

DUAL LINE LUBRICATION SYSTEM

N° 807-20



**ADVANCED FLUID
MANAGEMENT SOLUTIONS**

20





**ADVANCED FLUID
MANAGEMENT SOLUTIONS**

*the human side
of Quality*



founded in 1975



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Volumetric
distributor



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VED-L
Modular
volumetric
distributor





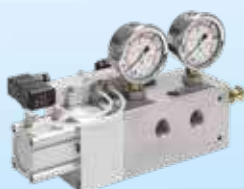
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**Electromotorized
reversing valve**



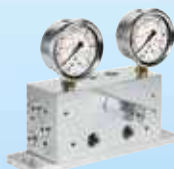
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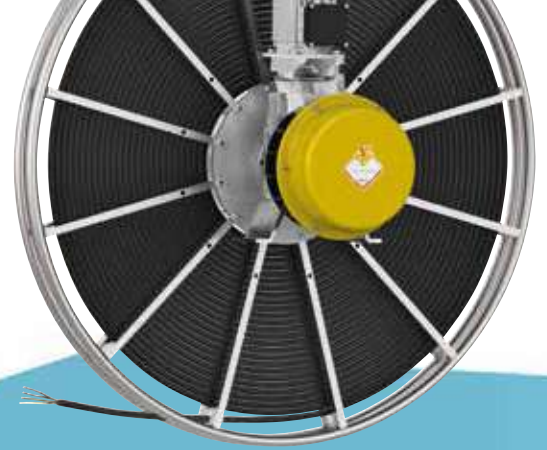
The dual line system is primarily used for great size industrial plants and machines where the number of greasing points goes easily above hundred. The most frequent applications are in: steel mills, wheel bucket reclaimers, large conveyor belts and cranes for shipyard.

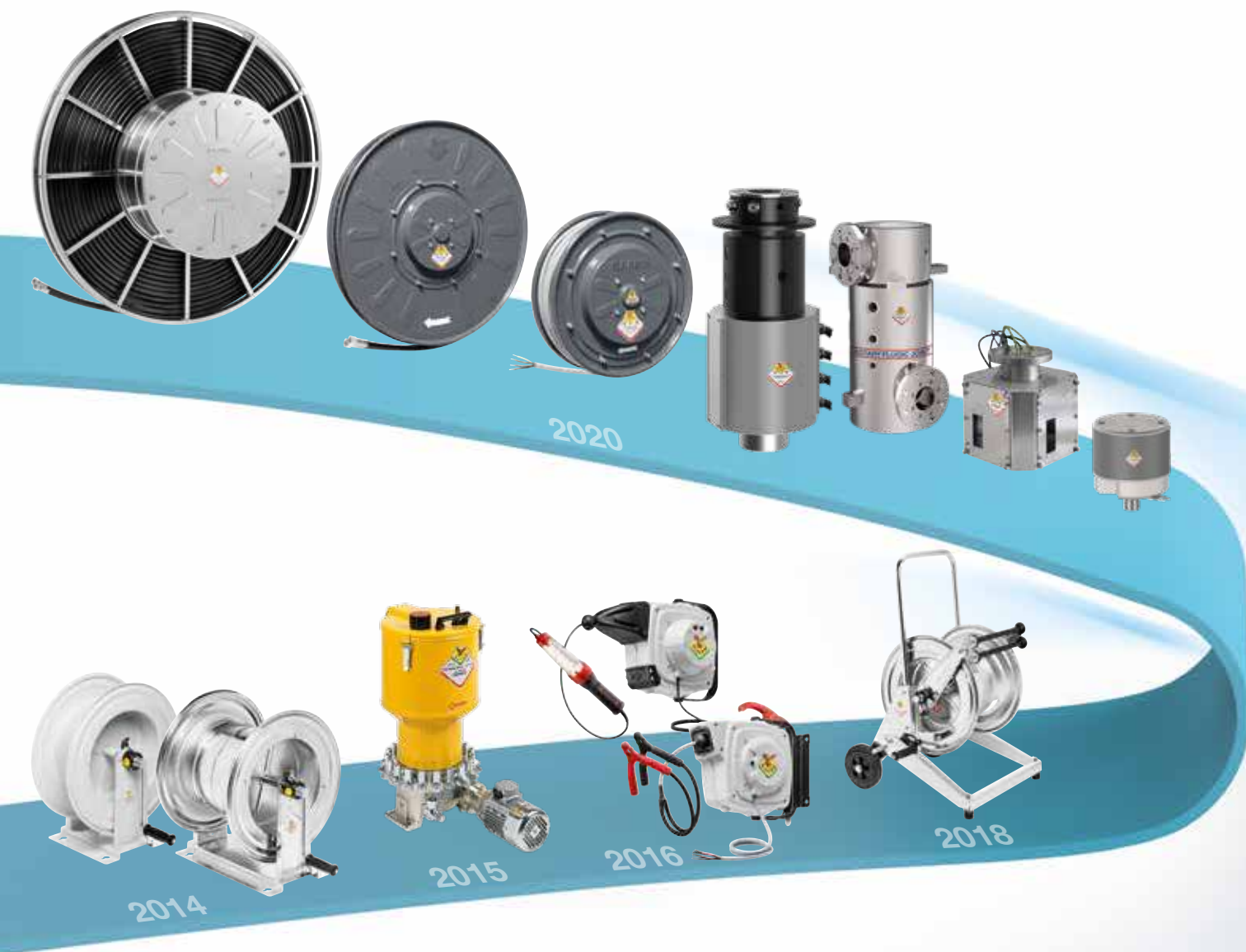
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VISION

DESIGN

TECHNOLOGY

QUALITY

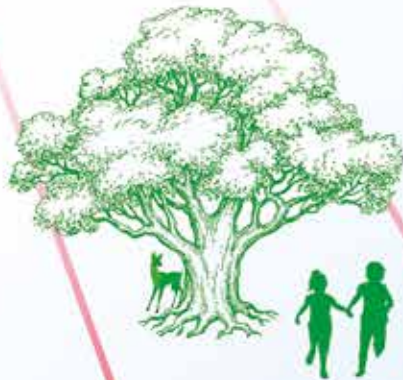
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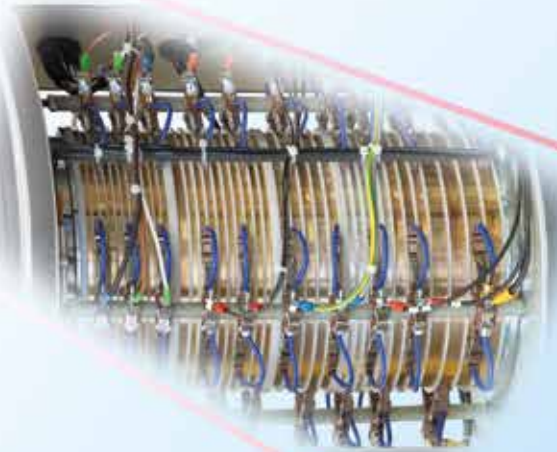
ASSISTANCE

ENVIRONMENT

PACKAGING

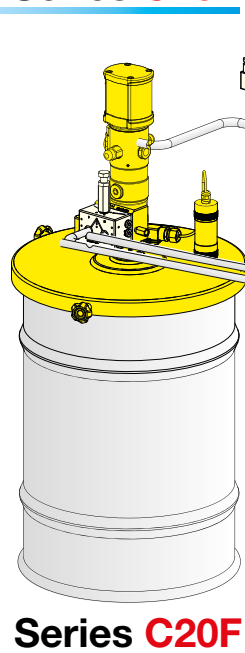
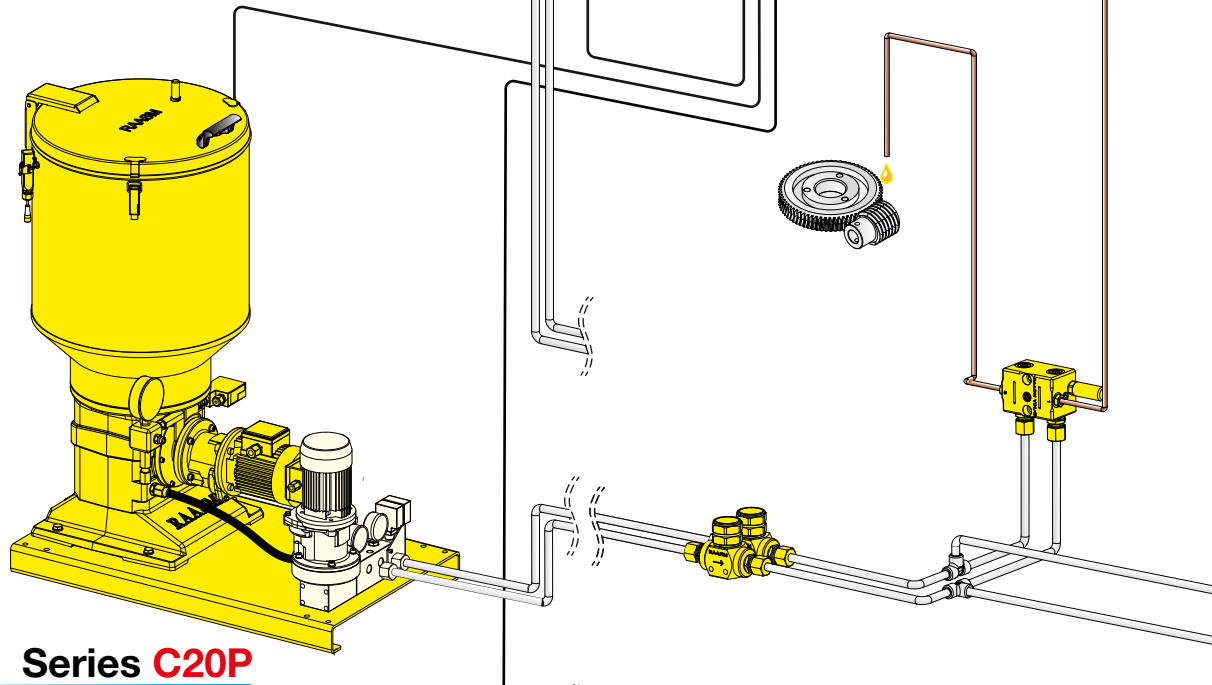
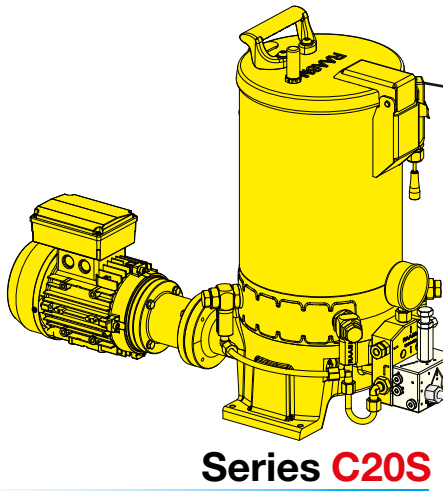
SHARING





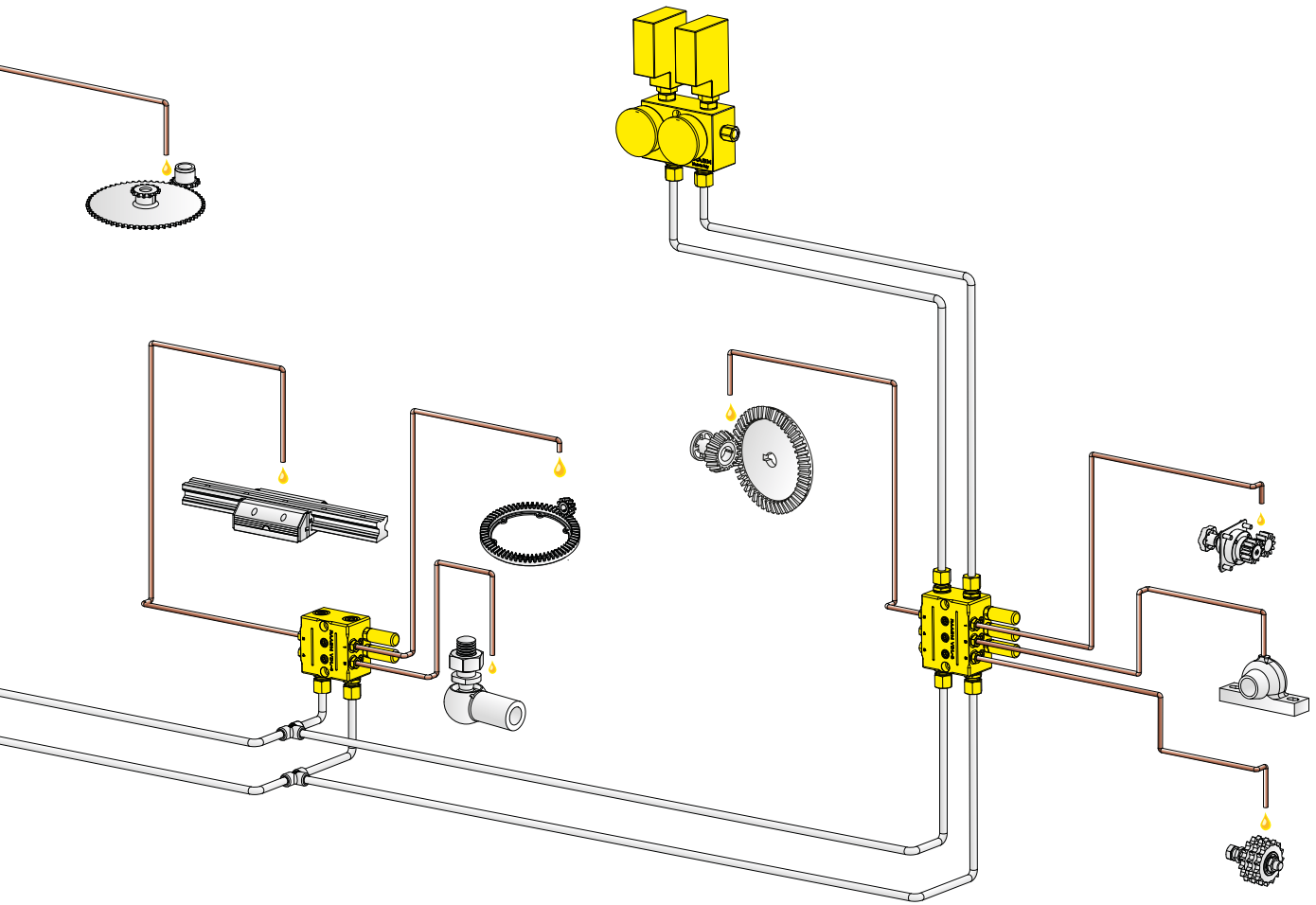


SYSTEM 20 DUAL LINE



CHARACTERISTICS

- ⊕ Supplies an exact quantity of lubricant from the pumping unit to all the grease points located even at great distances.
- ⊕ The dosing and measuring devices (called Volumetric distributors) are managed through two main lines, therefore the lubricant is always under the control of the system at the same time.
- ⊕ The system can be easily extended through the addition of one or more Volumetric distributors.
- ⊕ This high pressure system allows the use of particularly narrow pipes, enabling a reduction in quantity and deterioration of residual grease inside the piping, while also reducing installation costs.
- ⊕ Visual check of each Volumetric distributor or by means of a special sensor.
- ⊕ If a volumetric distributor does not work, all the other outlets will continue to function normally.
- ⊕ Easy re-calibration of lubricant dosing of each distributor even after installation.
- ⊕ Optimum monitoring and control possibilities using appropriate equipment.
- ⊕ The system keeps the pressure constantly regulated and is able to compensate temperature fluctuations.
- ⊕ The system is able to generate only the necessary pressure required for each lubrication cycle, therefore the pump and other system components are not subjected to pressure variations that can affect their service life.



The centralized dual-line lubrication systems are normally used in large systems and machines: steel mills, cement works, mines, overhead cranes, shipyard cranes and presses.

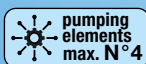
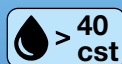
The systems are designed in order to be able to reach high pressures, from 200 to 400 bar. In such systems the length of the piping can easily exceed 70 metres. Lubricating oils starting from 40 cSt or greases up to NLGI 2 can be used.



SERIES C20S MOTOR-OPERATED with **RADIAL PISTONS**

Compact motor-operated pump equipped with line inverter.

It has a sturdy and compact base in nickel-plated aluminium alloy, radially fitted with pumping elements in galvanized hardened steel. The epoxy powder painted tank is available in 3 versions: 10, 30 and 70 litres. Two electric motors (three-phase) are available with 4 poles or 6 poles, to which gear motors with ratios of 35:1 and 70:1 are coupled. These all specifics allow a wide combination to meet all end-users' needs.



Technical characteristics

Max. flow rate *	108 cm ³ /min
Max. working pressure	400 bar adjustable
Tank capacity	10-30-70 litres
Ratio of reducer in pump	35:1 - 70:1
Filling connection	G 1/2" (f)
Lubricant outlet connection	G 1/4" (f)
Pumping unit flow rate	P/N 2081100 - 1 cm ³ /cycle
Temperature	-25 °C / +60 °C
Lubricant	Oil > 40 cSt - Greases max NLGI 2
Electric min. level control	Supplied
Electric min. max. level control	On request
Motor	Power: 0,25 kW
	230/400 V AC - 50 Hz - 275/480 V AC - 60 Hz *
	6 poles motor: 870 ÷ 1100 rpm
	4 poles motor: 1370 ÷ 1660 rpm
Materials	Protection IP 55
	Base: aluminum alloy
	Moving parts: steel
	Pumping piston: hardened steel
	Reservoir: painted steel

* Approx. flow rate with grease NLGI 2 at 18 °C. (The lubricant must have technical characteristics in compliance with working temperature).

