

## 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.

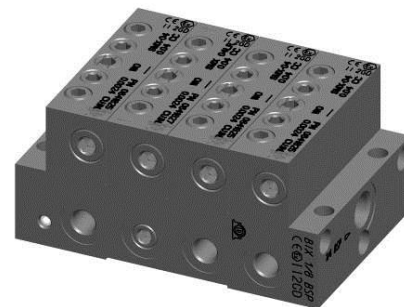
Thanks to its **modularity**, the system can be easily expanded and replacement of metering elements can occur without removing the pipework, thereby guaranteeing low maintenance costs. The modularity of the dividers furthermore allows you to bundle lubrication points according to system requirements.

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
<b>OIL</b>	Mineral oil viscosity 32 ÷ 6000 cSt	Mineral oil viscosity 32 ÷ 6000 cSt
<b>GREASE</b>	EP type - without a thickener Viscosity between 000 ÷ NLGI 2	EP type - without a thickener Viscosity between 000 ÷ NLGI 2
<b>NUMBER OF STROKES/MINUTE</b>	Max. 500 for the dosing element without a sensor, oil viscosity max. 220 cSt For the dosing unit with a sensor, see section 1.2.8	Max. 300 for the dosing element without a sensor, oil viscosity max. 220 cSt For the dosing unit with a sensor, see section 1.2.8
<b>OPERATING PRESSURE</b>	Max 400 bar	Max 250 bar

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

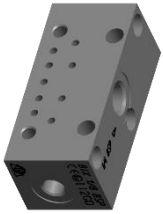
*The value of viscosity for oil and grease are always linked to the operating temperature*

### TECHNICAL INFORMATION

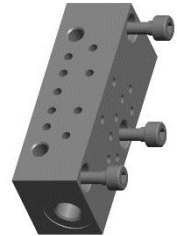
VERSION	TYPE	OIL CST (*)	GREASE NLGI (*)	OIL 32 CST		GREASE NLGI 2		TEMP. °C (°F)	VITON O-RING
				MIN. PRESSURE BAR (PSI)	MAX. PRESSURE BAR (PSI)	MIN. PRESSURE BAR (PSI)	MAX. PRESSURE BAR (PSI)		
STANDARD	SMX 0641516 ÷ 0641825	68 ÷ 6000	000 ÷ 2	15 (220,5)	250 (3675)	20 (294)	400 (5880)	-25 ÷ +80 (-13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

