

HG 60 OIL CONTROL GUN WITH ELECTRONIC PRESET METER HG 50 OIL CONTROL GUN WITH ELECTRONIC METER

INSTRUCTION MANUAL

INTRODUCTION

Thank you for purchasing a Macnaught oil control gun complete with either a HG50 Electronic or HG60 Electronic Preset meter. Macnaught oil control guns have been designed to accurately dispense, measure and control oil flow. The control guns are suitable 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 to fulfill all your fluid handling needs.

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.

Please take a few moments to read through this manual before installing and operating your new oil control gun. If you experience problems with this product, refer to the trouble shooting sections of this manual. If you require further assistance please contact your local Macnaught distributor or authorised Macnaught service center.

IMPORTANT INFORMATION



**READ THIS INFORMATION
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.

This oil control gun is not designed for in-line installation. Do not install with a shut-off valve on the outlet side of the meter. Such an installation could result in damage to the meter housing cover.

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

Do not exceed the maximum working pressure of 10350 kpa / 1500 psi / 103 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 center.

Never point the nozzle at yourself or anyone else.

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

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

Before attempting any repairs or maintenance of this product firstly disconnect the air supply from the oil pump, then release the oil line pressure by pressing the lever on your oil control gun.

ASSEMBLY

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

Outlet Nozzle

The outlet nozzle can be fitted either "inline" (forward) or on the outlet port "pistol style" located under the gun.

The long outlet tube should be used for the "inline" option.

The short adaptor should be used (instead of the long outlet tube) when using the "pistol style" option.

Note: Use the threaded Plug supplied to seal the outlet port not in use.

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

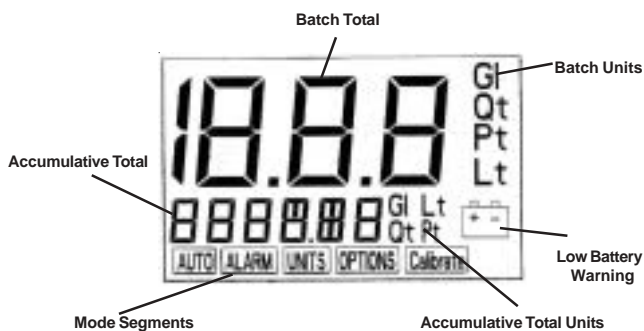
To latch the handle, press the lever, push the button and then release lever.

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

When the gun is in auto mode (Model HG60 only) the lever will release automatically once the preset volume has been dispensed.

Note: Do not obstruct or stop the lever from releasing automatically.

METER INTRODUCTION



Operating mode description.

Sleep Mode: To minimise battery consumption the meter will revert to sleep mode if left idle for more than 2 minutes, and will automatically “power up” if the RESET, AUTO (HG60) or ALARM (HG50) buttons are pressed or there is flow through the meter.

Manual Mode: For manual operation.

Auto Mode: For auto shut off operation (**HG60 only**)

Alarm Mode: For Alarm operation (**HG50 only**)

Resettable Mode: Displays the re-settable accumulative total.

Setting Mode: Provides access to meter settings.

- A) Change Preset volumes.
- B) Unit settings. (e.g litre or gallons etc.)
- C) Options setting
- D) Calibration.

OPERATION OF BUTTONS

The control buttons can be used in two ways

Press – Press and release the button.

Double click – Press and release the button twice quickly

TOTALIZERS

There are three totalizers built in to your meter

1) **Resettable batch total:** Displays the current volume dispensed. To reset batch total press the Reset button.

2) **Non resettable accumulative total** is located below the batch total and displays the total volume the meter has dispensed.

3) **Resettable accumulative total** is hidden from view and is used to track daily, weekly, or monthly usage.

TO VIEW OR RESET ACCUMULATIVE TOTAL:

1) If not in manual mode, Double click the reset button to return to manual mode (no mode segments will be visible).

2) Double click the Reset button (the display will enter the resettable total area).

3) To reset the resettable total, press and hold down the Reset button (3 seconds) until the total zeros.

4) The display will return to manual mode after 5 seconds.

MANUAL OPERATION (all models)

Press the gun lever to control oil flow through the gun.

AUTO MODE (HG60 Preset model only)

In auto mode the meter can be programmed to automatically shut after having dispensed the preset volume.

To Use Auto Mode :

- 1) Press Auto button to enter auto mode (The display will show the last volume dispensed)
- 2) To change volume press either the 10, 1 or 0.1 buttons to enter the required volume.
- 3) To dispense the preset volume, press and latch the lever.
- 4) To reset the volume to zero press Reset

How to select a Pre-Programmed Volume:

- 1) Press either the Auto (HG60) or Alarm (HG50) button. Each press of the Auto (HG60) or Alarm (HG50) button will cycle through the five preset volumes.
- 2) Stop at the required volume, press and latch lever.

NOTE: The **HG60** Preset model will automatically shut off at the required volume.
The **HG50** model requires to be **manually shut off** when the required volume is reached.

How to change the Pre-Programmed Volumes

- 1) If not in manual mode double click the Reset button.
- 2) Press the Auto (HG60) or Alarm (HG50) button (twice). The display will now show “PrES 1”.
- 3) Press and release either the Auto (HG60) or Alarm (HG50) button to cycle through the five preset volumes. Stop at the preset volume to be changed.
- 4) To change the preset volume press either the 10, 1, 0.1 buttons to obtain the desired volume.
- 5) Once you have changed your preset volume. Press and hold down the Auto (HG60) or Alarm (HG50) button until PRESS appears on the display (Takes approximately 5 seconds)

How to change the Units setting:

1) If not in manual mode, Double click the reset button to return to manual mode (no mode segments will be visible).

- 2) Press and hold down the Reset and Auto (HG60) or Alarm (HG50) buttons together until "PrES 1" appears.
- 3) Double click the reset button, the units segment starts flashing.
- 4) Press either the Auto (HG60) or Alarm (HG50) button to cycle through the unit options.
- 5) Stop at the required setting.

Batch Total	Accumulative Total
Litre	Litre
Pint	Gallon
Quart	Gallon
Gallon	Gallon

When complete double click the reset button to enter options setting mode.

Note: If you do not want to change the options settings double click the reset button four times to return to manual mode.

To change Options Settings:

- 1) If not in manual mode, Double click the Reset button to return to manual mode (no mode segments will be visible).
- 2) In manual mode press and hold down both the Reset button and Auto (HG60) or Alarm (HG50) buttons until the display shows "PrES 1".
- 3) Double click the Reset button twice to enter the options setting.
- 4) Press either the Auto (HG60) or Alarm (HG50) button to cycle through the options.
 - OP1) Batch resets to zero on wakening (on/off)
 - OP2) Batch counts up or down (up/down)
 - OP3) Turn Beeper on or off (on/off)
 - OP4) N/A
 - OP5) Factory setting (fixed)
 - OP6) Softwear version (Version 16 or later)
- 5) Press any of the 10, 1 or 0.1 buttons to change the option setting.

Note: After completing meter option settings double click the Reset button three times to return to manual mode

Note: Both the calibration and the sensor check mode are for factory use only.

Low Battery

The battery segment will flash when the battery is low and needs replacing.

The gun will not operate in auto mode when the battery is low, although the gun can still be used in manual mode.

Important: When the battery segment starts flashing replace the battery as soon as possible, use only Alkaline AA Batteries

Battery replacement:

- 1) Remove the protective rubber boot.

- 2) Remove the battery cover screw located near the inline (forward) outlet port and remove the battery cover.
- 3) Replace the two AA Alkaline batteries, note the battery direction label inside the housing.
- 4) Inspect the battery cover seal for damage and replace if necessary.
- 5) Replace battery cover and tighten screw.

Error signal

If an error is detected in the meter operation, the following error code will appear on the display.

- Err1 – Sensor error
- Err2 – Auto shut off failure
- Err3 – Flowrate too high
- Err4 – Calibration error
- Err5 – Computer error

To reset the meter after an error signal press the Reset button.

MAINTENANCE



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.

Inspect your oil control gun daily for any signs of damage. Replace any damaged parts or components as required.

Control Handle Disassembly.

Use a clean bench to carry out maintenance.

- A) Remove the oil hose from the control gun inlet swivel (31)
- B) Unscrew and remove swivel (31) and washer (29) and o'ring (30) from the control gun inlet. Clean or replace the strainer (37) and o'ring (38).

Caution the swivel is under spring tension

- C) Slide off the handle cover (28).
- D) Remove valve spring (27), seal/valve body assembly (25,26) and plunger (24).

