

BRAVO 4.0

MANUAL / LTC (LUBRICATE TIME CONTROL)

ADVANCED DESIGN AND SOLUTIONS

DropsA



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The BRAVO 4.0 electric pump is a robust and compact piston pump, designed for progressive grease and oil lubrication of machinery used in various sectors.

This pump has been developed to meet the wide range of space-related application needs, therefore there is provision for integrating tanks of different capacities as required. The tank is made of plastic (PET) and has mounting holes that reduce the possibility of lubricant leakage to zero, as well as other features that make it easy to install. The pump is available in 2 macro-versions, which can be used with grease, oil and wind turbine follower plate disc:

- **MANUAL:** It can be managed by PLC and electromechanical components; as it is not equipped with an internal control unit, this version is a cost-effective solution for lubricating your equipment.
- **LTC:** with DIP Switch configurable controller board; this version is equipped with LEDs for signalling cycle status and alarms.

APPLICATIONS

- Wind turbines
- Glass or woodworking, earthmoving and agriculture machinery
- Mining or construction industry, chains and gears

ADVANTAGES

- It is designed to operate with up to three pumps, for an overall higher flow rate.
- A remote reset button for LTC versions can be supplied as optional.
- The main body of the pump is made from injection-moulded thermoplastic and has a compact shape designed for high mechanical stress resistance.



CHARACTERISTICS

NEW TANK DESIGN

VOLTAGE:
12V DC - 24V DC
110V / 230V 50 / 60 HZ

FLOW RATE:
0.14 CM³ / REV (0.008 IN³ / REV)
ADJUSTABLE - 0.02 - 0.13 CM³ / REV
(0.0024 - 0.07 IN³ / REV)
0.19 CM³/REV (0.011 IN³ / REV)
ADJUSTABLE - 0.04 - 0.2 CM³ / REV
(0.0024-0.014 IN³ / REV)

BACKET FOR MOUNTING ON WIND TURBINES

MONITORING THE LEVEL

DEGREE OF PROTECTION:
IP69K (VERS. DIN 72585 / UTS)
IP67 (VERS. M12)

GENERAL TECHNICAL CHARACTERISTICS						
POWER SUPPLY VOLTAGE	DC		AC - 50HZ		AC - 60HZ	
	12 V	24 V	110 V	230 V	110 V	230 V
CURRENT (NOMINAL)	1.5A	0.7A	0.3A	0.2A	0.3A	0.2A
NUMBER OF OUTPUTS (PUMPING UNITS)	1 (3 MAX.)					
OUTLET THREAD	G1/4"					
NOMINAL VOLUME FOR SINGLE OUTLET	0.14 CM ³ / REV (0.008 IN ³ / REV)					
	ADJUSTABLE - 0.02 - 0.13 CM ³ / REV (0.0024 - 0.07 IN ³ / REV)					
	0.19 CM ³ / REV (0.011 IN ³ / REV)					
	ADJUSTABLE - 0.04 - 0.2 CM ³ / REV (0.0024 - 0.014 IN ³ / REV)					
MAXIMUM WORKING PRESSURE	350 BAR (4061 PSI)					
TANK CAPACITY OIL / GREASE VERSIONS	2 - 4 - 6 - 10 - 14 LT (0.53 - 1.05 - 1.58 - 2.64 - 3.7 US GALLONS)					
TANK CAPACITY GREASE VERSIONS W/FOLLOWER PLATE	2 - 4 - 8 - 12 KG (0.53 - 1.05 - 2.11 - 3.17 US GALLONS)					
MIN / MAX GREASE CONSISTENCY	NLGI 000 / NLGI 2					
OIL VISCOSITY MIN.	46 CST AT AMBIENT TEMPERATURE					
OPERATING TEMPERATURE	-25°C TO +80°C					
STORAGE TEMPERATURE	-30°C TO +90°C					
MAX. R.H. WITHOUT OPERATING CONDENSATE	90%					
DEGREE OF PROTECTION	IP69K (VERS. DIN 72585 / UTS) IP67 (VERS. M12)					
NOISE	< 70 DB (A)					

DESIGN AND NEW PERFORMANCE COMPARED TO THE BRAVO VERSION

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BRAVO 4.0



BRAVO

IP PROTECTION	IP69K (VERS. DIN 72585 / UTS) IP67 (VERS. M12)	IP65 (IP69K WITH SPECIAL EQUIPMENT)
IO LINK OPTICAL LEVEL (OPTIONAL)	CONTINUOUS LEVEL MONITORING	✗
OPTICAL LEVEL OPTIONAL	✓	✗
WIRING SET-UP	BOTH SIDES AND CUSTOMISABLE PLATE	RIGHT ONLY
MAXIMUM FLOW RATE (CC \ MIN)	4CC X 3 PUMP ELEMENTS = 12CC	5.2CC X 2 PUMP ELEMENTS = 10.4CC
MAXIMUM PRESSURE (BAR)	350	280
VENT VALVE SUPPORT	✓	✗
PUMPING ELEMENTS	SCREWED INTO THE HOUSING	SCREWED INTO THE NUT
FIXING HOLES	DOUBLE SLOT FOR GREATER COMPATIBILITY	ONLY 1 FIXING HOLE
CYCLE BUTTON (LTC ONLY)	✓	✗

EXAMPLE OF LUBRICATION SYSTEM ON WIND TURBINES

The BRAVO 4.0 pump is the optimal solution for installation on wind turbines and many types of vehicles such as: earthmoving machinery, agricultural machinery and other special vehicles.

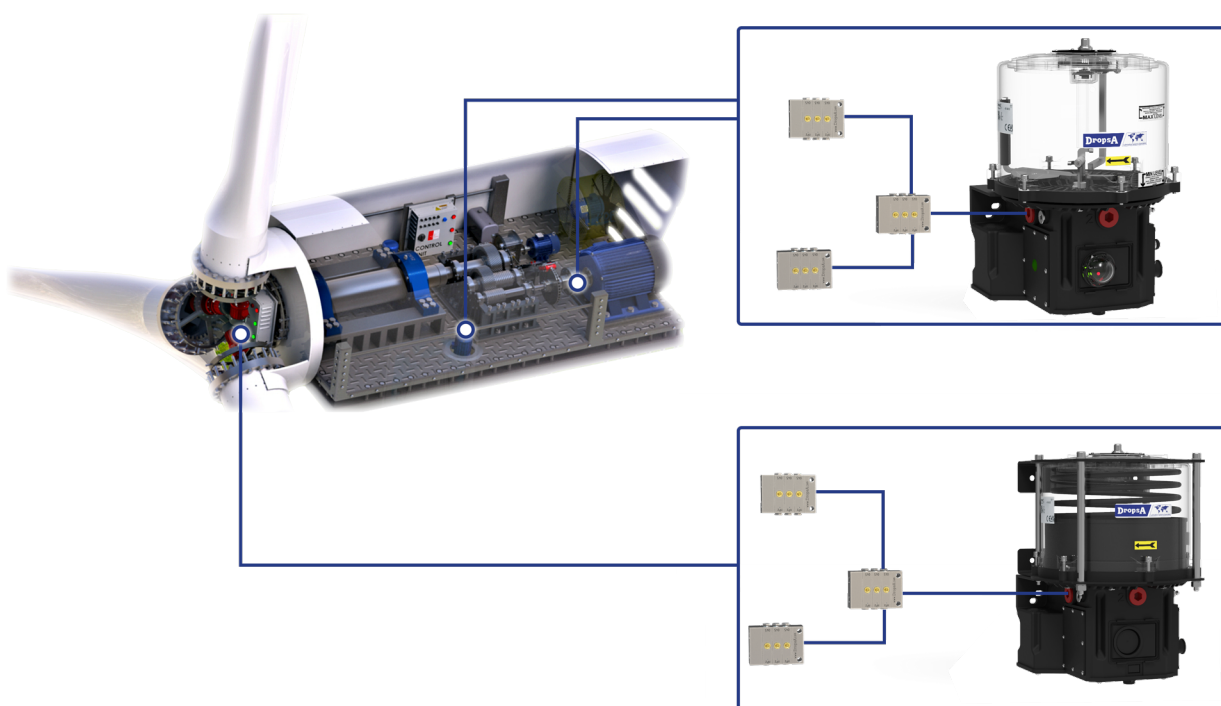
The complete lubrication system includes:

- BRAVO 4.0 pump
- Distributors
- Status display and remote reset / extra-cycle command

The wind turbine-mounted version has an upper bracket and an additional lower bracket to increase strength and the number of fixing points.

The tank contains the spring with the plate disc, so that the pump can also operate upside down.

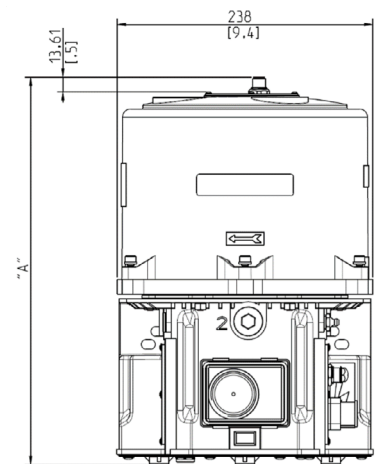
The follower plate disc is flat, so that the optical level can read the precise position and detect the amount of residual grease.



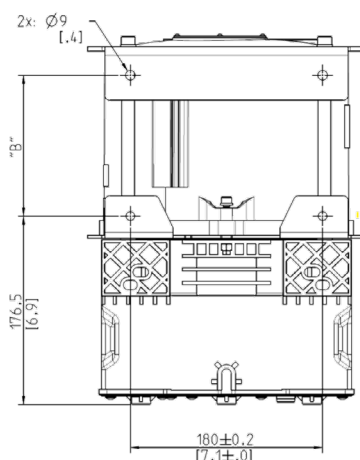
DIMENSIONS

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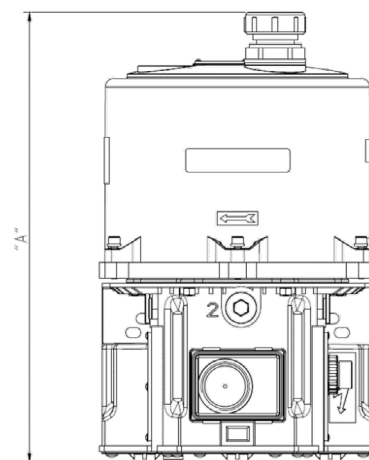
VERSIONS
GREASE / FOLLOWER PLATE



VERSION WITH BRACKETS



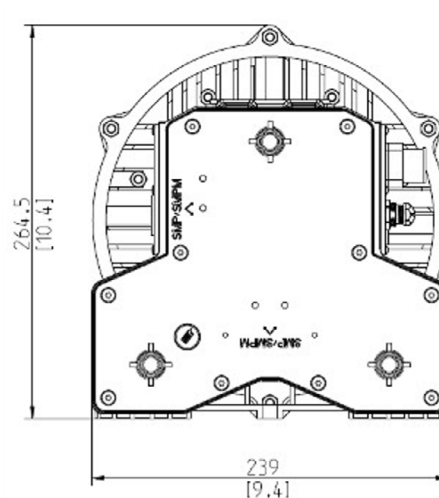
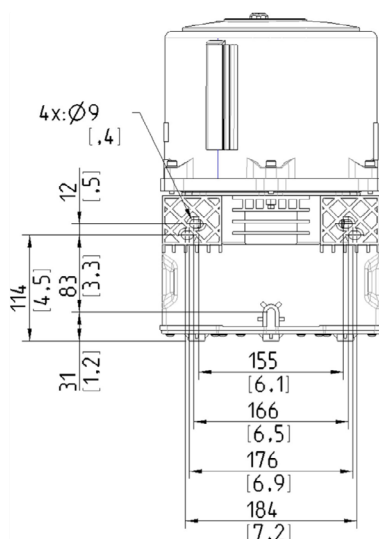
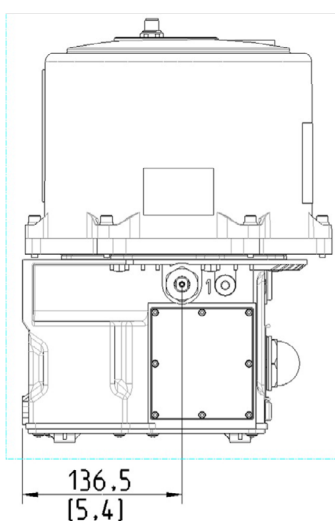
OIL VERSION



GREASE TANK	VALUE 'A'	GREASE TANK WITH FOLLOWER PLATE	VALUE 'A'	VALUE 'B'	OIL TANK	VALUE 'A'
2 KG	257 (N.A.)	2 KG	347 (361)	132	2 KG	303
4 KG	347 (361)	4 KG	397 (411)	182	4 KG	393
6 KG	397 (411)	8 KG	499 (513)	284	6 KG	443
10 KG	499 (513)	12 KG	604 (618)	389	10 KG	545
14 KG	604 (618)	-	-	-	14 KG	650

Note (xxx) = with optical level

Flanges are provided for the 10-kg and 14-kg versions, both grease and oil versions.