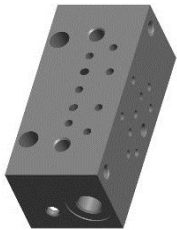
## THE BASES



**1. INITIAL BASE**



**2. INTERMEDIATE BASE**



**3. END BASE**

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

INITIAL, INTERMEDIATE AND FINAL BASE

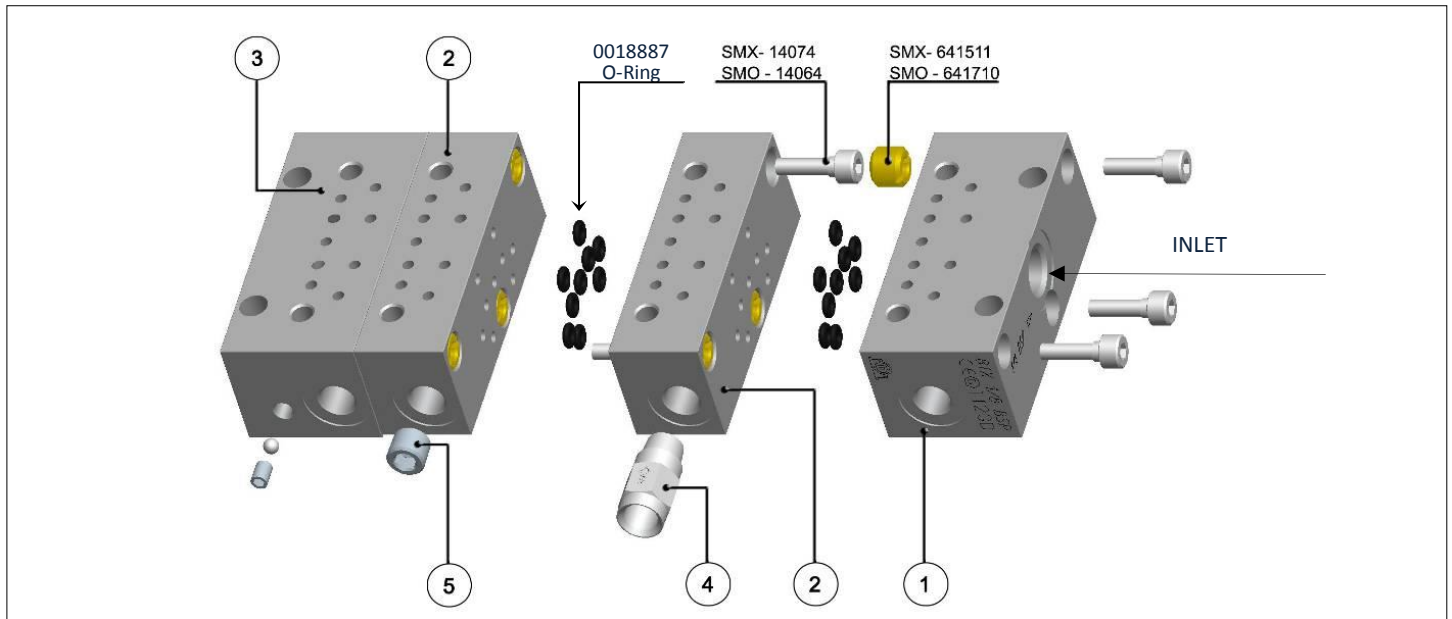
For assembling, it is essential to know the number of outlets required to lubricate the system in order to identify the number of useful elements.

The screws are not included; it is recommended that you buy the **BASE AND ELEMENT ASSEMBLY KIT** (part number **3140857** 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).

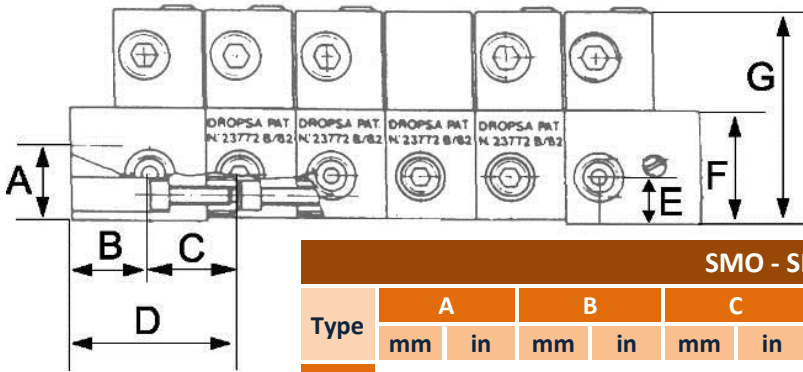
The elements can be assembled easily, without having to detach the pipework.

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



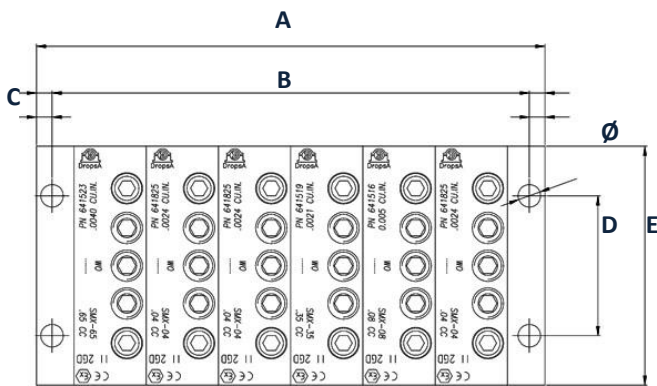
POSITION	DESCRIPTION	SMO		SMX		
	Inlet thread	1/8 BSP	1/8 NPTF	1/4 BSP	1/4 NPTF	7/16-20 UNF
	Outlet thread	1/8 BSP	1/8 NPTF	1/8 BSP	1/8 NPTF	7/16-20 UNF
<b>1</b>	Initial base	<b>641711</b>	<b>643562</b>	<b>641512</b>	<b>643541</b>	<b>643800</b>
<b>2</b>	Intermediate base	<b>641712</b>	<b>643563</b>	<b>641513</b>	<b>643542</b>	<b>643801</b>
<b>3</b>	End base	<b>641713</b>	<b>643564</b>	<b>641515</b>	<b>643561</b>	<b>643802</b>
<b>4</b>	Check valve	<b>92335</b>	<b>641564</b>	<b>92335</b>	<b>641564</b>	<b>642029</b>
<b>5</b>	Plug	<b>3232098</b>	<b>3232095</b>	<b>3232098</b>	<b>3232095</b>	<b>642031</b>

