

**Balcrank**<sup>TM</sup>

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## Digital Impulse Meter

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Model 3120-034



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

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## Operation, Installation, Maintenance and Repair Guide

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## General Safety

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

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### 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



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.

### WARNING



This product uses electrical energy and requires proper handling at all times. Do not attempt to open or remove the bezel assembly without first disconnecting the power supply.

### 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



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

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## Product Description

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The Spectrum™ Digital Impulse Meter is an in-line fluid meter for piping installations. The digital impulse meter utilizes an oval gear movement that transmits a magnetic pulse to a detector circuit, which pulses a nominal 12 volt signal to the Spectrum™ Queuing Console.

Used primarily as an inventory control device in the Spectrum™ dispensing system, they are unsurpassed for accuracy, ruggedness, and light weight. Adaptable to a variety of applications.

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## Specifications

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Flow Rate ..... 0 - 6.0 gpm  
Operating Pressure (max) ..... 1000 psi  
Operating Temperature (max) ..... 150°F  
Accuracy ..... +/- 0.5%  
Weight ..... 1.5 lbs.  
Inlet ..... 1/2" NPT(f)  
Outlet Port ..... 3/8" NPT(f)  
(With Swivel Adapter) ..... 1/2" NPT(f)  
Dimensions ..... 4.1" x 4.5" x 2"  
Wetted Parts... Aluminum alloy, Buna, Stainless steel, Polyphenylene Sulfide

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## Meter Installation and Calibration

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**Figure 1**  
**Meter Installation**

### To install meter Model 3120-034...

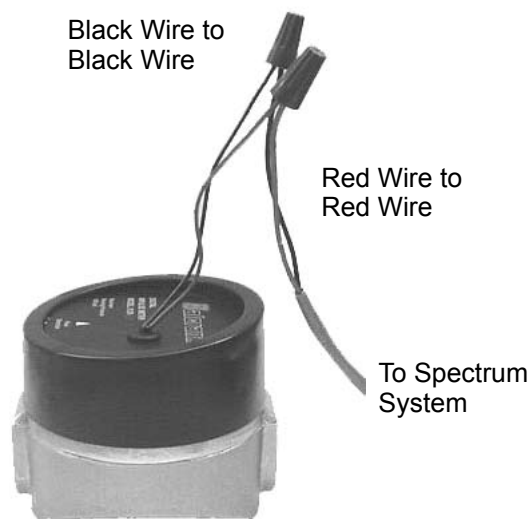
This procedure applies both for new installation, and for replacement of an existing meter.

- 1 Close the shutoff hand valve on the air supply to the pump where the meter is to be mounted. Close the fluid outlet hand valve to isolate the meter from external system fluid pressure.
- 2 Be sure fluid lines are clean and flushed. Do not introduce tubing cutting chips, excess teflon tape or other debris into the meter during or after the installation.
- 3 If an old meter is being replaced, remove the old meter by breaking the 1/2" NPT lines on each side of the meter. Be prepared to catch drain oil at the connections.
- 4 Mount the meter in the pump output line, along with a hand shutoff valve and a thermal relief valve. Use the component arrangement shown in Figure 1, "Pump Installation". Fitting and pipeline size should be 1/2" NPT. Use the 3/8 to 1/2" swivel adapter included with the meter. Note direction of flow on the meter cover.

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## Meter Installation and Calibration

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**Figure 2**  
**Meter Wire Installation**



**Figure 3**  
**Meter Calibration Factor**

**5** Connect the meter wires to the Spectrum™ impulse meter cable as shown in Figure 2, “Meter Wire Installation”. See service bulletin SB3028, “Spectrum 100™ Electronic Fluid Inventory System” for details of correcting wiring to the Spectrum system.

 CAUTION
Be sure to wire impulse meters correctly. Reverse wiring or attachment to wrong terminal points could cause immediate damage to the circuit board in the impulse meters.

**6** The impulse meter calibration factor, in pulses per gallon, is noted on the bottom of the meter body. Record that value on a sheet of paper.

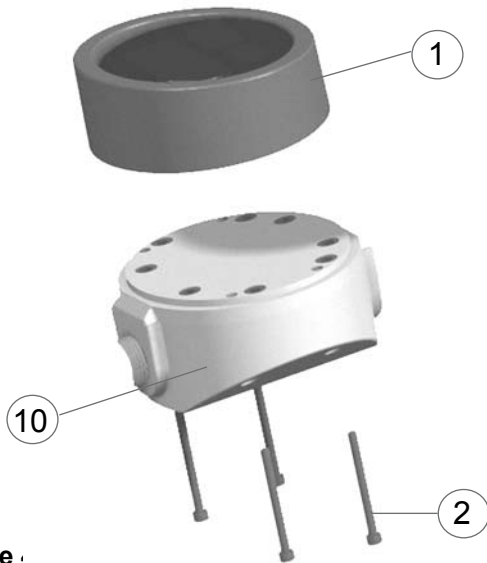
**7** Using procedures in the service bulletin SB3028, “Spectrum 100™ Electronic Fluid Inventory System”, enter the calibration factor for the new meter in the Spectrum Queuing Console.

**8** For installation of the Model 3120-034 Digital Impulse Meter in other (non-Spectrum) fluid inventory control systems, refer to the system manufacturers instructions for proper wiring and calibration. Be sure the meter is certified to be compatible with the control circuitry and pulse counting format of the host system.

# Trouble Diagnosis

Symptom	Cause and Corrective Action		
<p><b>01</b> Slow Flow Rate or No Fluid</p> <p>High apparent resistance to fluid flow through the meter or poor fluid delivery rate.</p>	<p>1...</p> <p>Debris in system</p> <p>Check and clean clogged filter, remove debris from meter chamber, clear fouled supply line.</p>	<p>2...</p> <p>Fluid pressure is low at the pump</p> <p>Increase pump output pressure by adjusting air supply pressure at the pump regulator.</p>	<p>3...</p> <p>Shutoff vale is not fully open</p> <p>Be sure valves are full open at the pump and at each dispense point.</p>
<p><b>02</b> Fluid Leaks at Meter</p> <p>Oil observed seeping at meter connections.</p>	<p>1...</p> <p>Threaded Joint Assembly</p> <p>Disconnect threaded joints, clean threads and fittings, apply sealant and reassemble.</p>	<p>2...</p> <p>Cracked Housing or Fitting</p> <p>Disconnect threaded joints, clean threads and fittings, replace defective part, apply sealant and reassemble.</p>	<p>3...</p> <p>Over pressurization</p> <p>Be sure a pressure relief valve is installed in the system, downstream of the meter.</p>
<p><b>03</b> Incorrect Fluid Amount is Dispensed</p> <p>System dispenses more or less oil than commanded during a dispense job.</p>	<p>1...</p> <p>Incorrect Calibration</p> <p>Check calibration number on the bottom of meter and follow procedures in SB 3028.</p>	<p>2...</p> <p>Fluid Leak in System</p> <p>Check system for leaks. Repair or replace any faulty components or joints.</p>	<p>3...</p> <p>Shutoff vale is not fully open.</p> <p>Be sure valves are full open at the pump and at each dispense point.</p>
<p><b>04</b> Fluid Does not Automatically Stop Dispensing</p> <p>Pump keeps running after the authorized amount has been dispensed.</p>	<p>1...</p> <p>Defective Circuit Board</p> <p>Replace Digital Bezel Assembly.</p>	<p>2...</p> <p>Spectrum Components not Wired Correctly</p> <p>Clean all wire connections and securely fasten with wire connectors.</p>	<p>3...</p> <p>Defective Spectrum Control Component</p> <p>Refer to error commands on Console and follow corrective action in SB 3028.</p>

## Repair Procedures



**Figure 4**  
**Bezel Removal**

### Replacing Bezel/Electronics Assembly:

**1 At the Queuing Console...** conclude or cancel all dispenses in queue. Then turn OFF the power switch on the back of the console. Remove the power connector from the back of the console for the duration of the repair.

**2 Remove the Bezel Assembly...** disconnect the two wire leads on the existing (old) bezel assembly. Remove 4 Socket Head Screws, item 2, on the back side of the Meter Body, item 10, using 7/64" Allen wrench. Remove the Bezel Assembly, item 1, from the Meter Body. Use care to avoid damage of the seal on the outer rim of the meter cover.

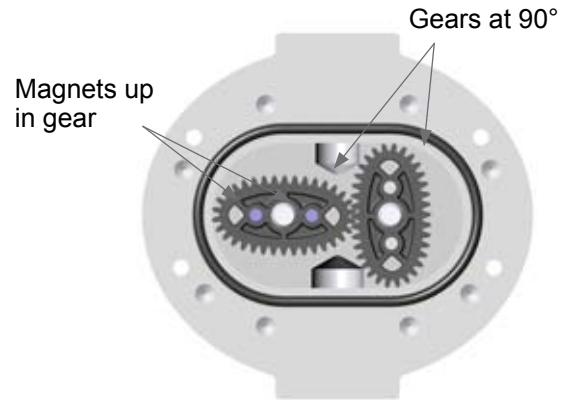
**3 Install the Replacement Bezel Assembly...** note direction of flow on the face of bezel assembly. Reattach to meter body with 4 Socket Head Screws, item 2, using care to avoid damage of the seal on the outer rim of the meter cover. Reconnect wires as shown on page 4, "Meter Installation".



### CAUTION

Be sure to wire impulse meters correctly. Reverse wiring or attachment to wrong terminal points could cause immediate damage to the circuit board in the impulse meters.

## Repair Procedures



**Figure 5**  
**Meter Chamber**



### WARNING



Always use the Pressure Relief Procedure shown on page 2 whenever shutting off, cleaning, or in any way checking or servicing the meter.

### Meter Chamber Rebuild:

**1 Remove the Bezel Assembly...** follow directions as described for Replacing Bezel Assembly steps 1 & 2.

**2 Disassemble meter chamber parts...** Using a 5/32" Allen wrench, remove the eight Socket Head Screws, item 4, which secure the Meter Chamber Cover, item 9. Remove the O-Ring, item 5. Lift the Gears, item 7, upward to remove them from the Shafts, item 6. Do not remove the shafts.

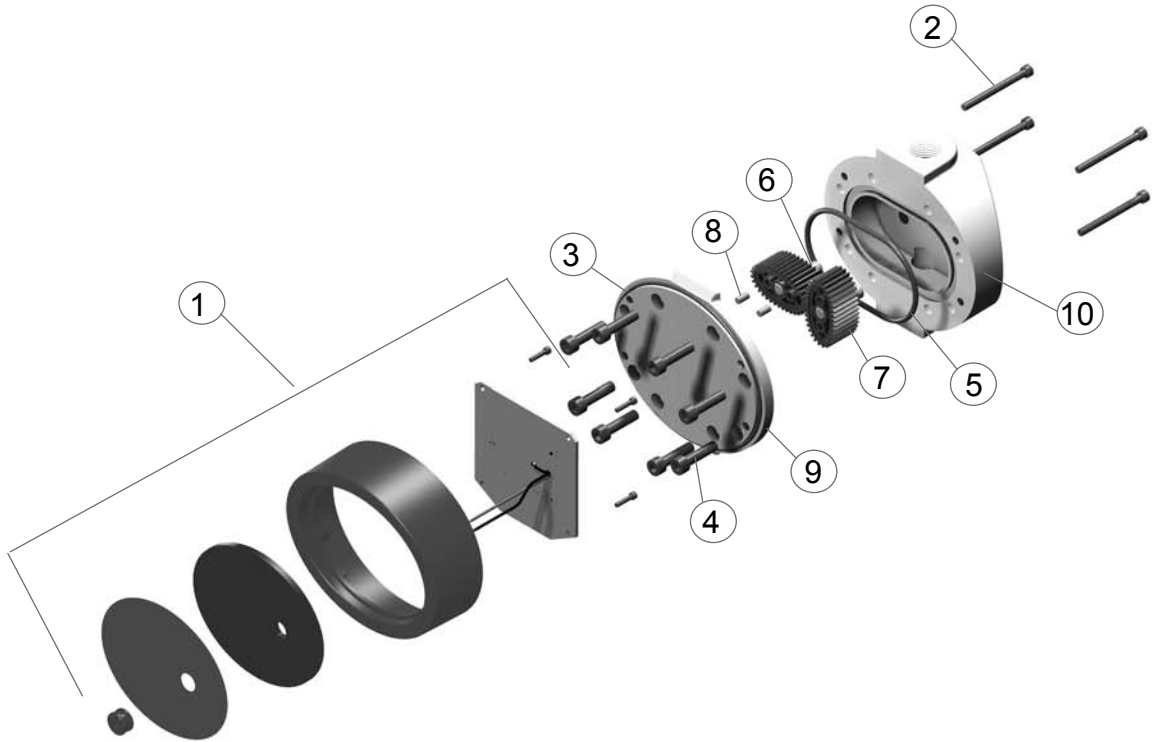
**3 Clean and inspect the meter chamber...** Clean all parts thoroughly and inspect for wear.

**4 Assemble meter chamber parts...** Reassemble parts in reverse order. Apply a light lubricating oil to the meter chamber and shafts before installing. Assure gear alignment as shown in Figure 5, "Meter Chamber", (gears 90 degrees apart, magnets facing up) when installing the gears. Apply Loctite 222 threadlock to screws before final assembly.

**5 Reinstall the Bezel Assembly...** follow directions as described for Replacing Bezel Assembly step 3.

**6 Reinstall complete meter...** follow directions as described for Meter Installation on page 3.

## Repair Parts



Item	Part #	Description	Qty
1	831168	Digital Bezel Assembly	1
2	829613	Screw, No. 7/64 "	4
3	829610	O-Ring	1
4	829612	Screw, No. 5/32"	8
5	829611	O-Ring	1
6	829609	Shaft	2
7	828137	Gear, Elliptic	2
8	829616	Magnet	2
9	829490	Meter Cover	1
10	829480	Meter Body	1
11	3270-046	Swivel, 3/8" to 1/2" (not shown)	1

## Balcrank Lubrication Equipment Warranty Statement

All Balcrank equipment sold by authorized Balcrank distributors is warranted to their original customer to be free from defects in materials and workmanship for a period of one year from the date of sale to that customer. Selected Balcrank equipment carries warranty terms for a more extended period as defined in the Balcrank Lubrication Equipment & Accessories User Price List, wherein a "lifetime" warranty represents a warranty period of thirty years. Within the initial one-year warranty period, Balcrank will repair or replace all Balcrank equipment determined by Balcrank to have defective materials or workmanship. For equipment carrying more extended warranties, Balcrank will repair or replace the product including parts and labor during the first full year and will provide parts only for the remainder of the warranty period.

This warranty applies only to equipment installed and operated according to applicable Balcrank Service Bulletins and Installation Instructions.

Any equipment claimed to be defective must be returned, freight prepaid, to an Authorized Balcrank Service Center (ASC). Upon receiving candidate warranty equipment from a customer, ASC will: 1) diagnose to determine the warrantable condition of the equipment, 2) submit, prior to repair or replacement, a request to Balcrank for warranty authorization, then 3) in cooperation with Balcrank, proceed with repair locally or forward the equipment to Balcrank and obtain replacement. If the part(s) or equipment items are found defective upon inspection by Balcrank, they will be repaired or replaced, and then will be returned to the ASC. If Balcrank finds the claimed part(s) or equipment not to be defective, the ASC will receive written authorization from the original customer, and then repair them for a reasonable charge to the customer, which will include all applicable parts, labor, and return transportation costs.

Optionally, the customer may submit certain eligible products directly to Balcrank for warranty return by using Balcrank Lubrication Equipment Direct Service Warranty Procedure. Eligible products are defined in the Balcrank Lubrication Equipment & Accessories User Price List. Refer to the Balcrank web site [www.balcrank.com](http://www.balcrank.com) for a copy.

Any equipment returned to Balcrank must have the Warranty Service Claim number (WSC#) clearly marked on the outside of the carton. Balcrank's sole responsibility is for defects in material and workmanship, and Buyer's sole and exclusive remedy hereunder, shall be limited to repair or replacement of the defective part or equipment.

This warranty does not cover, nor shall Balcrank be liable for repair or replacement of parts or equipment resulting from general wear and tear through use, or damage or failure caused by improper installation, abuse, misapplication, abrasion, corrosion, insufficient or improper maintenance, negligence, accident, alteration, or substitution of non-Balcrank parts.

Furthermore, the Warranty for Lubrication Equipment and Accessories does not cover the following specific conditions:

- Failure or damage to equipment caused by dirt or debris in compressed air lines and fluid lines. This includes, but is not limited to, clogged inlet filters, strainers, or regulators; fluid meters; control handles; fluid tips; and valves.
- Failure of normal wear parts including but not limited to: o-rings, packings, seals and valves unless originally improperly installed by the factory.
- Products placed in applications for which their use was not intended. Examples include but are not limited to Lubricant pump being used to pump solvents, or placing equipment intended strictly for indoor use outdoors
- Damage to equipment resulting from operation above and beyond Balcrank's recommendations.
- Leaks at air and fluid fittings and connections.
- Damage caused by thermal expansion whenever adequate pressure relief was not included in the system.
- Loose suction tubes on pumps.
- Incorrect hose reel spring tension, requiring adjustment.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL BALCRANK BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, OR OTHER DAMAGES OF SIMILAR NATURE, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST PRODUCTION, PROPERTY DAMAGE, PERSONAL INJURY, WHETHER SUFFERED BY BUYER OR ANY THIRD PARTY, IRRESPECTIVE OF WHETHER CLAIMS OR ACTIONS, LEGAL OR EQUITABLE, FOR SUCH DAMAGES ARE BASED UPON CONTRACTS, WARRANTY, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE. ANY CLAIM OR ACTION FOR BREACH OF WARRANTY MUST BE BROUGHT WITHIN TWO (2) YEARS FROM THE DATE OF SALE TO THE ORIGINAL CUSTOMER.

Balcrank Corporation  
Weaverville NC 28787  
800-747-5300  
828-658-0840 (fax)

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