

## BRAVO CONTROLLER BOARD UPDATED VERSION



**INFO:** Please be informed that, due to global electronic component supply issues, the **12V / 24V multi voltage version of the Bravo pump controller board** will not be available until January 2023. To overcome the supply issue a new controller that replaced the Solid state Driver with a relay driver has been developed. Therefore the pump must be selected as 12 or 24 V only.

When ordering, you are pleased to identify the pump operating voltage and choose between the Part Numbers contained in the column "Alternative Part Number".

Part Number	Description	Alternative Part Number	Description
0888403	BRAVO- GREASE-AUT-2KG-12/24VDC	0888403-12V	BRAVO-GREASE-AUT-2KG-12VDC
		0888403-24V	BRAVO-GREASE-AUT-2KG-24VDC
0888404	BRAVO- GREASE-AUT-5KG-12/24VDC	0888404-12V	BRAVO-GREASE-AUT-5KG-12VDC
		0888404-24V	BRAVO-GREASE-AUT-5KG-24VDC
0888405	BRAVO- GREASE-AUT-8KG-12/24VDC	0888405-12V	BRAVO-GREASE-AUT-8KG-12VDC
		0888405-24V	BRAVO-GREASE-AUT-8KG-24VDC
0888418	BRAVO-OIL-AUT-2KG-12/24VDC	0888418-12V	BRAVO-OIL-AUT-2KG-12VDC
		0888418-24V	BRAVO-OIL-AUT-2KG-24VDC
0888419	BRAVO-OIL-AUT-5KG-12/24VDC	0888419-12V	BRAVO-OIL-AUT-5KG-12VDC
		0888419-24V	BRAVO-OIL-AUT-5KG-24VDC
0888420	BRAVO-OIL-AUT-8KG-12/24VDC	0888420-12V	BRAVO-OIL-AUT-8KG-12VDC
		0888420-24V	BRAVO-OIL-AUT-8KG-24VDC
0888703	BRAVO- GREASE-AUT-2KG-12/24VDC - POT.	0888703-12V	BRAVO- GREASE -AUT-2KG-12VDC - POT.
		0888703-24V	BRAVO- GREASE -AUT-2KG-24VDC - POT.
0888483	BRAVO-PRESS-AUTO-4KG-12/24VDC	0888483-12V	BRAVO-PRESS-AUTO-4KG-12VDC
		0888483-24V	BRAVO-PRESS-AUTO-4KG-24VDC
0888484	BRAVO-PRESS-AUTO-8KG-12/24VDC	0888484-12V	BRAVO-PRESS-AUTO-8KG-12VDC
		0888484-24V	BRAVO-PRESS-AUTO-8KG-24VDC
0888485	BRAVO-PRESS-AUTO-12KG-12/24VDC	0888485-12V	BRAVO-PRESS-AUTO-12KG-12VDC
		0888485-24V	BRAVO-PRESS-AUTO-12KG-24VDC
0888430	BRAVO-AUTO 2KG 12/24VDC SENZA BY-PASS	0888430-12V	BRAVO-AUTO 2KG 12VDC WITHOUT BY-PASS
		0888430-24V	BRAVO-AUTO 2KG 24VDC WITHOUT BY-PASS

## CHARACTERISTICS

- **Modular stackable reservoirs** & Minimum level as standard
- **VOLTAGES:**  
12V AC/DC  
24V AC/DC  
110V/230V 50/60 Hz, as standard.
- **FLOW RATE:**  
2,8cm<sup>3</sup>/min  
0,4 ÷ 2,8  
cm<sup>3</sup>/min 5,2cm<sup>3</sup>/min
- **RESERVOIRS:**  
2, 5, 8 litres
- **INTEGRATED FIXTURE:** for SMP and SMPM distributors
- **MULTI LUBE CYCLE:** multiple sensor counts and selectable pre-lube function
- **DUAL ACCESS PORTS:** for convenient refilling and grease return line
- **MULTI CONNECTOR SYSTEM:** allow many electrical connector types to be applied to the standard product to suit varied OEM and end user requirements
- **MINIMUM LEVEL** as standard
- **2.8cm<sup>3</sup>/min PUMPING UNIT AS STANDARD**

## APPLICATIONS

- **MOBILE PLANT AND VEHICLE LUBRICATION**
- **MACHINE TOOLS:** like glass working machines or wood-working machines.
- **HEAVY VEHICLES:** like earth moving machines, harvesters and other uses for special machines or vehicles.
- **HEAVY INDUSTRIES:** like mining or construction.
- **CHAIN & GEAR LUBRICATION.**

## THE SMALL PUMP PACKAGE WITH BIG FEATURES THE HEAVY DUTY PUMP FOR INDUSTRY AND VEHICLES

### DESIGN AND ADVANCED SOLUTIONS

The **BRAVO** electric pump is a piston pump predisposed to operate with a maximum of three pumping units, with or without internal by-pass. Designed to work with progressive systems, it can feed several independent lines and, combining the outlets of two/three pumping units, the flow can be doubled or tripled.

The pump is available in two versions:

**MANUAL:** can be managed by an external PLC. Since it does not come with an internal control unit, this is the most economic solution for lubricating your systems.

**AUTOMATIC:** with electronic board built-in and local manual start-up. Thanks to the remote button, you can manually start the lubrication cycle on request. Low level sensor and one pumping are included as standard equipment.



- *Sturdy and heavy duty design*
- *Designed for industrial lubrication systems, heavy equipment and farm equipment;*
- *For progressive systems with many lubrication points;*
- *Alternative to manual lubrication*
- *Multiple pumping units*
- *VARIO-DRIVE control, the pump motor management system that protects and electronically adjusts the pumping system (automatic version).*
- *Multi-connector system: allows application of many types of standard connectors for the electrical connection. An OEM connection can also be created on request.*

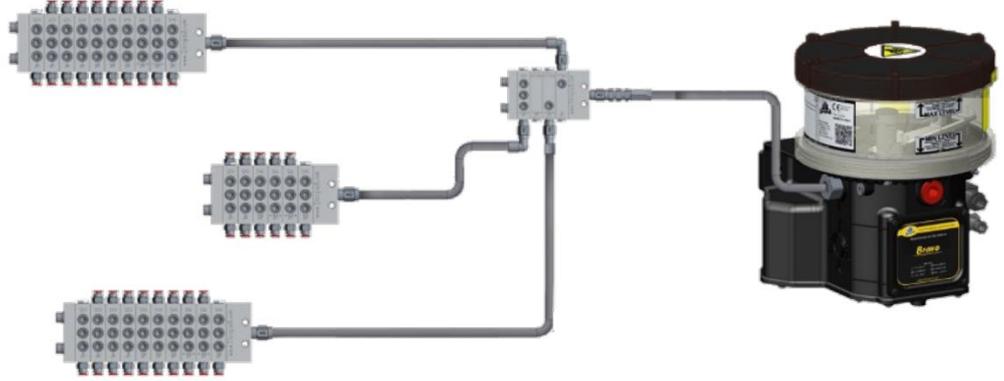
### TECHNICAL INFORMATION

TECHNICAL CHARACTERISTICS	
Number of outlets / pumping elements	1 (3 max.)
Outlet thread	1/4" BSP
Nominal output per pump element (20 RMP) *	2,8 cm <sup>3</sup> /min (0.17 in <sup>3</sup> /min) 5,2 cm <sup>3</sup> /min (0.31 in <sup>3</sup> /min) 0,4 ÷ 2,8 cm <sup>3</sup> /min (0.02 ÷ 0.17 in <sup>3</sup> /min) - Adjustable
Working pressure	280 bar (4061 psi)
Integrated By-pass pressure (if present)	320 bar ±30 bar (4641 psi ±435 psi)
Reservoir Capacity	2 – 5 – 8 litres (0.53 – 1.32 – 2.11 gallons)
Max Grease capability	Grease NLGI 2
Operating temperature	-25°C ÷ +80°C
Storage temperature	-30°C ÷ +90°C
Protection grade	IP65 (IP 69K with special equipment)

## BRAVO - THE EXTENTION OF THE PROGRESSIVE SYSTEM

### BENEFITS OF PROGRESSIVE SYSTEM DROPSA

- Modular progressive system for excellent lubrication
- Ability to expand the system
- High accuracy
- Stainless steel
- Different progressive distributor for all needs
- SMX - nP - nPr+ - SMP (Ref. DropsA documents progressive system SMX C2104PI - nP C2213PI - nPr+ C2220PI - SMP C2071PI)



## ESEMPIO DI IMPIANTO DI LUBRIFICAZIONE SU VEICOLI

Bravo is the cost effective solution for many type of vehicles like: heavy equipment, farm equipment and other special vehicles.

The complete lubrication system typically comprises:

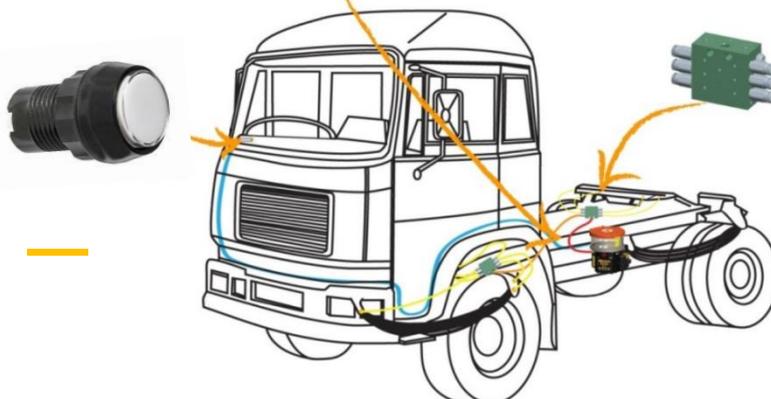
1. Bravo pump
2. Dividers
3. Remote status lamp with button

With just a status lamp & button placed in the vehicle cabin, the driver always knows the status of the lubrication system. Whenever needed an extra lubrication cycle, is just a push of a button.

Bravo is outfitted with a fixing point for integration SMP – SMPM distributors directly under the pump.

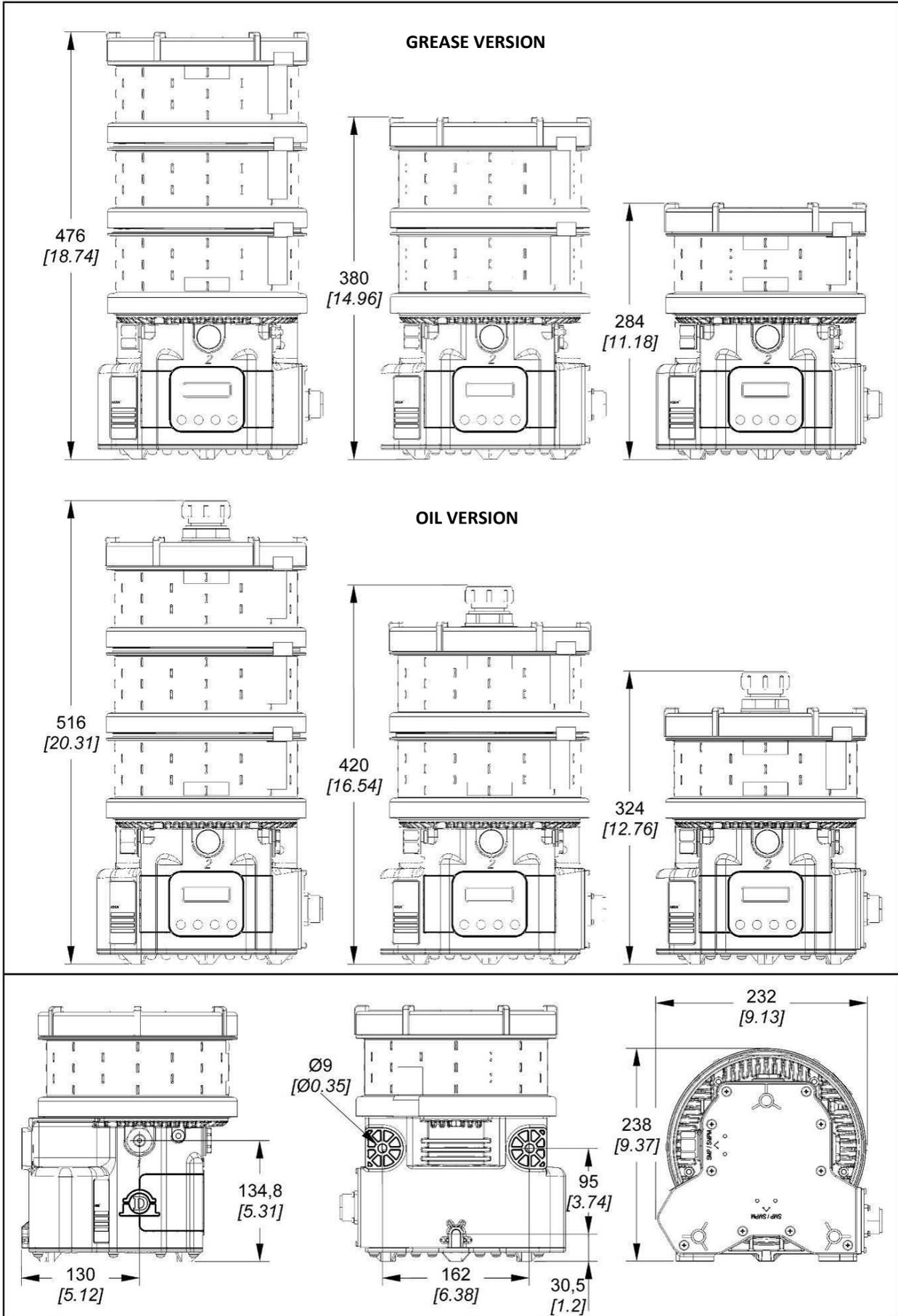


SMP – SMPM distributors can also be mounted on crucial point of the chassis in order to easily reach the lubrication pints.



**REMOTE CONTROL SYSTEM** - To have total control over the lubrication system.

**DIMENSIONS (NOT TO SCALE)**



Dimensions in mm [in]



## ORDERING INFORMATION

VERSION	LUBRICANT	VOLTAGE	RESERVOIR	Part. No.
AUTOMATIC VERSION	GREASE	110V/230V	2 l	0888400
			5 l	0888401
			8 l	0888402
		12V/24V	2 l	0888403
			5 l	0888404
			8 l	0888405
	OIL	110V/230V	2 l	0888415
			5 l	0888416
			8 l	0888417
		12V/24V	2 l	0888418
			5 l	0888419
			8 l	0888420
MANUAL VERSION	GREASE	110V/230V	2 l	0888406
			5 l	0888407
			8 l	0888408
		12V	2 l	0888409
			5 l	0888410
			8 l	0888411
	24V	2 l	0888412	
		5 l	0888413	
		8 l	0888414	
	OIL	110V/230V	2 l	0888421
			5 l	0888422
			8 l	0888423
		12V	2 l	0888424
			5 l	0888425
			8 l	0888426
	24V	2 l	0888427	
		5 l	0888428	
		8 l	0888429	

## PUMPING ELEMENTS

	DESCRIPTION	PART NO.
	Ø6 mm pumping element with integrated by-pass (included 1 notch)	0888058C
	Pumping element with fixing flow rate (5,2 cm <sup>3</sup> /min - without by-pass 2 notches)	0888391
	Pumping element with fixing flow rate (2,8 cm <sup>3</sup> /min - without by-pass 1 notch)	0888156
	Pumping element with adjustable flow rate (0,4 ÷ 2,8 cm <sup>3</sup> /min - without by-pass)	0888555

## ACCESSORIES

DESCRIPTION	PART NO.
Remote control switch and lamp 12V	0039433
Remote control switch and lamp 24V	0039434
Grease cartridge filling kit	0888038
400 cc Grease cartridge (NLGI 2)	1524952
P69K protection plug connector	0038966
Screws for SMP-SMPM base installation	0010509
IP69K Protection kit	0888470



## CONNECTORS

12V/24V AUTOMATIC VERSION							
CONNECTION		push-pull FEMALE CONNECTOR		AVAILABLE CONNECTIONS			
PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	Power Supply	Alarm contact	Cycle sensor	External button
0888102	"Amph" Connector	0039828	"Amph" Connector	•	•	•	•
0888059	4 "MPM" connectors	0039976	"MPM" connector	•	•	•	•
0888141	2 "MPM" connectors	0039976	"MPM" connector	•	•		
0888139	1 "MPM" connector 3 "M12" connectors	0039976 0039999	"MPM" connector "M12" connector	•	•	•	•
0888142	1 "MPM" connector 1 "M12" connectors	0039976 0039999	"MPM" connector "M12" connector	•	•		
0888437	IP69K – 12V/24V	0038963 0039835	3 pin IP69K Connector 4 pin IP69K Connector	•	•	•	•
110V/230V AUTOMATIC VERSION							
CONNECTION		push-pull FEMALE CONNECTOR		AVAILABLE CONNECTIONS			
PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	Power Supply	Alarm contact	Cycle sensor	External button
0888134	4 "MPM" connectors	0039976	"MPM" connector	•	•	•	•
0888138	2 "MPM" connectors	0039976	"MPM" connector	•	•		
0888136	1 "MPM" connectors 3 "M12" connectors	0039976 0039999	"MPM" connector "M12" connector	•	•	•	•
0888137	1 "MPM" connectors 1 "M12" connectors	0039976 0039999	"MPM" connector "M12" connector	•	•		
0888472	IP69K – 110V	0038963 0039835	3 pin IP69K Connector 4 pin IP69K Connector	•	•	•	•
0888474	IP69K – 230V	0038963 0039835	3 pin IP69K Connector 4 pin IP69K Connector	•	•	•	•
12V/24V MANUAL VERSION							
CONNECTION		push-pull FEMALE CONNECTOR		AVAILABLE CONNECTIONS			
PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	Power Supply	Alarm contact	Cycle sensor	External button
0888141	2 "MPM" connectors	0039976	"MPM" connector	•	•		
0888142	1 "MPM" connectors 1 "M12" connectors	0039976 0039999	"MPM" connector "M12" connector	•	•		
110V/230V MANUAL VERSION							
CONNECTION		push-pull FEMALE CONNECTOR		AVAILABLE CONNECTIONS			
PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	Power Supply	Alarm contact	Cycle sensor	External button
0888138	2 "MPM" connectors	0039976	"MPM" connector	•	•		
0888137	1 "MPM" connectors 1 "M12" connectors	0039976 0039999	"MPM" connector "M12" connector	•	•		

Distributor Info: