

## **Chapter 11 PLUMBING FIXTURES**

### **MANUFACTURER/DISTRIBUTOR:**

#### **WOLSELEY Inc.**

4200, Hickmore

St-Laurent, QC, H4T 1K2

Phone: (514) 344-9378

Fax: (514) 344-9341

- 11.1      **SERV-A-SINK LAUNDRY TUBS FIAT FL-1**
- 11.2      **SERVICE SINK FAUCET FIAT 830-AA**
- 11.3      **SINK WASTE ASSEMBLY KINDRED 1135**
- 11.4      **DRAIN ZURN ZZN-415-H6**
- 11.5      **EYE/FACE WASH GUARDIAN G1909SSH**
- 11.6      **TEMPERING VALVE GUARDIAN G3800**
- 11.7      **405 1/2 HP POMPE DRAIN 2 VENT LIBERTY, 120V/1/60**
- 11.8      **Liquid Level Regulators**



- **G1909** Safety Station with WideArea™ Eye/Face Wash, Stainless Steel Bowl  
☐ **G1909P** Safety Station with WideArea™ Eye/Face Wash, Plastic Bowl

**Application:** Combination WideArea™ eye/face wash and shower safety station. Four GS-Plus™ spray-type outlet heads deliver a flood of water over a wide area of coverage for complete rinsing of eyes and face.

**Shower Head:** 10" diameter orange ABS plastic.

**Shower Valve:** 1" IPS chrome plated brass stay-open ball valve. Valve is US-made with chrome plated brass ball and Teflon® seals. Furnished with stainless steel actuating arm and 29" stainless steel pull rod.

**Spray Head Assembly:** Four GS-Plus™ spray heads. Each head has a "flip top" dust cover, internal flow control and filter to remove impurities from the water flow.

**Eye/Face Wash Bowl:** 11-1/2" diameter. Bowl is stainless steel (G1909) or orange ABS plastic (G1909P).

**Eye/Face Wash Valve:** 1/2" IPS chrome plated brass stay-open ball valve. Valve is US-made with chrome plated brass ball and Teflon® seals.

**Pipe And Fittings:** Schedule 40 galvanized steel. Furnished with orange polyethylene covers for vertical piping for high visibility and corrosion resistance.

**Supply:** 1-1/4" NPT female top or side inlet.

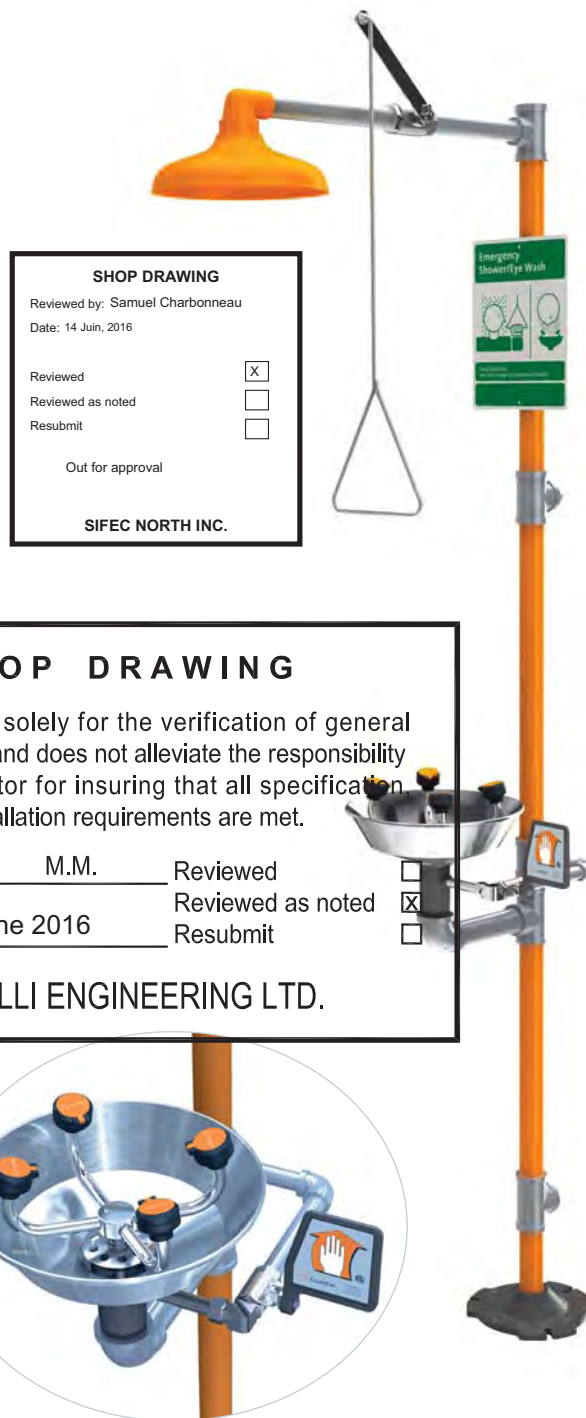
**Waste:** 1-1/4" NPT female outlet. Outlet can be positioned at either 9-1/4" or 19-5/8" above finished floor by reversing lower pipe nipples.

**Sign:** Furnished with ANSI-compliant identification sign.

**Quality Assurance:** Valve and spray head assemblies are factory assembled and water tested prior to shipment.

### Available Options

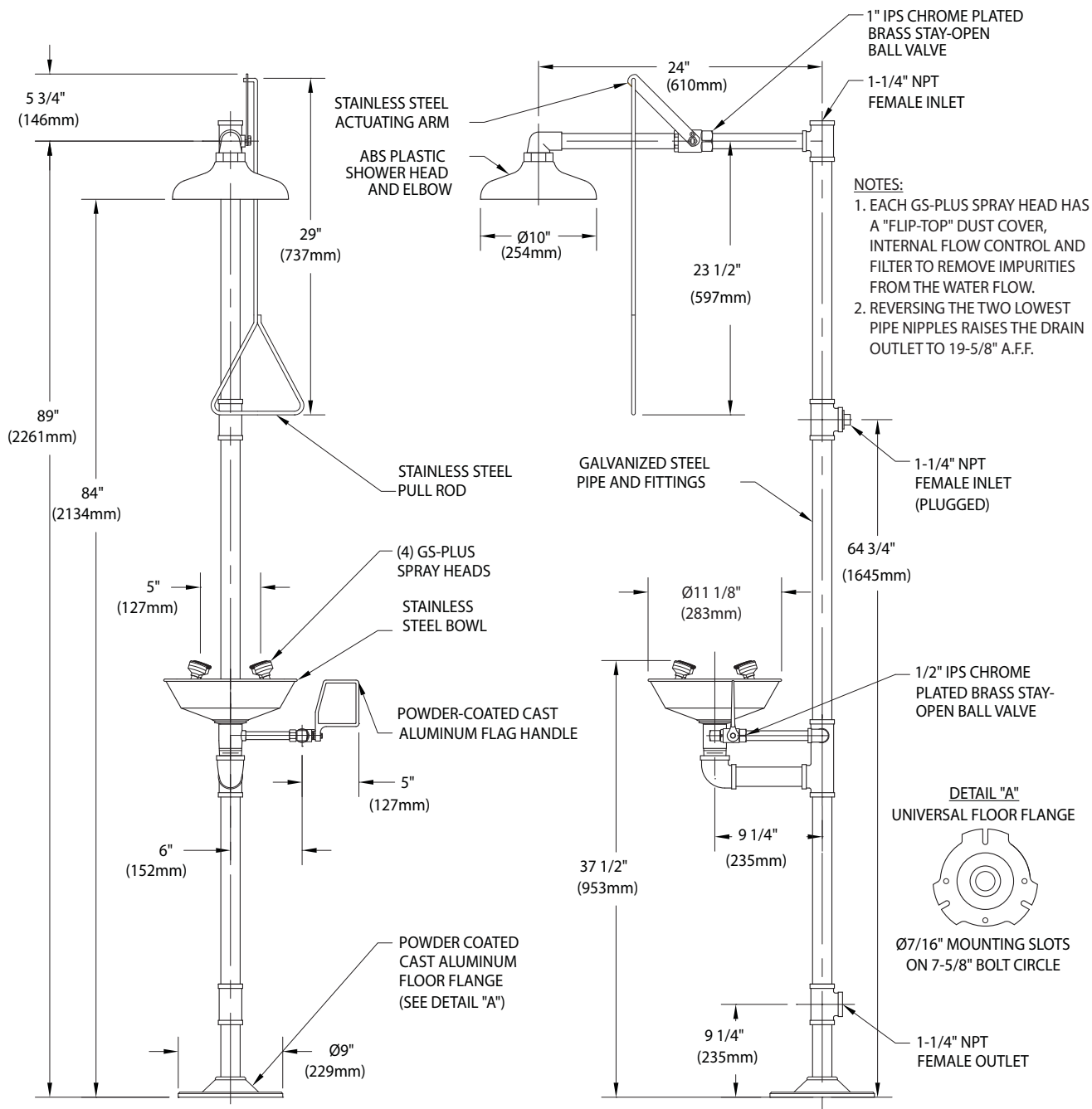
- ☐ **GC** Powder coated finish on galvanized pipe and fittings. Available colors include orange, yellow, red and green.
- ☐ **FC20** Regulates shower flow rate to 20 GPM.
- ☐ **GRN** Green ABS plastic shower head.
- ☐ **YEL** Yellow ABS plastic shower head.
- ☐ **SSH** Stainless steel shower head.
- ☐ **AP275-100 Electric Light and Alarm Horn**  
Light and alarm horn summon assistance when eye/face wash or shower is activated.
- ☐ **AP250-015 Modesty Curtain**  
Modesty curtain for mounting on safety station.
- ☐ **TMV** G3800 thermostatic mixing valve precisely blends hot and cold water to deliver warm (tepid) water as required by ANSI Z358.1-2009.





□ **G1909** Safety Station with WideArea™ Eye/Face Wash, Stainless Steel Bowl

□ **G1909P** Safety Station with WideArea™ Eye/Face Wash, Plastic Bowl



THIS SPACE FOR ARCHITECT/ENGINEER APPROVAL

Sign Included



Due to continuing product improvement, the information contained in this document is subject to change without notice. All dimensions are  $\pm 1/4"$  (6mm). **rev. 10114**



## SHOP DRAWING

Reviewed by: Samuel Charbonneau

Date: 14 Juin, 2016

Reviewed



Reviewed as noted



Resubmit



Out for approval

SIFEC NORTH INC.

## SB Series Simplex Basket Strainers

1/2" TO 4" PVC, CPVC, GFPP AND EASTAR®

### KEY FEATURES

- PVC, CPVC, GFPP and Eastar
- Ergonomic Hand-Removable Cover
- In-Line or Loop Connections
- External Cover Threads
- Integral Flat Mounting Bases
- NSF / ANSI 61 Listed

### OPTIONS

- Stainless Steel, Monel®, Hastelloy®, and Titanium Strainer Baskets
- Pressure Differential Gauge and Switch
- Baskets Available with Perforated or Mesh Liners

### MATERIALS

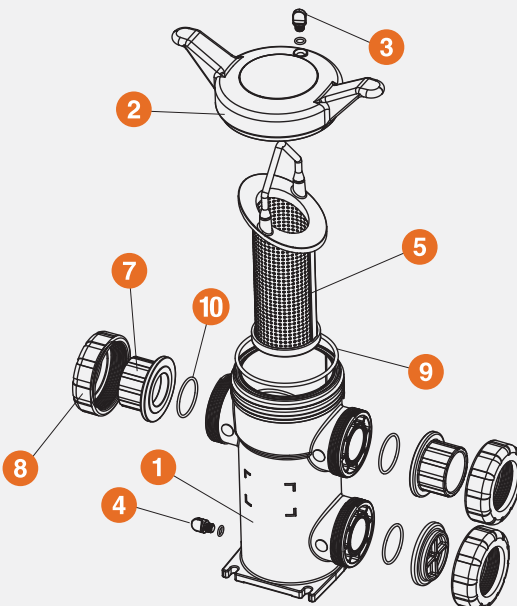
- PVC Cell Class 12454 per ASTM D1784
- CPVC Cell Class 23447 per ASTM D1784
- GFPP Cell Class 85580 per ASTM D4101
- Eastar
- FPM and EPDM O-Ring Seals

NSF

PVC and CPVC only

## TECHNICAL INFORMATION

### EXPLODED VIEW



### SELECTION CHART

SIZE	MATERIAL	END CONNECTION	SEALS	PRESSURE RATING
1/2" – 4" (DN15 – DN100)	PVC, CPVC and GFPP	Socket, Threaded or Flanged	FPM or EPDM	150 PSI @ 70°F Non-Shock
	Eastar*			100 PSI @ 70°F Non-Shock

\* End connections and assembly nuts are PVC

### SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: M.M. Reviewed ☐Date: 20 June 2016 Reviewed as noted ☒Resubmit ☐

CHIARELLI ENGINEERING LTD.

Page 142 of 2421

# SB Series Simplex Basket Strainers

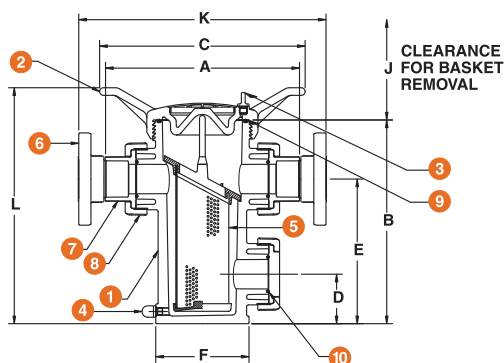
1/2" TO 4" PVC, CPVC, GFPP AND EASTAR®

## Strainers

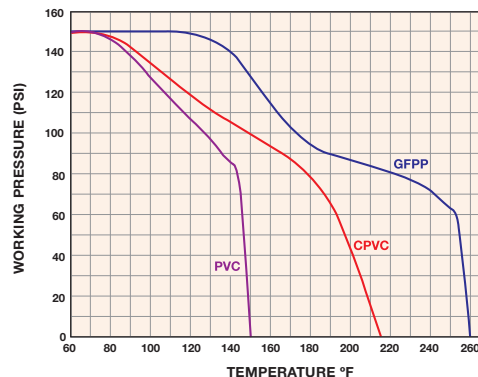
### TECHNICAL INFORMATION, CONTINUED

#### PARTS LIST

1. Body
2. Cover
3. Vent Plug and O-Ring
4. Drain Plug and O-Ring
5. Basket
6. Flange (Optional)
7. End Connector
8. Nut
9. Cover O-Ring
10. End Connector O-Ring



#### OPERATING TEMPERATURE / PRESSURE



#### DIMENSIONS – INCHES / MILLIMETERS

SIZE in / DN	A in / mm	B in / mm	C in / mm	D in / mm	E in / mm	F in / mm	J in / mm	K in / mm	L in / mm	WEIGHT lbs / kg		VOLUME gal / LT
										SOC / THD	FLANGED	
1/2 / 15	8.64 / 219	9.63 / 245	11.00 / 279	2.25 / 57	6.75 / 171	4.31 / 109	8.00 / 203	10.77 / 274	11.70 / 297	8.00 / 3.63	9.00 / 4.08	.20 / .76
3/4 / 20	8.64 / 219	9.63 / 245	11.00 / 279	2.25 / 57	6.75 / 171	4.31 / 109	8.00 / 203	11.02 / 280	11.70 / 297	8.00 / 3.63	9.00 / 4.08	.20 / .76
1 / 25	8.64 / 219	9.63 / 245	11.00 / 279	2.25 / 57	6.75 / 171	4.31 / 109	8.00 / 203	11.64 / 296	11.70 / 297	8.00 / 3.63	9.00 / 4.08	.20 / .76
1-1/4 / 32	12.75 / 324	13.38 / 340	13.50 / 343	3.25 / 83	9.50 / 241	6.13 / 156	12.86 / 327	15.63 / 397	15.50 / 394	14.00 / 6.35	16.50 / 7.48	.70 / 2.65
1-1/2 / 40	12.69 / 322	13.38 / 340	13.50 / 343	3.25 / 83	9.50 / 241	6.13 / 156	12.86 / 327	15.89 / 403	15.50 / 394	14.00 / 6.35	16.50 / 7.48	.70 / 2.65
2 / 50	12.75 / 324	13.38 / 340	13.50 / 343	3.25 / 83	9.50 / 241	6.13 / 156	12.86 / 327	16.29 / 413	15.50 / 394	14.00 / 6.35	16.50 / 7.48	.70 / 2.65
2-1/2 / 63	16.52 / 420	19.83 / 504	16.00 / 406	4.83 / 123	14.83 / 377	7.25 / 184	17.25 / 438	21.02 / 534	22.30 / 566	28.00 / 12.70	33.00 / 14.97	2.80 / 10.60
3 / 80	16.40 / 417	19.83 / 504	16.00 / 406	4.83 / 123	14.83 / 377	7.25 / 184	17.25 / 438	20.36 / 517	22.30 / 566	28.00 / 12.70	33.50 / 15.20	2.80 / 10.60
4 / 100	17.27 / 439	19.83 / 504	16.00 / 406	4.83 / 123	14.83 / 377	7.25 / 184	17.25 / 438	22.13 / 562	22.30 / 566	28.00 / 12.70	37.00 / 16.78	2.80 / 10.60

Dimensions are subject to change without notice – consult factory for installation information

#### PRESSURE DROP CALCULATIONS

##### BASKET PERFORATION CORRECTION FACTORS

For 1/2" to 4" Strainers

Plastic		Stainless Steel	
1/32"	1.05	1/32"	.82
1/16"	1.00	1/16"	.74
1/8"	.58	1/8"	.58
3/16"	.46	5/32"	.37
		3/16"	.46
		1/4"	.58
		3/8"	.45

##### PRESSURE LOSS CALCULATION FORMULA

The pressure drop across the strainer, for water or fluids with a similar viscosity, can be calculated using the formula at the right:

$$\Delta P = \left[ \frac{Q}{C_v} \right]^2$$

$\Delta P$  = Pressure Drop  
 $Q$  = Flow in GPM  
 $C_v$  = Flow Coefficient

#### Cv VALUES

SIZE in / DN	Cv VALUES GPM	SIZE in / DN	Cv VALUES GPM
1/2 / 15	15	2 / 50	60
3/4 / 20	18	2-1/2 / 63	290
1 / 25	20	3 / 80	300
1-1/4 / 32	55	4 / 100	350
1-1/2 / 40	58		

The above Cv Values were determined using a 1/16" perforated plastic basket in 1/2" through 4" strainers.

To calculate pressure drop through vessels using other than 1/16" perforated baskets, first calculate the pressure drop using the listed Cv, and then multiply the result by the correction factor in the Correction Factors chart to the left.



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 – Hastelloy is a registered trademark of Haynes International Inc.  
 – Monel is a registered trademark of Special Metals Corporation.



## SERV-A-SINK® LAUNDRY TUBS MODELS FL-1, L-1, DL-1

### FL-1 FLOOR MOUNTED SERV-A-SINK® L-1 WALL HUNG SERV-A-SINK® DL-1 DROP-IN SERV-A-SINK®

Fiat Products uses a specialized SMC process (Molded Stone®) to manufacture all laundry tubs. Moldings are manufactured in matched metal dies under heat and pressure resulting in a homogeneous molded unit. Drain(s) with stopper(s) are furnished as standard equipment. Capacity shall be 76 litres (17 Imp gal) for the single tub sink and 152 litres (33 Imp gal) for the double tub sink. Laundry sinks available in white only.

- All single compartment laundry tubs are available in sixpacks (L-6 and FL-6) and bulk quantities.
- All products must be installed in accordance with installation instructions provided. Failure to do so may invalidate warranty at manufacturer's discretion.

#### FL-1 Floor Mounted Serv-A-Sink®

- White baked enamel angle legs that slip into molded sockets for rigid, friction-fit. (Included)
- Easy leveling devices are provided for fast, even planing. Tub is capable of handling 600 pounds.

#### Nominal Dimensions:

Overall Outside Dimensions:

20-1/4" x 17-1/4" x 13" (514 x 438 x 330mm)

Overall height from floor

34-3/4" (883mm) CSA Approved

#### L-1 Wall Hung Serv-A-Sink®

- Heavy gauge galvanized - steel bracket capable of withstanding 600 pounds. (Included)
- Side fillers and bottom tub support, which are assembled in field to the mounting brackets, are made of white molded plastic polymer.

#### Nominal Dimensions:

20-1/4" x 17-1/4" x 13" (514 x 438 x 330mm)

#### DL-1 Drop-In Serv-A-Sink®

- Designed for a countertop installation.
- Self-rimming flange, four locking corner bars and screws for fast tightening into integral molded mounting legs and against the underside of the countertop. (Included)

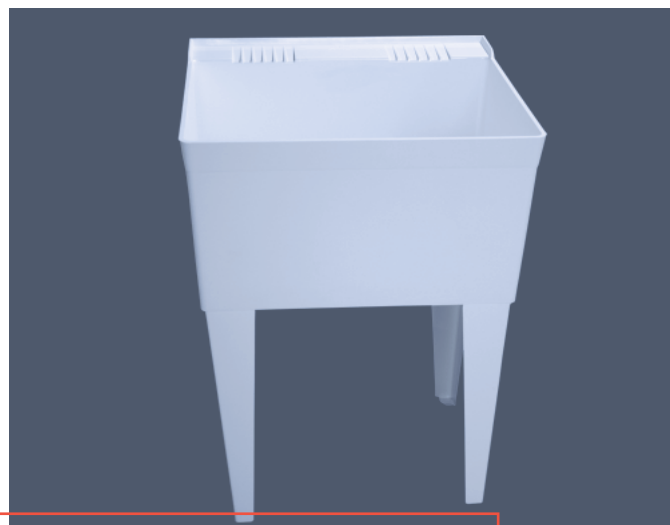
#### Nominal Dimensions:

22-1/8" x 17" x 12-3/7" (562 x 432 x 324mm)

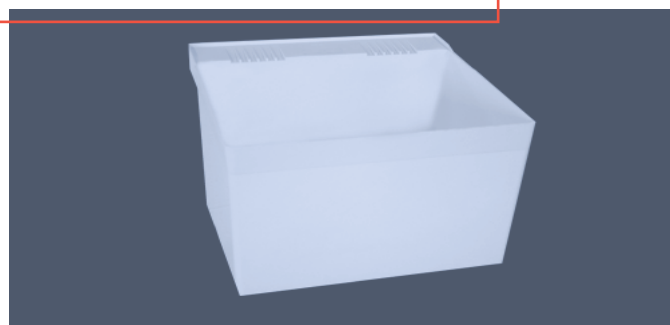
Underside flange rim sealant for watertightness supplied by others.

#### Customer Service Canada

1-800-387-0369  
www.fiat.ca



FL-1 Floor Mounted Serv-A-Sink®



L-1 Wall Hung Serv-A-Sink®



DL-1 Drop-In Serv-A-Sink®

SEE REVERSE FOR ROUGHING-IN DIMENSIONS

All products are UPC listed

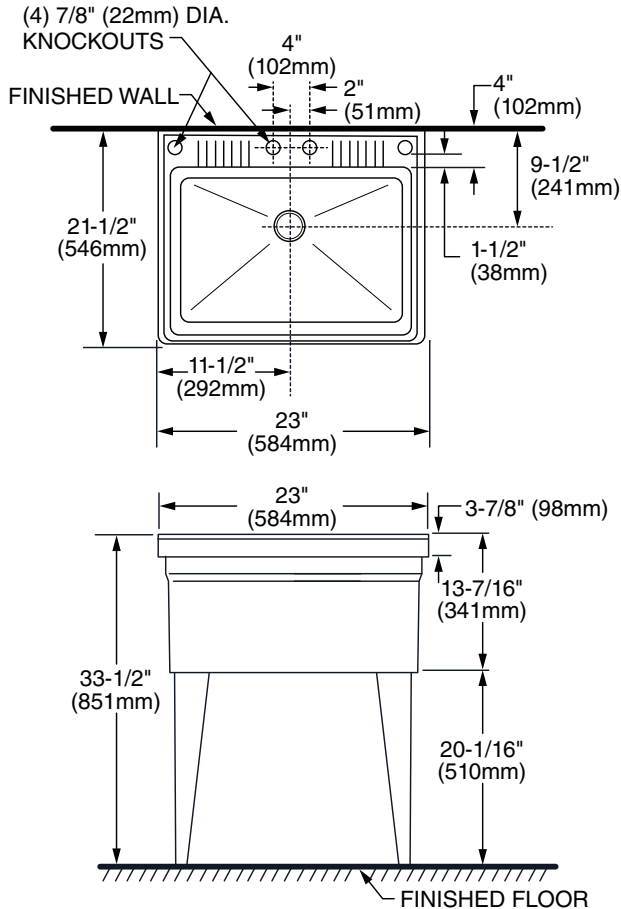
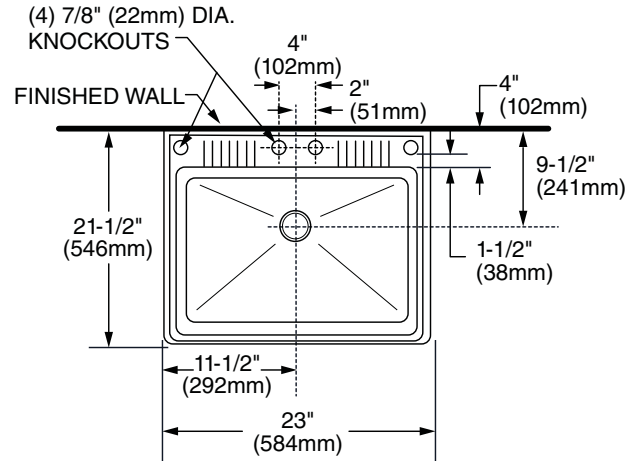
SHOP DRAWING	
Reviewed by: Samuel Charbonneau	
Date: 14 Juin, 2016	
Reviewed	<input checked="" type="checkbox"/>
Reviewed as noted	<input type="checkbox"/>
Resubmit	<input type="checkbox"/>
Out for approval	
SIFEC NORTH INC.	

**FIAT**  
QUALITY FOR LIFE

#### Customer Service United States

1-800-442-1902  
www.fiatproducts.com



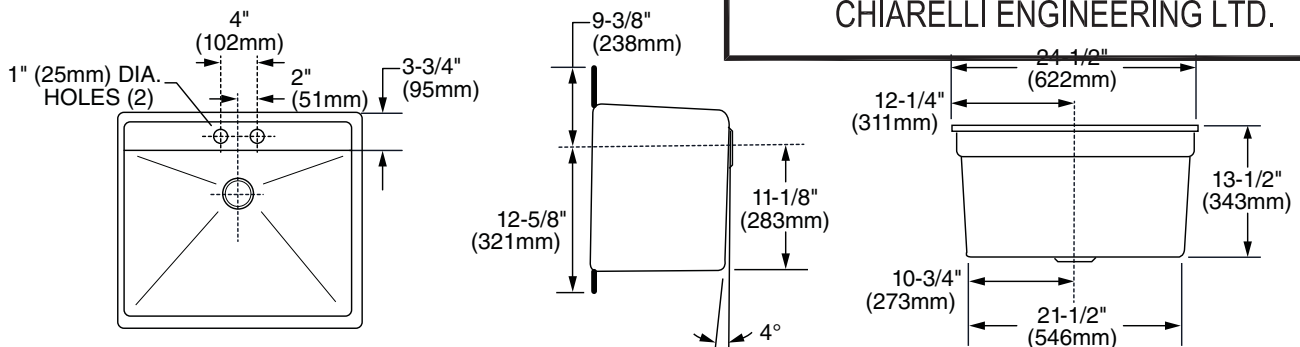
**SERV-A-SINK® LAUNDRY TUBS**  
**MODELS FL-1, L-1, DL-1**
**MODEL FL-1**  
**FLOOR MOUNTED**

**MODEL L-1**  
**WALL HUNG**


**IMPORTANT:** Roughing-in dimensions may vary 1/2" and are subject to change or cancellation without prior notice.

**SHOP DRAWING**

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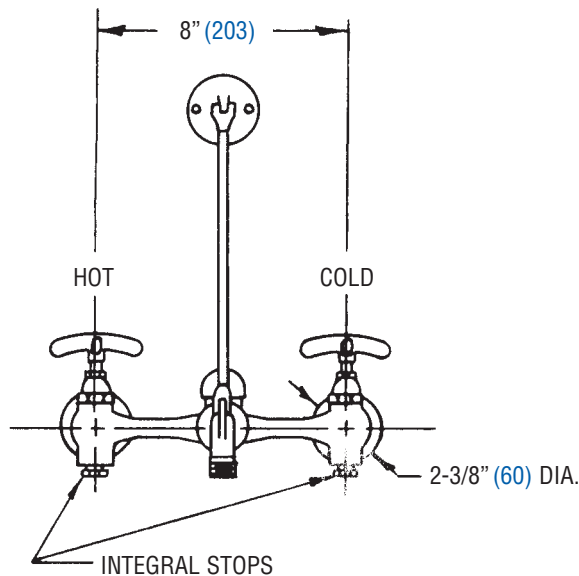
Reviewed By: M.M. Reviewed ☒  
 Reviewed as noted ☐  
 Date: 20 June 2016 Resubmit ☐

**CHIARELLI ENGINEERING LTD.**
**MODEL DL-1**  
**DROP-IN**


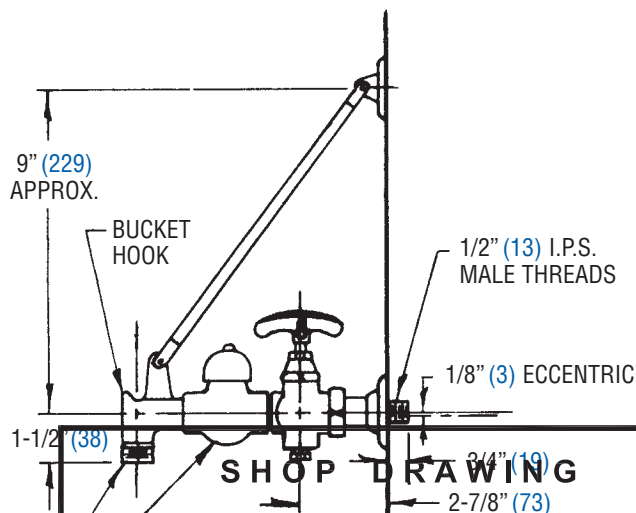
# Service-Sink Faucet Model: 830-AA

FIAT®

## Service Sink and Faucet



FRONT VIEW



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3/4" (19) HOSE THREAD

Reviewed By: \_\_\_\_\_ M.M.

Date: 20 June 2016

SIDE VIEW

Reviewed

Reviewed as noted

Resubmit



**NOTE:** These roughing measurements may vary 1/4" (plus or minus).

CHIARELLI ENGINEERING LTD.



FIAT PRODUCTS®  
A CRANE PLUMBING COMPANY

255 Hutchings St. • Winnipeg, MB • R2X 2R4 • Ph. 800-665-7531 • 204-633-6122 • Fx. 204-633-6122  
e-mail: info@fiat.ca • website: www.fiat.ca

A subsidiary of CR/PL, L.L.C. Company – Evanston, IL



### General:

830-AA Service Faucet - Chrome plated with vacuum breaker, integral stops, adjustable wall brace, pail hook and 3/4" hose thread on spout. Body inlets 8" center to center, four arm handles. Valves contain renewable hub, renewable seats, swivel discs, encased washers and brass washer screws.

### Material: Finish:

Commercial red brass alloy casting-rough finish.

Chrome plating exceeding requirements of ANSI/ASTM B-456-71. Indicators cold (blue) and hot (red) are included.

### Specifications and Codes:

In the U.S.A., meets or exceeds requirements of ANSI-A112.18.1M-1979 for "Finished and Rough Brass Plumbing Fixture Fittings." In Canada, meets or exceeds the requirements of CSA standards B125 - "Plumbing Fittings," B64.1.1 - "Vacuum Breakers - Atmosphere Type" and B64.0 - "General Requirements for Backflow Preventers and Vacuum Breakers," and is approved under Product Class No. 6811 01 under Report #LM57412-1. Conforms to ASSE 1001.

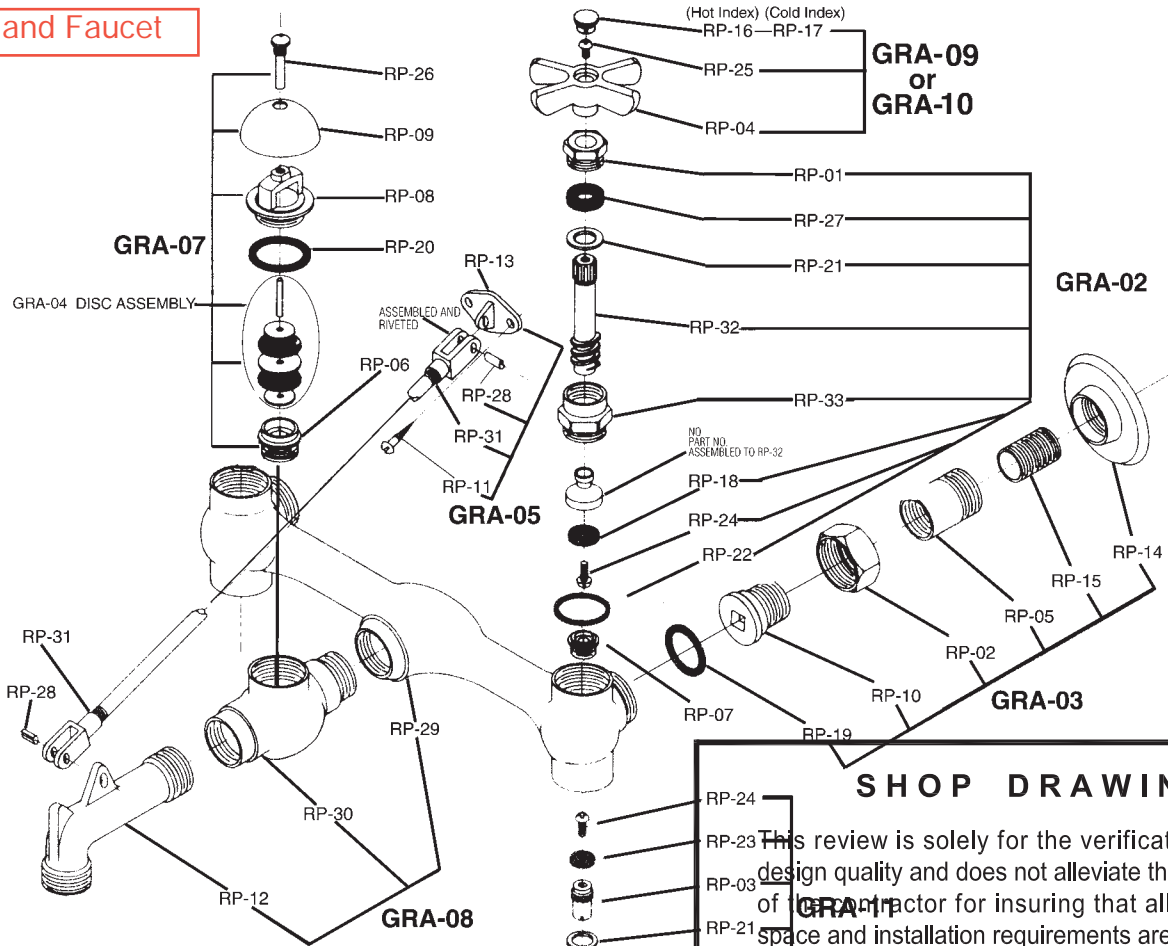
**Shop Drawings  
Contractor Approval**  
Approved by: M.A.G., G. F.  
Date: Mar 03, 2015  
Page 146 of 2421  
SIFEC NORTH INC



# 830-AA Group Replacement Assembly Parts List

FIAT

## Service Sink and Faucet



### SHOP DRAWING

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Reviewed By: M.M. Reviewed ☒  
 Reviewed as noted ☐  
 Date: 20 June 2016 Resubmit ☐

CHIARELLI ENGINEERING LTD.

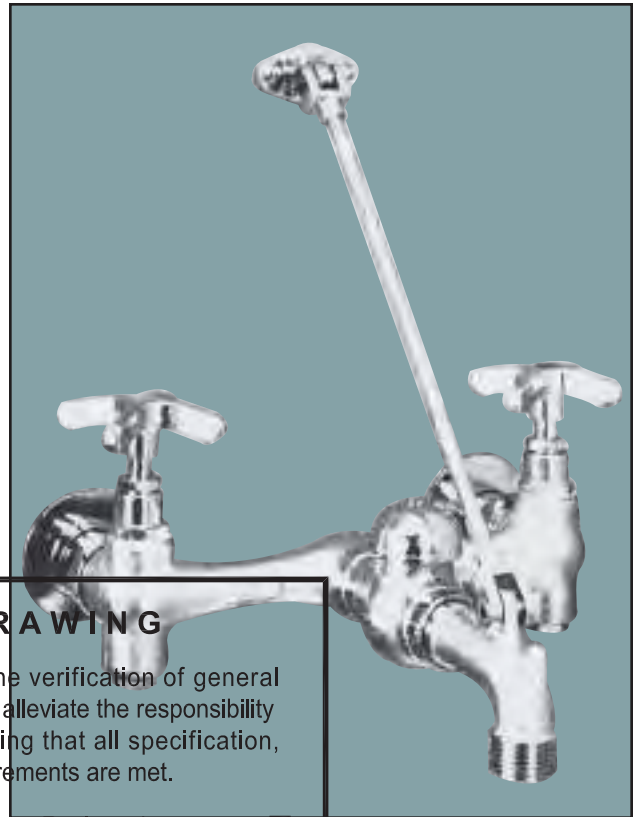
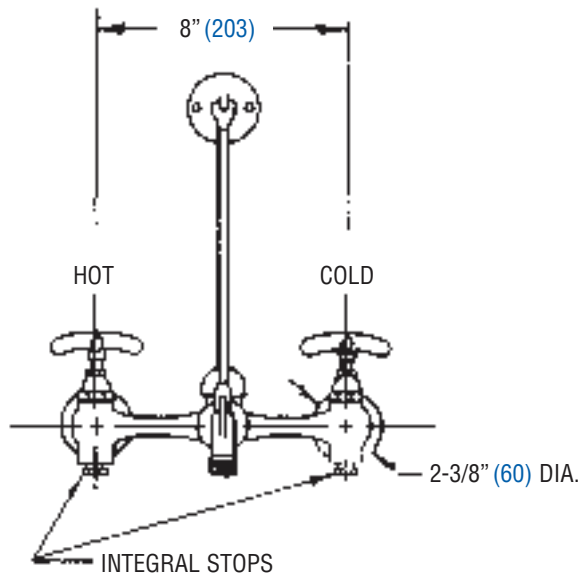
Group Assembly Part #	Description	Individual Components Comprising Group Assembly	
GRA-02	Handle Mounting Group Assembly	RP-01	Packing Nut
		RP-27	Packing
		RP-21	Brass Washer
		RP-32	Spindle
		RP-33	Handle Hub
		RP-18	Seat Washer
		RP-24	Seat Washer Screw
		RP-22	Hub Washer
GRA-03	Coupling Assembly	RP-14	Wall Flange
		RP-15	Nipple
		RP-05	Bushing (socket)
		RP-02	Coupling Nut
		RP-10	Swivel
		RP-19	Washer
GRA-05	Brace Assembly	RP-13	Brace Flange
		RP-28(2)	S.S. Roll Pin
		RP-31	Wall Brace Rod
		RP-11(2)	Wood Screw
GRA-07	Vacuum Breaker & Disc Assembly	RP-26	V.B. Cap Screw
		RP-09	Cap
		RP-08	V.B. Hub
		RP-20	V.B. Hub Washer
		RP-06	Seat
		GRA-04	Vacuum Breaker Disc Assembly

Group Assembly Part #	Description	Individual Components Comprising Group Assembly	
GRA-08	Complete Body Assembly	RP-29	Center Body
		RP-30	V.B. Body
		RP-12	Nozzle
GRA-09	Handle Assembly (Cold)	RP-17	Cold Index
		RP-25	Handle Screw
		RP-04	Handle
GRA-10	Handle Assembly (Hot)	RP-16	Hot Index
		RP-25	Handle Screw
		RP-04	Handle
GRA-11	Integral Stop Assembly	RP-24	Seat Washer Screw
		RP-23	Washer
		RP-03	Spindle
		RP-21	Brass Washer
		RP-27	Packing
		RP-01	Packing Nut
RP-07	(2 per package)	RP-07	Seat

# Service-Sink Faucet Model: 830-AA

FIAT®

## Service Sink and Faucet



### FRONT VIEW SHOP DRAWING

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Reviewed By: M.M.

Reviewed ☒

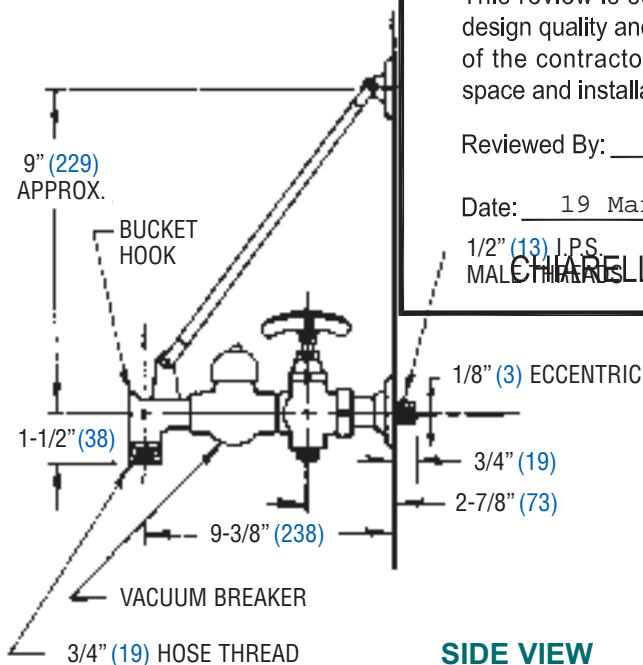
Date: 19 Mar 2015

General: ☐

Resubmit ☐

1/2" (13) I.P.S.  
MALCHER

CHIARELLI ENGINEERING LTD



### SIDE VIEW

**Material:**  
**Finish:**

Commercial red brass alloy casting-rough finish.

Chrome plating exceeding requirements of ANSI/ASTM B-456-71. Indicators cold (blue) and hot (red) are included.

**Specifications and Codes:**

In the U.S.A., meets or exceeds requirements of ANSI-A112.18.1M-1979 for "Finished and Rough Brass Plumbing Fixture Fittings." In Canada, meets or exceeds the requirements of CSA standards B125 - "Plumbing Fittings," B64.1.1 - "Vacuum Breakers - Atmosphere Type" and B64.0 - "General Requirements for Backflow Preventers and Vacuum Breakers," and is approved under Product Class No. 6811 01 under Report #LM57412-1. Conforms to ASSE 1001.

**NOTE:** These roughing measurements may vary 1/4" (plus or minus).



**FIAT PRODUCTS®**  
A CRANE PLUMBING COMPANY

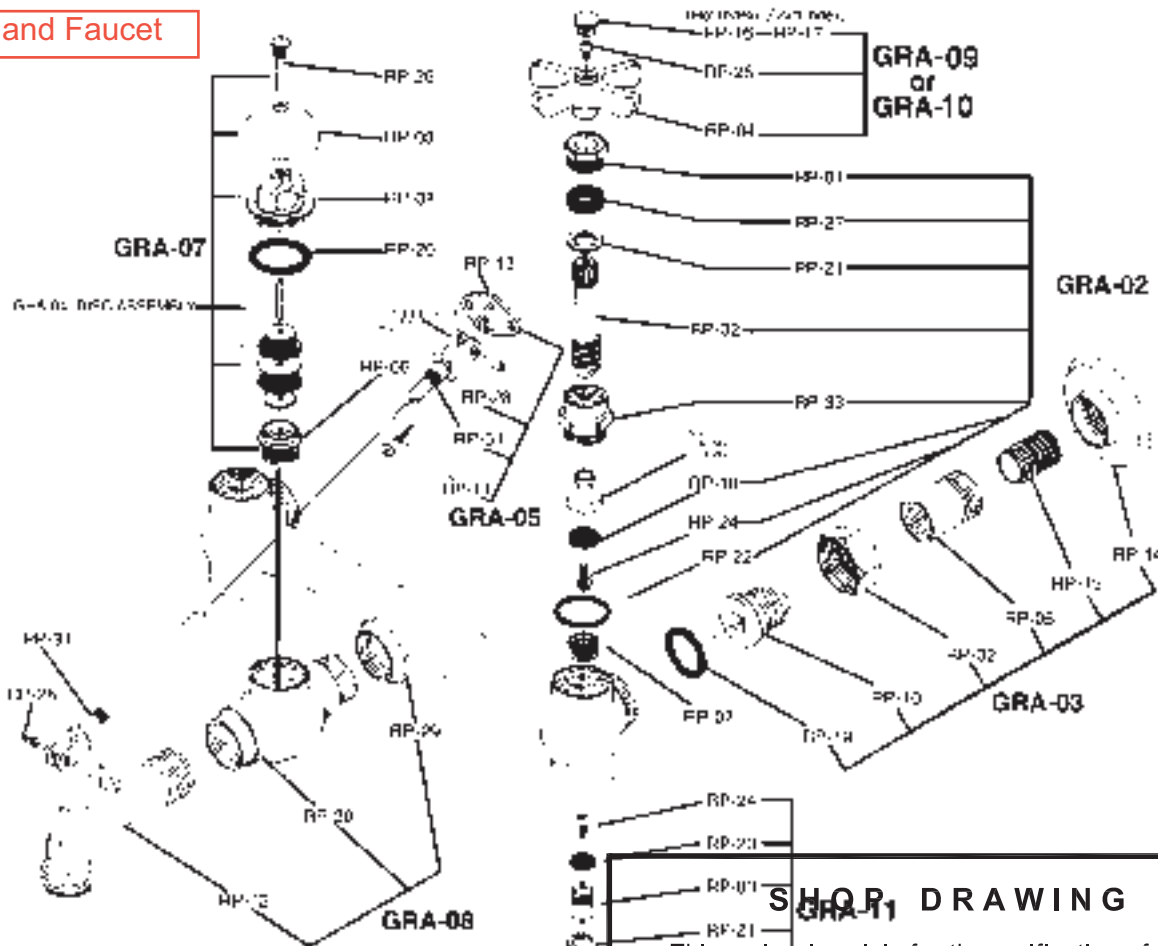
255 Hutchings St. • Winnipeg, MB • R2X 2R4 • Ph. 800-665-7531 • 204-633-6122 • Fx. 204-633-6122  
e-mail: info@fiat.ca • website: www.fiat.ca

A subsidiary of CR/PL, L.L.C. Company - Evanston, IL

**Shop Drawings  
Contractor Approval**  
Approved by: M.A.G., G. F.  
Date: Mar 03, 2015  
Page 148 of 2421  
SIFEC NORTH INC

# 830-AA Group Replacement Assembly Parts List

## Service Sink and Faucet



Group Assembly Part #	Description	Individual Components Comprising Group Assembly	
GRA-02	Handle Mounting Group Assembly	RP-01	Packing Nut
		RP-27	Packing
		RP-21	Brass Washer
		RP-32	Spindle
		RP-33	Handle Hub
		RP-18	Seat Washer
		RP-24	Seat Washer Screw
		RP-22	Hub Washer
GRA-03	Coupling Assembly	RP-14	Wall Flange
		RP-15	Nipple
		RP-05	Bushing (socket)
		RP-02	Coupling Nut
		RP-10	Swivel
		RP-19	Washer
GRA-05	Brace Assembly	RP-13	Brace Flange
		RP-28(2)	S.S. Roll Pin
		RP-31	Wall Brace Rod
		RP-11(2)	Wood Screw
GRA-07	Vacuum Breaker & Disc Assembly	RP-26	V.B. Cap Screw
		RP-09	Cap
		RP-08	V.B. Hub
		RP-20	V.B. Hub Washer
		RP-06	Seat
		GRA-04	Vacuum Breaker Disc Assembly

## SHOP DRAWING

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Reviewed By: M.M. Reviewed ☒

Reviewed as noted ☐

Date: 19 Mar 2015 Resubmit ☐

Group Assembly Part #	Description	Individual Components Comprising Group Assembly	
GRA-08	Complete Body Assembly	RP-29	Center Body
		RP-30	V.B. Body
		RP-12	Nozzle
GRA-09	Handle Assembly (Cold)	RP-17	Cold Index
		RP-25	Handle Screw
		RP-04	Handle
GRA-10	Handle Assembly (Hot)	RP-16	Hot Index
		RP-25	Handle Screw
		RP-04	Handle
GRA-11	Integral Stop Assembly	RP-24	Seat Washer Screw
		RP-23	Washer
		RP-03	Spindle
		RP-21	Brass Washer
		RP-27	Packing
		RP-01	Packing Nut
RP-07	(2 per package)	RP-07	Seat



## SERV-A-SINK® LAUNDRY TUBS MODELS FL-1, L-1, DL-1

### FL-1 FLOOR MOUNTED SERV-A-SINK® L-1 WALL HUNG SERV-A-SINK® DL-1 DROP-IN SERV-A-SINK®

Fiat Products uses a specialized SMC process (Molded Stone®) to manufacture all laundry tubs. Moldings are manufactured in matched metal dies under heat and pressure resulting in a homogeneous molded unit. Drain(s) with stopper(s) are furnished as standard equipment. Capacity shall be 76 litres (17 Imp gal) for the single tub sink and 152 litres (33 Imp gal) for the double tub sink. Laundry sinks available in white only.

- All single compartment laundry tubs are available in sixpacks (L-6 and FL-6) and bulk quantities.
- All products must be installed in accordance with installation instructions provided. Failure to do so may invalidate warranty at manufacturer's discretion.

#### FL-1 Floor Mounted Serv-A-Sink®

- White baked enamel angle legs that slip into molded sockets for rigid, friction-fit. (Included)
- Easy leveling devices are provided for fast, even planing. Tub is capable of handling 600 pounds.

#### Nominal Dimensions:

Overall Outside Dimensions:

20-1/4" x 17-1/4" x 13" (514 x 438 x 330mm)

Overall height from floor

34-3/4" (883mm) CSA Approved

#### L-1 Wall Hung Serv-A-Sink®

- Heavy gauge galvanized - steel bracket capable of withstanding 600 pounds. (Included)
- Side fillers and bottom tub support, which are assembled in field to the mounting brackets, are made of white molded plastic polymer.

#### Nominal Dimensions:

20-1/4" x 17-1/4" x 13" (514 x 438 x 330mm)

#### DL-1 Drop-In Serv-A-Sink®

- Designed for a countertop installation.
- Self-rimming flange, four locking corner bars and screws for fast tightening into integral molded mounting legs and against the underside of the countertop. (Included)

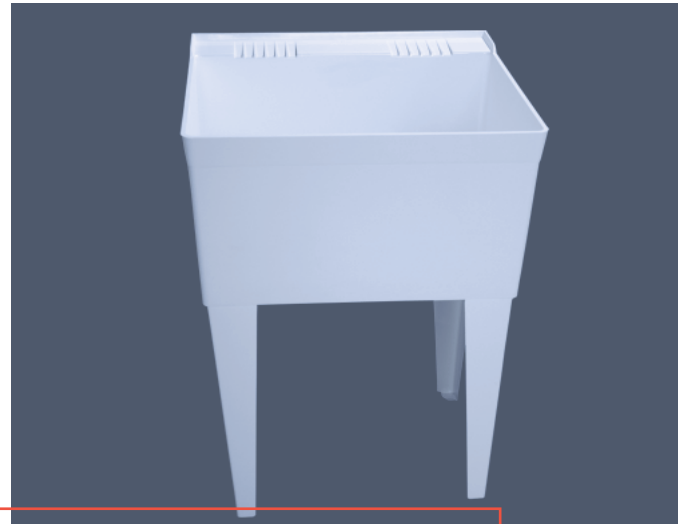
#### Nominal Dimensions:

22-1/8" x 17" x 12-3/7" (562 x 432 x 324mm)

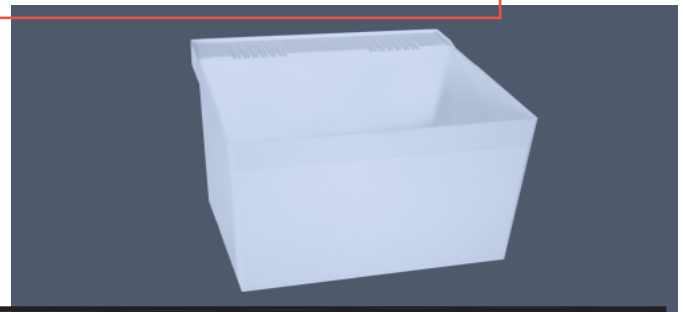
Underside flange rim sealant for watertightness supplied by others.

Customer Service Canada  
1-800-387-0369  
www.fiat.ca

© 2013 Fiat Products



FL-1 Floor Mounted Serv-A-Sink®



#### L-1 Wall Hung Serv-A-Sink® SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: M.M. Reviewed ☒  
Date: 19 Mar 2015 Reviewed as noted ☐  
Resubmit ☐

CHIARELLI ENGINEERING LTD.  
DL-1 Drop-In Serv-A-Sink®

SEE REVERSE FOR ROUGHING-IN DIMENSIONS

All products are UPC listed



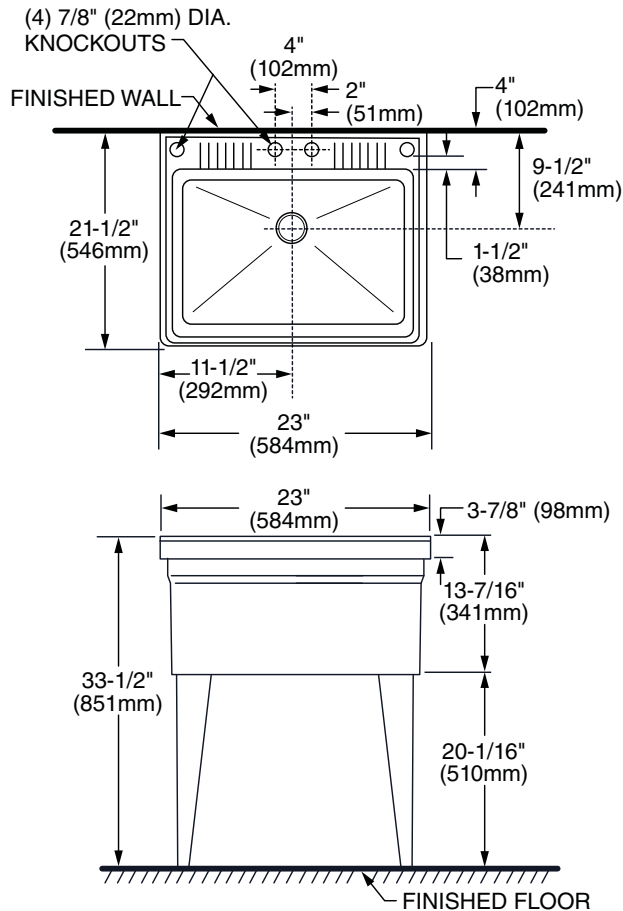
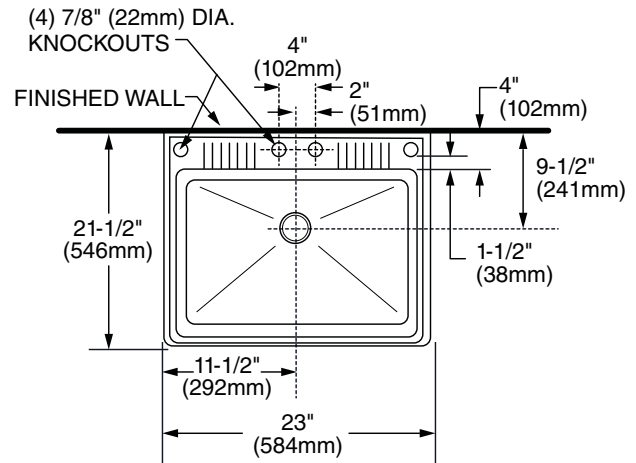
FIAT

QUALITY FOR LIFE

Customer Service United States  
1-800-442-1902  
www.fiatproducts.com

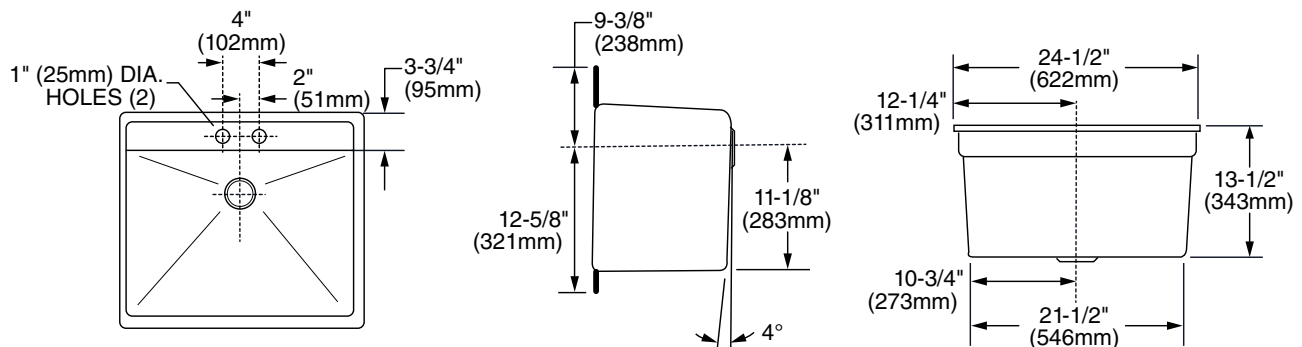
Revised 11/13

Page 150 of 2421

**SERV-A-SINK® LAUNDRY TUBS**  
**MODELS FL-1, L-1, DL-1**
**MODEL FL-1**  
**FLOOR MOUNTED**

**MODEL L-1**  
**WALL HUNG**

**SHOP DRAWING**

**IMPORTANT:** This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By:           M.M.           Reviewed ☒  
 Reviewed as noted ☐  
 Date:   15 Mar 2015   Resubmit ☐

**CHIARELLI ENGINEERING LTD.**
**MODEL DL-1**  
**DROP-IN**


18-10 Stainless Steel Basket  
Strainer (replacement basket is 1135B)

Threaded Spindle

18-10 Stainless Steel  
Strainer Body

Foam Washer

PVC Gasket

Polypropylene Shell

Rubber Washer

Polypropylene Tailpiece



## SPECIFICATION

**1135:** Stainless strainer assembly with polypropylene shell and tailpiece. Suitable to 18 and 20 gauge stainless steel product and granite product.

1135 FUN# 112.0040.565

1135/60 FUN# 112.0061.322

1135-CS FUN# 112.0181.283 is the 1135 assembly packaged in a clam shell





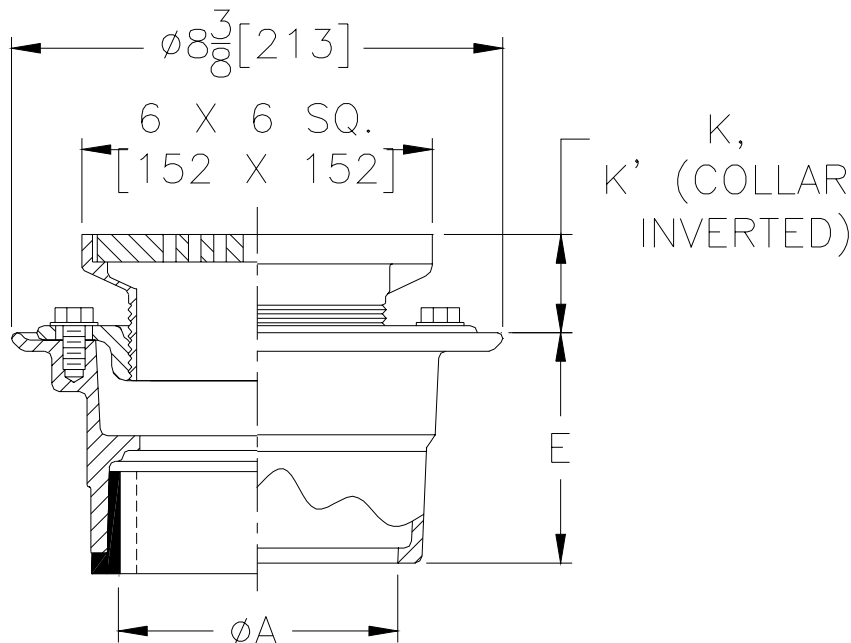
# ZXN-415-H

## BODY ASSEMBLY WITH "TYPE H" STRAINER

TAG \_\_\_\_\_



Dimensional Data (inches and [ mm ]) are Subject to Manufacturing Tolerances and Change Without Notice



Str. Desig	Dimensions In Inches / [mm]						Approx. Wt. Lbs. / (kg)	Strainer Open Area Sq. In. / [sq cm]
	A Pipe Size	Str. Dia.	K		K'			
			Min.	Max.	Min.	Max.		
-H6	2-3-4-6 [51-76-102-152]	6 x 6 [152 x 152]	1-1/4 [32]	2 [51]	2-1/8 [54]	3-1/4 [83]	15 [7]	3 [19]

**ENGINEERING SPECIFICATION:** ZURN ZXN-415 Floor and Shower Drain, Dura-Coated cast iron body with bottom outlet, combination invertible membrane clamp and adjustable collar with "TYPE H" heavy-duty polished nickel bronze strainer.

**OPTIONS** (Check/specify appropriate options)**PIPE SIZE**(Specify size/type) **OUTLET****'E' BODY HT. DIM.**

2 thru 4 [50 thru 100]	_____	IC	Inside Caulk	3 7/8 [98]
2 thru 4 [50 thru 100]	_____	IG	Inside Gasket	3 7/8 [98]
2 thru 4, 6 [50 thru 100, 152]	_____	IP	Threaded	2 5/8 [67]
2 thru 4 [50 thru 100]	_____	NH	No-Hub	3 7/8 [98]
2 thru 4 [50 thru 100]	_____	NL	Neo-Loc	4 5/8 [117]

**SUFFIXES**

_____	-AR	Acid Resisting Epoxy Coated Cast Iron
_____	-G	Galvanized Cast Iron
_____	-P	1/2" [13] Trap Primer Connection
_____	-U	1" [25] - 3" [76] High Extension Adapter
_____	-VP	Vandal Proof Secured Top
_____	-X	Squeezin Backwater Valve
_____	-Y	Sediment Bucket
_____	-6NH	6" [152] No-Hub Outlet (6IP w/Z-1040)
_____	-90	2" [51], 3" [76] or 4" [102] Side Outlet Body Assembly (IP or NH only)

\*REGULARLY FURNISHED UNLESS OTHERWISE SPECIFIED

REV. DATE: 11/15/99 C.N. NO. 83464

DWG. NO. 65032 PRODUCT NO. ZXN-415-H



- **G1909** Safety Station with WideArea™ Eye/Face Wash, Stainless Steel Bowl  
☐ **G1909P** Safety Station with WideArea™ Eye/Face Wash, Plastic Bowl

**Application:** Combination WideArea™ eye/face wash and shower safety station. Four GS-Plus™ spray-type outlet heads deliver a flood of water over a wide area of coverage for complete rinsing of eyes and face.

**Shower Head:** 10" diameter orange ABS plastic.

**Shower Valve:** 1" IPS chrome plated brass stay-open ball valve. Valve is US-made with chrome plated brass ball and Teflon® seals. Furnished with stainless steel actuating arm and 29" stainless steel pull rod.

**Spray Head Assembly:** Four GS-Plus™ spray heads. Each head has a "flip top" dust cover, internal flow control and filter to remove impurities from the water flow.

**Eye/Face Wash Bowl:** 11-1/2" diameter. Bowl is stainless steel (G1909) or orange ABS plastic (G1909P).

**Eye/Face Wash Valve:** 1/2" IPS chrome plated brass stay-open ball valve. Valve is US-made with chrome plated brass ball and Teflon® seals.

**Pipe And Fittings:** Schedule 40 galvanized steel. Furnished with orange polyethylene covers for vertical piping for high visibility and corrosion resistance.

**Supply:** 1-1/4" NPT female top or side inlet.

**Waste:** 1-1/4" NPT female outlet. Outlet can be positioned at either 9-1/4" or 19-5/8" above finished floor by using lower pipe nipples.

**Sign:** Furnished with ANSI-compliant identification sign.

**Quality Assurance:** Valve and spray head assembly is 100% factory assembled and water tested prior to shipment.

### SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: M.M.

Reviewed



Reviewed as noted



Resubmit



Date: 19 Mar 2015

CHIARELLI ENGINEERING LTD.

### Available Options

☐ **GC** Powder coated finish on galvanized pipe and fittings. Available colors include orange, yellow, red and green.

☐ **FC20** Regulates shower flow rate to 20 GPM.

☐ **GRN** Green ABS plastic shower head.

☐ **YEL** Yellow ABS plastic shower head.

☒ **SSH** Stainless steel shower head.

☐ **AP275-100 Electric Light and Alarm Horn**  
Light and alarm horn summon assistance when eye/face wash or shower is activated.

☐ **AP250-015 Modesty Curtain**  
Modesty curtain for mounting on safety station.

☒ **TMV** G3800 thermostatic mixing valve precisely blends hot and cold water to deliver warm (tepid) water as required by ANSI Z358.1-2009.

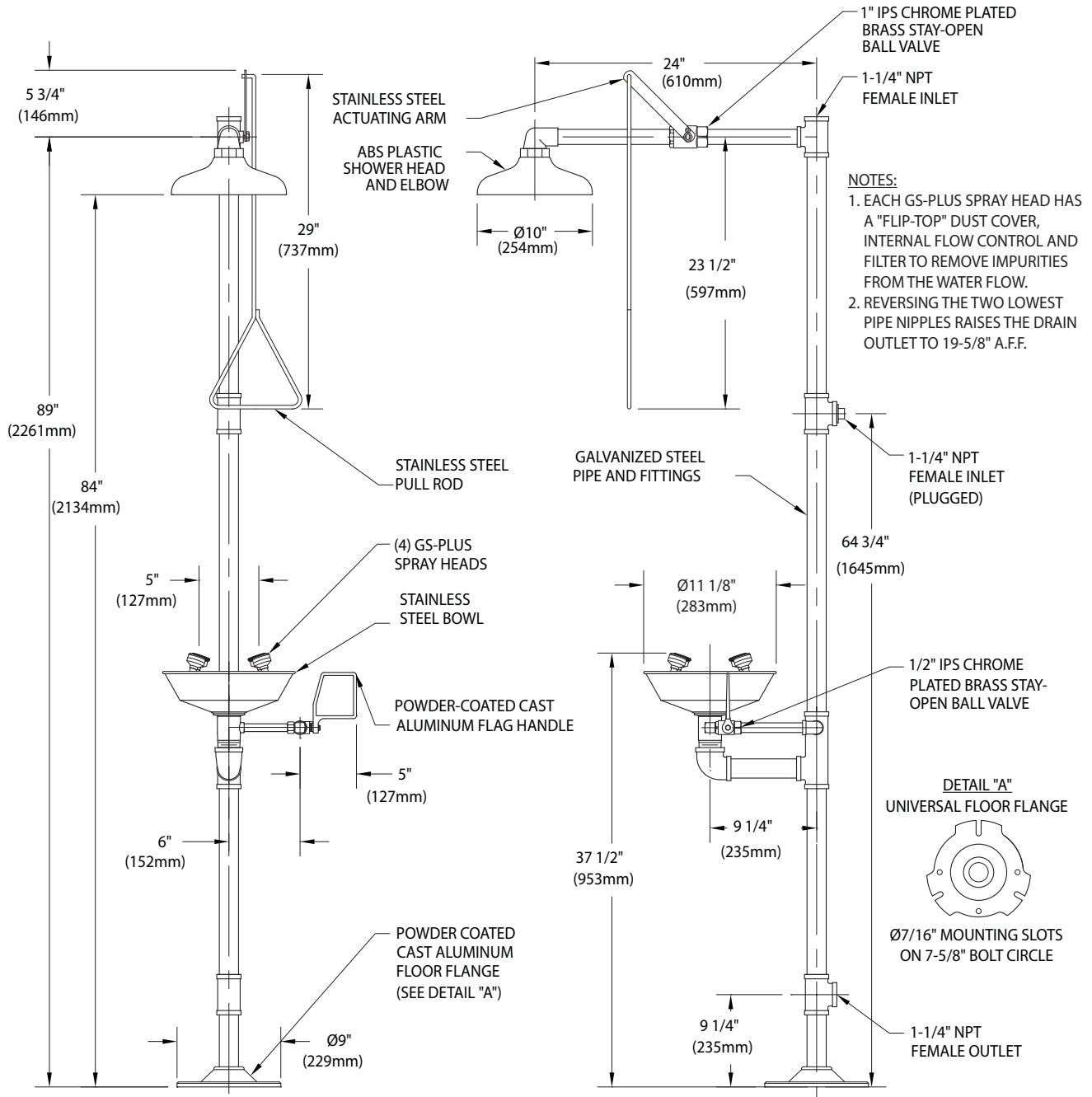


**Shop Drawings  
Contractor Approval**  
Approved by: M.A.G., G. F.  
Date: Mar 03, 2015  
SIFEC NORTH INC



□ **G1909** Safety Station with WideArea™ Eye/Face Wash, Stainless Steel Bowl

□ **G1909P** Safety Station with WideArea™ Eye/Face Wash, Plastic Bowl



THIS SPACE FOR ARCHITECT/ENGINEER APPROVAL

Sign Included



Due to continuing product improvement, the information contained in this document is subject to change without notice. All dimensions are  $\pm 1/4"$  (6mm). **rev. 10114**

Guardian Equipment  
1140 N North Branch St  
Chicago, IL 60642

312 447 8100 TELEPHONE  
312 447 8101 FACSIMILE  
gesafety.com

Listed 8116. Units have been tested to and comply with ANSI Z358.1-2009 and the Uniform Plumbing Code.



ETL Listed 101496. Units have been tested to and comply with ANSI Z358.1-2009.





## □ G3700LF Tempering Valve, 34 Gallon Capacity

**Application:** Tempering valve to blend hot and cold water to deliver tepid water. Valve has flow capacity of 3.0 to 34 gallons per minute (GPM). Valve can be used with emergency shower, safety station or multiple installations of eyewash, eye/face wash, dual purpose eyewash/drench hose and drench hose units.

**Temperature Control:** Valve has bimetallic thermostat that senses incoming water temperature and automatically blends water to 85°F (29°C). High temperature limit stop is set to 90°F (32°C). Valve has dial thermometer on outlet to monitor temperature of delivered water. *Note: Valve may need to be adjusted when installed based on incoming water temperature. Refer to "Installation Instructions" for further information.*

**Fail Safe:** In event of restriction or failure of hot water supply, internal bypass allows valve to deliver cold water to emergency unit. In bypass mode, valve will deliver 20 GPM of cold water at 30 PSI flow pressure. In event of loss of cold water supply, valve will close and not deliver water.

**Flow Capacity:** Refer to chart below for flow capacity of valve at specified pressure drops:

System Pressure Drop (PSI)	5	10	15	20	25	30	35	40
Flow Rate (GPM)	18	23	29	34	40	45	51	56

System Pressure Drop (Bar)	0.3	0.7	1.0	1.4	1.7	2.1	2.4	2.8
Flow Rate (Liters per Minute)	68	87	110	129	151	170	193	212

**Supply Temperature:** Minimum hot water supply temperature is 140° F (60° C).

**Supply Pressure:** 30 PSI minimum supply pressure is required for proper operation of valve. Maximum supply pressure is 125 PSI. Maximum hot to cold water pressure differential is 5%.

**Mounting:** Furnished with heavy duty mounting bracket for securing valve to panel or wall.

**Inlets:** 3/4" NPT female hot and cold water inlets. Inlets can be rotated 360 degrees for top or bottom supply. Each inlet has integral water strainer, check valve and supply stop.

**Outlet:** 1" NPT female outlet.

**Quality Assurance:** Valve is completely assembled and water tested prior to shipment. Valve is certified to ASSE 1071. Valve is certified to meet low lead requirements of wetted surface area less than 0.25% lead by weight.

### Additional Models

□ **G3702LF** Same as above except valve is installed in surface mounted stainless steel cabinet.

□ **G3707LF** Same as above except valve is installed in recess mounted stainless steel cabinet.

## SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: M.M. Reviewed ☒  
 Date: 28 Apr 2015 Reviewed as noted ☐  
 Resubmit ☐

CHIARELLI ENGINEERING LTD.



Shop Drawings  
 Contractor Approval  
 Approved by: M.A.G., G. F.  
 Date: Apr 23, 2015  
 SIFEC NORTH INC

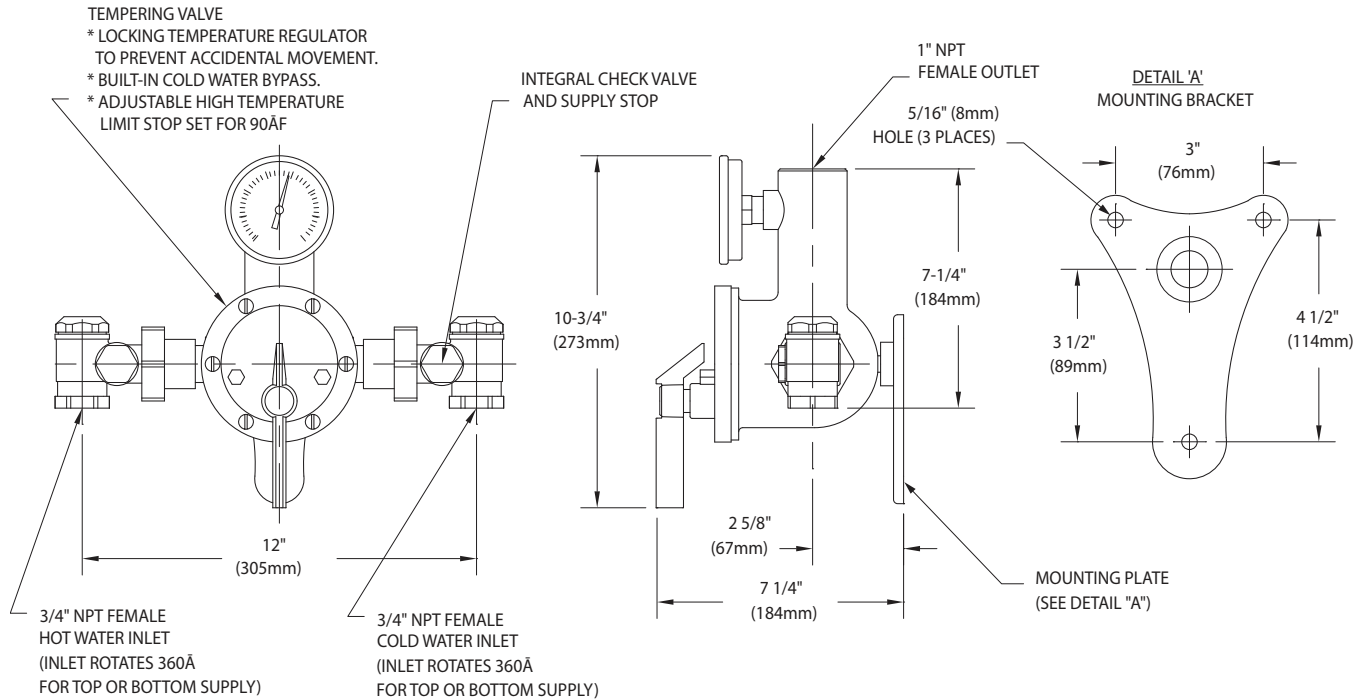
**IMPORTANT:** Pursuant to ANSI Z358.1-2009, the water delivered by emergency equipment should be "tepid". Tepid is defined as moderately warm or lukewarm, and is generally considered to be between 60°F (15°C) and 90°F (32°C). However, in certain circumstances, a chemical reaction may be accelerated or otherwise affected by the water temperature. Please consult with a medical advisor to determine the optimum delivered water temperature prior to specifying, installing or using a tempering valve.

Tempering valves will not deliver the appropriate water temperature if the system has not been sized correctly. Please refer to the flow capacities and supply pressure requirements listed above when designing the tempered water system and selecting tempering valves.

Tempering valves, like all emergency eyewash and shower equipment, must be installed in accordance with the manufacturer's instructions and maintained on a regular basis. Under ANSI Z358.1-2009, all emergency equipment should be activated weekly and inspected at least annually. Tempering valves should be treated the same and, in addition, must be regularly cleaned and cycled.



## G3700LF Tempering Valve, 34 Gallon Capacity



- As with all plumbing devices and emergency equipment, thoroughly flush supply lines prior to and after installation.
- Install mounting bracket on panel or wall. Thread tempering valve securely onto mounting bracket. Valve must be installed in location where it is readily accessible for inspection, cleaning and maintenance.
- Connect hot and cold water supply lines to valve. Connect outlet line to valve and then to inlet of emergency equipment.
- Activate the water flow and check the temperature of the water delivered from the tempering valve and emergency equipment. Note that the temperature control knob on the tempering valve has been factory preset to deliver 85°F (29°C) tepid water and the high temperature limit stop has been factory preset at 90°F (32°C). These temperatures are based upon an incoming hot water supply at 140°F (60°C). If the incoming hot water temperature is higher than 140°F (60°C), the valve will deliver water that is warmer than 85°F (32°C). **In this case, the high temperature limit stop must be reset by the installer.**
- To reset the high temperature limit stop:
  - While the water is running, turn the adjusting knob counterclockwise to the maximum hot water position.
  - Remove the knob and retaining ring, loosen the set screw and remove the limit stop.
  - Replace the handle on the valve stem and rotate the valve stem until the desired outlet water temperature is reached. Confirm the outlet water temperature on the outlet thermometer.
  - Replace the limit stop on the valve stem, positioned so that the limit stop is against the web on the LEFT side of the valve cover (i.e. the valve stem cannot be turned any further counterclockwise).
  - Replace the retaining ring, tighten set screw and replace knob.

## SHOP DRAWING

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Reviewed By: M.M. Reviewed ☒  
Reviewed as noted ☐  
Date: 28 Apr 2015 Resubmit ☐

CHIARELLI ENGINEERING LTD.

**Shop Drawings  
Contractor Approval**  
Approved by: M.A.G., G. F.  
Date: Apr 23, 2015  
SIFEC NORTH INC

THIS SPACE FOR ARCHITECT/ENGINEER APPROVAL

Due to continuing product improvement, the information contained in this document is subject to change without notice. All dimensions are  $\pm 1/16"$  (6mm). rev. 12/14

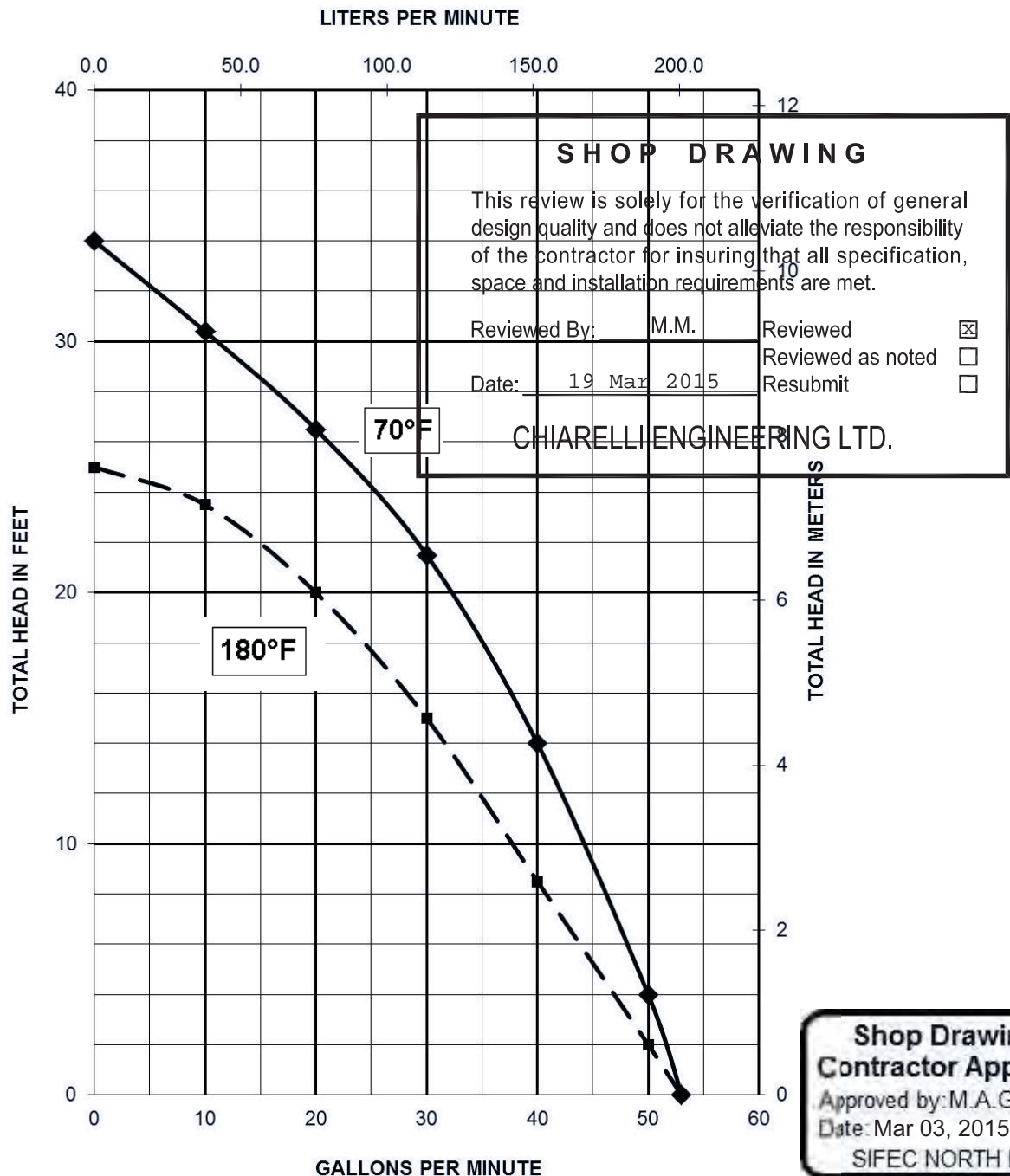
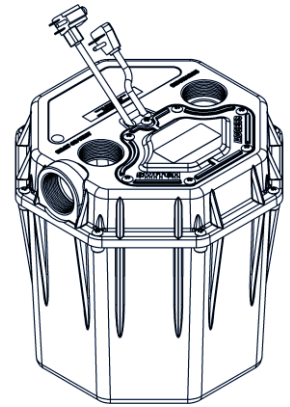




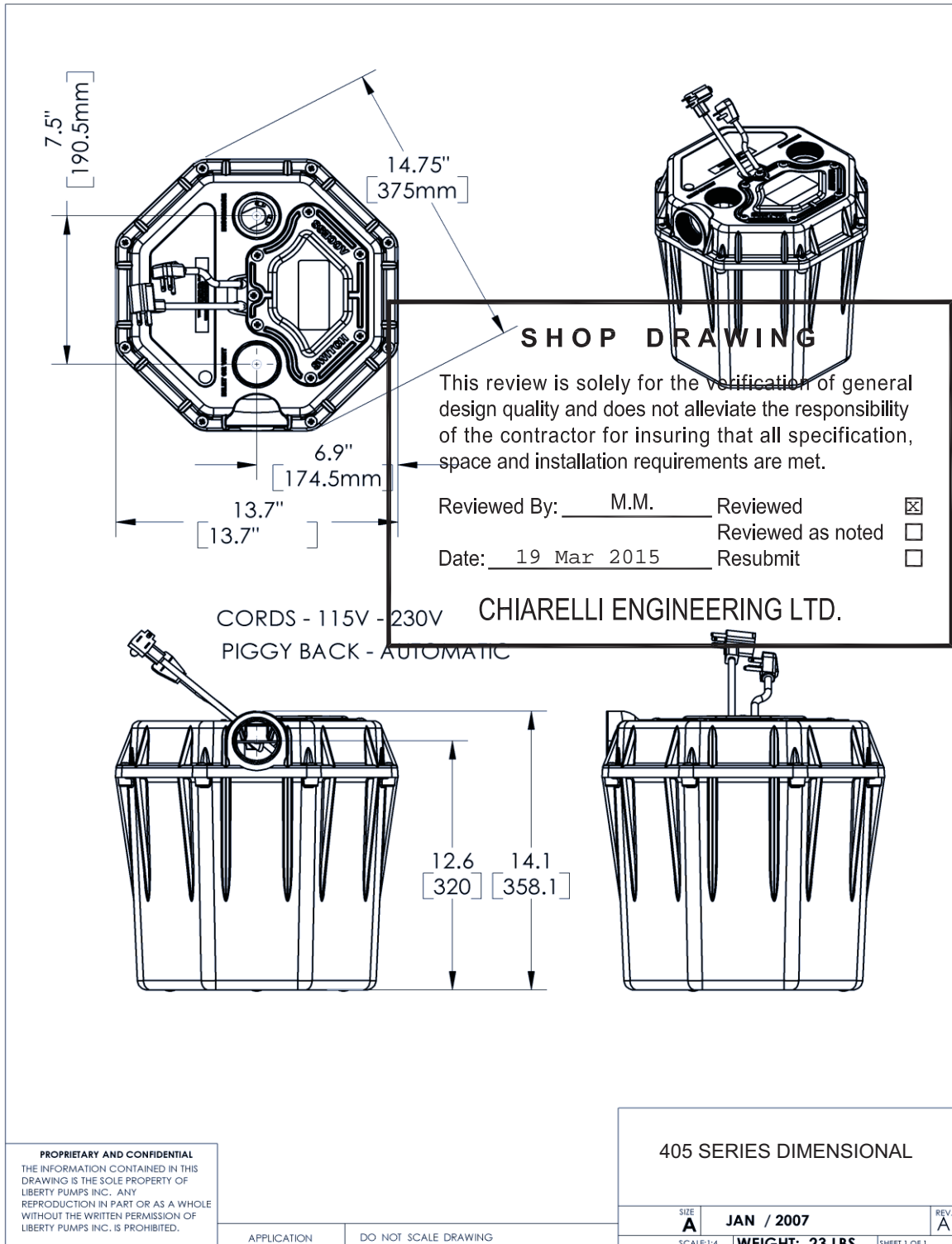


## Pump Specifications

### 405 Series Commercial Drain Pump (High-Temp)







**405-Series Electrical Data**

MODEL	HP	VOLTAGE	PHASE	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH FT	DISCHARGE	AUTOMATIC
405	1/2	115	1	7.3	16	140°C / 284°F	F	10	2"	YES
405-HV	1/2	208/230	1	3.5	7	140°C / 284°F	F	10	2"	YES

**405-Series Technical Data**

IMPELLER	VORTEX HIGH TEMPERATURE ENGINEERED POLYMER
SOLIDS HANDLING	3/8"
PAINT (PUMP)	POWDER COAT
MAX LIQUID TEMP	82°C / 180°F
MAX STATOR TEMP	CLASS F 155°C / 311°F
THERMAL OVERLOAD	140°C / 284°F
POWER CORD TYPE	SJTOOW
MOTOR HOUSING	DEEP FINNED POWDER COATED ALUMINUM
VOLUTE	ENGINEERED POLYMER
SHAFT	STAINLESS
HARDWARE	STAINLESS
ORINGS	BUNA N
SHAFT SEAL	ENGINEERED DOUBLE LIP WITH STAINLESS SPRINGS
WEIGHT	23 LBS
TANK MATERIAL	POLYPROPYLENE
INLET SIZE	2" FEMALE NPT
DISCHARGE SIZE	2" FEMALE NPT
VENT SIZE	2" FEMALE NPT

**SHOP DRAWING**

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

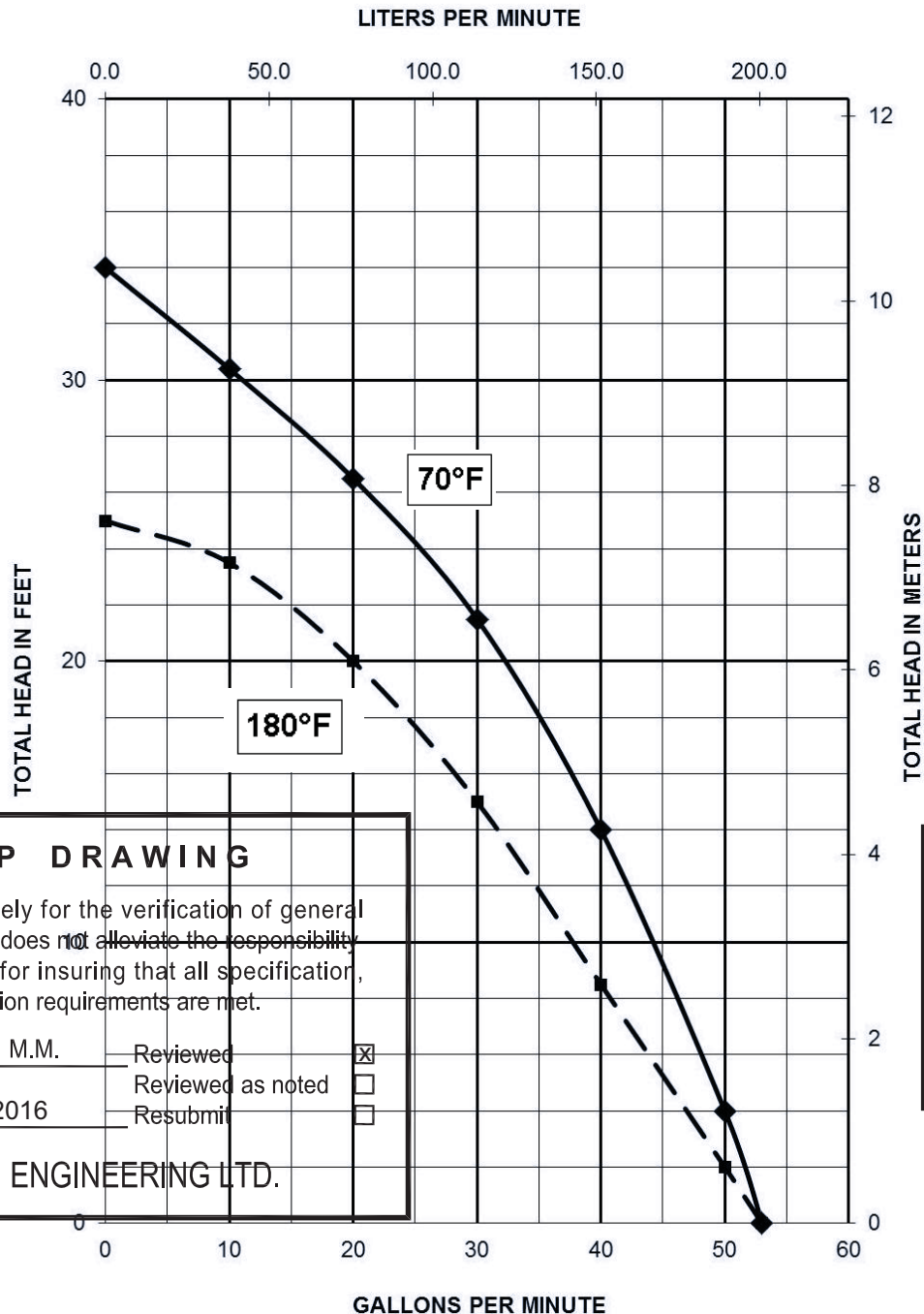
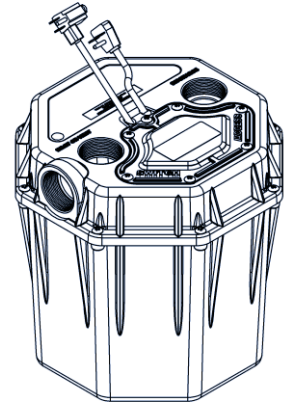
Reviewed By: M.M. Reviewed ☒  
Reviewed as noted ☐  
Date: 19 Mar 2015 Resubmit ☐

CHIARELLI ENGINEERING LTD.



## Pump Specifications

### 405 Series Commercial Drain Pump (High-Temp)



#### SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: M.M.

Date: 20 June 2016

Reviewed ☒  
Reviewed as noted ☐  
Resubmit ☐

CHIARELLI ENGINEERING LTD.

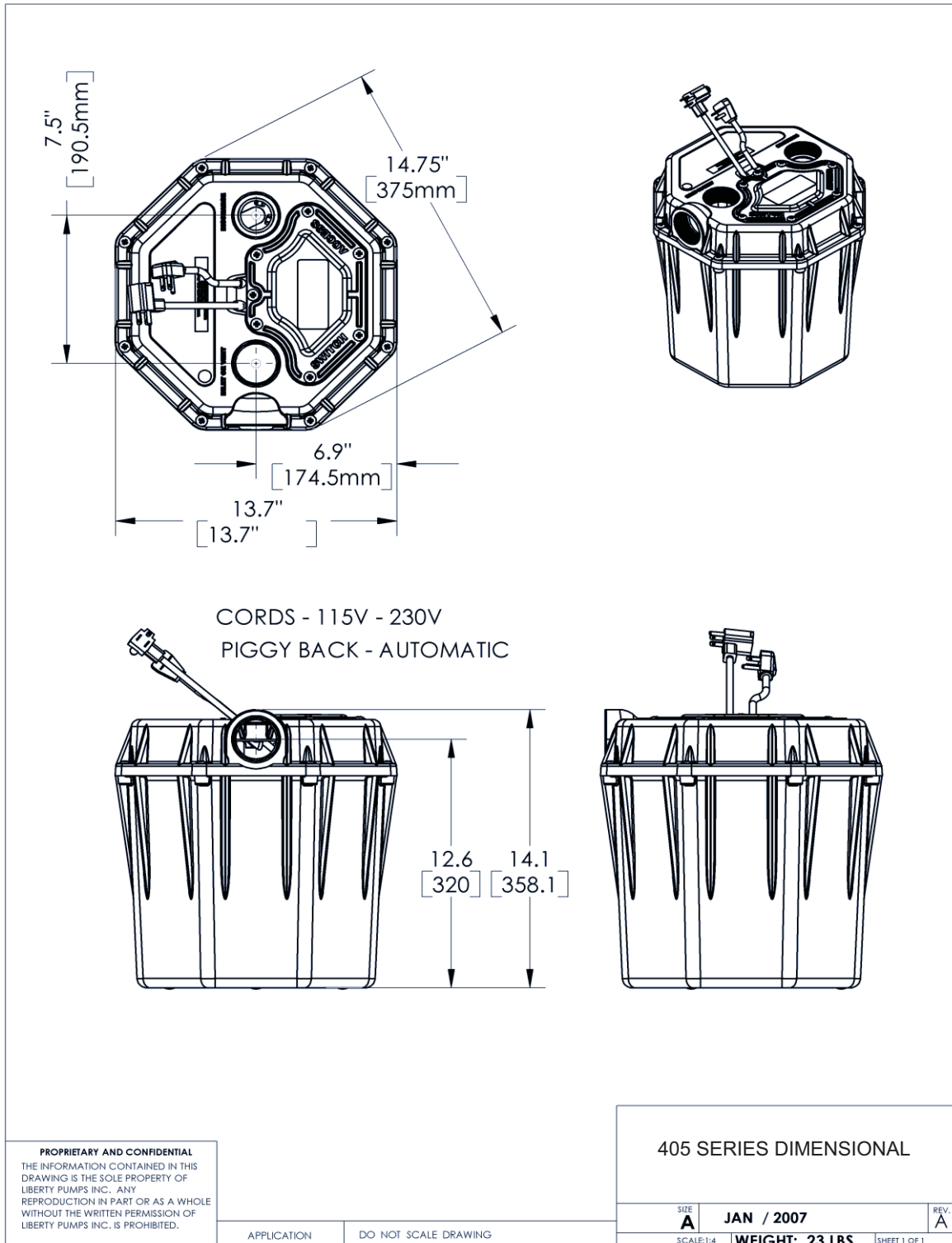
#### SHOP DRAWING

Reviewed by: Samuel Charbonneau  
Date: 14 Jun, 2016

Reviewed ☒  
Reviewed as noted ☐  
Resubmit ☐

Out for approval

SIFEC NORTH INC.



## 405-Series Electrical Data

MODEL	HP	VOLTAGE	PHASE	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH FT	DISCHARGE	AUTOMATIC
405	1/2	115	1	7.3	16	140°C / 284°F	F	10	2"	YES
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SOLIDS HANDLING	3/8"
PAINT (PUMP)	POWDER COAT
MAX LIQUID TEMP	82°C / 180°F
MAX STATOR TEMP	CLASS F 155°C/ 311°F
THERMAL OVERLOAD	140°C/ 284°F
POWER CORD TYPE	SJTOOW
MOTOR HOUSING	DEEP FINNED POWDER COATED ALUMINUM
VOLUTE	ENGINEERED POLYMER
SHAFT	STAINLESS
HARDWARE	STAINLESS
ORINGS	BUNA N
SHAFT SEAL	ENGINEERED DOUBLE LIP WITH STAINLESS SPRINGS
WEIGHT	23 LBS
TANK MATERIAL	POLYPROPYLENE
INLET SIZE	2" FEMALE NPT
DISCHARGE SIZE	2" FEMALE NPT
VENT SIZE	2" FEMALE NPT



## Installation Manual

7212000D

## Model 404 and 405 Automatic Drain Pump



**MODEL 404 Residential**  
**115 volt**



**MODEL 405 Commercial 115 volt**  
**MODEL 405HV Commercial 230 volt**

### Contents

- 1.) General Information and Safety Guidelines
- 2.) Installation
- 3.) Maintenance and Troubleshooting

#### IMPORTANT:

Prior to installation, record Model, Serial Number, and Code Number from pump nameplate for future reference.

MODEL \_\_\_\_\_

SERIAL \_\_\_\_\_

CODE \_\_\_\_\_

INSTALLATION  
DATE \_\_\_\_\_



7000 Apple Tree Avenue  
Bergen, NY 14416  
Phone: (800) 543-2550  
Fax: (585) 494-1839  
www.libertypumps.com



Contains Certified pump





# 1. General Information and Safety Guidelines

Before installation, read the following instructions carefully. Each Liberty pump is individually factory tested to insure proper performance. Closely following these instructions will eliminate potential operating problems, assuring years of trouble-free service.

## ⚠ WARNING

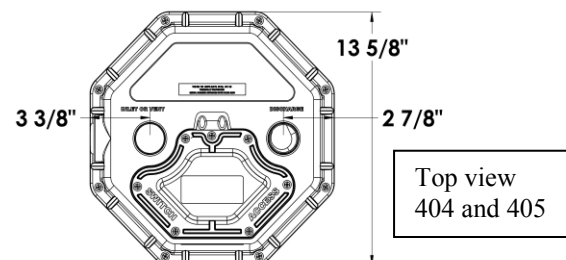
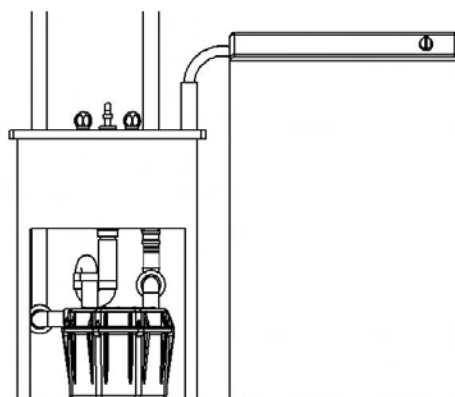
- **Risk of electric shock.** Always disconnect the pump from the power source before handling or making adjustments.
- The electrical connections and wiring for a pump installation should only be made by qualified personnel.
- **Explosion hazard during installation.** PVC cleaners, primers, and cements can release explosive vapors. These heavier than air vapors can accumulate in the tank. The heat of soldering or sweating copper or other metal pipe can ignite these vapors causing a violent explosion. If the unit is to be connected to copper discharge or vent piping, all solvent welded PVC joints must be allowed to cure a minimum of 24 hours. The access cover must be removed to allow the tank to be thoroughly ventilated prior to sweating copper pipe near the unit.
- This pump is supplied with a grounding conductor and grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected to a Ground Fault Circuit Interrupter (GFCI) receptacle that meets the latest requirements per UL 943 including End of Life Provision and protection from Reverse Line-Load Miswire.
- Always wear rubber boots when water is on the floor and you must unplug the pump.
- DO NOT bypass grounding wires or remove ground prong from attachment plugs. DO NOT use an extension cord.
- This pump requires a separate, properly fused and grounded branch circuit. Make sure the power source is properly sized for the voltage and amperage requirements of the pump, as noted on the nameplate.
- The electrical outlet shall be within the length limitations of the pump power cord, and at least 4 feet above floor level to minimize possible hazards from flood conditions.
- The installation must be in accordance with the National Electric Code, Uniform Plumbing Code, International Plumbing Code, as well as all applicable local codes and ordinances.
- Keep clear of suction and discharge openings. To prevent injury, never insert fingers into pump while it is plugged in.
- DO NOT use this product for flammable or corrosive liquid.
- DO NOT use this product in applications where human contact with the pumped fluid is common (such as swimming pools, fountains, etc.)
- NEVER dispose of materials such as paint thinner or other chemicals down drains, as they can chemically attack and damage pump components, potentially causing product malfunction or failure.

## ⚠ CAUTION

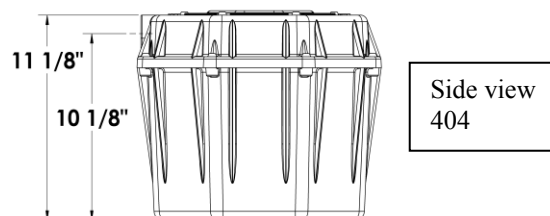
- **Model 404** Do not use this pump in water over 140°F.
- **Model 405** Do not use these pumps in water over 180°F
- DO NOT use pumps in mud, sand, cement, oil or chemicals.
- DO NOT modify the pump in any way.
- DO NOT lift or carry pump by power cord.
- DO NOT remove any tags from pump or cords.
- If pump is installed during construction before power is available, it must be protected from the environment to prevent water from entering through the cord plug end, etc.

## 2. Installation

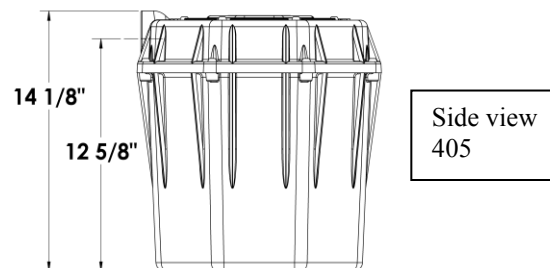
**Fig. 1 – Typical Resident Installation**  
This is a recommended installation only.



Top view  
404 and 405



Side view  
404



Side view  
405

Dimensions are rounded to the nearest 1/8"

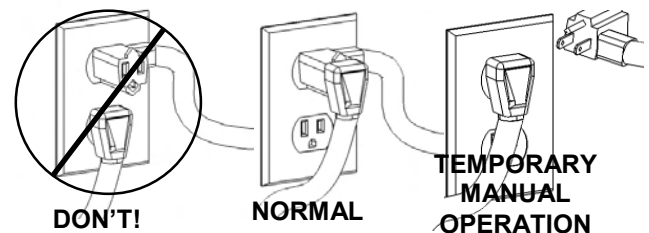
**INLET:** The pump has two ports: one on the top the other on the side, either can be used as a vent or inlet. Using the appropriate piping (1-1/2" on the model 404 and 2" on models 405, 405HV) connect the fixture to the pump. Note: a trap shall be used between the fixture and pump, a flange type is recommended. **HAND-TIGHTEN TO PUMP. DO NOT OVERTIGHTEN OR CROSS-THREAD.**

- A. **DISCHARGE:** HAND-TIGHTEN ONLY. Install a union just above the pump to facilitate removal if necessary for cleaning or service. Install a check valve just above the union (as close to the pump as possible) to prevent the backflow of water after each pump cycle.
- B. **VENT:** Provision is made for a vent stack to allow extra volume for high suds conditions, and to ensure proper drainage of the fixture. **HAND-TIGHTEN ONLY. DO NOT CAP-OFF VENT. DO NOT use ONE-WAY QUICK-VENTS or AIR ADMITTENCE VALVES** as they will not guarantee proper fixture performance. The vent pipe should have a union to facilitate removal if required and shall be connected directly to a building or house vent.
- C. **POWER CORD:** The pump power cord is equipped with a grounding conductor and grounding-type 3-prong plug. It should be connected to a separately fused, grounded, 3-wire grounding-type receptacle of 15-amp capacity with the proper voltage for your model. Make sure all electrical wiring and connections are in accordance with the National Electric Code and all applicable local codes.
- MODEL 404 - 115 volts  
MODEL 405 - 115 volts  
MODEL 405HV - 230 volts

**⚠ WARNING**

- **Risk of electric shock.** Always disconnect the pump from the power source before handling or making adjustments.
- **DO NOT** remove the plug or ground prong.
- **DO NOT** use an extension cord.

**Fig. 1 Piggyback plug installation.**



The **404 and 405-series pumps** come factory-equipped with a float switch mounted within the tank. These models come with two cords - one to the float switch and the other to the pump motor. The switch cord has a series (piggyback) plug enabling the pump cord to be plugged into the back of it (see Fig. 4). The purpose of this design is to allow temporary manual operation of the pump.

**For automatic operation** using Liberty's supplied switch, the two cords should be interconnected and plugged into a separately fused, grounded outlet of proper amp capacity for your selected pump model. (See the pump's nameplate for electrical specifications of your model.) Both cords are equipped with 3-prong plugs and must be plugged into a properly grounded 3-wire receptacle. **DO NOT REMOVE THE GROUND PRONGS.**

**For manual operation**, or in the event of switch failure, the pump cord can be separated and plugged into the electrical outlet, directly bypassing the switch. 208-230V single phase pumps should only be operated without the float switch by using the circuit breaker or panel disconnect. Do not let the pump run dry for extended periods.

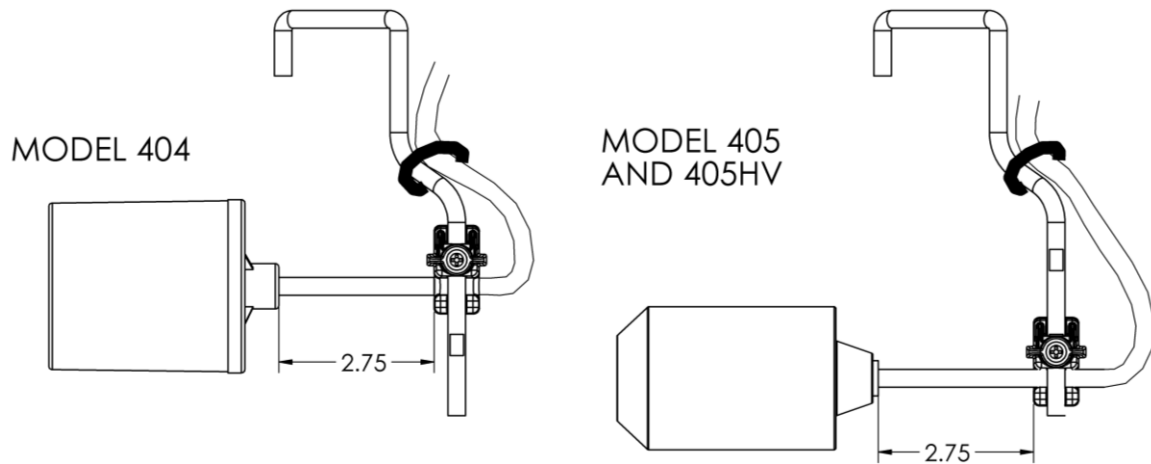
**Application:** The 404 and 405-series drain pumps are designed for use in gray wastewater applications. They will handle small debris and solids such as laundry lint (up to 3/8") associated with normal gray water drainage from a sink. Larger solids should be kept out of the pump system. The 405-series is designed for commercial applications where higher temperature drain water (up to 180 degrees F.) may be used.

### 3. Maintenance and Troubleshooting

Each unit is individually factory tested to ensure proper adjustment and operation. If the unit fails to operate properly, carefully re-read the instructions to see that they have been followed correctly. Routine maintenance is not required on the pump itself, but associated connections may require occasional attention. Lint and foreign objects should be removed from the trap periodically. The check valve on the discharge should also be checked for freedom of operation at the same time.

The pump is automatically turned on and off by use of a float switch mounted within the tank. This switch can be easily removed and checked for operation by removing the access cover located on top of the unit. Once the access cover has been removed a rubber plug must be lifted to free up the switch cord. The switch is mounted to a rod which can be removed by lifting or pulling upward. **IMPORTANT: Do not adjust the tether length. If replacing the switch, make sure to maintain the correct tether length for your model per the following diagram. (Tether length is the distance of cord measured between the clamp and top of float switch.)**

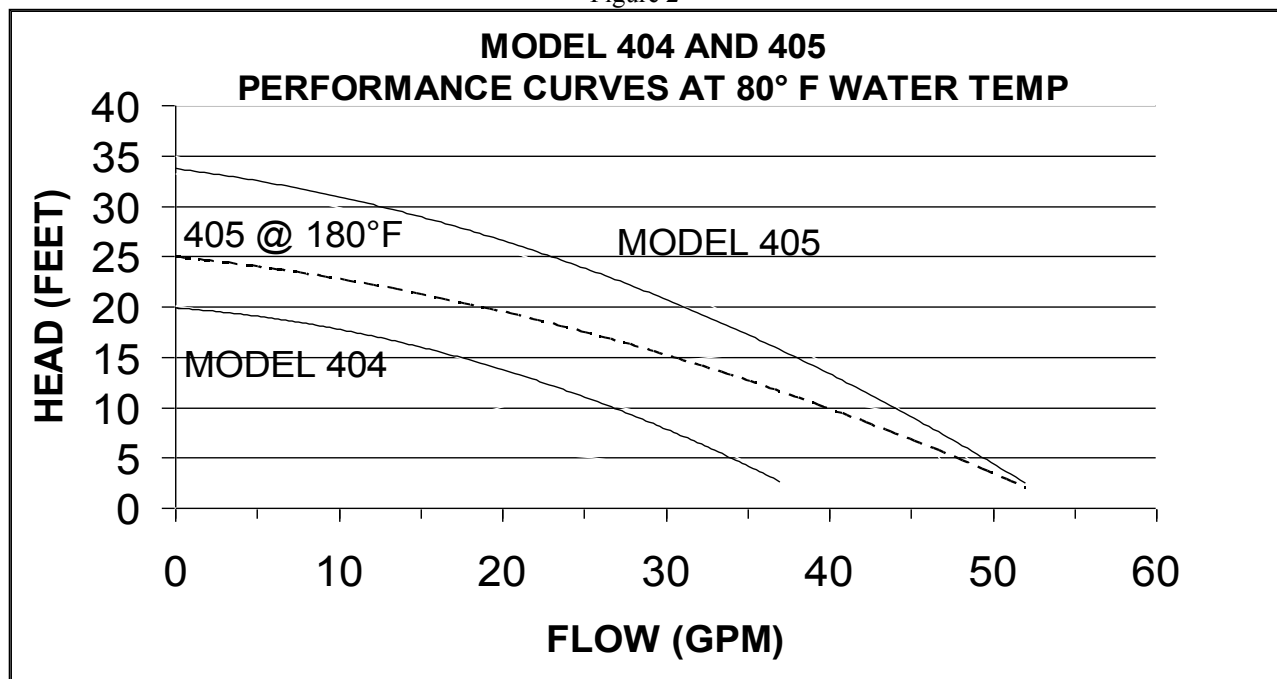
**\*NOTE:** Liberty Pumps, Inc. assumes no responsibility for damage or injury due to disassembly beyond float removal in the field. Disassembly, other than at Liberty Pumps or its authorized service centers, automatically voids warranty.



Problem	Cause	Correction
Pump will not turn on or shut off.	<ul style="list-style-type: none"> <li>Blown fuse or other interruption of power; improper voltage.</li> </ul>	<ul style="list-style-type: none"> <li>Check that the unit is securely plugged in. Have an electrician check all wiring for proper connections and adequate capacity.</li> </ul>
	<ul style="list-style-type: none"> <li>Plugged vent, or quick-vent in use.</li> </ul>	<ul style="list-style-type: none"> <li>Be sure that an unrestricted vent at least 1-1/4" in diameter is in use. Quick-vents shall not be used.</li> </ul>
	<ul style="list-style-type: none"> <li>Defective switch or build-up on tank wall restricting free movement of float switch.</li> </ul>	<ul style="list-style-type: none"> <li>*Remove access cover and check that float is free to move. If build-up restricts float, clean and reinstall. If defective, replace switch.</li> </ul>
Pump runs or hums but does not pump.	<ul style="list-style-type: none"> <li>Discharge is blocked or restricted.</li> </ul>	<ul style="list-style-type: none"> <li>Check the discharge line for blockage, including ice if the line passes through or into cold areas.</li> </ul>
	<ul style="list-style-type: none"> <li>Check valve is stuck closed or installed wrong.</li> </ul>	<ul style="list-style-type: none"> <li>Remove and examine for freedom of operation and proper installation.</li> </ul>
	<ul style="list-style-type: none"> <li>Total lift height has been reached (see Fig. 2)</li> </ul>	<ul style="list-style-type: none"> <li>Try routing pipe to a lower level. If not possible, another pumping station may be required at a level of roughly half the total lift.</li> </ul>
	<ul style="list-style-type: none"> <li>Pump impeller is jammed.</li> </ul>	<ul style="list-style-type: none"> <li>*Disassemble the receiver and bottom base of pump. Remove foreign material. Reassemble.</li> </ul>
	<ul style="list-style-type: none"> <li>Trap or inlet piping is clogged.</li> </ul>	<ul style="list-style-type: none"> <li>Check the trap and inlet piping for restrictions.</li> </ul>
Pump short-cycles.	<ul style="list-style-type: none"> <li>Plugged vent, or quick-vent in use.</li> </ul>	<ul style="list-style-type: none"> <li>Be sure that an unrestricted vent at least 1-1/4" in diameter is in use. Quick-vents shall not be used.</li> </ul>
	<ul style="list-style-type: none"> <li>Defective switch.</li> </ul>	<ul style="list-style-type: none"> <li>*Remove access cover and check that float is free to move. If build-up restricts float, clean and reinstall. If defective, replace switch.</li> </ul>
	<ul style="list-style-type: none"> <li>Check valve was not installed, is stuck open, or is leaking.</li> </ul>	<ul style="list-style-type: none"> <li>Remove and examine for freedom of operation and proper installation.</li> </ul>

Pump runs periodically when fixtures are not in use.	• Check valve was not installed, is stuck open, or is leaking.	• Remove and examine for freedom of operation and proper installation.
	• Faucets are dripping.	• Repair faucets to eliminate dripping.
Water or soap suds come out of vent pipe.	• Vent pipe is too short or too small in diameter.	• Be sure that an unrestricted vent at least 1- $\frac{1}{4}$ " in diameter is in use.
	• Defective switch.	• *Remove tank cover and check that float is free to move. If build-up restricts float, clean and reinstall. If defective, replace switch.
	• Rate of in-flow exceeds pump output.	• Use valve on the inlet to reduce rate of inflow.
Pump operates noisily.	• Foreign objects in impeller cavity.	• *Disassemble the receiver and bottom base of pump. Remove foreign material. Reassemble.
	• Piping to house structure is too rigid.	• Replace a portion of the discharge pipe with rubber hose to absorb noise.

Figure 2



### 3 Year Limited Warranty

Liberty Pumps, Inc. warrants that pumps of its manufacture are free from all factory defects in material and workmanship for a period of 3 years from the date of purchase. The date of purchase shall be determined by a dated sales receipt noting the model and serial number of the pump. The dated sales receipt must accompany the returned pump if the date of return is more than 3 years from the "CODE" (date of manufacture) number noted on the pump nameplate.

The manufacturer's obligation under this Warranty shall be limited to the repair or replacement of any parts found by the manufacturer to be defective, provided the part or assembly is returned freight prepaid to the manufacturer or its authorized service center, and provided that none of the following warranty-voiding characteristics are evident.

The manufacturer shall not be liable under this Warranty if the product has not been properly installed; if it has been disassembled, modified, abused or tampered with; if the electrical cord has been cut, damaged or spliced; if the pump discharge has been reduced in size; if the pump has been used in water temperatures above the advertised rating, or water containing sand, lime, cement, gravel or other abrasives; if the product has been used to pump chemicals or hydrocarbons; if a non-submersible motor has been subjected to excessive moisture; or if the label bearing the serial, model and code number has been removed. Liberty Pumps, Inc. shall not be liable for any loss, damage or expenses resulting from installation or use of its products, or for consequential damages, including costs of removal, reinstallation or transportation.

There is no other express warranty. All implied warranties, including those of merchantability and fitness for a particular purpose, are limited to three years from the date of purchase.

This Warranty contains the exclusive remedy of the purchaser, and, where permitted, liability for consequential or incidental damages under any and all warranties are excluded.

Low level float switch for DWT  
High level float switch for WWT



# Flygt ENM-10 liquid level regulators

TRIED-AND-TRUE SIMPLICITY

## SHOP DRAWING

Reviewed by: Samuel Charbonneau

Date: 17 juin 2016

Reviewed ☒

Reviewed as noted ☐

Resubmit ☐

Out for approval

SIFEC NORTH INC.

**FLYGT**  
a xylem brand

# So simple, yet so reliable

Proper level regulation is critical for operational reliability. Lack of proper regulation can cause improper operation, pump damage or, in the worst case, overflow that results in environmental and economic consequences. With over a decade of experience and countless satisfied users, the natural choice for level regulation is the Flygt ENM-10.

## Simple, reliable and effective

The Flygt ENM-10 level regulators are the ideal choice for most level control applications, such as wastewater pumping stations and ground water or drainage pumping. When the liquid level reaches the regulator, the bulb tilts, activating the internal microswitch, which starts or stops a pump or triggers an alarm device.

## Practically maintenance free

The outer casing of Flygt ENM-10 level regulators are resistant to most aggressive liquids. The cable material prevents buildup of deposits and other impurities. Rather than floating on the surface, ENM-10 hangs immersed in the liquid. This prevents the cables from tangling when several regulators are used.

Xylem testing indicates Flygt ENM-10 level regulators last several times longer than most standard level regulators. This ensures reliable operation and a low degree of maintenance, thereby keeping service costs down to a minimum over the life cycle.

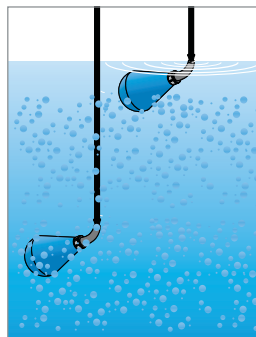
## Environmentally friendly

The Flygt ENM-10 level regulator contains no harmful or toxic materials such as lead or mercury and does not require the use of any adhesives. All plastic components are welded and screwed together.

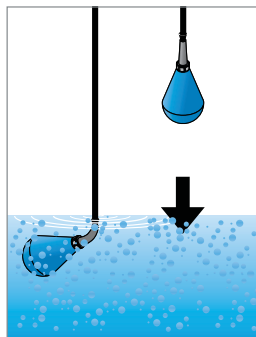


In a two-pump station, four level regulators are generally used. One is positioned at the stop level, one at each pump's start level, and the fourth regulator is used to trigger a high level alarm.

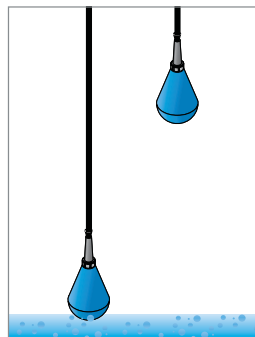
## Operating principle



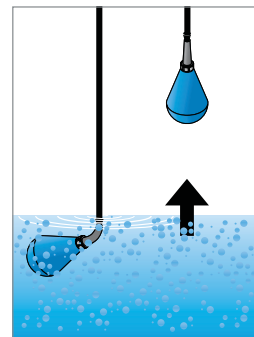
1. Media to be pumped reaches the pre-set level and tilts the upper regulator, which signals the start of the pumping process.



2. The pumping process drains the media.



3. The pumping process stops when the lower regulator returns to the vertical position and signals a stop.



4. The media level begins to rise, starting the process again.



### With a variety of installations in mind

The Flygt liquid level regulator comes in two main versions, standard and Ex-approved. Depending upon the media and type of installation, the Flygt ENM-10 is available for a broad range of liquid densities and with many cable lengths from which to choose.

### Features



#### Watertight cable

Encases and protects power supply to the microswitch.

#### Bending relief (protective sleeve)

Enables watertight, oil-resistant cable entry.

#### Operational mechanism

Initiates pump start and pump stop through the microswitch when the Flygt ENM-10 tilts or resumes its original position. Delivers reliable performance under all operating conditions including the slow movements often found in stormwater or rainwater installations.

#### Microswitch

Provides proven quality, performance and reliability for all operating conditions, including switching low currents.

### Accessories



#### Flygt ENM-10 cable holder

Dedicated accessory that reduces the cable wear. Sold separately or as package with the Flygt ENM-10.

#### Flygt Ex safety barrier

This two-channel safety barrier protects against overvoltage for liquid level regulators. Required when Flygt ENM-10s are to be used in Ex-installations.

### Technical data

	Standard version	Ex-approved version
Cable lengths	6, 13, 20, 30 or 50 m* (20, 42, 65, 100 or 167 ft.)	6, 13, or 20 m (20, 42 or 65 ft.)
Liquid density	Between 0.95 and 1.10 g/cm <sup>3</sup> *	Between 0.95 and 1.10 g/cm <sup>3</sup>
Materials	Body: Polypropylene Bending relief: EPDM rubber Cable: Special compound PVC & NBR/PVC	Body: Conductive polypropylene/carbon black Bending relief: NBR/PVC rubber Cable: NBR/PVC
Liquid temperature	Min. 0°C (32°F) Max. 60°C (140°F)	Min. 0°C (32°F) Max. 60°C (140°F)
Ingress protection	IP 68	IP 68
Electrical range (microswitch)	Interrupting capacity: AC: 250 V/10 A resistive load AC: 250 V/3 A inductive load at $\cos\phi = 0.5$ DC: 24 V/ 10mA min., 6 A max. Note that local regulations may limit the voltage.	Interrupting capacity: AC: 250 V/10 A resistive load AC: 250 V/3 A inductive load at $\cos\phi = 0.5$ DC: 24 V/ 10mA min., 6 A max. Note that local regulations may limit the voltage.
Approvals	CE, CSA, SEMKO, NEMKO, DEMKO	CE, SEMKO, NEMKO, DEMKO, ATEX/IECEX

\*Other cable lengths and liquid densities available upon request.

The Flygt ENM-10 is a part of the Level Sensor product range from Xylem, covering most level measuring needs.

## Xylem ['zɪləm]

- 1) The tissue in plants that brings water upward from the roots
- 2) A leading global water technology company

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to [xyleminc.com](http://xyleminc.com)