

# CROSS TECHNOLOGY

CITY/ST: \_\_\_\_\_

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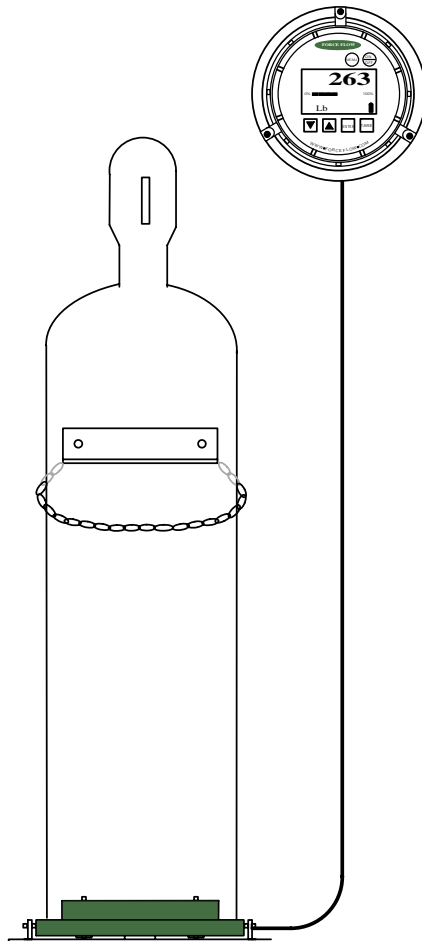
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FACTORY CALIBRATED

S/N \_\_\_\_\_

## INSTALLATION & OPERATION SOLO XT AMMONIA & CYLINDER SCALE



Version: XT103

1150-D Burnett Ave, Concord, CA 94520 USA  
1-800-893-6723 Fax: 925-686-6713  
www.forceflow.com / Info@forceflow.com

REF: T4\O&M\CYLXT\CVR 200# CYL.tew (100.pdf)  
10/25/04



## INCLUDES MODELS:

### CHLOR-SCALE 150 . AMMONIA-SCALE and CYLINDER-SCALE

with ELECTRONIC SOLO XT  
CROSS TECHNOLOGY DIGITAL INDICATOR

COVERING MODELS:

#### BATTERY:

		<u>Battery Model No.</u>	<u>(Metric Model)</u>
<u>CHLOR-SCALE 150:</u>	Single Cyl:	<b>XT150-1</b>	(XT68K-1 68 kg.)
	Dual Cyl:	<b>XT150-2</b>	(XT68K-2 68 kg.)
<u>AMMONIA-SCALE</u>	Single Cyl:	<b>XT400-1AS</b>	(XT200K-1AS 200 kg.)
	Dual Cyl:	<b>XT400-2AS</b>	(XT200K-2AS 200 kg.)
<u>CYLINDER-SCALE (liquefied gas)</u>	Single Cyl:	<b>XT200-1</b>	(XT100K-1 100 kg.)
	Dual Cyl:	<b>XT200-2</b>	(XT100K-2 100 kg.)

#### OPTIONAL 4-20mA:

		<u>4-20mA Model No.</u>	<u>(Metric Model)</u>
<u>CHLOR-SCALE 150:</u>	Single Cyl:	<b>XT150-1MA</b>	(XT68K-1MA 68 kg.)
	Dual Cyl:	<b>XT150-2MA</b>	(XT68K-2MA 68 kg.)
<u>AMMONIA-SCALE</u>	Single Cyl:	<b>XT400-1ASMA</b>	(XT200K-1ASMA 200 kg.)
	Dual Cyl:	<b>XT400-2ASMA</b>	(XT200K-2ASMA 200 kg.)
<u>CYLINDER-SCALE (liquefied gas)</u>	Single Cyl:	<b>XT200-1MA</b>	(XT100K-1MA 100 kg.)
	Dual Cyl:	<b>XT200-2MA</b>	(XT100K-2MA 100 kg.)

#### OPTIONAL 4-20mA & RELAY:

		<u>4-20mA &amp; RELAY Model No.</u>	<u>(Metric Model)</u>
<u>CHLOR-SCALE 150:</u>	Single Cyl:	<b>XT150-1MAR</b>	(XT68K-1MAR 68 kg.)
	Dual Cyl:	<b>XT150-2MAR</b>	(XT68K-2MAR 68 kg.)
<u>AMMONIA-SCALE</u>	Single Cyl:	<b>XT400-1ASMAR</b>	(XT200K-1ASMAR 200 kg.)
	Dual Cyl:	<b>XT400-2ASMAR</b>	(XT200K-2ASMAR 200 kg.)
<u>CYLINDER-SCALE (liquefied gas)</u>	Single Cyl:	<b>XT200-1MAR</b>	(XT100K-1MAR 100 kg.)
	Dual Cyl:	<b>XT200-2MAR</b>	(XT100K-2MAR 100 kg.)



## SOLO XT with ALL CYLINDER SCALES

### SECTION

X.1.000

YOU  
ARE  
HERE !

#### INSTALLATION & OPERATION:

- X.1.100 Indicator Specifications
- X.1.101-1 Drawing of Chlor-Scale 150 (Std US 150# Cylinders)
- X.1.101-2 Drawing for Ammonia Cylinders
- X.1.101-3 Drawing with Slotted Platform (all other Gas Cylinders)
- X.1.102 Installation Instructions
- X.1.103 Installation Drawing
- X.1.104 Installation Steps 1 thru 4
- X.1.105 Installation Steps 5 thru 8

#### INSTALLATION CHECK OFF LIST

- X.1.151 Installation Check Off List

#### OPERATION

- X.1.201 Scale Operation
- X.1.202 Indicator Functions
- X.1.210 Setting Net Weight
- X.1.211 Menu Functions (Zero & Bar/4-20mA)
- X.1.212 Menu Functions cont... (Off & Relay)
- X.1.213 Menu Functions cont... (Resolution & Exit)

X.2.000

#### 4-20mA OUTPUT & LEVEL ALARM RELAY OPTIONS:

- X.2.101 Installation Diagram
- X.2.105 Wiring Diagram

#### POWER SUPPLY OPTION:

- X.2.111 Power Supply (24 Volt)

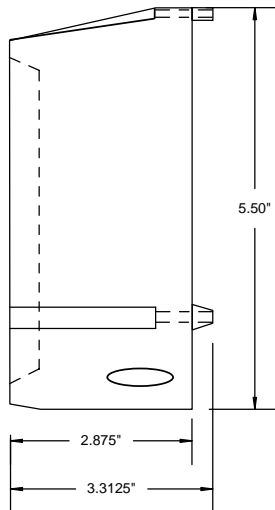
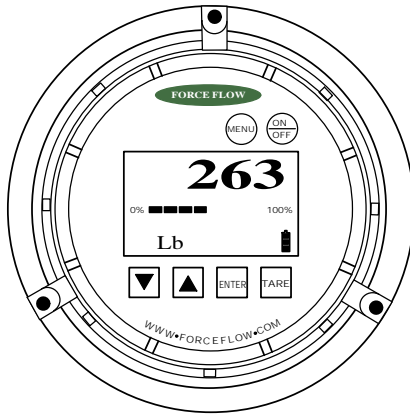
X.3.000

#### MISCELLANEOUS

- X.3.105 Calibration of "Slotted" Platform Scales only
- X.3.301 Troubleshooting and Maintenance
- X.3.401 Parts List

# SOLO XT

Digital Indicator  
with Cross Technology



## SPECIFICATIONS

**ACCURACY:** 0.5% - 1.0%

**OPERATING TEMPERATURE:** 0 - 54 degrees C / 32 - 130 degrees F

**INPUT:** Single Hydraulic Load Cell

**DISPLAY:** 3-line LCD with low battery icon  
Top line: 5-digit numeric with optional decimal point (0.1)  
Digit Size: 0.81"  
Middle Line: Programmable bar graph (0-100%)  
Bottom Line: 5 character alphanumeric  
Update Rate: 1/sec

**MEMORY:** Nonvolatile with battery backup  
Stored data saved if power interruption  
Battery backup provides local indication if power interruption

**KEYPAD:** 6 button membrane keypad  
Includes ON/OFF, MENU, TARE, ARROW (down), ARROW (up)  
MENU includes scrollable features for ease of operation.

**ENCLOSURE:** Glass filled polypropylene  
Gasketed NEMA 4X with o-ring seal

**SENSOR:** 17-4 stainless steel  
316 stainless pressure port

- AVAILABLE UNITS:**
- Battery Powered Model: No options provided.
  - 4-20mA Model: Includes 18" flying lead for +/- connection for analog output signal (requires 12-36 V DC)
  - Low Level Alarm Contact Model: SPDT switch rated (0.5 amp/120 V AC), with 18" flying lead. (Requires 12-36 VDC) Programmable set point located in MENU function.

**\*BATTERY LIFE:** **1 YEAR**  
(under normal operating conditions)

**\*Battery life will be greatly reduced in 4-20mA unit when operating on battery backup.**

X.1.100



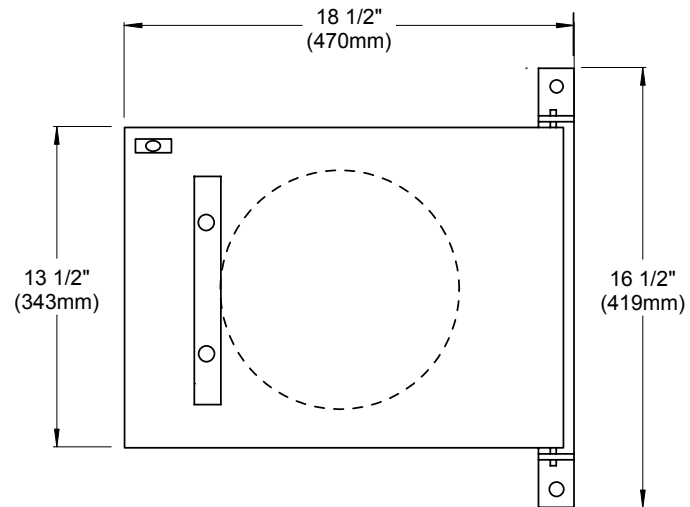
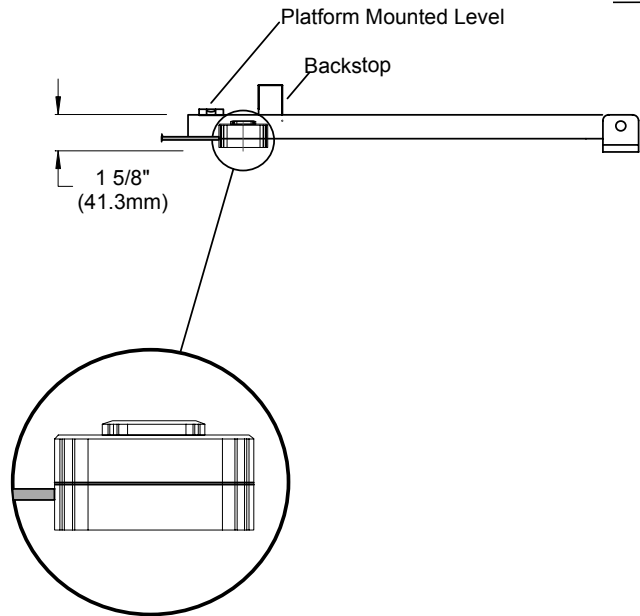
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**SOLO XT**  
Specification Drawing

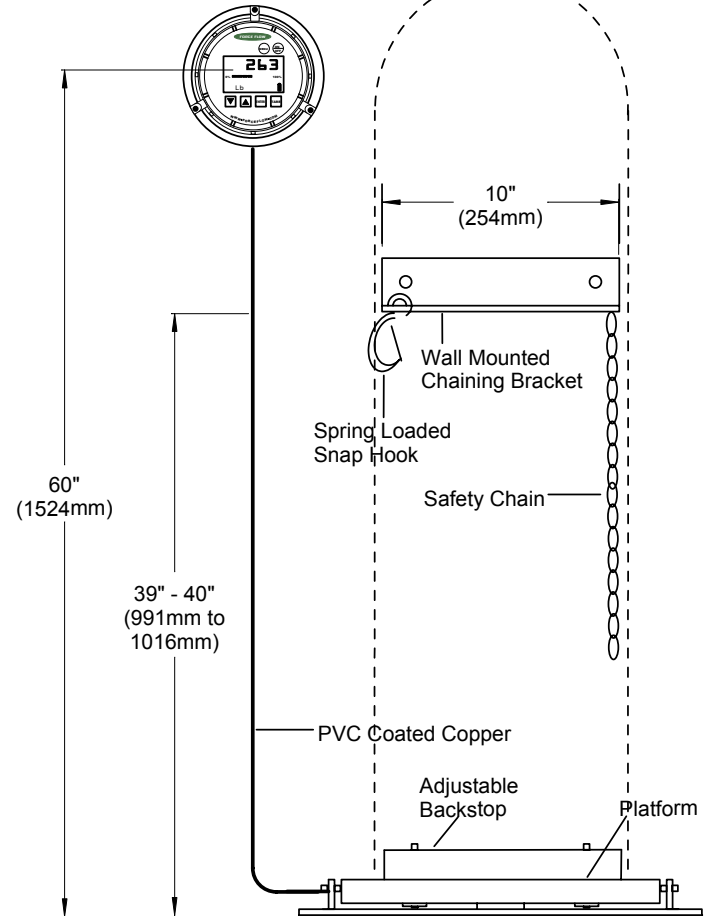
Drawn by: SLJ/MN  
Date: 09/13/02  
Revised: 11/01/04 JG  
Scale: NONE

Drawing Number  
**30454**

CHLORINE & SULFUR DIOXIDE  
CYLINDER SCALES



SOLO XT Cross  
Technology Indicator



**X.1.101-1**



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File: T4\O&M\CYLXT\150#XTO&M.tcw (101.pdf)

**HYDRAULIC CHLOR-SCALE 150**  
with SOLO XT Cross Technology  
Digital Indicator for Cl<sub>2</sub> & SO<sub>2</sub> Cylinders

Drawn by: SLP/MN  
Date: 01/05/94  
Revised: 02/26/03  
Scale: NONE

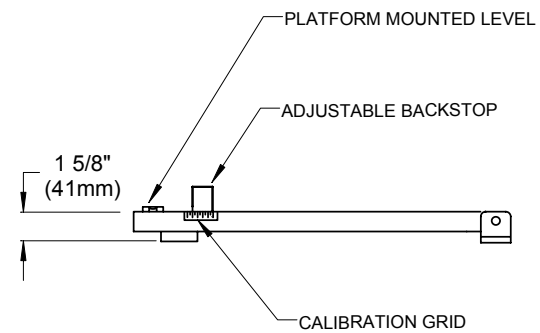
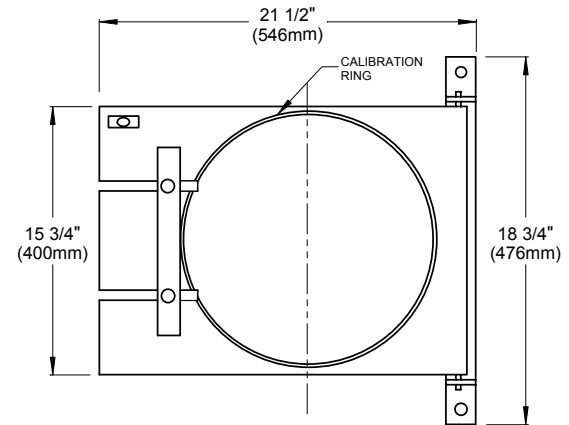
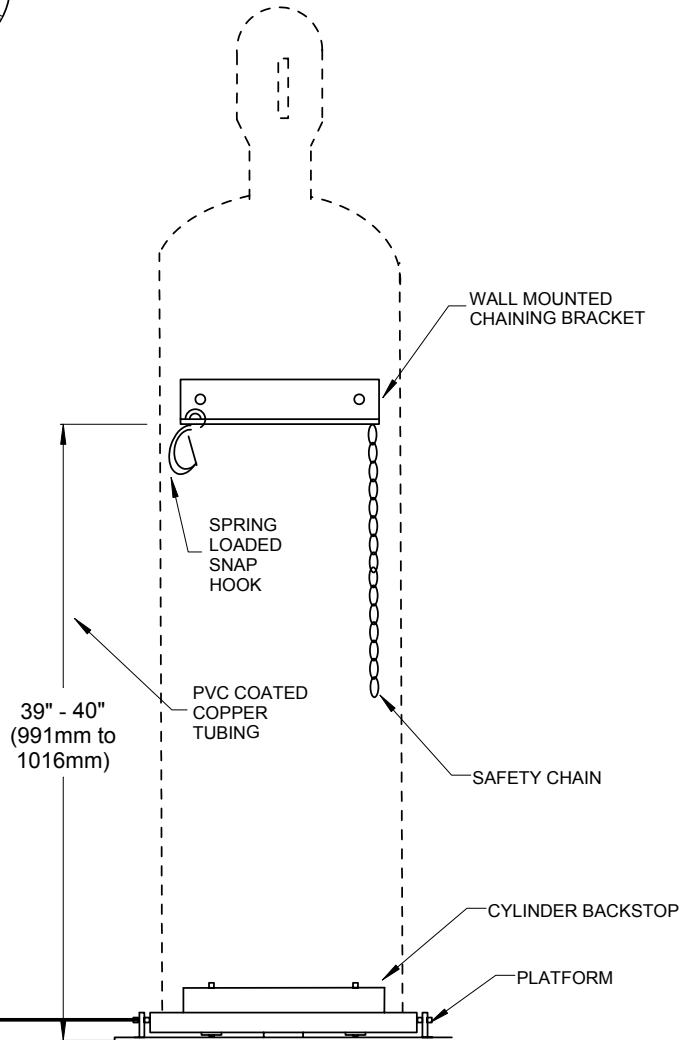
Drawing Number

**30307**  
**O&M**

SOLO XT CROSS TECHNOLOGY  
DIGITAL INDICATOR



## AMMONIA-CYLINDER SCALE



**X.1.101-2**



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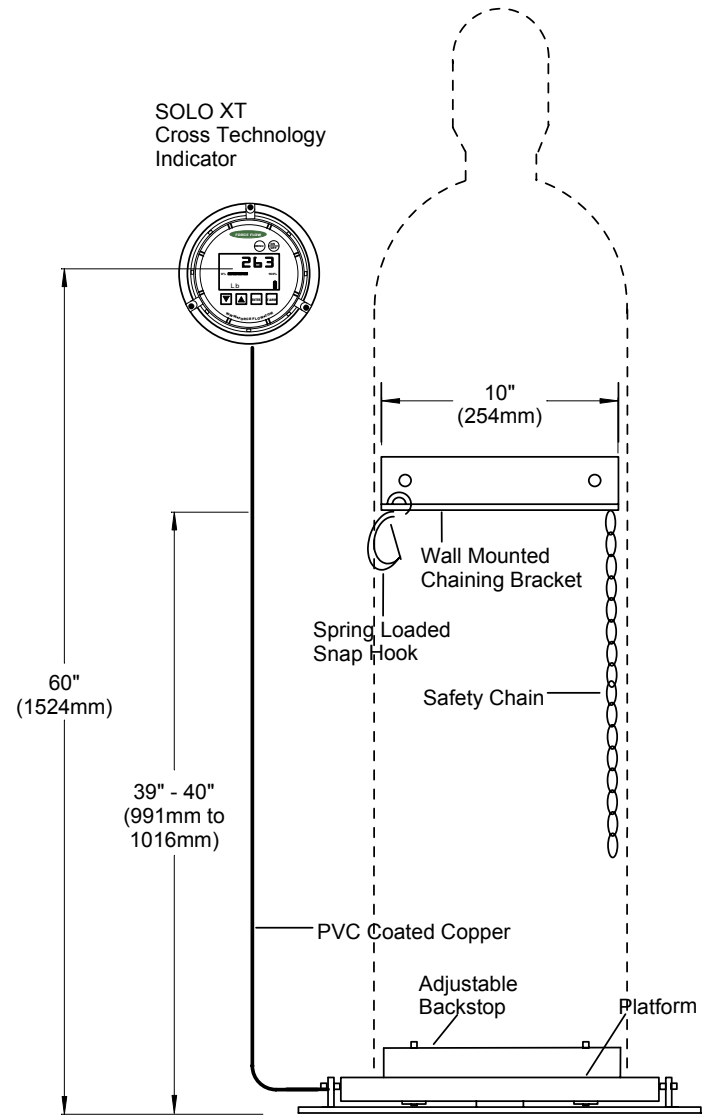
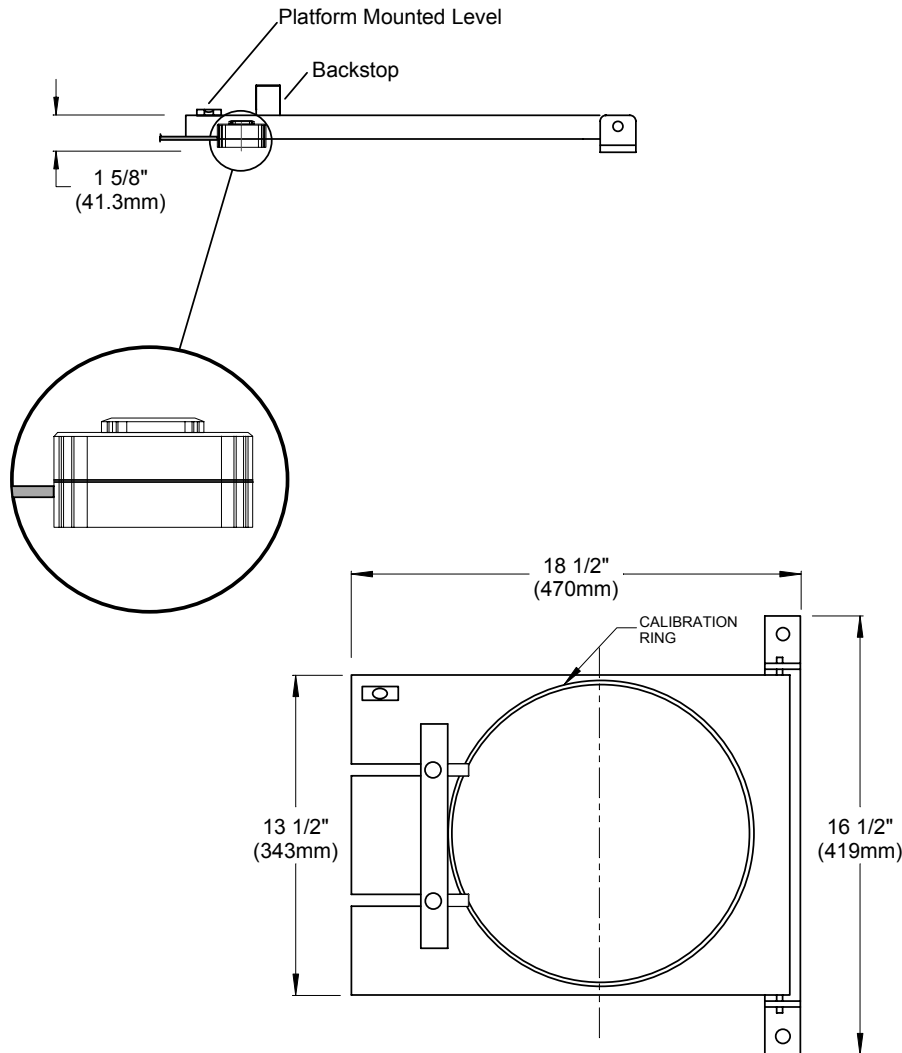
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**AMMONIA-SCALE with SOLO XT  
CROSS TECHNOLOGY INDICATOR for  
1 or 2 Ammonia Cylinders  
(400 lb. or 200 kg. Capacities)**

Drawn by: SLP  
Date: 01/15/95  
Revised: 02/26/03  
Scale: NONE

Drawing Number

**30304  
O&M**



**X.1.101-3**



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**HYDRAULIC CYLINDER-SCALE**  
 with SOLO XT Cross Technology Digital Indicator  
 for 8" (203mm) to 16" (406mm) Cylinders  
 200 lbs. or 100 kg. Dial

Drawn by: SLP/MN  
 Date: 01/05/94  
 Revised: 02/25/03  
 Scale: NONE

Drawing Number  
**30309**  
**O&M**



# SOLO XT for ALL CYLINDERS

## INSTALLATION . OPERATION . MAINTENANCE

If you have any questions regarding the installation, operation or maintenance on your SOLO XT CYLINDER SCALE please do not hesitate to call our .... HELP HOTLINE 1-800-893-6723

**WARNING:** To prevent possible personal injury or damage to the equipment through misuse, this equipment should be installed, operated and serviced only by trained, qualified personnel who are thoroughly familiar with the entire contents of this Instruction Manual, which should be thoroughly reviewed and understood prior to installing and operating the equipment.

### ITEMS REQUIRED FOR INSTALLATION

- Power drills and drill bits
- Hammer drill and masonry Bit (5/16" or 8mm)
- Two (2) 1/4" or 7mm diameter anchors (for platform)
- Three (3) properly chosen anchors (for dial)
- Two (2) properly chosen Anchors (chaining bracket)
- Two (2) adjustable wrenches
- Screwdriver and tape measure
- Hammer (for pounding in anchor bolts)
- Cylinder (for aligning platform)

### COMMENTS

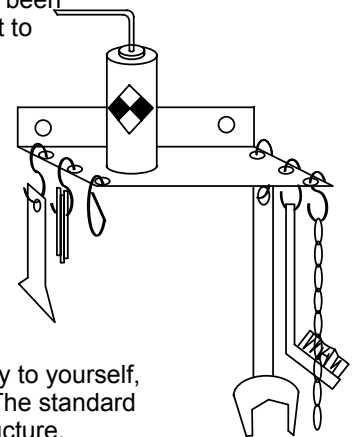
Your SOLO XT CYLINDER SCALE consists 3 basic assemblies:

1. Load Cell System (Indicator, PVC Coated Copper Tubing and Load Cell).
2. PVC Platform (Backstop, Platform with Hinge, and Leveling Shims).
3. Chaining Device (Bracket with Equipment Hooks, Chain and Spring Loaded Bolt Snap)

NOTE: Shim washers for leveling are also included.

### CYLINDER CHANGE-OUT TOOL HOOKS

Change-Out Tool Hooks have been added to the Chaining Bracket to keep frequently used tools need to change cylinders.



### INSTALLATION

**CAUTION:** For proper operation and to avoid possible damage to the scale or injury to yourself, you MUST install these items in the following Step-by-Step manner. The standard CHLOR-SCALE is meant to be installed in close proximity to a wall or other upright structure. If this is not possible, please consult factory for proper installation.

CHLOR-SCALE 150: Should be used with 150 lb. Chlorine and SO2 cylinders, with outside diameters of 10-1/4"(260mm) to 10-1/2" (267mm), and gross weights of 235 (107 kg) to 295 lbs (134 kg).

CYLINDER-SCALE: Should be used for compressed gas cylinders with outside diameters of 8" (203mm) to 16" (406mm), and gross weights of up to 300 lbs (137kg).

AMMONIA-SCALE: Should be used with cylinders with outside diameters of 14" (356mm) to 19" (483mm), and gross weights of up to 400 lbs.

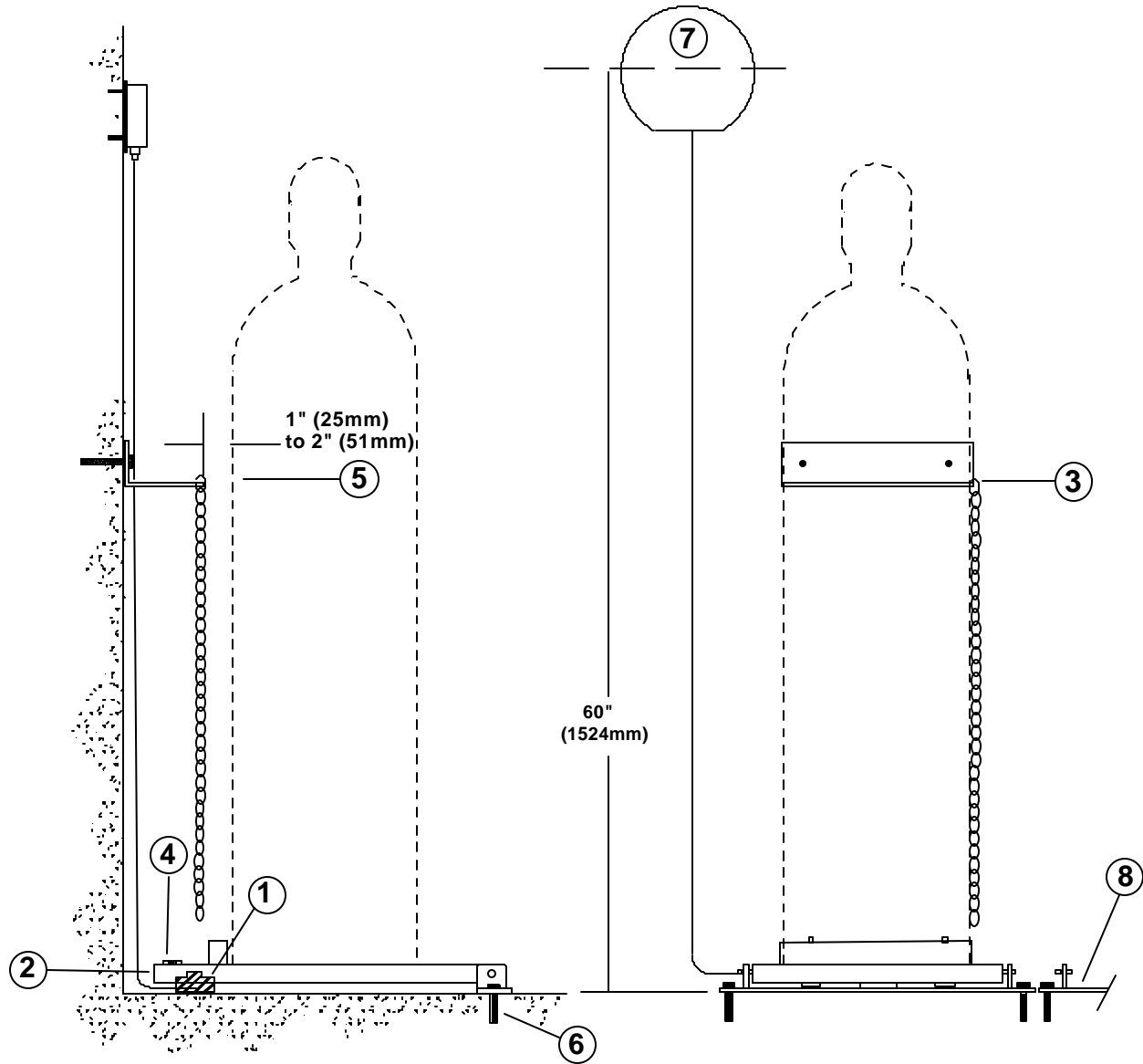
Remove all items from box. For dual cylinder units, two of each of the above assemblies should be found. The load cell systems is filled and calibrated at the factory. Be careful when handling the load cell system so as NOT TO TWIST, KINK or BREAK TUBING or FITTINGS !

**NOTE:** If installing multiple scales, be sure floor area is sufficient to accommodate platform feet (and diameter of tank if overhang).

**AVOID "KINKING" TUBING**

**IMPORTANT:** "Unroll" PVC Coated Copper Tubing, rather than "pulling" it straight.

**IMPORTANT:** Read Installation Instructions thoroughly before installing.



C.1.103  
X.1.103



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**CHLOR-SCALE CYLINDER SCALES**  
for Chlorine, Sulfur Dioxide,  
Ammonia & Liquefied Gas Cylinders

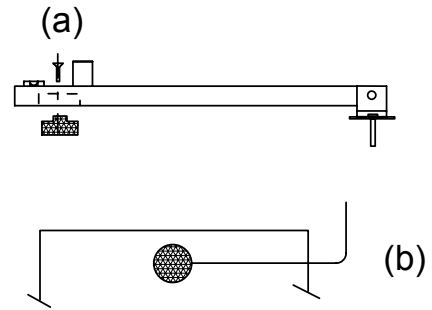
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Date: 01/05/94  
Revised: 10/01/98  
Scale: NONE

Drawing Number

**29809**

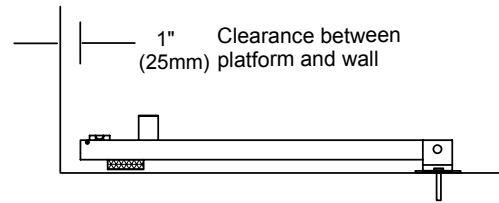
## STEP 1: MOUNTING THE LOAD CELL

- Remove the Flathead Screw from the load cell and attach the load cell under the back of the platform with this screw.
- Be sure the tubing is running out of the SIDE (NOT the end) of the platform and does not obstruct platform movement.



## STEP 2: PLACE PLATFORM ON FLOOR

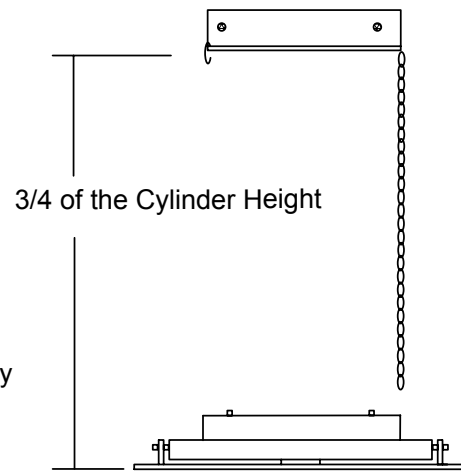
Place the platform on the floor with the backstop side of the platform at the wall. (NOTE: Allow at least 1" (25mm) clearance between wall and platform.)



## STEP 3: ALIGNING AND MOUNTING THE CHAINING BRACKET

- For 150 lb. cylinders, the chaining bracket should be at approximately 39" (991mm) to 41" (1041mm) above the floor. For oversized cylinders, the chaining bracket should be at approximately 3/4 of the height of the cylinder.
- To align the chaining bracket with the platform, adjust bracket until the hanging chain aligns with the right-hand side of the backstop. Be sure the bracket is level, mark holes and anchor the bracket to the wall. Make sure your anchor bolts are properly sized and are compatible with your wall material !!

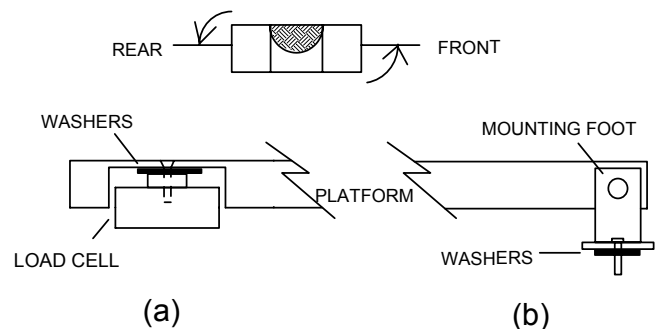
NOTE: If the foot of your wall protrudes, it may be necessary to opt a spacer between the wall and the chaining bracket to assure no more than 1" to 2" space (see Installation Drawing).



## STEP 4: LEVEL PLATFORM

Check the platform-mounting level to assure that the scale is level from FRONT to REAR. If the platform is NOT level, either:

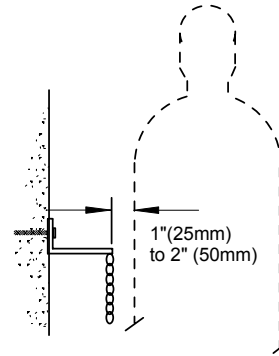
- RAISE REAR of platform by placing shims on TOP of LOAD CELL PISTON, or
- RAISE FRONT by placing shims UNDERNEATH the HINGE on the ANCHOR BOLTS (shims provided with scale).



**STEP 5: ADJUSTING CYLINDER DISTANCE FROM CHAINING BRACKET**

Adjust the platform distance so that with a cylinder against the platform backstop, the cylinder is approximately 1" (25mm) to 2" (50mm) from the front edge of the chaining bracket.

Cylinder must not touch chaining bracket or scale will not operate properly.



**STEP 6: ANCHORING THE PLATFORM**

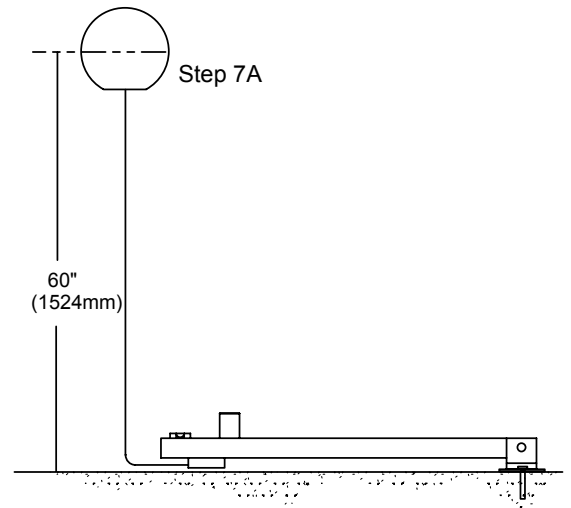
Platform must not touch wall, or scale will not function properly. Mark mounting holes on the floor, remove cylinder from the scale. Drill holes with proper sized bit and bolt scale to the floor using two (2) 1/4" (7mm) diameter anchor bolts. Make sure your anchor bolts are properly sized and compatible with your floor material !

**DANGER !**

To avoid injury caused by tipping cylinder, **DO NOT USE SCALE UNTIL PLATFORM IS BOLTED TO FLOOR !**

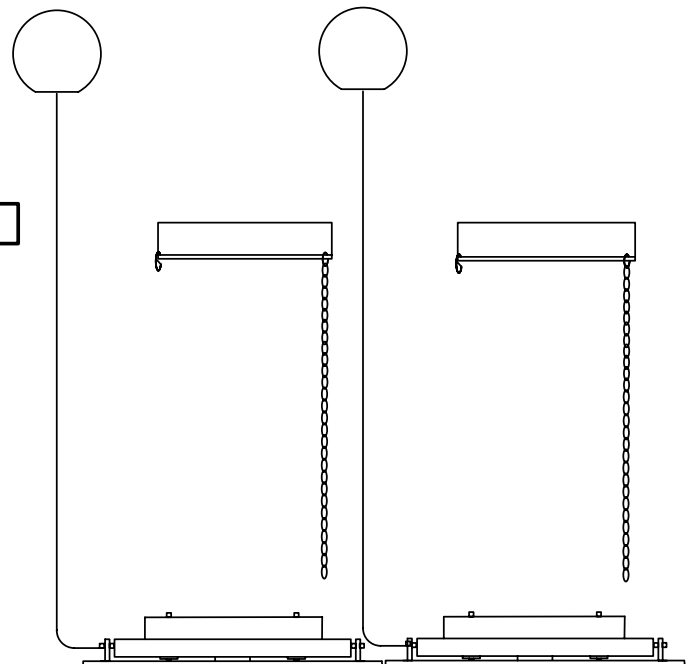
**STEP 7: MOUNTING THE INDICATOR**

- a) Carefully "UNROLL" tubing (avoid pulling like a spring) and mount dial at a convenient height (approx. 60" or 1524mm) above floor using three (3) properly chosen bolts. Make sure your bolts are properly sized and compatible with your wall material !!
- b) Be sure not to restrain the platform with the tubing when mounting the dial.



**STEP 8: MOUNTING ADDITIONAL SCALES**

To mount additional scales side-by-side, be sure to allow for the frame feet and/or cylinder diameter when determining the distance between platforms (if minimizing floor area) and repeat Step 1 - 7.



**C.1.105**  
**X.1.105**



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## SOLO XT with ALL CYLINDER SCALES

### SECTION

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- X.1.101-3 Drawing with Slotted Platform (all other Gas Cylinders)
- X.1.102 Installation Instructions
- X.1.103 Installation Drawing
- X.1.104 Installation Steps 1 thru 4
- X.1.105 Installation Steps 5 thru 8

**YOU  
ARE  
HERE !**

##### INSTALLATION CHECK OFF LIST

- X.1.151 Installation Check Off List

##### OPERATION

- X.1.201 Scale Operation
- X.1.202 Indicator Functions
- X.1.210 Setting Net Weight
- X.1.211 Menu Functions (Zero & Bar/4-20mA)
- X.1.212 Menu Functions cont... (Off & Relay)
- X.1.213 Menu Functions cont... (Resolution & Exit)

#### X.2.000

##### 4-20mA OUTPUT & LEVEL ALARM RELAY OPTIONS:

- X.2.101 Installation Diagram
- X.2.105 Wiring Diagram

##### POWER SUPPLY OPTION:

- X.2.111 Power Supply (24 Volt)

#### X.3.000

##### MISCELLANEOUS

- X.3.105 Calibration of "Slotted" Platform Scales only
- X.3.301 Troubleshooting and Maintenance
- X.3.401 Parts List

# INSTALLATION CHECK-OFF LIST

## CHLORINE, SULFUR DIOXIDE & AMMONIA CYLINDER SCALES

- PLATFORM DOES NOT TOUCH THE WALL AT THE BASE.
  
- LOAD CELL IS ATTACHED TO BACK OF PLATFORM WITH TUBING RUNNING OUT THE SIDE PERPENDICULAR TO THE PLATFORM.
  
- CHAINING BRACKET IS APPROXIMATELY 39" (991mm) TO 41" (1041mm) FROM THE FLOOR.
  
- PLATFORM IS LEVEL FROM FRONT TO REAR.
  
- CYLINDER IS 1" (25mm) TO 2" (50mm) FROM BRACKET WHEN AGAINST PLATFORM BACKSTOP.
  
- PLATFORM IS BOLTED TO FLOOR WITH TWO (2) 1/4" (7mm) ANCHOR BOLTS.

**CAUTION: DO NOT USE SCALE UNTIL PLATFORM IS BOLTED TO FLOOR !**

- DIAL IS MOUNTED APPROXIMATELY 60" (1524mm) ABOVE THE FLOOR AND TUBING DOES NOT RESTRAIN PLATFORM.

**NOTE: FEET OF ADDITIONAL SCALES MAY BE BUTTED AGAINST EACH OTHER.**

**FORCE FLOW**

**C.1.151**

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## SOLO XT with ALL CYLINDER SCALES

### SECTION

#### X.1.000

##### INSTALLATION & OPERATION:

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- X.1.102 Installation Instructions
- X.1.103 Installation Drawing
- X.1.104 Installation Steps 1 thru 4
- X.1.105 Installation Steps 5 thru 8

##### INSTALLATION CHECK OFF LIST

- X.1.151 Installation Check Off List

**YOU  
ARE  
HERE !**

##### OPERATION

- X.1.201 Scale Operation
- X.1.202 Indicator Functions
- X.1.210 Setting Net Weight
- X.1.211 Menu Functions (Zero & Bar/4-20mA)
- X.1.212 Menu Functions cont... (Off & Relay)
- X.1.213 Menu Functions cont... (Resolution & Exit)

#### X.2.000

##### 4-20mA OUTPUT & LEVEL ALARM RELAY OPTIONS:

- X.2.101 Installation Diagram
- X.2.105 Wiring Diagram

##### POWER SUPPLY OPTION:

- X.2.111 Power Supply (24 Volt)

#### X.3.000

##### MISCELLANEOUS

- X.3.105 Calibration of "Slotted" Platform Scales only
- X.3.301 Troubleshooting and Maintenance
- X.3.401 Parts List



# SOLO XT SCALE OPERATION

If you have any questions regarding the installation, operation or maintenance of your scale, please  
DO NOT HESITATE TO CALL OUR HELP HOTLINE 1-800-893-6723;  
email us at [info@forceflow.com](mailto:info@forceflow.com),  
or Fax us 1-925-686-6713

## "PORTABLE" TANK APPLICATIONS

"PORTABLE" means: Empty tank is REPLACED.

### 1. LOAD FULL CONTAINER

Load a FULL container on scale platform.

#### NOTE:

Make sure the tank/cylinder  
is resting against the platform backstop.  
If scale weighs HEAVY...move backstop forward.  
If scale weighs LIGHT ...move backstop back.

### 2. MAKE PROCESS CONNECTIONS

Make all necessary process connections to  
container or tank. Assure that all connections  
are FLEXIBLE, so as not to restrain the vessel  
from freely resting on the scale and platform  
movement is not restrained.

NOTE: If using compressed gas cylinders,  
always secure cylinder before making any  
process connections.

### 3. SET NET WEIGHT

Use arrow keys to enter net or tare  
weight (see Page X.1.210)

## "FIXED" TANK APPLICATIONS

"FIXED" means: Empty tank is REFILLED.

...PRIOR TO FILLING TANK:

### 1. INSTALL EMPTY CONTAINER

Install empty container on scale platform per  
manufacturer's suggestions.

### 2. MAKE PROCESS CONNECTIONS

Make all necessary process connections to  
container or tank. Assure that all connections  
are FLEXIBLE, so as not to restrain the vessel  
from freely resting on the scale and platform  
movement is not restrained.

### 3. ZERO SCALE

Go into the Menu and zero the scale (See Menu  
Functions on Page X.1.211)

### 4. FILL TANK

Fill tank. Indicator should now read only  
weight of chemical.



X.1.201

**MENU** MENU FUNCTIONS

- ZERO ..... Zero's scale
- BAR ..... Sets "100%" value for bargraph and 4-20mA output
- OFF ..... Sets display "Auto Off" time (Battery Saver mode).
- RELAY (Option) .. Allows entering set point values
- RES ..... Choose decimal place
- EXIT ..... Exit the menu

**ON OFF** DISPLAY ON & OFF

UNITS OF MEASURE  
or MENU PROMPTS

**Lb**

**250**  
NUMERICAL DISPLAY  
(NET CONTENTS)

**0% ■■■■■■■■ 100%**  
BARGRAPH DISPLAY  
(NET CONTENTS)

**BATTERY**  
BATTERY LIFE DISPLAY

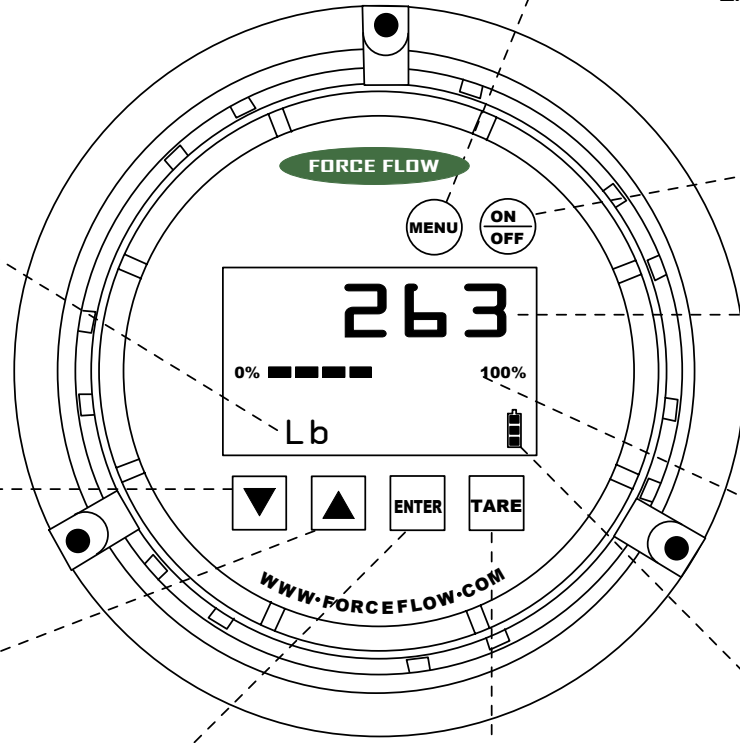
- DISPLAYS TANK TARE WEIGHT
- ALLOWS ADJUSTMENT OF TARE WEIGHT

**ENTER**  
• DATA ENTRY  
• MENU FUNCTION ACCESS

**TARE**

**SCROLL UP**  
• NET WEIGHT  
• TARE WEIGHT  
• SET POINTS  
• MENU ITEMS

**SCROLL DOWN**  
• NET WEIGHT  
• TARE WEIGHT  
• SET POINTS  
• MENU ITEMS



**X.1.202**



1150-D Burnett Ave, Concord, CA 94520 USA  
1-800-893-6723 US & Canada, Fax: 925-686-6713  
www.forceflow.com / info@forceflow.com

**INDICATOR FUNCTIONS  
SOLO XT INDICATOR**

Drawn by: SLP/MN  
Date: 12/02/02  
Revised: 12/17/02  
Scale: NONE

Drawing Number  
**30475**



## TIPS ON SCROLLING THE NUMERICAL DISPLAY

Each stroke of the ARROW keys will advance the numeric display 1 "count". If the ARROW key is HELD DOWN, the display will advance by tens, i.e. .1 (if RES .0 chosen), then 1, then 10, then 100.

### HELPFUL HINT:

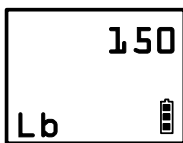
**Have another finger over the reverse arrow, so that adjustments can be made quickly, in the event you overshoot your target weight.**

If you overshoot your target weight, pushing the reverse arrow ...WITHIN 1 SECOND...will reverse directions by the most recent factor. After 1 second has passed, display will revert to the minimum scrolling increment (i.e. .1 or 1 depending on RES chosen) to allow minor adjustments.

## SETTING NET WEIGHT

In most cases, users will want to use the SOLO XT to display the "Net" chemical contents only (without the tank tare weight). There are two ways that the SOLO XT may be used in order to obtain a "NET WEIGHT" reading:

### **ONE WAY:**

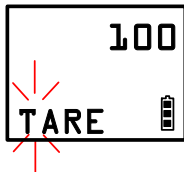


### IF NET CONTENTS ARE KNOWN

Press to adjust net weight. Tare weight is automatically calculated as the net weight is changed.

or . . .

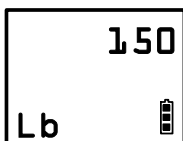
### **ANOTHER WAY:**



### IF ONLY THE TARE WEIGHT IS KNOWN

Press , then to adjust tare weight, then press




### **END RESULT**




Net weight is displayed.

# MENU FUNCTIONS

To enter the Menu of operations, press  and the first Menu item will begin to flash.

Use   to scroll through the menu items. Press  again to escape.

After 2 minutes, indicator will "Time Out" if no key is pressed to "Net Display" mode.

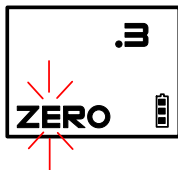
**ESCAPE REMINDER: PRESS  AGAIN TO ESCAPE.**

## ZERO


Allows user to re-zero the display if it has drifted or changed.

Digital Display

Step 1



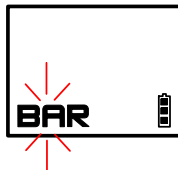
Action Required

With "ZERO" flashing, press  to Zero

## BAR & 4-20mA CALIBRATION

Allows user to set 100% and 0% for the bar graph values and the optional 4-20mA signal.

Step 1






With "BAR" flashing, press  to continue.

*Factory set "default" entered in red ink.*

Step 2



Use   to set FULL SCALE/20mA, then press 

Step 3

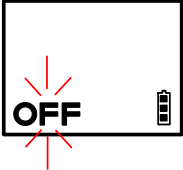







Use   to set ZERO/4mA, then press 

**ESCAPE REMINDER:** PRESS  AGAIN TO ESCAPE.

**OFF**

Allows user to set the amount of time that the display will stay on before going into the "Timed Out" (Battery Saver) mode. Approximate battery life is 4000 hours or about 1 year under normal operation. EXCEPTION: See 4-20mA Section.











	Digital Display	Action Required
Step 1		With "OFF" flashing, press  to continue.
	<i>Factory set "default" is "2 MINUTES".</i>	
Step 2		Use   to scroll through: NEVER (Display stays on, unless manually turned off) 2 MIN 5 MIN 10 MIN to accept, press 

**4-20mA OPTION VERSION:**

No matter which setting you choose, battery is in continuous use until DC power is applied. If 4-20mA circuit is not powered for 60 to 90 days batteries will need replacing.

**RELAY (Option)**

Allows user to set the Relay "SET POINT" value and "RE-TRIP" (turn off) value.

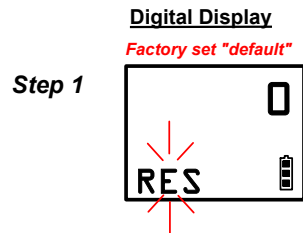
	Digital Display	Action Required
Step 1		With "RELAY" flashing, press  to continue.
	<i>Factory set "default" entered in red ink (60% of range).</i>	
Step 2		Use   to adjust ALARM SETPOINT (LOW or HIGH weight) Then press  to accept
	<i>Factory set "default" entered in red ink (40% of range).</i>	
Step 3		Use   to adjust ALARM RETRIP (ALARM OFF) Level. Then press  to accept

**NOTE:**  
Set "RETRP" BELOW "Setpoint" for a LOW level alarm.  
Set "RETRP" ABOVE "Setpoint" for a HIGH level alarm.

**ESCAPE REMINDER:** PRESS  AGAIN TO ESCAPE.

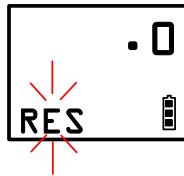
## RESOLUTION


Allows user to toggle "Net Display" decimal place from increments of .1 lb/kg to increments of 1 lb/kg, and then back.



### Action Required

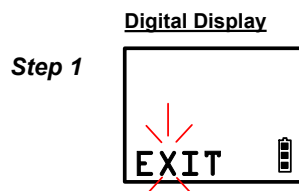
With "RES" flashing, press  to change decimal place.



Repeat process to change back.  to change decimal place back.

## EXIT

Allows user to escape Menu back to net display.



### Action Required

With "EXIT" flashing, press  to escape back to net display.

NOTE: When in Menu mode, hitting MENU again will also exit you to net display.



# INDEX

## SOLO XT with ALL CYLINDER SCALES

### SECTION

#### X.1.000

##### INSTALLATION & OPERATION:

- X.1.100 Indicator Specifications
- X.1.101-1 Drawing of Chlor-Scale 150 (Std US 150# Cylinders)
- X.1.101-2 Drawing for Ammonia Cylinders
- X.1.101-3 Drawing with Slotted Platform (all other Gas Cylinders)
- X.1.102 Installation Instructions
- X.1.103 Installation Drawing
- X.1.104 Installation Steps 1 thru 4
- X.1.105 Installation Steps 5 thru 8

##### INSTALLATION CHECK OFF LIST

- X.1.151 Installation Check Off List

##### OPERATION

- X.1.201 Scale Operation
- X.1.202 Indicator Functions
- X.1.210 Setting Net Weight
- X.1.211 Menu Functions (Zero & Bar/4-20mA)
- X.1.212 Menu Functions cont... (Off & Relay)
- X.1.213 Menu Functions cont... (Resolution & Exit)

#### X.2.000

**YOU  
ARE  
HERE !**

##### 4-20mA OUTPUT & LEVEL ALARM RELAY OPTIONS:

- X.2.101 Installation Diagram
- X.2.105 Wiring Diagram

##### POWER SUPPLY OPTION:

- X.2.111 Power Supply (24 Volt)

#### X.3.000

##### MISCELLANEOUS

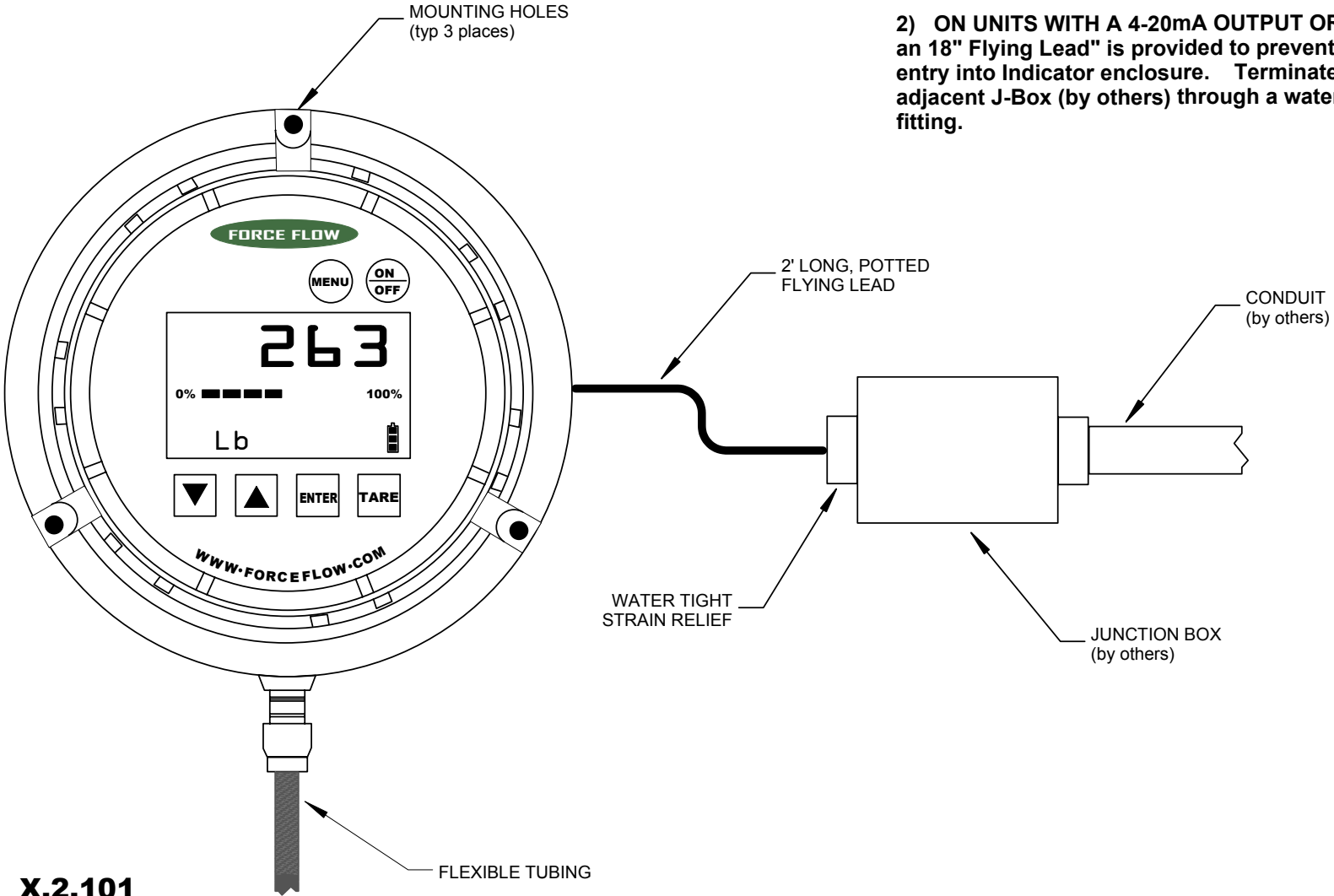
- X.3.105 Calibration of "Slotted" Platform Scales only
- X.3.301 Troubleshooting and Maintenance
- X.3.401 Parts List



# INSTALLATION

1) Secure SOLO XT Indicator to wall through 3 mounting holes provided.

2) ON UNITS WITH A 4-20mA OUTPUT OR RELAY, an 18" Flying Lead" is provided to prevent unnecessary entry into Indicator enclosure. Terminate flying lead in an adjacent J-Box (by others) through a watertight strain relief fitting.



**X.2.101**



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INSTALLATION DIAGRAM  
 SOLO XT

Drawn by: SLP/MN  
 Date: 12/06/02  
 Revised: 12/17/02  
 Scale: NONE

Drawing Number  
**30478**

**INTERNAL BATTERY BACK-UP**

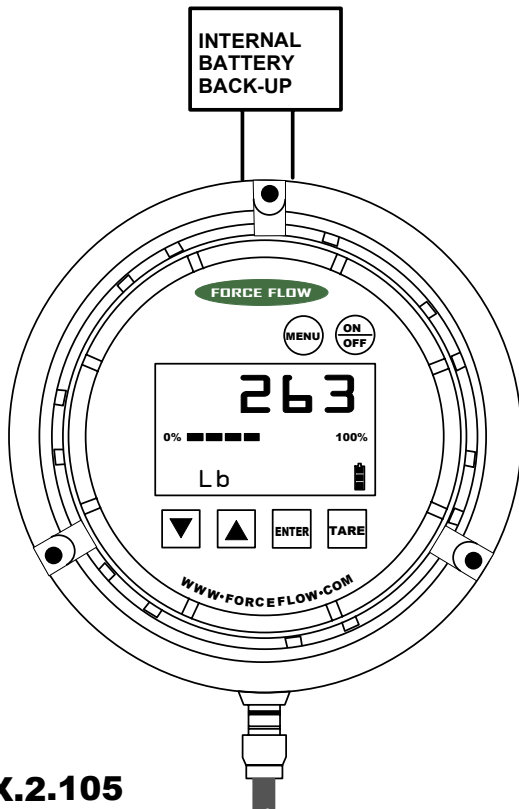
All SOLO XT Indicators contain 2 standard "C" batteries that back up the internal circuitry and display in the event DC power is lost. Battery life is approx. 4000 hours.

**Battery Powered Units**

On Battery Powered Units (without 4-20mA) battery is not depleted when the display is turned off.

**4-20mA Units:**

On units with 4-20mA option, battery will be depleted even when display is turned off.



**X.2.105**

PLC, SCADA or Weight Meter  
NOTE: If PLC, SCADA or Weight Meter is not connected, install a 250 ohm resistor.

12 to 36 VDC Power Supply (optional)

**4-20mA OUTPUT OPTION**

This analog output is "loop powered", and a voltage between 12 to 36 VDC is required for operation. DO NOT over voltage. If voltage at Force Flow indicator drops below 12 Volts, 4-20mA output will not work! See Menu Functions "BAR and 4-20mA Calibrations".

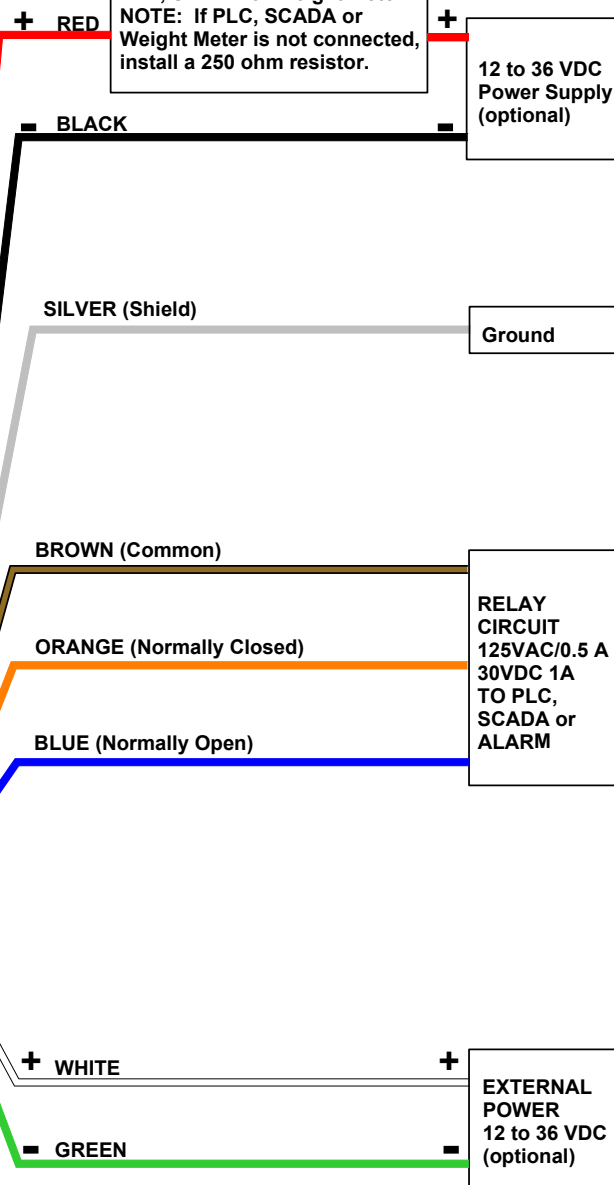
**GROUND**

**LEVEL ALARM RELAY**

Relay can be wired either: NORMALLY OPEN or NORMALLY CLOSED depending on the application.

**POWER FOR RELAY SWITCH**

A separate DC power supply must be used to power the relay. DO NOT USE POWER FROM 4-20mA LOOP!



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WIRING DIAGRAM  
SOLO XT INDICATOR

Drawn by: SLP/MD  
Date: 12/06/02  
Revised: 09/15/03  
Scale: NONE

Drawing Number  
**30479**



# INDEX

## SOLO XT with ALL CYLINDER SCALES

### SECTION

#### X.1.000

##### INSTALLATION & OPERATION:

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- X.1.103 Installation Drawing
- X.1.104 Installation Steps 1 thru 4
- X.1.105 Installation Steps 5 thru 8

##### INSTALLATION CHECK OFF LIST

- X.1.151 Installation Check Off List

##### OPERATION

- X.1.201 Scale Operation
- X.1.202 Indicator Functions
- X.1.210 Setting Net Weight
- X.1.211 Menu Functions (Zero & Bar/4-20mA)
- X.1.212 Menu Functions cont... (Off & Relay)
- X.1.213 Menu Functions cont... (Resolution & Exit)

#### X.2.000

##### 4-20mA OUTPUT & LEVEL ALARM RELAY OPTIONS:

- X.2.101 Installation Diagram
- X.2.105 Wiring Diagram

**YOU  
ARE  
HERE !**

##### POWER SUPPLY OPTION:

- X.2.111 Power Supply (24 Volt)

#### X.3.000

##### MISCELLANEOUS

- X.3.105 Calibration of "Slotted" Platform Scales only
- X.3.301 Troubleshooting and Maintenance
- X.3.401 Parts List

# ACOPIAN Series U

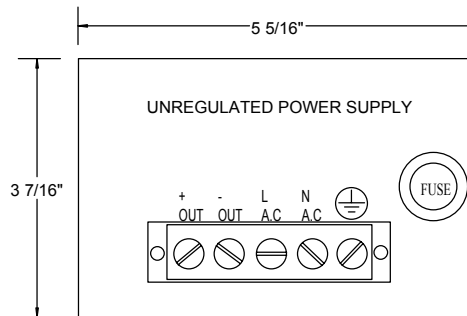
## Optional Accessory

Unregulated Power Supply  
U.L. Recognized

Low-cost DC power suitable for driving loads such as lamps, relays and small motors is provided by Series U Unregulated power supplies. All components are generously derated, insuring a long and trouble free life; built in fusing prevents damage due to prolonged overload or short circuits. They are housed in extruded aluminum cases which can be mounted in any position.

### STANDARD FEATURES:

- Silicon rectifiers
- Capacitive filtering
- Fused input
- May be used in series or parallel
- No derating or heat sinking required
- Completely serviceable.



### SPECIFICATIONS:

Input Voltage: 0-125 VAC, 50-400 Hz, Single Phase

Nominal Output Voltage: 24

Output AMPS: 1.0

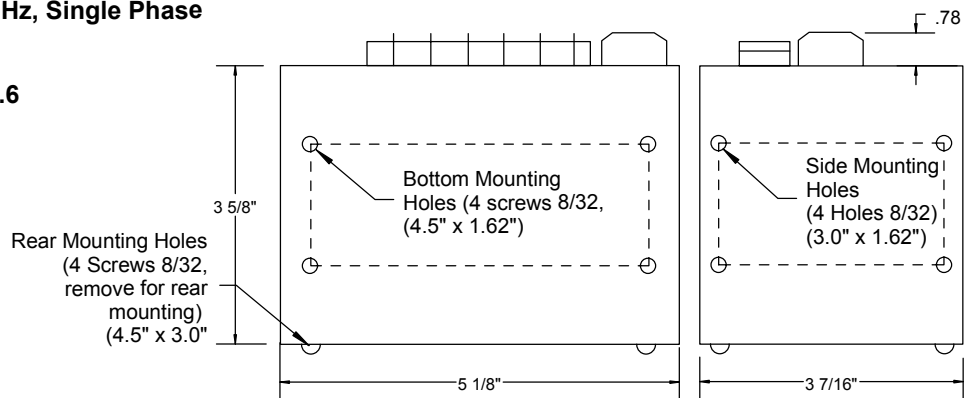
Output Voltage N/L F/L: 26.4 to 21.6

Ripple Volts: 1.7

Model: U24Y100

Size: Y3

Weight: 2 lbs. 8 oz.



**LOAD REGULATION:** Nominal output voltage is based on 115 VAC input, with approximately 50% of rated output current being drawn.

**LINE REGULATION:** With fixed load, output voltage change is proportional to input voltage change.

**OUTPUT VOLTAGE ADJUSTMENT:** An adjustable auto-transformer (not included) may be used to adjust output voltage by varying the AC input voltage to the supply.

**POLARITY:** Output is floating; either positive or negative terminal may be grounded or floated up to 300 V above ground.

**AMBIENT OPERATING TEMPERATURE:** -10 to + 65 degrees C. No derating required.

**STORAGE TEMPERATURE:** -55 to +85 degrees C.

**OPTIONAL 230 VOLT INPUT AVAILABLE:** Consult factory for model number and price.

C.2.111  
X.2.111  
SAT.2.111

REF: T4\O&MACENMSTR\ACOPIAN.tcw (A11.pdf) (WEB: ACOPIAN)  
11/26/02

## SOLO XT with ALL CYLINDER SCALES

### SECTION

#### X.1.000

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- X.1.212 Menu Functions cont... (Off & Relay)
- X.1.213 Menu Functions cont... (Resolution & Exit)

#### X.2.000

##### 4-20mA OUTPUT & LEVEL ALARM RELAY OPTIONS:

- X.2.101 Installation Diagram
- X.2.105 Wiring Diagram

##### POWER SUPPLY OPTION:

- X.2.111 Power Supply (24 Volt)

#### X.3.000

##### MISCELLANEOUS

- X.3.105 Calibration of "Slotted" Platform Scales only
- X.3.301 Troubleshooting and Maintenance
- X.3.401 Parts List

**YOU  
ARE  
HERE !**

# FOR SCALES WITH SLOTTED PLATFORM(S) ONLY !

## CALIBRATING THE SCALE

### IMPORTANT !

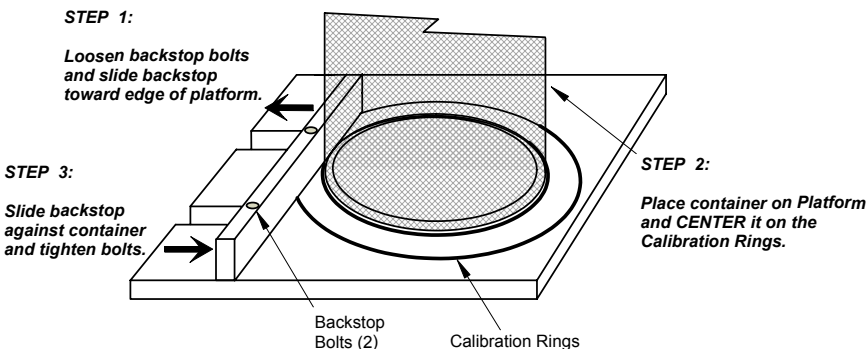
*To insure accurate weight readings, it is critical that the load is properly centered within the "CALIBRATION RING".*

### SCALE CALIBRATION

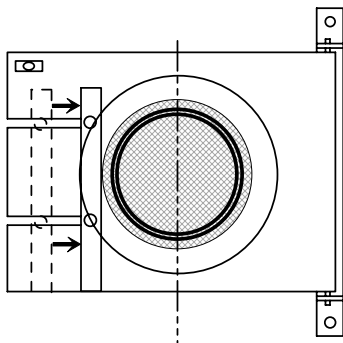
- 1) Loosen the backstop hold-down nuts and slide the backstop toward the edge of the platform.
- 2) Place the container that is to be weighed (or an empty container that is the same diameter of the container to be weighed) on the platform.

Using the CALIBRATION RINGS on the platform as the "target", center the container within the calibration rings.

- 3) Slide the backstop against the container and tighten the backstop hold-down bolts.

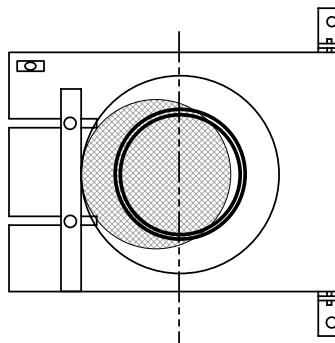


### CORRECT



Container CENTERED in Calibrating Rings

### INCORRECT



Container OFF CENTER of Calibrating Rings

### DAILY OPERATION

When using containers with the same diameter there is no need to readjust the backstop. Simply slide the new container against the backstop making sure the container is centered in the Calibration Rings.

**FORCE FLOW**

**C.3.105**  
**X.3.105**  
**S.3.105**  
**W.3.105**  
**SAT.3.105**

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WWW.FORCEFLOW.COM / INFO@FORCEFLOW.COM

REF: T4IO&MCYLHYDICALIBSLOT.tcw (L09.pdf)

# TROUBLESHOOTING & MAINTENANCE TIPS

## MAINTENANCE:

Your SOLO XT scale requires minimal maintenance. If the platform-mounted level is "out-of-level", this may indicate a loss of hydraulic fluid. If you experience inaccurate readings, consult factory.

If the floor is uneven, the piston of the load cell may be tilted so far over that it is creating a bind in the load cell. If so, use some washers to shim underneath the load cell so the piston is "straight" in relation to the load cell cylinder.

## BATTERY REPLACEMENT

The SOLO XT is powered by two (2) "C" cell batteries. Battery life should be one (1) year under normal operation (4000 hours of use).

**NOTE: BE CAREFUL WHEN OPENING CASE NOT  
TO DAMAGE INTERNAL WIRING CONNECTED  
TO FRONT PANEL !!**

**\*Battery life will be greatly reduced if 4-20mA Option is provided, but unit is used without being loop powered.**

To replace the battery, unscrew the bezel ring and allow the front panel to fall forward. Remove the old batteries and replace with two (2) new "C" alkaline batteries. Carefully reinstall the front panel to insure proper sealing. Screw bezel ring back into place so that it is finger tight.



**PARTS LIST**

- 1 Cylinder Platforms (for 1 cylinder)
  - 1A: 150# Cylinder Platform (USA/Canada only)
  - 1B: Ammonia Cylinder Platform
  - 1C: Liquefied Gas Cylinder or 150# INTERNATIONAL Cylinders

- 2 Wall Mounted Chaining Bracket:
  - With 32" Chain (8-12" cylinders)
  - With 44" Chain (12-16" cylinders)

- 3 ELECTRONIC: Load Cell (#3a) with Cable (#5a)

HYDRAULIC Load Cell (#3b) with PVC Copper and XT ONLY: Tubing (#5b)

- 4 HYDRAULIC (and XT) SCALES ONLY:
  - 4a: Internal 1.25 Load Cell Diaphragm
  - 4b: Pint of RO-5 Oil

- 5 5a: ELECTRONIC: Electronic Cable only  
5b HYDRAULIC and XT: PVC Copper Tubing only

- 6 CENTURY, 4-1/2" diameter Dial .  
SOLO XT Cross-Technology  
SOLO 1000-1 Single Channel  
SOLO 1000-2 Dual Channel  
WIZARD 4000-1 or -2  
WIZARD 4000-3 or -4

**ACCESSORIES**

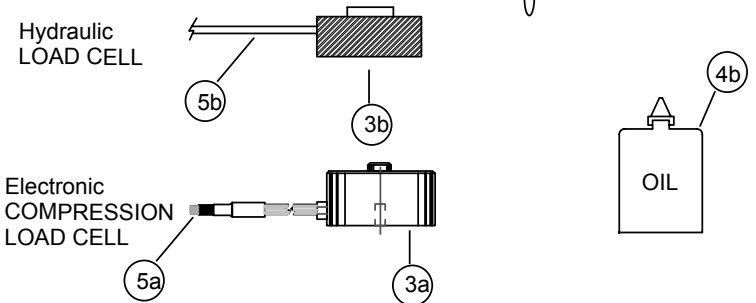
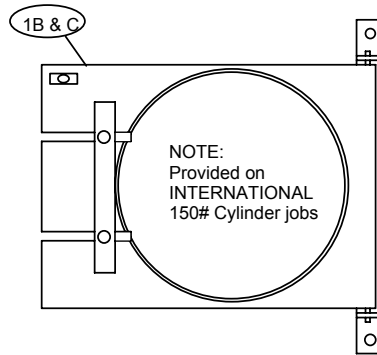
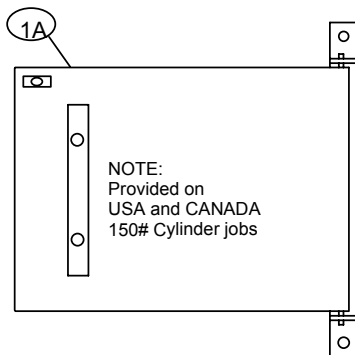
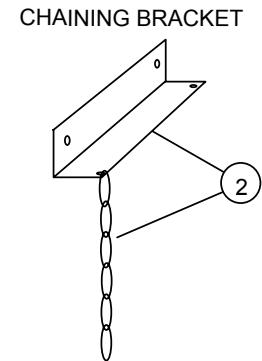
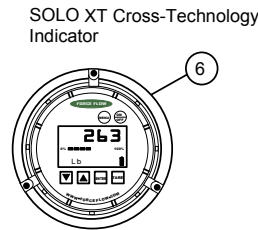
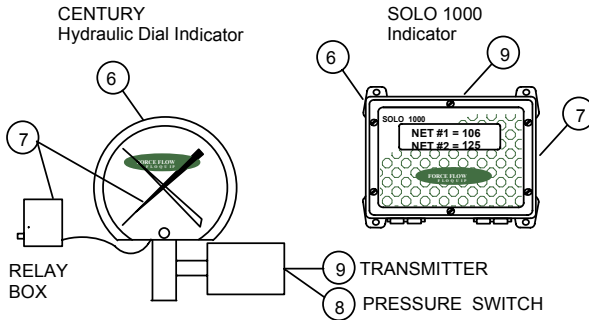
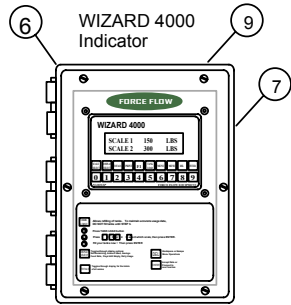
- 7 HYDRAULIC: RS-150 Reed Switch with Reset Relay Box  
ELECTRONIC WIZARD: W5ASP Alarm Switch  
ELECTRONIC SOLO: S5ASP Alarm Switch

- 8 HYDRAULIC and XT ONLY:  
PS-10 Fixed Pressure Switch

- 9 HYDRAULIC: MA-150 Transmitter (24 Volt)  
HYD. or XT: Power Supply  
ELECTRONIC: Consult Factory

**CONSULT FACTORY  
FOR CURRENT PRICING  
& TECHNICAL ASSISTANCE**

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info@forceflow.com www.forceflow.com



**C.3.401  
W.3.401  
S.3.401  
X.3.401**



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1-800-893-6723 US & Canada, Fax: 925-686-6713  
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**PARTS LIST**  
150 lb. CL2 & SO2, Ammonia &  
Liquefied Gas Cylinders

Drawn by: SLP  
Date: 01/05/89  
Revised: 12/17/02  
Scale: NONE

Drawing Number  
**29502-  
CYL**