HG50 Lever and Valve removal

- A) Using a 2.5mm allen key, remove the 2 handle screw (32).
- B) Remove lever (34).
- C) Remove the washer (20), "O"Ring (19), then push the valve cam (16) from the gun body (15), and remove "O"Ring (19).

HG60 Lever, latch plate and Valve Removal

- A) With the use of a suitably sized pin punch carefully remove the latching plate pin (22), spring (23) and latching plate (21). (The pin should be removed from the opposite side from the latch spring).

- B) Using a 2.5mm allen key, remove the 2 handle screws (32).
- C) Remove lever (34).
- D) Remove the washer (20), "O"Ring (19), then push the valve cam (16) from the gun body (15), and remove "O"Ring (19).

HG50 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 (19) onto valve cam (16).

Note: The cutout section in the middle of the valve cam (16) must face the inlet swivel (31).

- C) Replace the valve cam (16) into the body (15). Note the orientation shown on the assembly drawing. Fit the second "O"Ring (19) and washer (20).

- D) Slide lever assembly (34) into position and replace the two allen screws (32). (Use Loctite or similar sealant).

- E) Replace plunger (24).

Note: The end hole in the plunger must face the meter.

- F) Assemble the seal/valve body (25, 26), and spring (27) and replace into the gun body.

Note: Install the spring, small end first.

- G) Replace handle sleeve (28).

- H) Replace washer (29), o'ring (30) swivel assembly (31), and screw firmly into place. (Use Loctite or similar sealant).

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

HG60 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 (19) onto valve cam (16).

Note: The cutout section in the middle of the camshaft must face the inlet swivel (31).

- C) Replace the valve cam (16) into the body (15). (Note the orientation shown on the assembly drawing). Fit the second "O"Ring (19) and washer (20).

- D) Slide lever assembly (34) into position and replace the two allen screws (32). (Use Loctite or similar sealant).

Note: The latch plate pin should be fitted from the auto button side of the gun.

- E) Slide the latching plate (21) into position, push the latch pin (22) through the lever and part of the way through the latch plate assembly.

- F) Insert the latch spring (23) (The outside leg of the spring must point down and face away from the meter).

- G) Carefully press the latch pin (22) into position.

- H) Clip inside leg of the latch spring (23) under the location tab on the latch plate.

- I) Replace plunger (24).

Note: The end hole in the plunger cage must face the meter.

- J) Assemble the seal/valve body (25,26), and spring (27) and replace into the gun body.

Note: Install the spring, small end first.

- K) Replace handle sleeve (28).

- L) Replace washer (29), o'ring (30) swivel assembly (31), then screw firmly into place. (Use Loctite or similar sealant).

METER DISASSEMBLY

- 1) Unscrew the swivel assembly (31) two complete turns to allow easy disassembly and assembly of the meter and remove boot (1).

- 2) Remove battery cover screw (5), the battery cover (7) and batteries (9).

- 3) Remove the three phillips screws (11) and the calibration port screw (18) from the underside of the meter.

- 4) Carefully remove the computer module (2) from the module housing (10).

Note: The computer module is non repairable and will need to be replaced if damaged.

- 5) Remove the two phillips screws (3) from inside the module housing (10) and remove the latch release assembly (4) (**HG60 model only**).

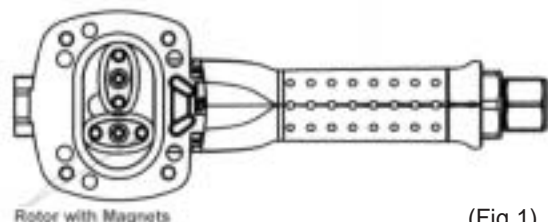
- 6) Remove the four allen screws (17) from the underside of the meter and remove the module housing (10).

- 7) Remove the rotors (13) and the body 'o' ring (14).

METER REASSEMBLY

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

- 2) Replace rotors (13). (Refer to Fig 1)



(Fig 1)

Note: Ensure the rotor with the magnets is assembled with the magnets facing up and positioned on the correct side of the meter. Both rotors must also be positioned at 90deg to each other (Refer Fig 1).

To check rotor operation, turn either rotor. If the rotors are not in mesh correctly or do not move freely, remove one of the rotors and replace it correctly at 90deg to the other rotor. Recheck the operation of the rotors.

- 3) Replace the gun body 'o'ring (14).
 - 4) Carefully position the module housing (10) on top of the gun body (15), replace and tighten the four allen screws (17).
 - 5) Replace the latch release assembly (4), and screw into position (**HG60 model only**).
 - 6) Ensure the handle latch is working correctly.
 - 7) Test the oil control gun for correct operation.
- Note:** If the handle latch is not operating correctly loosen the four allen screws (17) and re-position the module housing (10) until correct lever operation is obtained, then re-tighten the allen screws (17).
- 8) Press the lever (34) and replace the computer module (2).
 - 9) Replace and tighten the three phillips head screws (11) and calibration port screw (18).
 - 10) Replace the two AA Alkaline batteries (9). (use the directions on the label found inside the battery housing for correct battery orientation).
 - 11) Replace battery cover assembly (6,7,8) and tighten the screw (5).
 - 12) Firmly tighten the swivel assembly (31).
 - 13) Replace the boot (1).
 - 14) Test oil control gun for correct operation.

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 is 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 (reed switch unit)	c) Replace computer module
Meter display reads Err 1	Sensor error	Press the reset button to reset the computer. (If the error repeats, check the magnets in the rotor)
Meter display reads Err 2	Auto shut off error (HG60only) (latch failed to release in 0.5 seconds)	Check the latch release lever operation. Ensure the handle is not being physically restricted from closing (Manually release the lever to stop the flow).
Meter display reads Err 3	Flow rate too high	Adjust the flow rate to 1-30 l/min (0.26-8 US gal/min)
		Eliminate air from the system
Meter display reads Err 4	Calibration error	Press the reset button to reset the computer
Meter display reads Err 5	Computer error	Press the reset button to reset the computer
		Note: Always press the reset button to reset the computer
Constant oil leak from the nozzle	Damaged plunger seal (25)	Replace plunger seal (check for damage)
Intermittent drip from the nozzle	Dirt in the nozzle (40)	Remove the nozzle and blow out any dirt particles, replace if necessary.
Oil leak from the lever assembly area	Damaged o'rings (19)	Replace damaged o'rings
Oil leak from between the body casting and the computer module casting	Damaged o'ring (14)	Replace damaged o'ring

Note: To reset the computer, remove then replace the batteries.

SPARE PARTS LIST

ITEM	PART No.	No. off	EXISTING PART/SET No	KIT . REF	DESCRIPTION	
			HG 50-1K (KIT A)		MAJOR SERVICE KIT	
			HG 50-2K (KIT C)		REBUILD KIT	
			HG 031-1K (KIT B)		CONTROL VALVE SERVICE KIT	
1	HG 381BK	1	HG 381BKs		ELECTRONIC BOOT (STD)	
1	HG 381BU	1	CS4E		ELECTRONIC BOOT (BLUE)	
1	HG 381GR	1			ELECTRONIC BOOT (GREEN)	
1	HG 381RD	1			ELECTRONIC BOOT (RED)	
1	HG 381YL	1			ELECTRONIC BOOT (YELLOW)	
2	HG 370A	1		HG 370As		PRESET MODULE (HG60)
2	HG 371A	1	HG 371As		ELECTRONIC MODULE (HG50)	
3	N96	2	HG 340As incl 2xN96	A	M3x6 TAPTITE SCREWS (HG60)	
4	HG 340A	1	HG 390As		LATCH RELEASE ASSEMBLY	
5	HG 395	1			A	BATTERY COVER SCREW
6	BS007	1			A	O'RING
7	HG 390A	1				BATTERY COVER
8	HG 392	1			A	BATTERY COVER INSERT
9	HG 309	2	HG 309s		AA ALKALINE BATTERIES	
10	HG 380	1	HG 380s		MODULE HOUSING	
11	N30	3	HG 005s	A	M3x6 TAPTITE SCREWS	
12	MS25	4				MAGNETS
13	HG 005	2				OV AL GEAR SET
14	BS035	1			A	O'RING
15	HG 003	1		HG 003s		GUN BODY
16	HG 030	1	HG 374s	A & C	VALVE CAM	
17	N97	4			A	M6x20 TAPTITE SCREWS
18	HG 374	1			A	CALIBRATION SCREW
19	BS111	2			A ,B ,C	O'RING
20	HG 036	1			A ,B ,C	WASHER
21	HG 350A	1	HG 350As		LATCH PLATE ASSEMBLY (HG60)	
22	HG 353	1			A	LATCH PIVOT PIN (HG60)
23	HG 355	1			A & C	SPRING (HG60)
24	HG 032	1		HG 032s		PLUNGER
25	HG 031	1				A & B
26	HG 034	1				VALVE BODY
27	HG 033	1			A ,B ,C	VALVE SPRING
28	HG 004BK	1	HG 004BKs			HANDLE SLEEVE
29	HG 045	1	HG 040As incl HG 045 / BS117	B	WASHER	
30	BS117	1			B	O'RING
31	HG 040A	1			C	SWIVEL ASSEMBLY (BSP)
31	HG 043A	1		HG 043As incl HG 045 / BS117	C	SWIVEL ASSEMBLY (NPT)
32	N55	2			B & C	M4x6 C / SUNK SCREWS
33	HG 022	1	HG 022s incl HG 024 / HG 025		PUSH BUTTON MANUAL (HG50)	
33	HG 023	1	HG 023s incl HG 024 / HG 025		PUSH BUTTON PRESET (HG60)	
34	HG 020	1	HG 012As		LEVER NON LATCHING (HG50)	
34	HG 021	1	HG 011As		LEVER LATCHING (HG60)	
34	HG 021	1	HG 010As		LEVER LATCHING (HG50)	
35	HG 024	1	order either HG 022s or HG 023s		BUTTON SPRING	
36	HG 025	1	order either HG 022s or HG 023s		LEVER PLUG	
37	TD81	1		A & B	MESH	
38	BS113	1		A & B	O'RING	

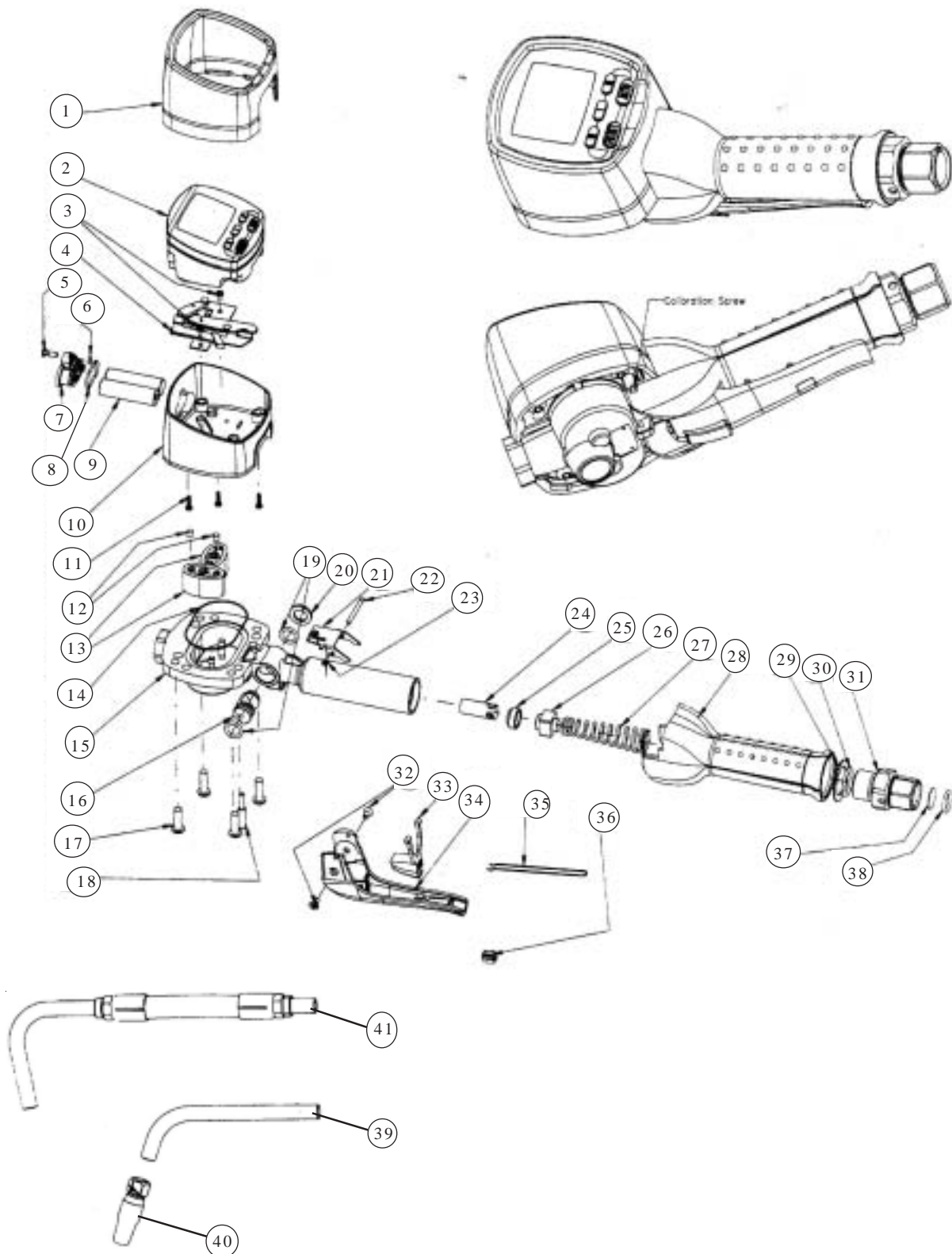
* ORDER HG511s for Outlet Adaper Set (not Shown)

* ORDER HGNZL for a Automatic non Drip nozzle (40).

* ORDER HGREX for a Rigid Tube Extension (39) incl outlet adapter set (not shown).

* ORDER HGFNZ for a Flexible Extension assembly , incl flexible extension (41), non drip nozzle (40) and adaptor (not shown).

HG50 and HG60 DIAGRAM



SPECIFICATIONS:

Accuracy:	+ - 0.5% (of Reading)
Flow Range:	1-30 l/min (0.26 – 8 US gal/min)
Maximum Pressure:	103.50 BAR / 10350kPa / 1500 PSI
Pressure Loss:	1Bar/ 100kPa / 14.4PSI @ 12 l/min (3.2 US gal/min) with calibration fluid (6 Centipoise Viscosity) without extension.
Weight:	1.16kg (2.55lbs)
Swivel Inlet:	½" BSPT or ½" NPT
Outlet:	3/8" NPT
Operating Temperature	-0° to +50°Celsius (32° – 122°F)
Storage Temperature:	-10° to +60°Celsius (14° – 140°F)
Battery:	2 x 1.5Volt Alkaline AA
Wetted Parts:	Aluminium, Acetal, Steel, Nitrile Rubber
Fluid Compatibility:	Engine Oil, Diesel Oil, Automatic Transmission Fluid, Anti-freeze / Anti-Boil Mixture. (Maximum Viscosity SAE140)
Dimensions:	25.8cm (10inch) Long x 9.5 cm (3.7inch) High, 11 cm (4.33inch) wide (Dimensions without extension)



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WARRANTY POLICY

Macnaught Pty Ltd ("Macnaught") warrants that all Products manufactured by Macnaught and purchased after 1st of July 1999 will be free from any defects caused by faulty materials or workmanship for a period of (5) years from the date of purchase of the product, provided that during the Warranty period:

- 1) Macnaught receives notice setting out full details of any defect in any product and details of the time and place of purchase.
- 2) The Purchaser, at their own cost returns the product to the nearest authorized Macnaught service center.

For componentry contained in the product, (such as o' rings, seals, springs and hoses) which are subject to wear, the warranty period will be (12) months from the date of purchase of the product.

Macnaught shall, at its option repair or replace any product found defective by its inspection. This warranty does not cover failure of parts or components which, in the judgment of Macnaught, arises from misuse, abrasion corrosion, negligence, accident, substitution of non-Macnaught parts, faulty installation or tampering.

If Macnaught inspection discloses no defect in material or workmanship, repair or replacement and return will be made at customary charges.

Macnaught's liability and the purchaser's rights under this Warranty shall be limited to such repair or replacement and in particular, shall not extend to any direct, special, indirect or consequential damage or losses of any nature.

The foregoing warranty supersedes, voids and is in lieu of all or any other warranties.

"Note: This warranty does not form part of, nor does it constitute, a contract between Macnaught and the end-user or purchaser. It is additional to any warranty given by the seller of the products.

This warranty does not exclude, limit, restrict or modify the non-excludable rights or remedies conferred upon the end-user or purchaser, or the non-excludable duties or liabilities imposed on the seller or Macnaught, by Part V, Divisions 2 and 2A of the Trade Practices act 1974 (Commonwealth) or other legislative provisions. Macnaught otherwise excludes, to the extent permitted by law, any rights conferred on the end-user or duties or liabilities imposed upon it."