HG20F-012E-01
HG20R-012E-02

HG 20F-012E / HG20R-012E OIL CONTROL GUN

INSTRUCTION MANUAL

macnaught

INTRODUCTION

Thank you for purchasing a Macnaught oil dispensing gun complete with electronic meter. The Macnaught metered oil dispensing gun has been designed for use with engine oil, gear oil, automatic transmission fluid, anti-freeze/anti-boil and compatible fluids.

Macnaught also manufacture a complete range of ratio oil pumps and retractable oil hose reels, greasing equipment and accessories to fulfil all your fluid handling and greasing needs requirements.

Please read and retain this instruction manual to assist you in the operation and maintenance of this quality product.

GENERAL INFORMATION

This manual assists you in operating and maintaining your new oil control gun. The information contained will help you ensure many years of dependable performance and trouble free operation.

If you require further assistance please contact your local Macnaught distributor or authorised Macnaught service centre.

IMPORTANT INFORMATION

READ CAREFULLY BEFORE USE

Your safety is important to us. Please read and follow all safety instructions listed inside.

Some of these instructions alert you to the potential for personal injury. "Cautions" listed throughout this manual advise of potential practices or procedures which may cause damage to your equipment.

Ensure all operators have access to adequate instructions about safe operating and maintenance procedures.

Do not exceed the maximum working pressure of 6900 kPa / 1000 psi / 69 bar.

CAUTION

Do not hit the oil control gun if it fails to operate. Refer to "trouble shooting guide" or return the unit to your nearest authorised service centre.

Never point the nozzle at yourself or anyone else.

Never exceed the pressure rating of any component installed in the System.

Before every use check all hoses for signs of wear, leaks or loose fittings. Tighten all fluid connections regularly and replace weak or damaged hoses.

HG20F-012E-01 (Pictured)

CAUTION

Before carrying out any maintenance disconnect the air supply to the pump and release the fluid pressure in the system by pressing the lever on the control gun.

ASSEMBLY

Use Teflon tape (or suitable thread sealant) when connecting the oil control gun to an oil hose.

OUTLET NOZZLE OPERATION

When fluid flows through the gun the outlet nozzle will automatically open. When the fluid flow stops the outlet nozzle will automatically shut.

HANDLE OPERATION

To latch the handle, squeeze the lever, push the button and then release lever.

To release the latch in manual mode simply squeeze and release lever.

CONTROL HANDLE DISASSEMBLY

Use a clean bench to carry out maintenance.

A) Remove the oil hose from the control gun inlet swivel (10).

B) Unscrew and remove swivel (10) washer and o'ring from the control gun inlet. (Clean or replace the swivel strainer and o'ring if required).

CAUTION

The swivel is under spring tension

C) Remove valve spring (9), seal/valve body assembly (8). and plunger (7).

D) Remove the screw (15), then unclip and remove the trigger guard (16).

LEVER and VALVE REMOVAL

A) Using a 2.5mm allen key, remove the 2 handle screws (2).

B) Remove lever (11), ease downwards.

C) Remove the washer (5), "O"Ring (3), then push the valve cam (4) from the gun body (6), and remove "O"Ring (3).

Note: If the plunger has not been removed the cam will not release from the body.

CONTROL HANDLE REASSEMBLY

A) Clean and inspect all parts. Replace any suspect, worn or damaged components.

Note: Lightly lubricate the valve cam before assembly.

B) Place "O"Ring (3) onto valve cam (4).

Note: The cut out section in the middle of the valve cam (4) must face the inlet swivel (10).

C) Replace the valve cam (4) into the body (6). Note the orientation shown on the assembly drawing. Fit the second "O"Ring (3) and washer (5).

D) Slide lever assembly (11) into position and replace the two Allen screws (2). (Use Loctite or similar sealant).

E) Replace plunger (7).

Note: The end hole in the plunger must face the gun outlet.

F) Replace the seal/valve body assembly (8), and spring (9) and replace into the gun body (6).

Note: Install the spring, small end first.

G) Re-fit the trigger guard (16) and replace screws(15)

H) Replace washer, o'ring on to the swivel assembly (10), and screw firmly into place (Use Loctite or similar sealant).

Note: After assembly ensure the handle latch is operating correctly.

IM012E METER INSTRUCTIONS

1. During normal operation the 6 Figure LCD display will appear as per the example diagram below.

2. Press the blue '*Mode*' button to enable toggle between the Batch and Total display options.

- Batch
- Total

3. Press the red 'Batch' total button to reset the batch total.

Please note:
The accumulative total is non-resettablle

4. The unit go to sleep after 30 secs without use to preserve battery life.

Programming Instructions

Note

Any changes made during the programming phase will automatically be '*Saved*' when the unit is returned to the operation mode

'Programming' Menu
To enter press the reset button for 5 secs.
Once in the programming menu, press reset to scroll through the 3 programming options

1- Setting Decimal Place
2- Display Units of measurement
3 - Calibration Mode

Setting the decimal place.
1.The unit is currently set at ' **dEC .22**"

2. Pressing the blue '*Mode*' button will cycle through options available.

- **dEC .1** = *1 Decimal Place*
- **dEC .22** = *2 Decimal Places*
- **dEC .333** = *3 Decimal Places*

3. To move to the next section (Unit) press the red '*Reset*' button

Setting the Units for both Batch & Total.
1. The LCD will now display 'UNIT'.

2. Press the blue '*Mode*' button to cycle through the Batch total options .

- **L**
- **GAL**
- **Qt**
- **Pt**
- **Oz**
- **dL**

3. Then press the red 'Reset' button to set the 'Total' units as above.

4. To move to the next section (Calibration), press the Red '*Reset*' button.

Calibration.

The calibration mode enables, in the case the operator suspects the accuracy of the meter is in question, the operator to dispense a known volume of fluid through the meter (Test Volume)
This Test Volume is compared to the volume measured by the meter (Measured Volume). The meter will perform an 'Auto Calibration' if applicable.

Self Calibration Procedure.

The auto calibration function allows the meter to perform an 'Auto Calibration' if applicable.

1. The unit will display 'CALIBRATE' in the lower left hand corner, and a number on the main display.

   The following options can be scrolled through by pressing the blue *Mode* button

   - 2
   - 4
   - 8
   - 20
   - 100
   - 250

This number represents the 'Test Volume' to be dispensed through the meter during Calibration.

2. Select the 'Test Volume' and press the blue *Mode* button for 3 secs. .

The meter will display '**PURGE'** and **'CALIBRATE'** and start flashing.

3. Purge the system of air by running fluid through the system.

4. Once purged of air, press the blue Mode button. The unit will display **RUN** and the 'Test Volume'.
   E.g. **RUN 100**

5. Run the Test Volume through the meter until stipulated volume has been reached (e.g. 100).

6. Once this volume has been reached press the blue *Mode* button to stop the test.

The unit will compare the 'Measured Volume' to the 'Test Volume' and perform an 'Auto Calibration. If the difference between the two volumes are within ± 8% of each other.

Note:
If the difference between the two volumes is greater than ± 8% of each other, the unit will display either,

- ERROR LOW
- ERROR HIGH

if these messages are displayed please contact your Macnaught agent for advice.

Return to 'Operation' Mode
The unit can be returned to the '*Operation*' mode at any time by pressing the red 'Reset' button for approx. 3 secs. The program changes will automatically be saved.

Maintenance Procedures.

Disassembly

Ensure that the fluid supply to the meter is disconnected, and the line pressure is released before disassembly,

1. Remove protective boot (item 24) and unscrew the four retaining screws (item 23), and remove the Electronic Module (item 22)

2. Check for evidence of moisture into the electronic housing. If there is evidence of this, check the condition of the O-Ring (item 21)

3. To access Rotor assembly, remove the 8 Meter Cap screws (item 28)

4. Remove rotors (item 25) and check for any damage or evidence of foreign material inside the

Note:
Replace any damaged or worn parts

Reassembly

Note: Insert the rotors with the magnets facing up toward the electronic module.

1. Replace the rotors (Item 25) onto the shafts at 90 degrees to each other (as per diagram below)

2. Check the Rotors rotate freely by turning either of the rotors. If the rotors do not move freely, move one of the rotors and replace correctly at 90 degrees to the other rotor.

3. Replace the 0-Ring (item 26) into the groove of the Meter Cap (item 27).

4. Replace the Meter Cap onto Meter Body (item 20) Tighten Meter Cap screws (item 28) in a diagonal sequence
   E.g. 1, 5, 3, 7, 4, 8, 6, 2

5. Place the O-Ring (item 21) into the Electronic Module (item 22) and mount the Electronic module onto to the Meter Body

6. Replace and tighten the Retaining Screws (item 23) in diagonal sequence.

Maintenance Procedures.

7. Align and push on the protective boot (item 24) onto the electronic module (item 22).

Changing the Battery.

A 'Low Battery' warning will be displayed on the LCD screen when there is 5% power left.
The warning will remain active until the battery is replaced.

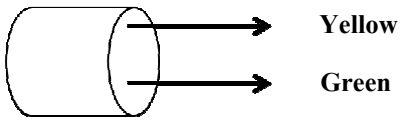
1. Remove the PCB from clear plastic housing by unscrewing the 3 retaining screws.

2. The battery can now be removed by placing a screw driver into the slot (*slot indicated by arrow*) on the PCB and easing the battery free from its compartment.

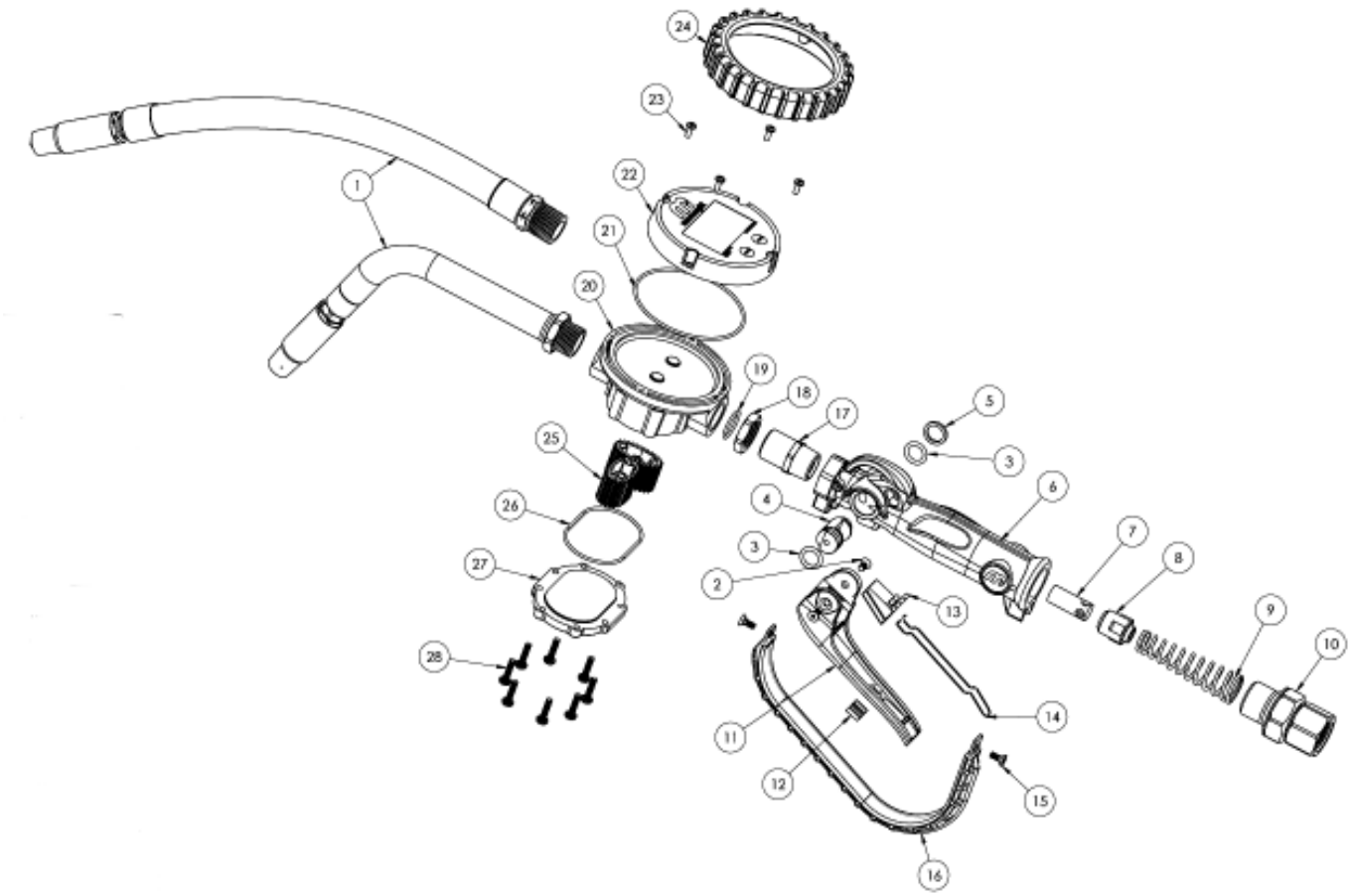
3. Replace with a new CR2450 Lithium battery.

REED SWITCH

Please Note: Not dependant on Polarity



PARTS DIAGRAM



SPARE PARTS LIST

Item	No Off	Order For Replacement Part or Set	Kit ref	Description
		HG20-1K (Kit A)		Seal Kit
1	1	IM078As		Flexible Extension with Auto Nozzle
1	1	IM106As		Ridgid Extension with Auto Nozzle
2	2		A	Screw (M4 x 8 CSK)
3	2		A	O-ring BS111
4	1		A	Camshaft
5	1		A	Washer
6	1	n/a - order HG20 (gun body complete)		Body Casting
7	1		A	Plunger Cage
8	1		A	Valve Seal
9	1		A	Spring
10	1	HG040As (BSP)		Swivel Assembly (BSP)
10	1	HG043As (NPT)		Swivel Assembly (NPT)
11	1			Handle (Latching)
12	1	HG022s incl item 2	A	Lever Plug
13	1		A	Push Button - Auto
14	1		A	Button Spring
15	2		A	Screw
16	1			Handle guard
17	1			Adaptor
18	2			Lock nut
19	2			O-ring
20	1	n/a - new meter req'd		Meter body
21	1			O'Ring (BS041)
22	1	n/a new meter req'd		Module Housing
23	4			Taptite Screw (M3 x 8)
24	1	IM215s		Protective Boot (Black)
25	2	MKIT-IM012-01		Oval Gear
26	1			O'Ring (BS035)
27	1	n/a		Chamber cover
28	8			Taptite screw (M4 x 16)

NOTES:

WEEE Directive - Waste Electrical and Electronic Equipment

The WEEE Directive requires the recycling of waste electrical and electronic equipment in the European Union.

Whilst the WEEE Directive does not apply to some of Macnaught's products, we support its policy and ask you to be aware of how to dispose of this product.

The crossed out wheelie bin symbol illustrated and found on our products signifies that this product should not be disposed of in general waste or landfill.

Please contact your local dealer national distributor or Macnaught Technical Services for information on product disposal.

TROUBLE SHOOTING GUIDE

TROUBLE	CAUSE	REMEDY
No fluid passing through the meter	a) Blocked strainer	a) Clean or replace strainer
	b) Dirt particles jamming the rotors	b) Dismantle meter assembly and clean (refer to meter disassembly)
	c) Damaged plunger seal	c) Replace damaged plunger seal
The meter not registering fluid output	a) Flat battery	a) Replace battery
	b) No signal from the magnets	b) Check magnets and replace rotors if required
	c) Damaged computer module	c) Replace computer module
No display	a) Faulty LCD	a) Replace PCB module
Constant oil leak from the nozzle	Damaged plunger seal	Replace plunger seal (check for damage)
Intermittent drip from the nozzle	Dirt in the nozzle	Remove nozzle and blow out any dirt particles, replace if necessary.
Oil leak from the lever assembly area	Damaged o'rings	Replace damaged o'rings
Oil leak from between the body casting and the computer module casting	Damaged o'ring	Replace damaged o'ring
Low flow rate	Blocked strainer	Replace strainer
Oil leaking from the swivel inlet	Damaged o'ring or swivel	Replace damaged o'ring or swivel

PRODUCT SPECIFICATIONS:

Accuracy	+ / - 0.5% of Reading
Type	Oval Gear
Flow rate	1 Ltr -25 Ltr (0.26 - 6.6 US Gal) per minute
Maximum Pressure	6900kPa / 1000psi / 69 Bar
Suitable for use w ith :	Engine Oil, Diesel Oil, Automatic Transmission Fluid (Maximum Viscocity SAE140), Ethelene Glycol Based Anti-Freeze / Anti-Boil mixture (Max 50% w ater)
Wetted Materials	Acetal, Aluminium, Steel, Nitrile Rubber
Connections	1/2" BSPT or 1/2" NPT
Maximum Temperature	55 deg C (131 deg F)
Minimum Temperature	-14 deg C (6.8 deg F)
Maximum Viscosity	1000cP (Centipoise)
Re-settable 'Batch' Total	99999.9
Non-Resettable Total	999999

* When tested with lubrication oil @ 25°C. Allowances should be made for changes to these parameters.

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Note:
This product should be disposed of according to all applicable local and national government environment regulations and guidelines.

For Warranty Terms and Conditions see macnaught.com.au
For a list of Australian Service Centres see macnaught.com.au