* Supply voltages different from the standard have to be specified during the purchase order.

GUIDE TO CHOOSING PUMP

P/N		Tank capacity (litres)	No. pumping elements	Reducer ratio	Motor	Flow rate (cm ³ /min)
Grease	Oil					
2070080	2070440	10	2	70:1	6 poles	28
2070200	2070560	30	2	70:1	6 poles	28
2070020	2070380	10	2	70:1	4 poles	40
2070140	2070500	30	2	70:1	4 poles	40
2070110	2070470	10	4	70:1	6 poles	56
2070230	2070590	30	4	70:1	6 poles	56
2070350	2070710	70	4	70:1	6 poles	56
2070050	2070410	10	4	70:1	4 poles	80
2070170	2070530	30	4	70:1	4 poles	80
2070290	2070650	70	4	70:1	4 poles	80
2070065	2070425	10	2	35:1	6 poles	54
2070185	2070545	30	2	35:1	6 poles	54
2070095	2070455	10	4	35:1	6 poles	108
2070215	2070575	30	4	35:1	6 poles	108
2070335	2070695	70	4	35:1	6 poles	108

ACCESSORIES

STANDARD EQUIPMENT



Low level capacitive sensor



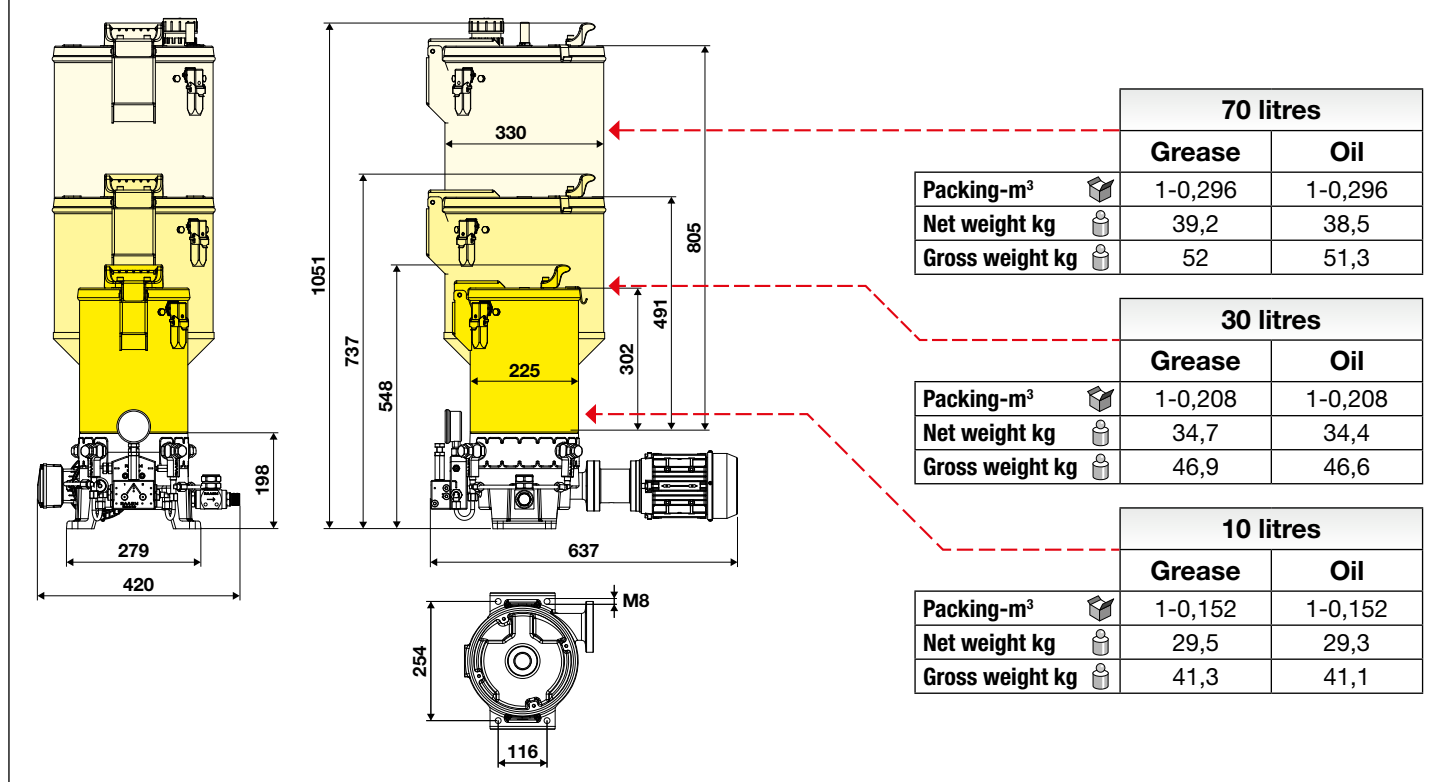
Visual level indicator
for oil and grease

ON REQUEST



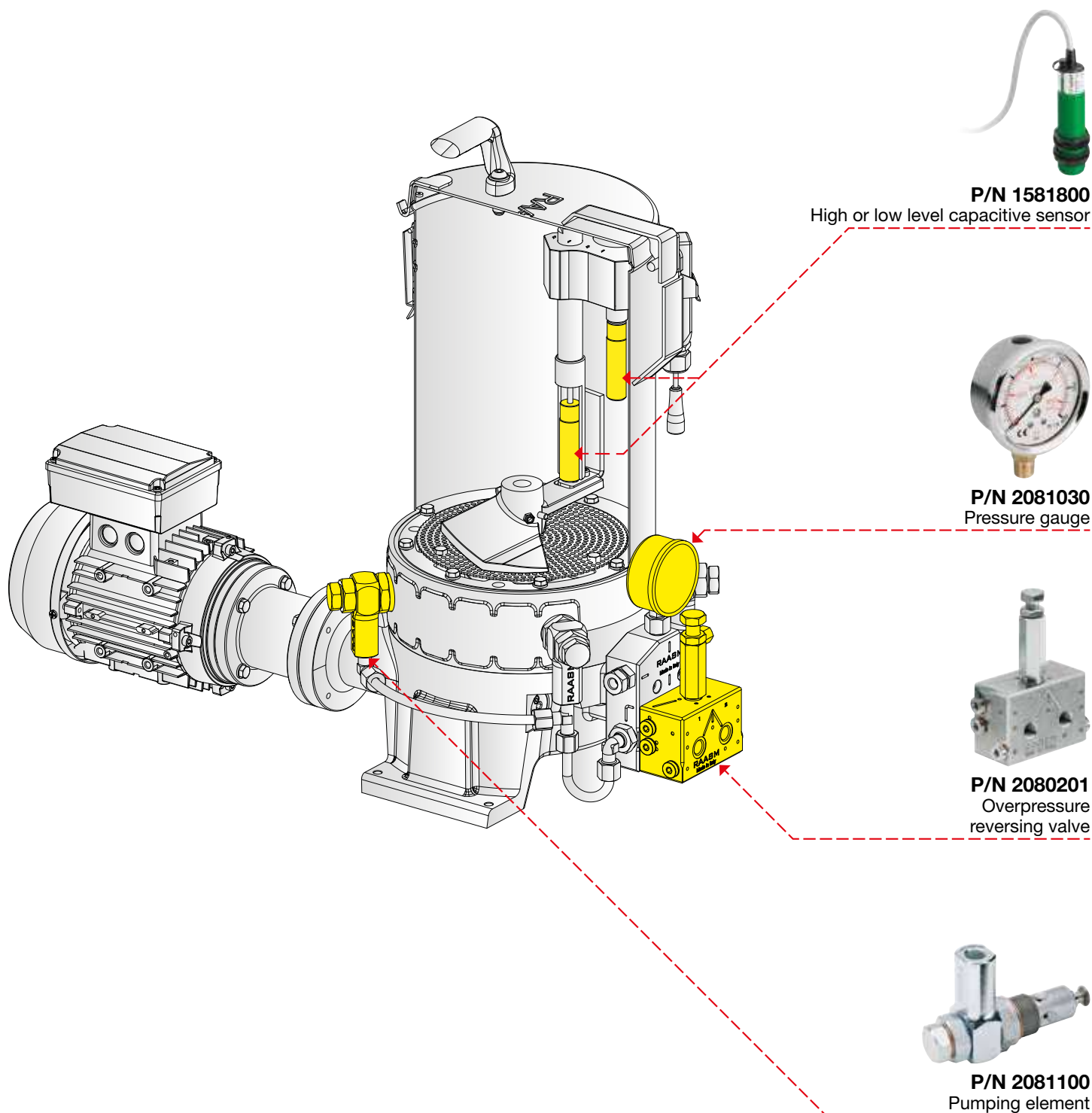
High level capacitive sensor

Overall dimensions (mm)

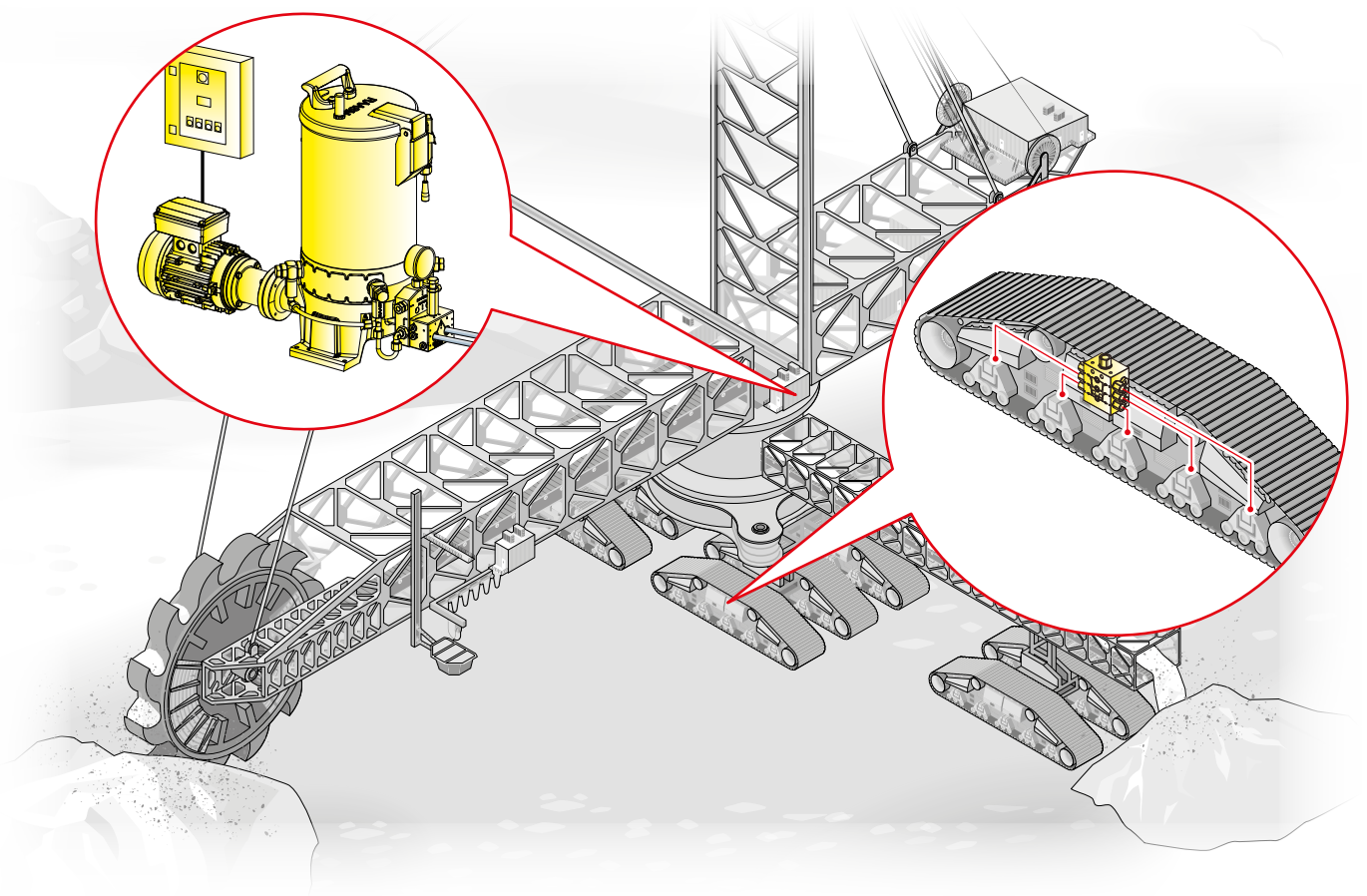




ACCESSORIES PUMP SERIES C20S



P/N	Description	Connection	Capacity	Pressure
1581800	Minimum and maximum capacitive level sensor	M18 x 1	-	
2081030	Pressure gauge ø 63 mm 600 bar	G 1/4" (m)	-	600 bar
2080201	Overpressure reversing valve	Outlet G 1/4" (f)	5500 cm ³ /min	50-150 bar oil / 50-400 grease bar
2081100	Pumping element ø 12 mm	M27 x 1,5	1 cm ³ /cycle	-





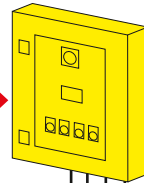
Control equipment
(PLC) (Page 44-45)



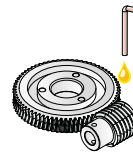
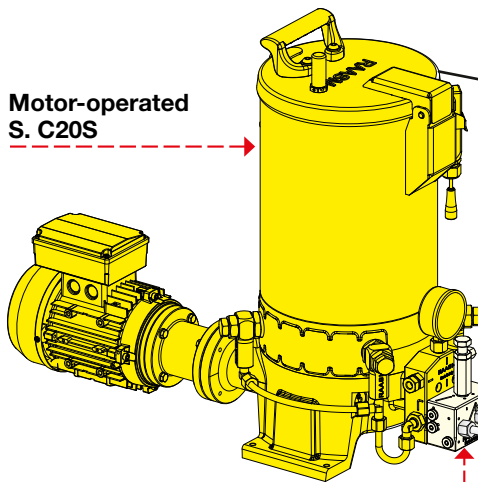
P/N 39290
Emergency stop
button (optional)



P/N 39289
Acoustic and flashing
alarm (optional)



Motor-operated
S. C20S



Secondary line
with piping in
steel tubing or
flexible hose



Overpressure
reversing valve (page 41)



Line and delivery
filter (page 43)

Type of lubrication system with motor-operated pump **SERIES C20S**



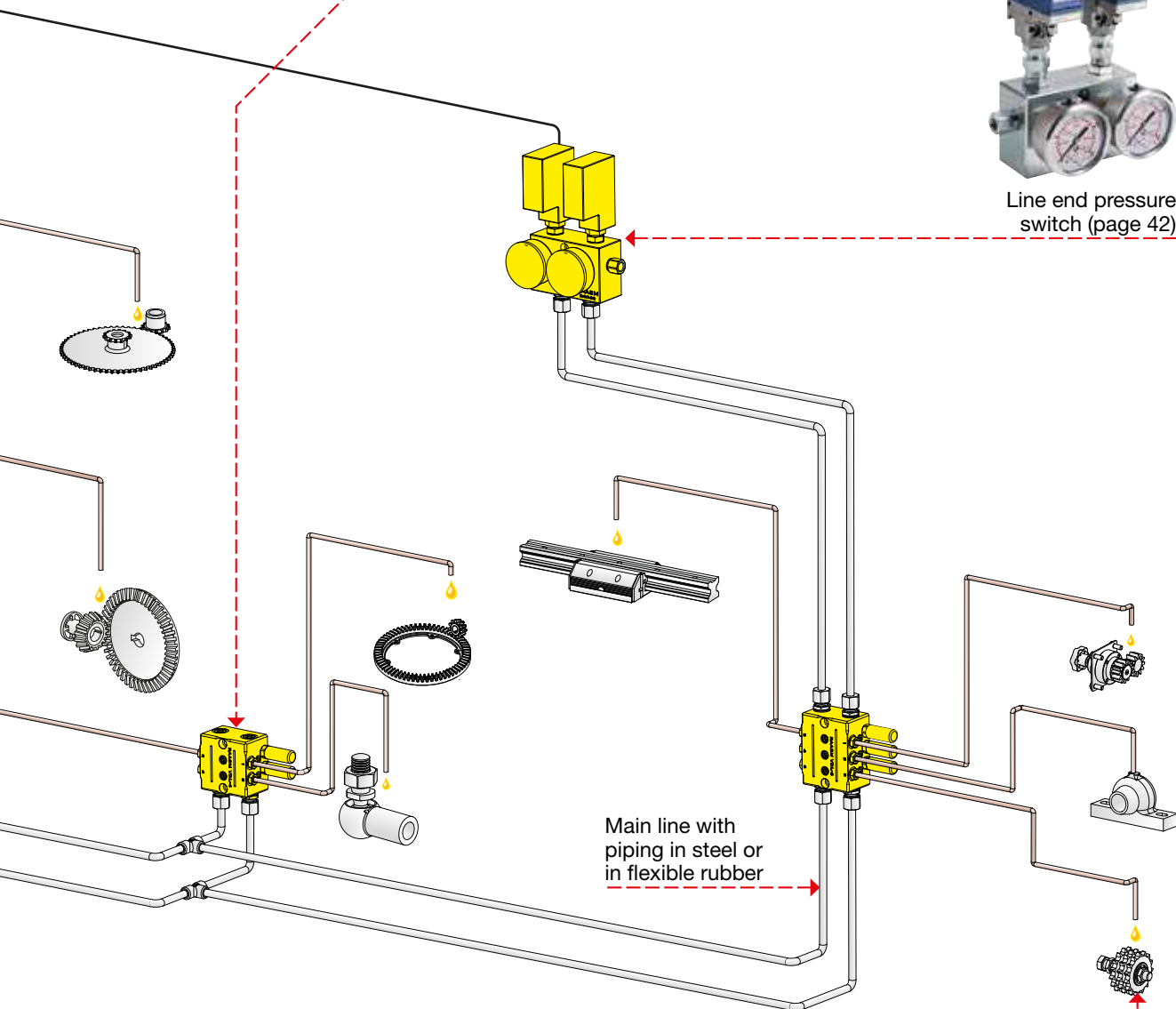
Volumetric distributor
Series VED-L (pag. 34)



Volumetric distributor
Series VDL-M (page 30)



Line end pressure switch (page 42)



Main line with
piping in steel or
in flexible rubber

Lube point:

In the plant are represented some
types of moving parts that need
to be lubricated.



SERIES C20P

MOTOR-OPERATED PUMP

PISTONS WITH OSCILLATING UNIT

Pump equipped with large epoxy powder painted tank (40 or 100 litres) mounted on base in nickel-plated aluminium alloy.

The pumping unit mounts dosing pistons available in two different diameters (7 or 10 mm).

The pumping unit can be fitted with dosing pistons of two different diameters (7 or 10 mm), thereby offering a choice of different deliveries according to customer requirements.

It is supplied with a minimum level sensor as standard: the latter allows to stop the operation of the pump in case of lack of lubricant inside the tank, protecting it from damage.

The line inversion system, available with electromechanical or overpressure drive, is supplied separately (see pages 38-39-40).



Technical characteristics

Doser piston flow rate *	160 (ø 7 mm) - 400 (ø 10 mm) cm ³ /min
Max. working pressure	400 bar adjustable
Tank capacity	40 - 100 litres
Doser piston diameter	7 - 10 mm
Filling connection	G 1/2" (f)
Lubricant outlet connection	G 3/8" (f)
Temperature	-25 °C / +60 °C
Lubricant	Oil > 40 cSt - Greases max NLGI 2
Electric min. level control	Standard
Electric min. max. level control	On request
Motor	Power 0,55-0,66 kW
	230/400 V AC-50 Hz - 276/480 V AC-60 Hz *
	Speed 1370 ÷ 1640 rpm
	Protection IP 55

* Approx. flow rate with grease NLGI 2 at 18 °C. (The lubricant must have technical characteristics in compliance with working temperature).

* Supply voltages different from the standard have to be specified during the purchase order.

GUIDE TO CHOOSING PUMP

P/N		Tank capacity (litres)	Ø pumping elements (mm)	Flow rate (cm³/min)
Grease	Oil			
2000065	2000305	40	7	160
2000185	2000425	100	7	160
2000095	2000335	40	10	400
2000215	2000455	100	10	400

ACCESSORIES

STANDARD EQUIPMENT



Low level capacitive sensor



Visual level indicator
for oil and grease

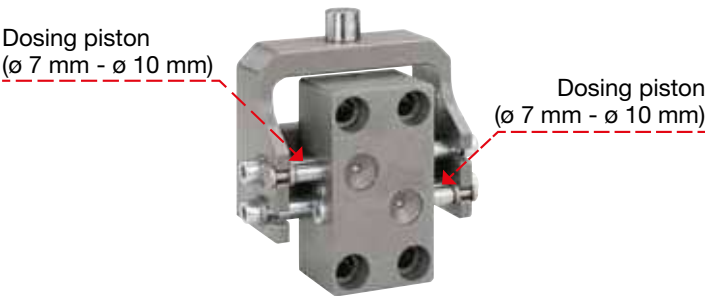
ON REQUEST



High level capacitive sensor

OSCILLATING PUMPING UNIT

The reciprocating motion of pumping group’s body allows the two dosing pistons dispense lubricant directly from pumping group to pump’s outlet.



Overall dimensions (mm)

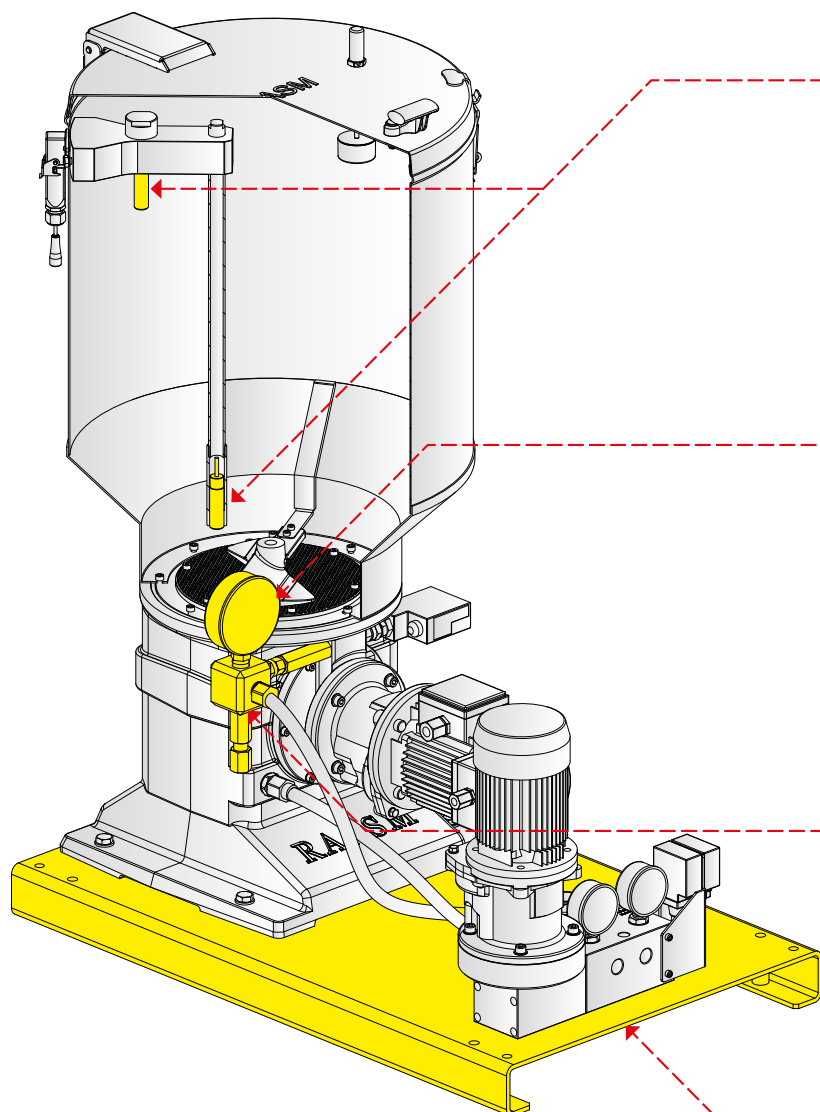
Dimensions shown: 1031, 715, 667, 490, 538, 899, 316, 148, 420, 361, 510, 660,6, 777,2, 255, 360 x ø 12,5

100 litres		
	Grease	Oil
Packing-m³	1-0,435	1-0,435
Net weight kg	75,7	73,6
Gross weight kg	92,5	90,4

40 litres		
	Grease	Oil
Packing-m³	1-0,268	1-0,268
Net weight kg	63,2	61,3
Gross weight kg	79,6	77,7



ACCESSORIES PUMP SERIES C20P



P/N 1581800
High or low level capacitive sensor



P/N 2081050
Pressure gauge

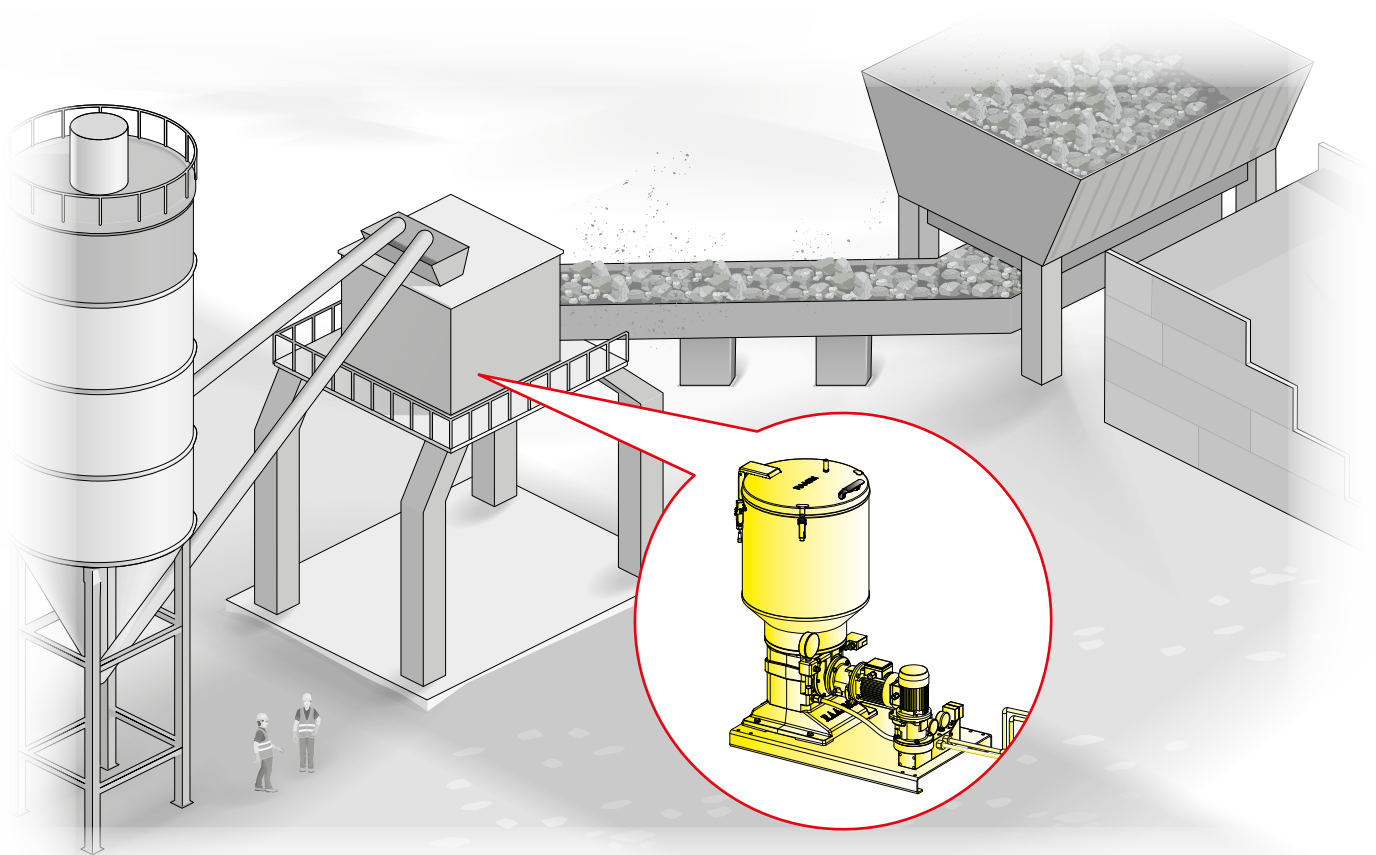


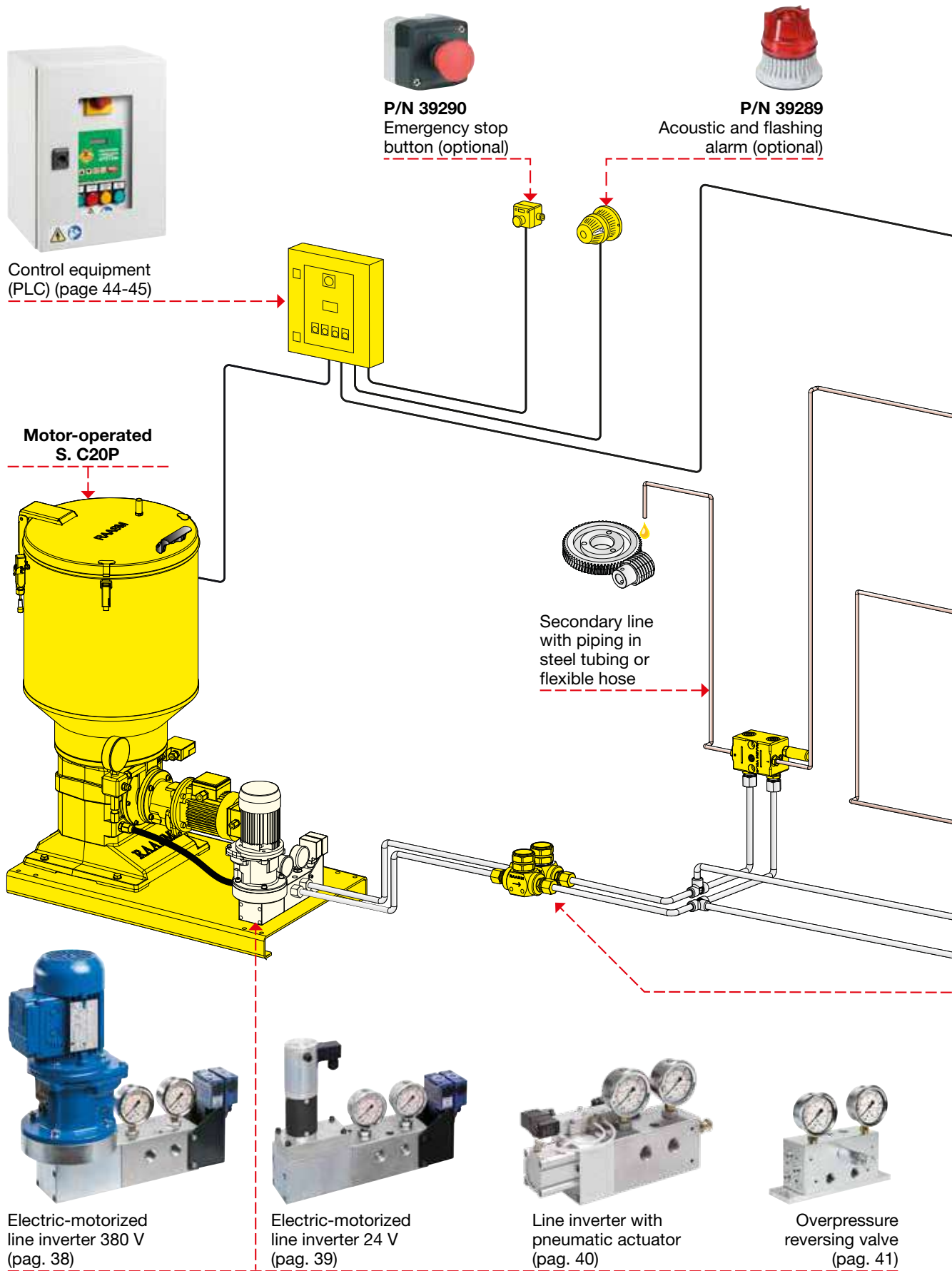
P/N 2081700
Outlet pressure control device



P/N 2081750
Base for pump and connecting hoses

P/N	Description	Connection	Capacity/Pressure
1581800	Minimum and maximum capacitive level sensor	M18 x 1	-
2081050	Pressure gauge ø 100 mm 600 bar	G 1/4" (m)	600 bar
2081700	Outlet pressure control device	Outlet G 3/8" (f)	50 - 400 bar
2081750	Base for pump and connecting hoses	Hoses G 3/8"(f) x G 3/8"(f)	Hoses 400 bar





Type of lubrication system with motor-operated pump **SERIES C20P**



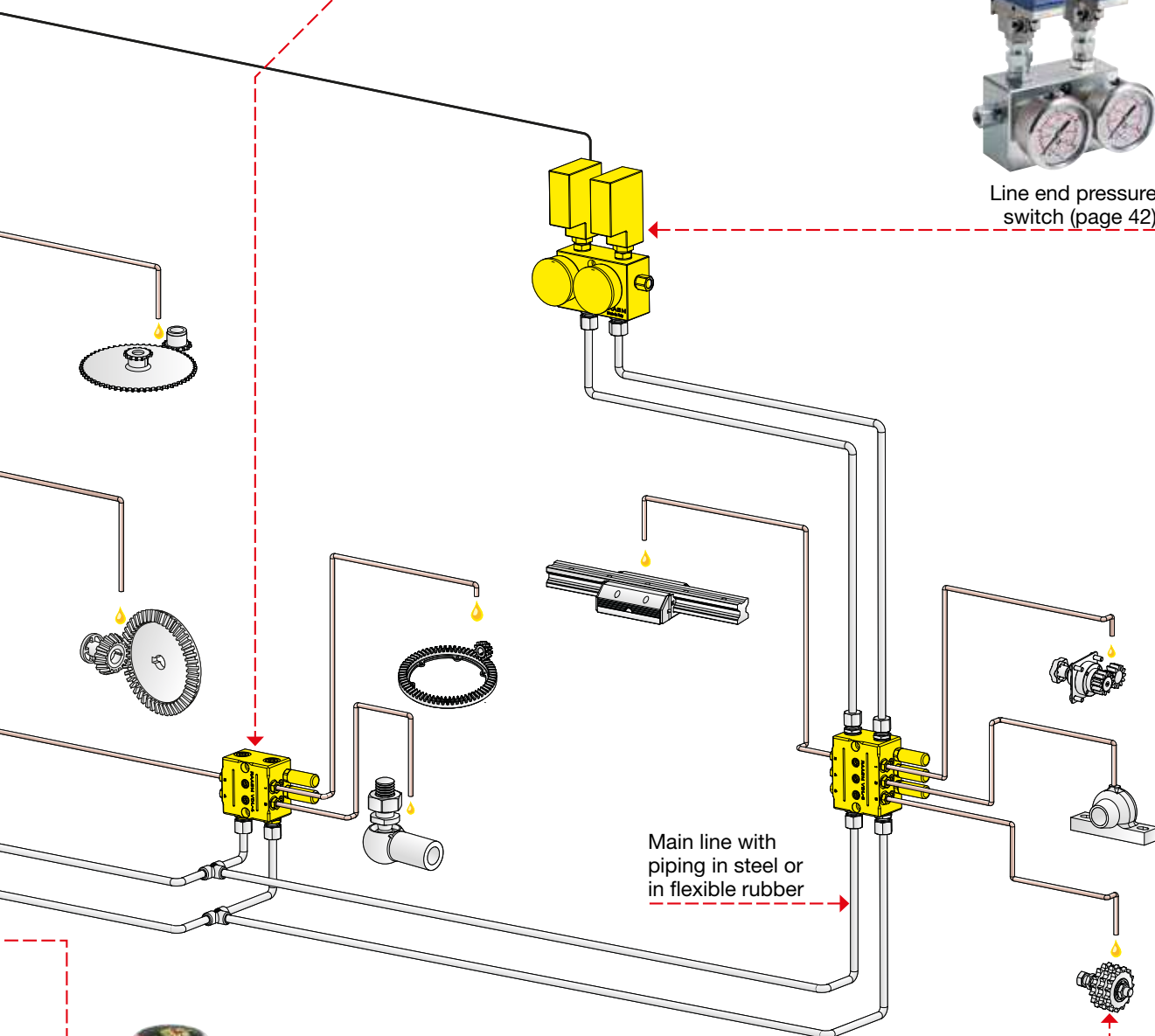
Volumetric distributor
Series VED-L (page 34)



Volumetric distributor
Series VDL-M (page 30)



Line end pressure
switch (page 42)



Line and delivery
filter (pag. 43)

Lube point:

In the plant are represented some types of moving parts that need to be lubricated.



SERIES C20F AIR-OPERATED PUMP

DRUM

Depending on available feed type, on system's specifics or on required dispense, an air-operated pump may be preferred to an electric one.

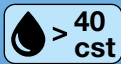
Various solutions are available for great versatility: with 10 liters tank or suitable for 20, 50 or 200 kg drums, provided with drum cover and grease follower plate (if necessary).

If commercial drums are used, once the lubricant is finished the end user can replace the drum or fill it up again through the specific inlet, on request with a special kit.

Oil pumps are provided with drum cover for open drums (up to 50 kg) or with ring nut for closed drums (usually from 50 kg to 200 kg).

High compression ratio (50:1) and adjustable feeding pressure allow to set system's pressure to its specific requirements (from 100 to 350 bar).

with tank 10 kg



Technical characteristics

Max. flow rate *	1330 cm ³ /min
Max. working pressure	8 bar
Pressure ratio	50:1
Air inlet connection	G 1/4" (f)
Lubricant outlet connection	G 1/4" (f)
Overpressure valve	Adjustable from 100 a 350 bar
Temperature	-25 °C / +60 °C
Lubricant	Oil > 40 cSt - Greases max NLGI 2

* Approx. flow rate with grease NLGI 2 at 18 °C. (The lubricant must have technical characteristics in compliance with working temperature).

DELIVERY INVERSION AND CONTROL ASSEMBLY

This group is composed by:

- **Pressure gauge:** to check the line pressure.
- **Overpressure valve:** allows to check the system pressure and to discharge the lubricant in case of overpressure 100 - 350 bar.
- **Filling filter:** for filling the lubricant in the tank.
- **Bleeder valve:** during the filling phase, it allows to remove the air inside.

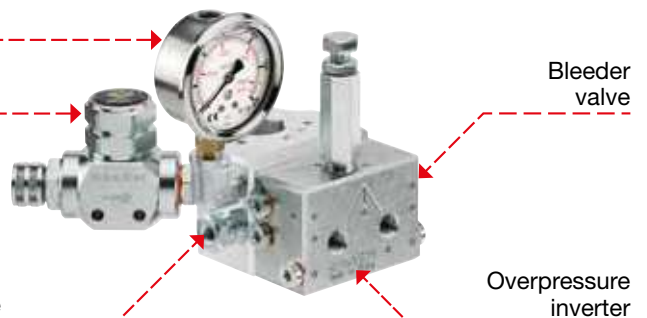
Pressure gauge

300 µm filling filter

Bleeder valve

Overpressure valve

Overpressure inverter






GUIDE TO CHOOSING PUMP

P/N full Grease	Tank capacity (kg)	For drums with capacity (kg)	Ø drum internal (mm)	P/N pump (R 50:1)	P/N drum cover	P/N follower plate	P/N overpressure reversing valve
2010020	10	-	220	62641	-	10/617	2080201
2010200	-	20	255/300	62648	10/507	10/63	2080201
2010380	-	50	335/360	62674	10/503	10/62	2080201
2010470	-	60	360/400	62674	10/502	10/61	2080201
2010560	-	180 - 220	540/580	62695	10/501	10/60	2080201

P/N full Oil	Tank capacity (kg)	For drums with capacity (kg)	Ø drum external (mm)	P/N pump (R 50:1)	P/N drum cover (for open drums)	P/N drum ring (for closed drums - 2" hole)	P/N minimum level indicator	P/N overpressure reversing valve
2010650	10	-	240	62641	-	-	-	2080201
2010830	-	20	260/330	62648	10/507	-	-	2080201
2011010	-	50 - 60	340/385	62674	10/503	-	-	2080201
2011100	-	50 - 60	-	62674	-	10/14	39650	2080201
2011190	-	180 - 220	-	62695	-	10/14	39650	2080201

ACCESSORIES

STANDARD EQUIPMENT

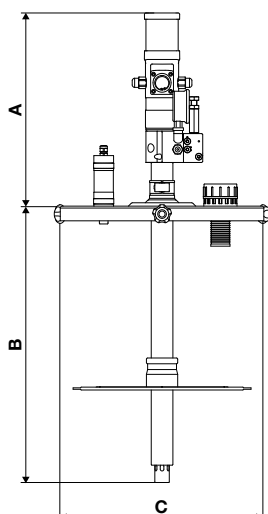
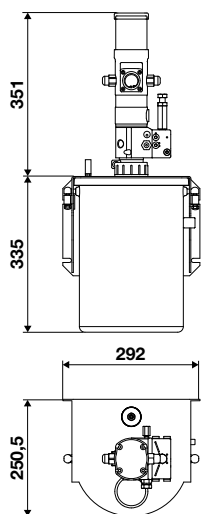
 <p>Ultrasonic min/max level indicator - connection G 3/4" (m)</p>	<p>Only for P/N 2010650</p>  <p>Visual high level indicator for oil</p>	<p>Only for P/N 2010020</p>  <p>Visual high level indicator for grease</p>

ON REQUEST






Overall dimensions (mm)

P/N 2010020 for Grease
P/N 2010650 for Oil



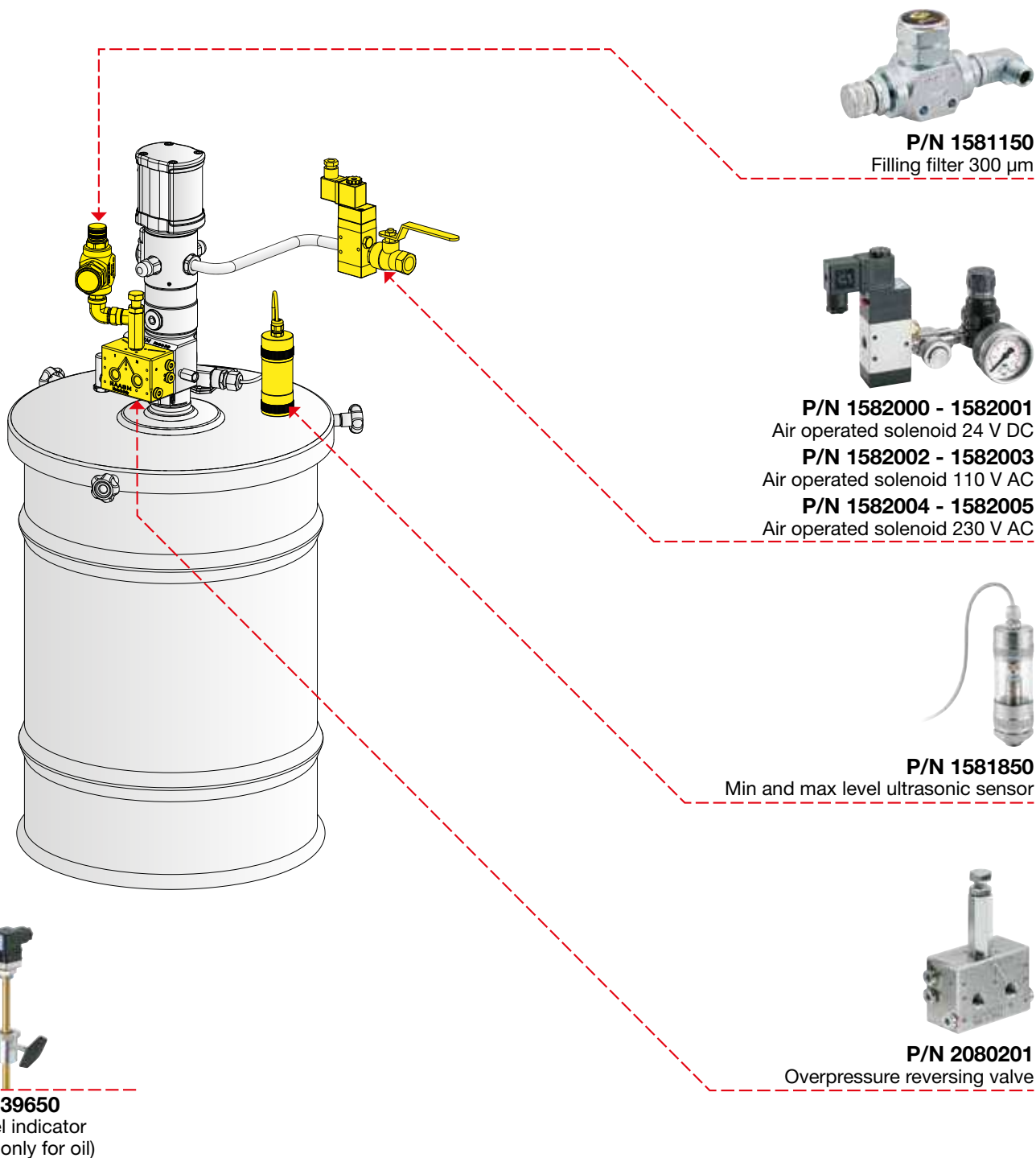
P/N Grease	A	B	C
2010200	355	361	341
2010380	355	621	389
2010470	355	621	424
2010560	355	835	604

P/N Oil	A	B	C
2010830	355	361	341
2011010	355	621	389
2011100	355	621	424
2011190	355	835	604

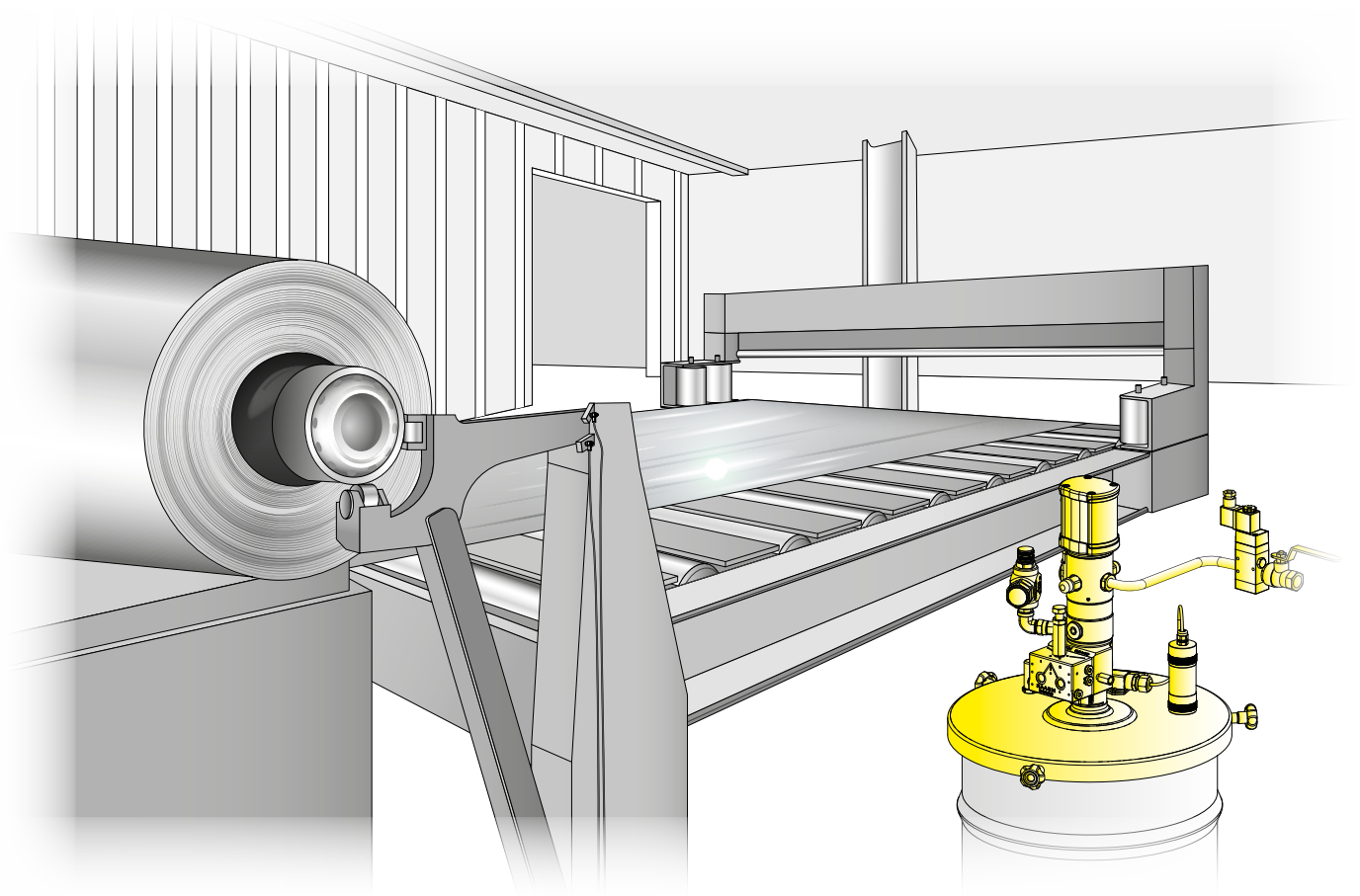
	10 kg		20 kg		50 kg		60 kg		220 kg	
	Grease	Oil	Grease	Oil	Grease	Oil	Grease	Oil	Grease	Oil
Packing-m ³ 	1-0,056	1-0,056	2-0,094	2-0,094	2-0,086	2-0,086	2-0,086	2-0,050	2-0,115	2-0,060
Net weight kg 	18,2	17,4	13,5	12,2	15,2	13,4	15,6	11,4	23,2	13,0
Gross weight kg 	18,5	17,7	14,1	12,8	15,8	14,0	16,2	12,0	24,0	13,8

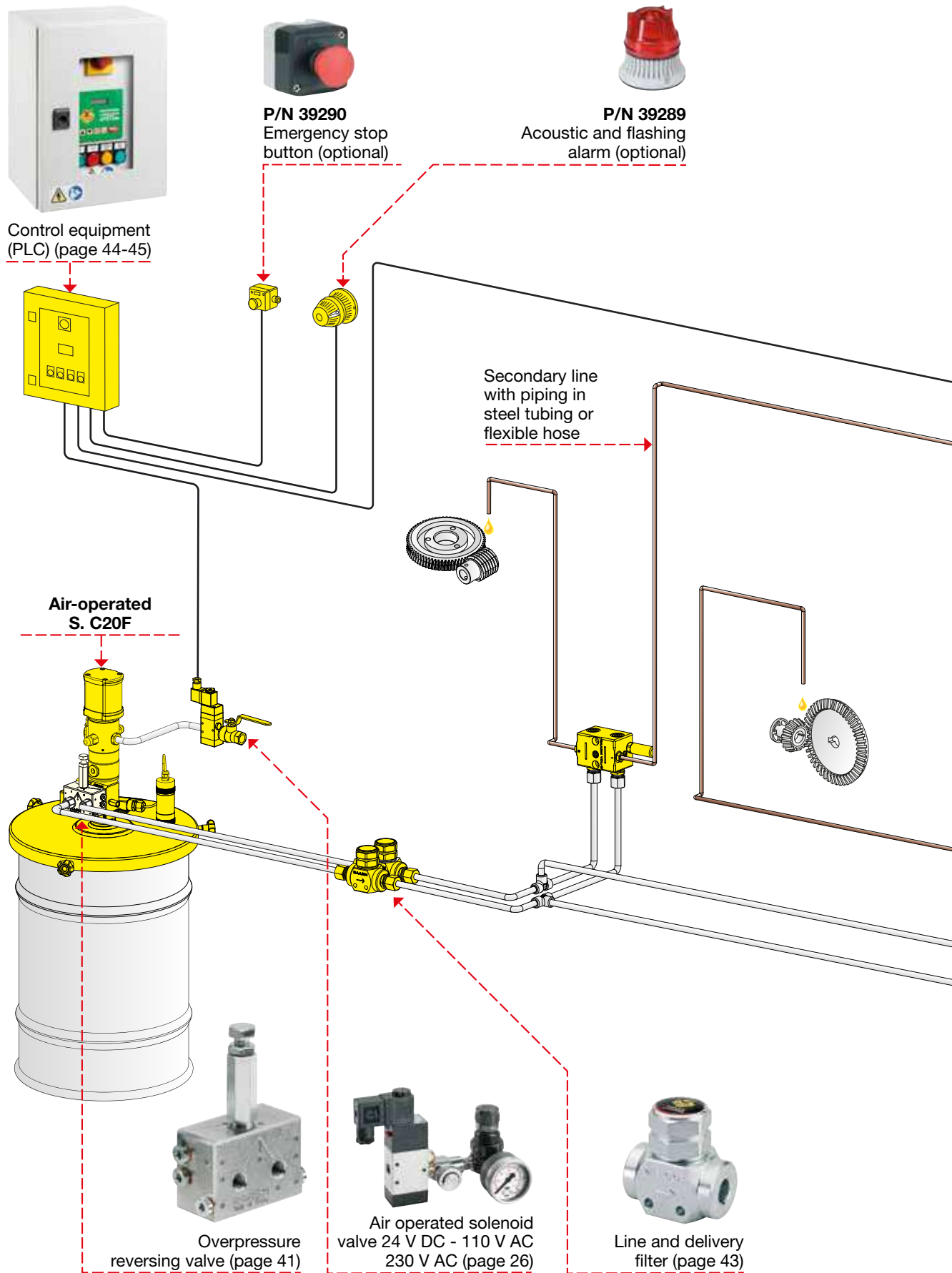


ACCESSORIES PUMP SERIES C20F



P/N	Description	Connection	Pressure
1581150	Filling filter 300 µm	G 3/8" (m)	-
1582000	Air operated solenoid 24 V DC	G 1/4" (f) x G 1/4" (f)	2,5-8 bar
1582001	Air operated solenoid 24 V DC	G 1/2" (f) x G 1/2" (f)	2,5-8 bar
1582002	Air operated solenoid 110 V AC	G 1/4" (f) x G 1/4" (f)	2,5-8 bar
1582003	Air operated solenoid 110 V AC	G 1/2" (f) x G 1/2" (f)	2,5-8 bar
1582004	Air operated solenoid 230 V AC	G 1/4" (f) x G 1/4" (f)	2,5-8 bar
1582005	Air operated solenoid 230 V AC	G 1/2" (f) x G 1/2" (f)	2,5-8 bar
1581850	Min and max level ultrasonic sensor	Hole on drum cover ø 31 mm	-
2080201	Overpressure reversing valve	Outlet G 1/4" (f)	50-150 bar oil / 50-400 bar grease
39650	Min level indicator (optional only for oil)	Oil	-





Type of lubrication system with air-operated pump **SERIES C20F**



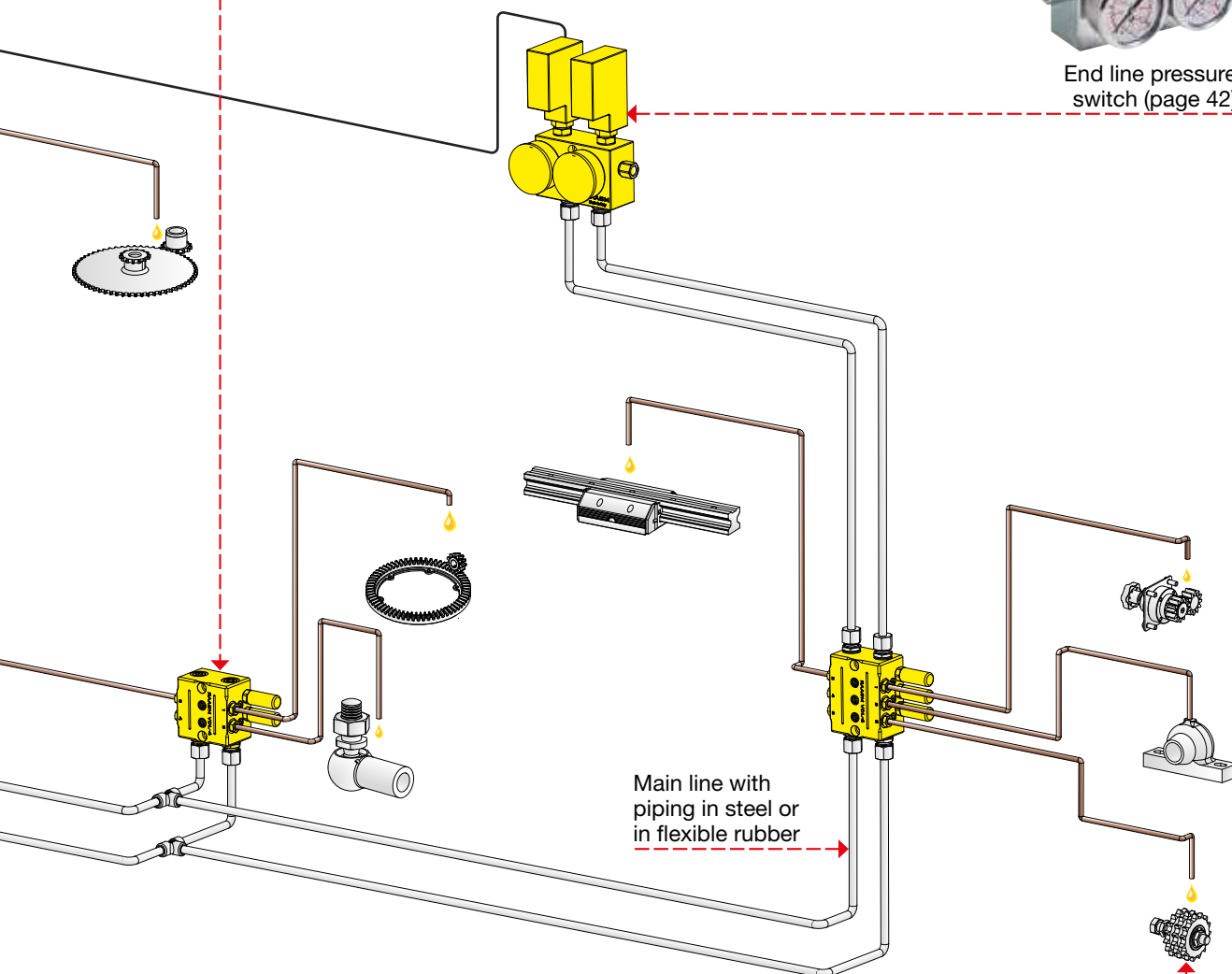
Volumetric distributor
Series VED-L (page 34)



Volumetric distributor
Series VDL-M (page 30)



End line pressure
switch (page 42)



Lube point:

In the plant are represented some types of moving parts that need to be lubricated.



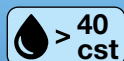
VDL-M VOLUMETRIC DISTRIBUTOR

The volumetric distributor VDL-M is very simple, efficient and precise, and also allows the adjustment of delivery directly to the system installation.

The volumetric distributor VDL-M has the function of delivering and regulating the quantity of lubricant directly to the system's users.

The flow rate can be adjusted by acting directly on the adjusting screws at the top of the distributor (1 screw/delivery).

The dispensing of lubricant occurs alternately by pumping through two separate main circuits, each with its own independent outlet.



Technical characteristics	
Doser piston flow rate	Adjustable from 0,28 to 3,00 cm ³ /cycle
Notch to regulate flow rate	1 - 2 - 3
Flow rate for each notches	0,3 - 1,5 - 3,00 cm ³ /cycle
Max working pressure	150 bar oil / 400 bar grease
Min flow rate for each delivery	0,28 cm ³ /cycle
Max flow rate for each delivery	3,00 cm ³ /cycle
Lubricant	Oil > 40 cSt - Greases max NLGI 2
No. of deliveries	2 - 4 - 6 - 8 - 10
Lubricant inlet connection	G 3/8" (f)
Lubricant outlet connection	G 1/4" (f)
Working temperature	-25 °C / +60 °C

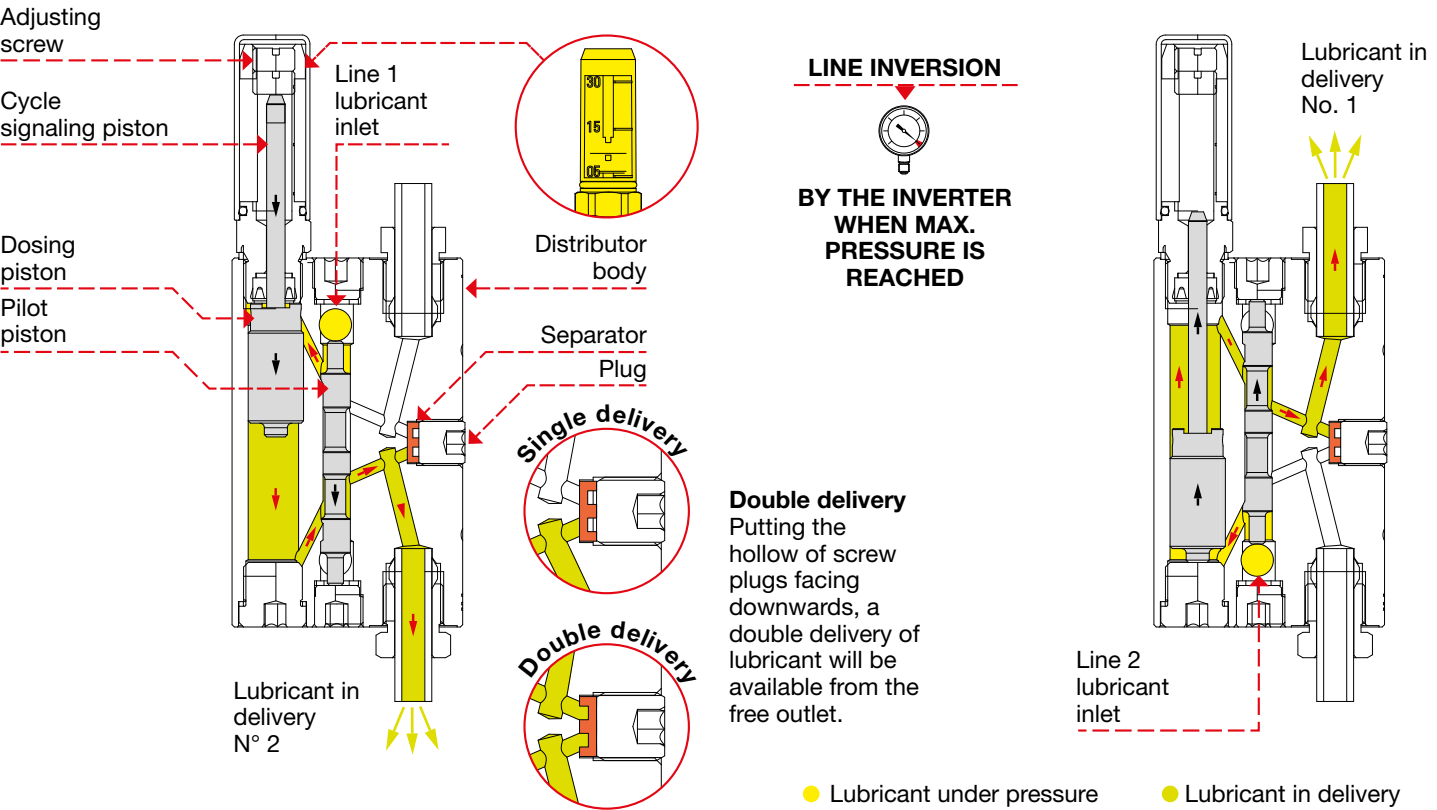
GUIDE TO CHOOSING DISTRIBUTOR

P/N	Abbreviation	Deliveries		Threads *	
		Min	Max	Inlet	Outlet
2030310	VDL-M2	1	2	G 3/8" (f)	G 1/4" (f)
2030330	VDL-M4	2	4		
2030350	VDL-M6	3	6		
2030370	VDL-M8	4	8		
2030390	VDL-M10	5	10		

* Threads on request NPT 3/8" (f) - NPT 1/4" (f).

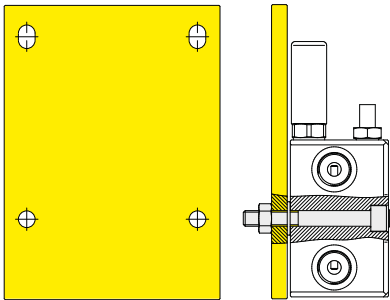
WORKING PRINCIPLE

In the first stage of the lubrication cycle the fluid pressure in line 1, moving the first pilot piston and then the dosing piston, sends the lubricant to the user points connected in delivery 2. After the maximum pressure in line 1 is reached, indicated by the line end pressure switch, the inverter changes the feed from line 1 to line 2. In the second stage, the procedure is repeated as above: the fluid pressure moving the the first pilot piston and then the dosing piston, sends the lubricant to the user points.



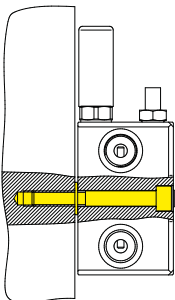
INSTALLATION ON MACHINERY WITH ADDITIONAL PLATE

The distributor can be installed using the steel fixing plates subsequently welded on the machinery or station fixed part.



DIRECT INSTALLATION ON MACHINERY

The distributor can be fixed directly on the structure of the machinery, using the fixing holes with M8 screws. It is advisable to insert spacer washers between the distributor body and the support surface, especially if unfinished.

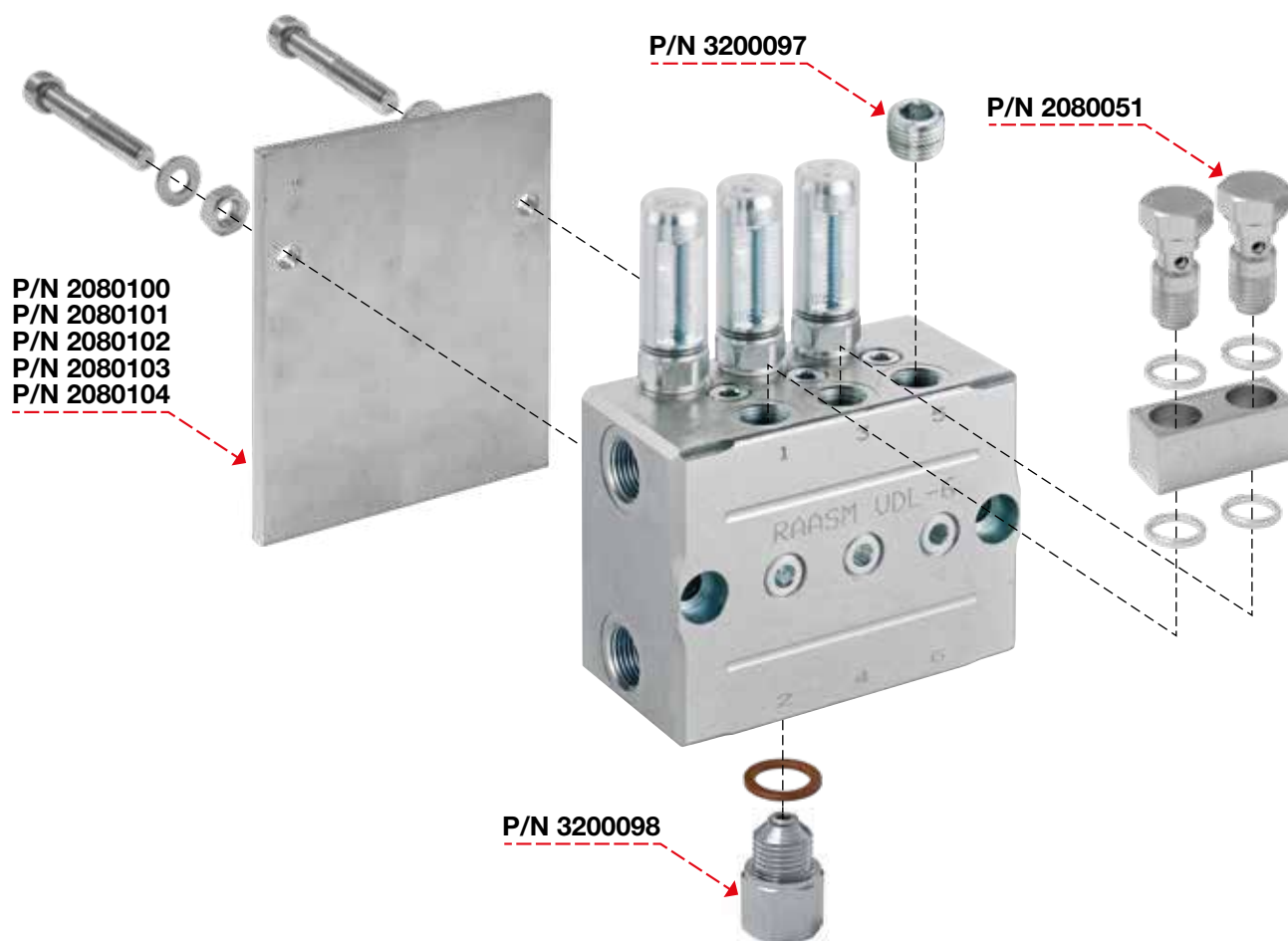






Overall dimensions (mm)

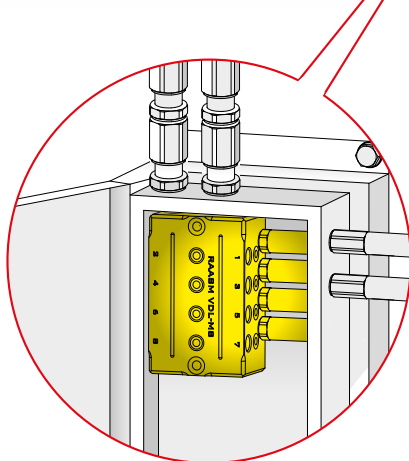
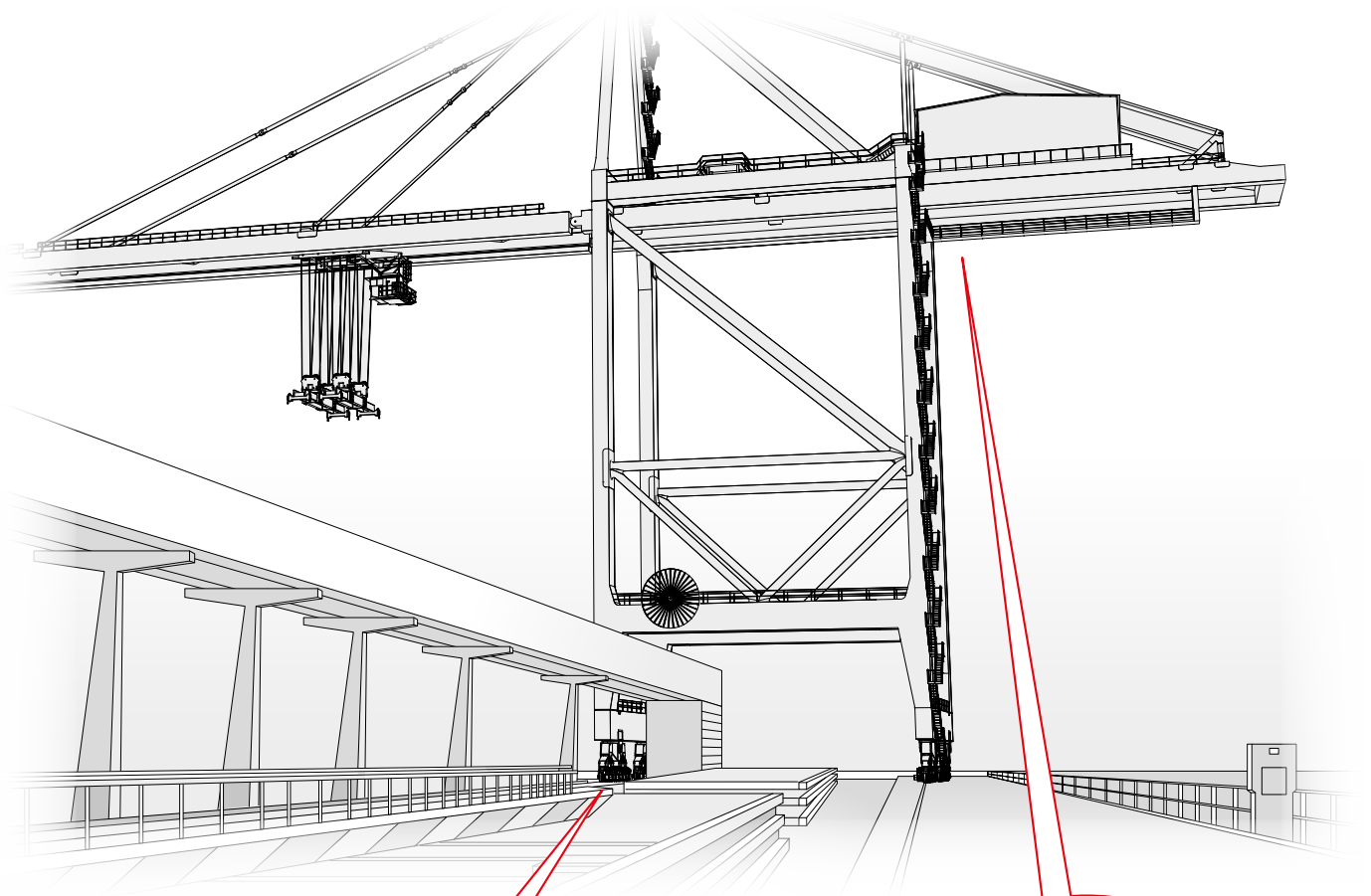
Top view of the distributor. The diagram shows a rectangular body with six ports arranged in two rows of three. The top row ports are labeled 1, 3, and 5, and the bottom row ports are labeled 2, 4, and 6. The overall width is dimensioned as A and the overall height as B. The distance from the top edge to the center of the top row of ports is $\phi 13,5$. The distance from the right edge to the center of the rightmost port in the top row is $\phi 8,5$.

Side view of the distributor. The diagram shows the profile of the device. The total height is 129,7 mm. The distance from the top edge to the center of the top port is 50 mm. The distance from the center of the top port to the center of the bottom port is 80 mm. The distance from the bottom edge to the center of the bottom port is 50 mm. The distance from the left edge to the center of the bottom port is 22,4 mm. The distance from the left edge to the center of the top port is 39,3 mm. The distance from the left edge to the center of the bottom port is 50 mm.

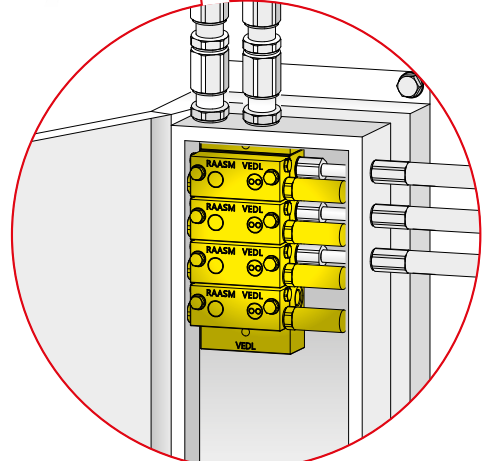
Abbreviation	A	B
VDL-M2	41	57
VDL-M4	64	80
VDL-M6	87	103
VDL-M8	110	126
VDL-M10	133	146



P/N		Description
	2080100	Fixing plate for volumetric distributor "VDL-M" - 2 deliveries
	2080101	Fixing plate for volumetric distributor "VDL-M" - 4 deliveries
	2080102	Fixing plate for volumetric distributor "VDL-M" - 6 deliveries
	2080103	Fixing plate for volumetric distributor "VDL-M" - 8 deliveries
	2080104	Fixing plate for volumetric distributor "VDL-M" - 10 deliveries
	3200097	Plug G 1/4" (m) for outlet distributor VDL-M
	2080051	Distributor junction "VDL-M" with dosing screw G 1/4" (m)
	3200098	Non-return valve G 1/4" (m) - outlet G 1/4" (f)



Distributor VDL-M



Distributor VED-L

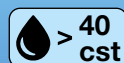


VED-L MODULAR VOLUMETRIC DISTRIBUTOR

The functioning of the VEDL modular volumetric distributor is very simple, effective and precise; it regulates the flow rate directly on the distributor.

Completely made of AVP steel with nickel-plating surface treatment, lapped holes and treated ground pistons for sealing without gaskets. It consists of two main parts: a modular base, on which the fittings inlet and lubricant delivery are fixed and a dosing element which has the task of dosing a fixed quantity of lubricant at the base.

The dosing element is equipped with a turret with adjustment screw for custom flow rate and impact-resistant PMMA cap and O-ring sealing. Available with BSP or NPTF inlet and outlet threads.



Technical characteristics

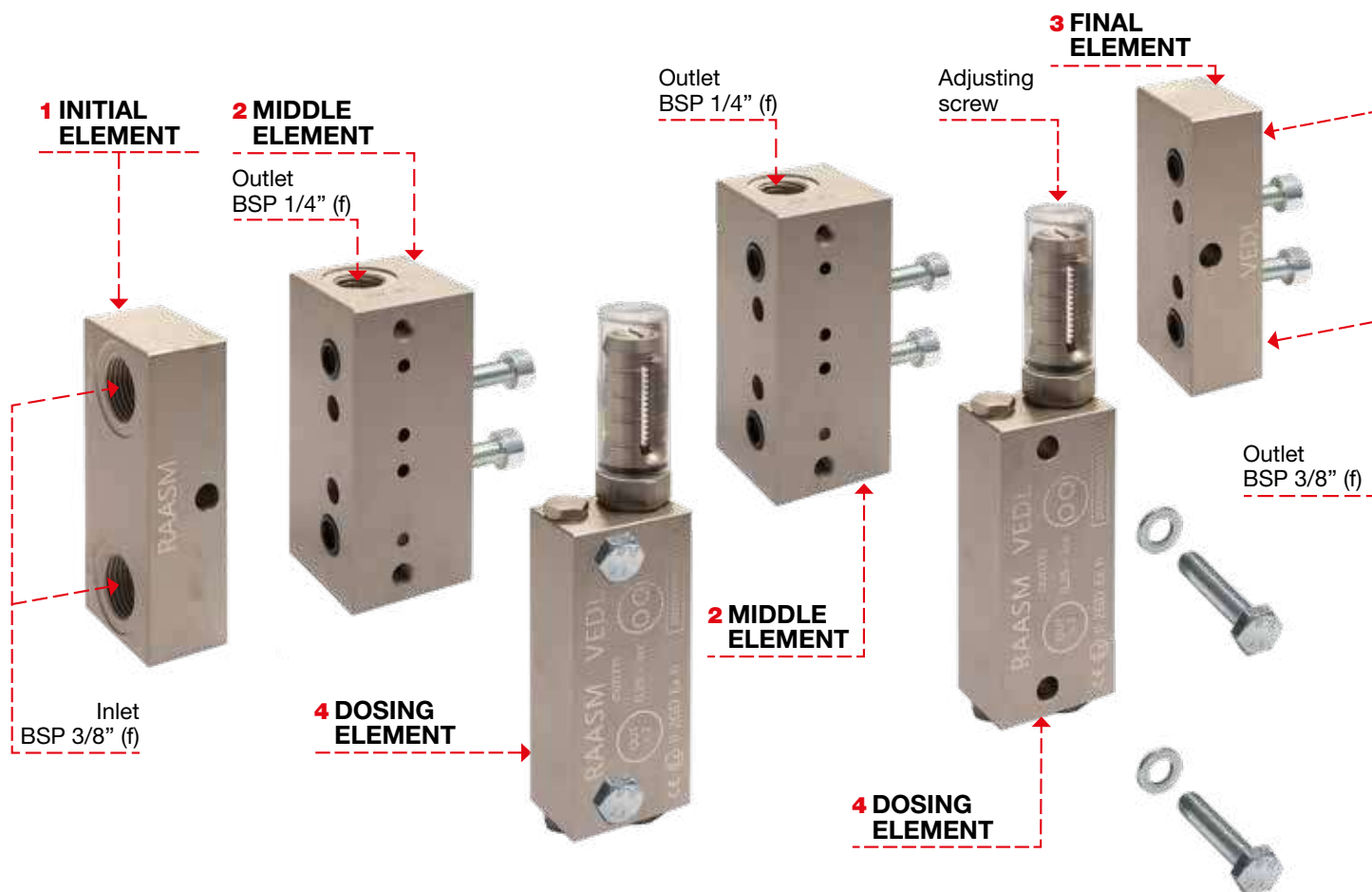
P/N	2200600	2200700
Doser piston flow rate	From 0,25 to 3,00 cm ³ /cycle	From 0,25 to 3,00 cm ³ /cycle
Notch to regulate flow rate	1 - 2 - 3 - 4	1 - 2 - 3 - 4
Flow rate for each notch	0,9 - 1,5 - 2,4 - 3,00 cm ³ /cycle	0,1 - 0,50 - 0,75 - 1,00 cm ³ /cycle
Min flow rate for each delivery	0,25 cm ³ /cycle	0,10 cm ³ /cycle
Max flow rate for each delivery	3,00 cm ³ /cycle	1,00 cm ³ /cycle
Max working pressure	150 bar oil / 400 bar grease	150 bar oil / 400 bar grease
Frequency	100 cycles/minute	100 cycles/minute
Lubricant inlet connection	BSP 3/8" (f) or NPTF 3/8"	BSP 3/8" (f) or NPTF 3/8"
Lubricant outlet connection	BSP 1/4" (f) or NPTF 1/4"	BSP 1/4" (f) or NPTF 1/4"
Temperature	-25 °C / +60 °C	-25 °C / +60 °C
Lubricant	Oil > 40 cSt - Greases max NLGI 2	Oil > 40 cSt - Greases max NLGI 2

Basic element type	P/N VED-L	Inlet	Outlet
1 Initial element	2200010	BSP 3/8" (f)	-
2 Middle element	2200012	-	BSP 1/4" (f)
3 Final element	2200013	-	BSP 3/8" (f)

4 Dispensing element VED-L	
Flow rate (cm ³ /cycle)	P/N
From 0,25 to 3,00	2200600
From 0,10 to 1,00	2200700

Assembled base VED-L (composed by 1+2+3)

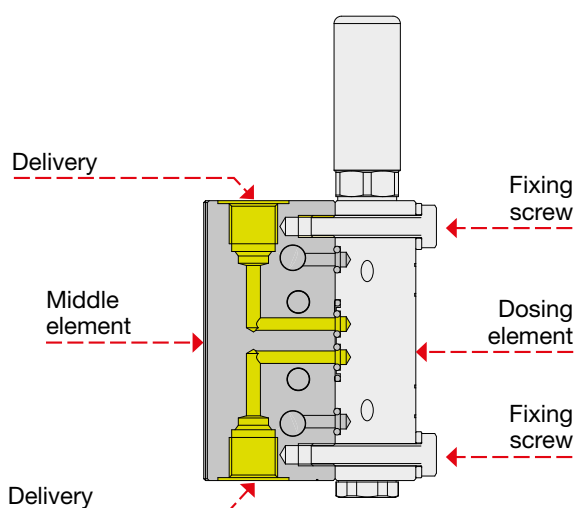
N° elements	P/N	N° elements	P/N	N° elements	P/N
3	2201560	9	2201566	15	2201572
4	2201561	10	2201567	16	2201573
5	2201562	11	2201568	17	2201574
6	2201563	12	2201569	18	2201575
7	2201564	13	2201570	19	2201576
8	2201565	14	2201571	20	2201577



CONVERSION FROM TWO TO ONE DELIVERY

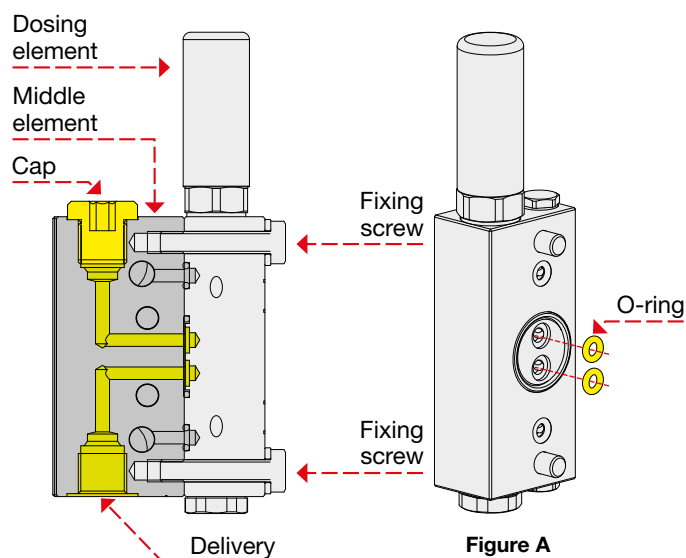
The lubricant deliveries are placed on both sides of the middle element and can be double or single. In the standard configuration the outputs are double.

DOUBLE DELIVERIES



The supply of lubricant takes place alternately from one side of the section (Line 1) to the other (Line 2). The quantity of lubricant delivered to each outlet (Line 1 and Line 2) is equal to the value defined by the adjusting screw (e.g. 0.25 cm^3).

SINGLE DELIVERY



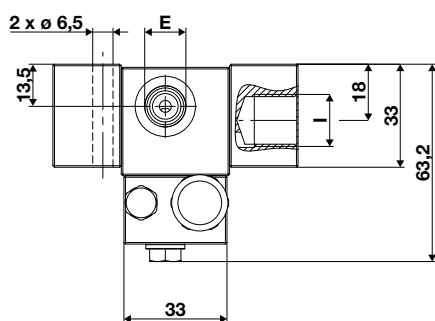
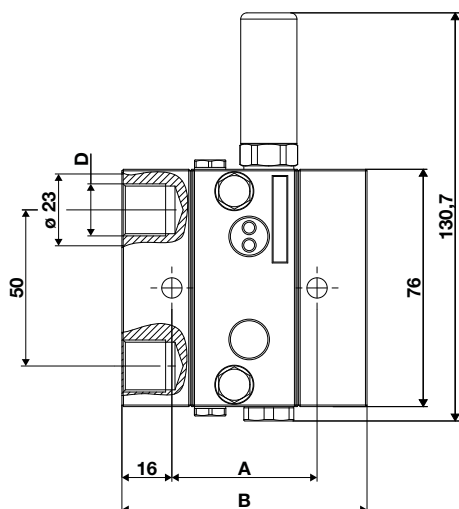
To use the single-outlet dispenser, the two O-rings in the dispensing element must be completely removed by following the steps below:

- Unscrew the two screws that secure the dosing element to the middle element.
- Remove the dosing element and turn it upside down.
- Remove the two O-rings as shown in figure A on the side.
- Fasten the dosing element again to the middle element.
- Apply the G 1/4 "(m) cap in the unused outlet.

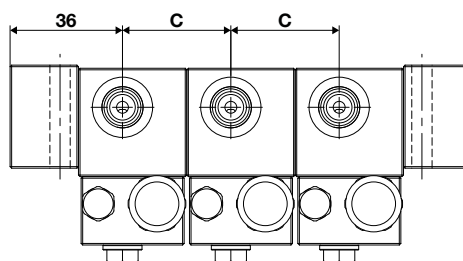
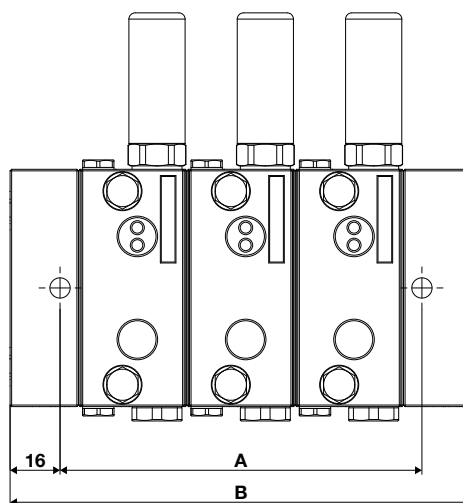
The quantity of lubricant supplied at each complete cycle of Line 1 and Line 2 on the single outlet (Line 1) is equal to the sum of the value defined by the adjustment screw (e.g. $.25 \text{ cm}^3 + 0.25 \text{ cm}^3 = 0.50 \text{ cm}^3$).

Overall dimensions (mm)

Example of distributor
2 deliveries

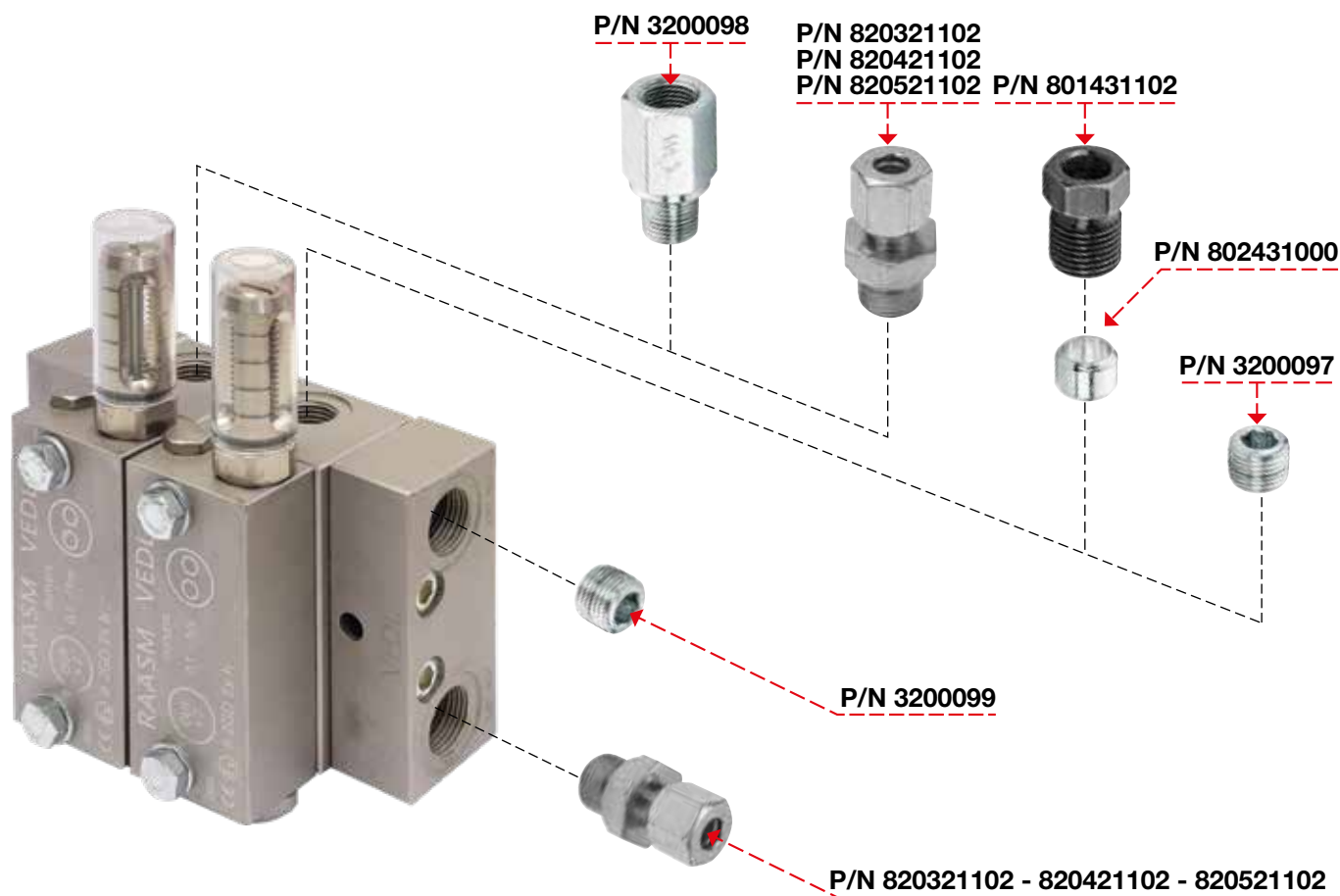









Example of distributor
6 deliveries



Model	P/N	N° deliveries	Flow rate (cm ³ /cycle)	Inlet	Outlet	Dimensions		
				D - I	E	A	B	C
VED-L	2200570	2	From 0,10 to 1,00	BSP 3/8" (f)	BSP 1/4" (f)	46,5	78,5	34,7
	2200571	4				81,2	113,2	34,7
	2200572	6				115,9	147,9	34,7
	2200573	8				150,6	182,0	34,7
	2200574	10				185,3	217,3	34,7
	2200575	12				220,0	252,0	34,7
	2200576	14				254,7	286,7	34,7
	2200577	16				289,4	321,4	34,7
	2200560	2	From 0,25 to 3,00	BSP 3/8" (f)	BSP 1/4" (f)	46,5	78,5	34,7
	2200561	4				81,2	113,2	34,7
	2200562	6				115,9	147,9	34,7
	2200563	8				150,6	182,0	34,7
	2200564	10				185,3	217,3	34,7
	2200565	12				220,0	252,0	34,7
	2200566	14				254,7	286,7	34,7
	2200567	16				289,4	321,4	34,7

ACCESSORIES VED-L



P/N		Description
	3200097	Plug G 1/4 "(m) for distributor inlet
	3200099	Plug G 3/8 "(m) for inlet/outlet distributor
	3200098	Non-return valve G 1/4" (m) - outlet G 1/4" (f)
	801431102	Fitting for bicone G 1/4" (m) - hose ø 8 mm
	802431000	Bicone ogive hose ø 8 mm
	820321102	Straight compression fitting G 1/4" (m) - hose ø 6 mm
	820421102	Straight compression fitting G 1/4" (m) - hose ø 8 mm
	820521102	Straight compression fitting G 1/4" (m) - hose ø 10 mm
	820521103	Straight compression fitting G 3/8" (m) - hose ø 10 mm
	820621103	Straight compression fitting G 3/8" (m) - hose ø 12 mm
	820821103	Straight compression fitting G 3/8" (m) - hose ø 16 mm



ELECTROMOTORIZED REVERSING VALVE 230 V

The reversing valves are devices that enable the flow of lubricant, at the pump outlet, to be automatically diverted from line 1 to line 2.

This operation allows the two lines to be alternately pressurized, thereby activating the distributors connected to them. They are available in three versions depending on the operating mode: overpressure, with pneumatic control and electromotorized. The electromotorized reversing valves carry out line reversal through a servo control fed by a gearmotor driven and controlled by PLC.

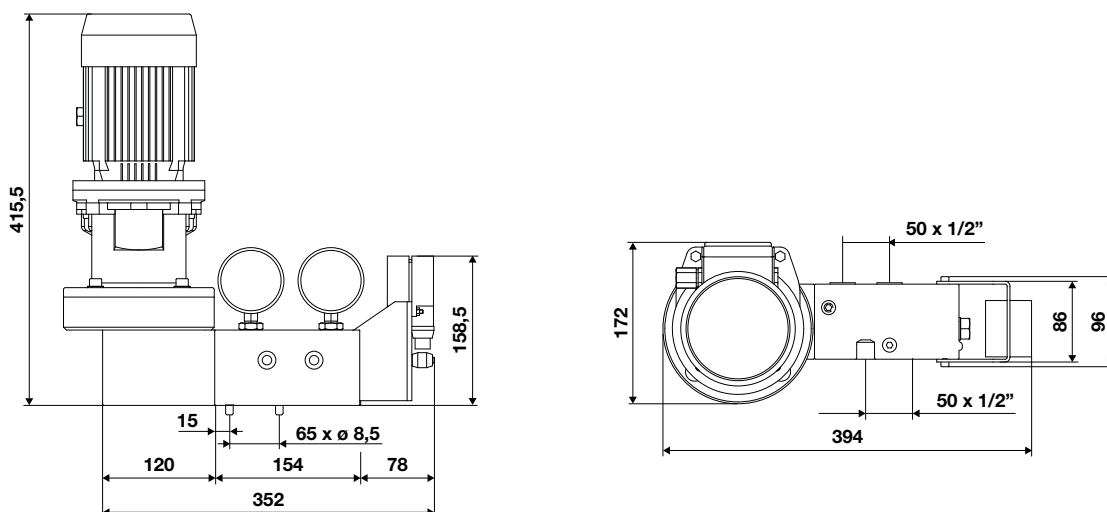


Technical characteristics

P/N	2080400
Max flow rate	Up to 7700 cm ³ /min (420 kg/h)
Max working pressure	150 bar oil / 400 bar grease
Reducer *	Asynchronous three-phase 230/400V AC 50 Hz - 0,09 kW Asynchronous three-phase 265/460V AC - 60 Hz - 0,09 kW Speed 900 ÷ 1120 rpm
Delivery connections line 1 and 2	G 1/2" (f)
Fluid inlet and discharging pressure outlet connection	G 1/2" (f)
Protection	IP55
Lubricants	Oil > 40 cSt - Greases max NLGI 2

* Supply voltages different from the standard have to be specified during the purchase order.

Overall dimensions (mm)





ELECTROMOTORIZED REVERSING VALVE 24 V DC

The electromotorized reversing valves carry out line reversal through a servo control fed by a 24 V DC gearmotor driven controlled by PLC.

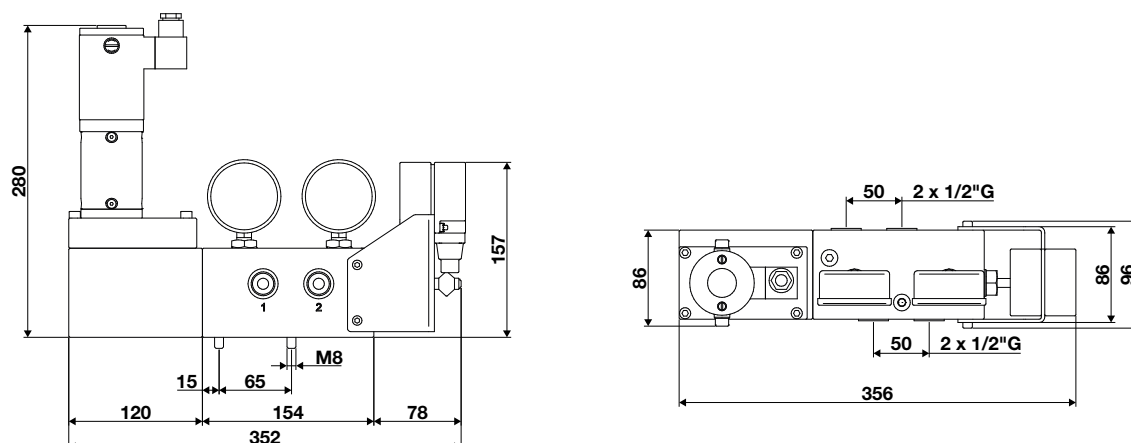


Technical characteristics

P/N	2080024
Max flow rate	Up to 7700 cm ³ /min (420 kg/h)
Max working pressure	150 bar oil / 400 bar grease
Reducer *	Rated voltage 24 V DC Rated speed 1500 Rpm Rated power 22W
Delivery connections line 1 and 2	G 1/2" (f)
Fluid inlet and discharging pressure outlet connection	G 1/2" (f)
Protection	IP55
Lubricants	Oil > 40 cSt - Greases max NLGI 2

* Supply voltages different from the standard have to be specified during the purchase order.

Overall dimensions (mm)





REVERSING VALVE WITH PNEUMATIC ACTUATOR

The **inverters with pneumatic actuator** allow the switching between the two feeding lines thanks to the pneumatic piston alternative movement, driven by the solenoid valve connected to the external PLC unit.



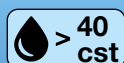
Technical characteristics	
P/N	2080410
Max flow rate	Up to 7700 cm ³ /min (420 kg/h)
Working pressure	150 bar oil / 400 bar grease
Pneumatic pressure	2 - 8 bar
Electric control	24 V DC - 2,5 W
Delivery connections line 1 and 2	G 1/2" (f)
Fluid inlet and discharging pressure outlet connection	G 1/2" (f)
Protection	IP55
Lubricants	Oil > 40 cSt - Greases max NLGI 2

Overall dimensions (mm)	



OVERPRESSURE REVERSING VALVES

The **overpressure reversing valves** exploit the pressure generated by the pump in order to carry out the change between the two lines.



Technical characteristics		
P/N	2080300	2080201
Max flow rate	6600 cm ³ /min (360 kg/h)	5500 cm ³ /min (300 kg/h)
Max working pressure	50-150 bar oil / 50-400 bar grease	50-150 bar oil / 50-400 bar grease
Delivery connections line 1 and 2	G 3/8" (f)	G 1/4" (f)
Working cycles	Max 120 per min	Max 120 per min
Fluid inlet and discharging pressure outlet connection	G 3/8" (f)	G 1/4" (f)
Lubricants	Oil > 40 cSt - Greases max NLGI 2	Oil > 40 cSt - Greases max NLGI 2

Overall dimensions (mm)	
<p>Front view dimensions: 186 (total height), 90 (height to gauges), 28 (height to ports), 10 (base thickness), 163 (width), 50 x 3/8" (port size).</p> <p>Side view dimensions: 190 x ø 10,5 (top flange), 32 x 3/8" (port size), 60 (height to ports), 20 (height to base), 136,5 (total height), 210 (width).</p>	<p>Front view dimensions: 136,5 (total height), 60 (height to ports), 38 (width to ports), 96 (total width).</p> <p>Side view dimensions: 40 (height), 70 (width).</p>



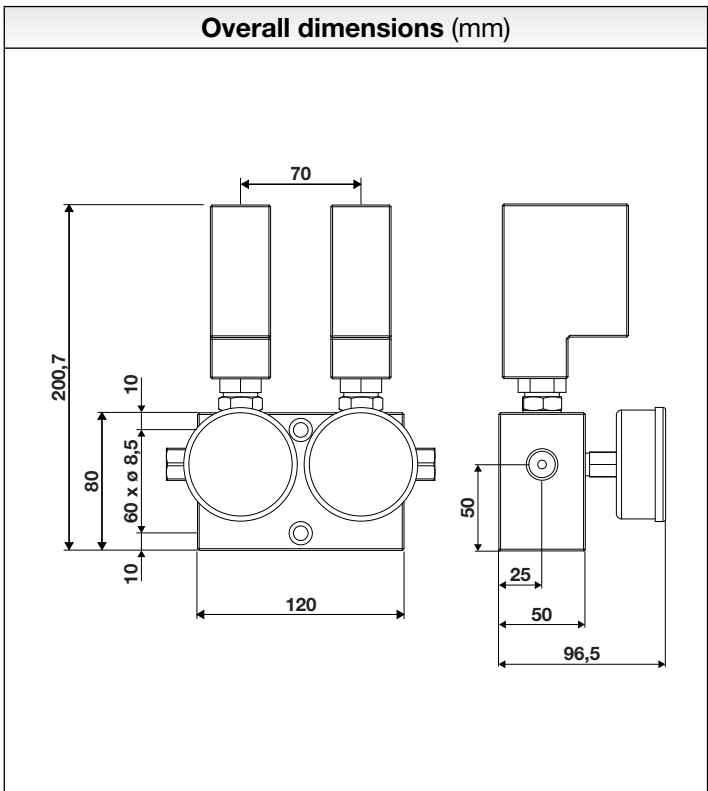
PRESSURE SWITCH

End line pressure switches.

Used for the control and functionality of the operation of the centralized system.
It reports when maximum pressure is reached and confirms that the lubricant dispensing cycle has been completed at all lubrication points of the system.



Technical characteristics	
Type	Oil and grease
Lubricant inlet connection	G 3/8" (f)
Electric contact	By clamps
Working temperature	-25 °C / +60 °C
Lubricants	Oil > 40 cSt - Greases max NLGI 2



1 pressure switch - 2 manometers			
P/N	Working pressure (bar)	Protection degree	Type
2080710	From 30 to 400	IP55	Without box
2080713		IP65	With box

2 pressure switches - 2 manometers			
P/N	Working pressure (bar)	Protection degree	Type
2080700	From 30 to 400	IP55	Without box
2080703		IP65	With box



FILTER

Filter. In order to ensure the proper functioning of the system and avoid any lubricant external contamination, it is advisable to install a filter at the pump outlet (delivery).

The sturdy steel structure of filters ensures a sure sealing and also allows their use in centralized lubrication systems where there are high operating pressures (up to 500 bar).

Operating with both oils and greases, it is placed both at the pump outlet and along the system line.

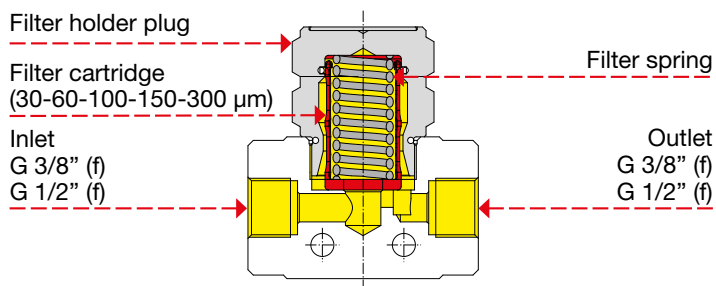


Technical characteristics

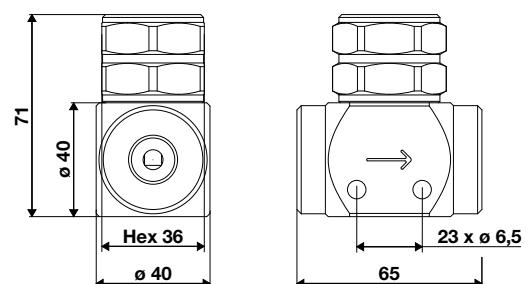
Type	Oil and grease
Working temperature	-25 °C / +60 °C
Lubricants	Oil > 40 cSt - Greases max NLGI 2

P/N	Inlet connection	Outlet connection	Max pressure (bar)	Filtration degree (µm)
2080900	G 3/8" (f)	G 3/8" (f)	500	30
2080930				60
2080950				100
2080800	G 3/8" (f)	G 3/8" (f)	500	150
2080801				300
2080901				30
2080931	G 1/2" (f)	G 1/2" (f)	500	60
2080951				100
2080850				150
2080851	G 1/2" (f)	G 1/2" (f)	500	300

DELIVERY-FILLING FILTER



Overall dimensions (mm)





CONTROL EQUIPMENT

Equipment dedicated to the management and control of centralized lubrication systems. Equipped with an electronic programming card and interface, they manage the input and output signals of the whole system.

200 ÷ 575 V AC 50/60 Hz



Technical characteristics					
P/N	2170036	2170026	2170037	2170035	2170025
Proper for pump	C20S - C20P		C20F	C20S - C20P	
Voltage	200 ÷ 575 V AC			200 ÷ 575 V AC	
Power consumed *	1500 W max		200 W	1500 W max	
Inverter type	2080300 - 2080201 2080410 - 2080024	2080400	2080300 2080201	2080300 - 2080201 2080410 - 2080024	2080400
Light filling	YES	YES	YES	NO	NO
Tank full light	YES	YES	YES	NO	NO
Filling control	YES	YES	YES	NO	NO
Protection rating	IP55			IP55	
Working temperature	-25 °C / +60 °C			-25 °C / +60 °C	

* Depends on the type of motor applied to the pump.



- Button start /stop
- Light alarm
- Display integrated into the keyboard.
- Simple and intuitive user interface.
- Rugged and waterproof cover with transparent window, meets the requirements of IP55.
- Ability to customize the lubrication intervals, pause and the cycle count.
- Programming of the parameters protected by password.
- Call system filling tank (on request) with high level light indicator.

Input signals
Start/Stop remote
Cycle-counter/Pressure switch L1
Cycle-counter/Pressure switch L2
Low level tank
Safety pressure switch maximum pressure
Thermal protection three-phase motors
Remote stand by cycle
Micro-inverter L1
Micro-inverter L2
Remote emergency button

Output signals
Power motor pump
Power
- motor inverter
- pressure discharge valve
- solenoid inverter 1
Power relay solenoid inverter 2
Remote operation lamp
Remote warning lamp

Overall dimensions (mm)		
Packing-m ³		1-0,03
Net weight kg		15,2-15,4
Gross weight kg		15,5-15,7



CONTROL EQUIPMENT

This **management and control equipment** consists of an electronic programming card placed in a small-sized panel. The card allows to manage the input and output signals of the entire system.

12-24 V DC

120-230 V AC 50/60 Hz



Technical characteristics		
P/N	1670035	1670036
Proper for pump	C20F	C20F
Voltage	12/24 V DC	120-230 V AC 60/50 Hz
Power consumed	200 W max	600 W max
Inverter type	2080300 - 2080201 - 2080410 - 2080024	2080300 - 2080201 - 2080410 - 2080024
Inlet	9	9
Outlet	5	5
Protection rating	IP64	IP64
Working temperature	-25 °C / +60 °C	-25 °C / +60 °C






- Display integrated into keyboard.
- Simple and intuitive user interface.
- Rugged and waterproof cover, meets the requirements of IP64.
- Ability to customize the lubrication intervals, pause and the cycle count.
- Programming of the parameters protected by password.

Input signals
Start/Stop remote
Cycle-counter/Pressure switch L1
Cycle-counter/Pressure switch L2
Low level tank
Safety pressure switch maximum pressure
Thermal protection three-phase motors
Remote stand by cycle
Micro-inverter L1
Micro-inverter L2

Output signals
Power motor pump
Power
- pressure discharge valve
- solenoid inverter 1
Power relay solenoid inverter 2
Remote operation lamp
Remote warning lamp

Overall dimensions (mm)

Technical drawing showing the front and side views of a control panel. The front view shows a width of 124 mm and a height of 185 mm. The side view shows a depth of 106 mm. The panel has a green front face and a black back face.

Packing-m³		1-0,005
Net weight kg		1,2-1,4
Gross weight kg		1,1-1,3



CUSTOMIZED PUMPS SELECTION GUIDE

Should the specific requirements be different from the ones of standard pumps, follow this model to customize your own pump.

SERIES C20S

Series	Lubricant type		Tank capacity			N° poles		No. Pumping elements		Ratio		Level control		
	G	O	10	30	70	4	6	2	4	3	7	O	L	Y
System 20 dual line	Grease (max NLGI 2)	Oil (> 40 cSt)	10 litres	30 litres	70 litres	4 poles	6 poles	2 pumping elements	4 pumping elements	R 35:1	R 70:1	Without minimum level	With minimum level	With minimum and maximum level

Example of pump code	C20S	G	10	6	/	2	7	L
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SERIES C20P

Series	Lubricant type		Tank capacity		Power		Flow rate		Control equipment		Level control			Accessories 1		Accessories 2	
	G	O	40	100	A	B	1	4	0	1	L	O	Y	/	1	/	1
System 20 dual line	Grease (max NLGI 2)	Oil (> 40 cSt)	40 litres	100 litres	0,75 Kw	0,37 Kw	160 cm³ ø 7 mm	400 cm³ ø 10 mm	Without control equipment	With control equipment	With minimum level	Without minimum level	With minimum and maximum level	Without base for pump and connecting hoses	With base for pump and connecting hoses	Without motor operated reversing valve	With motor operated reversing valve

Example of pump code	C20P	G	40	A	1	/	0	L	1	1
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SERIES C20F

Series	Lubricant type		Tank capacity	Ø tank external (mm)						Ratio			Level control		
	G	O		28	35	37	38	42	60	5	6	7	0	1	2
System 20 dual line	Grease (max NLGI 2)	Oil (> 40 cSt)	10 kg	From 240 to 280 mm	From 300 to 350 mm	From 260 to 330 mm	From 340 to 385 mm	From 370 to 420 mm	From 550 to 600 mm	R 50:1	R 65:1	R 75:1	Without minimum level ultrasonic	With minimum level ultrasonic	With minimum and maximum level ultrasonic + visual maximum level + filling filter

Example of pump code	C20F	G	10	/	5	1
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GENERAL SALES CONDITIONS



FOR FOREIGN MARKETS

The following general sales conditions regulate the sale of goods and services by the company RAASM S.p.A. for customers residing outside the territory of the Italian State.

Art. 1 GOODS DELIVERY TERMS

The goods are delivered ex works RAASM S.p.A. The subsequent transport/shipment must occur by, in the name and at the expense of the purchasing customer, even by means of a carrier appointed and designated by the same. All risks arising from loading, subsequent custody and transport are borne entirely by the purchasing customer.

Art. 2 MINIMUM ORDERS

Each order cannot be for less than € 1,500.00, net of fees, taxes, customs duties, discounts and rebates and any other charges not included in the price of the goods. If, at the option of RAASM S.p.A., orders for lower amounts are accepted, an extra charge of € 155,00 shall be applied for order management administrative expenses.

Art. 3 ACCESSORIES

All the accessories given in the price list (plugs, oil bar taps, oil guns, grease guns, probes, protection caps, clutches, swivelling supports, etc.) are supplied exclusively for fitting to or combining with the items RAASM S.p.A. produces.

Art. 4 COMPLAINTS

Any defects immediately noticed after a brief inspection of the goods (damage, shortages or different product from that ordered) must be notified in writing to our company within 8 (eight) days of receipt of the goods. Any defects in the product noticeable only during its use must be notified in writing to RAASM S.p.A. within 8 (eight) days of being detected.

Any returns of goods must be authorized in advance by RAASM S.p.A. and freight charges are at the customer's expenses.

Art. 5 DELIVERY TIMES/TERMS

Delivery times and dates are only approximate and are subject to change. Any delays in delivery do not entitle the customer to cancel the order or claim compensation for damages caused by delay of delivery. Delivery times for urgent orders must be agreed directly with RAASM S.p.A.

RAASM S.p.A. has the right not to carry out the order and/or totally or partially carry it out, without this giving rise to reimbursement or claims for compensation for damage.

Art. 6 PACKS AND PACKAGING

Packaging costs are included in the price, except for special packing, which shall be charged at cost.

Art. 7 PRICES

The current Price list cancels and replaces the previous price list. In the event of changes to our price list and/or individual items, the goods shall be forwarded at the price in force on the day of the order confirmation. The price list and/or the prices of individual items can be changed even without notice, according to the changes in market conditions or technical innovations/modifications made to the product. The prices are understood to be ex works RAASM S.p.A.

Art. 8 PAYMENTS

Payments must be made exclusively to RAASM S.p.A. at the agreed conditions. Under no circumstances will deductions or roundings be accepted. In case of late payment with respect to the agreed conditions, RAASM S.p.A. reserves the right to charge interest at the current rate, effective from the day after that agreed for payment, plus any additional expenses. Discounts conditional on the payment term and already credited shall be recharged.

Art. 9 WARRANTY

RAASM S.p.A. provides each product with the communication of particular instructions for the installation, use and maintenance requirements and the need to carry out possible checks on the product. All the technical information and data mentioned in the catalogue and in the price-list in force are not binding and can be changed without prior notice for the purpose of improving the quality of the products.

All products manufactured by RAASM S.p.A. are guaranteed for a period of 5 (five) years from the date of delivery to the first user. The user must keep and show the sales invoice - or an equivalent document - together with the item's serial number in order to make a claim under the RAASM S.p.A. guarantee. The 5 (five) year guarantee does not apply to components which are subject to normal wear and tear (such as gaskets, diaphragms, O-rings, hoses, etc.), electronic components and items that are sold but not manufactured by RAASM S.p.A. (marked with a red asterisk in the current product catalogue) which are guaranteed for 1 (one) year from the date of delivery to the first user.

1 (one) year warranty is valid also for the following products:

- digital litre counters and FCS system;
- cable reels;
- electric, pneumatic or hydraulic motor;
- slip rings;
- centralized lubrication systems.

Incorrect installation, use or maintenance of the product shall void the warranty. Upon written notice, the articles must be returned free to our Factory for checking and acceptance. In any case,

The manufacturer declines any responsibility for possible inaccuracies contained in this catalogue, due to printing or transcription errors. The manufacturer reserves the right to make any changes or improvements of a functional, technical or aesthetic nature without prior notice.

RAASM

the guarantee expires in the 10th year from the date of manufacture (indicated by the serial number), if the stated expiry takes place before the expiration terms indicated above (1 or 5 years from delivery to the first user).

Art. 10 RESPONSIBILITY

RAASM S.p.A. is exempt from any responsibility and liability for accidents that may occur to persons and property, as a result of or during the use of the equipment, due to or depending on the same whenever the products have been damaged during transport, tampered with or modified, or improperly used, or stored, installed, protected and preserved without complying with the instructions of RAASM S.p.A. as given in the installation, use and maintenance instruction manuals for each product.

RAASM S.p.A. is liable for the value for the supplied product and cannot be held responsible in any way for other possible costs or additional costs that the customer may bear.

Art. 11 CONFIDENTIALITY

Information not in the public domain that is exchanged in the execution of the contract is subject to the obligation of confidentiality, secrecy and security; said information is covered as an industrial secret and is of a confidential and reserved nature and may not be disseminated to third parties; its use is permitted exclusively and strictly to execute the supply contract.

Art. 12 INTELLECTUAL PROPERTY RIGHTS

The RAASM trademark, and likewise the name RAASM, RAASM S.p.A., the logo and the other distinctive signs are internationally registered trademarks, and RAASM S.p.A. does not authorise their use and application under any circumstances. Without prior written consent from RAASM S.p.A., the content of catalogues, price lists, instruction manuals and similar, including content on the website may not be reproduced, either entirely or partially, nor may it be transferred by electronic or traditional means, nor may it be modified or utilised by any means and for any purpose. All rights are held by RAASM S.p.A. The customer acknowledges that RAASM S.p.A. holds exclusive ownership of all the parts, images, photographs and signs not in common usage, the content in the catalogues, price lists, instruction manuals and similar and/or present on the website www.raasm.com and/or other channels and/or social networks used by RAASM S.p.A. for their informational and marketing campaigns pursuant to Copyright Law and the Industrial Property Code.

Art. 13 INFORMATION ON THE PROCESSING OF DATA PURSUANT TO ITALIAN LEGISLATIVE DECREE 196/2003

In accordance with article 13 of Italian Legislative Decree 196/2003 - Personal Data Protection Code - you are hereby advised that the processing of the personal data, provided with the purchase of goods or services and/or the supply of goods or services is solely for the purposes of carrying out the contract-based obligations and to comply with the specific requests from customers/ suppliers, as well as adhering to legislative obligations, in particular accounting and tax obligations or to respect orders issued by public authorities or to exercise a right in court.

The data shall also be used for commercial statistics for corporate use and to obtain commercial information on our products and services if expressly authorised by the applicant.

The processing of data shall be done using hard-copy and computerised procedures, in the manner and within the limits necessary to achieve the aforementioned purposes.

Data may be communicated and processed by other companies in the Group for the same specified purposes, and may be made known to employees of our company, consultants and other suppliers, always and exclusively within the limits of the aforementioned purposes.

The provision of data is mandatory for the correct execution of the contract and pre-contract based obligations, and failure to do so could result in it being impossible to fully comply with contractual obligations, and make it impossible to provide updates on the new products and services offered by our company.

Data shall be processed for the duration of the contract relationship in place and subsequently to fulfil any legal formalities.

Art. 14 RIGHTS OF DATA SUBJECTS

The information is aimed at defining the limits and methods for the processing of data, based on which individual customers and/or suppliers may freely authorise the collection and subsequent use of data. Data subjects are entitled to the rights pursuant to article 7 of the aforementioned Code and in particular, the right to access their personal data, ask for the amendment, update and cancellation thereof, if incomplete, incorrect or collected in violation of the law, and may object to the processing for legitimate reasons, addressing requests in this regard to RAASM S.p.A. Pursuant to the same article the data subject also has the right to request the complete and updated list of the Data Supervisors, and to ask for the cancellation, transformation into anonymous form or blocking of data processed in violation of the law, and to oppose in any case, for legitimate reasons, the processing thereof.

To exercise these rights, and in the case of problems or any requests for clarification regarding what has been explained herein, kindly address these to RAASM S.p.A. – Via Marangoni, 33, Cassola (VI) – Italy or to the following email address: info@raasm.com.

Art. 15 DATA CONTROLLER

The Data Controller is RAASM S.p.A. with registered office at Via Marangoni 33, Cassola (VI) – Italy, and this is where the data processing shall take place.

Art. 16 COMPETENT LAW COURT

Any disputes shall be settled by the Law Court of Vicenza, Italy.

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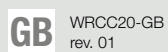


Company with quality,
environment and safety system
according to ISO 9001:2015,
ISO 14001:2015 and
ISO 45001:2018 standards

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