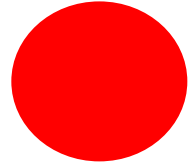




**Cascade
Aqua-Aire®**



Contour Bathing System Parts Breakdown & Assemblies



Side Entry - Side Entry High Seat - End Opening - Swivel Lift Tub

360748C Revision "D" 9/26/18

Penner Patient Care

101 Grant Street

Aurora, NE 68818

**For Service Please Call:
1-800-732-0717 or 1-866-736-6377**

Visit Our Web Site: <http://pennerbathingspas.com/>

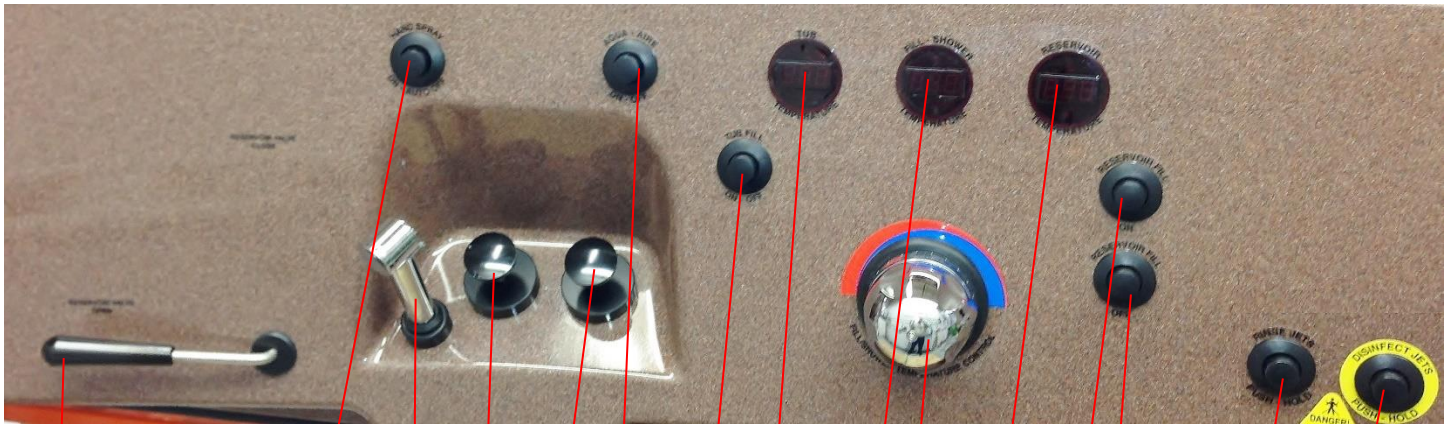
Table of Contents

Cascade Contour Controls Identification	3
Control Panel Parts	4
Temperature Readout.....	4
Rada 320 Mixing Valve Service Component Breakdown & Removal	5
Rada 320 - Mixing Valve Adjustment.....	6
Rada 222 - Mixing Valve Parts (Minnesota Only)	7
Rada 222 Mixing Valve Adjustment	7
Checking for the Correct Dilution of Disinfectant Solution	8
Cascade Contour Electrical Kit	9
Timer Adjustments Explanation.....	9
Cabinet Outlets	10
Reservoir Release Valve	10
Shower (by-pass) Hose Connection	10
Bottle Tray and Check Valves.....	11
Solenoid Valves Identification.....	11
Solenoid Valve Breakdown	12
Disinfectant Injector Breakdown	12
Hot and Cold Water Supply.....	13
Plumbing Hoses.....	13
Dispenser Pumps.....	14
Air System	15
Blower & Filter	15
Inside Tub Components Drain and Temperature Probe.....	16
Water Doors with lock	16
Side Opening Water Door Internal Parts	17
Water Door Handle (Side and End Opening)	17
End Opening Door Parts.....	18
End Opening Door Internal Parts	18
Plumbing Drain and Overflow.....	18
Temperature Probe Assembly	19
Drain and Overflow Complete Assembly	19
Swivel Lift Actuator Limit Switch Parts	20
Swivel Lift Actuator Breakdown.....	20
Swivel Lift Chair Components	21
Swivel Lift Scale	21
Swivel Lift Electrical Box.....	22
Swivel Lift Scale Calibration Procedure	23
Installation Kit Parts.....	24

Notice:

If you do not find the part that you need in this manual, contact your distributor or Penner Patient Care at the phone numbers listed on the front cover of this manual for further assistance.

Cascade Contour Controls Identification



RESERVOIR VALVE
OPEN/CLOSE
HAND SPRAYER
ON/ AUTO OFF BUTTON

HAND SHOWER

BATH OIL DISPENSING PUMP

SHAMPOO DISPENSING PUMP

AQUA-AIRE ON/OFF BUTTON

TUB FILL ON/OFF BUTTON

TUB TEMPERATURE READ-OUT

FILL-SHOWER TEMPERATURE READ-OUT

FILL-SHOWER TEMPERATURE CONTROL

RESERVOIR TEMPERATURE READ-OUT

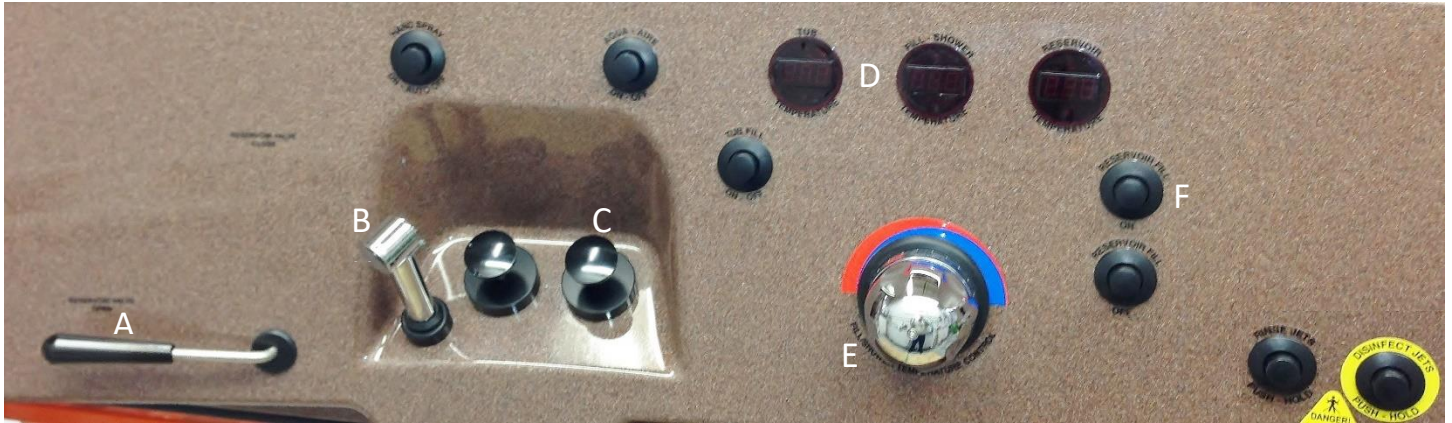
RESERVOIR FILL - ON

RESERVOIR FILL - OFF

RINSE JETS BUTTON

DISINFECT JETS BUTTON

Control Panel Parts



- A. 370325 - Handle - Reservoir Lever
- B. 140106CHT - Hand Sprayer - Triggered Chrome
- C. 350200 - Dispenser Pump - Complete (2 ea) See “Dispenser Pump Parts” - Below
- D. 350535M-SER -Temperature Readout (3 ea) See “Temperature Readout” section below
- E. Mixing Valve - See “Rada 320 Mixing Valve Service Component Breakdown” - Below
For Minnesota Systems, See “Rada 222 - Mixing Valve Parts” - Below
- F. 350495 - Air Transmitter (Push Button) (7 ea)

Temperature Readout



Front



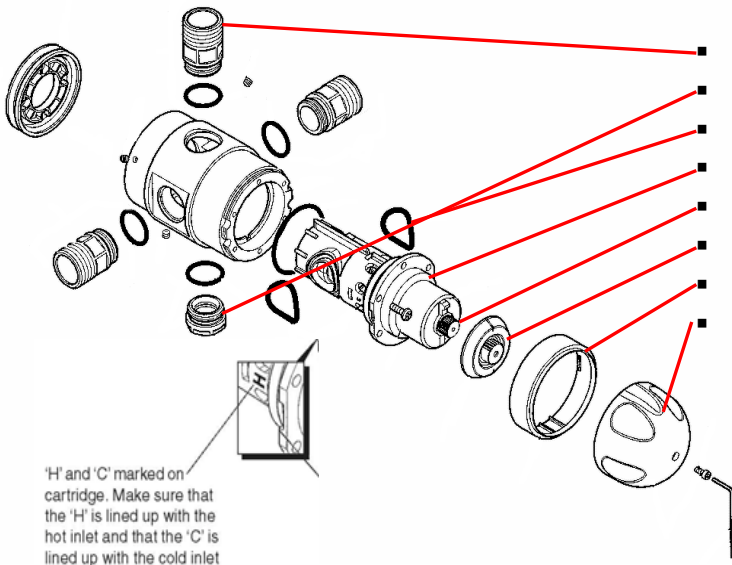
Back

350535M-SER Thermometer Readout - Service Replacement

To replace a thermometer, remove the two nuts on the back and slide through the front. The leads are connected inside the electrical kit and temperature probes. The thermometer can be calibrated by adjusting the blue dial on the back.

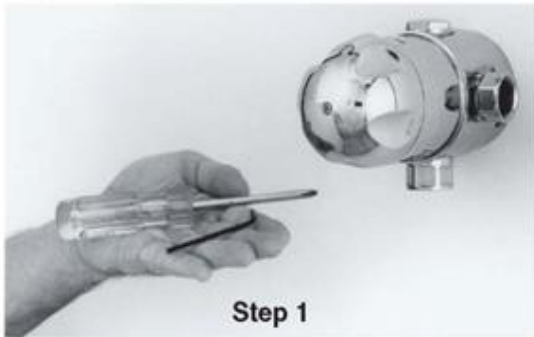
Rada 320 Mixing Valve Service Component Breakdown & Removal

350150 – Complete Mixing Valve – Rada 320



'H' and 'C' marked on cartridge. Make sure that the 'H' is lined up with the hot inlet and that the 'C' is lined up with the cold inlet

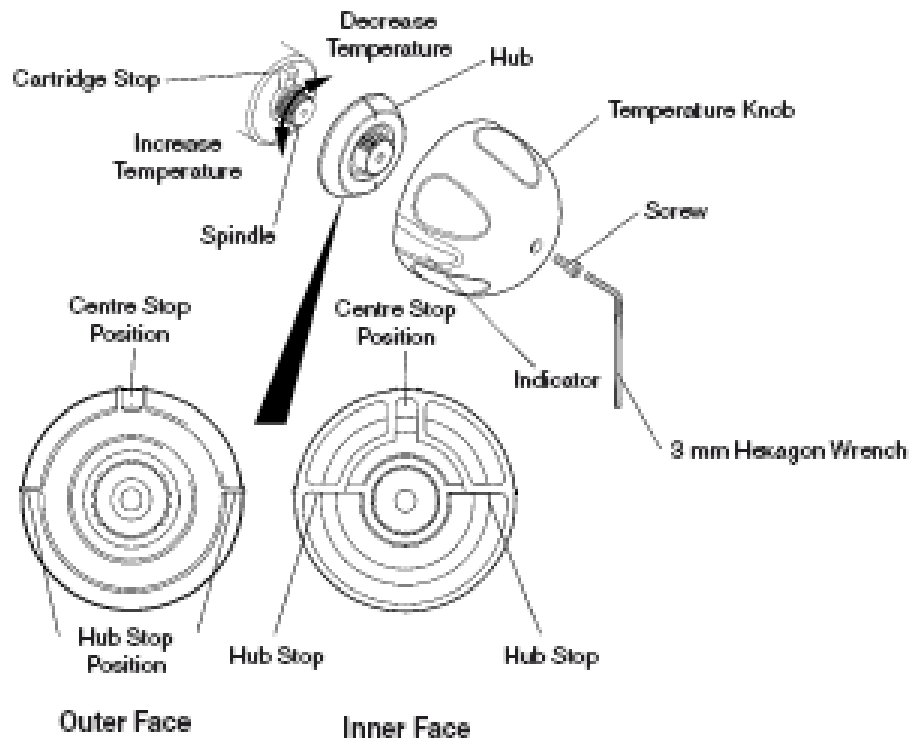
- 350157 - Inlet/Outlet Adapter, 3/4 Female (3 ea)
- 350163 - Cap (with O-ring)
- 350158 - Seal Pack (includes all O-rings)
- 350151 - Cartridge – with O-rings Rada 320
- Temperature Spindle
- 350154 - Hub
- 350152 - Temperature indicating ring
- 350162 - Knob Pack (Knob, screw, and wrench)
- 350159 – Screw Pack (includes all screws)



The Rada 320 Mixing Unit features a single "sealed for life" disposable internal cartridge. With an allen key (3 mm) to remove the handle retaining screw and a phillips head screwdriver to remove the 6 cartridge retaining screws, the entire mixing unit can be serviced and/or replaced in approximately 10 minutes.

Note: All seals are pre-lubricated. If further lubrication is required, use only silicone based lubricants on this product. Do not use petroleum based lubricants.

Rada 320 - Mixing Valve Adjustment

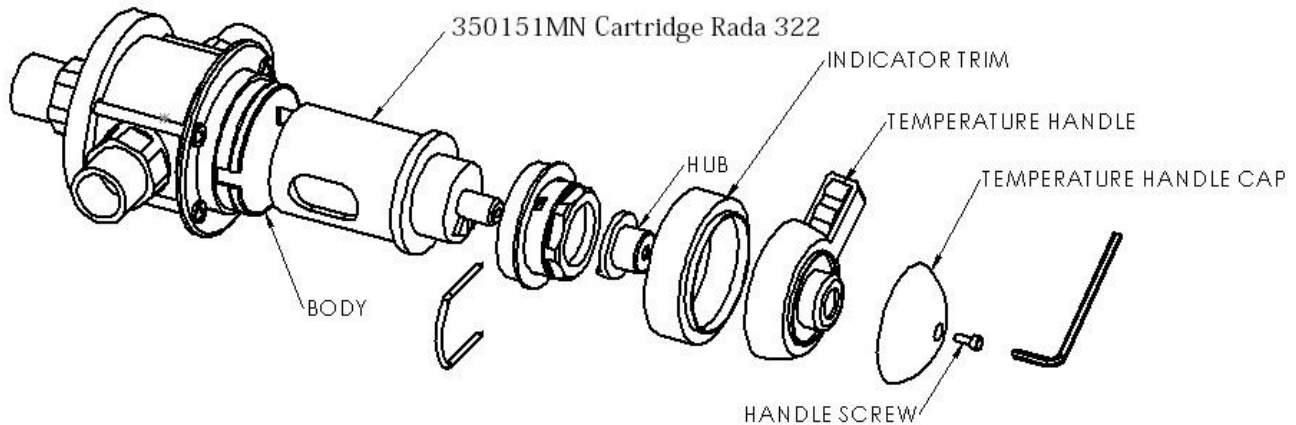


1. Remove the temperature knob screw using a 3 mm hexagonal wrench. Remove the temperature knob.
2. Pull off the black polymer hub assembly which may inadvertently remain attached to the inside of the temperature control handle. This is a “push fit” and can be “levered” out using a thin blade screwdriver or pliers.
3. Rotate the spindle until required maximum blend temperature is obtained at outlet point (clockwise = decrease temperature, counterclockwise = increase temperature).

When resistance is felt do not use force to turn any further, as this can damage the internal parts.

4. Once the desired maximum blend temperature is achieved, re-fit the hub without disturbing the spindle: Position the hub so that the hub stop comes up against the cartridge stop preventing any further rotation in a counterclockwise direction. Check that blend temperature has not altered.
5. Refit the temperature knob. Make sure that the indicator points to 9 o'clock.

Rada 222 - Mixing Valve Parts (Minnesota Only)



Rada 222 Mixing Valve Adjustment

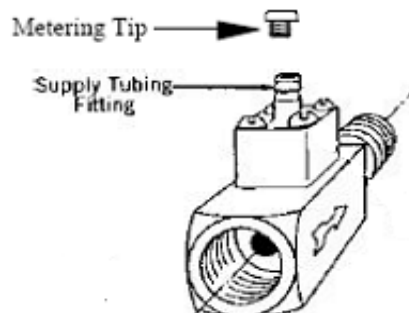
1. Check that an adequate supply of hot water is available at the hot inlet of the mixing valve.
2. Temperatures should always be checked using a thermometer with proven accuracy.
3. Remove the handle screw, temperature handle cap, temperature handle, and indicator trim using a 3 mm hexagonal key.
4. Pull off the hub.
5. Using the temperature hub, rotate the spindle until the required maximum blend temperature is obtained at the discharge point (rotate clockwise to decrease temperature).
If resistance is felt do not use force to turn any further, as this can damage the internal parts.
6. Once the desired maximum blend temperature has been achieved, refit the hub so that the lug is against the side of the stop on the cartridge face, thus preventing counter clockwise rotation past the maximum temperature stop.
7. Check that blend temperature has not altered.
8. Refit the indicator trim, handle, and cap. Then secure with the handle screw using a 3 mm hexagonal key.

Checking for the Correct Dilution of Disinfectant Solution

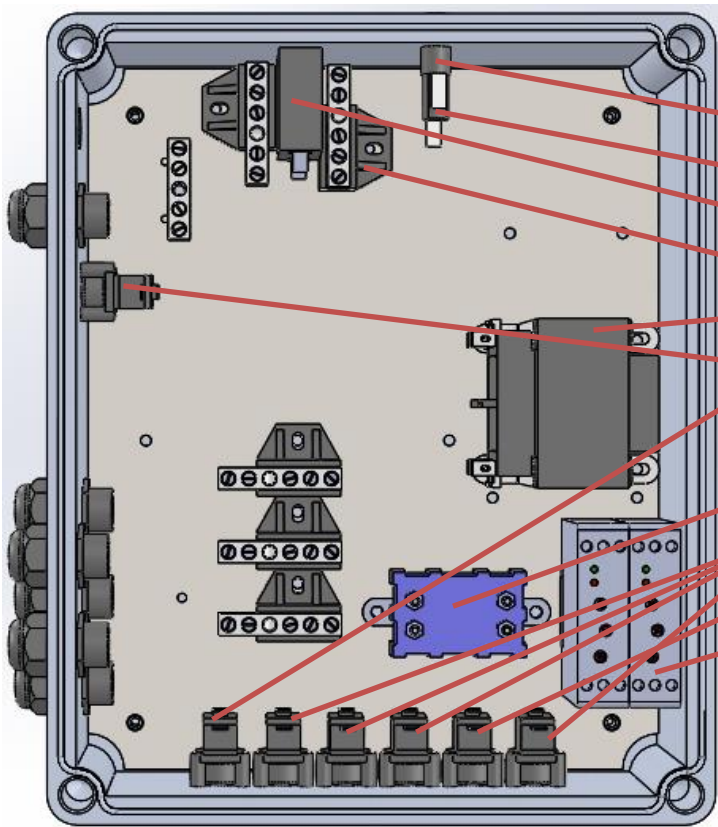
1. Check to see if a container of disinfectant has been installed. Assure that the disinfectant tube is inserted into the container and connected to the Injector with black metering tip. See the drawing of the square injector (204C) below for location of the metering tip.
2. Visually check if disinfectant is in the hose all the way to the injector. If not, the disinfectant can be brought to the injector pushing the disinfect button on the tub until disinfectant fills the hose all the way to the injector.
3. With the drain open, push the fill button on the tub to check the water temperature. Adjust the temperature control to read 60 degrees to 65 degrees (F). When the temperature remains in the above range, turn off the fill button.
4. Allow the water to drain from the tub.
5. Close the tub drain, push and hold the disinfect button long enough to bring the disinfectant mixture into the tub then release the disinfect button.
6. To test the solution in the foot-well of the tub with the Dilution Check Kit, order (140481). A dispenser of test paper (part number 219201) is included in this kit.
7. Tear off a strip of test paper from the dispenser and immerse in the solution for at least (10) seconds. Compare the color that the test paper turns with the chart on the dispenser. If the test paper matches the green in the range of 600-800, the disinfecting solution is the correct strength.
8. If the color of the test paper matches a color on the dispenser chart in the 800-1000 range, install the next smaller metering tip. See metering tip chart for color reference. The injector is furnished with a metering tip installed. The Metering tips listed below are included in the Dilution check kit, (Part number 140481).
9. If the color of the test paper matches a color on the dispenser chart in the 0-400 range, install a metering of the next larger size and re-test.

METERING TIP CHART APPLICABLE TO THE AQUA-AIR JET DISINFECTATION INJECTOR

<u>Color</u>	<u>Part Number</u>	<u>Metering Tip Size</u>	<u>Solution Strength</u>
Black	1404824	Large	Preferred Strength
Blue	1404822	Medium	Less Strength



Cascade Contour Electrical Kit



- 350533 - Fuse - 3ag 1 amp Slo-Blo
- 350530 - Fuse Holder
- 350525 - Circuit Breaker 20 amp
- 140926 - Neutral Bar with Insulator (5 ea)
- 140952 - Transformer 24 volt 5 amp
- 350510 - Air Switch TBS 310 (2 ea)
(Tub Fill & Blower)
- 370305 – Load Pak
- *350505 - Air Switch TBS 362A
- 370505 - Air Switch TBS 302 (Reservoir Fill Off)
- 350545-09 – Timer (2 ea)

*350505 - Air Switch TBS362A replaced TBS304

NOTE: A spare fuse is taped inside the Lid in case it is needed.

Timer Adjustments Explanation

The timers located in the lower right hand corner of the Electrical Kit (shown above). It is adjusted by setting the timer sector and value. An example is the **Time Sector** setting of 100S = 100 seconds and with the **Time Value** set at 5, the timer is now set for 50 seconds. Another example is the **Time Sector** setting of 1000S = 1000 seconds and with the **Time Value** set at 5, the timer is now set for 500 seconds.

Cabinet Outlets



- 360522P - Outlet Spout - Contour
- 360305P - Reservoir Outlet
- 350220 - Dispenser Spout -(2 ea) Oil and Soap

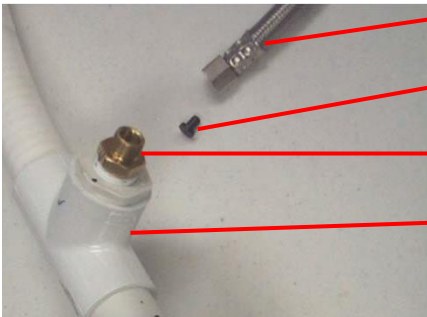
VIEW UNDER CABINET
FRONT EDGE, ABOVE TUB

Reservoir Release Valve



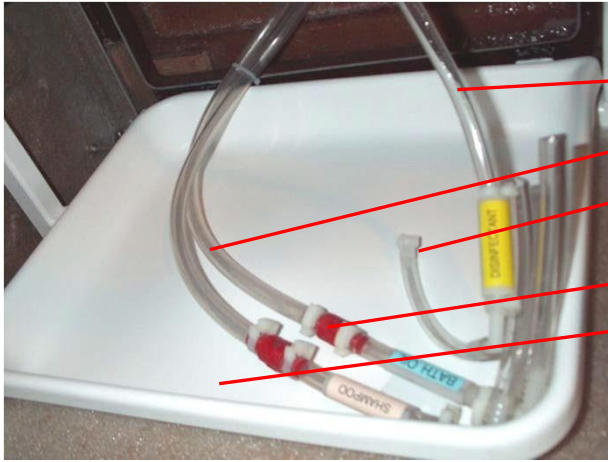
- 370412 - Butterfly Valve - 2"
- 370435 - Coupling, 2" PVC Flex
- Reservoir Overflow
- Shower (by-pass) Hose connection - See below

Shower (by-pass) Hose Connection



- 360492 - Hose - 3/8" x 60" SS
- 360439 - Orifice - Shower Vent (Inside Hose)
- 360667 - Adapter-1/2" M x CMPR 3/8 Brass
- Overflow Plumbing for Reservoir

Bottle Tray and Check Valves



- 140261 - Hose 1/4" ID Clear
- 350276 – 3/8 ID Clear Tubing
- 140489 - Foot Strainer (clear)
On end of Disinfectant Hose
- 350235 - Check Valve (2 ea)
- 360866 - Tray - Bottle

Solenoid Valves Identification

Penner Plumbing systems have the solenoid connections marked with the colors indicated below to easily identify correct connection and to improve communications in the field for service when diagnosing solenoid problems.

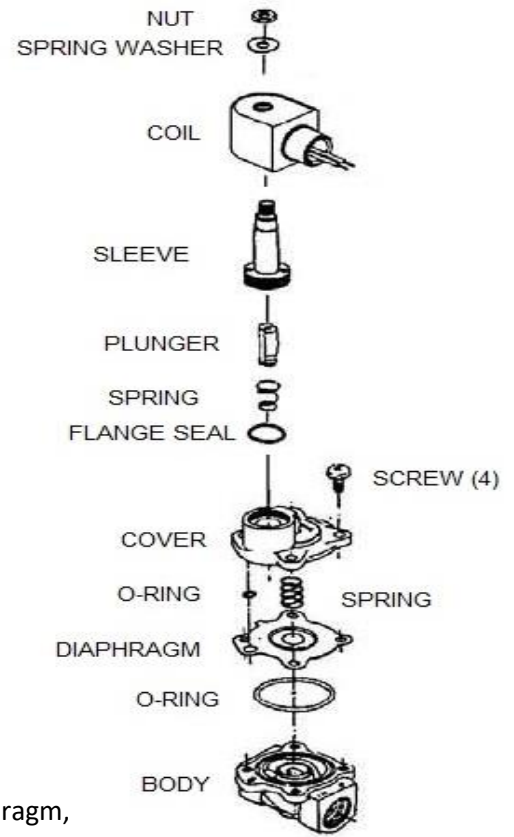


- 144105 - Vacuum Breaker Watts 288A-3/8 (3 ea)
- 370300 - Float Switch
- 140124 - Solenoid Valve (5 ea)

Colors near Solenoid connections:

- Reservoir Fill Gray 
- Shower Sprayer Red 
- Rinse Jets Blue 
- Disinfect Jets Yellow 
- Tub Fill Green 

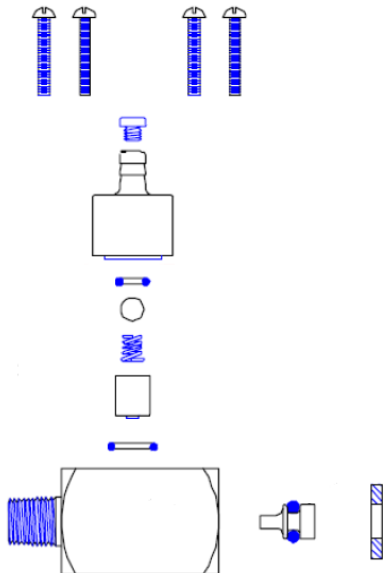
Solenoid Valve Breakdown



140124 - Solenoid Valve - Complete

1401308 - Rebuild kit for Solenoid Valve (Includes all O-rings, a diaphragm, all springs, a plunger, and a spanner tool for removing Sleeve).

Disinfectant Injector Breakdown

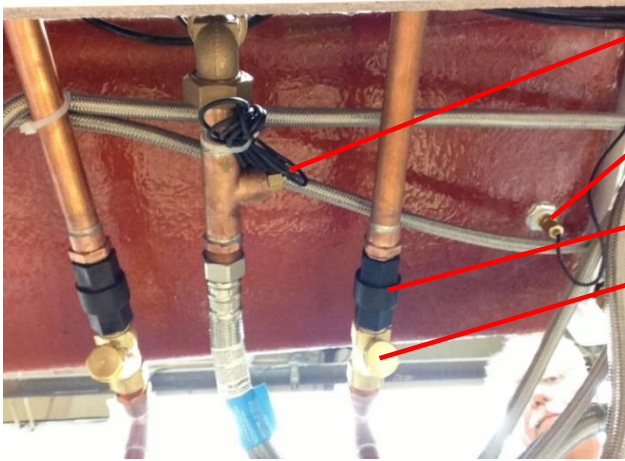


1404804 - Injector - Complete



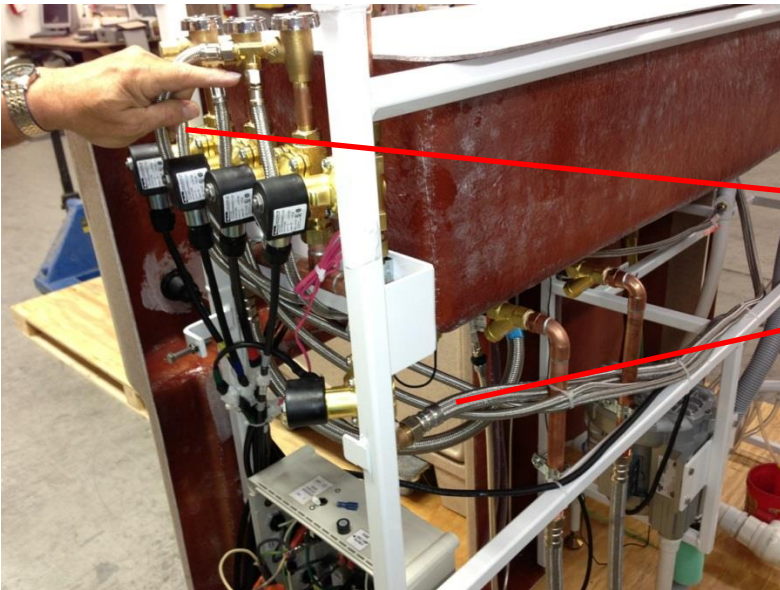
Hot and Cold Water Supply

View: up into front cabinet access door opening.



- Temperature probe location for fill-shower temperature readout.
- Temperature probe location for reservoir temperature readout.
- 140474- Check Valve (2 ea on water supplies)
- 350315 - Screen 1/2" 40 mesh in-line (2 ea)

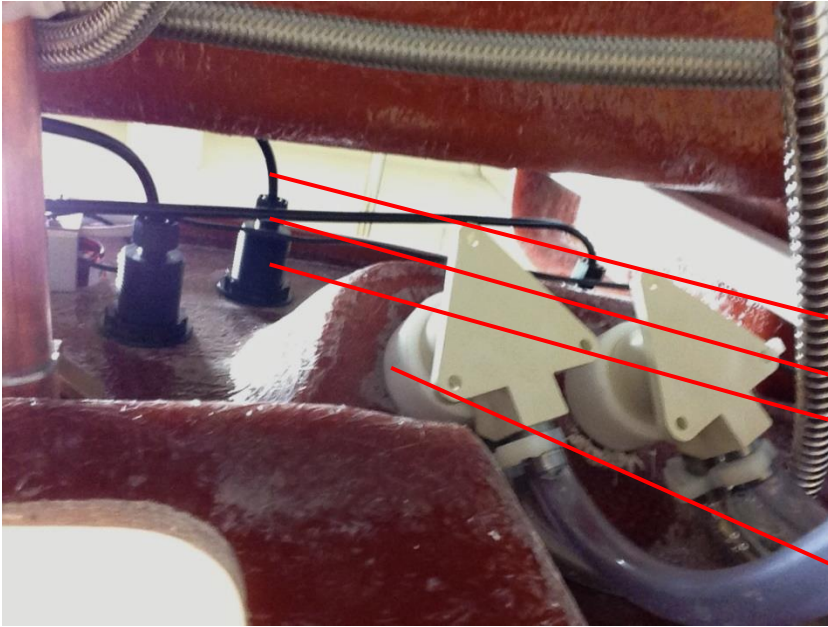
Plumbing Hoses



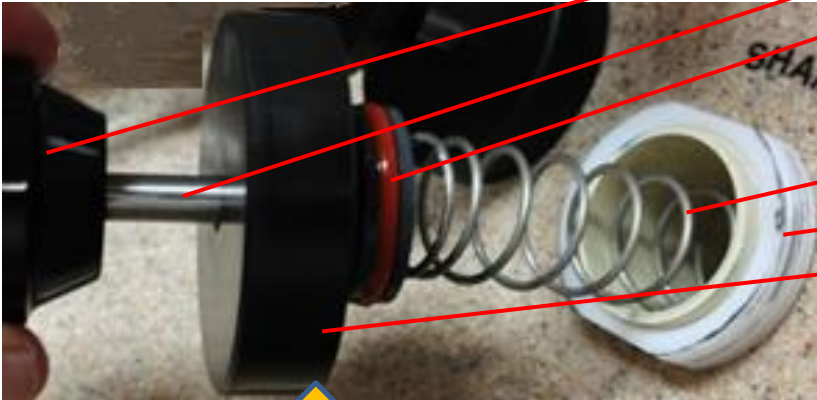
- 360491 - Hose - 3/8" X 48" SS (1 ea)
Shower Sprayer Hose
- 360492 - Hose - 3/8" X 60" SS (1ea)
Shower Bypass Hose
- 360185 - HOSE - 3/8" X 72" SS (2 ea)
Rinse and Disinfect
- 390100 - Hose - 72" Braided SS (1 ea)
Tub Fill

Dispenser Pumps

View looking up through the cabinet's
front access door opening

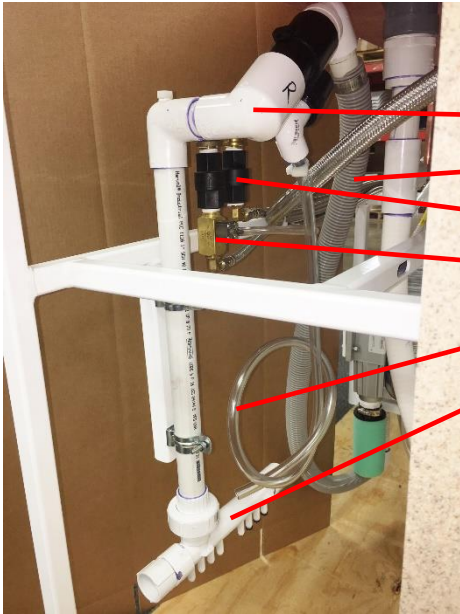


- 040955 - Tubing 1/8" Air line
- 350497 - Tubing strain relief
- 350495 - Air Transmitter - Black Raised
- 350200 - Dispenser Pump Complete
(Includes the Following)
- 350205 - Spacer, Pump Mount
- 350207 - Knob Black
- 350202 - Piston Assy W/"O"Ring
- 350201 - "O" Ring Red
- 350203 - Ball - Check for Dispenser Pump
(Not Shown)
- 350204 - Spring-Dispenser
- 350210 - Nut, Pump Mount
- 350215 - Cap, Dispenser Pump



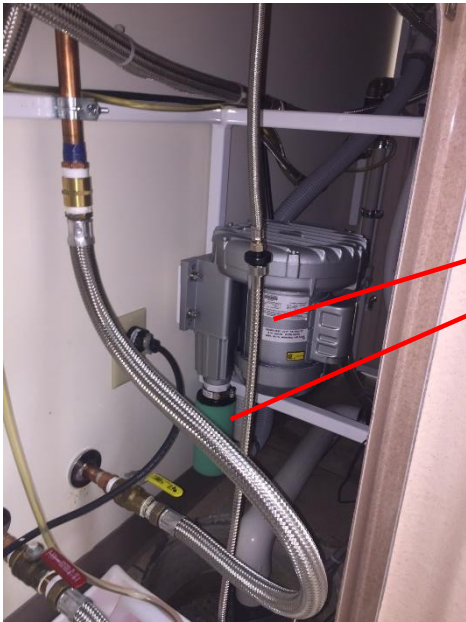
LARGE THREADS DO NOT CROSSTHREAD

Air System



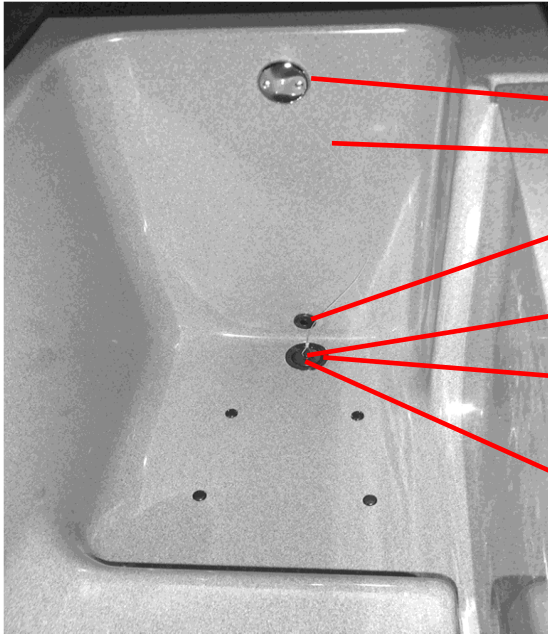
- 360404C - Kit - Air Check Valve Replacement Contour
- 390409 - Hose Vac 1-1/4 ID
- 140474 - Check Valve-1/2 FxF – Black Plastic
- 1404804 - Injector – Dema
- 350276 - Clear Tubing 9/16" OD X 3/8"ID
- PVC Mainfold

Blower & Filter

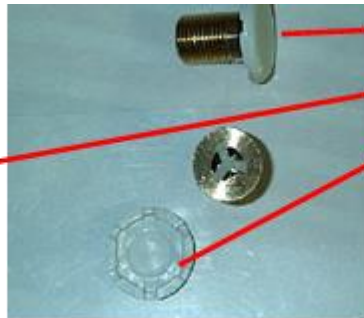


- 350602 - Blower Air Gast
- 350601 - Filter - Air

Inside Tub Components Drain and Temperature Probe



- 350172 - Escutcheon, Chrome
- 350177 - Drain Plug Replacement Kit
- 360630-14 - Adapter - Temp Probe
- 1050401 - Base Shoe Basket Brass
- 1050345 - Washer - 1 7/8 x 2 1/8 x 1/16 Rubber
- 350391 - Cross Hair Drain Screen (In Drain)



- 350135 - Jet - Brass
- 350134 - Kit - Internal Jet Replacement
- 360646 - Replacement Cap - White 360644 - Replacement Cap - Black (not shown)

Water Doors with lock

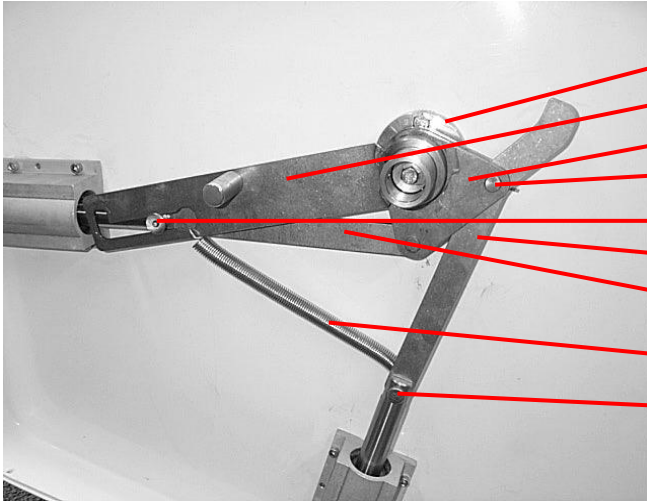


- 360125K - Door Seal Replacement Kit

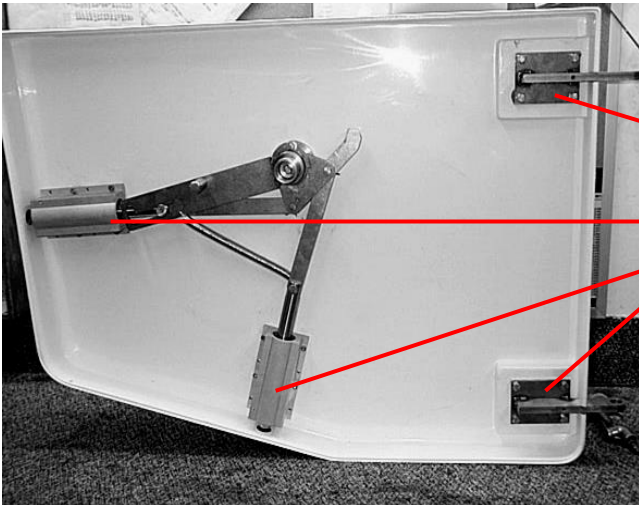
Includes everything needed to replace the door seal. It works for either the end opening or the side opening water doors.

(An End Opening Door is shown at the left.)

Side Opening Water Door Internal Parts

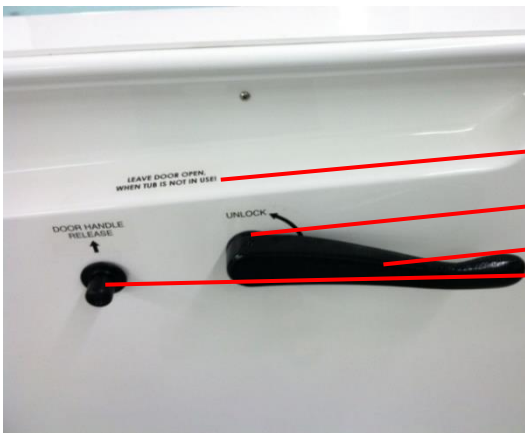


- 360280 - Door Lock Spindle
- 360315 - Secondary Lock Assembly
- 360320 - Hub Assembly
- 360425 - Clevis Pin - 3/8 X 1" (2ea)
- 360310 - Pin - 2nd Lock
- 360331 - Linkage - Off-Set
- 360326 - Linkage - Straight
- 360435 - Spring
- 360430 - Clevis Pin - 1/2 X 1 1/4" SS



- 360335 - Hinge Assembly (2 ea)
- 360101 - Bearing, Linear Modified

Water Door Handle (Side and End Opening)



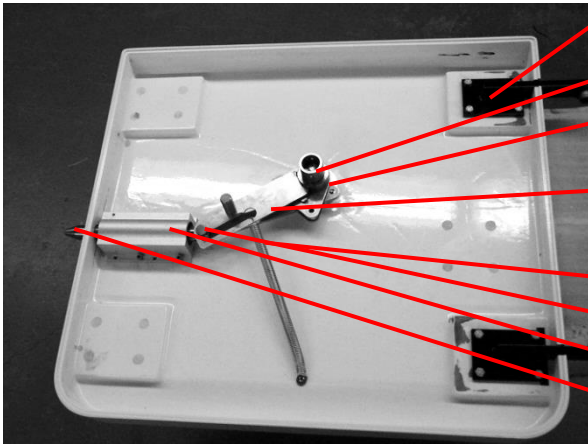
- 360720-12 - Label - Leave Door Open
- 360440 - Roll Pin - 1/4 X 1 3/4" SS
- 360297 - Handle Cast Complete
- 360309 - Secondary Lock Knob

End Opening Door Parts



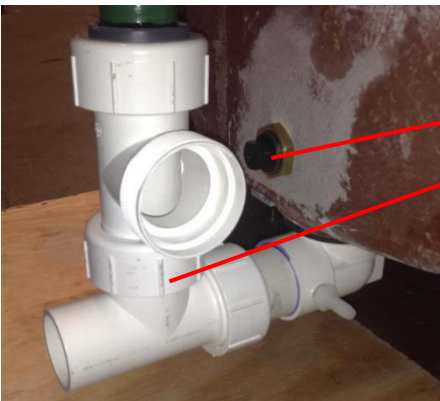
- 360336E - Hinge Assembly – (Tub End Opening)
- 360276 - Hinge Spacer
- 360250 - Lock Bushing

End Opening Door Internal Parts



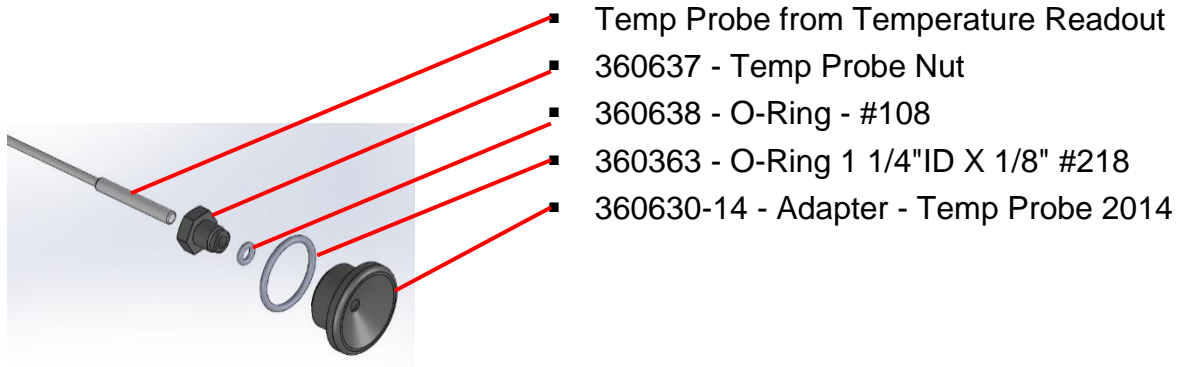
- 360335E - Hinge Assembly (RH Hinge) (2 ea)
- 360335EL -Hinge Assembly (LH Hinge) (2ea)
- 360280 - Door Lock Spindle
- 360320E -Hub Assembly-EO (RH)
- 360320EL - Hub Assembly EO (LH)
- 360315E - Secondary Lock Assembly-EO
- 360315EL - Secondary Lock Assembly-EO LH
- 360435 - Spring
- 360310 - Pin - 2nd Lock
- 360101 - Bearing, Linear Modified
- 360302 - Door Lock Bolt - Short

Plumbing Drain and Overflow



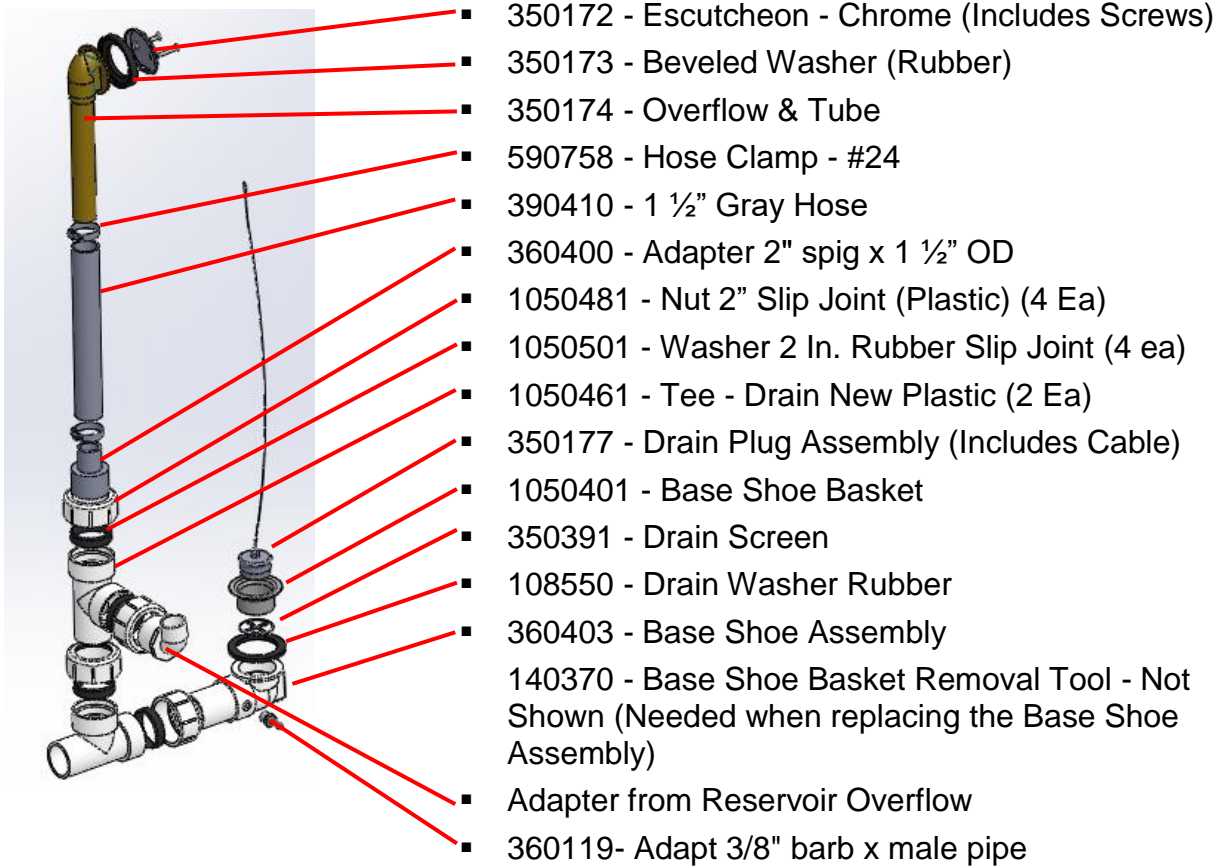
- Temperature Probe Assembly - See Below
- Tub Drain assembly - See Below

Temperature Probe Assembly



- Temp Probe from Temperature Readout
- 360637 - Temp Probe Nut
- 360638 - O-Ring - #108
- 360363 - O-Ring 1 1/4"ID X 1/8" #218
- 360630-14 - Adapter - Temp Probe 2014

Drain and Overflow Complete Assembly



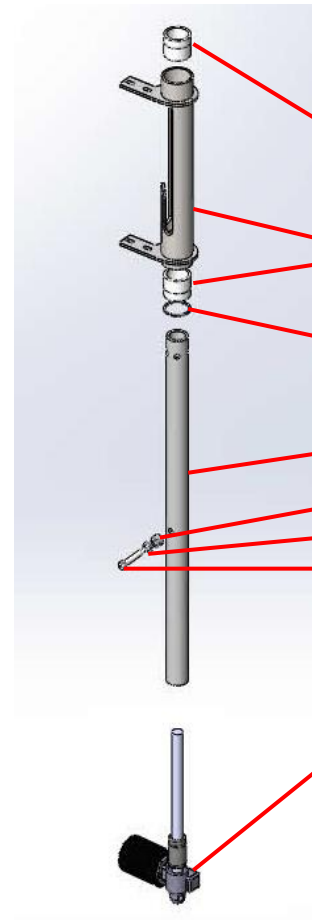
- 350172 - Escutcheon - Chrome (Includes Screws)
- 350173 - Beveled Washer (Rubber)
- 350174 - Overflow & Tube
- 590758 - Hose Clamp - #24
- 390410 - 1 1/2" Gray Hose
- 360400 - Adapter 2" spig x 1 1/2" OD
- 1050481 - Nut 2" Slip Joint (Plastic) (4 Ea)
- 1050501 - Washer 2 In. Rubber Slip Joint (4 ea)
- 1050461 - Tee - Drain New Plastic (2 Ea)
- 350177 - Drain Plug Assembly (Includes Cable)
- 1050401 - Base Shoe Basket
- 350391 - Drain Screen
- 108550 - Drain Washer Rubber
- 360403 - Base Shoe Assembly
- 140370 - Base Shoe Basket Removal Tool - Not Shown (Needed when replacing the Base Shoe Assembly)
- Adapter from Reservoir Overflow
- 360119- Adapt 3/8" barb x male pipe

Swivel Lift Actuator Limit Switch Parts



- 480367 - Proximity Switch - Actuator (Upper Limit)
- 340610 - Proximity Switch - Actuator (Lower Limit)
- 480368 - Switch Limit - Actuator (No-Load)
- 340590 - Linkage
- 340572 - Clevis Pin with cotter pin

Swivel Lift Actuator Breakdown



- 360420 - Bearing
- 340525 - Outside Tube Assembly - Post
340525L - LH Outside Tube Assembly - Post
- 340535 - Retaining Ring
- 340520 - Inside Tube
- 340581 - Roller
- 380575 - Washer 1/2 x 1/8 SS
- 380574 - Shoulder Screw 1/2 x 2 1/2 Modified
- 341122 - Actuator

Swivel Lift Chair Components



- 481150-2 - Chair brown w/o hole (Shown)
- 481151-2 - Chair brown w/hole
- 481150-1 - Chair blue w/o hole
- 481151-1 - Chair blue w/hole
- 481150-3 - Chair gray w/o hole
- 481151-3 - Chair gray w/hole
- 481160-2 - Arm rest - RH brown (Shown)
- 481160-1 - Arm rest - RH blue
- 481160-3 - Arm rest - RH gray
- 481161-2 - Arm rest - LH brown (Shown)
- 481161-1 - Arm rest - LH blue
- 481161-3 - Arm rest - LH gray

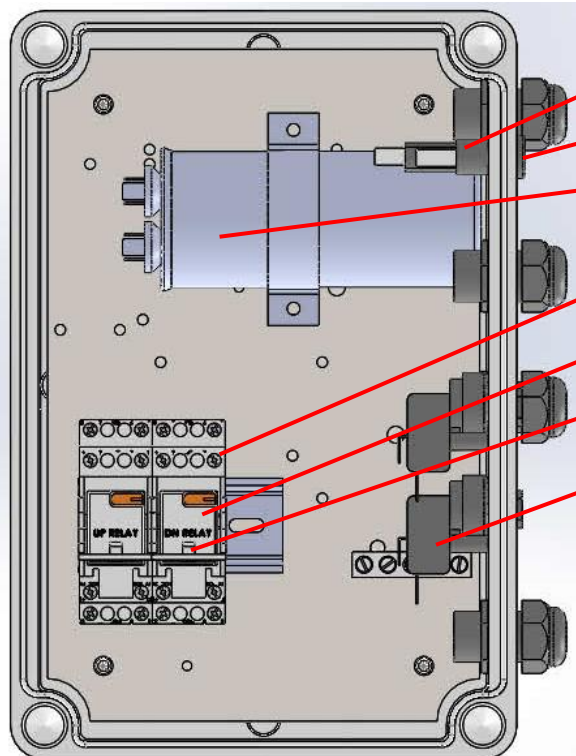
Swivel Lift Scale

Swivel Lift Electrical Kit If Applicable to your system (Located behind End Panel of Swivel Lift Tub)



- 390640 - Screw 1/4-20 x 1/2 PH TR HD SS
- 3411068 - Scale PSC48 Complete display (only)
Service Replacement
- 381198 - Printed Circuit Board only (Replacement)
- 360820 - Cover, lift scale arm
- 360830 - Cover, no scale lift arm
- 350495 - Air transmitter - black raised

Swivel Lift Electrical Box



- 350530 - Fuse Holder
- 340620 - Fuse - 3AG 3/8 amp Fast Blow
- 340115 - Capacitor - Post Tub Actuator
- 390530-09 - Base Blade Socket - 2ea
- 390540-09 - Relay for Actuator - 2ea
- 390545-09 - Retainer Clips - 2 ea
- *350505 - Air Switch TBS362A - 2ea

*350505 - Air Switch TBS362A replaced TBS304A.

Note: The Actuator System Schematic is inside the Electrical Kit Lid.

Note: This view is up side down for left hand tubs.

Swivel Lift Scale Calibration Procedure



It **is very important** that you use an absolutely accurate 25 lb. weight. If not, you will have variations in your patient weighing.

Requirements: Calibrated 25lb. weight.

1. To enter the calibration mode, first press and hold the "ON / ZERO" pad. While holding the "ON / ZERO" pad, press and hold the "LB / KG" pad. After approximately 3 (three) seconds the message on the display will change from "ZERO" to "CAL". Release both pads at this time and the display will show the "C 0" message.
2. Make sure the chair is empty and not in contact with any part of the tub and is *stable (not moving or vibrating). Press the "ON / ZERO" pad once again. The indicator will count down from "8" to "0". When finished, the indicator will show "C 25".
3. Place the 25lb calibrated weight on the chair, allow it to stabilize* and press the "ON / ZERO" pad once again. The indicator will again count down from "8" to "0" as before and then will read "25". Remove the weight and the indicator should read "0". The indicator then automatically returns to the normal weighing mode. Calibration is now complete.

*Failure to stabilize the unit during the calibration process may cause the scale to display an inaccurate weight or not permit calibration.

Installation Kit Parts

- 201900 - Snap Clamp Size 08 Nylon (1 ea)
- 400212 - Belt, Cascade 78" (2 ea)
- 390100 - Hose Assembly - 3/4 x 72" (2 ea)
(Fiber Washer Comes With Hose)
- 350889 - Key – Lock (6 ea)
- 360420 - Screw 3/8-16 X 2 1/2" Hex Head Tub To Cabinet (2 Ea)
- 140518 - Washers 3/8 Flat (4 ea)
- 655400 - Nut 3/8-16 Hex plt (Tub To Cabinet) (2 Ea)
- 140626 - 3/8" X 3 3/4" (Swivel Lift Tub Anchor) (1 Ea)
- 140627 - 3/8" X 5" Cabinet Anchors (2 ea)
- 350650 - Label- Warranty Registration
- 360745C - Cascade Contour Installation Manual
- 360748C - Label- Manual Cascade Contour Parts And Assembly
- 360750C - Cascade Contour Operation Manual

Your Penner Distributor and his personnel are trained to provide in-service instruction and maintenance information on your Cascade Bath System. If you have any questions about the operation or maintenance of your Cascade Bath System, please contact your Penner Distributor. For your nearest Penner distributor, contact

Penner Patient Care, Inc.

1-866-736-6377

OR

1-800-732-0717