

Balcrank[®]

DR Control Handles

See page 3 for list of available models



Thoroughly read and understand this manual before installing, operating or servicing this equipment.

Operation, Installation,
Maintenance and Repair Guide

GENERAL SAFETY



IMPORTANT

Read these safety warnings and instructions in this manual completely, before installation and start up of the control handle. It is the responsibility of the purchaser to retain this manual for reference. Failure to comply with the recommendations stated in this manual will damage the control handle and void factory warranty.



CAUTION

- 1) Always read and follow the fluid manufacturers's recommendations regarding the use of protective eye wear, clothing, gloves, and other personal equipment.
- 2) Never alter or modify any parts of this product; doing so may cause damage and/or personal injury.



WARNING

DANGER: Not for use with fluids that have a flash point below 100°F (38°C, examples: gasoline, alcohol). Sparking could result in an explosion which could result in death.



WARNING

Always use the following Pressure Relief Procedure whenever shutting off, cleaning, or in any way checking or servicing the control handle:

- 1) Disconnect compressed air line or turn off power supply at the fluid pump.
- 2) Point the control handle outlet into a waste container and open trigger to relieve pressure.
- 3) Open any bleed-type supply air valves and fluid drain valves in the system.
- 4) Leave the drain valves open until you are ready to re-pressurize the system.



WARNING

Do not place your hand or fingers over the dispensing nozzle and/or aim the nozzle at a person at any time. Personal injury may result.



CALIFORNIA PROPOSITION 65

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling



WARNING

Airborne particles and loud noise hazards.

Wear ear and eye protection.



CAUTION

Maximum Fluid Pressure 1450 PSI (100 bar). Under no circumstances should the control handle be aimed at any person or your own body at anytime. Personal injury may result.

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PRODUCT DESCRIPTION

The DR Electronic Control Handle is designed specifically to dispense motor oils, automatic transmission fluid, antifreeze (Glycol) and antifreeze/water solution. Perfect balance, lightweight, ruggedness, and comfortable grip make it the best choice for overhead reel systems. When not in use for 30 seconds, the meter enters "sleep mode", which prolongs battery life. When in sleep mode, the meter is turned on by a simple press of the RESET button or if the meter detects fluid flow. The trigger allows for progressive opening of the valve for better control of oil delivery and incorporates a trigger lock to prevent accidental opening. The valve can also be locked in the open position by means of the trigger lock button.

The electronic register module can be programmed to dispense in pints, quarts, liters, or gallons and will totalize in liters or gallons. A calibration factor and unit of measure are programmed during factory test. A 5-digit liquid crystal display, accurate to the third decimal place, shows the exact amount of fluid dispensed.

TECHNICAL SPECIFICATIONS

Accuracy (after field calibration).....	+/- 0.5%	Inlet.....	1/2" NPT compatible
Flowrange.....	0.25-8 Gal/min.	Outlet.....	1/2" NPT compatible
Max working pressure (handle w/meter).....	1450psi (100bar)	Batteries (meter).....	2 x 1.5VAAA
Max working pressure (handle only).....	1450psi (100bar)	Operating Temp. Range.....	14°F - 140°F
Weight (meter only).....	1.2 lbs	Fluid compatibility.....	Oils (up to SAE 140), ATF, Antifreeze (Glycol), Antifreeze/ water solution
Weight (handle only).....	1.1 lbs	Wetted Parts.....	Liquid Crystal Polymer (LCP), aluminium, stainless steel, NBR, zinc plated steel, brass
Weight (handle w/meter).....	2.3 lbs		

MODELS

Metered

Model	Extension - Tip Type	Extension Part No.	Nozzle/Tip Part No.
3330-157	Rigid - 1/4 turn manual	3332-091	3332-096
3330-158	Flex 90 - 1/4 turn manual	3332-092	
3330-159	Flex-memory - 1/4 turn manual	3332-093	
3330-168	Flex - 1/4 turn manual	3332-100	3332-097
3330-160	Flex 90 - automatic	3332-094	
3330-161	Flex - automatic	3332-095	
3330-162	Rigid - automatic	3332-098	
3330-167	Flex-memory - automatic	3332-099	3332-105
3330-169	Rigid - 1/4 turn manual (narrow)	3332-101	
3330-171	Flex - 1/4 turn manual (narrow)	3332-103	
3330-170	Flex 90 - 1/4 turn manual (narrow)	3332-102	
3330-172	Flex-memory - 1/4 turn manual (narrow)	3332-104	No nozzle/tip
3330-166	Bare metered control handle	No extension	

Non-metered

Model	Extension - Tip Type	Extension Part No.	Nozzle/Tip Part No.
3320-022	Rigid - 1/4 turn manual	3332-091	3332-096
3320-023	Flex 90 - 1/4 turn manual	3332-092	
3320-024	Flex-memory - 1/4 turn manual	3332-093	
3320-028	Flex - 1/4 turn manual	3332-100	3332-097
3320-025	Flex 90 - automatic	3332-094	
3320-026	Flex - automatic	3332-095	
3320-027	Rigid - automatic	3332-098	
3320-033	Flex-memory - automatic	3332-099	3332-105
3320-029	Rigid - 1/4 turn manual (narrow)	3332-101	
3320-030	Flex 90 - 1/4 turn manual (narrow)	3332-102	
3320-031	Flex - 1/4 turn manual (narrow)	3332-103	
3320-032	Flex-memory - 1/4 turn manual (narrow)	3332-104	

In-line meter

Model	Extension - Tip Type	Extension Part No.	Nozzle/Tip Part No.
3120-091	N/A	N/A	N/A

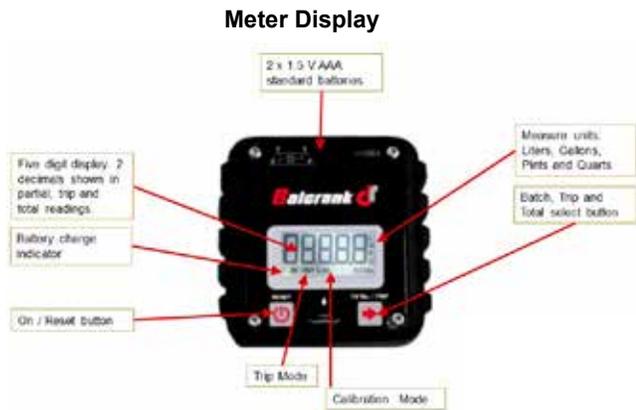
DISPLAY FUNCTIONS

RESET BUTTON

Press once to switch on the meter. Press and hold for 1 second to reset the batch total or the "Trip" to zero. This button is also used when programming the unit of measure and during calibration.

TOTAL/TRIP BUTTON

Press once to toggle through batch, trip, and cumulative totals. This button is also used when programming the unit of measure and during calibration.



OPERATION

Press the RESET button to turn on the meter. The meter performs a check on the display by showing all the segments briefly (Fig. 1). If needed, reset the batch total to zero by pressing the RESET button for 1 second (Fig. 2). To dispense fluid, press the locking button (Fig. 3) and squeeze the trigger handle. The locking button can be pressed again after fully squeezing the trigger to lock the valve open.

CAUTION

Do not leave the control handle unattended if using the trigger lock feature when dispensing, doing so could result in accidental overflow.

To release the trigger lock, pull in on the trigger, this will release the locking button and allow the valve to close.

Fig. 1

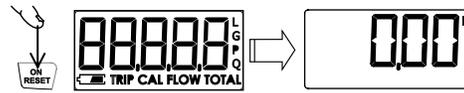
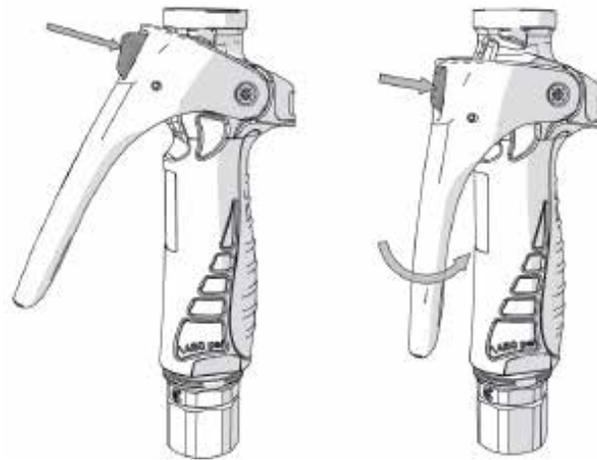


Fig. 2



Fig. 3

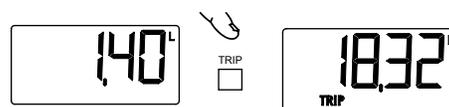


TOTALIZERS

The BATCH total is a resettable total that displays the current running total while dispensing fluid. To reset the BATCH total, press and hold the RESET button for 1 second (Fig. 2).

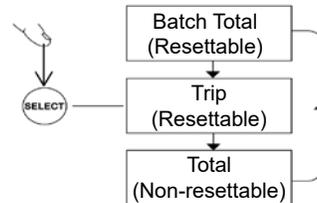
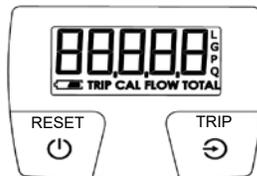
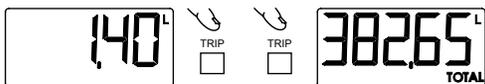
The TRIP is a resettable total that can be used to track the quantity that has been dispensed over a given period which can then be reset to zero when desired. The TRIP totalizer is reached by pressing the TRIP button (Fig. 4). To reset the TRIP totalizer, press and hold the RESET button for 1 second.

Fig. 4



The TOTAL is a non-resettable total that keeps a running total for the life of the meter (Fig. 5).

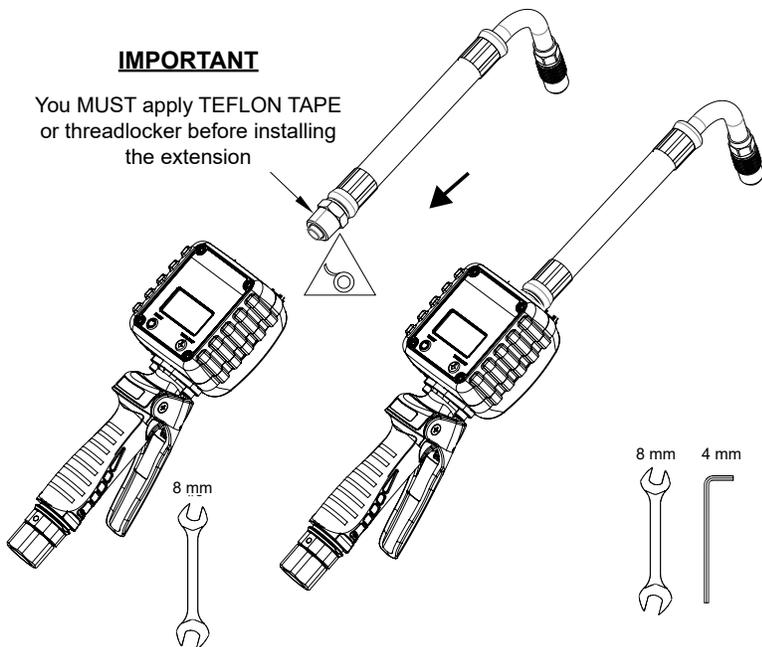
Fig. 5



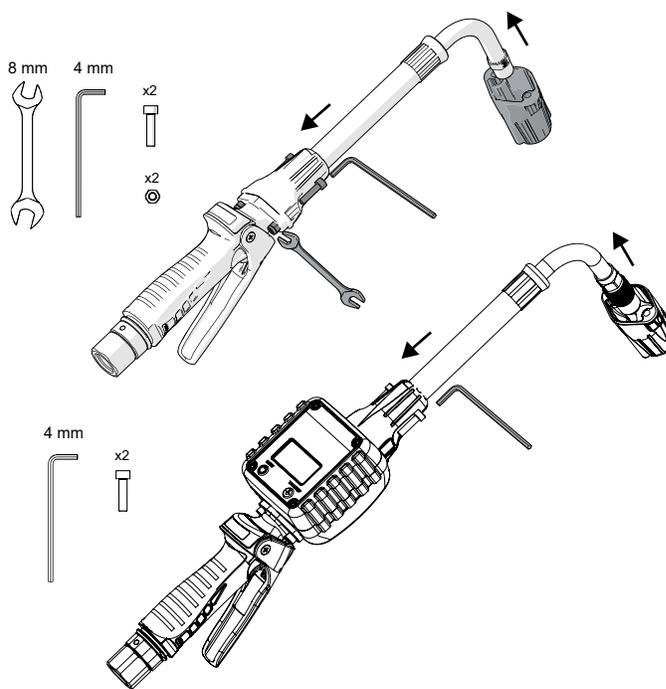
INSTALLING THE EXTENSION

IMPORTANT

You MUST apply TEFLON TAPE or threadlocker before installing the extension

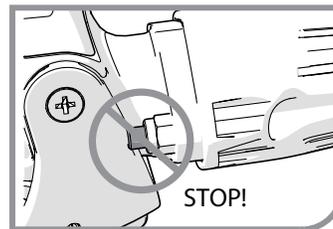
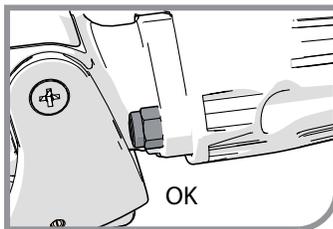


INSTALLING THE SHROUD



CAUTION

On non-metered models, when tightening the shroud screws, do not allow the threads to extend beyond the self-locking nut. Over tightening can interfere with proper operation of the trigger and damage the shroud.



CONFIGURATION - Unit of Measure

The meter has four possible combinations of units of measure that can be set based on the table below.

Batch Total	TRIP Register	Total Register
Liters (L)	Liters (L)	Liters (L)
Gallons (Gal)	Gallons (Gal)	Gallons (Gal)
Quarts (Qt)	Quarts (Qt)	Gallons (Gal)
Pints (Pt)	Pints (Pt)	Gallons (Gal)

To change between these combinations, the meter must be in batch mode. With the meter displaying the batch total (Fig. 6) press and hold the RESET and TRIP buttons simultaneously for 1 second (Fig. 7). The word "Unit" will appear in the display. You can then change the unit of measure by pressing the TRIP button until the desired unit of measure is displayed (Fig. 8). To save the new unit of measure, press the RESET button (Fig. 9).

UNITS OF MEASURE

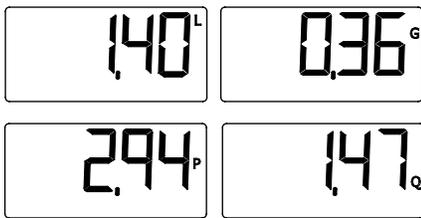


Fig. 6



Fig. 7

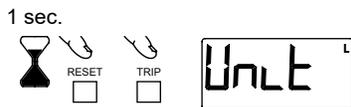


Fig. 8



Fig. 9



CONFIGURATION - Calibration

The meter is calibrated at the factory and does not normally require calibration for the fluids generally used in workshops. If using fluids with high or low viscosity, as well as if working with high flows or very low flows, calibration may be required.

Calibration may also be required after having used the meter for a long time, especially if working with fluids with that leave behind residues.

Verify the precision of the meter prior to use and proceed with calibration if required.

In order to perform the calibration process correctly the following rules must be adhered to:

1. The calibration can be performed for any volume, however it is recommended that a minimum of 1 unit (Quart, Gallon, Pint, Liter) and a maximum 25 units can be used.
2. The container used must be calibrated and be completely empty (prior use of the container can easily leave behind 0.1 quarts even if it appears to be empty). Put the container upside down for a while, or clean it before starting the calibration process.
3. When the fluid is being released you must wait until all the air contained in it is eliminated. This can take some time. If precision scales are used the accumulation of air has no effect.

CALIBRATION PROCEDURE

The calibration process is semi-automatic. To start the process, the meter must be in batch mode (Fig. 10) and is accessed by simultaneously pressing the buttons RESET and TRIP for 3 seconds (Fig. 11). After releasing the buttons the current calibration factor is shown on the meter (Fig. 12).

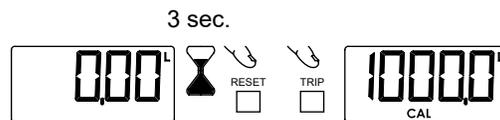


Fig. 10

Fig. 11

Fig. 12

If the screen does not show the correct unit of measure (Fig. 12) press the TRIP button (Fig. 13) successively until displaying the required unit (Fig. 14). Press RESET (Fig. 15) to start the calibration process (Fig. 16).



Fig. 13

Fig. 14

Fig. 15

Fig. 16

Begin dispensing the desired volume into the container. Remember that you must release at least 1 unit (Quart, Gallon, Pint, or Liter) to perform a good calibration. In the example shown the actual volume that has been dispensed is 2 liters according to the reading on the calibrated container (Fig. 17) and that the meter recorded 2.1 liters (Fig. 18).

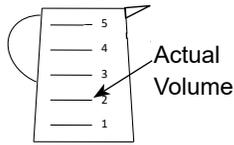


Fig. 17



Fig. 18

NOTE

For proper calibration it is important to:

- completely eliminate air from the system
- use an accurate sample container
- during calibration, ensure dispensing is done at a constant flow rate equivalent to normal dispensing until the container reaches the desired quantity. You may start and stop the flow but do not “trickle” flow
- after dispensing wait a short period to ensure any air bubbles have dissipated

To adjust the meter to the actual quantity dispensed (measured in the calibrated container or scales), press the RESET button for 1 second (Fig. 19). The digits start to flash (Fig. 20) indicating that the value shown can be modified. Each press of the RESET button increases the value by 0.1 unit and each press of the TRIP button (Fig. 21) reduces this value by 0.1 unit (Fig. 22).

1 sec.



Fig. 19



Fig. 20



Fig. 21



Fig. 22

Once the meter has been adjusted to reflect the actual quantity that was dispensed (Fig. 22) press the RESET button for 1 second (Fig. 23). The meter shows the new stored calibration factor (Fig. 24) and then exits the calibration process. The screen shows the batch total with the unit that was set during the calibration process (Fig. 25).

1 sec.



Fig. 23



Fig. 24



Fig. 25

If, during any phase of the calibration process, you wish to exit without saving the changes made you must press the TRIP button for 1 second. Likewise, if 30 seconds of inactivity elapses during the process, the meter switches off automatically and exits the calibration process without storing the data.

MAINTENANCE

The meter is designed to be virtually maintenance free. The only maintenance required is periodic battery replacement.

The meter comes complete with two 1.5 V size AAA alkaline batteries. The function of the low-battery alarm icon is shown below.



BATTERIES OK (NO ICON)



BATTERIES HALF CHARGED (HALF ICON)



BATTERIES DEAD (EMPTY ICON)
REPLACE THE BATTERIES

1. Remove the four #4 Torx screws in the battery cover as shown (Fig 26).
2. Remove the old batteries.
3. Install the new batteries (observe polarity).
4. Re-install the battery cover and tighten the screws.

When new batteries are installed, the display will briefly show the software version (similar to the below).



	WARNING
<p>Always use the following Pressure Relief Procedure whenever shutting off, cleaning, or in any way checking or servicing the control handle:</p>	
<ol style="list-style-type: none"> 1) Disconnect compressed air line or turn off power supply at the fluid pump. 2) Point the control handle outlet into a waste container and open trigger to relieve pressure. 3) Open any bleed-type supply air valves and fluid drain valves in the system. 4) Leave the drain valves open until you are ready to re-pressurize the system. 	

REPLACING THE BATTERIES

	NOTE
<p>Observe the polarity on the batteries when installing</p>	

The location of the batteries is shown below

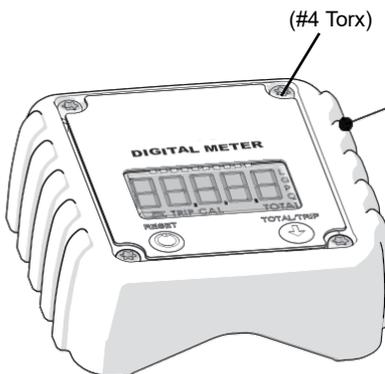
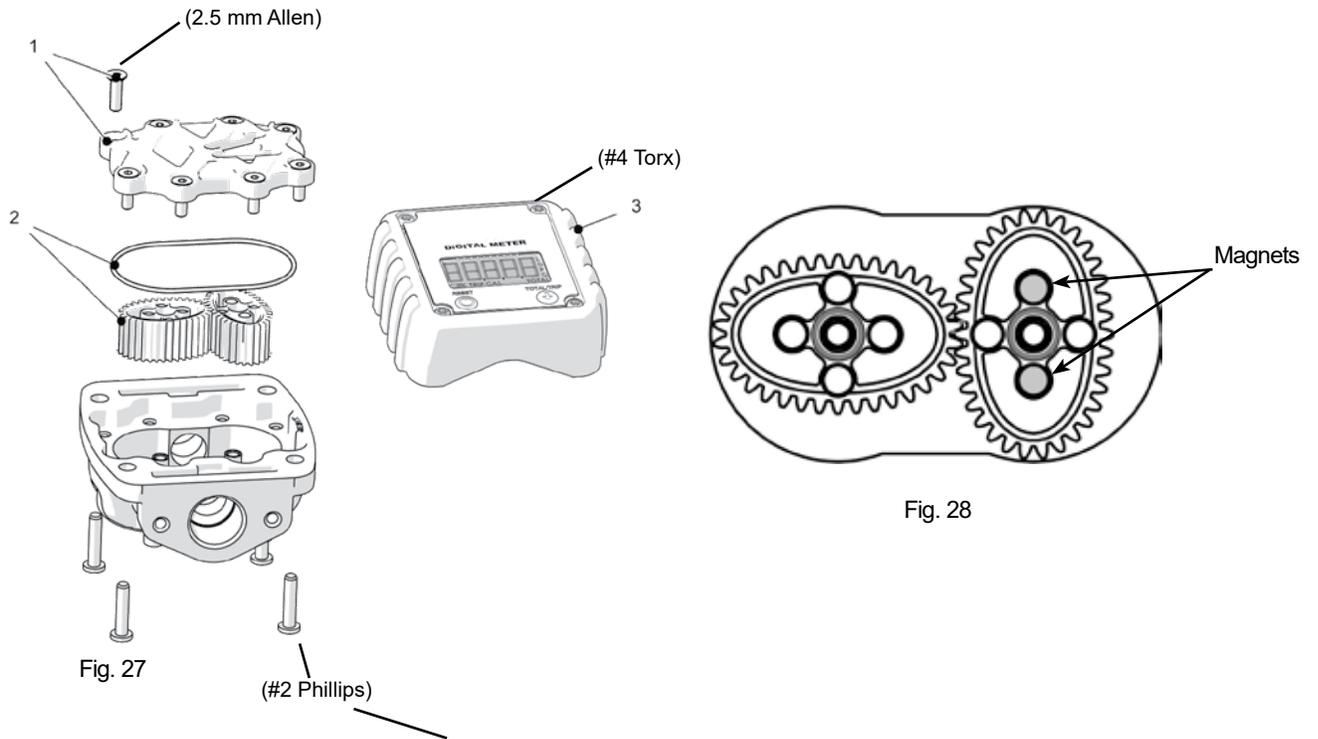


Fig. 26

CLEANING THE FLUID CHAMBER / REPLACING THE OVAL GEARS

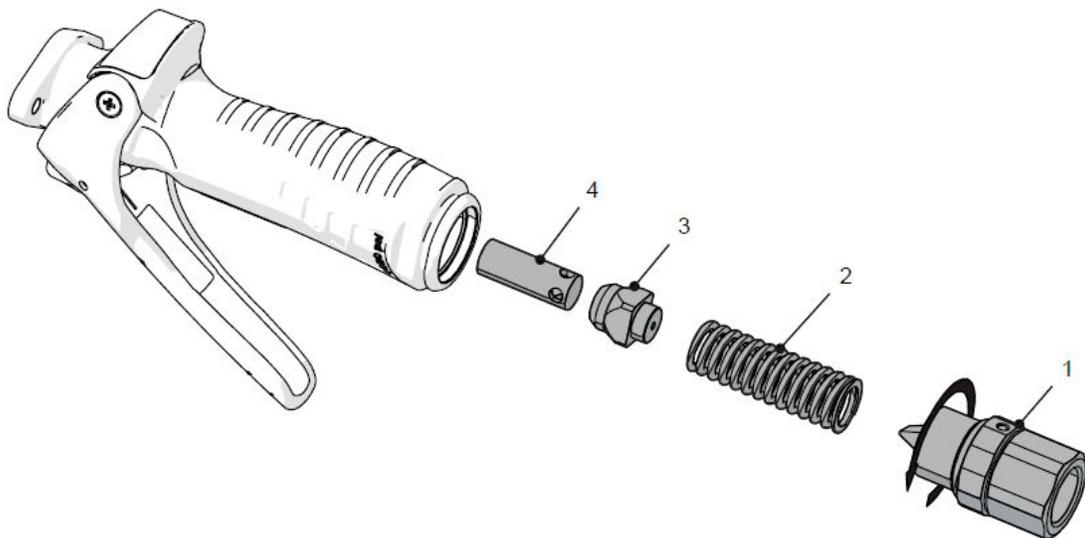
Refer to the steps below and Figures 27 & 28 (on page 9) for cleaning the fluid chamber.

1. Remove the four #4 Torx screws from the rear casing (4), then remove the back cover
2. Lift off the front casing/display assembly (3)
3. Remove the eight 2.5mm allen screws of the metering chamber cover, then remove the cover (1)
4. Make note of the position/orientation of the oval gears (2), then remove the oval gears
5. Clean the chamber and the gears carefully using a soft brush
6. Replace the oval gears. When replacing the gears, the gear with magnet installs on the right side (Fig. 28). Magnets should face up with flush side on top. Before replacing the meter cover, insure the gears spin freely.
7. Replace the metering chamber cover and tighten the allen screws
8. Replace the top cover/display assembly, the back cover and install the phillips screws.



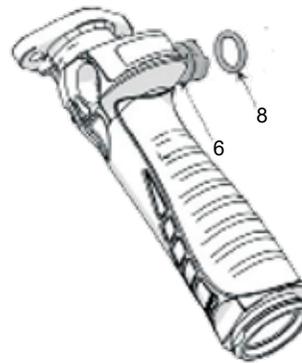
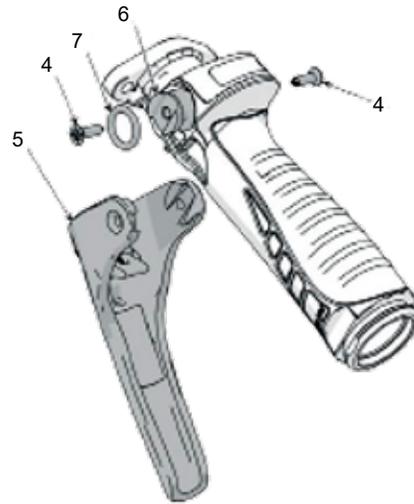
REPLACING THE VALVE ASSEMBLY

1. Loosen and remove the swivel (1), then remove the spring (2), the valve (3) and the rod (4).
2. Reassemble in reverse order.



REPLACING THE CAM O-RINGS

1. Disassemble the valve as described In REPLACING THE VALVE ASSEMBLY on page 9.
2. Remove the #2 phillips screws (4) from the cam (6) and remove the trigger (5).
3. To avoid damaging the o-rings, push the cam (6) out on one side until only the o-ring (7) of that side is exposed.
4. Remove, replace, and lubricate the the o-ring (7). Carefully push the cam (6) through to the other side just until the o-ring (8) is exposed, remove, replace, and lubricate the o-ring (8), then carefully push the cam (6) back into its original position.
5. Re-install the trigger and screws.
6. Re-install the valve assembly.

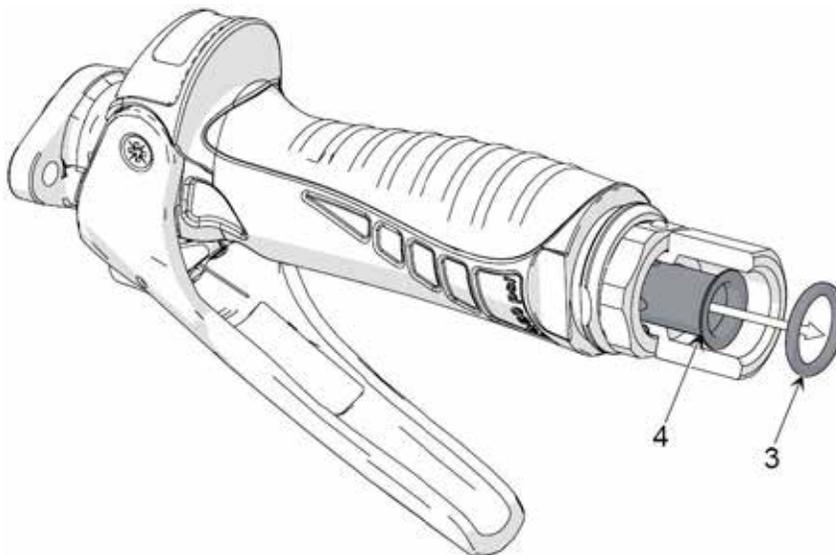


NOTE

Do not remove cam completely. The o-rings must be changed one at a time by pushing the cam to one side, replace and lubricate the o-ring then push through the handle to the other side and repeat the operation. If you remove the cam completely, when reinstalled, the o-ring that was installed first will be cut.

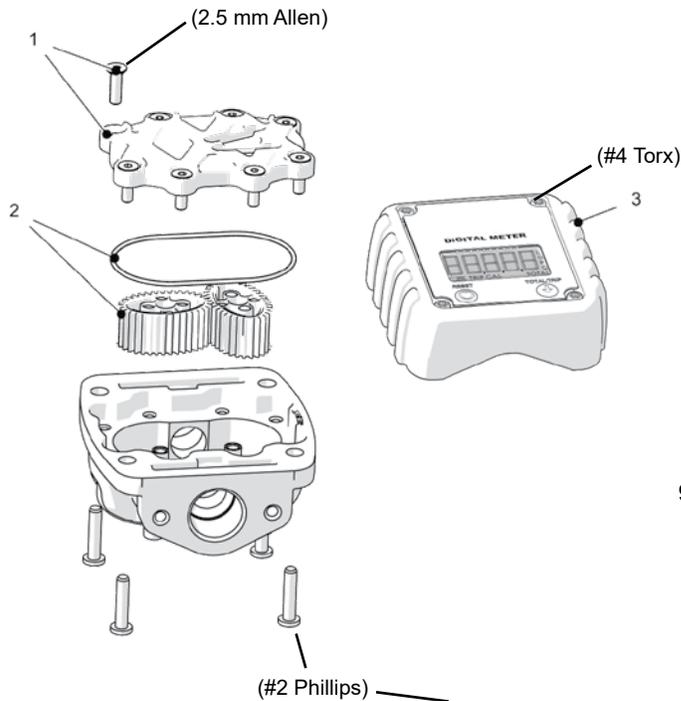
REPLACING THE FILTER SCREEN

1. Remove the o-ring (3) fixing the filter screen (4) and then remove the filter screen.
2. Inspect the filter and clean or replace it as necessary.
3. Replace the filter screen with the o-ring, install the swivel cover (optional), and re-connect the hose.



TROUBLESHOOTING

Symptom	Possible Cause	Remedy
Blurred or unclear reading.	Batteries dead.	Replace the batteries
The meter does not switch on.	Batteries dead.	Replace the batteries
The meter is inaccurate.	Erroneous calibration factor.	Calibrate the meter
	A fluid with very high or very low viscosity is being used.	Calibrate the meter
	Very high or low fluid temperature.	Calibrate the meter.
	The meter is working outside its field of application (see technical specifications).	Restore the working conditions (flow, viscosity, temperature...) to those required by the meter
Reduced flow.	Debris in the fluid chamber.	Clean the fluid chamber
	Filter / strainer clogged	Clean or replace the filter / strainer
The meter does not count.	Faulty reed sensor.	Inform technical support
Valve leaks	Valve seal worn or damaged	Dissassemble the valve for inspection. If not damaged, clean an re-seat valve. If damaged, replace the valve
	Foreign material on valve seat	
Leak at trigger cam	O-ring worn or damaged	Replace the O-ring
Leak at swivel	Swivel is loose	Tighten swivel assembly
	Swivel O-ring worn or damaged	Replace the O-ring



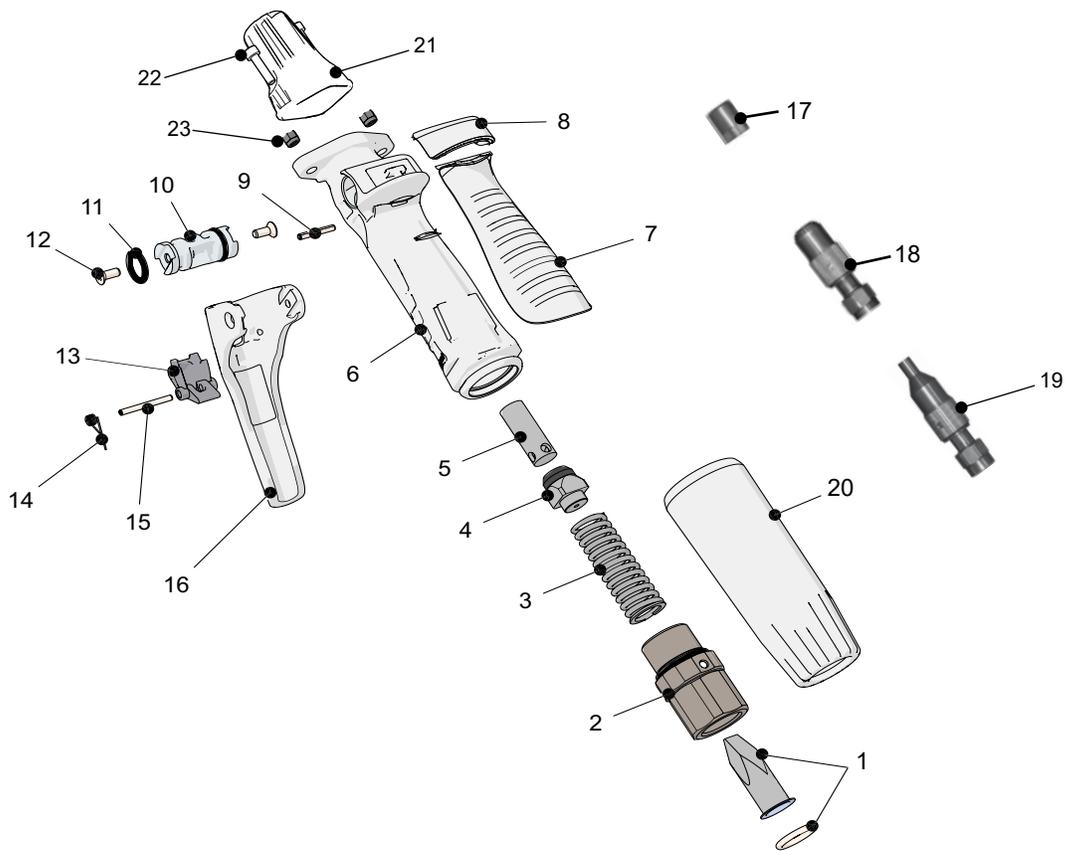
METER DIMENSIONS



PARTS LIST (Meter)

Item	Description	Qty
1	Counter-sunk screw	8
	Metering chamber cover	1
	O-Ring	1
2	Oval gear	2
	Magnet	2

Item	Description	Qty
3	Electronic card	1
	Front Casing	1
	Screw w/plastic thread PCB	4
	Screw w/plastic thread casing	4
4	Rear casing	1
	Self-tapping screw	4

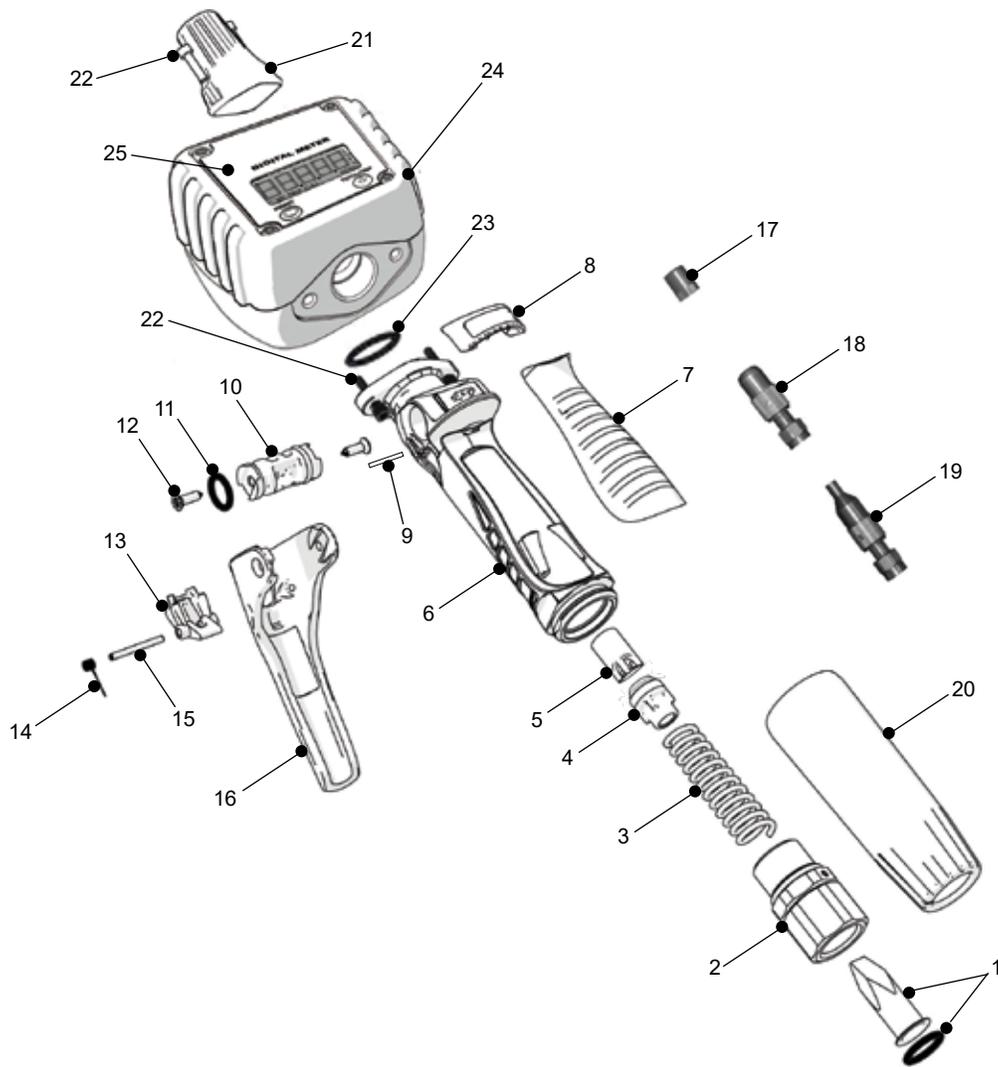


PARTS LIST (Non-Metered Control Handle)

Item	Description	Qty.
1	O-ring Strainer	1 1
2	Swivel	1
3	Spring	1
4	Valve	1
5	Rod	1
6	Body	1
7	Grip	1
8	Cover	1
9	Pin	1
10	Cam	1
11	O-ring	2

Item	Description	Qty.
12	Self tapping screw	2
13	Lock/unlock button	1
14	Trigger spring	1
15	Pin	1
16	Trigger	1
17	Automatic non-drip tip*	1
18	1/4 Turn Manual non-drip tip*	1
19	1/4 Turn Manual non-drip tip (narrow)*	1
20	Swivel cover	1
21	Shroud	1
22	Screw (M5 x 14)	2
23	Lock nut**	2

*Tip type depends on control handle model number (see Models on page 3)
 **Lock nuts only Included on non-metered control handles



PARTS LIST (Metered Control Handle)

Item	Description	Qty.
1	O-ring Strainer	1 1
2	Swivel	1
3	Spring	1
4	Valve	1
5	Rod	1
6	Body	1
7	Grip	1
8	Cover	1
9	Pin	1
10	Cam	1
11	O-ring	2

Item	Description	Qty.
12	Self tapping screw	2
13	Lock/unlock button	1
14	Trigger spring	1
15	Pin	1
16	Trigger	1
17	Automatic non-drip tip*	1
18	1/4 Turn Manual non-drip tip*	1
19	1/4 Turn Manual non-drip tip (narrow)*	1
20	Swivel cover	1
21	Shroud	1
22	Screw (M5 x 14)	4
23	O-ring**	1
24	Meter	1
25	Face Plate	1

*Tip type depends on control handle model number (see Models on page 3)
 **Only included on metered control handles

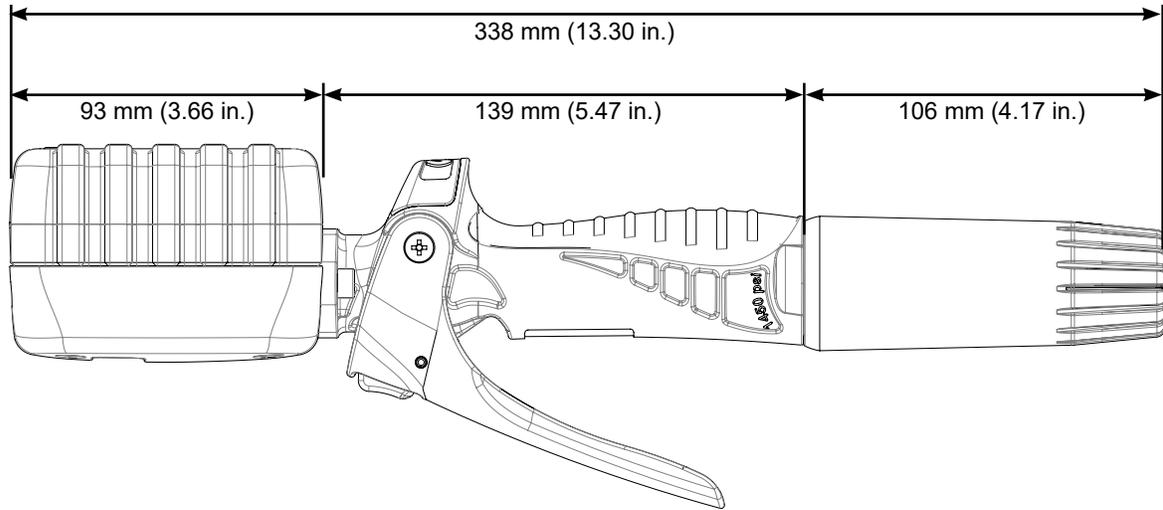
REPAIR KITS / PARTS

Description	Part Number	Included Items
Inlet swivel kit	833306	1 & 2 (from page 12 or 13)
Trigger kit	833307	9 & 13 - 16 (from page 12 or 13)
Valve kit	833308	3 - 5 (from page 12 or 13)
Cam kit	833309	10 - 12 (from page 12 or 13)
Swivel Cover	833354	20 (from page 12 or 13)
Gears kit	833310	2 (from page 11)
Circuit board kit	833873	3 (from page 11)
O-ring	833381	23 (from page 13)
Screw (M5 x 14)	833539	22 (from pages 12 or 13)
In-Line meter	3120-091	24 (from page 13)
Shroud (black)	833398BK	21 (from pages 12 or 13)
Face Plate	833917	25 (from page 13)

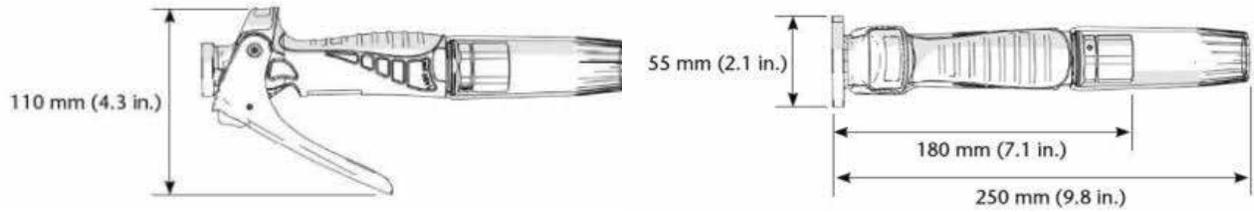
OPTIONAL COLORED SHROUDS

Description	Part Number
Muti-color kit (one of each of the above)	833398

**CONTROL HANDLE WITH METER
DIMENSIONS**



**CONTROL HANDLE
DIMENSIONS**



**For Warranty Information Visit
www.balcrank.com**

Revision Log:

- Rev. A - Release
- Rev. B - Corrected meter max working pressure and added maintenance instructions for valve, inlet filter and cam o-rings
- Rev. C - Changed schematic ID numbers on pages 9-11
- Rev. D - Added non-metered models. Added shroud installation instructions & part numbers
- Rev. E - Added exploded view, & part numbers specific to metered models.
- Rev. F - Replaced standard shield and label to reflect updated design
- Rev. G - added Calf Prop 65
- Rev. H - Updated new circuit board product number, removed NLA'd shroud numbers.
- Rev. I - Added kit 833917 to pages 13 & 14
- Rev. J - User button data

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Rev. J 6/22