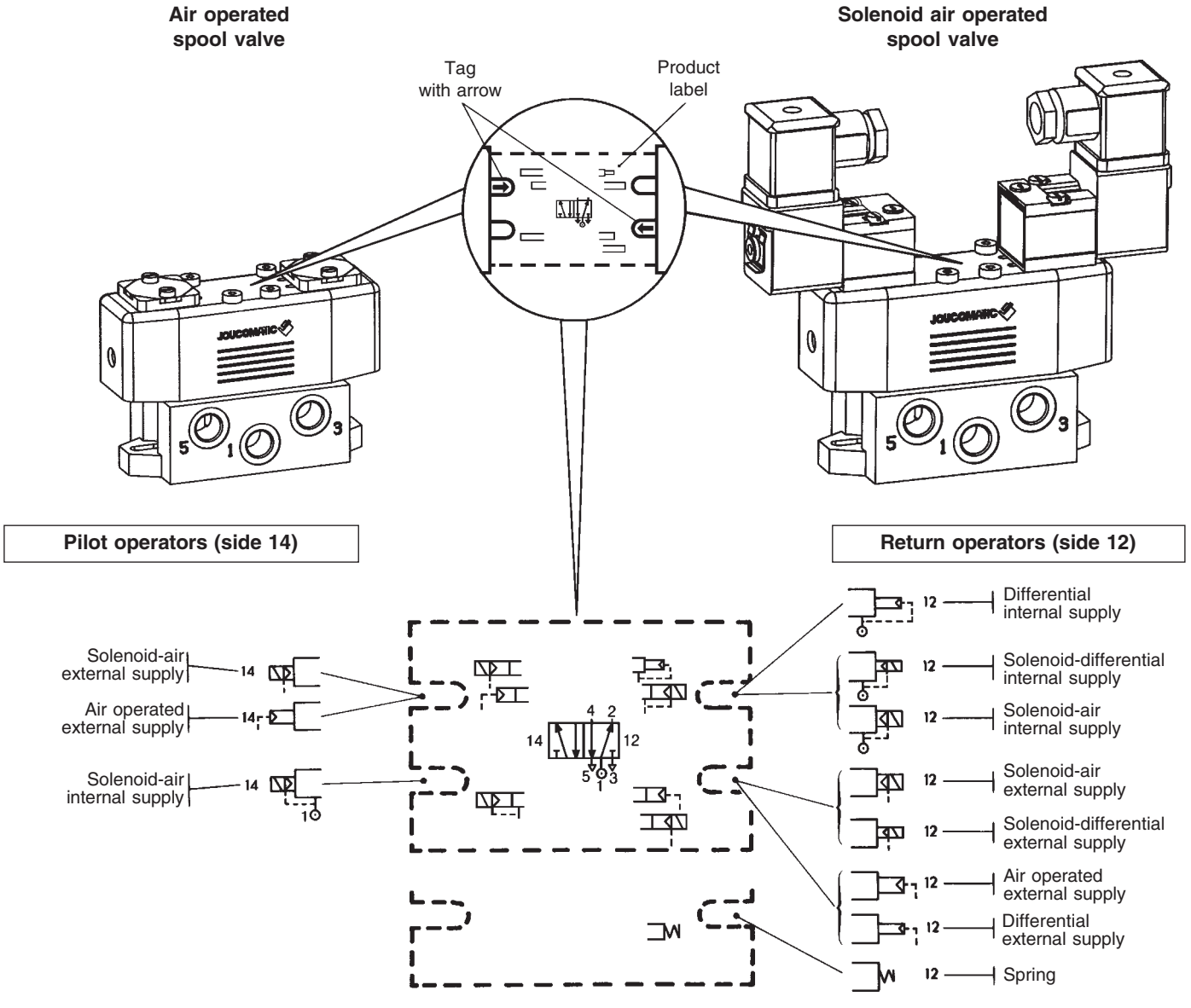
5/2-5/3
ports / positions

SPECIFICATIONS

FLUID	: Air or neutral gas, filtered, lubricated or not
PRESSURE	: – 0,950 to +12 bar (can be used with vacuum)
AMBIENT TEMPERATURE	: –10°C, +60°C
FLOW (Qv at 6.3 bar)	: 2800 l/min (ANR)
FLOW COEFFICIENTS	
- conforming to ISO 6358	: C = 1.136 x 10^{-7} m^3/s.Pa (sonic conductance) b = 0.22 (absolute static pressure)
- conforming to NF E29312	: KV = 37.5 (l/min)
LIFE	: 30 millions of cycles (in normal operating conditions)
BASE	: ISO 5599/01 - Size 2 - AFNOR NF E49080
PORTS	: By subbases G 3/8 - G 1/2
SUBBASES	: Single subbases ISO/AFNOR NF E49085 Joinable subbases ISO/VDMA 24345 Joinable subbases with integrated functions MULTIPOL Islands or BUSLINK

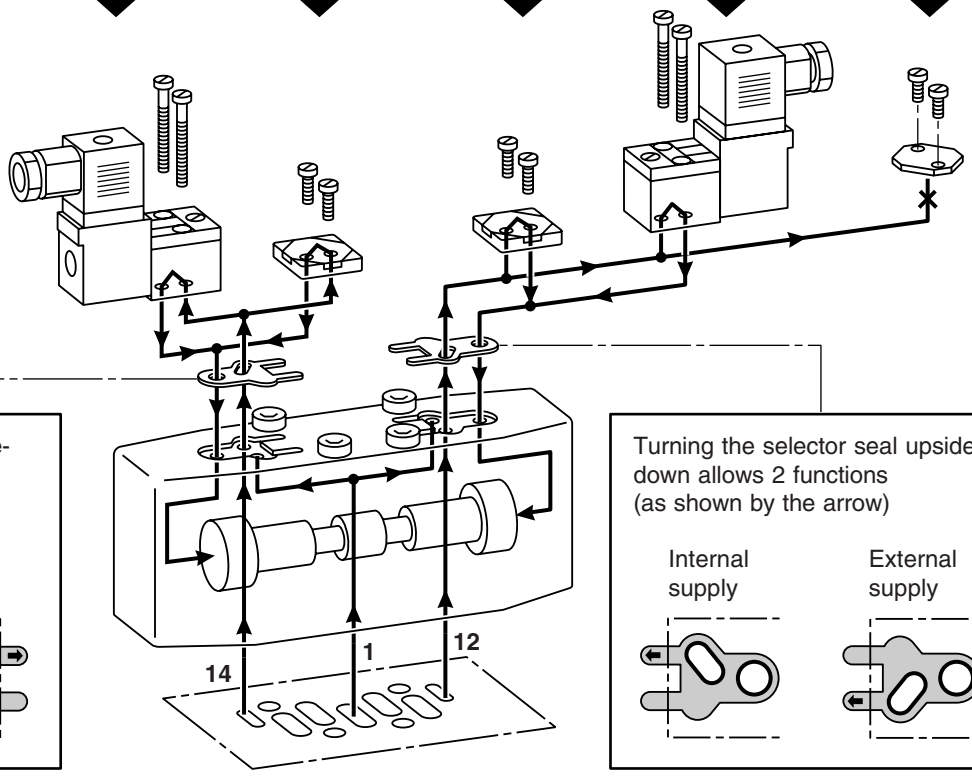
MULTIFUNCTION

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.



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 (the components below are also available for ISO 3 series 543).

	FUNCTIONS		Pilot		Return			
	Symbols	Pilot (14) Return (12)	14	14	12 12	12 12	12	
5/2		Air operated Spring return		●			●	
		Air operated Differential return		●	●			
		Air operated Air return		●	●			
		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 **881 00 074**	Interface **881 00 074**	Solenoid valves **189-190** or **192**	Blanking plate **881 00 073**	



Turning the selector seal upside-down allows 2 functions (as shown by the arrow).

Internal supply

External supply

Turning the selector seal upside-down allows 2 functions (as shown by the arrow)

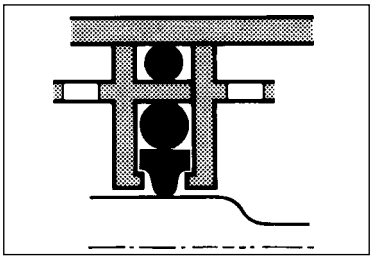
Internal supply

External supply

5

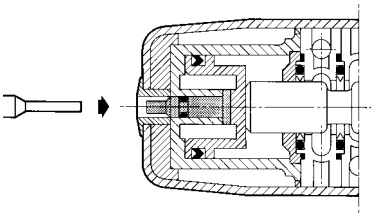
USE WITH NON LUBRICATED AIR

The 542/PH - ISO2 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.

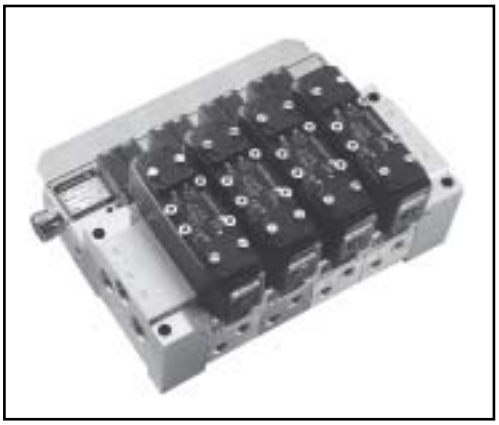


EASY INSTALLATION

ASCO/JOUCOMATIC markets a complementary range of components simplifying the installation of valves ISO 2:

- Single subbase with side ports or bottom ports
- Joinable subbases with bottom ports
- Side connection joinable subbase coupling unit with integral wiring and functions
- Islands can be supplied with 4 to 8 monostable or bistable ISO 2 spool valves.
  Systems designed for electrical connection to a PLC by multi-core cable (MULTIPOL - see P585) (1)
  or field bus (BUSLINK - see P589) (2)

Numerous accessories complete these systems.



(1)

(2)

MULTIFUNCTION SPOOL VALVE
solenoid air operated
ISO 5599/01 - Size 2

5/2-5/3
ports / positions

SPECIFICATIONS

FLUID : Air or neutral gas, filtered, lubricated or not
PRESSURE : +3 to +10 bar (with internal supply to pilot)
+3 to +12 bar (with solenoid valve series 192)
– 0.950 to +12 bar (with external supply to pilot)
Can be used with vacuum – 0.950 bar maxi
PILOT PRESSURE : See table below
TEMPERATURE AMBIANTE : – 10°C, +60°C
FLOW (Qv at 6.3 bar) : 2800 l/min (ANR)
FLOW COEFFICIENTS
- conforming to ISO 6358 : C = 1.136 x 10^{-7} m^3/s.Pa (sonic conductance)
b = 0.22 (absolute static pressure)
- conforming to NF E29312 : KV = 37.5 (l/min)
RESPONSE TIME : See table below
LIFE : 30 millions of cycles (in normal operating conditions)
BASE : ISO 5599/01 - Size 2 - AFNOR NF E49080
PORTS : By subbases G 3/8 - G 1/2
SUBBASES : Single subbases ISO/AFNOR NF E49085
Joinable subbases ISO/VDMA 24345
Joinable subbases with integrated functions
MULTIPOL Islands or BUSLINK

1 = Pressure	12 = Return
2-4 = Outlets	14 = Pilot
3-5 = Exhausts	

CONSTRUCTION

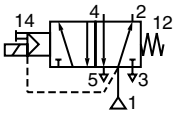
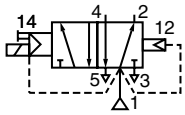
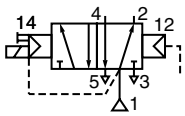
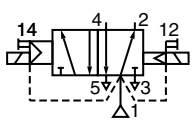
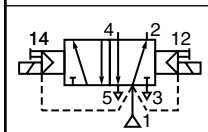
Painted steel cover
Pilot and return assembly : acetal resin (POM)
Sealing nitrile (NBR) and polyurethane (PUR)
Internal parts : acetal resin (POM), light alloy
Multifunction pilot by selector seal (see page P570-20)
Without or with manual testers checking the position of the spool

ELECTRICAL CHARACTERISTICS OF PILOTS

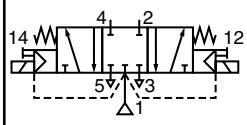
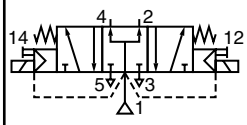
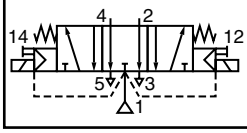
Type of solenoid valve		Voltages	Consumption Inrush	Consumption Hold	Insulation class	Protection degree	Electrical connection
Series 189	~	24V-115V-230V-50 Hz	6 VA	3,5VA(2,5W)	F	IP 65	Connecter rotatable x 180° CM 8 (Pg 9P)
	=	24V	2,5 W				
Series 190	~	24V-48V-115V-230V-50 Hz	9 VA	4VA(3W)	F	IP 65	Connector ISO 4400 rotatable x 90° - CM 10 (Pg 11P) with simplified connection
	=	12V-24V-48V-110V	3 W				

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

CHOICE OF EQUIPMENT 5/2

5/2 FUNCTIONS Symbols	Pilot (14) Return (12)	Response time (ms) Ener-gized	 De-ener gized	Pressure of the pilot fluid (in bar) min.	 max.	2 CODES VALVE WITHOUT manual tester	 WITH manual testers	+ Quantity & code SOLENOID PILOT Manual override: ▼ : impulse
	Solenoid-air pilot - Spring return	30	75	3	10	**542 92 023**	**542 92 006**	
	Solenoid-air pilot - Differential return	40	60	3	10	**542 92 024**	**542 921 007**	+1x **190 00 022** with connector (LED) **190 60 005** with M12 connection **190 00 018** without connector
	Solenoid-air pilot - Air operated return	20	-	1,5	10	**542 92 025**	**542 921 008**	
	Solenoid-air pilot - Solenoid differential return	20	-	3	10	**542 92 026**	**542 92 009**	+2x **190 00 022** with connector (LED) **190 60 005** with M12 connection **190 00 018** without connector
	Solenoid-air pilot and return	20	-	1,5	10	**542 92 027**	**542 92 010**	

CHOICE OF EQUIPMENT 5/3

5/3 Symbols	Functions	Response time (ms) Energized	Response time (ms) De-energized	Pressure of the pilot fluid (in bar) min.	Pressure of the pilot fluid (in bar) max.	2 CODES VALVE WITHOUT manual tester	2 CODES VALVE WITH manual testers	+ Quantity & code SOLENOID PILOT Manual override: ▼ : impulse
	Pressure held **W1** Solenoid-air operated	30	55	2,5	10	**542 92 028**	**542 92 011**	
	Pressure applied **W2** Solenoid-air operated	30	55	2,5	10	**542 92 030**	**542 92 014**	+ 2x **190 00 022** with connector (LED); **190 60 005** with M12 connection; **190 00 018** without connector
	Pressure release **W3** Solenoid-air operated	30	55	2,5	10	**542 92 029**	**542 92 012**	

OPTIONS

SOLENOID PILOTS

- Solenoid valve pilot 3/2 series 192 in 3 versions : 1-standard 2-with solenoid head and waterproof metal enclosure (see P592) 3-complying with European standards EEx "**d**","**m**" or "**me**" for use in explosive atmospheres (see P595)
- Solenoid valve series 189 certified EEx "**m**" (see P593)
- Solenoid valve intrinsically safe (consult us)
- Solenoid valves series 189 - 190 with double pulse coil (see P514)
- Connector with cable 2m long (see P515)
- Connector with transil protection (see P515-4)
- Solenoid valve with plug and built-in visual control and protection :

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

Type of solenoid valve	(M)	**CODE** solenoid valve **without** connector	**CODE** (~ / =) 24V	48V	115V	230V
189 NC	●	**189 00 002**	**881 22 405**	**881 22 406**	**881 22 407**	**881 22 410**
190 NC	×	**190 00 013**	**881 22 603**	**881 22 604**	**881 22 605**	**881 22 608**
	●	**190 00 014**				
	▼	**190 00 018**				
192 NC (1)	×	**192 00 022**				
	●	**192 00 023**				
	▼	**192 00 024**				

(M) Type of manual override on pilot(s) : × : without ● : screwdriver ▼ : impulse

(1) Solenoid valve series 192 - 3/2 NC - Ø 2.1mm with exhaust in subbase

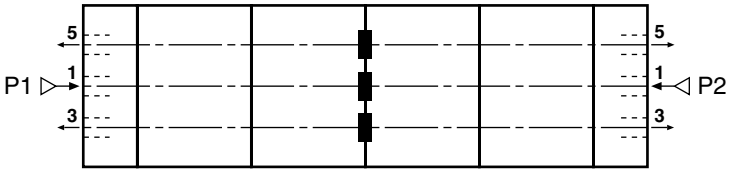
- Monostable or bistable spool valve with a central Ø M12 electrical connector (5 pins)

SUBBASES AND ACCESSORIES : see next pages

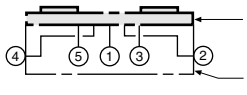
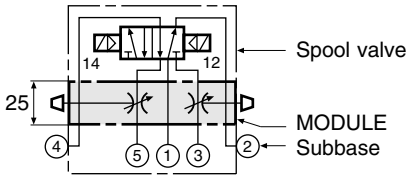
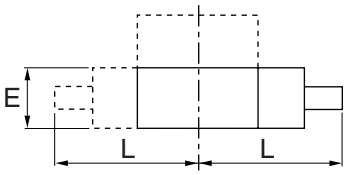
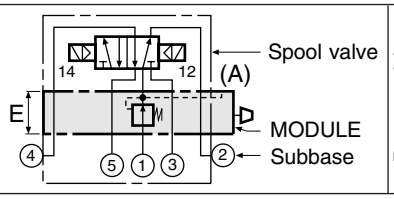
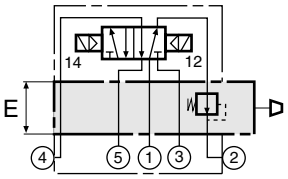
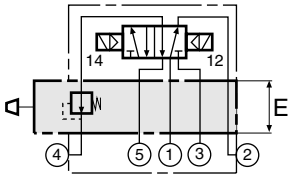
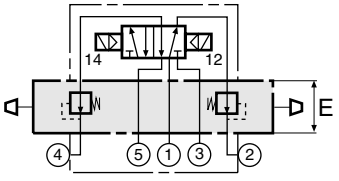
SUBBASES ISO 2

DESCRIPTION - TYPE			CODES
Single subbases ISO/AFNOR	Single subbase with side port	G 3/8	**355 00 041**
		G 1/2	**355 00 042**
	Single subbase with bottom port G 3/8		**355 00 085**
Joinable subbases ISO/VDMA with **bottom** port	Joinable subbases with bottom port G 3/8 (port orifices 12 and 14 with side port G 1/8)		**355 00 169**
	Set of 2 end plates ; ports 1-3-5 : G 1/2 (supplied with 3 plugs)		**355 00 170**
	Set of 3 plugs for main pressure supply (1) and exhausts (3-5) for 2 different supply pressures (see below)		**881 35 522**
Joinable subbases with **side** port			(see page P570-27)
Set of transfer plate and connections for joinable subbases			(see page P570-29)

The concept of mounting plug sets enables joinable subbases to be supplied with 2 different pressures.



ACCESSORIES ISO 2

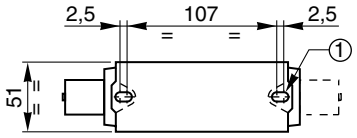
Designation			Symbol	CODES
Blanking plate to cover interface ISO2 This plate allows later assembly with a spool valve.				**881 35 518**
Flow regulator sandwich This unit, fitted between the subbase and the valve, incorporates 2 flow regulators in the exhaust ports 3 and 5. Flow regulators can be used to control the speed of a double acting cylinder. Weight : 0,230kg				**346 00 477**
Sandwich pressure regulator module This module, which is placed between a subbase and a spool valve, is designed to regulate the pressure and the port according to: - Adjustable pressure: 0.5 to 10 bar - G1/8 (A) port on top for pressure gauge connection - Locking adjustment knob of "Pull-Turn-Push" type  E = 60mm L =180mm	**on port 1** (supply pressure)	regulator flow at 6 bar: 1000 l/min weight: 1.680kg		Button side 12: **346 00 475** Button side 14: **346 00 472**
	on port 2	regulator flow at 6 bar: 1400 l/min weight: 1.680kg		**346 00 461**
	on port 4	regulator flow at 6 bar: 1400 l/min weight: 1.680kg		**346 00 462**
	on ports 2 and 4	regulator flow at 6 bar: 1400 l/min weight: 2.400kg		**346 00 463**
Gauge Ø40 (0 - 12 bar)				**343 00 014**
G1/8 bracket connection for pressure gauge mounting				**881 00 617**

5

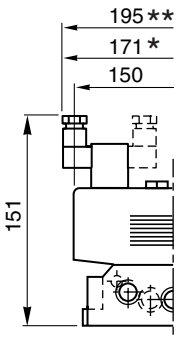
DIMENSIONS AND WEIGHTS

VALVES ON **SINGLE** SUBBASE

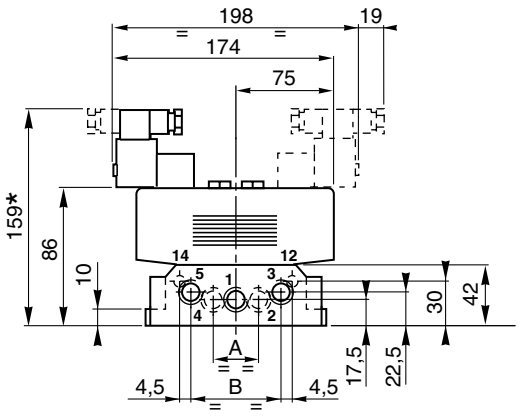
Side ports



With pilots 189



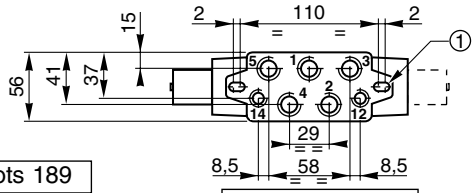
With pilots 190



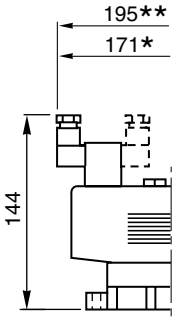
CODES of subbases	Port orifices			Dimensions (mm)	
	12-14	1-2-4	3-5	A	B
355 00 041	G 1/8	G 3/8	G 3/8	32	63
355 00 042	G 1/8	G 1/2	G 1/2	36	67

Total weight (kg)			
with 1 pilot		with 2 pilots	
189	190	189	190
1.20	1.27	1.35	1.42

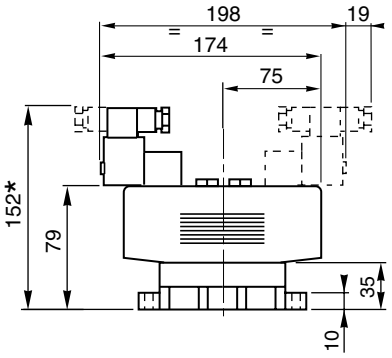
Bottom ports



With pilots 189



With pilots 190



(1) Mounting: 2 holes Ø 5.5

CODES of subbases	Port orifices		
	12-14	1-2-4	3-5
355 00 085	G 1/8	G 3/8	G 3/8

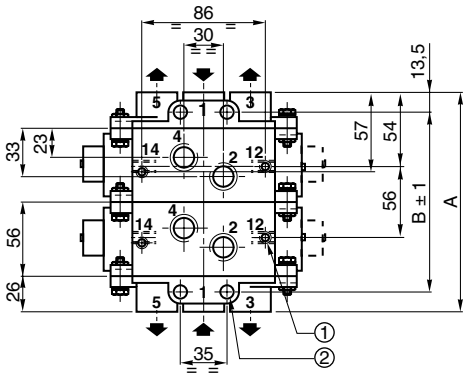
Total weight (kg)			
with 1 pilot		with 2 pilots	
189	190	189	190
1.2	1.35	1.3	1.5

VALVES ON **JOINABLE** SUBBASES WITH BOTTOM PORTS ISO/VDMA 24345

(1) Bottom mounting : 4 Ø M6
(2) Front mountinge : 4 Ø 9

	CODE	Port orifices		
		12-14	2-4	1-3-5
Subbase	**355 00 169**	G 1/8	G 3/8	–
2 End plates	**355 00 170**	–	–	G 1/2

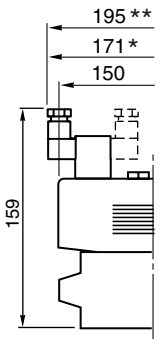
Set of end plates supplied with 3 plugs G 1/2 (for 1-3-5)



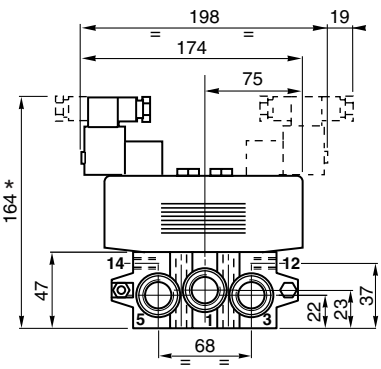
Number of subbases	A	B±1	Weights (kg) Valves with 2 pilots + subbases + end plates	
			Pilot 189	Pilot 190
3	220	193	4.5	4.6
4	276	249	5.9	6
5	332	305	7.4	7.5
6	388	361	8.9	9
7	444	417	10.4	10.7
8	500	473	11.5	12.2

Weight pilot : 1 x 189 = 0.120 kg - 1 x 190 = 0.180 kg

With pilots 189



With pilots 190



* : + 1 x 15 mm for plug removal
** : + 2 x 15 mm for plugs removal

SUBBASE SYSTEM

Metalic joinable subbases with **side ports** G 1/2 with accessories - Series 355 for valves to **ISO 5599/01 - Size 2**

GENERAL

This subbase system comprises joinable subbases and accessories with 3 principal characteristics.

- The equipment has a **standard** interface complying with the international standard ISO 5599/1, size 2, so that spool valves series 542 can be fitted.
- Subbases for **side ports**.
- The subbases are fitted with selector plates which mean that various piping arrangements and inter-connections can be selected.

CONNECTION POSSIBILITIES

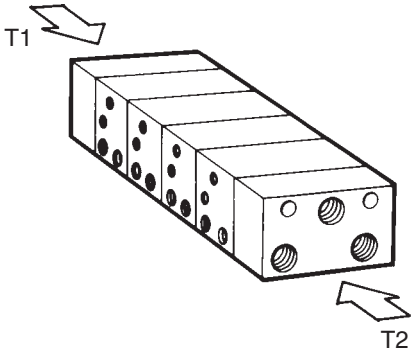
These joinable subbases with side ports offer many advantages:

- Various piping possibilities due to a large number of port connections.
- Simple assembly in panels due to an improved accessibility to the ports.
- Simple maintenance.
- A reduction in costs due to the removal of pivoting mounting chassis and a reduction in the number of fittings.
- Possibility of mounting directly onto the body of the machine.
- A reduction in lengths of tube giving improved flow rates and improved response times.

These bases allow piping to outlet ports (2, 4) and pilot ports (12, 14) on both side faces, as shown below.

The end plates allow the piping of the supply (1) and exhausts (3,5), in addition, the pilots (12,14) can be piped into the end plates.

PIPING THROUGHT THE END PLATE



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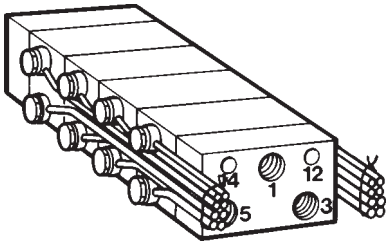
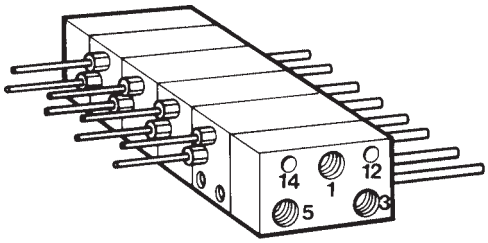
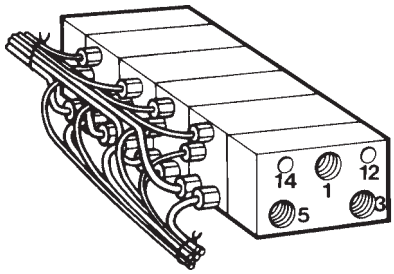
SAMPLE PIPING ARRANGEMENTS



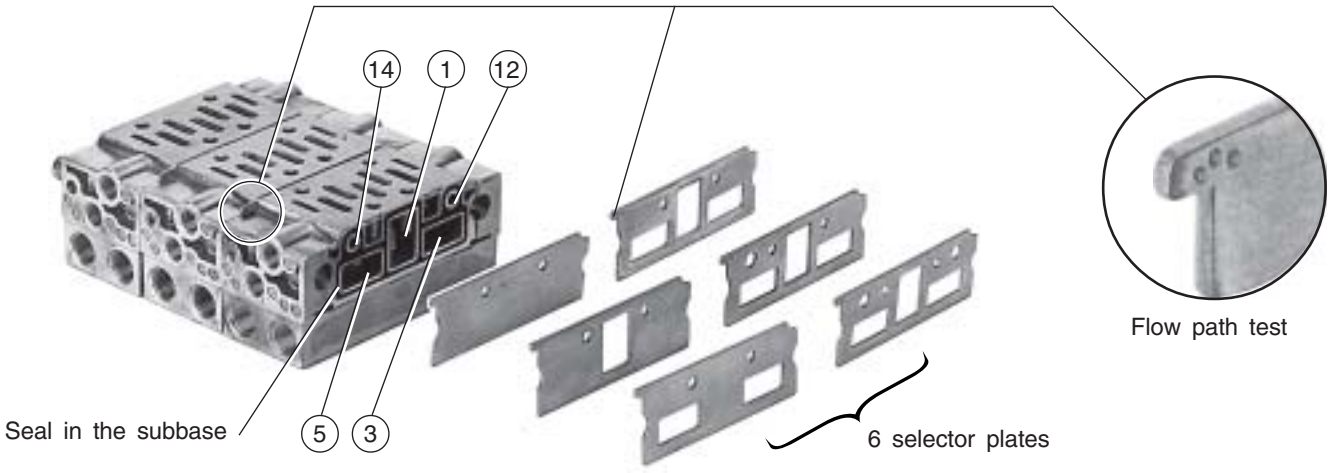
This arrangements allows the use of rotatable fitting



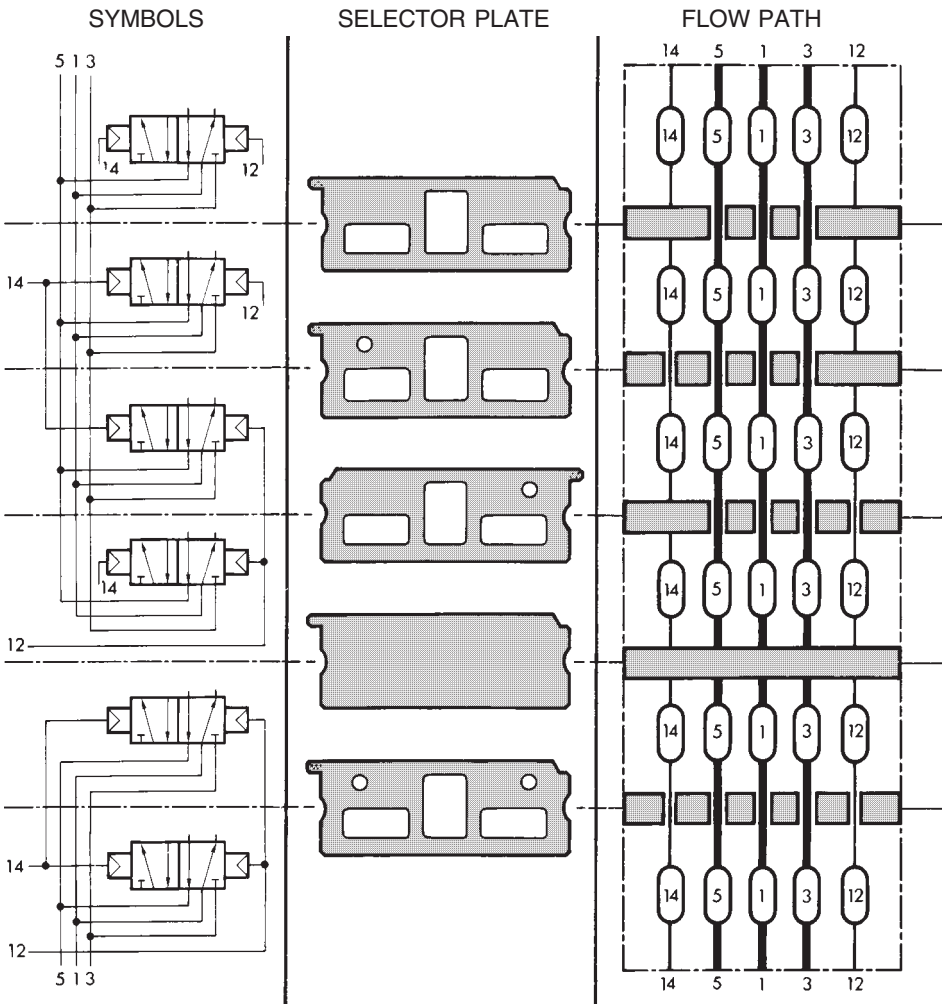


POSSIBLE FLOW PATHS

The subbases include 5 flow paths (1-3-5-12-14), all of which can be connected through the end plates of each manifold assembly.



POSSIBLE FLOW PATHS



The pilots are piped separately to each subbase (plate 1-3-5 supplied with each subbase).

Pilot on side 14 is connected between 2 or more subbases.

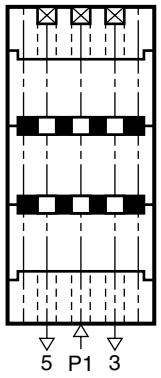
Return on side 12 is connected between 2 or more subbases (uses the same plate as the one above).

Blanking plate (allows a manifold to be used with 2 different supply pressures).

Allows the inter-connection of both pilots 12, 14 between 2 or more valves.

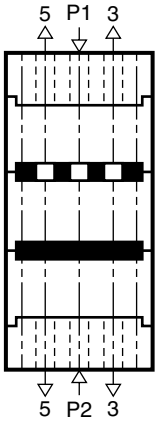
PIPING OF SUPPLY AND EXHAUSTS TO THE END COVERS

STANDARD ASSEMBLY
Supply and exhausts to 1 side plate.



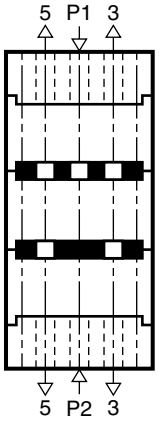
Selector plates supplied as standard allow the assembly as shown above.

Assembly with 2 different pressures and with the exhaust piped separately to both end plates.



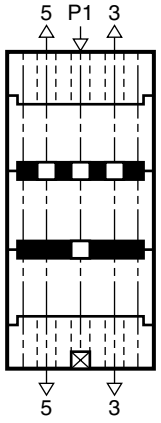
The full selector plate delivered with end plate, allow the assembly as shown above.

Assembly with 2 different pressures and with the exhaust piped together to both end plates.



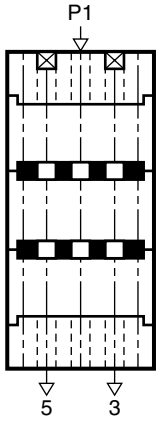
For this assembly a selector plate with connections between 3, 5 is necessary. **(881 35 511)**

Assembly with 1 supply on 1 plate but with exhausts from the 2nd end plate.



For this assembly a selector plate allows flow through port 1 if required. The supply port in the second plate must be plugged.

Assembly with the supply port in 1 end plate and the exhaust from the other end plate.



Selector plates supplied as standard with subbases, and the 3 plugs G 1/2 attached with end plates, allow the assembly as shown above.

SUBBASES ISO 2

	Description	Parts list	Ports 1-3-5	Ports 2-4	Ports 12-14	CODES
ISO 2	Joinable subbases with side ports	1 subbase + 2 seals 1 selector plate (connects 1-3-5) 2 G 1/2 plugs 1 G 1/8 plug 2 assembly diabolos	—	G 1/2	G 1/8	**355 00 102**
	Set of 2 end plates	2 end plates 1 blank selector plate 3 G 3/4 plugs + 2 G 1/8 plugs 2 assembly diabolos	G 3/4	—	G 1/8	**355 00 101**
	Blank selector plate (no flow)					**881 35 506**
	Selector plate (connects port 1)					**881 35 513**
	Selector plate (connects ports 3, 5)					**881 35 511**
	Selector plate (connects ports 1 - 3 - 5)					**881 35 507**
	Selector plate (connects ports 1 - 3 - 5 and 1 pilot 12 or 14)					**881 35 508**
	Selector plate (connects ports 1 - 3 - 5 and 2 pilots 12 and 14)					**881 35 509**

ACCESSORIES ISO 2 (see page P570-24)

SET OF TRANSFER AND CONNECTIONS

- **Set of transfer plates and connections to join ISO-VDMA joinable subbases of different sizes :**
  ISO 1 - ISO 2 set including :
  - A transfer module to join ISO-VDMA joinable subbases with ISO 1 and ISO 2 **bottom** ports, and to connect their supply pressure (1) and exhaust (3-5) ports.
  - One end plate ISO 1 (ports 1 - 3 - 5)
  - One end plate ISO 2 (ports 1 - 3 - 5)

  ISO 2 - ISO 3 set including the same parts as above but appropriate to the ISO 2 - ISO 3 transfer.

- **Set of transfer plates and connections to put together different sizes ISO joinable metalic subbases :**
  ISO 2 - ISO 1, set including :
  - A transfer module to join ISO 2 and ISO 1 subbases.
  - One end plate ISO 2 (ports 1 - 3 - 5) : G 3/4
  - One end plate ISO 1 (ports 1 - 3 - 5) : G 3/8

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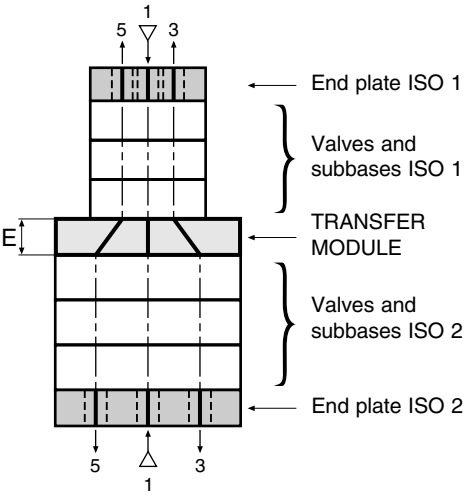
SELECTION DU MATERIEL

DESIGNATION		CODES	E (mm)
Set of transfer plate and connections for ISO/VDMA joinable subbases with **bottom** ports	**ISO 1 - ISO 2**	**355 00 199**	20
Set of transfer plate and connections for ISO/VDMA joinable subbases with **bottom** ports	**ISO 2 - ISO 3**	**355 00 196**	32
Set of transfer plate and connections for joinable **metalic** subbases with **side port**	**ISO 2 - ISO 1**	**355 00 390**	30

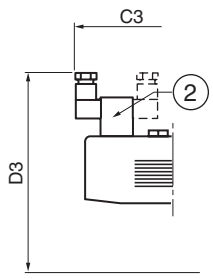
*Possibility of joining the ISO 2 subbase with the ISO 1 joinable polyamid subbase with side ports **355 00 388***



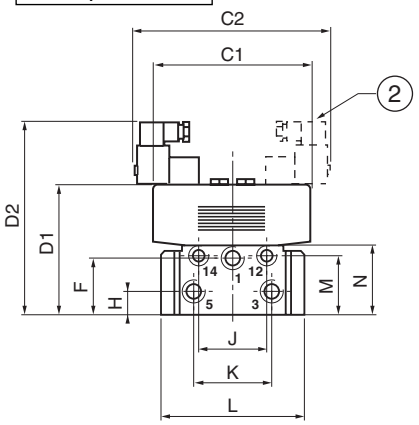
DIMENSIONS AND WEIGHTS ISO 2

Ports 1-3-5 : G 3/4
Ports 2-4 : G 1/2
Ports 12-14 : G 1/8

With pilots 189



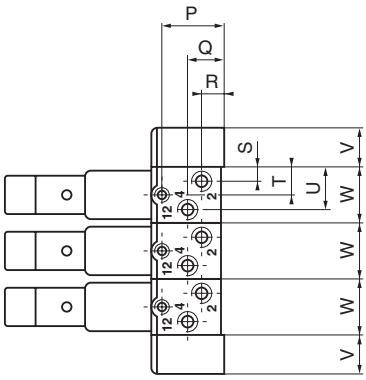
With pilots 190

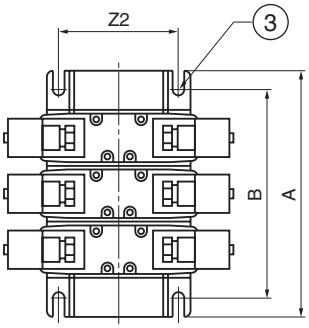


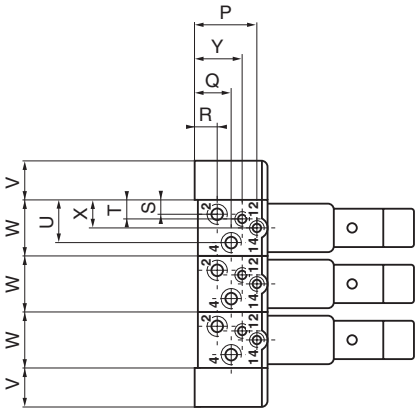
1. Pilot 190
2. Pilot 189
3. Mountings : 4 slots Ø 8,5 depth 72

Number of subbases	A (mm)	B (mm)	Weight in kg
2	192	168	5,400
3	248	224	6,680
4	304	280	8,060
5	360	336	9,440
6	416	392	10,820
7	472	448	12,200
8	528	504	13,580

Weight =
subbases + end plates + valves + 2 pilots 189

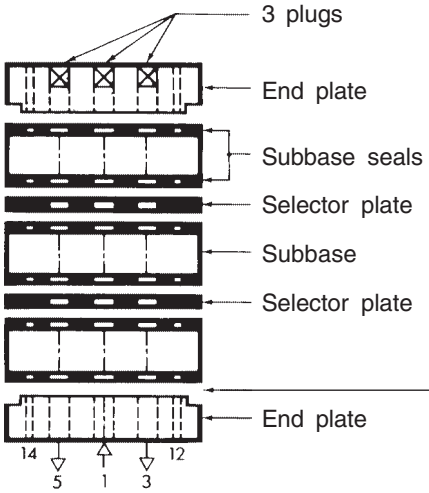






	C1	C2	C3	D1	D2	D3	F	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z_2
ISO 2	150	198	171	126	199	194	62	30	62	62	126	72	80	68	36	17	15	18	41	40	56	38	64	104

ASSEMBLY OF SUBBASES



The blank selector plate supplied with the ISO 2 end plate allows an assembly with 2 different supply pressures.

When assembling a manifold of ISO 2 subbases, don't use the last subbase selector plate with the end plate.

CONNECTION

End plates and subbases are connected together using a system of diabolos and grub screws.