C2411PE - WK 14/25

GREASE VERSION WITH FOLLOWER PLATE

Tank size available
(2-4-8-12 Kg)



Minimum level
sensor

Loading cap

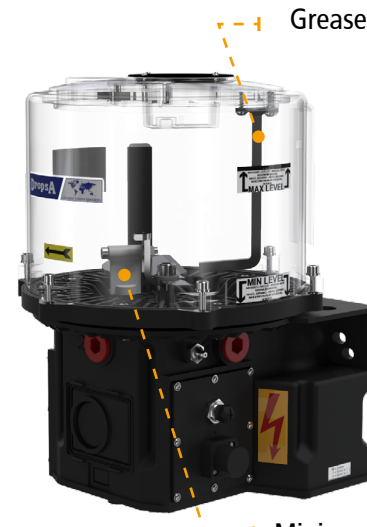
OIL VERSION

GREASE VERSION

Tank size available
(2-4-6-10-14 Kg)



Auxiliary return
port G1/8"

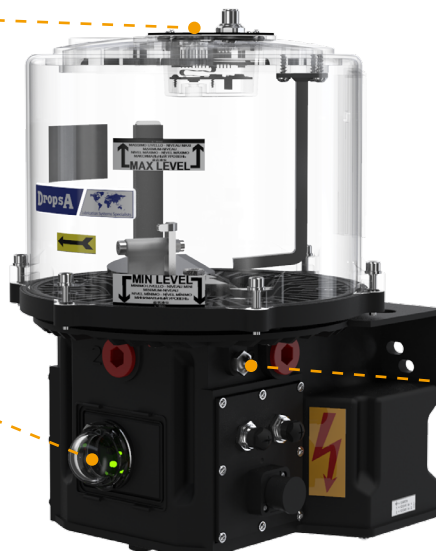


Grease breaker

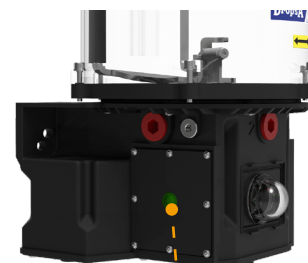
Minimum flag
detachment level

ALSO AVAILABLE WITH LTC ELECTRONICS/LEVEL SENSOR IN GREASE VERSIONS WITH STERRING DEVICE

Optical
IO-Link/digital
level connector
(optional)



Inspection
window
status/
configuration
display



Extra
cycle key

Filling grease
nipple holder

ORDER INFORMATION

The pump can be configured according to customer requirements.
The order code is derived from the above-mentioned identification string divided into two sections:

Product ID code = Product type identifier (Bravo 4.0)
Order options = Available product configuration options.

PRODUCT CODE ID		
8	8	3

ORDER OPTIONS			
X	X	X	X

TANK CAPACITY		
GREASE	2 KG	0 (*)
	4 KG	1
	6 KG	2
	10 KG	3
	14 KG	4
GREASE WITH FOLLOWER PLATE	2 KG	5
	4 KG	6
	8 KG	7
	12 KG	8
OIL	2 KG	A (*)
	4 KG	B
	6 KG	C
	10 KG	D
	14 KG	E
(*) OPTICAL LEVEL NOT AVAILABLE		

POWER		
MANUAL WITHOUT OPTICAL LEVEL	12 VDC	0
	24 VDC	1
	110 / 220V 50 / 60HZ	2
MANUAL WITH OPTICAL LEVEL IO-LINK	12 VDC	E
	24 VDC	F
	110 / 220V 50 / 60HZ	G
LTC WITHOUT OPTICAL LEVEL	12 VDC	3
	24 VDC	4
	110 / 220V 50 / 60HZ	5
LTC WITH OPTICAL LEVEL IO-LINK	12 VDC	H
	24 VDC	I
	110 / 220V 50 / 60HZ	L

ELECTRICAL CONNECTION		
FOR MANUAL VERSION	1X MPM + 1X M12 4PIN R SIDE (1) (2)	00
	1X MPM + 1X M12 4PIN L SIDE (2)	01
	2X MPM R SIDE (1) (2)	02
	2X MPM L SIDE (2)	03
	AMP 7 PIN IP69K R SIDE (1) (3)	04
	AMP 7 PIN IP69K L SIDE (3)	05
FOR LTC VERSION	AMP 7 PIN + 1X M12 4PIN R SIDE (1) (3)	50
	AMP 7 PIN + 1X M12 4PIN L SIDE (3)	51
	AMP 7 PIN IP69K R SIDE (1) (3)	52
	AMP 7 PIN IP69K L SIDE (3)	53
	1X MPM + 2X M12 5PIN R SIDE (1) (2)	54
	1X MPM + 2X M12 5PIN L SIDE(2)	55
(1) STD VERSION		(1)
(2) AVAILABLE FOR 12 / 24V DC 110 / 230V AC		(2)
(3) ONLY AVAILABLE FOR 12 / 24V DC		(3)

OPTIONAL ACCESSORIES				
PUMP UNIT POSITIONING				
1	2	3		
X	X	X	X	0

CUSTOMISATION	
NO MODIFICATION	0

CUSTOMISED LABEL	
DROPSA LABEL	0
CUSTOMISED	1

PUMPING UNITS		RELIEF VALVE
0	NOT PRESENT	NO
1	0.14 CC / REV.	NO
2	ADJ. 0.02-0.13 CC / REV.	NO
3	0.19 CC / REV.	NO
4	ADJ. 0.03-0.2 CC / REV.	NO
5	0.14 CC / REV.	GREASE NIPPLE 280 BAR LH
6	ADJ. 0.02-0.13 CC / REV.	280 BAR
7	0.19 CC / REV.	GREASE NIPPLE 280 BAR LH
8	ADJ. 0.03-0.2 CC / REV.	280 BAR
9	0.14 CC / REV.	GREASE NIPPLE 350 BAR LH
A	ADJ. 0.02-0.13 CC / REV.	350 BAR
B	0.19 CC / REV.	GREASE NIPPLE 350 BAR LH
C	ADJ. 0.03-0.2 CC / REV.	350 BAR
D	FITTING / FILLING	HORIZONTAL
E	0.14 CC / REV.	280 BAR
F	0.19 CC / REV.	280 BAR
G	0.14 CC / REV.	350 BAR
H	0.19 CC / REV.	350 BAR
I	-	-
L	-	-
M	-	-
N	-	-
O	FITTING / FILLING	ORIENTATION 90°

PUMPING UNITS		RELIEF VALVE
0	NOT PRESENT	NO
1	0.14 CC / REV.	NO
2	ADJ. 0.02-0.13 CC / REV.	NO
3	0.19 CC / REV.	NO
4	ADJ. 0.03-0.2 CC / REV.	NO
5	0.14 CC / REV.	GREASE NIPPLE 280 BAR LH
6	ADJ. 0.02-0.13 CC / REV.	280 BAR
7	0.19 CC / REV.	GREASE NIPPLE 280 BAR LH
8	ADJ. 0.03-0.2 CC / REV.	280 BAR
9	0.14 CC / REV.	GREASE NIPPLE 350 BAR LH
A	ADJ. 0.02-0.13 CC / REV.	350 BAR
B	0.19 CC / REV.	GREASE NIPPLE 350 BAR LH
C	ADJ. 0.03-0.2 CC / REV.	350 BAR
D	FITTING / FILLING	HORIZONTAL
E	0.14 CC / REV.	280 BAR
F	0.19 CC / REV.	280 BAR
G	0.14 CC / REV.	350 BAR
H	0.19 CC / REV.	350 BAR
I	0.14 CC / REV.	GREASE NIPPLE 280 BAR RH
L	0.19 CC / REV.	GREASE NIPPLE 280 BAR RH
M	0.14 CC / REV.	GREASE NIPPLE 350 BAR RH
N	0.19 CC / REV.	GREASE NIPPLE 350 BAR RH
O	FITTING / FILLING	ORIENTATION 90°