## 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
<b>SMO</b>	18.5	0.72	16	0.62	20.60	0.80	30	1.17	12.5	0.72	30	1.17	50	1.9
<b>SMX</b>	20	0.78	20.2	0.78	23.42	0.91	35	1.36	12.5	0.72	30	1.17	56	2.2



**SMX DIMENSIONS**

**SMO DIMENSIONS**

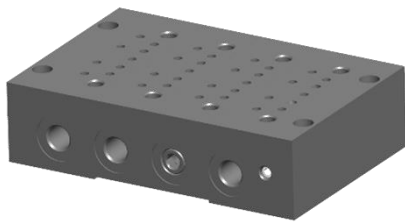
N° of elements	B		A		B		A	
	Centre to centre distance of the fixing holes [mm]	Centre to centre distance of the fixing holes [inches]	Total length [mm]	Total length [inches]	Centre to centre distance of the fixing holes [mm]	Centre to centre distance of the fixing holes [inches]	Total length [mm]	Total length [inches]
<b>3</b>	83.22	3.28	93.02	3.66	72.4	2.85	80.4	3.17
<b>4</b>	106.64	4.2	116.44	4.58	93.2	3.67	101.2	3.98
<b>5</b>	130.06	5.12	139.86	5.51	114	4.49	122	4.8
<b>6</b>	153.48	6.04	163.28	6.43	134.8	5.31	142.8	5.62
<b>7</b>	176.9	6.96	186.7	7.35	155.6	6.13	163.6	6.44
<b>8</b>	200.31	7.89	210.11	8.27	176.4	6.95	184.4	7.26
<b>9</b>	223.73	8.81	233.53	9.19	197.2	7.76	205.2	8.08
<b>10</b>	247.15	9.73	256.95	10.12	218	8.58	226	8.9
<b>11</b>	270.57	10.65	280.37	11.04	238.8	9.4	246.8	9.72
<b>12</b>	293.99	11.57	303.79	11.96	259.6	10.22	267.6	10.54
<b>13</b>	317.41	12.5	327.21	12.88	280.4	11.04	288.4	11.35
<b>14</b>	340.83	13.42	350.63	13.8	301.2	11.86	309.2	12.17
<b>15</b>	364.25	14.34	374.05	14.73	322	12.68	330	12.99
<b>16</b>	387.67	15.26	397.47	15.65	342.8	13.5	350.8	13.81
<b>17</b>	411.09	16.18	420.89	16.57	363.6	14.32	371.6	14.63
<b>18</b>	434.5	17.11	444.3	17.49	384.4	15.13	392.4	15.45
<b>19</b>	457.92	18.03	467.72	18.41	405.2	15.95	413.2	16.27
<b>20</b>	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°	SAE	NPT	Kg	Lb.	BSP	NPTF	SAE-UNF	Kg	Lb.
3	641763	643543	0.92	2.0	641583	643523	642703	1.3	2.9
4	641764	643544	1.13	2.5	641584	643524	642704	1.6	3.5
5	641765	643545	1.33	2.9	641585	643525	642705	1.9	4.2
6	641766	643546	1.54	3.4	641586	643526	642706	2.2	4.8
7	641767	643547	1.75	3.9	641587	643527	642707	2.5	5.5
8	641768	643548	1.96	4.3	641588	643528	642708	2.8	6.2
9	641769	643549	2.17	4.8	641589	643529	642709	3.1	6.8
10	641770	643550	2.38	5.2	641590	643530	642710	3.4	7.5
11	641771	643551	2.59	5.7	641591	643531	642711	3.7	8.1
12	641772	643552	2.80	6.2	641592	643532	642712	4.0	8.8
13	641773	643553	3.00	6.6	641593	643533	642713	4.3	9.5
14	641774	643554	3.16	6.9	641594	643534	642714	4.5	9.9
15	641775	643555	3.42	7.5	641595	643535	642715	4.9	10.8
16	641776	643556	3.63	8.0	641596	643536	642716	5.2	11.4
17	641777	643557	3.84	8.4	641597	643537	642717	5.5	12.1
18	641778	643558	4.05	8.8	641598	643538	642718	5.8	12.8
19	641779	643559	4.26	9.4	641599	643539	642719	6.1	13.4
20	641780	643560	4.47	9.8	641600	643540	642720	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	SMO 04	641720
0,08	0.005	SMO 08	641716
0,16	0.010	SMO 16	641717
0,25	0.015	SMO 25	641718

SMX DIVIDER ELEMENTS			
Flow rate for outlet		1 or 2 outlets	
CC.	CU. IN.	Symbol	Part number
0,04	0.0024	SMX 04	641825
0,08	0.005	SMX 08	641516
0,16	0.010	SMX 16	641517
0,25	0.015	SMX 25	641518
0,35	0.021	SMX 35	641519
0,40	0.025	SMX 40	641520
0,50	0.030	SMX 50	641521
0,60	0.036	SMX 60	641522
0,65	0.040	SMX 65	641523



## BRIDGE PLATES



Thanks to the bridge plates, it is possible to transfer the flow rate of one metering valve to the next one.

They must be ordered based on the side of the outlet that you want to add.

There are three types of plates, which coincide with the outlet: right bridge, left bridge or right/left bridge.

The side of the bridge element is indicated directly on the piece by an arrow that indicates the outlet connected to the following one.

For assembly, position the bridge plate on the base; connect the metering valve and used two fastening screws supplied with the bridge element to fasten 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	641734	SMO 08LR	641745	SMO 08R	641739
SMO 16L	641735	SMO 16LR	641746	SMO 16R	641740
SMO 25L	641736	SMO 25LR	641747	SMO 25R	641741

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	<b>0641827</b>	SMX 04R	<b>0641828</b>
SMX 08L	641629	SMX 08LR	<b>641637</b>	SMX 08R	<b>641621</b>
SMX 16L	641630	SMX 16LR	<b>641638</b>	SMX 16R	<b>641622</b>
SMX 25L	641631	SMX 25LR	<b>641639</b>	SMX 25R	<b>641623</b>
SMX 35L	641632	SMX 35LR	<b>641640</b>	SMX 35R	<b>641624</b>
SMX 40L	641633	SMX 40LR	<b>641641</b>	SMX 40R	<b>641625</b>
SMX 50L	641634	SMX 50LR	<b>641642</b>	SMX 50R	<b>641626</b>
SMX 60L	641635	SMX 60LR	<b>641643</b>	SMX 60R	<b>641627</b>
SMX 65L	641636	SMX 65LR	<b>641644</b>	SMX 65R	<b>641628</b>

## 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	<b>641714</b>	<b>641514</b>

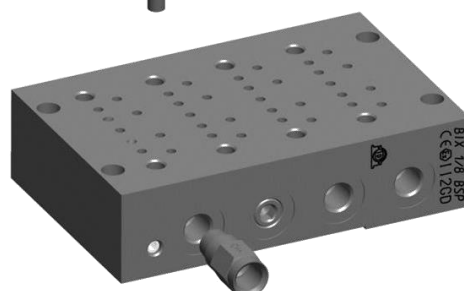
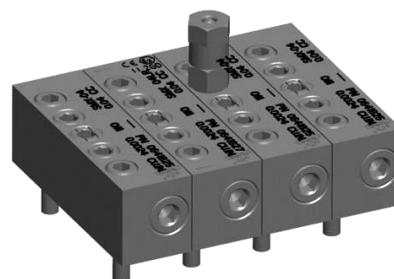
## ASSEMBLY

The assembly and of the metering elements is very simple:

- Position the valve on its base.
- Insert fastening screws.
- Tighten them.

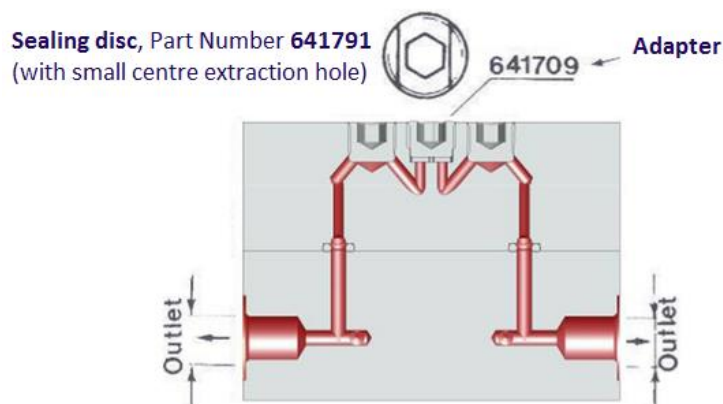
In case there is a bridge position it between the base and the valve, remember to attach everything with the mounting screws supplied with the bridge element.

0014186Z\* TO BE ORDERED SEPARATELY



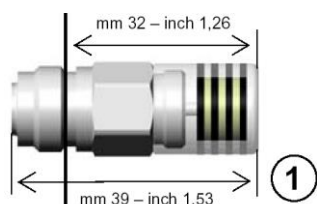
## DEVICE TO MERGE OR TO SEPARATE OUTLETS

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). 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



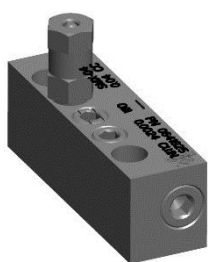
This sensor is designed to monitor the proper functioning of a progressive system without allowing the lubricant to escape outside of the operating chamber.

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.

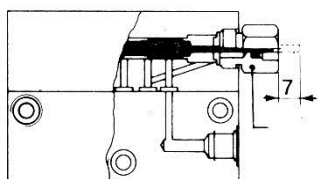
It is recommended to find out the reason and the location of the fault before lowering the lever.

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

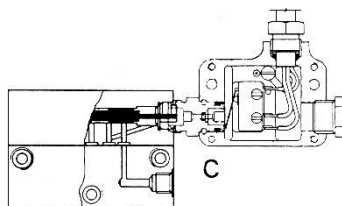


**A**

Adapter only:

SMX 35 ÷ 65  
Part number 640092

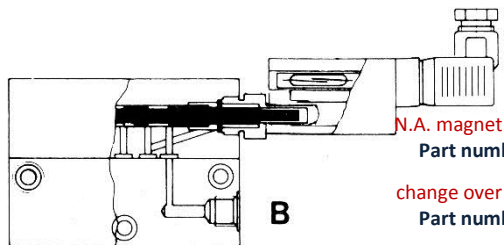
SMX 04 ÷ 25 or SMO  
Part number 640599



**C**

Only MICRO-CONTACT

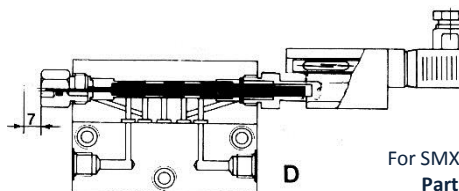
For SMX 35 ÷ 65  
Part number 1655133



**B**

N.A. magnet control only  
Part number 1655059

change over control only  
Part number 1655124

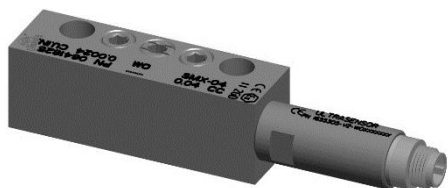


**D**

For SMX 04 ÷ 25 and SMO  
Part number 1655134

	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
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



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		039999
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
<b>ELEMENT AND BASE ASSEMBLY KIT</b> (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

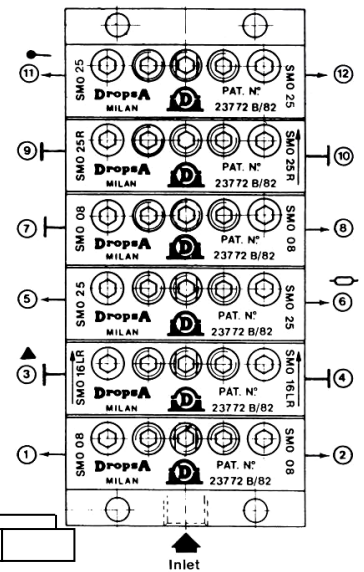
### SMO – 6 (O8 – 16LR – 25CC – 08D – 25R – 25C)

**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.

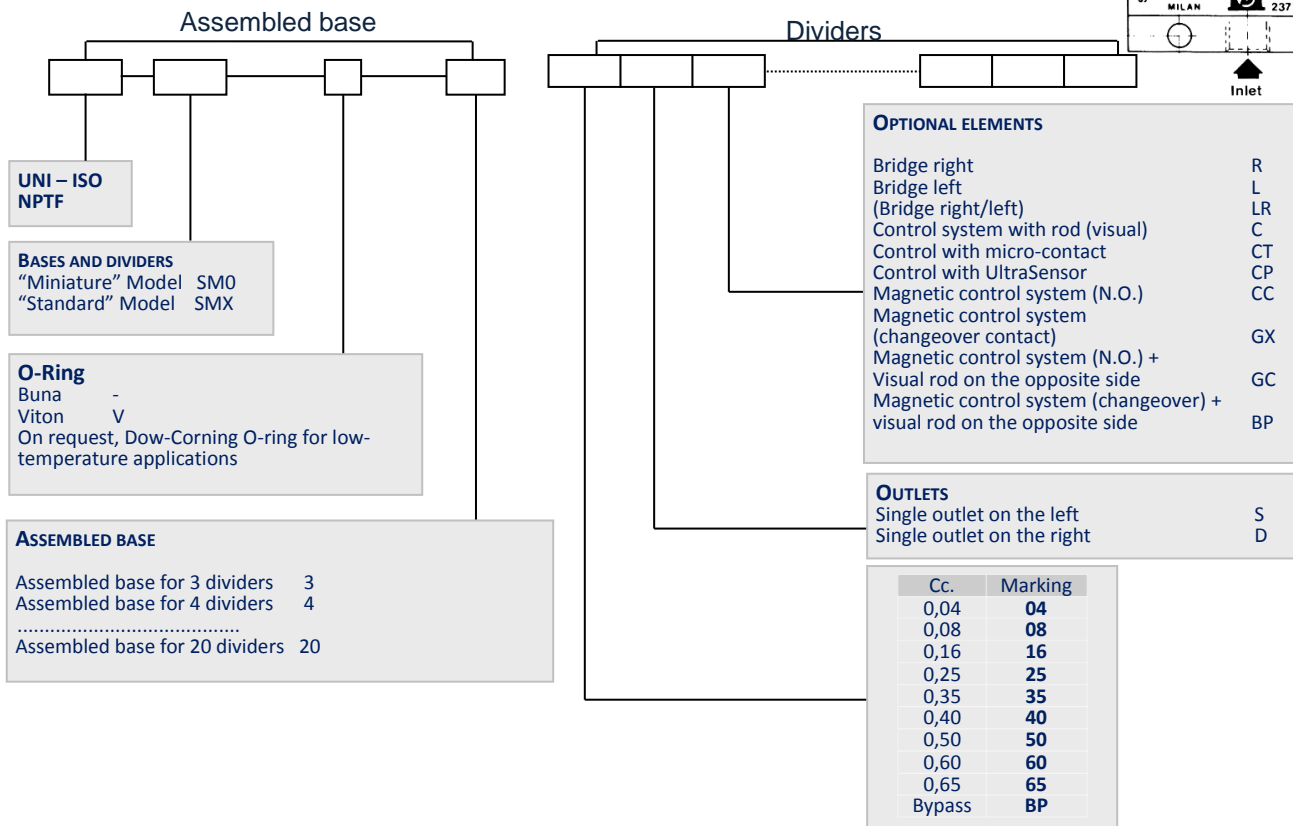
A letter, a number or another letter is stamped on each divider element to indicate: series, 2) capacity for each cycle, 3) outlet.

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 cm<sup>3</sup>/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 cm<sup>3</sup>/min flow rate for each outlet;
- The 3rd element is the **SMO 25 CC** with two outlets with a flow rate of 0.25 cm<sup>3</sup>/min and a reed switch NO on the right (outlet 6).



### HOW TO ORDER THE ASSEMBLY



Distributor info: