

## CHARACTERISTICS

- **VOLTAGES AVAILABLE:**  
12V AC/DC  
24V AC/DC  
110V/230V 50/60 Hz,  
STANDARD
- **NOMINAL UOTPUT PER PUMP ELEMENT:**  
FROM 2,8CM<sup>3</sup>/MIN  
(0.17IN<sup>3</sup>/MIN) TO 20 RPM
- **WORKING PRESSURE**  
280BAR (4061PSI)
- **INTEGRATED FIXTURE:**  
FOR SMP AND SMPM DISTRIBUTORS
- **VARIO-DRIVE:** ALLOWS ELECTRONIC VARIATION OF PUMP MOTOR 50-100% OF NOMINAL OUTPUT
- **DIAGNOSTIC AND EVENT LOGGING**
- **MULTI LUBE CYCLE:** MULTIPLE SENSOR COUNTS AND SELECTABLE PRE-LUBE FUNCTION
- **MULTICONNECTOR SYSTEM:** ALLOW MANY ELECTRICAL CONNECTOR TYPES TO BE APPLIED TO THE STANDARD PRODUCT TO SUIT VARIED OEM AND END USER REQUIREMENTS
- **DUAL ACCESS PORTS:** FOR CONVENIENT REFILLING AND GREASE RETURN LINE
- **MINIMUM LEVEL AS STANDARD**

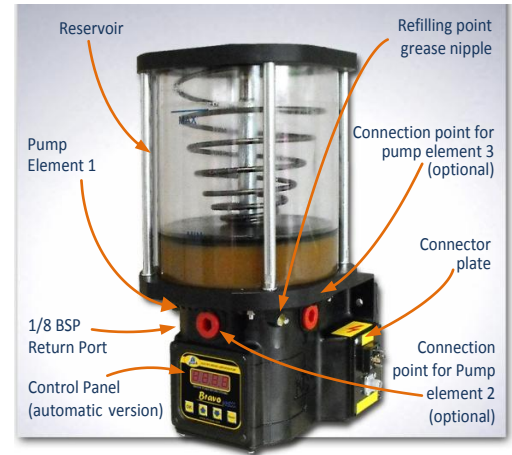
## THE SMALL PUMP PACKAGE WITH BIG FEATURES

### GREASE AND OIL LUBRICATION FOR INDUSTRY AND UP-SIDE DOWN APPLICATIONS DESIGN AND ADVANCED SOLUTIONS

This small pump package contains many innovative features exclusive to Dropsa that allows fresh possibilities in lubrication systems engineering.

The **BRAVO FP** version is ideal for wind turbine lubrication where the pump unit must be fitted in the nose cone causing the unit to rotate with the blades.

The **follower plate** and **stirring paddle system** keep the grease compacted and allows to pump to continue to feed the lubrication system correctly even when it is in an upside down position.



Bravo FP is suited not only for indoor industrial applications but also mobile plant and vehicle lubrication systems.

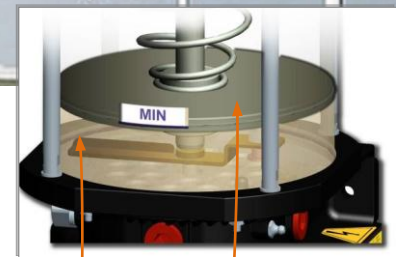
## APPLICATIONS



### WIND TURBINES

Pumps subjected to turning movement, with the possibility to be an overturned position needs a system that allows the grease to flow always towards the pumpings.

Follower plate pushed the grease and ensures a continuous lubrication.



Stirring paddle Follower plate

### VEHICLES AND HEAVY VEHICLES

Bravo is the cost effective solution for many type of vehicles like: trucks, trailers, tractors, earth moving equipment, harvesters and other special vehicles.

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.



**The complete lubrication system typiccaly comprises:**

1. Bravo pump
2. SMP – SMPM Distributors
3. Remote status lamp with button

## APPLICATIONS

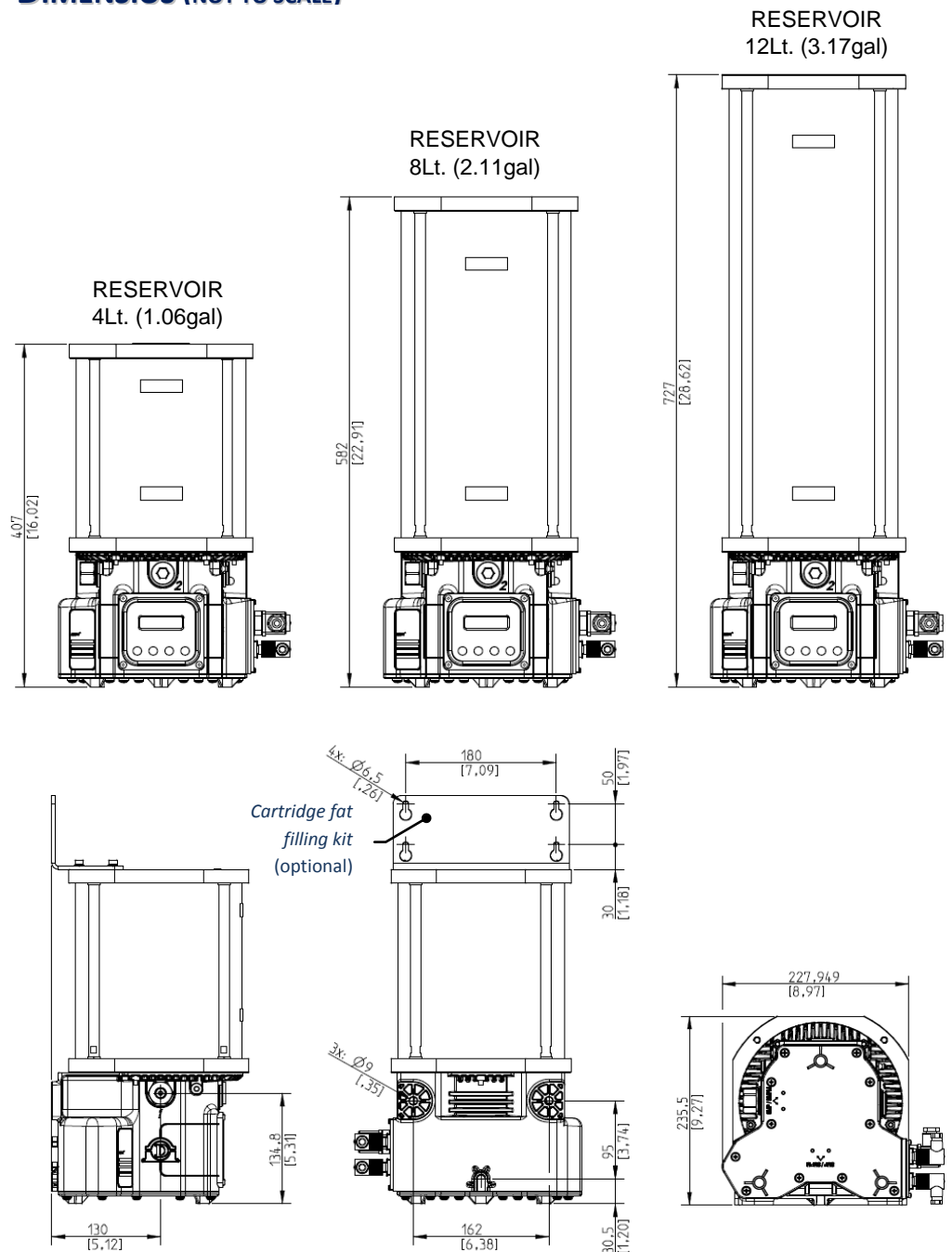
- **MOBILE PLANT AND VEHICLE LUBRICATION**
- **MACHINE TOOLS:** LIKE GLASS WORKING MACHINES OR WOOD-WORKING MACHINES
- **HEAVY VEHICLES:** LIKE EARTH MOVING MACHINES, HARVESTERS AND OTHER USES FOR SPECIAL MACHINES OR VEHICLES
- **HEAVY INDUSTRIES:** LIKE MINING OR CONSTRUCTION
- **CHAIN & GEAR LUBRICATION**

## NEW GENERATION CONTROLLER

It allows numerous ways to trigger and control the lubrication event in a system:

1. **CYCLE MODE:**  
allows pause to be determined by timer or a number of external impulses. These can be in any combination.
2. **PULSE MODE:**  
pause and lubrication cycles are determined by external impulses. Additionally, during the lubrication cycles, the cycle sensor can be monitored to ensure correct operation of the system. The pump can suspend the lubrication cycle if external impulses not detected.
3. **OFF MODE:**  
La pump sets as slave to host machine.

## DIMENSIOIS (NOT TO SCALE)





## TECHNICAL INFORMATION

### VARIO-DRIVE

VARIO-Drive is a **new power management system** for the pump motor that protects and adjusts the pumping system electronically. That means:

- increased reliability;
- greater lifespan of the pump motor;
- ability to electronically adjust the pump output from 50% to 100% of its nominal value.

You will find that you are able to precisely control and engineer systems like never before.

Bravo Controller also has built in Diagnostic logging features as standard.

GENERAL TECHNICAL CHARACTERISTICS									
Operating Voltage	AC		DC		AC - 50Hz		AC - 60Hz		
	12V	24V	12V	24V	110V	230V	110V	230V	
Current (nominal)	1A	0,5A	1A	0,5A	0,2A	0,1A	0,2A	0,1A	
Current (peak)	6,5A	3A	6,5A	3A	0,3A	0,2A	0,3A	0,2A	
Nett weight	Reservoir - 4 liters	12Kg (26.45lb)				13 Kg (28.66lb)			
	Reservoir - 8 liters	14Kg (30.86lb)				15Kg (33.07lb)			
	Reservoir - 12 liters	16Kg (35.27lb)				17Kg (37.48lb)			
Number of outlets / pumping elements	1 (3 max.)								
Outlet thread	G1/4 BSP								
Nominal output per pump element	2,8cm <sup>3</sup> /min (0.17in <sup>3</sup> /min) a 20 RPM								
Working pressure	280bar (4061psi)								
Integrated By-pass pressure	320bar (4641psi)								
Reservoir Capacity	4 – 8 – 12 liter (1.06 – 2.11 – 3.17 gallons)								
Max Grease capability	NGLI 2								
Operating temperature	-25°C ÷ +80°C								
Storage temperature	-30°C ÷ +90°C								
Humidity	90%								
IP Protection grade	IP65								
Noise	< 70 db (A)								
CONTROL PANEL CHARACTERISTICS									
Operating Voltage	12VDC		±20%						
	24VDC		±20%						
	110VAC		Includes internal transformer						
	230VAC								
Maximum Output load capability	5A								
Short circuit & Overload protection.	7.5A typical				10A max.				
Operating temperature	-20°C ÷ +80°C								
Storage temperature	-30°C ÷ +90°C								
Hardware protection	<ul style="list-style-type: none"> <li>• Overload protection on motor and lamp</li> <li>• Integrated Motor protection</li> <li>• Spike voltage protection</li> <li>• Inverted Polarity protection</li> </ul>								
Memory for parameter storage	EEPROM								
Memory Life	Unlimited (no battery requirement)								
MINIMUM LEVEL									
Max load	AUTOMATIC Version				1A	@	30V		
					0,3A	@	230V		
	MANUAL Version				0,25A	@	120V		
ELECTRICAL CONNECTIONS									
P/N Connector	Nominal Voltage	N° poli	Max Cable	IP	Max. A				
0039975 (MPM 203)	250V-300V	3+	1mm <sup>2</sup>	65	10A				
0039820 (M12)	150V	4	0,5mm <sup>2</sup>	68	4A				
0039823 (Amphenol)	1680V	17+PE	1mm <sup>2</sup>	65	6A				



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## ORDERING INFORMATION

PUMPS						
Operating Voltage	AUTOMATIC VERSIONS			MANUAL VERSIONS		
	Reservoir 4Lt. (1.06gal)	Reservoir 8Lt. (2.11gal)	Reservoir 2Lt. (3.17gal)	Reservoir 4Lt. (1.06gal)	Reservoir 8Lt. (2.11gal)	Reservoir 2Lt. (3.17gal)
110V/230V	0888480	0888481	0888482	0888486	0888487	0888488
12V/24V	0888483	0888484	0888485	-	-	-
12V	-	-	-	0888489	0888490	0888491
24V	-	-	-	0888492	0888493	0888494

## CONNECTORS BASE AND CONNECTORS

### AUTOMATIC VERSION 12V/24V

CONNECTION		FEMALE CONNECTOR		CONNECTION AVAILABLE			
Part No.	Description	Part No.	Description	Power	Alarm contact	Cycle sensor	External switch
0888102	Base connector "Amph"	0039828	Connector "Amph"	•	•	•	•
0888059	Base Connector "MPMx 4"	0039976	Connector "MPM"	•	•	•	•
0888141	Base Connector "MPMx 2"	0039976	Connector "MPM"	•	•		
0888139	Base Connector "MPM x 1 + M12 x 3"	0039976 0039999	Connector "MPM" Connector "M12"	•	•	•	•
0888142	Base Connector "MPM x 1 + M12 x 1"	0039976 0039999	Connector "MPM" Connector "M12"	•	•		

### VERSIONE AUTOMATICA 110V/230V

CONNECTION		FEMALE CONNECTOR		CONNECTION AVAILABLE			
Part No.	Description	Part No.	Description	Power	Alarm contact	Cycle sensor	External switch
0888134	Base Connector "MPMx 4"	0039976	Connector "MPM"	•	•	•	•
0888138	2 Connectors "MPM"	0039976	Connector "MPM"	•	•		
0888136	1 Connectors "MPM" 3 Connectors "M12"	0039976 0039999	Connector "MPM" Connector "M12"	•	•	•	•
0888137	1 Connectors "MPM" 1 Connectors "M12"	0039976 0039999	Connector "MPM" Connector "M12"	•	•		

### VERSIONE MANUALE 12V/24V

CONNECTION		FEMALE CONNECTOR		CONNECTION AVAILABLE			
Part No.	Description	Part No.	Description	Power	Alarm contact	Cycle sensor	External switch
0888141	2 Connectors "MPM"	0039976	Connector "MPM"	•	•		
0888142	1 Connectors "MPM" 1 Connectors "M12"	0039976 0039999	Connector "MPM" Connector "M12"	•	•		

### VERSIONE MANUALE 110V/230V

CONNECTION		FEMALE CONNECTOR		CONNECTION AVAILABLE			
Part No.	Description	Part No.	Description	Power	Alarm contact	Cycle sensor	External switch
0888138	2 Connectors "MPM"	0039976	Connector "MPM"	•	•		
0888137	1 Connectors "MPM" 1 Connectors "M12"	0039976 0039999	Connector "MPM" Connector "M12"	•	•		

## OPTIONAL

Part No.	Description	Part No.	Description
0039433	Remote control switch and lamp 12V	0888058	Pump element Ø6mm with integrated PSV
0039434	Remote control switch and lamp 24V	0010509	Screws for SMP-SMPM base installation
0888386	Clamping Pump Kit		