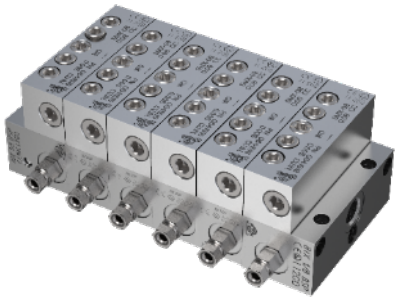
CHARACTERISTICS

- THREE TYPES OF THREADING AVAILABLE: BSP, NPTF, SAE
- SMX: UP TO 500 BAR SMO: UP TO 400 BAR
- OIL AND GREASE FUNCTION
- CE AND ATEX MARKINGS
- BASES ALWAYS SUPPLIED WITH STANDARD SEALS AND MOUNTING SCREWS
- THE TWO OUTPUTS ARE COMBINED BY SUBSTITUTING THE ADAPTER.
- EXHAUST-AIR VALVES INCORPORATED IN BOTH SIDES OF THE BASE
- SAFE AND CONTROLLED LUBRICATION
- EASY AND FLEXIBLE ASSEMBLY WITH LOW MAINTENANCE COSTS
- POSSIBILITY OF REPLACING THE METERING ELEMENTS WITHOUT BLOCKING THE PIPEWORK

APPLICATIONS

- ANY OIL AND GREASE LUBRICATION SYSTEM

SMX/SMO MODULAR PROGRESSIVE DIVIDERS



The SMX/SMO modular dividers are capable of guaranteeing precise lubrication while maximising the efficiency of lubrication systems.

The divider consists of two main parts:

- **THE BASE** (consisting of a minimum of three elements)

- **THE METERING VALVES** (available with both a **single outlet** as well as **a double one**).

To maximize the performance of the plant, it is crucial to use **electrical monitoring elements** that detect malfunctioning or system blockage.

Thanks to its **modularity**, the system can be easily expanded and replacement of metering elements can occur without removing the pipework, thereby guaranteeing low maintenance costs. The modularity of the dividers furthermore allows you to bundle lubrication points according to system requirements.

The modular system consists of two main components: the base and the metering elements.

The modular progressive divider is available in two sizes:

SMO: Miniature (Mini)

SMX: Standard

GENERAL CHARACTERISTICS FOR LUBRICANTS AND MAXIMUM OPERATING PRESSURE:

	SMX	SMO
OIL	Mineral oil viscosity 32 ÷ 6000 cSt	Mineral oil viscosity 32 ÷ 6000 cSt
GREASE	EP type - without a thickener Viscosity between 000 ÷ NLGI 2	EP type - without a thickener Viscosity between 000 ÷ NLGI 2
NUMBER OF STROKES/MINUTE	Max. 500 for the dosing element without a sensor, oil viscosity max. 220 cSt	Max. 300 for the dosing element without a sensor, oil viscosity max. 220 cSt
OPERATING PRESSURE	Max 500 bar	Max 400 bar

Note: the pressure is directly proportional to the number of strokes

The value of viscosity for oil and grease are always linked to the operating temperature

TECHNICAL INFORMATION

				OIL 32 CST		GREASE NLGI 2			
VERSION	**TYPE**	**OIL CST (*)**	**GREASE NLGI (*)**	**MIN. PRESSURE BAR (PSI)**	**MAX PRESSURE BAR (PSI)**	**MIN. PRESSURE BAR (PSI)**	**MAX PRESSURE BAR (PSI)**	**TEMP. °C (°F)**	**VITON O-RING**
STANDARD	SMX 0641516 ÷ 0641825	68÷ 6000	000 ÷ 2	15 (220.5)	250 (3675)	20 (294)	400 (5880)	-25 ÷ +80 (-13 ÷ + 176)	
	SMO 0641716÷ 0641747								
LOW PRESSURE	SMX 0641516L÷ 0641825L	-	00 ÷ 2	10 (147)	150 (2205)	15 (220.5)	250 (3675)	-25 ÷ + 100 (-13 ÷ + 212)	
	SMO 0641716L÷ 0641747L								
HIGH PRESSURE	SMX 0641516P÷ 0641825P	32 ÷ 220	-	20 (294)	400 (5880)	25 (367.5)	400 (5880)	-15 ÷ + 50 (5 ÷ +122)	X
NPT OUTLET	SMX 0641516U÷ 0641825U	68 ÷ 6000	000 ÷ 2	15 (220.5)	250 (3675)	20 (294)	400 (5880)	-15 ÷ + 80 (5 ÷ +176)	X

(*) The value of viscosity for oil and grease are always linked to the operating temperatures

THE BASES

1. INITIAL BASE

2. INTERMEDIATE BASE

3.END BASE

THE BASE CONSISTS OF A MINIMUM OF **THREE ELEMENTS**.

