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& Newnam, Inc.**

**TRANSMITTAL**

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<b>To:</b> Michael Prysby		<b>Date:</b> 10-16-13
<b>Company:</b> MDEQ		<b>Project Number:</b> 130-10701-001
<b>Address:</b> 525 WEST ALLEGAN STREET Lansing, MI 48933		<b>Routing:</b>
<b>Project:</b> City of Flint Water Treatment Plant Improvements.		
<b>We Are Sending You:</b> <input type="checkbox"/> Shop Drawings <input type="checkbox"/> Reports <input type="checkbox"/> Original Drawings <input type="checkbox"/> Submittal Data <input checked="" type="checkbox"/> Prints <input type="checkbox"/> Proposal <input type="checkbox"/> Specifications <input type="checkbox"/> As Noted <input type="checkbox"/> <input type="checkbox"/>		<b>These Are Transmitted:</b> <input type="checkbox"/> As Requested <input checked="" type="checkbox"/> For Your Use <input checked="" type="checkbox"/> For Review and Comment <input type="checkbox"/> For Your Signature <input type="checkbox"/>

Quantity	Description
3	Full Set of Plans for Ph2-Seg4 Corrosion Control
1	Act 399 Permit Application
1	11x17 Set of Plan for Ph2-Seg4 Corrosion Control

**Remarks**

These plans have been modified slightly from the set electronically submitted last night.

We look forward to your comments and approval.

Thanks.

DEQ  
RESOURCE MANAGEMENT DIVISION

OCT 16 2015

LANSING DISTRICT

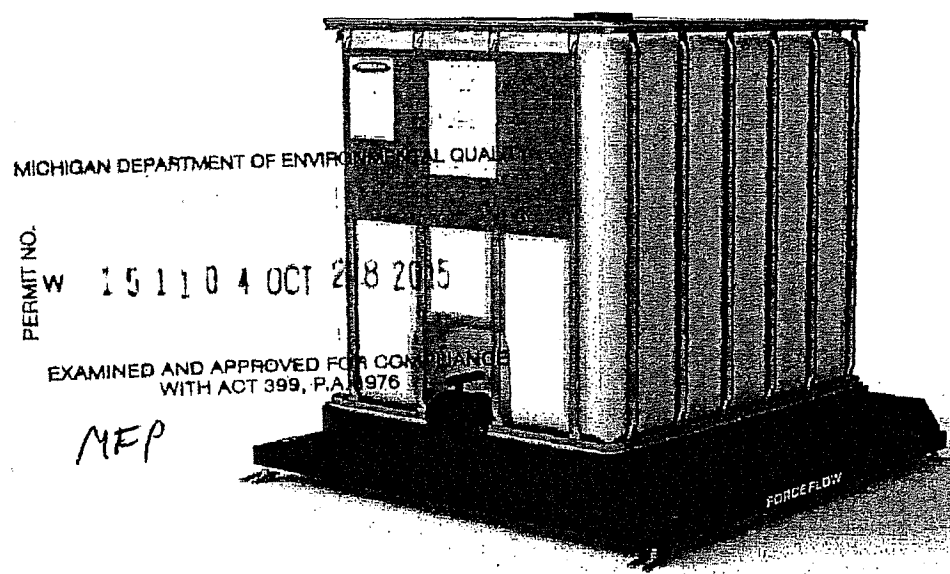
1311 SOUTH LINDEN ROAD  
SUITE B  
FLINT, MI 48532  
TEL 810.820.2682  
FAX 810.820.2703  
www.lan-inc.com

<b>Distribution</b>	<b>Prepared By</b>
1- Mike Glasgow 2- Brent Wright 3- File	Samir Matta, PE

# IBC TOTE SCALE

## FOR CHEMICAL IBC TOTES

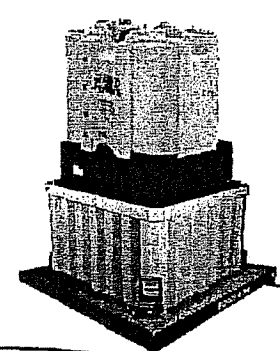
<b>Safely track</b> chemical usage and tank levels	<b>Warn of dangerous</b> over and under- feed conditions	<b>Prevent system</b> from running empty	<b>4-20mA remote</b> monitoring reduces operator exposure to chemicals
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Strict federal and state reporting requirements have created a need for water and wastewater plant operators to easily and accurately track chemical feed rates and usages. The IBC Tote Scale gives you this information along with the assurance that your chemical supply will not unexpectedly run out.

The heavy duty steel platform is protected with our advanced 80 mil thick TUF-COAT™ Environmental Armor. Tuf-Coat is highly resistant to chemicals, abrasion, impact and ultraviolet light degradation making the IBC Tote Scale ideal for even the harshest environments. Options include 316 stainless steel and MaxSense™ high accuracy models.

The IBC Tote Scale utilizes weighing technology to create a highly reliable, non-contacting chemical monitoring system that avoids problems other sensor technologies face caused by irregular tank shapes, corrosive chemical fumes, fluctuating temperatures and changes in specific gravity.



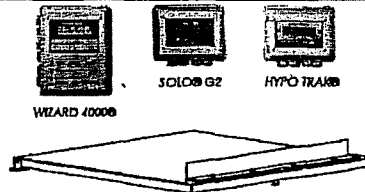
# IBC TOTE SCALE

## MODELS AND ORDERING INFORMATION

IBC Tote Scales do not include weight indicating instrument. Select from the following: Wizard 4000® Advanced Digital Display (Bulletin 518), the SOLO® G2 Digital Weight Display (Bulletin 516), the SOLO XT® Hydraulic Digital Display (Bulletin 514), the Century Hydraulic dial (Bulletin 519) or Hypo Track® (Bulletin 517). Please order indicator separately.

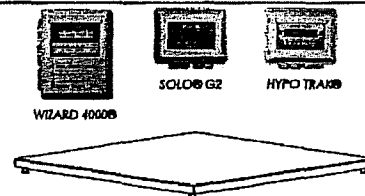
**ELECTRONIC - Single Load Cell Platform** (Includes platform with backstop and electronic load cell with 20 ft. cable. Lengths up to 100 ft. available; request when ordering.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR**TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
54-DR**TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
60-DR**TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/4 of 1% FS
60-DR**TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/4 of 1% FS



**ELECTRONIC - HI Accuracy 4-Load Cell Platform** (Includes platform and (4) electronic load cells with 20 ft. of cable. Lengths up to 100 ft. available; request at time of purchase. Backstop not included or necessary on these models but available upon special request.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR**TB-HA4	TUF-COAT® STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
54-DR**TBS-HA4	316 STAINLESS STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
60-DR**TB-HA4	TUF-COAT® STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS
60-DR**TBS-HA4	316 STAINLESS STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS

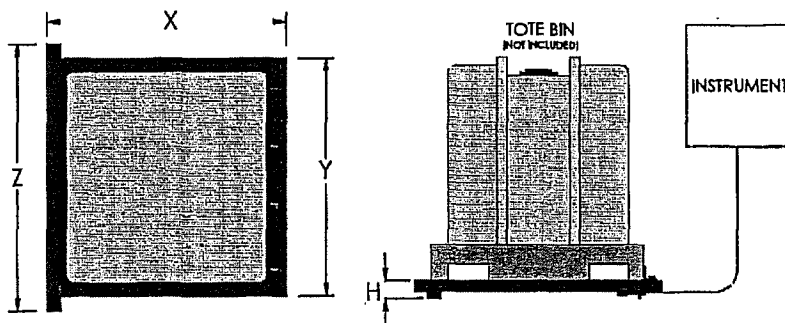


**HYDRAULIC - Single Load Cell Platform** (Includes platform with backstop, and hydraulic load cell with 12 ft. hose and quick connect. Hose/tubing lengths up to 100 ft. available to allow remote mounting of indicator; request at time of purchase.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-HY**TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
54-HY**TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
60-HY**TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/2 of 1% FS
60-HY**TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/2 of 1% FS



\*\* = CAPACITY: 1000 lbs = "10", 2000 lbs = "20", 3000 lbs = "30", 4000 lbs = "40", 5000 lbs = "50"



**SPECIFYING GUIDELINES:**

- A. For maximum accuracy, size scale capacity to match the gross weight (chemical plus tote tare weight).
- B. Tote size should not exceed platform size.
- C. Supply connections must be flexible and preferably connected to tote over pivoted side of platform.

Please visit [www.forceflow.com](http://www.forceflow.com) for drawings, engineered specifications and manuals.



**MODEL NUMBERS (for Load Cell & Platform)**

60-DR30TC-HA4 (3,000 Lbs.) 60" x 60" x 3.25"  
 60-DR40TC-HA4 (4,000 Lbs.) 60" x 60" x 3.25"  
 60-DR50TC-HA4 (5,000 Lbs.) 60" x 60" x 3.25"  
 60-DR60TC-HA4 (6,000 Lbs.) 60" x 60" x 3.25"

For Stainless Steel platform, as "S" after "TC", i.e. 60-DR30TCS-HA4.  
 For other capacities and platform sizes, consult factory.

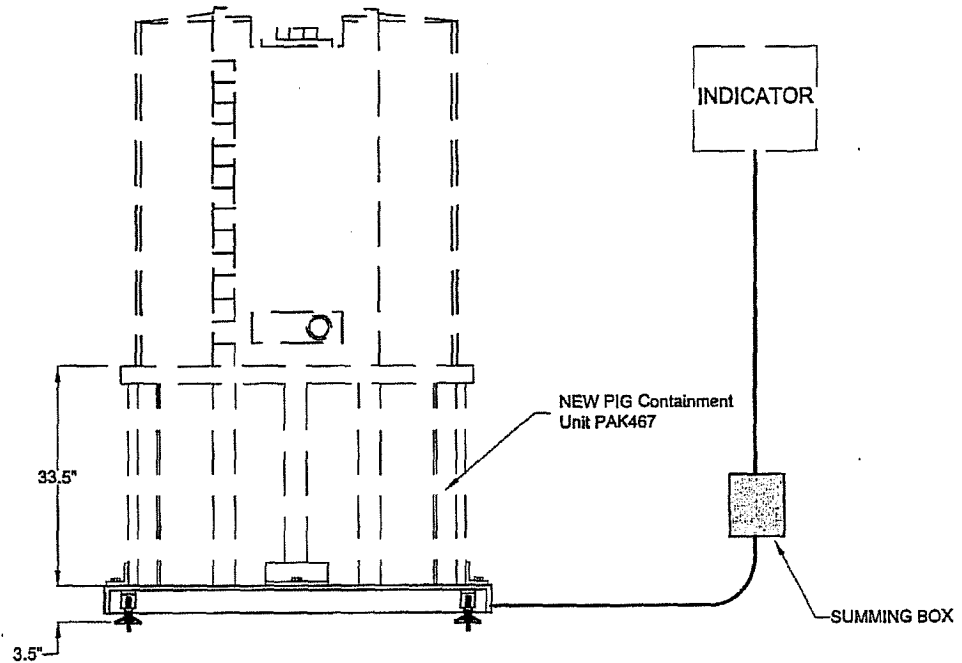
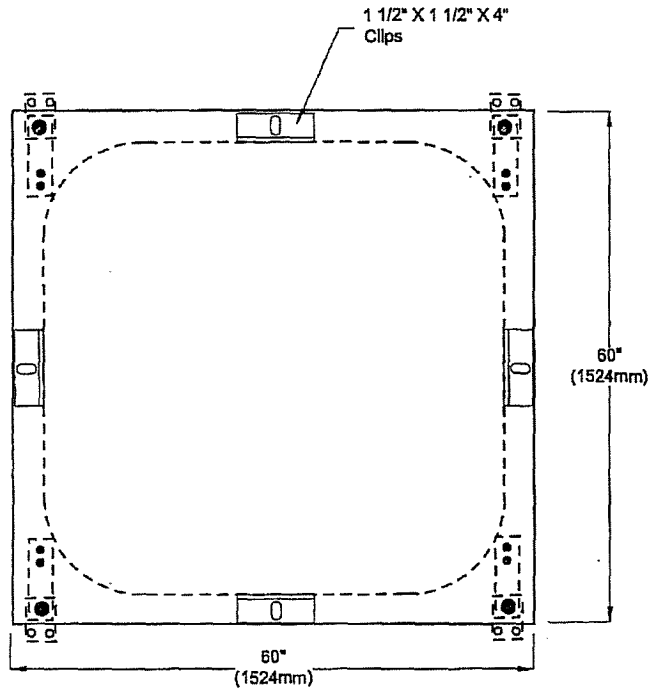
**MODEL NUMBER (for SOLO 1000 Indicator)**

SR-1000-1 1-Channel SOLO 1000 Indicator  
 SR-1000-2 2-Channel SOLO 1000 Indicator

**MODEL NUMBER (Containment Unit)**

PAK467 400 gal. NEW PIG Poly IBC Containment Unit

- \_\_\_\_\_ Scale Model Number
- \_\_\_\_\_ Pounds or Kilogram Indication
- \_\_\_\_\_ Feet of Cable (20' Standard)
- \_\_\_\_\_ Tote Skid Size
- 400 \_\_\_\_\_ Containment Size (Gallons)



**INSTALLATION NOTE:**

We recommend using a forklift to load/unload totes.  
 If a pallet jack is to be used, scale platform must be pit mounted so deck is flush with floor surface.  
 Surface mounting with use of inclined load ramps are **NOT RECOMMENDED**.



2430 Stanwell Dr, Concord, Ca 94520 USA  
 1-800-893-6723 US & Canada, Fax: 925-686-6713  
 WWW.forceflow.com / Info@forceflow.com

P:\EMAIL\_SUBMITTAL\_FORMS\Autocad Drawings\31431 HA Tote Bin Scale 60 Containment.dwg

HI-ACCURACY ELECTRONIC  
 60" TOTE BIN SCALE  
 CONTAINMENT

Drawn by: KBV

Date: 1/23/09

Revised: 4/13/10

Scale:

Drawing Number

31431

—NOT SUPPLIED BY FORCE FLOW—  
For use with Force Flow Scale Model 60-DR100TCHA4



# New Pig

Your partner for a clean  
and safe workplace.

1-800-HOT-HOGS® (468-4647)

**Product Data Sheet**

**Item Number:** PAK467

**Item Name:** PIG® Poly IBC Containment Unit

**Load Capacity UDL:**

- 12000 lbs./each (5443.2 kg/each)

**Sump Capacity:**

- 400 gal./each (1514 L/each)

**Options Available:**

Item #	Size	Color	Misc. Features	Amount	Length	Width	Height	Depth	Int. Dia.	Ext. Dia.	Weight	Qty/Pallet
PAK467	—	—	—	1 each	58" (147.3cm)	58" (147.3cm)	33.5" (85.1cm)	—	—	—	415lbs. (188.2kg)	1

**Color:** White/Black

**Description:**

Polyethylene containment unit used to help meet containment regulations when storing IBCs.

**Application:**

Used to help meet containment regulations when storing IBCs of 400 gallons or less containing materials compatible with polyethylene. IBCs can be stacked two high.

**Product Features:**

Super-strong Containment Unit helps you comply with regulations and store IBC tanks safely. Capture leaks, drips and spills to keep floors dry and workers safe.

- Heavy-duty construction permits double-stacking of IBCs to save space
- Solid anti-slip deck holds a variety of IBC sizes; if tank has feet or pegs, be sure to use proper support pads or plates
- Positioning pegs in pedestals keep deck from shifting
- Polyethylene construction resists UV rays, rust, corrosion and most chemicals
- Translucent white sidewalls allow easy visual inspection
- Arrives ready to use with no assembly required

**Composition:**

- Sump - Polyethylene
- Grates - Injection Molded Polyethylene

**This product helps you comply with:**

Regulatory Citation	Summary
40 CFR 264.175	Hazardous waste containment systems must be free of structural cracks or gaps, be designed to keep spilled liquids from remaining in contact with the container, prevent run-on and "have sufficient capacity to contain 10% of the volume of the containers, or the volume of the largest container, whichever is greater."

**Additional Specifications:**

- Dimensions (Grate): 52" L x 52" W

**Disclaimers:**

- **Flammables Notice:** If using this product with flammable liquids, please consider the regulations that apply to storage and handling of flammable liquids and the safety of this application, specifically flammable vapors, static discharge and heat sources. For further assistance, please call Technical Services.

PDS generated: Jul 14, 2008

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One Pork Avenue, Tipton, PA 16684-0304 • 1-800-HOT-HOGS® (468-4647)  
Fax: 1-800-621-PIGS® (621-7447) • Email: hothogs@newpig.com • Web: newpig.com

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## Flint Phosphate Calculations

Chemical will be 75% NSF certified Phosphoric acid

75% acid has a density of 13.17 #/gal. (5,974 g/gal)  $13.17 \times 453.5923$

Of this 75% is Phosphoric acid ( $H_3PO_4$ ) = 4,480 g  $H_3PO_4$ /gal  $5,974 \times 0.75$

Molecular weight of  $H_3PO_4$  is 97.9913 g/mole

Moles  $H_3PO_4$  / gal = 45.72  $4,480/97.9913$

Moles  $H_3PO_4$  = Moles Orthophosphate ( $PO_4^{3-}$ ) = Moles Phosphorus (P)

Species	Molecular Wt.	Moles / gal	g/gal
$H_3PO_4$	97.9913	45.72	4,480
$PO_4^{3-}$	94.9676	45.72	4341.92
P	30.97	45.72	1407.72

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO.

W 151104 OCT 28 2015

### Proposed Operating Parameters

EXAMINED AND APPROVED FOR COMPLIANCE  
WITH ACT 399, P.A. 1976

#### Assumptions per DEQ:

- City of Detroit residual is 0.39 mg/l as P
- MDEQ wants Flint to maintain a residual of approximately 1.0 mg/l as P
- Feed pump capacity should be sized for a max dose of 2.0 mg/l as P

MFP

	Plant Flow	Dosage as $PO_4^{3-}$ *	Dosage as P
Maximum	25 MGD	6.13 mg/l	2.0 mg/l
Average	16 MGD	3.07 mg/l	1.0 mg/l
Minimum	8 MGD	1.53 mg/l	0.5 mg/l

\*Equivalent dosage to P dosage

### Feed Rate Calculations

Maximum feed rate (Max Flow  $\times$  Max Dosage)

$$25 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times 2.0 \text{ ppm} / 1,408 \text{ g/gal} = 134.30 \text{ gpd Phosphoric Acid}$$

Average feed rate (Avg Flow  $\times$  Avg Dosage)

$$16 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 26.21 \text{ gpd Phosphoric Acid}$$

Minimum feed rate (Min Flow  $\times$  Min Dosage)

$$8 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 13.10 \text{ gpd Phosphoric Acid}$$

### Storage Requirements

30 days supply at average flow and dosage =  $26.21 \text{ gpd} \times 30 \text{ days} = 786 \text{ gal}$ .

Assuming the use of 275 gal semi-bulk totes, 3 totes required (recommend 2 in service, 1 spare)

Four Function Valve  
AUTOPRIME™ Liquid End  
High Viscosity Liquid End  
Low Level Float Switch  
Digi-Pulse Flow Monitor  
Repair & Preventive Maintenance Kits  
Calibration Columns

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Sub



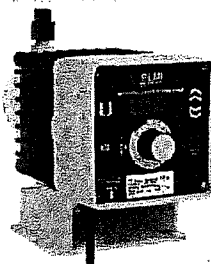
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LMI PRODUCTS Metering Pumps Series C Chemical Metering Pumps

Series C Chemical Metering Pumps

Series C Chemical Metering Pumps

Series C Chemical Metering Pumps have been an industry standard for over 20 years. Designed for Municipal/Industrial applications, the familiar yellow and black pumps have a rugged, totally enclosed, chemically resistant housing for protection in the harshest environments. Encapsulated electronics and a rigid housing and stroke bracket ensure years of precise, repeatable performance.



High Resolution Image

Request a Quote



Features Tab

Information Tab

Options Tab

- Adjustable stroke frequency and the flexibility of up to 1000:1 turndown ratio
- Manually adjustable stroke length provides accurate pump output adjustment
- NEMA 4X / IP65 enclosures for protection against corrosive environments
- Time tested electronics for reliable, repeatable performance
- Totally encapsulated electronics for protection against moisture and corrosive conditions
- Inputs for low level switch available on certain models
- Models with external pacing for flow proportional applications
- Advanced control options for simplified system integration (pulse multiply/divide, 4-20 mA, remote on/off)

\*UL, \*CUL, NSF 50, NSF 61, \*CE Certifications

Control Codes:

- 1 - Dual Manual Control (speed and stroke length)
- 7 - Pulse Input / Dual Manual Control
- 9 - Pulse/Analog Input / Dual Manual Control

Output Codes with standard liquid end	
Max Capacity:	Max Pressure:
*CX0 - 1.3 GPH (4.9 l/h)	300 psi (20.7 Bar)
*CX1 - 2.5 GPH (9.5 l/h)	150 psi (10.3 Bar)
*CX2 - 4.0 GPH (15.1 l/h)	100 psi (6.9 Bar)
*CX3 - 8.0 GPH (30.3 l/h)	60 psi (4.1 Bar)
*CX4 - 20 GPH (75.7 l/h)	25 psi (1.7 Bar)
C76 - 4.0 GPH (15.1 l/h)	175 psi (12.1 Bar)
C77 - 10.0 GPH (38.0 l/h)	80 psi (5.5 Bar)
C78 - 25 GPH (95.0 l/h)	30 psi (2.07 Bar)

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