PUMPING UNITS		RELIEF VALVE
0	NOT PRESENT	NO
1	0.14 CC / REV.	NO
2	ADJ. 0.02-0.13 CC / REV.	NO
3	0.19 CC / REV.	NO
4	ADJ. 0.03-0.2 CC / REV.	NO
5	REPLACED BY OPTION I	
6	ADJ. 0.02-0.13 CC / REV.	280 BAR
7	REPLACED BY OPTION L	
8	ADJ. 0.03-0.2 CC / REV.	280 BAR
9	REPLACED BY OPTION M	
A	ADJ. 0.02-0.13 CC / REV.	350 BAR
B	REPLACED BY OPTION N	
C	ADJ. 0.03-0.2 CC / REV.	350 BAR
D	FITTING / FILLING	HORIZONTAL
E	0.14 CC / REV.	280 BAR
F	0.19 CC / REV.	280 BAR
G	0.14 CC / REV.	350 BAR
H	0.19 CC / REV.	350 BAR
I	0.14 CC / REV.	GREASE NIPPLE 280 BAR RH
L	0.19 CC / REV.	GREASE NIPPLE 280 BAR RH
M	0.14 CC / REV.	GREASE NIPPLE 350 BAR RH
N	0.19 CC / REV.	GREASE NIPPLE 350 BAR RH
O	FITTING / FILLING	ORIENTATION 90°

Order example

883 0 0 0 0 - 1 2 7 0 0		
PUMP ID	883	BRAVO 4.0
TANK	0	2 KG GREASE
POWER SUPPLY	0	12 VDC MANUAL
CONNECTIONS	00	1X DIN 43650 1X M12
CODING SEPARATOR	-	-
PUMPING UNIT OUTLET 1 (LEFT)	1	0.14 CC / REV.
PUMPING UNIT OUTLET 2 (FRONT)	2	ADJ. 0.02 - 0.13 CC / REV.
PUMPING UNIT OUTLET 3 (RIGHT) WITH PRESSURE RELIEF VALVE	L	0,19 CC / REV 280 BAR
CUSTOMISED LABEL	0	DROPSA LABEL
JOLLY POSITION	0	EMPTY

ACCESSORIES, SPARE PARTS KITS AND PUMPING UNITS

ACCESSORIES	
CODE	DESCRIPTION
0010509	SCREW FOR ASSEMBLING SMP-SMPM
3134209	GREASE FILLING CARTRIDGE KIT
3234406	GREASE FILLER FITTING
3133723	CARTRIDGE-LOADING-KIT
0039999	M12 CONNECTOR - 90° WITHOUT CABLE
0039169	M12 CONNECTOR - DIR. WITHOUT CABLE
3084761	PUSH-IN-DIR M5 Ø6 (BY-PASS CONNECTION)
0888969	PRESSURE RELIEF VALVE WITH GREASE NIPPLE 280 BAR LH
0888970	PRESSURE RELIEF VALVE WITH GREASE NIPPLE 350 BAR LH
0888991	PRESSURE RELIEF VALVE WITH GREASE NIPPLE 280 BAR LH
0888992	PRESSURE RELIEF VALVE WITH GREASE NIPPLE 350 BAR LH
0888989	PRESSURE RELIEF VALVE 280 BAR
0888990	PRESSURE RELIEF VALVE 350 BAR
0093660	GREASE NIPPLE - 1/4" FOR PRESSURE RELIEF VALVE
3134207-A00	LEV. KIT BRAVO4 - IO-LINK
3134207-100	LEV. KIT BRAVO4- 4KG STIRRING PADDLE PNP
3134207-200	LEV. KIT BRAVO4 - 6KG STERRING DEVICE PNP
3134207-300	LEV. KIT BRAVO4 - 10KG STERRING DEVICE PNP
3134207-400	LEV. KIT BRAVO4- 14KG STERRING DEVICE PNP
3134207-500	LEV. KIT BRAVO4 - 2KG FOLLOWER PLATE PNP
3134207-600	LEV. KIT BRAVO4 - 4KG FOLLOWER PLATE PNP
3134207-700	LEV. KIT BRAVO4 - 8KG FOLLOWER PLATE PNP
3134207-800	LEV. KIT BRAVO4 - 12KG FOLLOWER PLATE PNP
0093660	GREASE NIPPLE - 1/4" FOR PRESSURE RELIEF VALVE
3237112	90° FILLING FITTING

SPARE PARTS	
CODE	DESCRIPTION
3130540	GREASE NIPPLE FILTER

PUMPING UNITS	
CODE	DESCRIPTION
0888156	PUMPING UNIT 0.14 CC/REV
0880104	PUMPING UNIT 0.19 CC/REV
0888555	PUMPING UNIT ADJUSTABLE 0.02-0.13 CC/REV
0880060	PUMPING UNIT ADJUSTABLE 0.03-0.2 CC/REV