INITIAL, INTERMEDIATE AND FINAL BASE

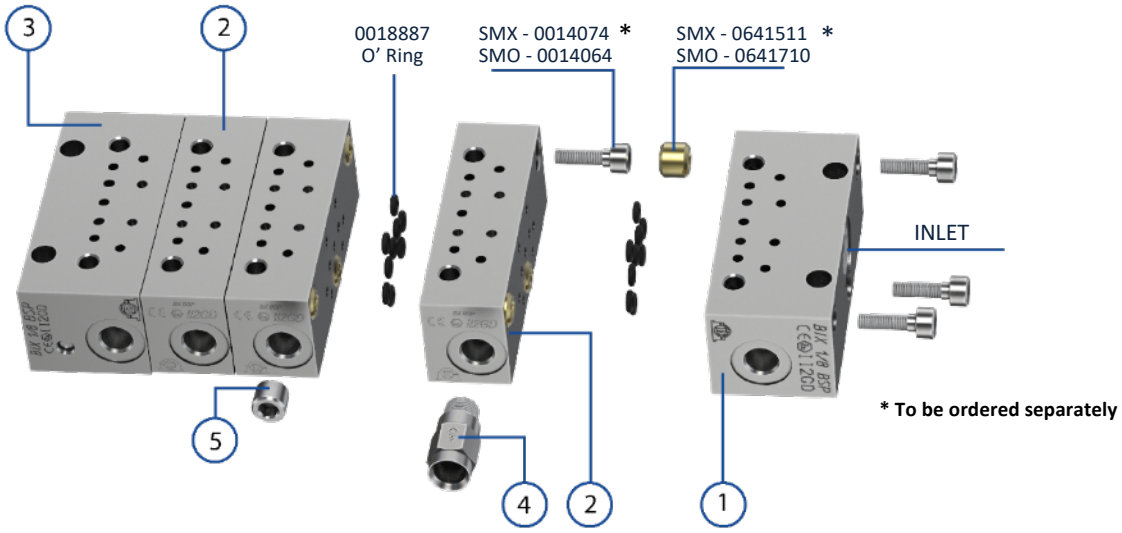
For assembling, it is essential to know the number of outlets required to lubricate the system in order to identify the number of useful elements.

The screws are not included; it is recommended that you buy the BASE AND ELEMENT ASSEMBLY KIT (part number **3140770 composed of** no. 3 screws for the assembly of the base- no. 3 threaded grub screws - no. 2 screws for the elements)

If you do not have special requirements, it is possible to order assembled bases that are already mounted (see p. 3).

The elements can be assembled easily, without having to detach the pipework.

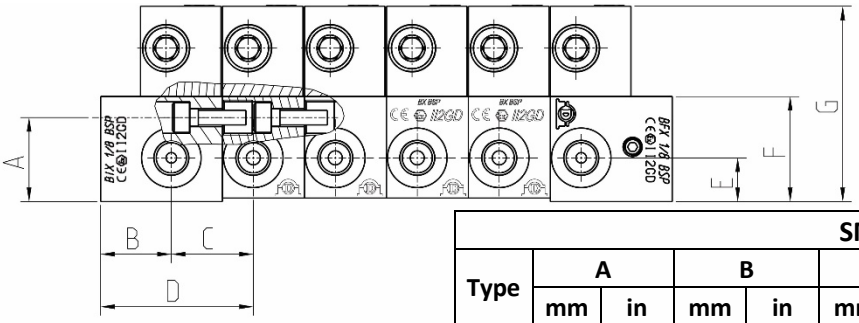
During assembly, pay ATTENTION to the O-rings situated on the side of the base.



POSITION	DESCRIPTION	SMO		SMX			
	Inlet thread	1/8 BSP	1/8 NPTF	1/4 BSP	1/4 BSP(1)	1/4 NPTF	7/16-20 UNF
	Outlet thread	1/8 BSP	1/8 NPTF	1/8 BSP	1/4 BSP(1)	1/8 NPTF	7/16-20 UNF
1	Initial base	**0641711**	**0643562**	**0641512**	**0642800**	**0643541**	**0643800**
2	Intermediate base	**0641712**	**0643563**	**0641513**	**0642802**	**0643542**	**0643801**
3	End base	**0641713**	**0643564**	**0641515**	**0642804**	**0643561**	**0643802**
4	Check valve	**0092335**	**0641564**	**092335**	**0641564**	**0641564**	**0642029**
5	Plug	**3232098**	**3232095**	**3232098**	**0519061**	**3232095**	**0642031**

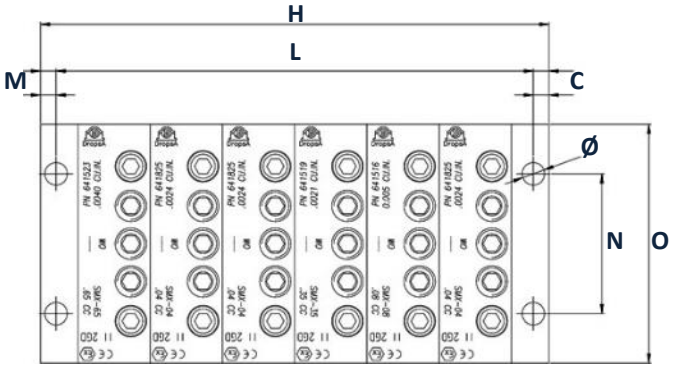
(1) Special versions only on request

DIMENSIONS



SMO - SMX DIMENSIONS														
Type	A		B		C		D		E		F		G	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
SMO	18.5	0.72	16	0.62	20.60	0.80	36.6	1.44	12.5	0.72	30	1.17	50	1.9
SMX	20	0.78	20.2	0.78	23.42	0.91	43.6	1.72	12.5	0.72	30	1.17	56	2.2

SMX DIMENSIONS 1/4 BSP outlet						
Type	B		D		E	
	mm	in.	mm	in.	mm	in.
SMX	19.3	0.76	42.72	1.68	11.5	0.45



DIMENSIONS SMO-SMX							
Type	M		N		O		Ø
	mm	in.	mm	in.	mm	in.	
SM0	4,2	0.16	42	1.63	68	2.6	6
SMX	5,0	2	44,45	1.73	76	2.9	7.2

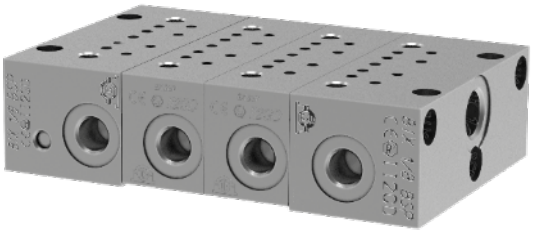
SMX DIMENSIONS					SMO DIMENSIONS			
No. of elements	B		A		B		A	
	Centre to centre distance of the fixing holes [mm]	Centre to centre distance of the fixing holes [inches]	Total lenght [mm]	Total lenght [inches]	Centre to centre distance of the fixing holes [mm]	Centre to centre distance of the fixing holes [inches]	Total length [mm]	Total length [inches]
3	83.22	3.28	93.02	3.66	72.4	2.85	80.4	3.17
4	106.64	4.2	116.44	4.58	93.2	3.67	101.2	3.98
5	130.06	5.12	139.86	5.51	114	4.49	122	4.8
6	153.48	6.04	163.28	6.43	134.8	5.31	142.8	5.62
7	176.9	6.96	186.7	7.35	155.6	6.13	163.6	6.44
8	200.31	7.89	210.11	8.27	176.4	6.95	184.4	7.26
9	223.73	8.81	233.53	9.19	197.2	7.76	205.2	8.08
10	247.15	9.73	256.95	10.12	218	8.58	226	8.9
11	270.57	10.65	280.37	11.04	238.8	9.4	246.8	9.72
12	293.99	11.57	303.79	11.96	259.6	10.22	267.6	10.54
13	317.41	12.5	327.21	12.88	280.4	11.04	288.4	11.35
14	340.83	13.42	350.63	13.8	301.2	11.86	309.2	12.17
15	364.25	14.34	374.05	14.73	322	12.68	330	12.99
16	387.67	15.26	397.47	15.65	342.8	13.5	350.8	13.81
17	411.09	16.18	420.89	16.57	363.6	14.32	371.6	14.63
18	434.5	17.11	444.3	17.49	384.4	15.13	392.4	15.45
19	457.92	18.03	467.72	18.41	405.2	15.95	413.2	16.27
20	481.34	18.95	491.14	19.34	426	16.77	434	17.09

