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**POWERS  
PROCESS CONTROLS**

**PREVENTIVE MAINTENANCE**

**EVERY SIX MONTHS:** Check and adjust the maximum temperature setting (see instructions below).

**EVERY TWELVE MONTHS:**

1. Shut off water supply.
2. Open up checkstops.
3. Clean strainers (if any) and check for free movement of checkstop poppet.
4. Remove the bonnet and check for freedom of movement of internal components.
5. Test the thermostatic motor as described in Thermostatic Motor Testing Section
6. Replace seals if cracked, cut or worn.

**TROUBLESHOOTING**

What to look for if...

1. The flow of water is less than desired...
  - valves upstream from supply not fully open
  - low supply pressures
  - accumulation of lime deposits in hot water pipes, restricting the flow of hot water
  - checkstops not fully open
  - clogged strainer screens in the checkstops
2. Flow of water is completely shut off...
  - valves upstream from supply completely closed

**Hydroguard 420 Mixing Valves—**

- failure of cold water supply pressure (the 420 Hydroguard is designed to shut off on a cold water supply failure)
  - checkstops completely closed
3. Flow is untempered hot or cold water...
    - accumulation of lime deposits in hot water pipes, restricting the flow of hot water
    - thermostatic motor failure, replace with new thermostatic motor
    - hot and cold water supplies are connected to the wrong ports
  4. Flow of water continues when 420 Hydroguard is shutoff...
    - worn shutoff discs, replace shutoff discs
    - worn combination seat o-ring, replace o-ring and seat
  5. Maximum temperature specified for the 420 Hydroguard cannot be obtained...
    - accumulation of lime deposits in hot water pipes, restricting the flow of hot water
    - the concealed maximum temperature setting is not at its maximum adjustment
    - hot water supply temperature is too low
  6. Variable discharge temperature occurs...
    - extreme pressure variations in supply lines

**REPAIR KIT PART NOS.**

Problem	Recommended Type of Kit	Repair Kit No. Includes item numbers	Includes Items
<ul style="list-style-type: none"> <li>• Water leaks at valve stem and/or bonnet</li> <li>• Water leaks at valve shut-off</li> </ul>	Motor Replacement	227-338 18, 18A, 20, 23, 26, 29	Bonnet gasket, bonnet O-ring, packing rings, motor quad ring, shut-off disc, combination seat, O-ring, hot water disc
<ul style="list-style-type: none"> <li>• Variable or untempered discharge temperature</li> </ul>	Motor Replacement	227-343 (40–90°F) 227-339 (65–115°F) 227-342 (120–175°F) 18, 18A, 23–27, 30	Bonnet gasket, bonnet O-ring, motor quad ring, motor stem, shut-off disc retainer, shut-off disc, thermostatic motor, and motor sleeve
<ul style="list-style-type: none"> <li>• Water leaks at valve shut-off due to worn hot water seat</li> <li>• Variable or untempered discharge temperature continues after motor replacement</li> </ul>	Valve and Hot Water Seat Replacement	227-290 (model 1, 2, 3, 4) 227-340 (model 5, 6, 7, 8) includes items 18, 18A, 29, 32, 33, 34	Bonnet gasket, bonnet O-ring, combination seat O-ring, valve assembly, valve return spring, hot water seat
<ul style="list-style-type: none"> <li>• Water leaks at valve shut-off, shut-off disc and/or hot water seat have been replaced</li> </ul>	Combination Seat Replacement (6 GPM mixer)	227-341 18, 18A, 28, 29, 31	Bonnet gasket, bonnet O-ring, combination seat O-ring, combination seat
<ul style="list-style-type: none"> <li>• To increase capacity of mixer to 9 GPM (.06 l/s)</li> </ul>	High Capacity Kit	227-431 (model 5, 6, 7, 8) 18, 18A, 28, 29, 31–34	Bonnet gasket, bonnet O-ring, comb. seat O-ring, comb. seat, valve assembly, valve return spring, hot water seat, bonnet gasket, bonnet O-ring, comb. seat O-ring, comb. seat, valve assembly, valve return spring, hot water seat
<ul style="list-style-type: none"> <li>• To decrease capacity of mixer to 1.5 GPM (.091 l/s)</li> </ul>	Low Capacity Kit	227-445 (model 5, 6, 7, 8) 18, 18A, 28, 29, 31–34	
<ul style="list-style-type: none"> <li>• For use when hot water supply temperature is below 120°F, allows discharge temperature to be within 2°F of hot water supply</li> </ul>	Low Temperature Conversion Kit (110°F)	420-203 18, 18A, 28–31	Bonnet gasket, bonnet O-ring, combination seat O-ring, motor sleeve, combination seat
<ul style="list-style-type: none"> <li>• <b>Complete Bonnet Assembly</b> Includes items: 13, 14, 16–22, 28</li> </ul>	Model 1–3, convert to model 8; Model 4–6, 227-377; Models 7–8, 420-161		Limit stop, spacer sleeve, bonnet, bonnet gasket, bonnet O-ring, packing gland, packing rings, packing stop ring, adj. stem, spacer ring
<ul style="list-style-type: none"> <li>• <b>Complete Bonnet Assembly, to convert model 1–3, to model 8</b> Use model 8 bonnet, oval dial, and lever handle. (Discard old stem.)</li> </ul>	Bonnet assembly 420-161; Oval Dial Assembly 420-182; Lever Handle 420-243		

NOTE: Kit includes packing for various models. Replace old packing with like material/components and discard extra parts.

**MAXIMUM TEMPERATURE SETTING**

Factory set at 115°F (46°C), with equal supply pressures, hot water temperature at 140°F, cold water temperature at 60°F. To change setting, remove splined stop. Rotate temperature adjustment stem to desired maximum setting and replace splined stop, making sure ear on splined stop is against bonnet stop post. Shutoff is made by rotating temperature adjustment stem clockwise. Handle holds splined stop in position. **THE MAXIMUM TEMPERATURE SETTING MUST BE CHECKED AND SET BY THE INSTALLER BEFORE USE!**  
**CAUTION:** Resetting of the splined stop can result in temperatures higher than 115°F (46°C).

