



#### COLD WATER - LOW PRESSURE SYSTEM

- 101 Garden Hose Connection
- 102 Ball Valve (Handle Shown In Closed Position)
- 103 Line From Front Panel Ball Valve 102
- 104 Junction (Water To and From Water Holding Tank and To Cat High Pressure Pump)
- 105 Ball Valve (Handle Shown In Closed Position) Stops Water Flow To and From Fresh Water Tank
- 106 Water Line To Fresh Water Tank
- 107 Junction of Unloading Return Line 207
- 108 Water Pressure Reducing Valve and Filter (Braukman Valve) Reduces Incoming Water Pressure. On New Models Valve Will Be Mounted On Its Side, For Easier Access
- \*109 Water Filter - Enclosed in Black Threaded Cap on Right - Clean Every Month
- 110 Inlet Water Pressure Adjustment (Pre-Set) No Adjustment Necessary
- 111 Inlet Water Manifold (Part of Cat Pump)

#### COLD WATER - HIGH PRESSURE SYSTEM

- 200 Cat Pump (High Pressure Pump)
- 201 Pump Cylinders (3 Cylinders)
- 202 Purolator (Pulsation Damper) No Adjustment Necessary
- 203 High Pressure Gauge (Note: Pressure Will ONLY Register Accurately When Machine Is Running And Wand Trigger Is Pressed)
- 204 Quick Disconnect (Not Shown) Attached To Pressure Gauge For Easy Removal When Winterizing (See Winterizing In Manual)
- 205 High Pressure Regulator/Unloader
- 206 Pressure Adjustment (Pre-Set at 450 Lbs.) Pressure May Be Increased By Turning Nut Clockwise. (CAUTION: ONLY Adjust When Machine Is Running And Trigger On Wand Or Pressure Gun Is Pressed)
- 207 Unloading Return Line (Returns Water To Cold Water Low Pressure System When Trigger On Wand Is NOT Pressed) See 107 Junction
- 208 Temperature Adjusting Ball Valve (Handle Shown In Hottest Position) See 303
- 209 Line To Heat Exchanger

#### HOT WATER - HIGH PRESSURE SYSTEM

- 300 Heat Exchanger (Where Water Is Circulated Through a Series Of Copper Coils That Have Been Heated By The Anti-Freeze Of The Van Motor See 601 thru 606)
- 301 Pressure Relief Valve (Safety Valve) DO NOT ADJUST!!! This Valve Will Discharge Water Under Van If Item 205 (High Pressure Regulator/Unloader) Is Adjusted Beyond 1000 Lbs. Of Pressure
- 302 Line From Heat Exchanger (Contains Hot Water)
- 303 Temperature Adjusting Ball Valve (Shown In Hottest Position) Opening This Valve Mixes Cold Water With Hot Water Lowering Water Temperature.
- 304 Temperature Sensing Relay (Senses and Relays Water Temperature To Gauge 311)

#### HOT WATER - HIGH PRESSURE WITH CHEMICAL INJECTED

- 305 Chemical And Hot Water Mixing Junction
- 306 Line To Front Panel Fittings (307, 309, 310)
- 307 Hot Water Convenience Ball Valve (Handle Shown In Closed Position) (Also Relieves Pressure From Entire System)
- 308 Convenience Hose
- 309 Quick Connect (Connection For High Pressure Hose)
- 310 Quick Connect (Connection For High Pressure Hose)
- 311 Temperature Gauge (NOTE: Temperature Reading Accurate ONLY When Machine Is Running And Trigger On Wand Pressed)
- 312 Temperature Sensing Relay Wire From 304 to 311
- 313 Wand Valve (Trigger Valve) Located On Shaft of Wand
- 314 Plunger Stem. Opens and Closes Water Flow To Jets
- 315 "O" Ring
- 316 Nut
- 317 Gasket
- 318 Teflon Washer (Seals Water Flow to Jets When Off) To Be Replaced When Wand Jets Drip
- 319 Spring (Pushes Plunger 314 to OFF Position)
- 320 Line From Wand Valve To Manifold
- 321 Manifold (Housing For 3 Jets)
- 322 Spray Jets (3) Please Note Angle Positioning
- \*323 Screens Attached to Jets (Not Shown) Clean Monthly

#### CHEMICAL INJECTION SYSTEM

- 400 Chemical Container
- \*401 Filter (On End Of Hose In Container) Not Shown. Clean Weekly
- 402 Chemical Line From Chemical Container To Connector On Bottom Of Flow Meter (Clear Tubing)
- 403 Chemical Flow Meter
- 404 Indicator Ball (NOTE: Chemical Will Register Accurately ONLY When Machine Is Running And Trigger On Wand Is Pressed) See Chemical Mixtures In Manual For Proper Setting
- 405 Line From Top Fitting On Flow Meter To Pulse Pump
- 406 Check Valve Housing (Valve And Spring Inside)

\*ITEMS REQUIRING ROUTING SERVICE  
See Maintenance Schedule for Details

**IMPORTANT NOTE: EVERY DAY  
KEEP SCREEN ON VACUUM TANK CLEAN, AND KEEP ALL "V" BELTS SNUG, INCLUDING BELTS IN MOTOR COMPARTMENT**

#### 407 Pulse Pump (Chemical Pump)

- 408 Chemical Priming Screw - Important! - See Chemical Priming Procedure In Manual
- 409 Check Valve Housing (Valve And Spring Inside)
- 410 Line From Pulse Pump To Chemical Flow Control Valve
- 411 Chemical Flow Control Valve. On New Models, Valve Will Be Located On Front Panel
- 412 Chemical Flow Adjustment Knob

#### VACUUM AND R.P.M. CONTROL

- 500 Vacuum Blower
- 501 Vacuum Hose Connection From Vacuum Tank (Dirty Water Tank) 2 1/2" Hose
- 502 Fitting (90° 2 1/2" Elbow)
- 503 Hose To Vacuum Advance (R.P.M. Control) Hose Is Attached To Fitting 502 And Continues Under Van Into The Motor Compartment Where It Is Attached To The Vacuum Advance (R.P.M. Control) 504
- 504 Vacuum Advance (R.P.M. Control) Located On Top Of Van Motor In Engine Compartment (See 513 Tachometer For Operating Details)
- 505 Fastening Bolt (Loosen and Push Complete Mechanism Forward To Decrease R.P.M. or Pull Back To Increase R.P.M.) See 513 For Details
- 506 Mounting Bracket
- 507 Spring
- 508 Rod Connecting Vacuum Advance To Chain
- 509 Chain To Carburetor Linkage
- 510 Line To Vacuum Gauge On Front Panel
- 511 Vacuum Blower Pulley Shaft
- 512 Vacuum Gauge. Registers The Amount of In. Hg. (Inches Of Mercury-Vacuum) Which Is Controlled By The Vacuum Safety Relief Valve Located On Top Of Vacuum Tank (Dirty Water Tank). This Safety Valve Is Pre-Set To Read 13-14 In. Hg. When The Machine Is Running And Hand Is Cupped Over Vacuum Hose To Wand. **IMPORTANT: DO NOT ADJUST!!!**
- 513 Tachometer. Indicates The Speed (R.P.M.-Revolutions Per Minute) Of The Van Motor. R.P.M. Is Controlled By The Vacuum Advance (R.P.M. Control) 504. When Machine Is Running, Vacuum (Suction) Will Be Created In The Vacuum Blower 500. Suction Will Also Occur In Line 503. This Causes A Diaphragm In The Vacuum Advance (R.P.M. Control) Assembly To Draw Rod 508 Forward. This In Turn Causes Chain 509 (Attached To The Carburetor Linkage) To Operate. This Action Increases The Fuel Supply, Increasing The R.P.M. Of The Running Motor. See Manual For Proper R.P.M. Setting.

- 514 Floor Wand
- \*515 Vacuum Opening (Air Inlet). Clean Weekly
- \*516 Clean-Out Plug. Clean Monthly
- 517 Wand Tubing (1 1/2" Tubing)

#### WATER HEATING SYSTEM

(Located In Motor Compartment)

- 601 Hose From Thermostat Housing Cap To Van Radiator
- 602 Heating Hose (Containing Heated Anti-Freeze) Passes Through Engine Compartment, Under Van, And Into Heat Exchanger Located Inside Cabinet Directly Behind Driver's Seat
- 603 Thermostat (Not Shown) Controls Anti-Freeze Temperature In Van Motor And Inside Heat Exchanger
- 604 Thermostat Housing
- 605 Thermostat Housing Cap
- 606 Return Hose To Van Motor (Connects Into "T" Of Lower Radiator Hose Located On Bottom Of Radiator)

#### LUBRICATING OILS AND GREASE

- \*CAT PUMP - Change Oil Every 500 Hours
- 701 Filter Cap (Note: Use ONLY Special Cat Pump Oil When Filling)
- 702 Line To Oil Drain Plug
- 703 Oil Drain Plug (Oil Drains Very Slowly)
- 704 Peep Hole To View Oil Level Indicator
- \*705 Oil Level Indicator (Not Shown) Oil Level To Center Of Indicator ONLY - Check Weekly
- \*VACUUM BLOWER - Change Oil Every 500 Hours
- \*706 Grease Fitting (Grease Monthly)
- \*707 Grease Fitting (Grease Monthly)
- 708 Oil Drain Plug (Underside)
- 709 Oil Filler Plug (Note: Use ONLY SAE Non-Detergent Oil 40)
- \*710 Oil Level Check Plug (Oil To Be To The Level Of Check Plug Hole ONLY) Check Monthly

#### DRIVE SHAFT, PULLEYS "V" BELTS

- 800 Drive Shaft (From Van Motor)
- 801 Drive Pulley For Vacuum Blower (2 Groove)
- 802 Idler Pulley (Adjustable Pulley) See 805
- 803 Vacuum Blower Pulley (2 Groove)
- 804 Fastening Bolt For 805
- \*805 Belt Tension Adjustment For Vacuum Blower Belts - Check Tension Daily
- 806 2 Matched "V" Belts (Must Be A Matched Set)
- 807 Drive Pulley For Cat Pump-High Pressure Pump (Single Groove)
- 808 "V" Belt To Cat Pump Pulley (Must Be Removed When Vacuum Only Is Being Used) See Manual - Instructions For Flood Work
- 809 Cat Pump Pulley
- 810 "V" Belt Tension Adjustment Rail (Cat Pump)
- 811 "V" Belt Tension Adjustment Rail (Cat Pump)
- \*812 Allen Screws (2) Tighten Monthly

- 900 On-Off Switch
- \*901 Electric Clutch - Located In Engine Compartment Of Van (When Switch 900 Is On, Electric Clutch Engages Causing Drive Shaft To Turn, Powering Cat Pump And Vacuum Blower) Check Belt Tension Daily
- 902 Hot Wire From Switch To Clutch
- 903 Ground Wire

**the butler corporation**  
251 MOODY STREET, LUDLOW, MASSACHUSETTS 01056  
(800) 535-5025 • (413) 547-8557