APPLICATION EXAMPLES

DIVIDER ELEMENT VERSION	TYPE OF DIVIDER ELEMENT	APPLICATION
STANDARD	SMO - SMX	Standard version ideal for the majority of oil and grease installation and Air/Oil lub. systems.
LOW PRESSURE-L	SMO - SMX	Metering elements designed for installations with lubricants (grease) with solid additive (e.g. graphite, copper or silicone). L version has a particular clearance between the piston and the metering element body which allows the passage of the thick particles which won't be possible with the standard version.
HIGH PRESSURE - P	SMX	Metering elements for high pressure oil installations where there could be high counter-pressure at the lubrication point (e.g. gas compression plants). Accurate coupling between the metering element body and the piston has been designed to reduce the risk of internal leakage.
NPT - U OUTLET	SMX	Metering elements with upper outlet in NPT.

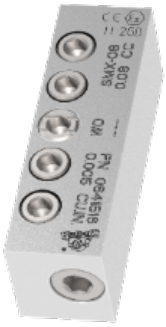
ASSEMBLED BASES

The assembled bases are supplied in a fully mounted state for easy ordering and installation by the customer.



SMO					SMX				
INLET/OUTLET THREAD			WEIGHT		INLET/OUTLET THREAD			WEIGHT	
N° elem	BSP	NPTF	Kg	Lb.	BSP	NPTF	SAE-UNF	Kg	Lb.
3	**0641763**	**0643543**	0.92	2.0	**0641583**	**0643523**	**0642703**	1.3	2.9
4	**0641764**	**0643544**	1.13	2.5	**0641584**	**0643524**	**0642704**	1.6	3.5
5	**0641765**	**0643545**	1.33	2.9	**0641585**	**0643525**	**0642705**	1.9	4.2
6	**0641766**	**0643546**	1.54	3.4	**0641586**	**0643526**	**0642706**	2.2	4.8
7	**0641767**	**0643547**	1.75	3.9	**0641587**	**0643527**	**0642707**	2.5	5.5
8	**0641768**	**0643548**	1.96	4.3	**0641588**	**0643528**	**0642708**	2.8	6.2
9	**0641769**	**0643549**	2.17	4.8	**0641589**	**0643529**	**0642709**	3.1	6.8
10	**0641770**	**0643550**	2.38	5.2	**0641590**	**0643530**	**0642710**	3.4	7.5
11	**0641771**	**0643551**	2.59	5.7	**0641591**	**0643531**	**0642711**	3.7	8.1
12	**0641772**	**0643552**	2.80	6.2	**0641592**	**0643532**	**0642712**	4.0	8.8
13	**0641773**	**0643553**	3.00	6.6	**0641593**	**0643533**	**0642713**	4.3	9.5
14	**0641774**	**0643554**	3.16	6.9	**0641594**	**0643534**	**0642714**	4.5	9.9
15	**0641775**	**0643555**	3.42	7.5	**0641595**	**0643535**	**0642715**	4.9	10.8
16	**0641776**	**0643556**	3.63	8.0	**0641596**	**0643536**	**0642716**	5.2	11.4
17	**0641777**	**0643557**	3.84	8.4	**0641597**	**0643537**	**0642717**	5.5	12.1
18	**0641778**	**0643558**	4.05	8.8	**0641598**	**0643538**	**0642718**	5.8	12.8
19	**0641779**	**0643559**	4.26	9.4	**0641599**	**0643539**	**0642719**	6.1	13.4
20	**0641780**	**0643560**	4.47	9.8	**0641600**	**0643540**	**0642720**	6.4	14.0

METERING VALVES



A minimum of three valves are required to build an assembly and can extend up to an unlimited number of elements.
The valves are available either with single outlet well as a double outlet (SAE and NPT).
In order to form the assembly in the most suitable manner, it is necessary to know the number of outlets required, the flow rate of each outlet, and to include the UltraSensor monitoring device to verify proper disbursement.
The installation takes place using the two mounting screws (to be ordered separately).
It is always possible to replace the valve with a different model without disconnecting the pipes or opening the bases.

SMO DIVIDER ELEMENTS			
Flow rate for outlet		1 or 2 outlets	
CC.	CU. IN.	Symbol	Part number
0.04	0.0024	SM0 04	**0641720**
0,08	0.005	SM0 08	**0641716**
0,16	0.010	SM0 16	**0641717**
0.25	0.015	SM0 25	**0641718**

SMX DIVIDER ELEMENTS			
Flow rate for outlet		1 or 2 outlets	
CC.	CU. IN.	Symbol	Part number
0.04	0.0024	SMX 04	**0641825**
0,08	0.005	SMX 08	**0641516**
0.16	0.010	SMX 16	**0641517**
0.25	0.015	SMX 25	**0641518**
0.35	0.021	SMX 35	**0641519**
0.40	0.025	SMX 40	**0641520**
0.50	0.030	SMX 50	**0641521**
0.60	0.036	SMX 60	**0641522**
0.65	0.040	SMX 65	**0641523**

BRIDGEVALVE

Thanks to the bridge plates, it is possible to transfer the flow rate of one metering valve to the next one.
Must be sorted based on the output side you want to add. There are three types of divider bridges, which coincide with the outlet: right bridge, left bridge or right/left bridge
The side of the bridge and reported directly on the piece with an arrow, indicating the output connected to the next.
For mounting position the bridge over the base and using the two screws supplied with the bridge element for attaching everything.
IMPORTANT: plug the outlets corresponding to the arrows on the bridge elements.

SMO DIVIDER ELEMENT VERSION with flow rate to the subsequent element					
LEFT		LEFT/RIGHT		RIGHT	
acronym	PART NO.	acronym	PART NO.	acronym	PART NO.
SMO 04L	**0641733**	SMO 04LR	**0641744**	SMO 04R	**0641738**
SMO 08L	**0641734**	SMO 08LR	**0641745**	SMO 08R	**0641739**
SMO 16L	**0641735**	SMO 16LR	**0641746**	SMO 16R	**0641740**
SMO 25L	**0641736**	SMO 25LR	**0641747**	SMO 25R	**0641741**

SMX DIVIDER ELEMENT VERSION with flow rate to the subsequent element					
LEFT		LEFT/RIGHT		RIGHT	
acronym	PART NO.	acronym	PART NO.	acronym	PART NO.
SMX 04L	**0641826**	SMX 04LR	**0641827**	SMX 04R	**0641828**
SMX 08L	**0641629**	SMX 08LR	**0641637**	SMX 08R	**0641621**
SMX 16L	**0641630**	SMX 16LR	**0641638**	SMX 16R	**0641622**
SMX 25L	**0641631**	SMX 25LR	**0641639**	SMX 25R	**0641623**
SMX 35L	**0641632**	SMX 35LR	**0641640**	SMX 35R	**0641624**
SMX 40L	**0641633**	SMX 40LR	**0641641**	SMX 40R	**0641625**
SMX 50L	**0641634**	SMX 50LR	**0641642**	SMX 50R	**0641626**
SMX 60L	**0641635**	SMX 60LR	**0641643**	SMX 60R	**0641627**
SMX 65L	**0641636**	SMX 65LR	**0641644**	SMX 65R	**0641628**

BYPASS ELEMENT

The bypass element has the same dimensions as a divider element, but without an internal piston, therefore without a metering system.
Its function is to create a reserve position where you can install a metering valve to increase the number of outlets.
The installation takes place using the two mounting screws (to be ordered separately.)
The bypass element can be mounted on a dosing group where there are at least three effective metering elements present.

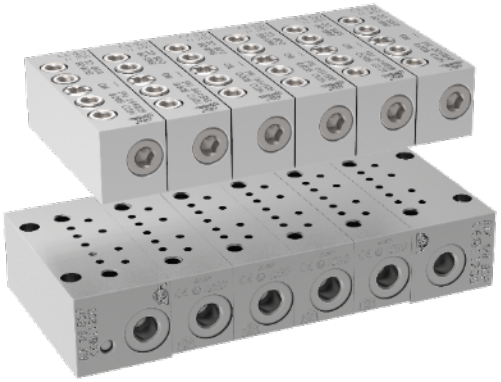
IMPORTANT: After installation, remember to plug the outlets.

DESCRIPTION	SMO	SMX
BY-PASS VALVE	**0641714**	**0641514**

ASSEMBLY

The assembly and of the metering elements is very simple:
- Position the valve on its base.
- Insert fastening screws.
- Tighten them.

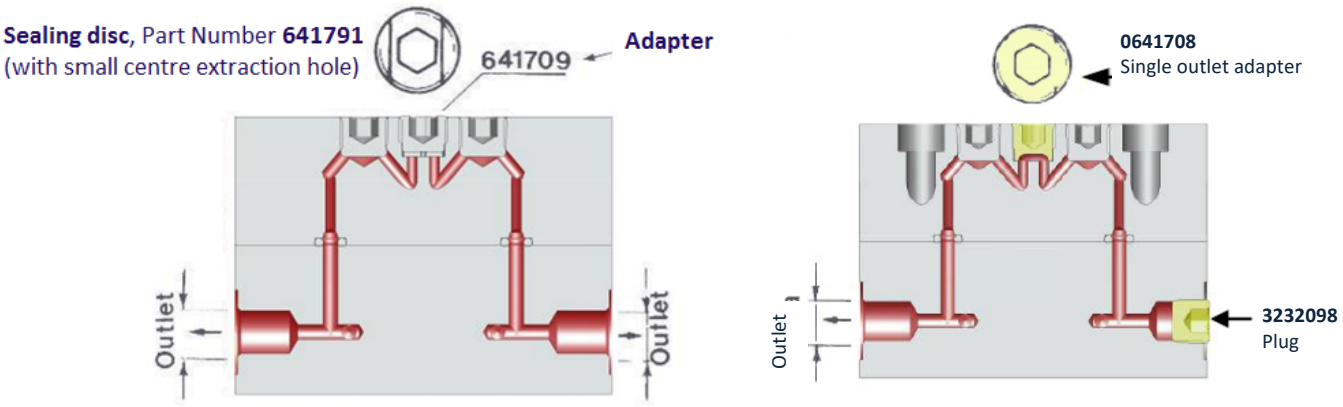
In case there is a bridge position it between the base and the valve, remember to attach everything with the mounting screws supplied with the bridge element.



*** FASTENING SCREWS TO BE ORDERED SEPARATELY**
0014077 SMO
0014242 SMX

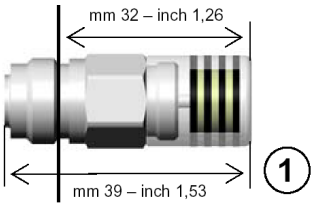
DEVICE TO MERGE OR TO SEPARATE OUTLETS

It is possible to add the two flow rates of a single element by substituting the adapter, Part Number 641709, with the adapter, Part Number 641708, as illustrated in the drawing below. When the two outlets are connected, remember to close off the one that is not being used with a plug. The tightening torque of these adapters to ensure the seal and dismantling should be 0.8-1 Kg m (8-10 Nm). **The torque setting for the fixing screws to mount the element on the base is 0.5 Kg m (5 Nm).** When the two outlets are connected, remember to close off the one that you do not want to use with a plug.



MONITORING DEVICES

VISUAL INDICATOR



This sensor is designed to monitor the proper functioning of a progressive system without allowing the lubricant to escape outside of the operating chamber.

The indicator allows for the course of the SMX metering piston element to be checked. The electronic logic that characterises the sensor allows for a visual or acoustic alarm to be transmitted or if necessary, it shuts down the system.

VISUAL INDICATOR FOR SMX 08 ÷SMX 65
1655200

OVERPRESSURE INDICATOR

These indicators are generally used to control the overpressure on the primary and secondary lines.

If an excessive increase in pressure is detected, the indicator pin projects out, and stays in place until the release lever is lowered manually.

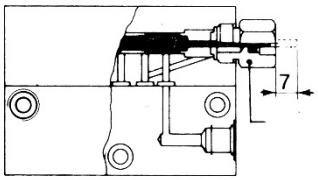
It is recommended to find out the reason and the location of the fault before lowering the lever.

PRESSURE INDICATOR WITH ROD		
PRESSURE		PART NUMBER
psi	Bar	1/8 BSP
300	20	**3290019**
450	30	**3290006**
750	50	**3290007**
1500	100	**3290008**
2200	150	**3290009**
2900	200	**3290010**
3600	250	**3290011**

PRESSURE INDICATOR WITH MEMBRANE		
PRESSURE		PART NUMBER
psi	Bar	1/8 BSP
450	30	**3290012**
750	50	**3290013**
1100	75	**3290014**
1500	100	**3290015**
2200	150	**3290016**
2900	200	**3290017**

PRESSURE INDICATOR WITH MEMORY		
PRESSURE		PART NUMBER
psi	Bar	1/8 BSP
450	30	**3290000**
750	50	**3290001**
1100	75	**3290022**
1500	100	**3290002**
2200	150	**3290003**
2900	200	**3290004**
3600	250	**3290005**

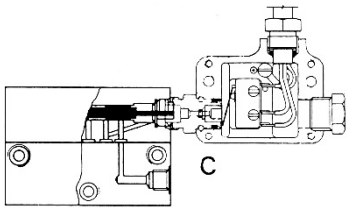
MICRO-SWITCH



Adapter only:

SMX 35 ÷ 65
Part number 6400092

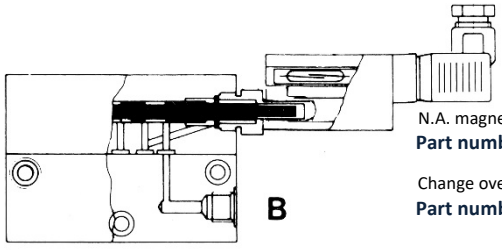
SMX 04 ÷ 25 or SMO
Part number 640599



Only MICRO-CONTACT

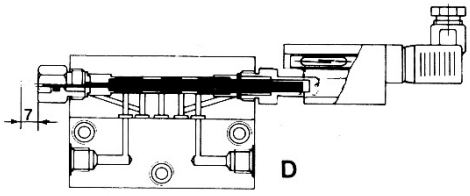
For SMX 35 ÷ 65
Part number 1655133

For SMX 04 ÷ 25 and SMO
Part number 1655134



N.A. magnet control only
Part number 1655059

Change over control only
Part number 1655124



		DELIVERY		A	B		C	D	
		CC.	CU. INS.	DISTRIBUTOR WITH INDICATING PIN "C"	DISTRIBUTOR WITH N.O. REED SWITCH "CC"	DISTRIBUTOR COMPLETE WITH CHANGEOVER REED SWITCH "GX"	DISTRIBUTOR WITH MICRO SWITCH "CT"	DISTRIBUTOR WITH PIN AND N.O. REED SWITCH "GC"	DISTRIBUTOR WITH PIN AND CHANGE OVER REED SWITCH "GXC"
THE PART NUMBERS REFER TO THE DIVIDER ELEMENTS (8)	SMX	.04	.0024	**0641829**	**0641833**	**0641972**	**0641837**	-	-
		.08	.005	**0641830**	**0641834**	**0641973**	**0641838**	-	-
		.16	.010	**0641831**	**0641835**	**0641974**	**0641839**	-	-
		.25	.015	**0641832**	**0641836**	**0641975**	**0641840**	-	-
		.35	.021	**0641695**	**0641569**	**0641976**	**0641820**	**0641690**	**0641493**
		.40	.025	**0641696**	**0641570**	**0641977**	**0641821**	**0641691**	**0641494**
		.50	.030	**0641697**	**0641571**	**0641978**	**0641822**	**0641692**	**0641495**
		.60	.036	**0641698**	**0641572**	**0641979**	**0641823**	**0641693**	**0641496**
		.65	.040	**0641699**	**0641573**	**0641980**	**0641824**	**0641694**	**0641497**
	SMO	.04	.0024	**0641861**	**0641786**	**0641896**	**0641867**	-	-
		.08	.005	**0641862**	**0641787**	**0641897**	**0641868**	-	-
		.16	.010	**0641863**	**0641788**	**0641898**	**0641869**	-	-
		.25	.015	**0641761**	**0641811**	**0641899**	**0641815**	**0641813**	**0641568**

UltraSensor 2

Ultrasensor 2 was designed to replace systems with inductive proximity sensors, mechanical micro-switches, and the magnetic contacts that monitor the movement of the Pistons inside the divider elements of progressive systems.
The sensor is a screw-on accessory (laterally to the divider), without needing to make any modifications to the divider.
This patented technology allows you to check the variations in magnetic flow when the piston reaches the detection zone thanks to a Hall-Effect sensor.
There are no moving parts providing for a complete absence of wear.

The device is equipped with two LEDs:
1. MONITORING LED (ORANGE): allows you to see the output signal. The LED signal indicates proper operation of the sensor. The LED is lit when the piston enters the detection zone and stays off when it is far away.
2. DIAGNOSTICS LED (GREEN): When switched on, the number of pulses indicates the magnetic flux. The number of pulses can vary from 0 to 10; When the LED blinks five times (number of standard pulses), this indicates that the device is working properly. The diagnostic system makes it possible to verify correct magnetic field readings.

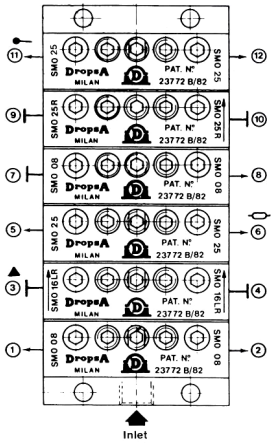
ULTRASENSOR (ELECTRIC)		
DESCRIPTION	**SMX**	**SMO**
Ultrasensor, stainless steel, AISI 316	**1655340**	**1655342**
Ultrasensor, nickel-plated brass	**1655305**	**1655308**

ACCESSORIES	SMX	SMO
Ultrasensor connector	0039999	
Sealing disc (with central extraction hole)	0641709	
Check valve, outlet	0092335	
M 1/4 NPTF - F 1/4 BSP reducer fitting	3077166	
M 1/8 NPTF - F 1/8 BSP reducer fitting	3077090	
M 1/4 BSP - F 1/4 NPTF reducer fitting	3077059	
M 1/8 BSP - F 1/8 NPTF reducer fitting	3077075	
Screws for assembling the base	0014074*	0014064*
Threaded grub screws	641511*	641710*
Screws for assembling the elements	0014242*	0014077*
Single outlet adapter	0641708	
ELEMENT AND BASE ASSEMBLY KIT (No. 3 screws for the assembly of the base- no. 3 threaded grub screws - no. 2 screws for the elements - no. 1 single outlet adapter)	3140770	3140769

* Order separately - (sold in 500 pc. boxes or can be purchased in as multiple individual pieces by adding "-1" to the part number)

ORDER INFORMATION - EXAMPLE ORDER

SM0 – 6 (O8 – 16LR – 25CC – 08D – 25R – 25C)



Attention: To determine the outlets, take note that the assembly is seen vertically and the outlets are numbered sequentially starting from the top (inlet) from left to right.

A letter, a number or another letter is stamped on each divider element to indicate: series, 2) capacity for each cycle, 3) outlet.

The elements in the image are from the SMO series that have the following main characteristics:

1st input element: **SMO 08** with 2 outlets with a flow rate of 0.08 cm3/min each;
The 2nd element is the **SMO 16 LR** which signifies a double right and left bridge for transfer to the subsequent element +0.16 cm3/stroke flow rate for each outlet;
The 3rd element is the **SMO 25 CC** with two outlets with a flow rate of 0.25 cm3/stroke and a reed switch NO on the right (outlet 6).

HOW TO ORDER THE ASSEMBLY

Assembled base

UNI – ISO NPTF

BASES AND DIVIDERS
"Miniature" Model SM0
"Standard" Model SMX

O-Ring
Buna -
Viton V
On request, Dow-Corning O-ring for low-temperature applications

ASSEMBLED BASE

Assembled base for 3 dividers 3
Assembled base for 4 dividers 4
.....
Assembled base for 20 dividers 20

Dividers

OPTIONAL ELEMENTS

Bridge right	R
Bridge left	L
(Bridge right/left)	LR
Control system with rod (visual)	C
Control with micro-contact	CT
Control with UltraSensor	CP
Magnetic control system (N.O.)	CC
Magnetic control system (changeover contact)	GX
Magnetic control system (N.O.) + Visual rod on the opposite side	GC
Magnetic control system (changeover) + visual rod on the opposite side	BP

OUTLETS

Single outlet on the left	S
Single outlet on the right	D

Cc.	Marking
0.04	04
0,08	08
0.16	16
0.25	25
0.35	35
0.40	40
0.50	50
0.60	60
0.65	65
Bypass	BP

Dropsa products can be purchased at Dropsa branches and authorised distributors. Go to www.dropsa.com/contact or write to sales@dropsa.com

Distributor info: