AUTEC
CAR WASH SYSTEMS™

OWNER'S MANUAL

MODEL ATF CAR WASH SYSTEM

1.800.438.3028

2500 West Front Street • Statesville NC 28677 • 704-871-9141 • fax 704-871-9101
www.autec-carwash.com • email - info@autec-carwash.com

Highest Quality Wash • Lowest Operating Costs • Profits Without Problems

Revision 4 – Published 9/25/2020

Table of Contents

SECTION 1 – GENERAL SPECIFICATIONS 7

SECTION 2 – SAFETY 10

A. WARNING 10
B. SAFETY 10

SECTION 3 – GENERAL OPERATING SEQUENCE 13

A. PRE-WASH CYCLE 13
B. WASH CYCLE 14
1. Rinse/Chemical Application Pass 14
2. Wash Pass 14
C. POST WASH 15

SECTION 4 – GENERAL MAINTENANCE AND OPERATION INSPECTION 16

A. GENERAL MAINTENANCE 16
1. Bearing Inspection and Lubrication 16
2. Bearing Inspection / Lubrication Schedule 16
3. Routine Inspection 16
4. Operational Inspection 17

SECTION 5 – PROGRAM SEQUENCE 19

A. PROGRAM FOR AUTEC CAR WASH CONTROLLER 19
B. HARDWARE SPECIFICATIONS 19
C. PROGRAM FUNCTIONALITY 19
1. Pre-wash 19
2. Wash 20
3. Post Wash 22
4. Freeze Protection Package 23
5. Automatic Door Package 24
6. Fault Indications 24
a. Fatal Faults 24
1. E-Stop 24
2. Low Air Pressure Switch 25
3. Hydraulic Fluid Over-Temp Switch 25
4. Hydraulic Motor Starter 25
5. Communication Fault 25
6. Low Hydraulic Fluid Switch 25
7. Treadle Switch Fault 25
8. Low Water Fault 25
9. Entry System Out of Service Fault 26
10. Both Forward and Rear Prox Switch Fault 26
11. Gantry Travel Time Out Fault 26
b. Non-Fatal Faults 26
1. Low on Presoak Water 26
2. Entrance Bell Switch 26
3. Exit Bell Switch 26
4. Back-up Bell Switch 27
5. Front Travel Prox Switch 27
6. Reverse Travel Prox Switch 27
7. Reclaim Alarm 27
8. Gantry Power Supply Slot 1 Module Error 27
9. Gantry DI Slot 2 Module Error 27
10. Gantry DO Slot 3 Module Error 27
11. Gantry DO Slot 4 Module Error 27
12. Gantry DO Slot 5 Module Error 28
13. Gantry DO Slot 6 Module Error 28
14. Gantry DO Slot 7 Module Error 28
15. Gantry DO Slot 8 Module Error 28
16. Back in Service 28

17. PLC Powered up Flag 28
18. System Startup Flag 28

SECTION 6 – INSTALLATION 29

A. UNLOADING EQUIPMENT 29
B. BAY FLOOR LAYOUT 29
C. MACHINE PREP 41
D. WATER CONNECTION 41
E. COMPRESSED AIR 44
F. HOT WATER PUMPING STATION 44
G. HIGH PRESSURE PUMPING STATION 44
H. CHEMICAL PUMPING STATIONS 44
I. ELECTRICAL 48
J. SETUP PROCEDURE 51
1. Verify I/0 51
2. Hydraulic Adjustments 51
3. High Pressure nozzle Adjustments 51
4. Gantry Photoeyes 52
5. Pneumatic Adjustments 54
6. High Pressure Creep 54
7. Wash Pass Setup 55
8. Drive Speed 56
9. Hydraulic Flow Control Valves 62
10. Hydraulic Ports 62
11. Miscellaneous Items 62

SECTION 7 – MACHINE AND WASH CONFIGURATION 64

A. TOUCH SCREEN CONTROL PANEL 64
1. Introduction 65
2. Installation 65
3. Main Menu 65
4. Manual Wash 66
5. Machine Configure 67
6. Wash Configure 67
a. Wash Configuration 67
Pass Configuration 68
Pass Options 69
7. Parameter Configure 70
8. Manual Control 73
a. Manual Operation Page – Controls for Mechanical Movement 74
1. Gantry Travel Control 74
Reset 74
Help 74
Status/Force 74
Fresh Water Rinse 74
Presoak 74
CTA Control 74
Front/Rear High Pressure Nozzles 74
Wax (Colorshield) Control 74
Wheel Blaster Control 74
Multi-Foam Control 74
Rinse Aid 75
Underbody 75
High Pressure Nozzle Oscillate 75
Spot Free Rinse 75
Blower 75
Blower Oscillation Control 75
Input / Output Status Screens (Figs. 19 - 28) 75
Diagnostics 79
9. System 79
a. Update Date & Time 79

Toggle SmartServer 79
Clean Screen 79
Control Panel 80
Close Runtime 80
Admin Config 80
Email Address 80
1. Press in an Email field, and an alpha-numeric screen appears (Fig 31). 81
Type the desired email address. The “@” symbol is found by pressing shift lock (the up arrow) highlighted yellow in Fig 29 below. 81
After pressing shift lock, the “@” symbol appears on the screen, as shown in Fig 32. 81
When finished typing the email address, press the Enter button, also highlighted in yellow in Fig. 32. 81
10. Totalizing 81
11. Trending 83
12. Alarms 83
13. Remote Access 85
a. Stridelinx Router 85
b. eWON Router 87
c. VNC Setup 88

SECTION 8 – PLC REGISTERS (PARAMETERS) AND I/O 91

TABLE 8.1 - PLC TIMERS AND COUNTERS (BY NAME) 91
TABLE 8.2 - PLC TIMERS AND COUNTERS (BY NUMBER) 99
INPUTS - MAIN CONTROL PANEL (-DC) 107
INPUTS - GANTRY CONTROL PANEL (-DC) 107
OUTPUTS - MAIN CONTROL PANEL (115 VAC) 108
OUTPUTS - GANTRY CONTROL PANEL (24 VDC OR 120 VAC) 108
TABLE 8.3 – INPUTS: MAIN CONTROL PANEL (-DC) 110
TABLE 8.4 – INPUTS: GANTRY JUNCTION BOX (-DC) 113
TABLE 8.5 – OUTPUTS: MAIN CONTROL PANEL 113
TABLE 8.6 – OUTPUTS: GANTRY CONTROL PANEL 118

SECTION 9 – ELECTRICAL DRAWINGS – ATF 120

9-1 LAYOUT MAIN PANEL BACKPLANE DEVICES 121
9-2 LAYOUT MAIN PANEL TERMINAL BLOCK 2 DETAIL 122
9-3 LAYOUT MAIN PANEL TERMINAL BLOCK 1 DETAIL 123
9-4 LAYOUT MAIN PANEL PLC RACK DETAIL 124
9-5 LAYOUT MAIN PANEL FUSE BLOCK DETAIL 125
9-6 SCHEMATIC MAIN PANEL POWER & E-STOP 126
9-7 SCHEMATIC MAIN PANEL DC POWER & PHOTOEYES 127
9-8 SCHEMATIC MAIN PLC CPU INPUTS 128
9-9 SCHEMATIC MAIN PLC EXP MODULE 1 INPUTS 129
9-10 SCHEMATIC MAIN PLC EXP MODULE 2 INPUTS 130
9-11 SCHEMATIC MAIN PLC CPU OUTPUTS 131
9-12 SCHEMATIC MAIN PLC MODULE 1 OUTPUTS 132
9-13 SCHEMATIC MAIN PLC EXP MODULE 2 OUTPUTS 133
9-14 SCHEMATIC MAIN PLC EXP MODULE 3 OUTPUTS 134
9-15 ETHERNET COMMUNICATION DIAGRAM 135
9-16 LAYOUT GANTRY PANEL BACKPLANE DEVICES 136
9-17 LAYOUT CONTROLLER DETAIL GANTRY PANEL 137
9-18 SCHEMATIC COUPLER MOD 0 COMM & MOD 1 POWER 138
9-19 SCHEMATIC COUPLER MOD 2 INPUTS & MOD 3 OUTPUTS 139
9-20 SCHEMATIC COUPLER MOD 4 & 5 OUTPUTS 140
9-21 SCHEMATIC COUPLER MOD 6 & 7 OUTPUTS 141
9-22 SCHEMATIC COUPLER MOD 8 OUTPUTS 142
9-23 LAYOUT MOTOR STARTER PANEL 143
9-24 SCHEMATIC HYDRAULICS 144
9-25 LAYOUT HEATED PRESOAK PANEL BACKPLANE DEVICES 145
9-26 LAYOUT HEATED PRESOAK PANEL TB DETAIL 146
9-27 SCHEMATIC HIGH PRESSURE PUMP HEATED PRESOAK 147
9-28 SCHEMATIC BLOWER MOTORS A 148

9-29 Schematic Blower Motors B 149
9-30 Layout Boom Stand Junction Box 150
9-31 Layout Main Panel Backplane Drilling 151
9-32 Enclosure Drilling Main Panel Door 152
9-33 Enclosure Layout Main Panel Door 153
9-34 Layout Gantry Panel Backplane Drilling 154
9-35 Gantry Enclosure Drilling 155
9-36 Layout Motor Starter Panel Backplane Drilling 156
9-37 Motor Starter Enclosure 157
9-38 Layout Heated Presoak Panel Backplane Drilling 158
9-39 Motor Circuit Spec Tables 159
9-40 Symbols & Legend 160

SECTION 10 – HYDRAULIC/WATER DRAWINGS 161

10-1 Main Hydraulic Block 162
10-2 Main Power Unit 163
10-3 Main Hydraulic Assembly 165
10-4 Main Hydraulic Manifold Left View 166
10-5 Main Hydraulic Manifold Right View 167
10-6 High-Pressure Schematic 169
10-7 High-Pressure Schematic Sheet 2 170
10-8 High Pressure Pumping Station (Optional) 171
10-9 Heated Pre-Soak Chemical Stand (Optional) 172
10-10 Low Pressure Water Nozzle Layout 173

SECTION 11 - TROUBLE SHOOTING 174

Main Breaker / Overload / Primary Fuses / breakers 174
Output Fuses 174
No Power Outputs (Water, Lights, Solenoids, Etc.) 174
Power To Outputs But No Operation (Water, Hyd., Air, Etc.) 174
Hydraulics not working, 10 or 15 H.P. motor humming 174
Machine Won't Move 174
Machine not stopping at end of track 175
Machine won't leave end of track, or only travels short distance 175
Machine Stopping Prematurely 175
Machine or Brush Movements Opposite Of Output Signal 175
Rear Jog Not Working, ... 175
Continuous Water/Air/Lights 175
Exit light won't go off, or rinse arch won't time out 175
Fault Conditions / Flash Codes 175
Entry System 176
High Pressure Pumping Station 177
Traffic Signals 177
PLC Problems 177
Chemicals 177

SECTION 12 – HOW TO… 179

A. How to Setup an Android or iPhone for Remote Connection. 179
1. eCatcher Setup: 179
2. Stridelinx Setup: 179
3. VNC Setup: 180
4. Setting up your HMI for Text Messages: 180
5. Common Texting formats: 180
B. How to install the program to your PLC. 183
C. How to install the program to your HMI. 184
D. How to obtain Totals reports 187
E. How to check the Axiomatic card to the proportional valve 187

SECTION 13 – CONTROL OF PERIPHERAL EQUIPMENT 189

A. AUTOMATIC DOOR CONTROL PACKAGE 190
1. Related I/O and Timers 190
2. Program Functionality 191
B. EXTERNAL BLOWER CONTROL 196
1. Related I/O and Timers 196
2. Program Functionality 196
C. RECLAIM SYSTEMS 197
a. Related I/O and Timers 197
D. R/O (SPOT-FREE SYSTEMS) 197
1. Related I/O and Timers 197
2. Program Functionality 197
E. R/O CHEMICAL SUPPLY (ROCS) 198
1. Related I/O and Timers 198
2. Program Functionality 198
F. ENTRY SYSTEMS 198
1. Related I/O and Timers 198
2. Program Functionality 199
G. PRE-SOAK FUNCTIONS 200
1. Related I/O and Timers 200
2. Program Functionality 201
H. POST-WASH (RINSE ARCH) FUNCTIONS 201
1. Related I/O and Timers 201
2. Program Functionality 202
I. UNDERBODY FUNCTION 203
1. Related I/O and Timers 203
2. Program Functionality 203
J. CHEMICAL TIRE APPLICATION (CTA) 204
1. Related I/O and Timers 204
2. Program Functionality 204
Installation Procedures 206
Maintenance and Repair 207
K. BUG SPRAYER FUNCTION 208
1. Related I/O and Timers 208
2. Program Functionality 208
L. DRIVE-BY WHEEL/ROCKER PANEL BLASTER 208
1. Related I/O and Timers 209
2. Program Functionality 209
M. TREADLE BUZZER 210
2. Related I/O and Timers 210
3. Program Functionality 210
N. WINDOW WASH DOWN 211
1. Related I/O and Timers 211
2. Program Functionality 211
O. FREEZE PROTECTION 212
1. Related I/O and Timers 212
2. Program Functionality 213
P. Setting up mobile devices with remote access 216

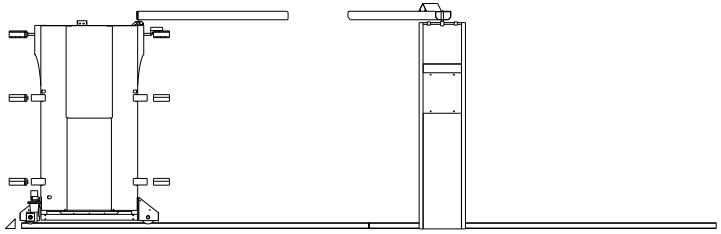
Section 1 – General Specifications

Table 1.1 lists the general specifications for the Carwash.

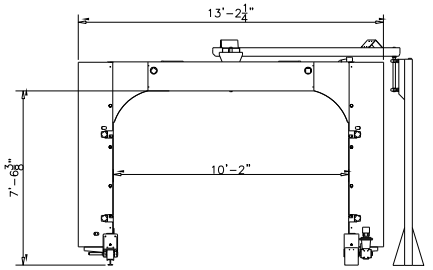
Figure 99-005-MM shows the overall dimensions and general mass of the Carwash.
Figure ATF-023-MM shows the overall dimensions and general mass of the Carwash.

Table 1.1 - General Specifications		
1	Structural Members	3"x3" and 2"x4" stainless steel tubing
2	Hydraulic Reservoir	27 gallon capacity
3	Hydraulic Fluid	Exxon Nuto H32 Hydraulic Fluid Or AUTEC H_2O Hydraulic Fluid (water–based fluid)
4	Hydraulic Hose 3/8”--1/2”--3/4”	2250--1750--1250 PSI rated operating pressure
5	Hydraulic Pressure Setting	Factory set at 700 PSI
6	Hydraulic Motor – High Pressure Nozzle Oscillate	Parker TEO260 Series (3)
7	Hydraulic Safety Switch	Low-level and temperature sensing switches
8	Electric Motor - Gantry	5 hp, 3-phase (1)
9	Electrical Requirements - Gantry	208/230 volts, 3 phase, 25 amps or 460 volts, 3 phase, 15 amps
10	Electrical Motor – High Pressure Pumping Station	25 hp, 3-phase
11	Electrical Requirements – High Pressure Pumping Station	208/230 volts, 3 phase, 125 amps or 460 volts, 3 phase, 60 amps
12	Water Requirements – Supply to High Pressure Holding Tank	Minimum of 45 Gallons per min @ 40 PSI
13	Air Pressure Requirement	Minimum of 100 PSI
14	Air Consumption	Maximum of 5 cubic ft. per min. at 75 PSI
15	Pneumatic Valve	Wabco – 1/4” – 4-way
16	Pneumatic Regulator-Main	3/8" with filter and automatic drain system
17	Pneumatic Oil Lubricator	3/8" adjustable with clear bowl
18	Bearings - Mitter	1-1/2” Heavy duty Pillow Block
19	Wheels – Drive	Steel (4)
20	Wheels – Idler	Plastic (2)
21	Control Unit	Siemens S7-200 Programmable PLC

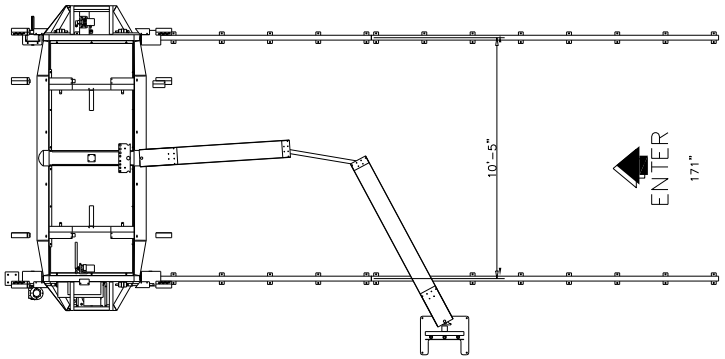
22	Height of vehicle	Maximum of 90"
23	Width of Vehicle	Maximum of 110"
24	Track	Solid steel
25	Safety Listed	ETL, CETL



WASHER SIDE ELEVATION



WASHER END ELEVATION



WASHER PLAN / MASS VALUES

BASE MACHINE WEIGHT – 2,800 LBS.

SCALE: NONE

AUTEC

ATF-1
MACHINE MASS

DATE: 11-30-05	DWG. NO. ATF-023-MM	REV. 0

Top

Section 2 – Safety

A. WARNING

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to malfunction resulting in serious injury to persons and or property.

- **CAUTION**: Risk of Electric Shock.
  This appliance has more than one connection to the source of supply. Disconnect all such connections before servicing.
- This equipment should be serviced, adjusted and repaired by trained personnel only
- Read all instruction manuals, tags and labels before operating equipment
- Use equipment only for its intended purpose. If you are not sure, call AUTEC at USA 704-871-9141
- Do not alter or modify this equipment
- Check equipment daily. Repair or replace damaged or worn parts immediately.
- Use only recommended fluids and chemicals or equivalent. Read all fluid and chemical manufacturer's warnings

Comply with all applicable local, state and national fire, electrical and safety regulations

B. SAFETY

1. **EMERGENCY STOPS:** The washer is equipped with an Emergency Stop (E-Stop) Switch mounted on the front of the main control panel. Additional E-Stop switches may be placed in other locations if desired. If at any time an E-Stop is depressed, the washer will stop all operations immediately by program logic and by removing power to all PLC outputs and the red Fault Light on the Main Control Panel will illuminate. The washer cannot be restarted without first resetting the system once the condition that necessitated the emergency stop has been corrected. To reset the washer, the E-stop that was depressed must be reset (twist right 1/4 turn) first and the reset button on Main Control Panel must be depressed. The wash cycle that was in progress when the E-Stop was depressed will be lost

2. **MACHINE FAULTS:** In addition to the E-Stop above, the Washer is equipped with six sensors that will cause a fault condition and shut down the machine. All faults, which shut down the machine, are referred to as Fatal Faults. See Section 5, C, 6a.

a. **Low Air Pressure Switch** (input B4) – Normally open switch held closed by air pressure. If the system air pressure falls below 65 PSI, the Washer will shut down until air pressure is restored and the machine reset. Low Air Pressure is indicated by a single flash of the Stop Light and Fault Light followed by a single flash of the enter light.

b. **Hydraulic Fluid Over-Temp Switch** (input B5) – Normally closed switch that opens at high temperature. If the hydraulic fluid exceeds 170˚ F (130˚ F for Water Based Hydraulic Fluid), the Washer will shut down until the temperature drops below 170˚ F (130˚ F for Water Based Hydraulic Fluid) and the machine is reset. Hydraulic Over-Temp is indicated by two flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

c. **Hydraulic Motor Starter** (input A1) – If the motor starter for the main hydraulic pump fails to engage within approximately one second after called for, the Washer will shut down until reset. A Motor Starter Fault is indicated by three flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

d. **Communication Fault** – If at any time the PLC in the main control panel loses communications with the Coupler that is on the machine (called the Gantry), the Washer will shut down until communications are re-established and the machine is reset. A Communication Fault is indicated by four flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

e. **Hydraulic Fluid Level Switch** (input B7) – Normally open switch held closed by full hydraulic tank. If the Washer loses more than approximately 5 gallons of hydraulic fluid, the Washer will shut down until the hydraulic fluid is replenished and the machine is reset. Hydraulic Low Level is indicated by five flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

f. **Treadle Switch Fault** – If the machine sees a continuous input from the Treadle Switch (input A15) for five minutes anytime the wash is not in use, a Treadle Switch Fault will be generated and the machine will shut down. The machine will not restart until the Treadle is repaired and the machine is reset. A Treadle Switch Fault is indicated by seven flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

g. **Low Water Fault** – The Machine will shut down any time the PLC in the main control panel loses the input from the Low Water Level Switch in the High-Pressure Holding Tank. Once the PLC receives an input from the High-Water Level Switch in the High-Pressure Holding Tank (A36), the machine will automatically restart. A Low Water Fault is indicated by eight flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

h. **Entry System Fault** – The Machine will shut down anytime an Entry System Fault Signal is received (input A41). The Machine cannot be reset until the Entry System Fault is cleared and the Machine is reset. An Entry System Fault is indicated by nine flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

i. **Proximity Switch Fault** – The Machine will shut down anytime both the forward and reverse travel proximity switches (inputs B2 & B3) are made simultaneously and produce a Proximity Switch Fault. The machine cannot be reset until at least one of the proximity switch inputs are cleared and the machine is reset. A Proximity Switch Fault is indicated by ten flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

j. **Travel Time Out** – When the machine fails to reach the travel prox switch in the allotted time per registers the machine stops for Travel Time Out.

3. **ADJUSTMENTS:** Never attempt to ride the washer to make adjustments. There is a severe risk of injury from the Mitter retracting and crushing anything in its way. ***All speed adjustments should be made from a ladder.***

4. **DRIVE OFFS:** If at any time after the washer starts operating, the vehicle moves off the treadle, one of two things will happen depending on programming.

   a. Washer will stop drive, and turn off all spray functions. That wash cycle is lost and washer will not restart until that car leaves wash bay and entry system notifies washer to start a new cycle.

   b. Washer will turn off all spray functions and drive to the home position. Washer will not restart until entry system notifies washer to start a new cycle.

5. **CRUSHING HAZARDS:** During normal operation no one should be allowed in the bay area due to several crushing hazards.

   a. A crushing hazard is present if feet or hands are on track when washer is in operation.

   b. A crushing hazard may exist between the Washer and other structures within the wash bay.

6. **LOOSE CLOTHING:** There is a danger of loose clothing becoming entangled in rotating objects. Make sure shirt tails or any other loose clothing is tucked in when working around Washer.

7. **SERVICE:** All service should be performed by factory-trained technicians.

Section 3 – General Operating Sequence

The washer is intended to wash passenger cars and light trucks. **After the vehicle enters the wash bay you should never attempt to get out of vehicle. Severe personal injury and/or vehicle damage may result.** The washer will start automatically when the vehicle is in the correct position. Depending on the options and type of wash purchased the washer will make one or more passes over the vehicle. When the wash cycle is complete the washer will stop and an exit light will come on directing the vehicle to exit the wash bay.

The washer should be installed in an enclosed building with minimum 10'x10' doors on each end to allow vehicles to enter from one end and exit the opposite end. The washer is intended to operate year-round. If the washer is to be operated in temperatures below freezing, damage to the washer and vehicles may result unless the washer is enclosed in a heated wash bay with automatic doors installed on both ends. The washer can also be protected from freezing with the optional freeze protection package. The freeze protection package closes the washer and removes the water from all water lines on the washer, by injecting air into the water lines, to prevent them from freezing. The freeze protection package and/or the automatic door package is activated when the temperature falls below the low temperature set point for a continuous five minutes. If a vehicle is being washed when the five-minute verification timer expires, the washer will complete the wash in progress and then shut down.

AUTEC supplies an instruction sign with each vehicle washer. This sign should be mounted on the outside of the wash bay clearly visible from the entry system. A typical instruction sign will read: 1. Lower antennas. Remove CB or cellular antennas. 2. Enter slowly. STOP when red light comes on. Place vehicle in park. Set brake. 3. Exit SLOWLY when EXIT light comes on. The sign also has a DANGER section that states: DO NOT WASH 1. Vehicles with non-standard factory accessories. 2. Vehicles with body damage or loose parts. 3. Elevated or modified pickups or vans. If these instructions are not followed, then damage to the vehicle may occur.

For proper operation of the vehicle washer and the ultimate in cleaning quality, using only AUTEC Automatic concentrated carwash chemicals is recommended. They are non-corrosive, non-hazardous, and biodegradable. **When handling the highly concentrated chemicals, it is recommended you always wear eye and hand protection.**

The AUTEC ATF High Pressure Vehicle Washer will normally be positioned towards the entrance end of the bay at the start of all operating cycles. However, there is a "Home at Exit" button located on the Machine Configure screen that allows the Washer to be parked at the Exit end of the bay. These are both referred to as the "Home" position.

OPERATING CYCLES

A. Pre-Wash Cycle

1. The Pre-Wash cycle begins when the computer receives a signal from the entry system. The green enter light turns on and the entrance door opens. As the vehicle enters the bay it activates a bell hose and/or Photoeyes turning on up to

four pre-soak functions plus undercarriage wash and remote chemical tire applicator.

2. When the front tire is positioned on the treadle switch, the red stoplight will light, the optional treadle buzzer will sound and, after approximately 4 seconds, the washer will start.

3. If the “Home at Exit” button is de-selected the machine will then travel backward until the rear of the vehicle is located using the infrared photo eye mounted on the Gantry or until the Gantry reaches the Rear Prox switch. If the “Home at Exit” button is selected the machine will then travel Forward until the front of the vehicle is located using the infrared photo eye mounted on the Gantry or until the Gantry reaches the Front Prox switch.

B. Wash Cycle

The machine will make up to eight passes over the vehicle. A Pass is defined as one complete cycle, forward and reverse over the vehicle. Both Rinse/Chemical and Wash Pass have been integrated so the operator can use any function in either one. The types of passes are defined as follows:

1. Rinse/Chemical Application Pass

Machine will travel with high-pressure nozzles turned off. Any combination of chemicals and/or water may be applied in either direction.

a. Machine will turn on any programmed chemical or water applications, and start travel forward toward the exit end of the bay if “Home at Exit” is not selected or travel reverse toward the Entrance end of the bay if “Home at Exit” is selected.

b. The washer will continue moving until the proximity switch is made or until the travel timer has expired. When the proximity switch is activated, the washer will reverse direction, turn on or off water or chemicals as programmed, and travel in reverse, toward the entrance end of bay if “Home at Exit” is not selected, or travel forward toward the Exit end of the bay if “Home at Exit” is selected.

c. The washer will continue until the proximity switch is made or until the travel timer expires. When the proximity switch is made, the rinse/chemical pass is complete.

2. Wash Pass

Machine will make a High-Pressure Pass or just apply chemicals or complete a rinse.

a. High-Pressure Pass (requires optional Rockerpanel and / or Bumper Blaster options) – Machine will make a pass with high-pressure water plus any combination of chemicals and/or water programmed.

i. Machine will start high-pressure pump and activate valve for rockerpanel high-pressure nozzles.

ii. Machine will travel while spraying vehicle with high-pressure spray from the rockerpanel nozzles until proximity switch is made.

iii. Machine will reverse direction, close the water valve for the rockerpanel high-pressure nozzles, and open the water valve for the bumper blaster high-pressure nozzles if selected.

iv. Machine will travel towards the rear or front of the vehicle with bumper blaster high-pressure spray from the arm mounted nozzles until the Gantry photoeye is made.

v. Machine will continue towards the rear or front until the travel after Gantry photoeye timer expires or until the proximity switch is made, at which time the High Pressure Pass is complete.

C. Post Wash

After wash, rinse and blower cycles are complete, the following will occur depending on options chosen:

1. The exit light will turn on and the exit door will open.

2. The freestanding final rinse, spot free rinse and/or rinse wax will start.

3. 5 seconds after the vehicle leaves the treadle switch, any existing external blower units will start.

4. After the exit bell switch has been activated twice, the rinse and/or blower functions will be shut off and the exit door closure timer will start

5. After a 15 second delay the exit door will close.

6. The washer is ready for the next wash cycle.

Section 4 – General Maintenance and Operation Inspection

A. General Maintenance

CAUTION: Maintenance should be performed by factory-trained personnel only. Be sure to disconnect and lock out power prior to lubricating and inspecting washer.

1. Bearing Inspection and Lubrication

Bearings should routinely be visually inspected for excessive wear. Most of the bearings are sealed and require no additional lubrication however some must be re-lubricated. If required, grease bearings slowly with Molylube No. 2, or equivalent waterproof grease, until fresh grease appears at seal. **THE IMPORTANCE OF USING THE PROPER GREASE CANNOT BE OVER-EMPHASIZED**.

2. Bearing Inspection / Lubrication Schedule

Location	Type of Bearing	Frequency
Track Wheels	4 Idler wheel bearings 4 Drive wheels bearings	***Bi-Weekly***
Umbilical Boom (Optional)	2 Post bearings 2 Machine bearings	***Bi-Weekly***

REMOVE EXCESS GREASE TO PREVENT CONTAMINATION!

3. Routine Inspection

There is no better way to prevent downtimes and avoid unnecessary repairs than to carefully inspect the carwash regularly to discover potential problems at an early stage.

a. Check all bearings for excessive wear.

b. Check all hydraulic motors for signs of leakage. Evidenced by moistness or presence of fresh fluid around motor shaft or hose fittings.

c. Check all hydraulic hoses for loose mounting clamps. Evidenced by clean or worn areas on sides of hoses.

d. Check tightness of hydraulic motor securing bolts.

e. Check all four wheels for loose mounting bolts or misalignment.

f. Check tightness of drive wheel coupler.

g. Check air filter for presence of water and drain as required.

h. Check oil level in air system lubricator. Add Marvel Mystery Oil (TM) or 10W non-detergent oil and adjust as necessary.

i. Check airlines for leaks.

j. Check inside side panels for hydraulic leaks.

k. Check fluid level in hydraulic reservoir. ***Caution – Verify type of hydraulic fluid used before adding additional fluid***. Add Exxon Nuto H32 Hydraulic Fluid or, if water based, add H_2O Hydraulic Fluid from AUTEC as required.

l. Check gauge on oil filter housing on top of hydraulic reservoir. Change filter annually or if gauge reads above 18 psi.

m. Inspect all proximity switches for proper adjustment. Recommended clearance is 3/8” for 30mm switches and 1/4” for 18mm switches.

n. Check all water hoses for signs of abrasion.

o. Check all water nozzles for evidence of plugging from water-born debris.

p. Check level of chemicals (soap, wax, etc.) in tanks and fill as required. Recommend use of AUTEC chemicals only.

q. Clean bay area including washing the floor and track. Remove any foreign materials.

r. Check blower electrical cord and blower mounting bolts for loose or worn parts.

s. Check high-pressure water pump oil level.

t. Check high-pressure water pump pressure (not to exceed 500 PSI).

u. Check high-pressure strainer and clean as required.

4. Operational Inspection

CAUTION: Moving Equipment hazard!!
Machine motion during wash/rinse cycle includes travel along floor tracks between stop blocks with automatic direction reversal. Do not enter carwash bay during machine operation or attempt machine adjustments and/or repairs unless you are aware of all programmed machine movements to avoid possible personal injury. No loose-fitting clothes or jewelry, which may become entangled in machinery, should be worn.

After completion of lubrication and routine inspections, trained service personnel should operate the washer and the following operational checks should be made while the washer is running.

a. Observe system air pressure (95 to 100 PSI). Adjust if necessary by turning adjustment knob on the main air regulator clockwise to increase, counter-clockwise to decrease. System air pressure is controlled by the regulator portion of the filter-regulator-lubricator assembly mounted at the top of the air panel located in the driver's side cabinet.

b. Observe hydraulic system pressure (1000 PSI) ***FACTORY SET - DO NOT ADJUST*.**

c. Observe the following speeds:

    i. All motor speeds are controlled by Hydraulic Flow Valves and should only be adjusted by experienced technicians. (See section 6)

d. Observe the travel limit function at each end of the track.

e. Observe the water system for clogged nozzles.

f. Observe the detergent cycle for proper operation to assure the cleaning of the vehicle.

g. Observe all instructional lights.

Section 5 – Program Sequence

A. PROGRAM FOR AUTEC CAR WASH CONTROLLER

B. HARDWARE SPECIFICATIONS

The program runs on a Siemens S7-1215c Series PLC with 24 VDC inputs and 24VDC/120VAC outputs.

C. PROGRAM FUNCTIONALITY

The program is divided into six functional units: pre-wash, wash, post-wash, Freeze protection, Automatic Door, and Fault Indications.

1. Pre-wash

The pre-wash cycle consists of all functions occurring before the vehicle is in proper position for washing. There are separate inputs for four programmable Pre-Wash functions, plus Underbody Wash, CTA, and Drive-By Rocker panel Blaster. Each input has an associated timer to control the duration of the function. There is also one input to turn off all Pre-Wash functions, the Pre-Wash Stop input (Input A23). The treadle switch will also turn off all Pre-Wash functions that have not timed out or been turned off by the Pre-Wash Stop input. The sequence of events is as follows:

a. PLC receives signal on the wash inputs (inputs A26-A34). The PLC will use the last input seen before the vehicle is in position on the treadle switch to determine which wash type to use.

b. Enter light is turned on.

c. Pulse entrance door up signal for approximately 1 second.

d. When entrance bell switch is activated, pulse the Chemical Tire Applicator (CTA) for approximately 1.5 seconds each time the bell switch is activated (if programmed in wash package).

e. As Photoeye or Bell Switch for each programmed Pre-Wash function is activated, turn on the associated function until duration timer expires, Pre-Wash Stop photoeye/bellswitch is activated, or treadle switch is activated.

f. When the treadle switch is activated, extinguish the enter light, enable the stop light, stop all pre-wash functions, and turn on wash water. The treadle switch must be activated for the duration of the treadle verify timer before wash function will begin (default four seconds).

g. If the treadle switch is unmade during the treadle verify timer, extinguish the stop light, turn off wash water, and enable the enter light. If the backup bell switch is activated, turn off the enter light and turn on the backup light. This light will remain on until the treadle switch is again activated or the backup light

timer expires, at which time the backup light will be extinguished and the program will loop back to step 6 above. This sequence will be repeated as needed until the treadle switch has been made for the duration of the treadle verify timer. If the treadle switch is unmade after the treadle verify timer has been satisfied and the washer starts, the washer will turn off all operations and start its homing sequence. The homing sequence is based upon the “Home at Exit” button (located on the Machine Config screen), if the button is highlighted (Home is at the Exit end) the Washer drives until it finds the front limit proximity switch, switches direction and drives in reverse until the Parking timer expires; if the button is not highlighted (Home is at the Entrance End) the Washer drives until it finds the rear limit proximity switch, reverses direction and drives forward until the Parking Timer expires.

h. Pre-wash is now complete.

2. Wash

The wash cycle consists of all steps taken while the vehicle is on the treadle switch. Depending on the selected wash options, the following processes occur.

Move to Start Position – If the “Home at Exit” button is not highlighted, all passes start from the rear of the vehicle or the Entrance End; If the “Home at Exit” button is highlighted, all passes start from the front of the vehicle or the Exit End.

a. Energize the Motor Start Coil and the Car Wash in Use Signal.

b. Delay 1 second.

c. If the Gantry Photoeye is not made, energize the Hydraulic Drive Valve, the Hydraulic Speed Control Valve and remain in this state until the Gantry Photoeye is made or until the front or rear Proximity Switch is made.

d. If the Gantry is moving in the reverse direction and the Gantry Entrance Photoeye is made (blocked) then becomes unblocked, continue until the Travel After Rear Jog Timer expires or until the Rear Proximity Switch is made. If the Gantry is moving in the Forward direction and the Gantry Exit Photoeye is made (blocked) then becomes unblocked, continue until the Rear Proximity Switch is made.

e. Once the Forward or Reverse travel is complete, turn off the Drive Valve and the Hydraulic Speed Control Valve.

Rinse / Chemical Pass

1. Maintain the Motor Start Coil.

2. Energize the Hydraulic Drive Valve, the Hydraulic Speed Control Valve, and any programmed chemical/water valves. The Gantry will move according to the “Home at Exit” button.

3. Travel forward until the Forward Proximity Switch is made.

4. De-energize the Hydraulic Drive Forward Valve, the Hydraulic Speed Control Valve, and any chemical/water valves not required during the reverse travel.

5. Pause until the Hydraulic Pause Timer expires.

6. Energize the Hydraulic Reverse Drive Valve, the Hydraulic Speed Control Valve, and any programmed chemical/water valves.

7. Travel backward until the Gantry Entrance Photoeye is made or until the Rear Proximity Switch is made.

8. If the Gantry Entrance Photoeye is made, continue until the Gantry Entrance Photoeye Travel Timer expires or until the Rear Proximity Switch is made.

9. De-energize the Hydraulic Speed Control, the Hydraulic Drive Reverse Valve, and any chemical/water valves not required on the next forward pass.

Wash Pass – Frictionless (Or High Pressure) Only

1. Maintain the Motor Start Coil.

2. Delay 1 second.

3. Energize the Hydraulic Drive Valve, the Hydraulic Speed Control Valve, and any programmed chemicals, or functions.

4. Drive forward or reverse while monitoring Travel Proximity Switches.

5. If High Pressure is activated and Gantry photoeye is blocked, start Creep Speed Timer and adjust Hydraulic Speed Control Valve to slow machine until Creep Speed Timer expires then maintain original movement speed.

6. Remain in this state until the Forward or Reverse Travel Timer expires or until the Proximity Switch is made.

7. Turn off the Hydraulic Drive Valve, the Hydraulic Speed Control Valve, and any water/chemical valves not used on the next pass.

8. Pause until the Hydraulic Pause Timer expires.

9. Continue with passes until all passes are complete, then park to the home position.

Move to Home Position – On the final programmed pass, the washer will continue to the front or the rear until the Forward or Reverse Travel Proximity Switch is made and return to the Home Position based upon the “Home at Exit” button in Machine Config.

1. At the completion of the final programmed pass the machine will de-energize all wash functions, and continue the direction of travel until the Travel Prox Switch is made.

2. Once the Travel Proximity Switch is made de-energize the Hydraulic Speed Control, the Hydraulic Drive Reverse Valve and activate the Exit Light.

3. Pause until the Hydraulic Pause Timer expires.

4. Energize the Hydraulic Drive Valve and move forward or reverse depending on the “Home at Exit” button has indicated, the Hydraulic Speed Control Valve and start the Parking Timer.

5. Once the Parking Timer expires, turn off the Drive Valve, the Hydraulic Speed Control Valve, and the Hydraulic Motor Starter.

3. Post Wash

The Post Wash cycle allows for two rinse arch outputs and two sets of blower outputs (each set containing 3 staggered outputs). There is a separate timer for each rinse arch and a single timer for blowers to control duration of function. Also, there is an input for a photoeye or bellswitch to turn off the rinse arches, otherwise the exit photoeye/bellswitch will deactivate all arches and blowers.

The following sequence of events occurs during Post Wash, assuming devices are programmed in wash package and Door Package is activated.

a. At completion of wash turn on Exit Light, sound Treadle Buzzer, and send Exit Door Up signal. (If Short Bay option is programmed, also start the Rinse Arch, the Post Wash Chemical Arch, and the Blower Start Delay timer.)

b. When vehicle leaves treadle, start rinse arches and initiate the Rinse Arch timer, the Post Wash Chemical Arch timer, the Blower Start Delay timer, and the Exit Light timer.

c. After the Blower Start Delay timer expires, start one or both sets of freestanding blowers (with timed delay between each motor) and the Blower On timer.

d. When Exit Light timer expires, turn off Wash In Use signal and Exit Light.

e. If the Rinse Arch Stop Bellswitch / Photoeye is activated, turn off all rinse arches. (Rinse Arch Stop Counter must be set to 1 for photoeye or two for bellswitch.)

f. After the Exit Bellswitch / Photoeye has been activated, start Rinse / Dry Shutoff timer and Exit Door Close Delay timer. (Exit Switch Counter must be set to 1 for photoeye or two for bellswitch.)

g. Once Rinse / Dry Shutoff timer expires, turn off all rinse arches and blowers.

h. If the Rinse Arch timer, the Post Wash Chemical Arch timer, or the Blower On timer expires, turn off the corresponding outputs unless already stopped by bellswitch or photoeye.

i. Send Exit Door Close signal and start Exit Door Down Verify timer once Exit Door Close Delay timer expires.

j. If Exit Door Photoeye is blocked prior to Exit Door Down Verify timer expiring, generate Exit Door Open signal.

k. Once Exit Door Photoeye is remade, start the Close Exit Door After Photoeye Remade timer.

l. Once the Close Exit Door After Photoeye Remade timer expires, loop back to step 9 above.

4. Freeze Protection Package

The PLC will also be checking the timer inputs from the low temperature switches during this time (The timers will be running regardless of whether the carwash is active or not). If the input for the freeze protection is on for more than 300 seconds, the following sequence will take place.

a. Close Doors.
b. 60 second delay.
c. Air Solenoid Valve on, water off.
d. 2 second delay.
e. Energize Machine Water Valve for 5 seconds.
f. 5 second delay.
g. Energize the Final Rinse arch for 5 seconds.
h. 5 second delay.
i. Energize Spot Free Final Rinse Valve for 5 seconds.
j. 5 second delay.
k. Energize Presoak Water Valve for 5 seconds.
l. 5 second delay.
m. Energize Undercarriage Wash for 5 seconds.
n. 5 second delay.
o. Energize Tire Scrubber for 5 seconds.
p. System will remain active until temp interlock has been de-energized for 300 seconds.

***NOTE**:* The PLC will also recognize the Jog Forward and Jog Reverse inputs during this time.

5. Automatic Door Package

The Automatic Door Package requires the use of Photoeyes on input A7 (Entrance Door Photoeye) and input A6 (Exit Photoeye). The automatic door package becomes active when input A5 has an uninterrupted thermostat signal for 5 minutes. At this time, assuming no car wash usage, the doors will both close. Upon activating a wash, or driving over the entrance bell switch, the entrance door will open allowing entry to the wash bay. The entrance door will close upon startup of the equipment, and the exit door will not open until the end of the wash cycle, or the activation of the exit photoeye. As the car leaves the bay, it passes through the exit photoeye, starting a 15 sec timer to close the door. Should the car not activate the photoeye, a 5 minute safety timer will then shut the exit door, and the wash is ready for the next vehicle.

6. Fault Indications

The Carwash is programmed with two types of Fault Indications. Faults which disable the Carwash are called ***Fatal Faults*** and generally require the Carwash to be manually reset before resuming operation. Faults which do not disable the carwash are called ***Non-Fatal Faults*** and will reset automatically once the fault condition has been corrected. The carwash will continue to operate during a Non-Fatal Fault but may behave erratically depending on the fault condition.

Other than an E-Stop Fault, all Fatal Faults are indicated by flashing the Fault Light and the Stop Light a number of times corresponding to number of the fault condition and then flashing the Enter Light one time to indicate the end of sequence. This process will repeat until the fault conditions are cleared and the machine reset. (Ex. If a High Oil Temp fault occurs then the stop and fault lights will flash 2 times and then the enter light will flash once to end the sequence.) All Non-Fatal Faults are indicated by a solid Fault Light on the main Control Panel Door and will clear automatically once the fault condition is corrected. An E-Stop Fault is also indicated by a solid Fault Light on the Main Control Panel Door but is a Fatal Fault. The E-Stop button must be released and the machine reset before restarting the Carwash.

If configured, all Fault conditions will also generate an email to up to 4 addresses. See Section 7, 9d (Page 7-18) for details.

a. Fatal Faults

1. E-Stop

Normally closed switch (or multiple switches wired in series) which supply power to the coil of the E-Stop relay and input (input A0). The E-Stop relay supplies power to all outputs from the PLC in both the Main Control Panel and the Gantry Junction Box. When an E-Stop switch is depressed, all outputs in the PLCs are disabled and the Carwash will shut down. The machine will not restart until the depressed E-Stop switch is released and the machine is reset. An E-Stop fault is indicated by a solid Fault Light and by an illuminated E-Stop switch.

2. **Low Air Pressure Switch**
   Normally open switch held closed by air pressure (input B4). If the system air pressure falls below 65 PSI, the Washer will shut down until air pressure is restored and the machine reset. Low Air Pressure is indicated by a single flash of the Stop Light and Fault Light followed by a single flash of the enter light.

3. **Hydraulic Fluid Over-Temp Switch**
   Normally closed switch that opens at high temperature (input B5). If the hydraulic fluid exceeds 170˚ F (130˚ F for Water Based Hydraulic Fluid), the Washer will shut down until the temperature drops below 170˚ F (130˚ F for Water Based Hydraulic Fluid) and the machine is reset. Hydraulic Over-Temp is indicated by two flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

4. **Hydraulic Motor Starter**
   If the motor starter for the main hydraulic pump motor fails to engage within approximately one second after called for, the Washer will shut down until reset. A Motor Starter Fault is indicated by three flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light. PLC Input A1.

5. **Communication Fault**
   If at any time the PLC in the main control panel loses communications with the Gantry, the Washer will shut down until communications are re-established and the machine is reset. A Communication Fault is indicated by four flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

6. **Low Hydraulic Fluid Switch**
   Normally open switch held closed by full hydraulic tank (input B7). If the Washer loses more than approximately 5 gallons of hydraulic fluid, the Washer will shut down until the hydraulic fluid is replenished and the machine is reset. Hydraulic Low Level is indicated by five flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

7. **Treadle Switch Fault**
   If the machine sees a continuous input from the Treadle Switch (input A15) for five minutes after completion of wash, a Treadle Switch Fault will be generated and the machine will shut down. The machine will not restart until the Treadle is repaired and the machine is reset. A Treadle Switch Fault is indicated by seven flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

8. **Low Water Fault**
   The Machine will shut down any time the PLC in the main control panel loses the input from the Low Water Level Switch in the High-Pressure Holding Tank (input A36). Once the PLC receives an input from the High-Water Level Switch in the High-Pressure Holding Tank (input A37), the

machine will automatically restart. A Low Water Fault is indicated by eight flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

9. **Entry System Out of Service Fault**
   If an Out of service signal (input A41) is received from the entry system, the Carwash will shut down with an Entry System Out of Service Fault. The fault must be cleared and the machine reset before the Carwash can be restarted. An Entry System Out of Service Fault is indicated by nine flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

10. **Both Forward and Rear Prox Switch Fault**
    The Machine will shut down anytime both the forward and reverse travel proximity switches (inputs B2 & B3) are made simultaneously and produce a Proximity Switch Fault. The machine cannot be reset until at least one of the proximity switch inputs are cleared and the machine is reset. A Proximity Switch Fault is indicated by ten flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

11. **Gantry Travel Time Out Fault**
    The Machine will shut down any time it takes too long for it to travel in either direction based on the travel time out timers (timers 134-136). A Travel Time Out Fault is indicated by eleven flashes of the Stop Light and Fault Light followed by a single flash of the Enter Light.

b. Non-Fatal Faults

1. **Low on Presoak Water**
   Normally closed switch that signals the PLC when the Heated Presoak Chemical holding tank is low on chemical (input A35). The switch will shut off the Presoak Chemical heater and the PLC will disable the Foaming Presoak Chemical Pump (output R43) until the switch is remade. The Carwash will otherwise continue normal operation.

2. **Entrance Bell Switch**
   If the Entrance Bell Switch (input A7) is activated continuously for 100 seconds, an Entrance Bell Switch Fault is generated. Once the bell switch input is removed the Fault will automatically reset. The Carwash will continue to run but operations controlled by the Entrance Bell Switch may behave erratically.

3. **Exit Bell Switch**
   If the Exit Bell Switch (input A6) is activated continuously for 100 seconds, an Exit Bell Switch Fault is generated. Once the bell switch input is removed the Fault will automatically reset. The Carwash will continue to run but operations controlled by the Exit Bell Switch may behave erratically.

4. **Back-up Bell Switch**
   If the Back-up Bell Switch (input A17) is activated continuously for 100 seconds, a Back-up Bell Switch Fault is generated. Once the bell switch input is removed the Fault will automatically reset. The Carwash will continue to run but operations controlled by the Back-up Bell Switch may behave erratically.

5. **Front Travel Prox Switch**
   If the Front Travel Prox Switch (input B2) is activated continuously for 5 seconds during reverse travel, a Front Travel Prox Switch Fault is generated. Once the prox switch input is removed the Fault will automatically reset. The Carwash will continue to run but operations controlled by the Front Travel Prox Switch may behave erratically.

6. **Reverse Travel Prox Switch**
   If the Reverse Travel Prox Switch (input B3) is activated continuously for 5 seconds during forward travel, a Reverse Travel Prox Switch Fault is generated. Once the prox switch input is removed the Fault will automatically reset. The Carwash will continue to run but operations controlled by the Reverse Travel Prox Switch may behave erratically.

7. **Reclaim Alarm**
   Input from reclaim alarm (input A42). Carwash will continue normal operation.

8. **Gantry Power Supply Slot 1 Module Error**
   If the power supply for the Coupler in the Gantry Control Panel loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

9. **Gantry DI Slot 2 Module Error**
   If the Digital Input module in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

10. **Gantry DO Slot 3 Module Error**
    If the first Digital Output module (a red module) in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

11. **Gantry DO Slot 4 Module Error**
    If the second Digital Output module (a red module) in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds

then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

12. **Gantry DO Slot 5 Module Error**
    If the third Digital Output module (a red module) in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

13. **Gantry DO Slot 6 Module Error**
    If the fourth Digital Output module (a red module) in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

14. **Gantry DO Slot 7 Module Error**
    If the fifth Digital Output module (a red module) in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault.

15. **Gantry DO Slot 8 Module Error**
    If the sixth Digital Output module (a red module) in the Coupler, in the Gantry Control Panel, loses communications for up to 2 seconds then a minor fault will occur. This will not shut down the machine unless the duration is longer than 2 seconds then a communication timeout will occur triggering a fatal fault. A reset is not required.

NOTE: All of the following messages are for status only and do not need the reset button pressed.

16. **Back in Service**
    After the Reset button is pressed this message will appear for a few seconds then disappear.

17. **PLC Powered up Flag**
    If the PLC should have its power cycled, this message will display but will disappear after a few seconds.

18. **System Startup Flag**
    There is a first pass bit that is set whenever power is applied, this message will appear for a few seconds then disappear.

Section 6 – Installation

CAUTION: Equipment should be unloaded, serviced and installed by factory trained personnel only

A. Unloading equipment

1. Forklift requirement: 6000 lbs. capacity with 7’ fork extensions and 12’ high lift minimum.

2. Prior to unloading the washer, clear entire area of all vehicles and personnel.

3. Park truck on the most level grade accessible to job site. Make sure forklift is on a level or slightly upgrade plane. Never try to unload washer on a downgrade or side grade.

4. Depending on type washer and accessories, center of gravity will vary. Usually, center of gravity is off center toward the passenger side.

5. Pick washer up with forks on the main frame below the Mitter. Forks must extend through frame and support both the entrance and exit side header.

6. As soon as the washer clears the truck bed, lower to approximately 12” from grade. Set washer on dollies close to or inside wash bay.

B. Bay Floor Layout

1. Track Installation

a. Measure door openings of the wash bay. Mark the center point of each opening. Snap a chalk line from one end to the other.

b. Measure over 56¼” from centerline each way and make a mark. Do this on both ends of the bay and two places in the center of bay. Snap a chalk line down these marks also, end to end. There should now be three chalk lines. The two lines that are furthermost apart should measure 112½”. This is the center of the track rail.

c. Find the highest corner of the floor. Use a line or laser level to check diagonally from corner to corner. Once the high point has been established, place two sections of track down directly over the center lines that were marked, one on the left and one on the right, on the high end of the bay.

d. There are a number of options that will determine placement of track from either end of bay. AUTEC recommends 6’ minimum from inside entry end door opening.

e. Place track in position and drill through mounting holes on both tracks. It is recommended that a couple of rods be placed in the holes as they are drilled to keep the track from moving.

f. After all the holes on the two tracks have been drilled, use a 4-foot level to find the highest place on the track. Start anchoring track at the highest point.

g. Place 1 washer under track where first anchor bolt will be placed, this is the highest point in bay.

h. Work away from this high point using 4-foot level and placing washers under track to level entire length from one end to other and side-to-side.

i. After leveling and anchoring this track, use anchored track to level the other track on same end of bay. It is critical that the two tracks are level with each other for the washer to operate correctly. Drill and anchor this track as noted above.

j. The first two sections of track should now be mounted.

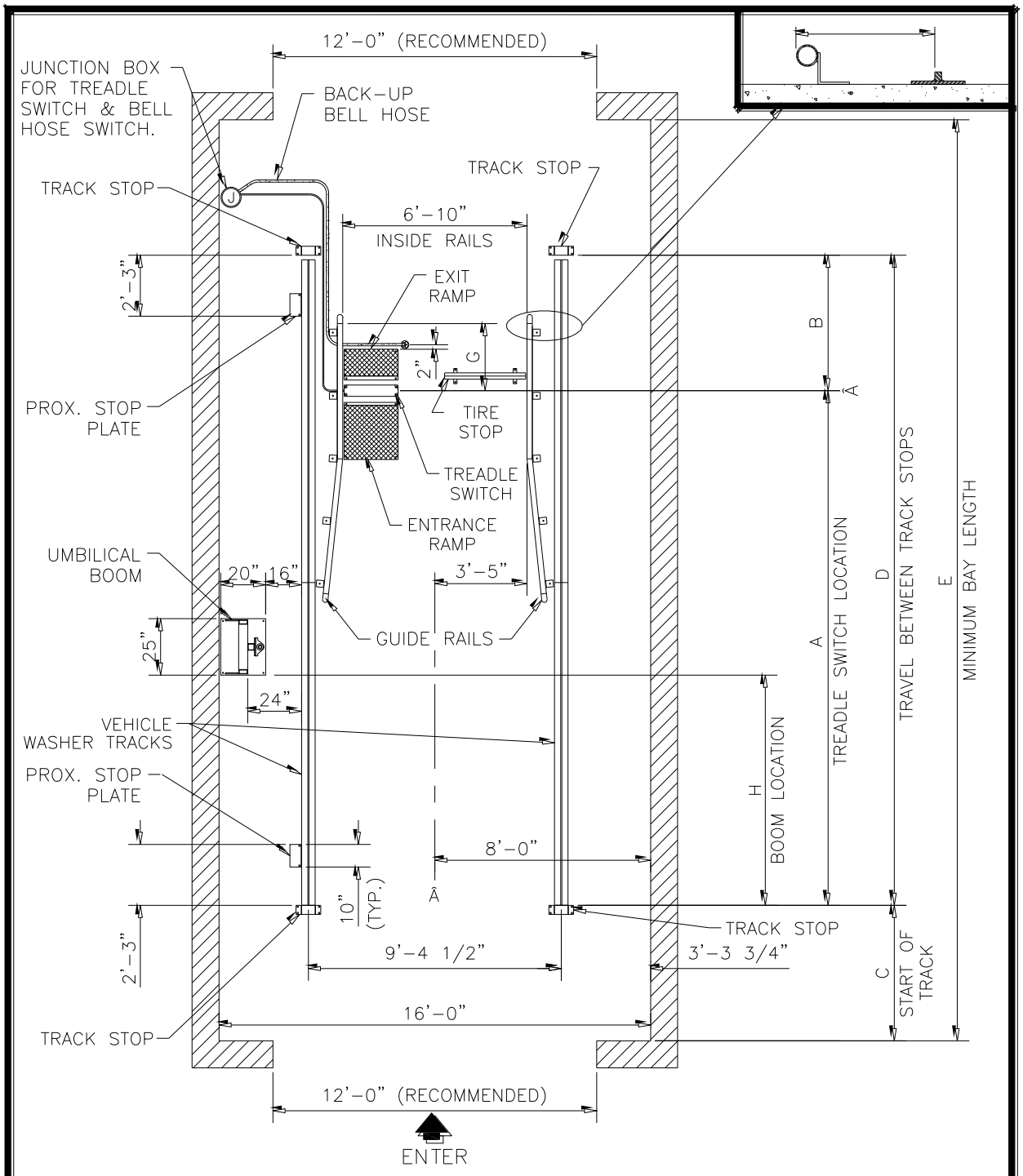
k. Before mounting the next two sections of track, place the equipment on the mounted tracks. Washer is currently on dollies so it can be rolled up over installed tracks. Make sure washer is turned the correct way. Jack up one side of the washer high enough to roll dollies out. Set this side of washer down on track. Proceed with other side of washer in same manner.

l. Now that washer is on tracks install the other two tracks. Do this in the same manner as the first two. Start drilling, anchoring and leveling where the two tracks butt together.

2. **Guide Rails** – Start installing from the exit end of the bay. The guide rail should start one to two feet forward of treadle plate. Place the guide rail so that the inside of the guide rail is 14 3/4” from the inside of the track rail. Continue rearward maintaining 14 3/4” distance until guide rail angles outward toward track. Secure the guide rail by drilling and fastening with concrete anchor bolts. Verify measurements as the rail is installed. Proceed with opposite side in same manner. The guide rails should be 82” apart (inside measurement) on straight section of guide rail.

3. **Track Stops** – There are four track stops. Attach one track stop to each track end at the point of maximum travel in each direction. Shim track stops as necessary.

4. **Treadle Switch** – Mount center of treadle switch 60” back from the exit end track stop. Place rubber cover over treadle switch and mount the longer treadle ramp toward the entrance 2 1/2” from the treadle. Duplicate with the short treadle ramp toward the exit. (Refer to drawings EV1-007-IM and 99-014-IM)



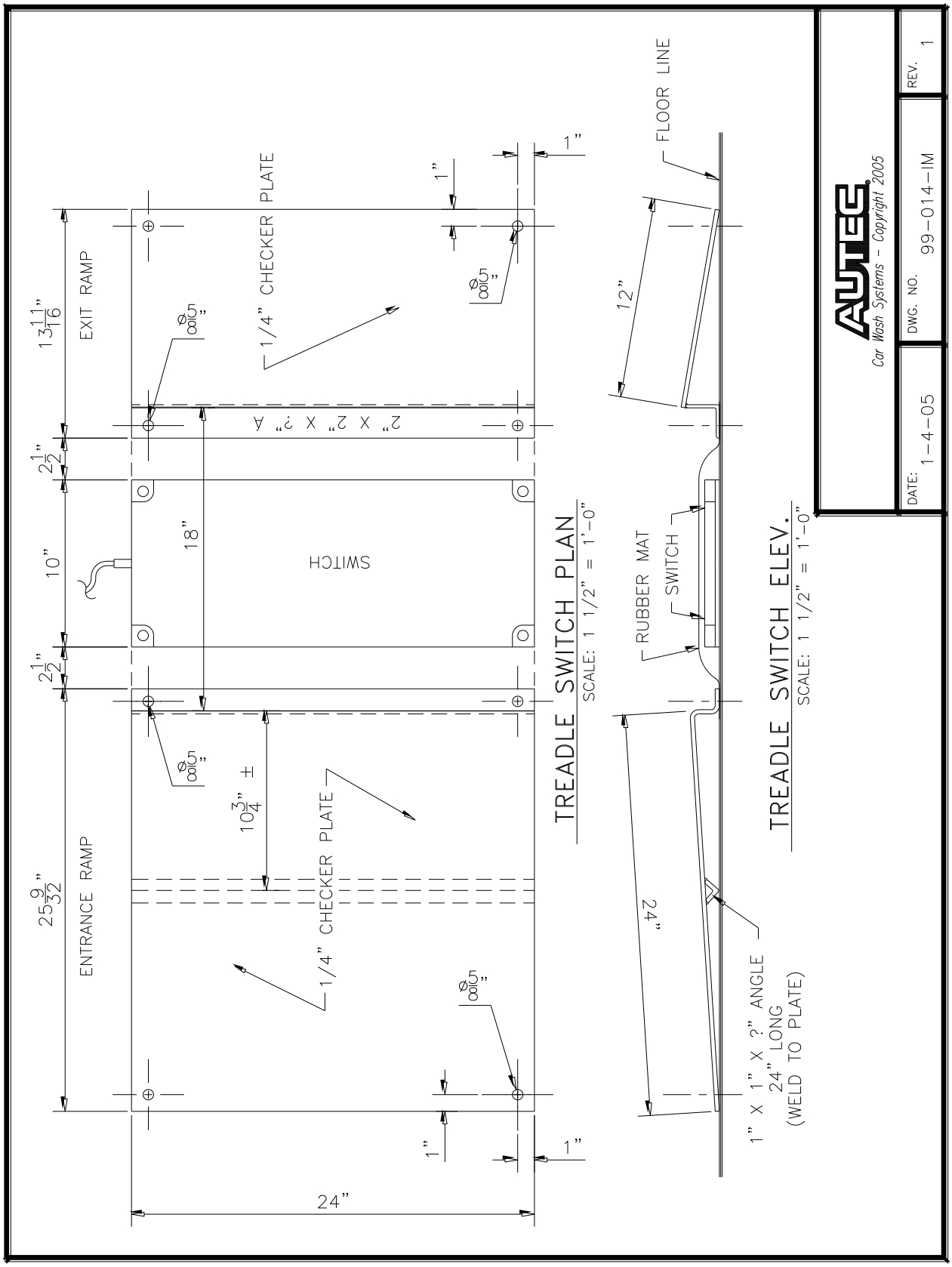
LEGEND								
MODEL	A	B	C	D	E	F	G	H
EV-1	19'-0"	5'-0"	5'-0"	24'-0"	34'-0"	14 3/4"	29 3/4"	8'-6"
EV-1	21'-0"	5'-0"	5'-0"	26'-0"	36'-0"	14 3/4"	29 3/4"	8'-6"

SCALE: NONE

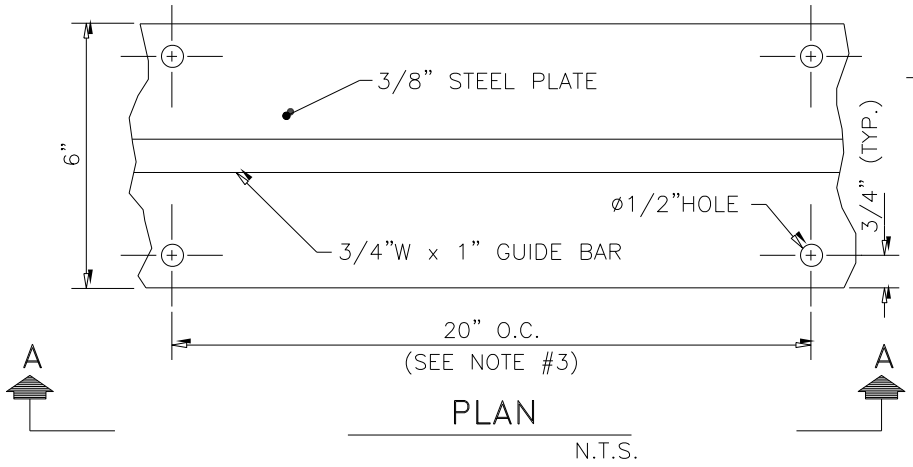
AUTEC

Soft Touch Car Wash Systems - Copyright 2002

DATE: 11-25-02	DWG. NO. EV1-007-IM	REV. 1


TREADLE SWITCH PLAN
SCALE: 1 1/2" = 1'-0"
TREADLE SWITCH ELEV.
SCALE: 1 1/2" = 1'-0"
EXIT RAMP
ENTRANCE RAMP
1/4" CHECKER PLATE
1/4" CHECKER PLATE
SWITCH
RUBBER MAT
SWITCH
FLOOR LINE
24"
1" X 1" X ?" ANGLE
24" LONG
(WELD TO PLATE)
AUTEC
Car Wash Systems - Copyright 2005
DATE: 1-4-05
DWG. NO. 99-014-IM
REV. 1

ANCHOR INSTALLATION PROCEDURE for EQUIPMENT TRACK



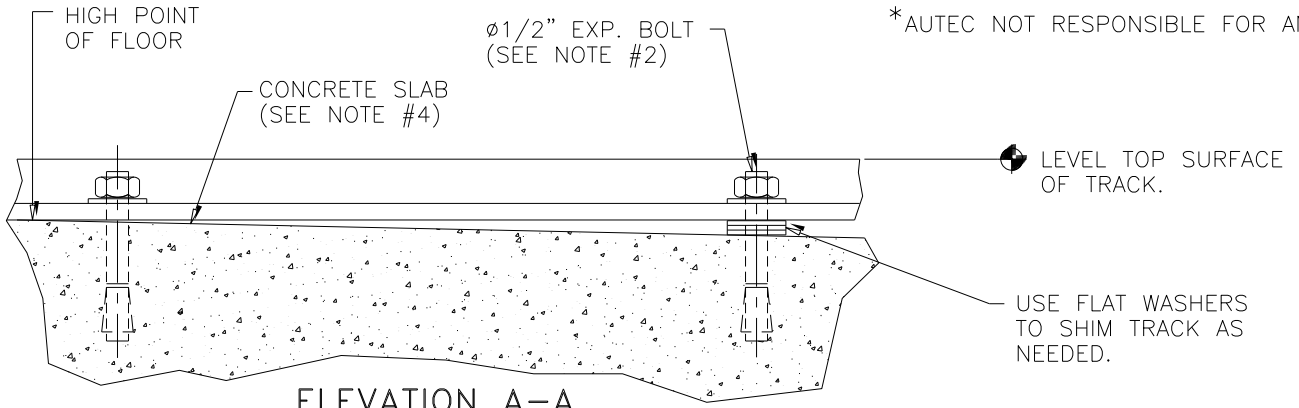
PLAN

N.T.S.

RECOMMENDED ANCHOR INSTALLATION

1. SET TRACK IN PLACE AS REQUIRED.
2. DRILL HOLES IN CONCRETE SLAB AND INSTALL "HILTI" #KBII 1/2" X 3 3/4" EXPANSION BOLTS * PER MANUFACTURERS REQUIREMENTS. USE PRE-DRILLED BEARING PLATES AS TEMPLATE. CLEAN HOLES OF ALL DEBRIS.
3. START 1st. PAIR OF HOLES 2" FROM END OF TRACK, 2nd. PAIR AT 18" AND PROCEED AT 20" CENTERS FOR ENTIRE LENGTH.
4. AUTEC RECOMMENDS A MIN. CONCRETE SLAB THICKNESS OF 6" W/ 6X6X6/6 WELDED WIRE FABRIC REINFORCING.

*AUTEC NOT RESPONSIBLE FOR ANY SUBSTITUTIONS.

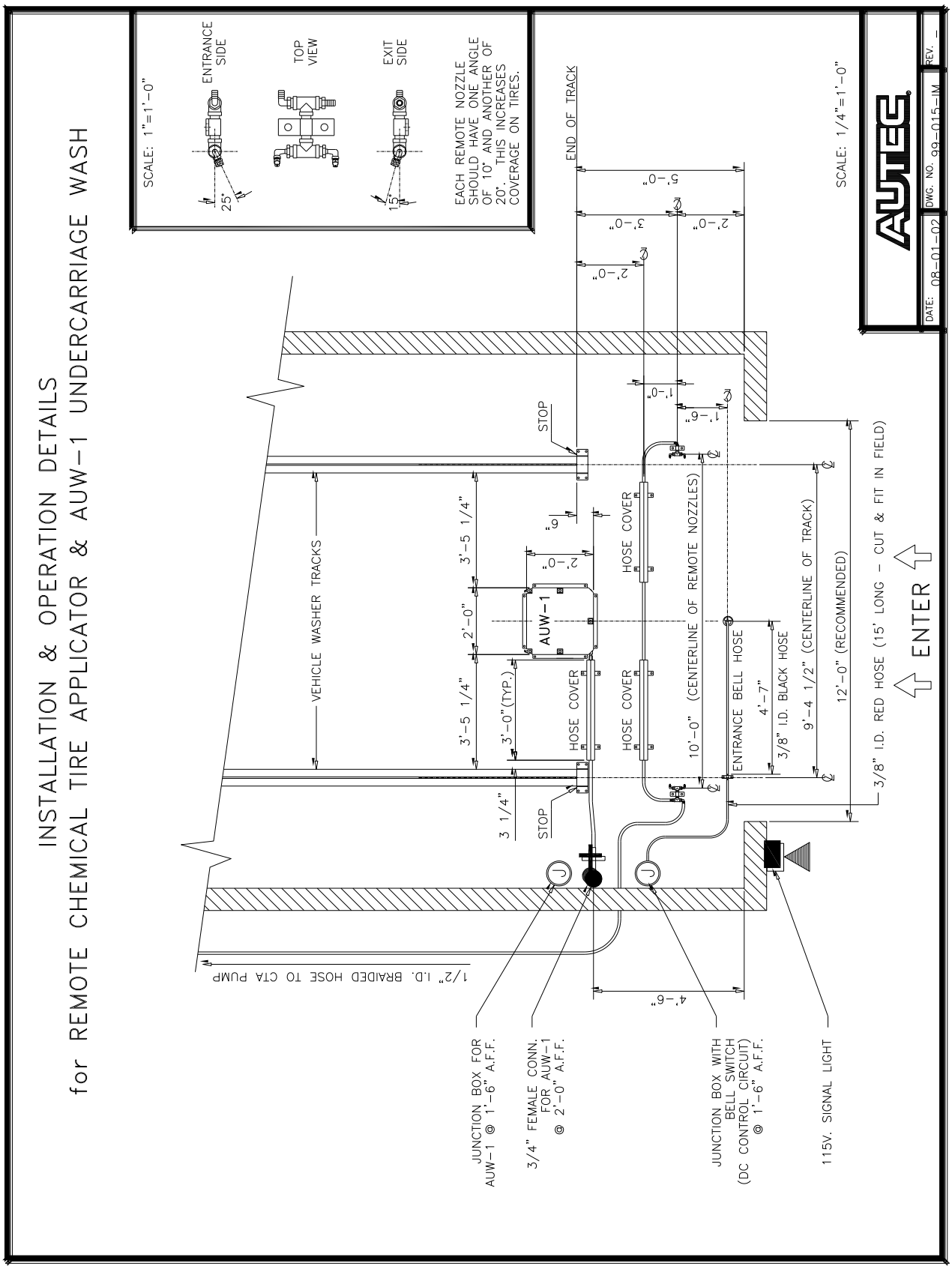


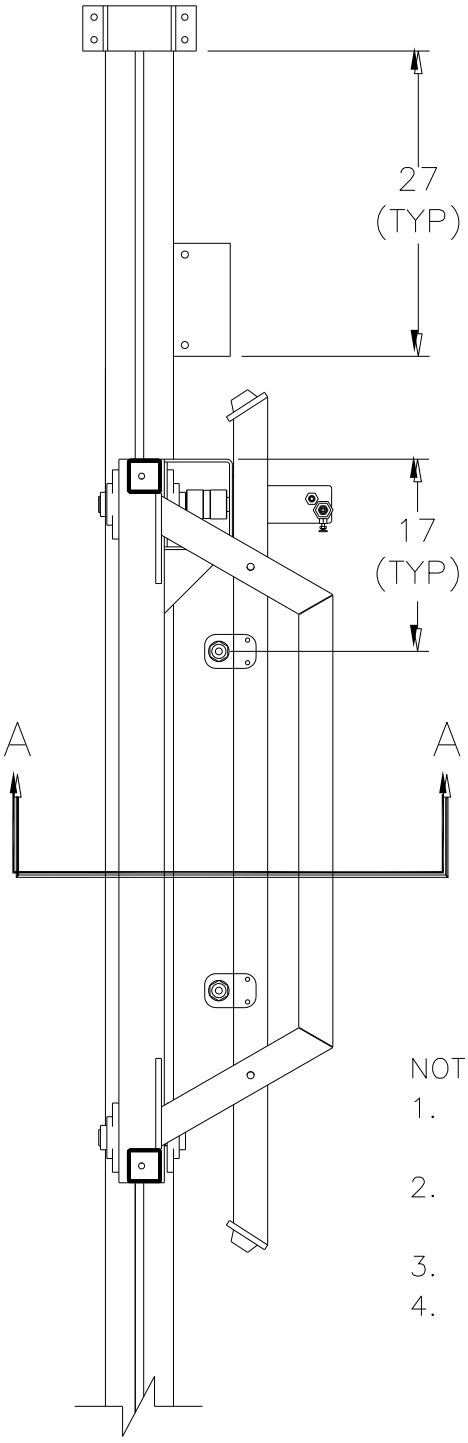
ELEVATION A-A

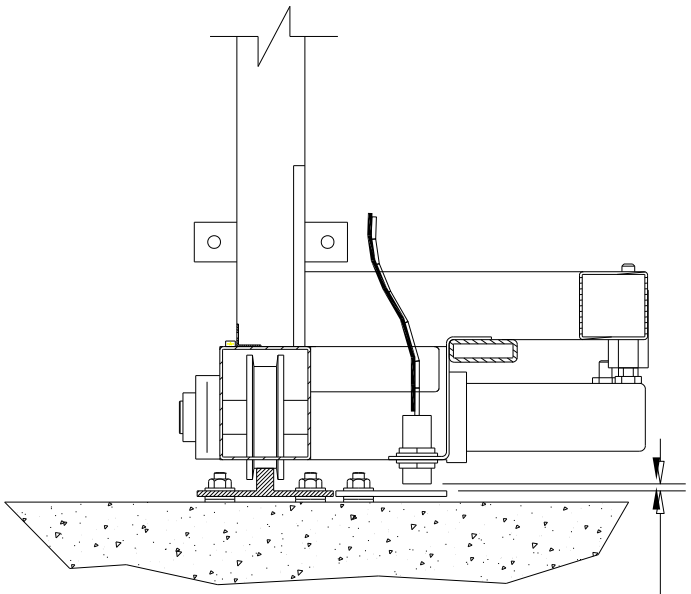
N.T.S.

AUTEC

DATE:	DWG. NO.	REV.
08-01-02	99-016-IM	-


INSTALLATION & OPERATION DETAILS
for REMOTE CHEMICAL TIRE APPLICATOR & AUW-1 UNDERCARRIAGE WASH
SCALE: 1"=1'-0"
ENTRANCE SIDE
25°
TOP VIEW
EXIT SIDE
15°
EACH REMOTE NOZZLE SHOULD HAVE ONE ANGLE OF 10° AND ANOTHER OF 20°. THIS INCREASES COVERAGE ON TIRES.
SCALE: 1/4"=1'-0"
AUTEC
DATE: 08-01-02
DWG. NO. 99-015-IM
REV. -
END OF TRACK
VEHICLE WASHER TRACKS
STOP
HOSE COVER
AUW-1
3'-5 1/4"
2'-0"
3'-0"(TYP.)
10'-0" (CENTERLINE OF REMOTE NOZZLES)
ENTRANCE BELL HOSE
4'-7"
3/8" I.D. BLACK HOSE
9'-4 1/2" (CENTERLINE OF TRACK)
12'-0" (RECOMMENDED)
3/8" I.D. RED HOSE (15' LONG - CUT & FIT IN FIELD)
ENTER
1/2" I.D. BRAIDED HOSE TO CTA PUMP
JUNCTION BOX FOR AUW-1 @ 1'-6" A.F.F.
3/4" FEMALE CONN. FOR AUW-1 @ 2'-0" A.F.F.
JUNCTION BOX WITH BELL SWITCH (DC CONTROL CIRCUIT) @ 1'-6" A.F.F.
115V. SIGNAL LIGHT





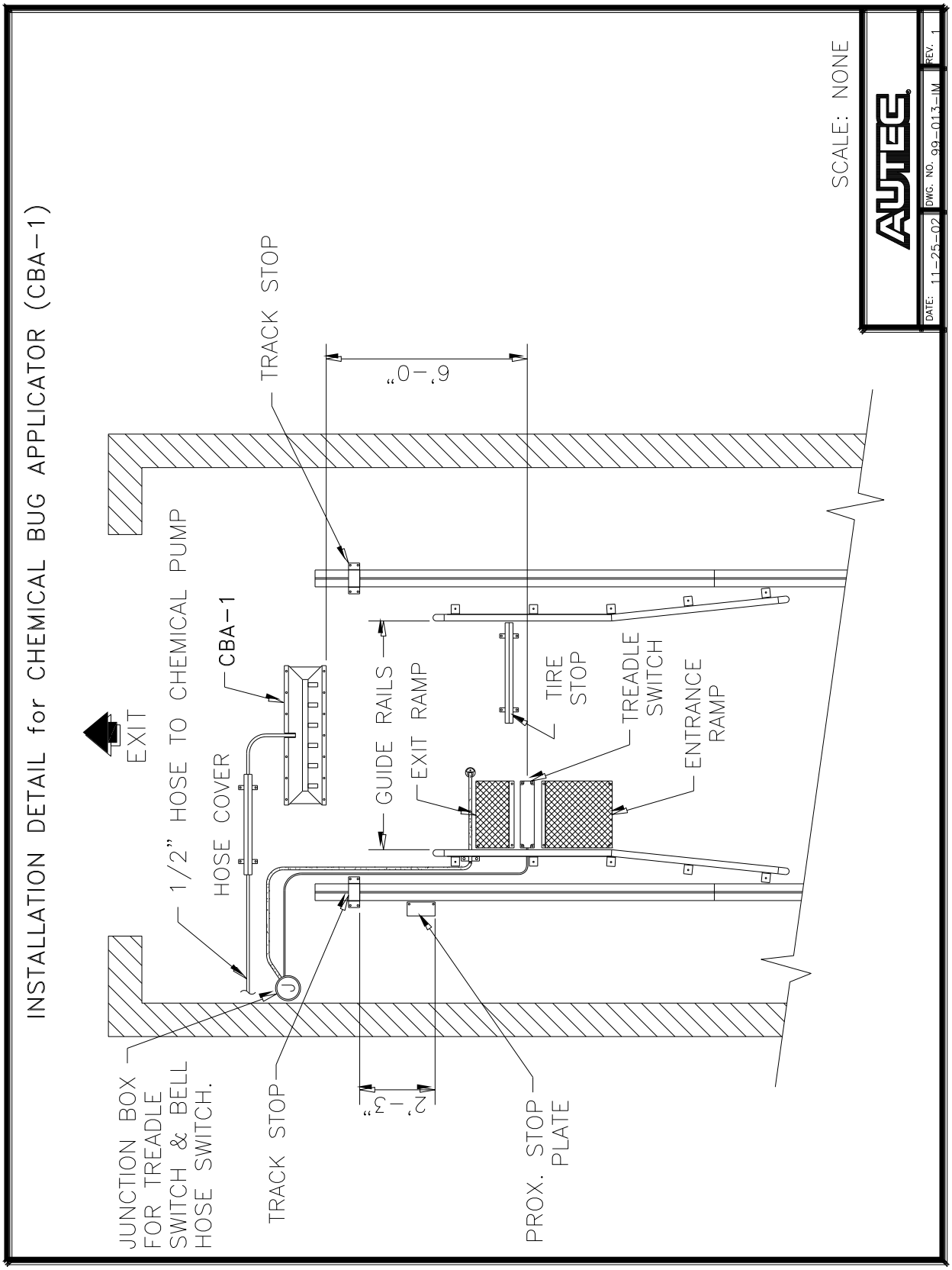
SECTION A–A

1/4
(TYP)

NOTES:

1. PLACE PROXIMITY PLATES AGAINST TRACK WITH BOLT HOLES CLOSEST TO TRACK
2. SHIM AS REQUIRED TO MOUNT PLATE FLUSH WITH TRACK BASE.
3. MAKE SURE BOLTS CLEAR MACHINE FRAME.
4. ADJUST PROXIMITY SWITCH TO 1/4" CLEARANCE FROM PLATE.

AUTEC	PROXIMITY SWITCH & PLATE LOCATION	SHT. 1 OF 1
DATE: 10/04/02	DWG. NO. 99–021–IM	REV. ––



5. **Vehicle Wheel Stop** – Install the angled wheel stop, if necessary, directly across from the treadle switch exit ramp.

6. **Proximity Switch Plate** – Inside edge of front proximity switch plate should be mounted 27” from inside of exit end track stop with mounting hole side flush against track. Inside edge of rear proximity switch plate should be mounted 27” from inside of entrance end track stop with mounting hole side flush against track. Shim plate as required. (Refer to drawing #99-021-IM)

7. **Chemical Bug Applicator** (CBA-1) – Position CBA-1 manifold and cover plate 72” from centerline of treadle.

8. **Entrance Bell Hose** – If required, the entrance bell hose should be mounted immediately inside the entrance door, leaving enough room for the door to close without damaging the hose. Attach the round bell hose anchor on the centerline of the bay. Slip 3/8” bell hose into bell hose anchor and stretch hose slightly to the side of the bay. Attach hose to hose retainer bracket and anchor on same line that was used to center track. Continue to Bell Switch with 3/8” red air hose.

9. **Remote Nozzles** – If so equipped, mount the remote nozzles for the CTA. Drill and anchor nozzles 18” beyond entrance bell hose, 10’ apart.

10. **Hose Covers** – Install hose covers 8” to 12” beyond (towards exit end of bay) remote nozzles, to protect hoses and to act as a momentary speed bump. Connect chemical lines to remote nozzles. Be sure to install a check valve between the first nozzle and pump to prevent chemical from siphoning out when washer is at rest.

11. **Back Up Bell Hose** – Mount back up bell hose approximately 2” from edge of treadle switch exit ramp. Attach the round bell hose anchor on the centerline of the bay. Slip 3/8” bell hose into bell hose anchor and stretch hose slightly to side of bay. Attach hose to hose retainer bracket and anchor on same line that was used to center track. Continue to Bell Switch with 3/8” red air hose. Additional hose retainers should be used to secure hose where it turns corner at end of track.

12. **Exit Bell Hose** – Bell hose should be just inside exit door opening. Anchor the round bell hose anchor on the centerline of the bay. Slip 3/8” bell hose into bell hose anchor and stretch hose to the controller side of the bay. Attach hose to hose retainer bracket and anchor on same line that was used to center track. Continue to Bell Switch with 3/8” red air hose.

13. **Entrance Light** – The entrance light package should be installed to the left of the entrance bay door. The bottom of the light fixture should be a minimum of 6’ from the floor.

14. **Exit Light** – The exit light package should be mounted either on the rinse arch or on the exit wall clearly visible from a car positioned in the wash. The fixture should be mounted so the red light is on the left or on top.

15. **Exit Slowly Sign** – The exit slowly sign should be mounted on the right side of the rinse arch, the right side of bay on the wall, or on right side of air blower.

16. **Instruction Sign** – Install the instruction sign where it can be clearly read when someone is sitting at the entry system, typically to the left of the entrance door below traffic signal.

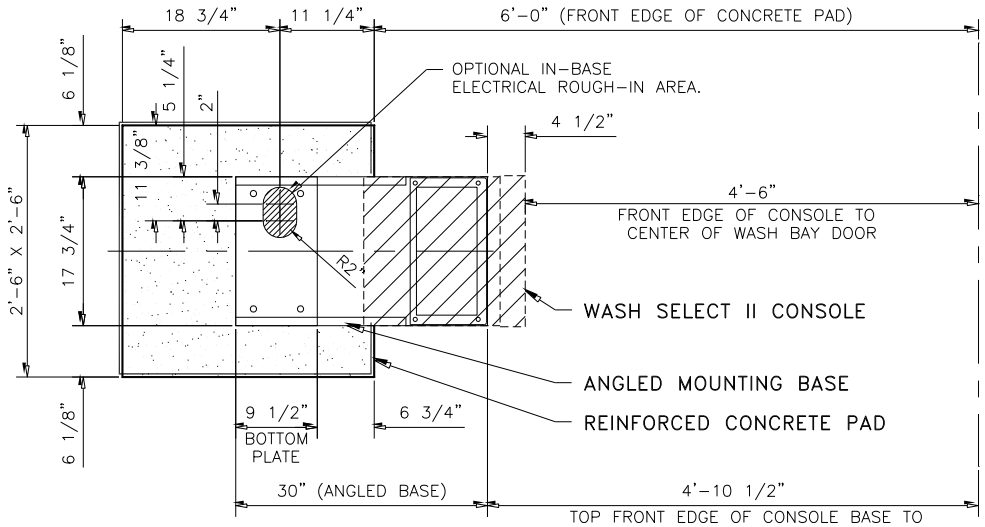
17. **Entry System** – The entry system needs to be a minimum of 10’ from entry door opening. The face of entry system should be 54” from centerline of entry door opening. The entry system should be protected by either steel poles or brick columns.

18. **Utility Boom**

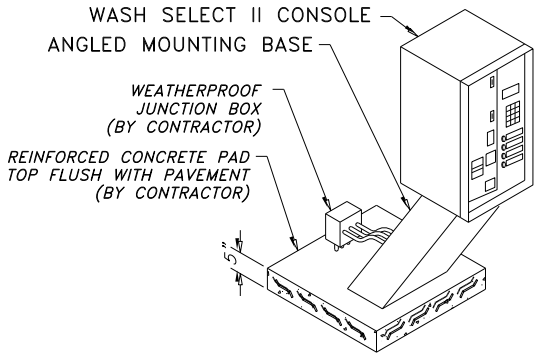
    a. Mount Boom Stand on either Driver or Passenger Side as required.

    b. Mount the 7’ Boom Arm to the Boom Stand using the two 1-1/4” pillow block bearings provided.

    c. Mount the 6’ Boom Arm to the inside of the entrance end header of the machine using the two 1-1/4” pillow block bearings provided.



PLAN VIEW
SCALE: NONE

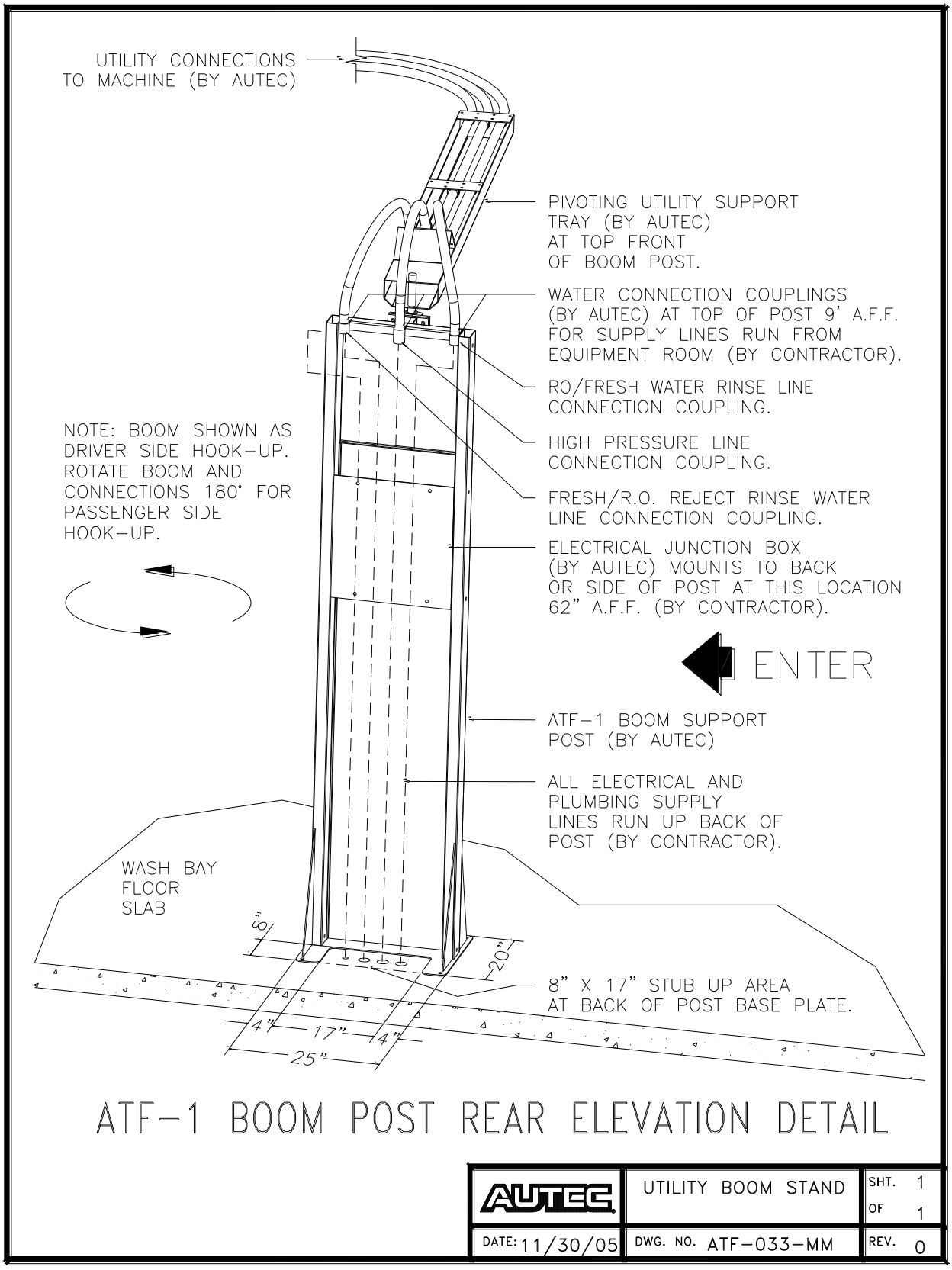


NOTE
ALL WIRING MUST HAVE A MINIMUM LENGTH OF 66" FROM THE POINT OF ENTRY IN THE MOUNTING BASE TO MAKE THE FINAL CONNECTIONS WITH THE ENTRY SYSTEM CONSOLE.

ISOMETRIC VIEW
SCALE: NONE

WASH SELECT II ENTRY SYSTEM
SCALE: NONE

AUTEC	ENTRY SYSTEM TYPICAL LAYOUT	SHT. 1 OF 1
DATE: 11/30/05	DWG. NO. ATF-032-IM	REV. 0



ATF-1 BOOM POST REAR ELEVATION DETAIL

AUTEC	UTILITY BOOM STAND	SHT. 1 OF 1
DATE: 11/30/05	DWG. NO. ATF-033-MM	REV. 0

C. MACHINE PREP

The Carwash Machine will arrive with several items disconnected or re-positioned for shipment.

1. Turn over the brackets for the forward and reverse travel proximity switches (located in the bottom of the driver side cabinet). Being careful not to run the switch into the activation plate, push the machine to each end of the track and set the clearance of each switch to approximately ¼".

2. Replace the plug in the hydraulic reservoir with the vented cap (in plastic bag attached to the hydraulic pump motor).

3. Remove plastic film from stainless steel panels.

D. WATER CONNECTION

1. All Water Lines going to the Carwash Machine should be hard piped to the couplings provided on the top of the Boom Stand.

2. Starting from the open end of the Boom Arm attached to the Boom Stand, run one end of the High-Pressure Hose through the middle of the arm and bring it up the incline on the pivot end.

3. Position hose so that middle clamp on incline is 44" from hose end towards stand.

4. Connect end of High-Pressure Water Hose to middle coupling on top of Boom Stand.

5. Pull hose snug in Arm and attach the remaining two hose clamps in the middle position on each cross brace.

6. Route other end of High-Pressure Hose through the Boom Arm attached to the Carwash and bring it up the incline on the pivot end.

7. Position Clamp on open end of Boom Arm attached to Carwash wash so that there is 42" of hose between each Boom Arm.

8. Pull hose snug in Arm and attach the remaining two hose clamps in the middle position on the middle cross brace and the incline. You should have approximately 53" from last clamp to the end of the hose.

9. Before connecting High-Pressure Hose to Carwash, flush line to remove any debris in system.

10. Attach High-Pressure Hose to Carwash.

11. Position Carwash so that Boom Arm attached to the Boom Stand is perpendicular to the track.

12. Route the Low-Pressure Hose for Fresh and / or RO Rinse Water on each side of the High-Pressure Hose and attach to the hose barbs on top of the Boom Stand matching the loop of the High-Pressure Hose.

13. Pull Low-Pressure Hoses snug and attach the remaining clamps on Boom Arm.

14. Route the Low-Pressure Hoses through the Boom Arm on Carwash but do not attach.

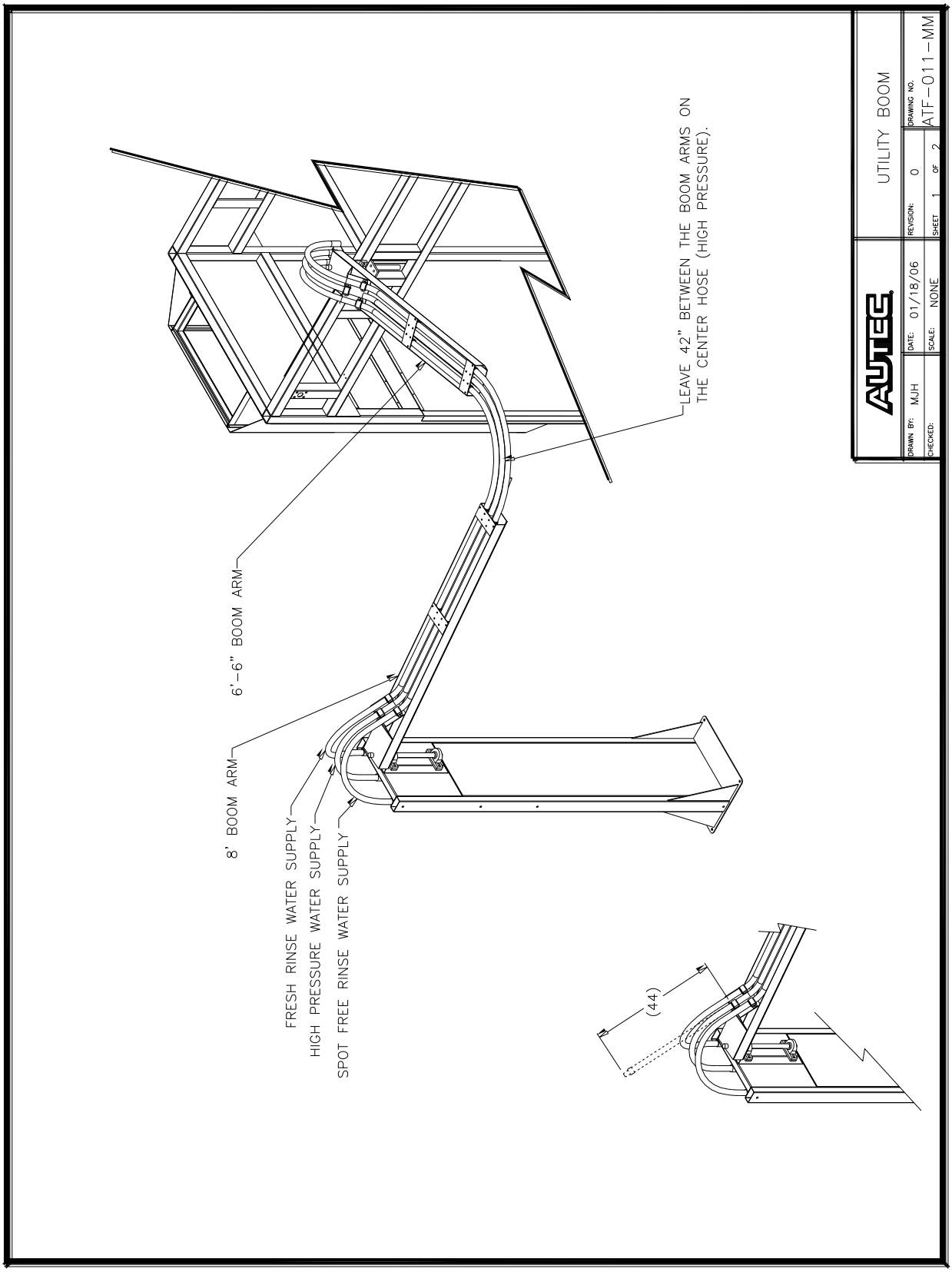
15. Move Carwash to Entrance End of track and then position and clamp Low-Pressure Hoses so that they form concentric radii with the High-Pressure Hose.

16. Pull hoses snug and attach remaining clamps on Boom Arm.

17. Before connecting Low-Pressure Hoses to Carwash, flush lines to remove any debris in system.

18. Move Carwash toward Exit End until the Boom Arm attached to the Carwash is parallel to the track.

19. Attach Low-Pressure Hoses to the Carwash matching the loop of the High-Pressure Hose.


UTILITY BOOM
AUTEC
DRAWN BY: MJH
CHECKED:
DATE: 01/18/06
SCALE: NONE
REVISION: 0
SHEET 1 OF 2
DRAWING NO. ATF-011-MM
LEAVE 42" BETWEEN THE BOOM ARMS ON THE CENTER HOSE (HIGH PRESSURE).
6'-6" BOOM ARM
8' BOOM ARM
FRESH RINSE WATER SUPPLY
HIGH PRESSURE WATER SUPPLY
SPOT FREE RINSE WATER SUPPLY
(44)

E. COMPRESSED AIR

1. The customer is to supply air service (min. of 3/8” dia and 100 psi). The air supply should be hard piped to the top of the Boom Stand.

2. Connect AUTEC supplied 3/8” air hose to end of air supply pipe.

3. Route air hose through Boom Arms, matching contour of water lines.

4. Temporarily attach airline to machine but do not cut to length yet.

5. Move Carwash to each end of track and make sure air hose flexes freely with no kinks or rubbing.

F. HOT WATER PUMPING STATION

1. Mount Hot Water pumping station to floor or wall as required.

2. Make electrical connections to tank heater, thermostat, level switch, and pump motor as required (refer to electrical schematics in section 9).

3. Plumb ½” delivery line from pump to machine and ½” return line back to tank (refer to section 10 for plumbing schematics).

G. HIGH PRESSURE PUMPING STATION

1. Mount pumping station to floor as required.

2. Set 165 gallon holding tank on top of pump stand.

3. Plumb pumping station as shown (refer to section 10).

4. Make electrical connections to pump motor, low and high level float switches, and fill valve (refer to electrical schematics in section 9).

5. Plumb ½” delivery line from pump to machine and ½” return line back to tank (refer to plumbing schematics in section 10).

H. CHEMICAL PUMPING STATIONS

1. Chemical Pumping Stations come pre-assembled with an air diaphragm pump, hydrominder, and air solenoid valve mounted on a stainless steel backplane. These pumping stations can be wall-mounted individually or fastened together to form one large chemical pumping station panel. There is also a separate panel that includes an air filter/regulator and water filter for the incoming air and water supply. (See drawings 99-008-MC)

    a. Mount chemical pumping stations and the air/water filter panel to the wall.

b. Plumb the incoming air and water to the air and water filter and then in series to each pumping station.

c. Place chemical barrels beneath pumping station and plumb suction line from hydrominder to chemical bucket.

d. Attach chemical lines feeding wash bay to discharge side of air diaphragm pumps.

2. Chemical lines

a. Run chemical lines to top of Boom Stand and route through Boom arms matching contour of Water Lines.

b. Temporarily tie chemical lines to water lines but do not cut to length yet.

c. Move Carwash to each end of track and make sure chemical lines flex freely with no kinks or rubbing.

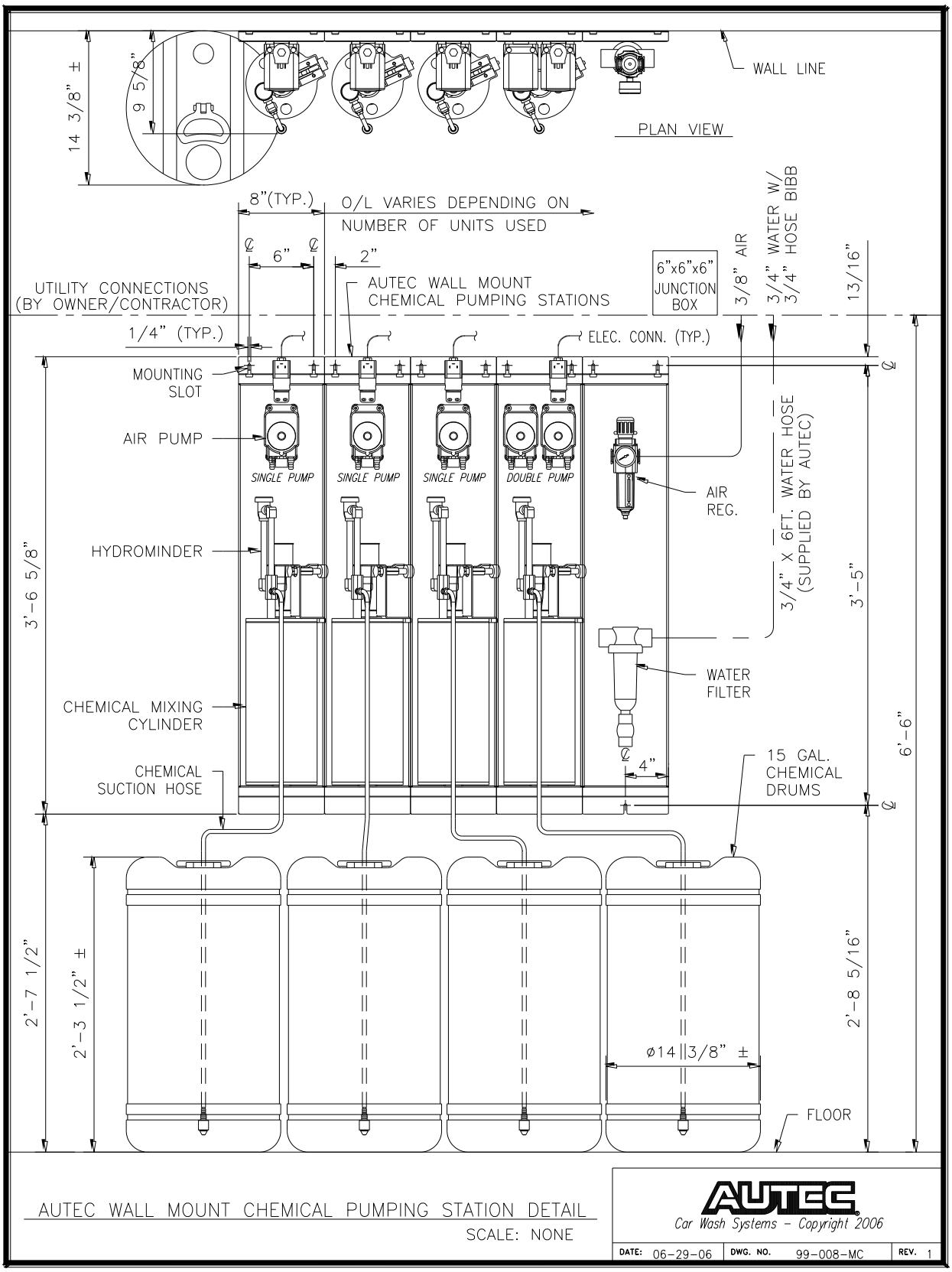
3. Chemical Settings – Use the following chart to adjust chemical setups. This chart is for reference only as each site may require additional adjustment based on specific installations.

CHEMICAL SETUPS

Chemical	Pump Type	Pump Air Pressure	Hydrominder Type	Tip Size	Approximate Dilution (@40 PSI Water Pressure)
Wheel Brite	½" ARO w/ Teflon Seals (66605J)	80 PSI	Model 511	Black	10 to 1
Ultra Grime Buster (Bug Buster)	½" ARO (670003)	60 PSI	Model 511	Orange	64 to 1
Clearcoat Protectant	¼" Flojet (G575205A)	60 PSI	Model 511	Yellow	90 to 1
Drying Agent	¼" Flojet (G575205A)	60 PSI	Model 511	Purple	120 to 1
Red, Yellow, Blue Triple Foam	¼" Flojet (G575205A)	60 PSI	Model 511	Purple	120 to 1

ATF-1 CHEMICAL SETUPS							
Chemical	**Pump Type**	**Pump Air Pressure**	**Hydrominder Type**	**Tip Size**	**Approx. dilution (@40 psi Water Pressure)**	**Hot Water Pump Pressure**	**Flow Meter Setting**

Wheel Brite	1/2" ARO w/ Teflon Seals (66605J)	80 psi	Model 511	Black	10 to 1	N/A	N/A
Drying Agent	1/4" Flojet (G57***5***205 A)	60 psi	Model 515	none	120 to 1	50 psi	10
Red, Yellow, Blue Wax	1/4" Flojet (G57***5***205 A)	60 psi	Model 511	Yellow	90 to 1	N/A	N/A
Pre-Soak #1	1/4" Flojet w/ Viton Seals (G57***3***205 A)	60 psi	Model 515	none	40 to 1	50 psi	60
Pre-Soak #2	1/4" Flojet w/ Viton Seals (G57***3***205 A)	60 psi	Model 515	none	100 to 1	50 psi	15


WALL LINE
PLAN VIEW
14 3/8" ±
9 5/8"
8"(TYP.)
O/L VARIES DEPENDING ON
NUMBER OF UNITS USED
6"
2"
UTILITY CONNECTIONS
(BY OWNER/CONTRACTOR)
AUTEC WALL MOUNT
CHEMICAL PUMPING STATIONS
6"x6"x6"
JUNCTION
BOX
3/8" AIR
3/4" WATER W/
3/4" HOSE BIBB
13/16"
1/4" (TYP.)
ELEC. CONN. (TYP.)
MOUNTING
SLOT
AIR PUMP
SINGLE PUMP
SINGLE PUMP
SINGLE PUMP
DOUBLE PUMP
AIR
REG.
3/4" X 6FT. WATER HOSE
(SUPPLIED BY AUTEC)
HYDROMINDER
3'-6 5/8"
3'-5"
WATER
FILTER
CHEMICAL MIXING
CYLINDER
4"
15 GAL.
CHEMICAL
DRUMS
6'-6"
CHEMICAL
SUCTION HOSE
2'-7 1/2"
2'-3 1/2" ±
2'-8 5/16"
ø14 3/8" ±
FLOOR
AUTEC WALL MOUNT CHEMICAL PUMPING STATION DETAIL
SCALE: NONE
AUTEC
Car Wash Systems - Copyright 2006
DATE: 06-29-06
DWG. NO. 99-008-MC
REV. 1

I. ELECTRICAL

The main disconnect, control panel and all other junction boxes, conduits and related electrical wiring should be installed and connected per state and local codes by a licensed electrician. (See drawing ATF-200-MI in Section 9)

GROUNDING INSTRUCTIONS: This appliance must be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance.

1. The customer is to supply and mount specified disconnect switch to local electrical code.

2. Mount the Main Control Panel in the equipment room.

3. Install Main Panel supply wiring from disconnect switch. Connect power wire to L1, Neutral to N, and Ground to ground as shown on Schematic Sheet 1.

4. Mount the AUTEC supplied Boom Junction Box to the back of the Boom Stand.

5. Run wire in rigid conduit between the Main Control Panel and the Boom Junction Box as required.

6. Route the four AUTEC supplied power cables (#6-4 – 3-phase power, #16-3 Yellow Cable – hydraulic heater, #16-5 – 120V, and #16-3 DC analog) through the Boom Arms matching the contour of the High-Pressure Hose. ***DO NOT RUN THE CAT5 COMMUNICATION CABLE AT THIS TIME***.

7. Make connections in the in-bay junction box, if used, and temporarily tie power cables to water lines in umbilical bundle or boom arms.

8. Move Carwash to each end of track and make sure power cables flex freely with no kinks or rubbing.

9. Starting at wall or boom stand, begin fastening power cables, chemical lines, and airline to waterlines using wire ties. Place a wire tie approximately every 12 inches.

10. Route power cables to Gantry Junction Box and Main Hydraulic Motor and connect the wires labeled X1, X3, N, and Ground as shown on Schematic Sheet 1.

11. Run the CAT5 communication cable from the Main Control Panel and route through the Boom Junction Box as shown in the Electrical Schematics sheet titled ETHERNET COMMUNICATIONS DIAGRAM.

12. Route the Communication Cable alongside the umbilical bundle or through the boom arms matching the contour of the main water lines.

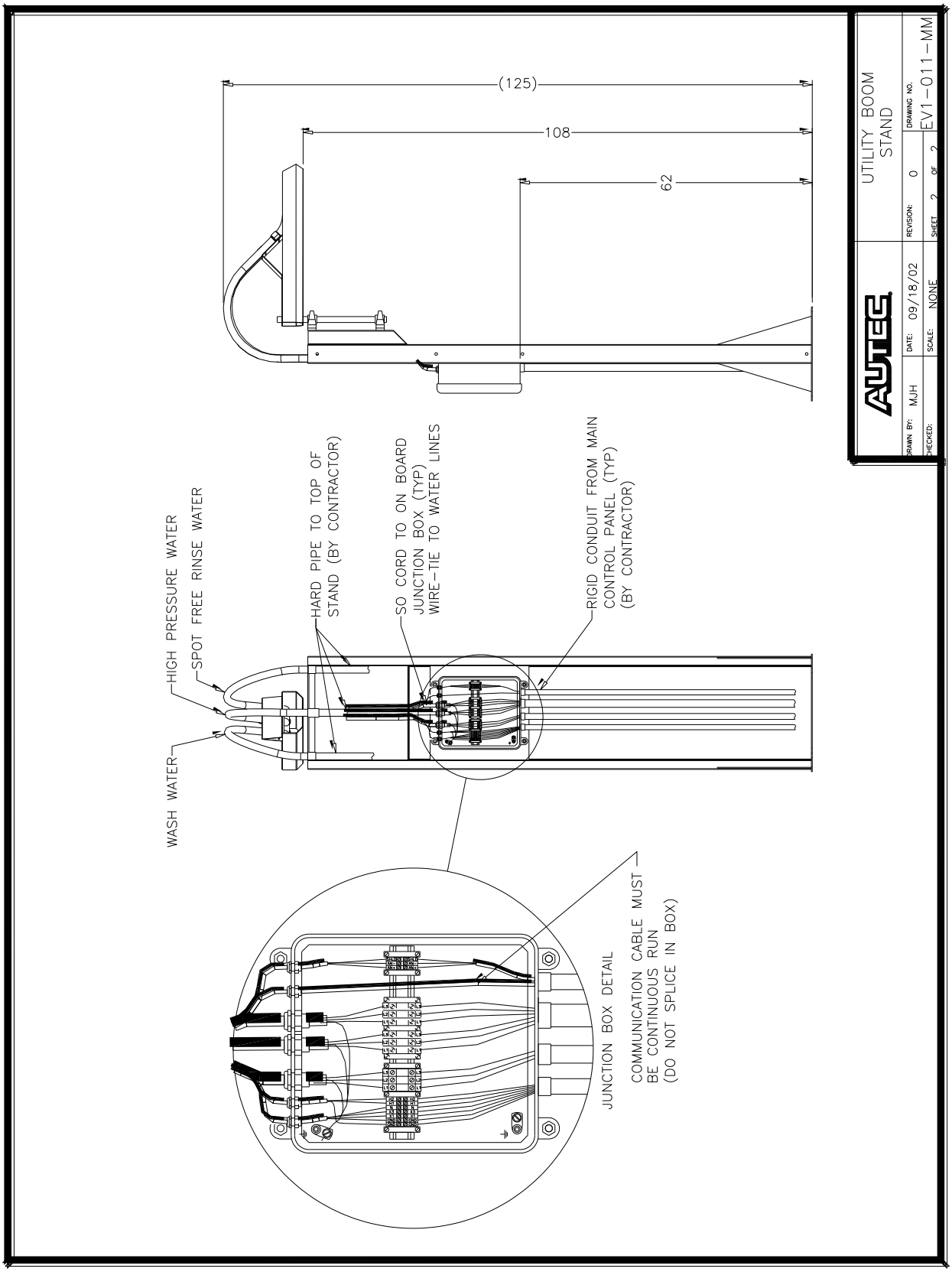
13. Temporarily tie Communication Cable to water lines in umbilical bundle or boom arms and move Carwash to each end of track and make sure Communication Cable flexes freely with no kinks or rubbing.

14. Starting at wall or boom stand, begin fastening Communication Cable to water line using wire ties. ***MAKE SURE TO LEAVE ENOUGH SLACK AT ALL PIVOT POINTS SO THAT COMMUNICATION CABLE IS NOT STRETCHED WHEN IT FLEXES***.

15. Push washer to each end of track and re-check cable bundle to ensure there are no kinks or rubbing.

16. Route Communication Cable into Gantry Junction Box and plug it into the top port of the B&R coupler as shown on schematic sheet 7.

17. After the electrician has made all final connections, re-check all the connections to ensure that they have been properly made. Do not attempt to turn power on until all connections have been checked.


(125)
108
62
HIGH PRESSURE WATER
SPOT FREE RINSE WATER
WASH WATER
HARD PIPE TO TOP OF STAND (BY CONTRACTOR)
SO CORD TO ON BOARD JUNCTION BOX (TYP) WIRE-TIE TO WATER LINES
RIGID CONDUIT FROM MAIN CONTROL PANEL (TYP) (BY CONTRACTOR)
JUNCTION BOX DETAIL
COMMUNICATION CABLE MUST BE CONTINUOUS RUN (DO NOT SPLICE IN BOX)
AUTEC
UTILITY BOOM STAND
DRAWN BY: MJH
DATE: 09/18/02
REVISION: 0
DRAWING NO. EV1-011-MM
CHECKED:
SCALE: NONE
SHEET 2 OF 2

J. SETUP PROCEDURE

1. Verify I/0

Refer to the software section of the manual to identify all input and output devices.

a. Checking Outputs (Main Control Panel and Gantry Junction Box) – Connect the TP700 Touch Panel to the main PLC and go to the Manual Force Page. (See Section 7)*.* Force each output, one at a time, and verify that the proper output is energized. Check all outputs both in the Main Control Panel (R0-R40) and the Gantry Junction Box (S0-S26). If a device doesn't come on or if the fuse blows, trace that circuit to its destination to identify and remedy the problem. This is a beneficial procedure since all devices can be individually tested.

b. Checking Inputs (Main Control Panel and Gantry Junction Box) – Manually activate input devices, one at a time, and verify the correct input light illuminates on the TP700 panel. Note that some inputs are **Normally Closed (NC)** and the light on the TP700 panel will extinguish when the input changes state. Check all inputs both in the Main Control Panel (A0-A45) and the Gantry Junction Box (B0-B11). (Note: Not all inputs will be used.) If an input light doesn't come on (or go off if NC), trace that circuit to identify and remedy the problem.

2. Hydraulic Adjustments

Go to the Manual Operation Screen on the TP700 to energize hydraulic outputs. (See Section 7 – TP700 Logic Touch Control Panel)

a. **High-Pressure Nozzle Oscillate Speed –** Energize the HP Nozzle Oscillate valve and verify the hydraulic pressure is at ±750 PSI (gauge is on Main Hydraulic Manifold located inside the driver side cabinet. The speed control valve on the top side of the main hydraulic manifold controls the speed the high-pressure nozzles oscillate (see drawing ATF-007-AH). The recommended speed is 80 RPM. Lock down adjustment screw jam nut.

3. High Pressure nozzle Adjustments

Adjust the High Pressure Nozzles as follows: (refer to Drawing No. ATF-024-MM)

b. Top header nozzles – at the maximum oscillator down stroke the top nozzles should point straight down, and at the maximum oscillator up stroke the top nozzles should shoot water approximately 1-2" below the center point of the header.

c. Side Top Nozzles – Look through the hole in the nozzle and you should see the top header nozzle on the opposite side of gantry when the oscillator is at the maximum up stroke.

d. Bottom Side Nozzle – Mark a line 16-18 inches from inside edge of the track. At the minimum oscillator stroke (bottom of stroke) look through the hole in the nozzle. You should see the line that you marked centered in the hole.

e. The top and bottom side nozzles should overlap in their oscillations.

f. Rocker panel – Mark a line 16-18 inches from inside edge of the track. At bottom of the oscillation the rocker blaster water stream should be hitting this line, and not any closer to the track.

4. Gantry Photoeyes

Check photoeyes and adjust alignment and timer values if necessary (see table at end of section).

a. If gantry stops and reverses direction in the middle of a pass the photoeyes may need to be adjusted. This seems to be especially true with trucks. After checking mechanical adjustment/alignment of photoeyes check the photoeye timers (see below).

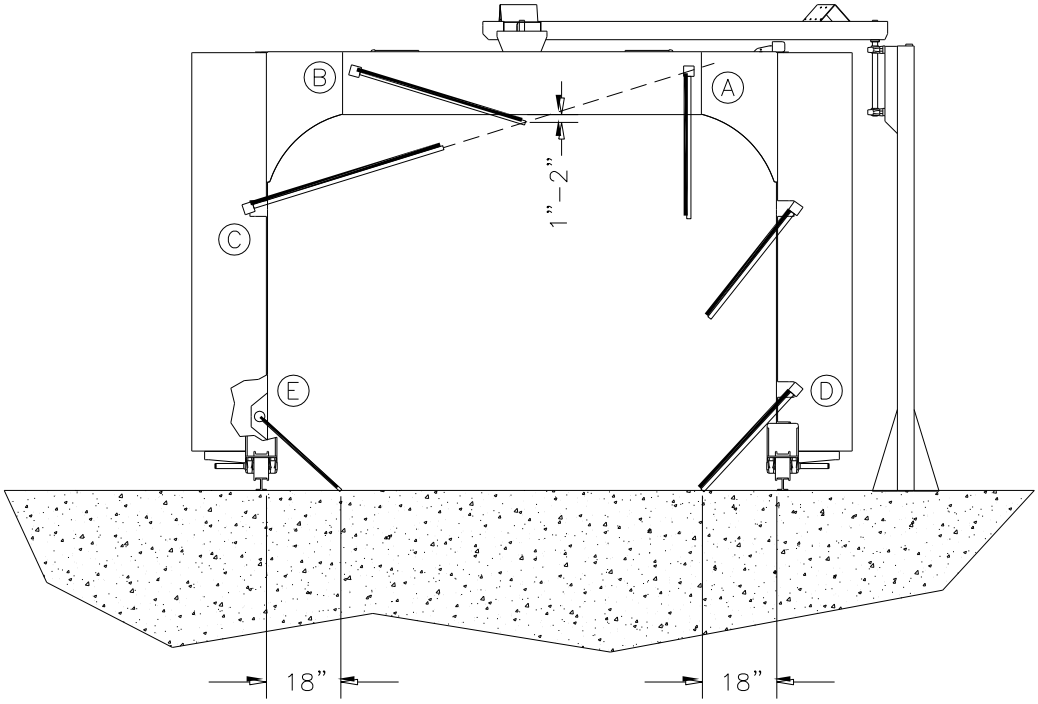
b. If gantry stops and reverses direction in the middle of a pass while traveling toward entrance end of the bay then adjust photoeye timer #115 (Entrance Eye Gantry Off Delay). Increase the amount of time by 1/2 second from the current setting and test again up to a maximum value of 1.5 seconds, using same vehicle that caused previous error if possible. If problem is still apparent and time value in parameter is at 1.5 seconds, then increase value by 0.1 second intervals and retest until problem no longer occurs.

c. If gantry stops and reverses direction in the middle of a pass while traveling toward exit end of the bay then adjust photoeye timer #118 (Exit Eye Gantry Off Delay). Increase the amount of time by 1/2 second from the current setting and test again up to a maximum value of 1.5 seconds, using same vehicle that caused previous error if possible. If problem is still apparent and time value in parameter is at 1.5 seconds, then increase value by 0.1 second intervals and retest until problem no longer occurs.

d. Adjust the photoeye parameter #116 (Forward Travel Time) so that the gantry travels past the rear of the vehicle by the desired distance. You want to go far enough past the vehicle that when the gantry reverses direction and starts the next pass back over the vehicle that the high pressure water is not already up on the trunk when it turns on. Be careful that the gantry does not go so far that the exit photoeye on the gantry passes the rear of the vehicle or it may cause other problems. If this occurs decrease parameter #116 by 0.1 second increments to get proper stop location.

e. Adjust the photoeye parameter #119 (Reverse Travel Time) so that the gantry travels past the front of the vehicle by the desired amount. You want to go far enough past the vehicle that when the gantry reverses direction and starts the next pass back over the vehicle that the high pressure water is not already up on the hood when it turns on. Be careful that the gantry does not go so far that the entrance photoeye on the gantry passes the front of the vehicle or it may cause other problems. If this occurs decrease parameter #119 by 0.1 second increments to get proper stop location. Also note that because of the location of the treadle switch relative to the exit end of the

bay that the maximum travel may depend more on the travel proximity switch plate mounted to the floor than on this parameter.



A. Top header nozzles - At the maximum oscillator down stroke the top nozzles should point straight down.

B. Top header nozzles - At the maximum oscillator up stroke the top nozzles should shoot water approximately 1-2" below the center point of the header.

C. Side Top Nozzles - Look through the hole in the nozzle and you should see the top header nozzle on the opposite side of gantry when the oscillator is at the maximum up stroke.

D. Bottom Side Nozzle - Mark a line 16-18 inches from inside edge of the track. At the minimum oscillator stroke (bottom of stroke) look through the hole in the nozzle. You should see the line that you marked centered in the hole.

E. Rocker panel - Mark a line 16-18 inches from inside edge of the track. At bottom of the oscillation the rocker blaster water stream should be hitting this line, and not any closer to the track.

AUTEC	HP NOZZLE ADJUSTMENT	SHT. 1 OF 1
DATE: 1/17/06	DWG. NO. ATF-024-MM	REV. 0

5. Pneumatic Adjustments

Pneumatic adjustments are made on the Air Control Panel located in the Driver Side Cabinet (See drawing ATF-015-MP).

a. **Main Air Filter / Regulator** – The main air filter/regulator is located on the top of the Air Control Panel and should be set at approximately 100 psi. To make adjustments, pull up the black knob on top of the unit and turn clockwise to increase pressure and counter-clockwise to decrease pressure. Once the regulator is adjusted to the desired pressure, push down the black knob to lock adjustment.

b. Air Pressure Switch – A low pressure safety switch is located immediately to the right of the main filter / regulator and is factory set at 65 psi. This switch is designed to shut down the machine is the main air supply falls below 65 psi to prevent damage due to inadequate air pressure to properly control the machine.

c. Oiler / Lubricator – A pneumatic lubricator is located to the right of the filter/regulator and air pressure switch.

6. High Pressure Creep

Check and adjust the timer values for the high-pressure front and rear end creep (see table at end of section). Note: Adjust photoeye parameters listed above before adjusting the HP parameters below. Anytime you need to change the photoeye parameters you will need to go back and check/adjust the HP parameters as well.

a. Adjust parameter #60 (Delay Creep on FWD HP Pass) so that the high-pressure water stream will be approximately 2 inches away from the rear of the vehicle when the gantry starts into creep speed. So on the forward moving pass, the gantry will move at regular speed until it is 2 inches behind the vehicle, then slow to creep speed to make sure the rear of the vehicle gets adequate high pressure “scrubbing”. Adjust parameter #120 (Fwd High Pressure Creep Timer) for the amount of time the gantry should stay in creep before resuming the normal pass speed, usually so that the about foot or so of the end of the vehicle is covered by the creep HP spray.

b. Adjust parameter #61 (Delay Creep on Rev HP Pass) so that the high pressure water stream will be approximately 2 inches away from the front of the vehicle when the gantry starts into creep speed. So on the rearward moving pass, the gantry will move at regular speed until it is 2 inches in front of the vehicle, then slow to creep speed to make sure the front of the vehicle gets adequate high pressure scrubbing. Adjust parameter #121 (Rev High Pressure Creep Timer) for the amount of time the gantry should stay in creep before resuming the normal pass speed. **On the front of the vehicle the rocker panel blasters will be more important as far as the distance to travel in creep speed**, so use

parameter 121 to make sure the rocker blaster creeps at least as far as the front wheel well.

c. Adjust the creep speed parameter (#122) so that the gantry goes slow enough to properly clean the ends of the vehicle. This will typically be near 25% depending on the machine's proportional speed valve setup.

7. Wash Pass Setup

Note the following when setting up your wash passes. Refer to Section 7 for specific instructions for wash package setup.

a. Adjust the rinse/chemical pause timer (#109) to help with the chemical coverage. Start at 2.5 seconds, and increase if necessary to get good chemical coverage on ends of vehicle

b. Presoak and Rinse passes will probably need to be run at a speed near 65%, while high pressure passes (and rocker) should run at 50-55%. These percentages depend on how the proportional speed valve was adjusted in step 2-b above. The presoak/rinse passes should go end-to-end in about 20-30 seconds, while the high pressure passes should go about 30-40 seconds from end-to-end. IF YOU RUN TOO FAST YOU WILL NOT GET GOOD COVERAGE OF PRESOAK CHEMICAL ON THE VEHICLE, YOU WILL NOT GET A GOOD HIGH PRESSURE "SCRUB", OR YOU WILL NOT GET A GOOD RINSE!

c. If presoak is unbalanced (chemical comes out of nozzles on one side, air comes out of nozzles on other side of vehicle) make sure that the foamer air is adjusted correctly. This solenoid is located in the gantry side panel (red air line)…adjust to ±20PSI.

Partial list for reference only - Refer to Section 8 for a complete list of timers and registers.

Parameter	Description	Typical Range	Start Value
60-Delay creep on Fwd HP pass	Amount of time that the gantry will travel forward at the start of a High Pressure pass before going into the High Pressure Creep mode (see register 120)	1 - 3	2
61-Delay creep on Rev HP pass	Amount of time that the gantry will travel in reverse at the start of a High Pressure pass before going into the High Pressure Creep mode (see register 121)	1 - 3	1.5
109-Pause before Rinse\Chem Pass	Amount of time that gantry will pause between a Rinse/Wash/Chemical pass to allow the chemical/water from the prior pass to turn off and allow the new chemical/water for the upcoming pass to come on. Useful for ensuring that chemicals have time to get from the pump to the nozzle before the pass starts to ensure coverage on entire vehicle.	2 - 4	2.5

Parameter	Description	Typical Range	Start Value
114-Entrance Eye Gantry On Delay	Time Entrance Gantry Photoeye (input #111) must be blocked before activating eye.	0 - 1	0.5
115-Entrance Eye Gantry Off Delay	Time Entrance Gantry Photoeye (input #111) must be unblocked before de-activating eye.	0.5 - 2	1.2
116-Entrance Eye Travel Time	Time Gantry continues Reverse travel after Gantry Entrance Photoeye Off Delay (timer #115) is satisfied.	0 - 3	0.5
117-Exit Eye Gantry On Delay Time	Time Exit Gantry Photoeye (input #110) must be blocked before activating eye.	0 - 1	0.5
118-Exit Eye Gantry Off Delay Time	Time Exit Gantry Photoeye (input #110) must be unblocked before de-activating eye.	0.5 - 2	1.2
119-Exit Eye Travel Time	Time Gantry continues Forward after Gantry Exit Photoeye Off Delay (timer #118) is satisfied.	0 - 3	0.5
120-Fwd High Pressure Creep Timer	Time Creep Speed is activated during Forward Travel of High Pressure Wash to increase time on rear of vehicle. This creep time will take place after the gantry has moved at regular speed for a programmable delay time (see register 60).	6 - 12	10
121-Rev High Pressure Creep Timer	Time Creep Speed is activated during Reverse Travel of High Pressure Wash to increase time on front of vehicle. This creep time will take place after the gantry has moved at regular speed for a programmable delay time (see register 61).	6 - 12	10
122-Creep Speed 0-100%	Speed Setting of gantry travel during front and rear slowdown for nose and rear scrubbing, expressed as a percentage of full speed.		25

8. Drive Speed

Drive speed is controlled by a proportional hydraulic valve located on the main hydraulic block (see drawing ATF-007-AH). The proportional valve allows infinite speed adjustment up to approximately 1 foot/sec. Speeds are expressed as a percentage (0-100%) of flow through the hydraulic valve where 0% is stationary and 100% is top speed. The speed settings are programmed into each wash pass (See Wash Programming in Section 7); however, some speeds are set with register values – The following registers control global drive speeds.

I. **Jog Speed** (register #133) – Controls how fast the washer moves during manual jog from either the LT-170 or the jog switch in the Main Control Panel. Speed is expressed as a percentage (0-100%) of flow through the hydraulic valve where 0% is stationary and 100% is top speed.

II. **Creep Speed** (register #122) – Control how fast the washer moves during front and rear slowdown for nose and rear scrubber. Speed is expressed as a percentage (0-100%) of flow through the hydraulic valve where 0% is stationary and 100% is top speed.

III. **Parking Speed** (register #123) – Controls how fast the washer moves back to its park position after a completed wash or after a drive off. Speed is expressed as a percentage (0-100%) of flow through the hydraulic valve where 0% is stationary and 100% is top speed.

IV. **Speed Reference** – The following table shows the approximate travel time for a standard 26' track.

Speed	Time	Speed	Time
10 %	126 seconds	60 %	27 seconds
20 %	80 seconds	70 %	22 seconds
30 %	56 seconds	80 %	19 seconds
40 %	42 seconds	90 %	18.5 seconds
50 %	32 seconds	100 %	18 seconds

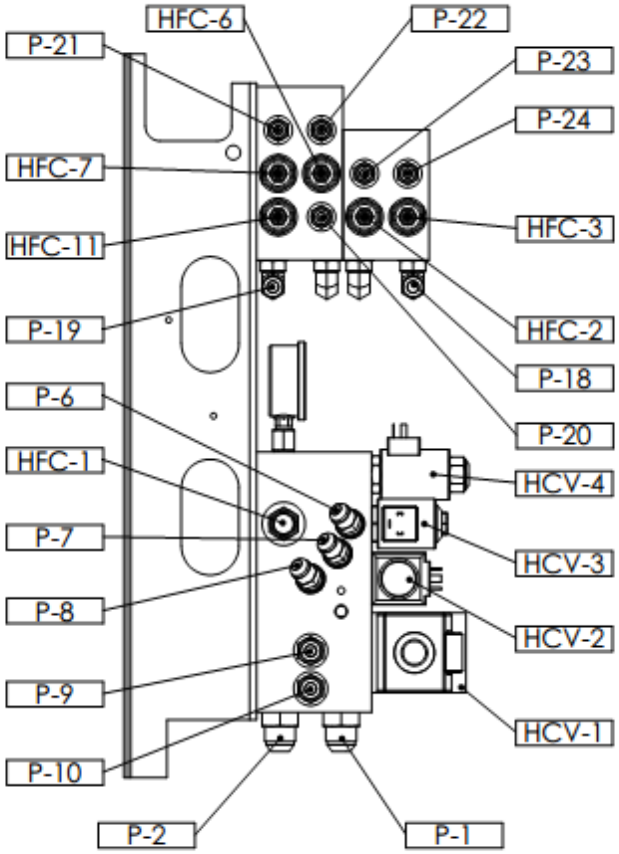
Hydraulic speed adjustments are made on the Main Hydraulic Manifold located in top center of the passenger side cabinet (see drawing 895010). The main components of the Main Hydraulic Manifold are:

Hydraulic Directional Control Valves – These are either 2 or 4-way valves that start and stop hydraulic flow and/or reverse direction of flow. They include:

1. HVC-2 – Gantry Drive 4-way Valve: Turns on/off and determines direction of gantry travel.

2. HCV-3 – Nozzle Oscillate Valve: Turns on/off nozzle oscillation.

3. HCV-4 – Gantry Drive Proportional Valve: Determines travel speed of gantry.

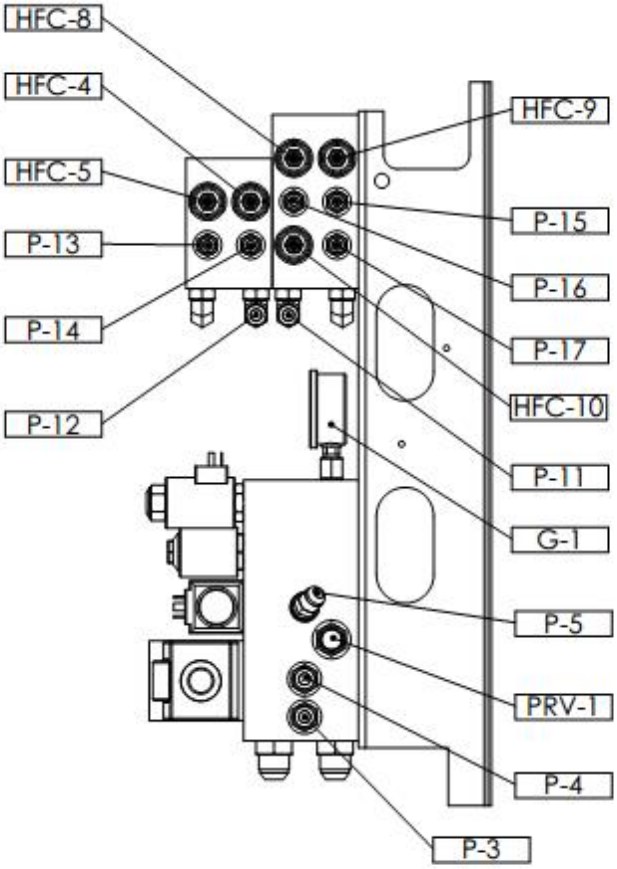


		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ; BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±		NAME	DATE
			DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
			Q.A.		
		MATERIAL	COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <INSERT COMPANY NAME HERE>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <INSERT COMPANY NAME HERE> IS PROHIBITED.

MAIN HYD MANIFOLD
LEFT SIDE VIEW

SIZE	DWG. NO.	REV.
A	898010	
SCALE:1:5	WEIGHT:	SHEET 1 OF 2



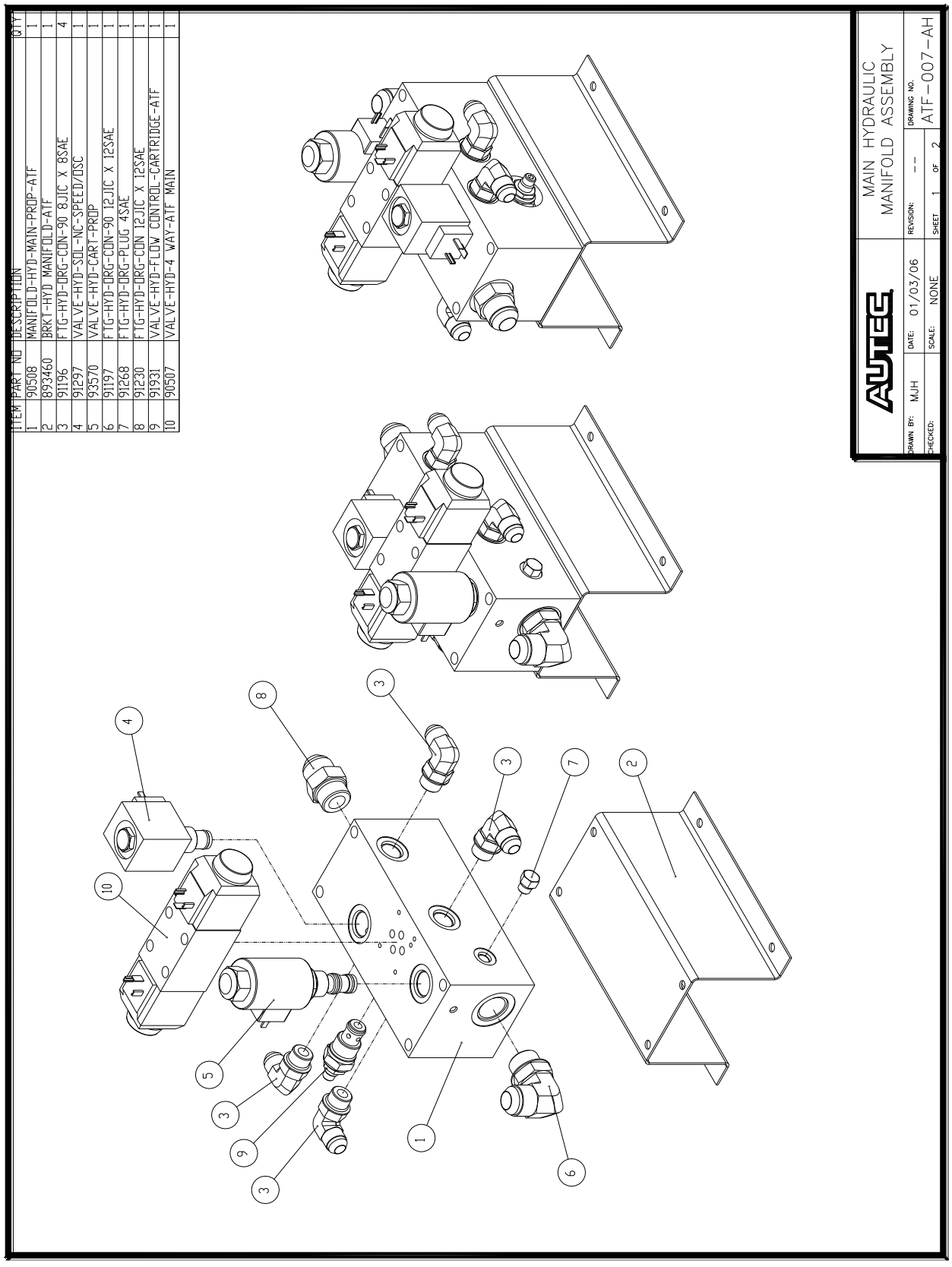
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±		NAME	DATE
			DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		MATERIAL	Q.A.		
			COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

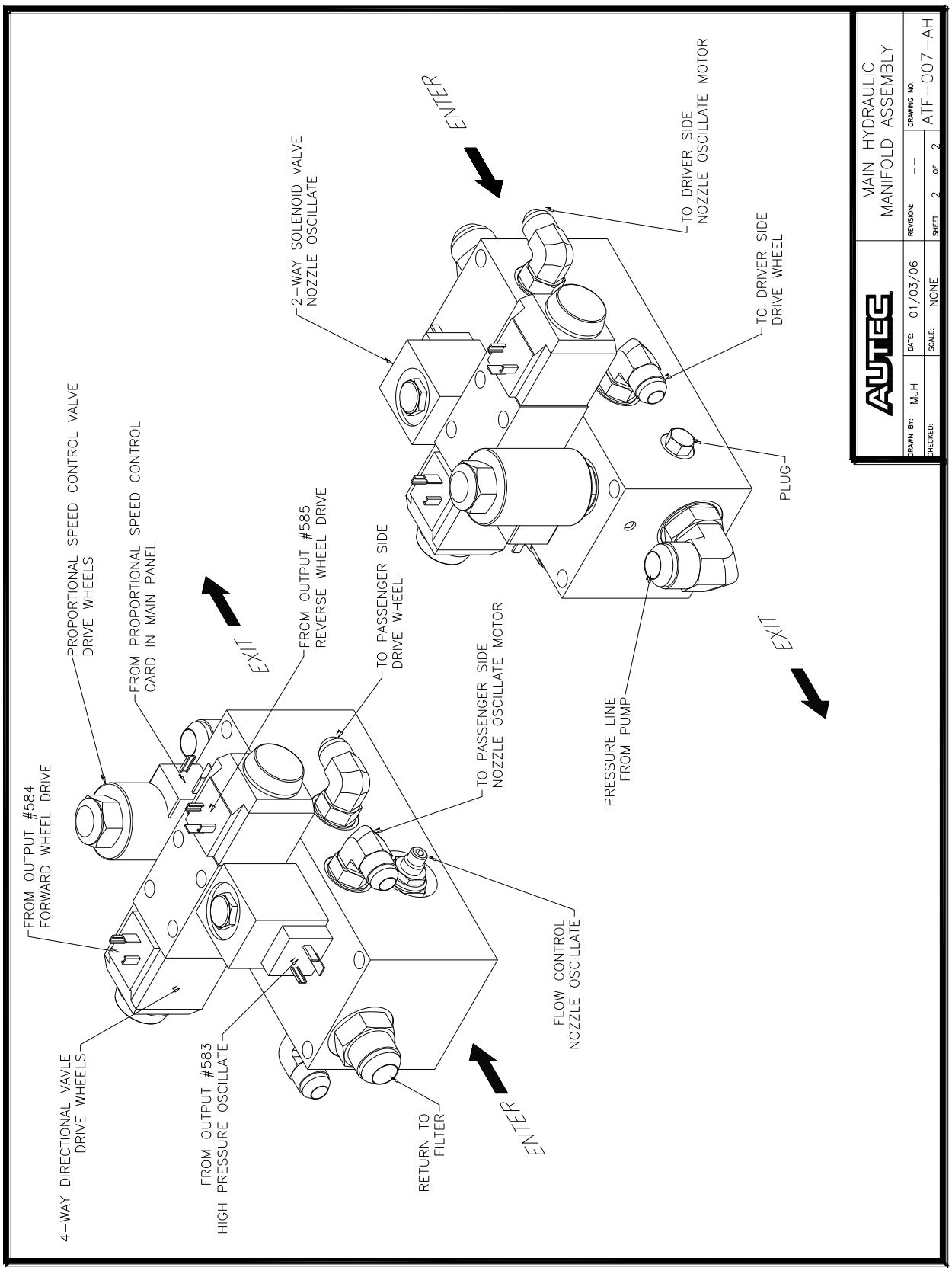
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <INSERT COMPANY NAME HERE>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <INSERT COMPANY NAME HERE> IS PROHIBITED.

MAIN HYD MANIFOLD
RIGHT SIDE VIEW

SIZE	DWG. NO.	REV.
A	898010	

SCALE:1:5 WEIGHT: SHEET 2 OF 2


ITEM PART NO DESCRIPTION QTY
1 90508 MANIFOLD-HYD-MAIN-PROP-ATF 1
2 893460 BRKT-HYD MANIFOLD-ATF 1
3 91196 FTG-HYD-ORG-CON-90 8JIC X 8SAE 4
4 91297 VALVE-HYD-SOL-NC-SPEED/DSC 1
5 93570 VALVE-HYD-CART-PROP 1
6 91197 FTG-HYD-ORG-CON-90 12JIC X 12SAE 1
7 91268 FTG-HYD-ORG-PLUG 4SAE 1
8 91230 FTG-HYD-ORG-CON 12JIC X 12SAE 1
9 91931 VALVE-HYD-FLOW CONTROL-CARTRIDGE-ATF 1
10 90507 VALVE-HYD-4 WAY-ATF MAIN 1
AUTEC
DRAWN BY: MJH
DATE: 01/03/06
CHECKED:
SCALE: NONE
MAIN HYDRAULIC MANIFOLD ASSEMBLY
REVISION: --
DRAWING NO. ATF-007-AH
SHEET 1 OF 2


MAIN HYDRAULIC
MANIFOLD ASSEMBLY
AUTEC
DRAWN BY: MJH
DATE: 01/03/06
REVISION: --
DRAWING NO. ATF-007-AH
CHECKED:
SCALE: NONE
SHEET 2 OF 2
4-WAY DIRECTIONAL VAVLE DRIVE WHEELS
FROM OUTPUT #583 HIGH PRESSURE OSCILLATE
RETURN TO FILTER
FROM OUTPUT #584 FORWARD WHEEL DRIVE
PROPORTIONAL SPEED CONTROL VALVE DRIVE WHEELS
FROM PROPORTIONAL SPEED CONTROL CARD IN MAIN PANEL
FROM OUTPUT #585 REVERSE WHEEL DRIVE
TO PASSENGER SIDE DRIVE WHEEL
TO PASSENGER SIDE NOZZLE OSCILLATE MOTOR
FLOW CONTROL NOZZLE OSCILLATE
2-WAY SOLENOID VALVE NOZZLE OSCILLATE
TO DRIVER SIDE NOZZLE OSCILLATE MOTOR
TO DRIVER SIDE DRIVE WHEEL
PLUG
PRESSURE LINE FROM PUMP
ENTER
EXIT
ENTER
EXIT

9. Hydraulic Flow Control Valves

These valves regulate the speed of oscillation or various functions controlled by hydraulic motors. To adjust, loosen the jam nut and then turn the adjusting screw in (clockwise) to slow the speed or out (counter-clockwise) to increase the speed. Make sure to retighten the jam nut after adjustment. The Flow Control Valves include:

1. HFC-1 – High Pressure Nozzle Oscillate

10. Hydraulic Ports

Plumbing to and from the Main Hydraulic/Distribution Manifold includes:

1. P-1 – Return line to Heat Exchanger (3/4”)
2. P-2 – Pressure line from High Pressure Filter (3/4”)
3. P-3 – Line to Port P-11 on Distribution Manifold (1/2”)
4. P-4 – Line to Port P-12 on Distribution Manifold (1/2”)
5. P-5 – Line to Driver Side Gantry Drive Motor (3/8”)
6. P-6 – Line to Driver Side Nozzle Oscillate Motor (3/8”)
7. P-7 – Line to Passenger Side Nozzle Oscillate Motor (3/8”)
8. P-8 – Line to Passenger Side Gantry Drive Motor (3/8”)
9. P-9 – Line to Port P-19 on Distribution Manifold (1/2”)
10. P-10 – Line to Port P-18 on Distribution Manifold (1/2”)
11. P-11 – Line to Port P-3 on Distribution Manifold (1/2”)
12. P-12 – Line to Port P-4 on Distribution Manifold (1/2”)
13. P-18 – Line to Port P-10 on Distribution Manifold (1/2”)
14. P-19 – Line to Port P-9 on Distribution Manifold (1/2”)
15. P-20 – Line to Mitter Oscillate Motor – Rev (3/8”)

11. Miscellaneous Items

1. PRV-1 – Pressure Relief Valve set to 1350 psi.
2. G-1 – Pressure Gage – System pressure set to 975 psi.

Section 7 – Machine and Wash Configuration

ATP700

A. Touch Screen Control Panel

Section	Page
1. Introduction	7-1
2. Installation	7-1
3. Main Menu	7-1
4. Manual Wash	7-2
5. Machine Configure	7-2
6. Wash Configure	7-3
a. Wash Number	7-3
b. Wash Options	7-4
c. Pass Configuration	7-4
d. Pass Speed Entry	7-4b
e. Pass Types	7-5
f. Pass Options	7-5
1. Rinse / Chemical Pass Options	7-5
2. Wash Pass Options	7-6
3. Blower Pass Options	7-7
7. Parameter Configuration	7-7
a. Parameter Configure	7-7
b. Adjustment	7-7
8. Manual Control	7-11
a. Manual Operation	7-11
b. Input/Output Status Screens	7-13
c. Diagnostic Screen	7-14
9. System	7-16
a. Date & Time	7-16
b. Clean screen	7-16
c. Control Panel	7-17
d. Email	7-17
10. Totalizing	7-19
a. Wash Totals	7-19
b. Reset Totals	7-20
11. Trending	7-20
12. Alarms	7-20
a. Alarm History	7-20
13. Remote Access	7-21
a. Download and Install eCatcher & VNC Viewer	7-21
b. Run eCatcher	7-21
c. Run VNC Viewer	7-21
d. Enter IP Address	7-22
e. Manual control	7-23
f. Exit Remote Access	7-23

1. Introduction

The ATP700 is a digital display touch screen available on all AUTEC machines with a Siemens S7-1200 PLC. The ATP700 can be used to set up all machine and wash options, as well as monitor all inputs and outputs in real time. Also, outputs can be selectively energized to operate specific functions. This enables the carwash operator or service technician to check specific functions as well as perform set-up and adjustments from a keypad.

2. Installation

The ATP700 can either be installed in a permanent enclosure at a specific site or mounted in a portable enclosure for use at multiple sites. Regardless of whether the ATP700 is a permanent or portable installation, the communications and electrical connections are the same.

a. Communication Cable – Install an Ethernet patch cable between these 2 ports as shown on Schematic Sheet 7:

    1. ATP700– Plug the Ethernet patch cable into either port labeled PROFINET (LAN). Plug the other end into any of port 1-3 of the eWON or port 2-4 of the Stridelinx.
    2. Router
        1. eWON Cosy– Plug the Internet Providers Ethernet cable into port 4.
        2. Stridelinx – Plug the Internet Providers Ethernet cable into port 1.

b. Power Cable – Install the green power plug onto the gray 2-conductor cable provided and plug into the ATP700. Attach the other end to +/-24 VDC in the Main Control Panel.

HMI Power Plug

3. Main Menu

The Main Menu screen displays the type of Machine is operational, displays the version of the PLC & of the HMI software that is currently running, and the Menu buttons that are divided into 11 sections along the bottom of the screen. (Figure 1). To make a selection on the screen, lightly press the screen with your finger or soft pointer (eraser tip, etc.).
NOTE: Do not use sharp objects or apply excessive pressure or damage may result to the touch screen.

c. Manual Wash
d. Machine Configure
e. Wash Configure
f. Parameter Configure
g. Manual Control
h. System
i. Totalizing (only with iRAM)
j. Trend Menu (only with iRAM)

k. Alarms
l. Alarm History
m. Help

Figure 1 Main Menu

4. Manual Wash

Press the Manual Wash screen to activate a manual wash. This shows whether the car wash is in use and if so, which wash package is running. It also allows you to start Wash 1-9, simulate the treadle switch operation, go to a diagnostic screen, and reset faults. The on-screen traffic signals follow the actual traffic signals on the machine.

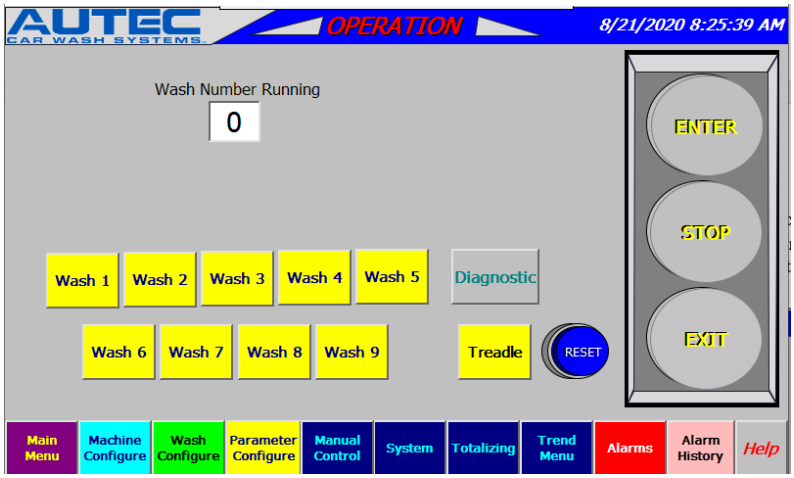


Figure 2 Manual Operation

5. Machine Configure

Press the **Machine Configure** Button to open the Machine Configuration Screen (Fig. 3). Select all features that were installed at that location. These are site-specific features and will apply to all programmed wash packages. When the button is selected it will turn green but the red indicator on the button will remain red until the “Enter New Configuration” button is pressed, which activates the feature in the PLC. Selected features will appear green and will become available as the wash progresses. Press the Help button to view help on each button. Greyed out buttons indicate disabled feature with any particular machine model or unused buttons.

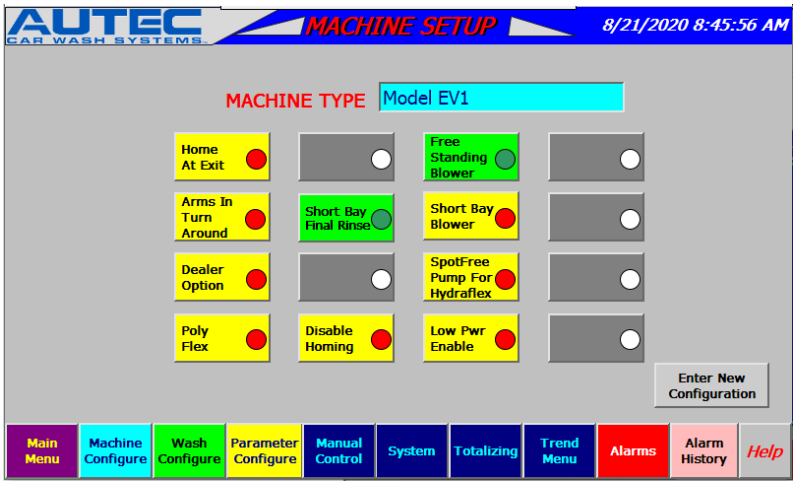


Figure 3 Site-Specific Machine Configuration

6. Wash Configure

Press the numbered button corresponding to the wash to be programmed (wash #1, wash #2, etc.).

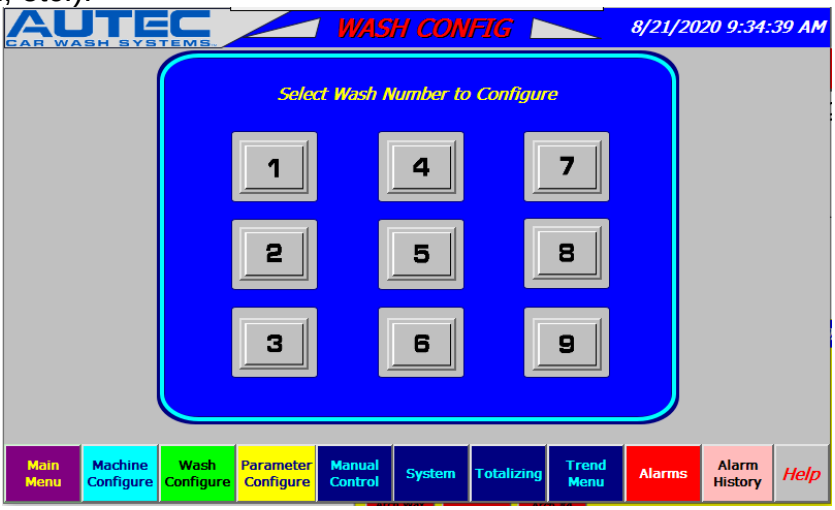


Figure 4 Wash Configure

a. Wash Configuration

Select the desired options from the Wash Configuration Options Screen (Fig. 5) that you want available in this wash. Selected options will turn green.

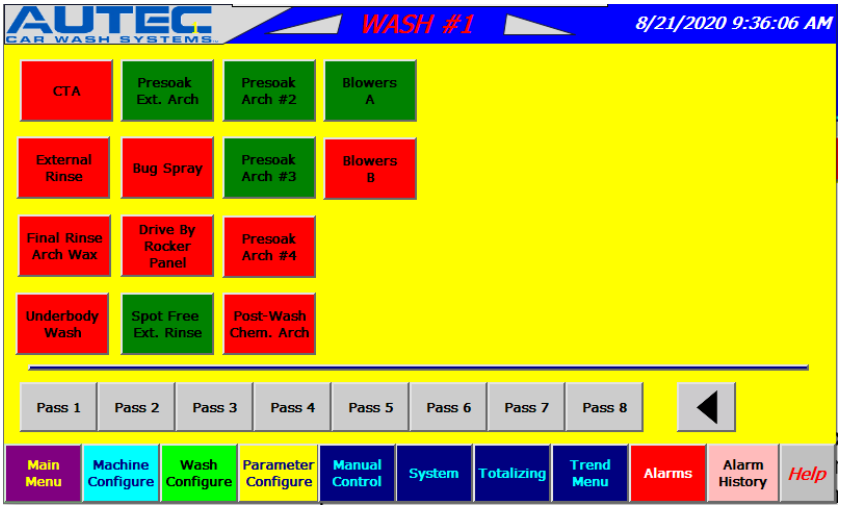


Figure 5 Wash Options

Pass Configuration

The second part of setting up a wash package involves defining wash passes. **A pass consists of a forward and reverse movement of the gantry.** Each Wash Configuration can consist of up to 8 passes. Press a **Pass #** button near the bottom to open the Pass Configuration Screen (Fig. 6). The currently selected Wash #, Pass #, and Pass Type are displayed across the top.

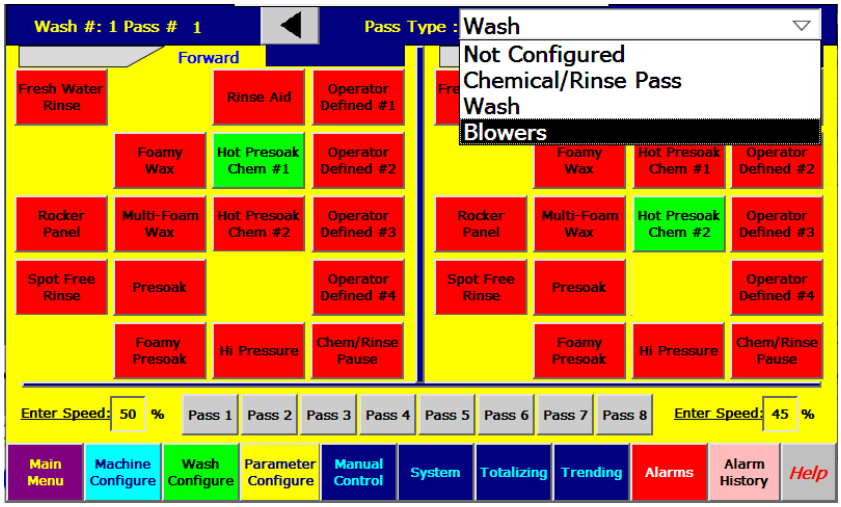


Figure 6 Pass Configuration

1. Press the **drop down arrow** at the top of the screen to select the desired pass type. The 4 types of passes are:
   a. Not Configured – the current pass is not configured.
   b. Chemical/Rinse Pass –Gantry will travel allowing the application of any combination of available water or chemical sources.
   c. Wash – Carriage will travel while doing high-pressure wash with chemical and water applications.
   d. Blowers – Carriage will travel and blowers activated.

   NOTE: As of 6/1/2020 all Chemical/Rinse Passes and Wash passes will and can do the same functions, whereas before they were limited to certain functions.

2. A pass consists of a forward and reverse movement of the gantry. The options for the forward movement are on the left half of the screen, and reverse options are on the right. Although, if the “Home at Exit” (located on the Machine Configure screen) is selected these will be reversed. Different buttons will be displayed depending on the Pass Type. Selected items will appear green.
   NOTE: As of 6/1/2020 all Chemical/Rinse Passes and Wash passes will and can do the same functions, whereas before they were limited to certain functions.

Pass Options

1. Both Chemical/Rinse Pass Options and Wash Options are now combined:

   a. Fresh Water Rinse – Applies Fresh Rinse Water through 12 side nozzles and 16 overhead nozzles.
   b. Rocker Panel – Applies High Pressure Water through eight turbo nozzles (four each side) to rocker panel area.
   c. Spot Free – Applies Spot Free Rinse Water through 12 side brush nozzles and 16 overhead nozzles.
   d. Foamy Wax - Applies Foamy Wax through 4 foaming nozzles mounted on each corner of machine.
   e. Multi-Foam Wax – Applies Foamy Wax through 6 foaming nozzles mounted in center of front and rear headers and on each corner of machine. Driver side, center, and passenger side will each be a different color.
   f. Hot Presoak #1 Chemical – Injects chemical #1 into High Pressure Water.
   g. Hot Presoak #2 Chemical – Injects chemical #2 into High Pressure Water.
   h. High Pressure – Applies High Pressure Water through either 24 oscillating nozzles on entrance end or 24 oscillating nozzles on exit end. (Cannot be programmed with Rocker Panel on same pass.)
   i. High Pressure Only – Applies water through entrance side nozzles during forward travel and exit side nozzles during reverse travel.
   j. High Pressure with Friction – Applies water through exit side nozzles during forward travel and entrance side nozzles during reverse travel.
   k. Rinse Aid – Injects Rinse Aid into Rinse Manifold (used with either Fresh Water Rinse or Spot Free Rinse)
   l. Operator-Defined Options – These are buttons that allow site-specific customization. Each Operator Defined Option button is linked to an output on both the carriage and in the Main Control Panel. This allows an operator to program custom options on a specific pass.
   m. Enter Speed – Allows speed control from 0 – 100% of full speed for both Forward & Reverse passes.

2. Blower Pass Options

   Operator-Defined Options – These are buttons that allow site-specific customization. Each Operator Defined Option button is linked to an

output on both the carriage and in the Main Control Panel. This allows an operator to program custom options on a specific pass. †

7. Parameter Configure

a. Press the **Parameter Configure** Button to move to the first Parameter Configure Page (Figs 7 - 17). Press the **black arrows** at the top center to scroll through the parameters. Alternatively, use the **drop-down boxes** at the top right of the screen to jump to particular screens. Values are indicated in Seconds or Counts depending on the parameter type.

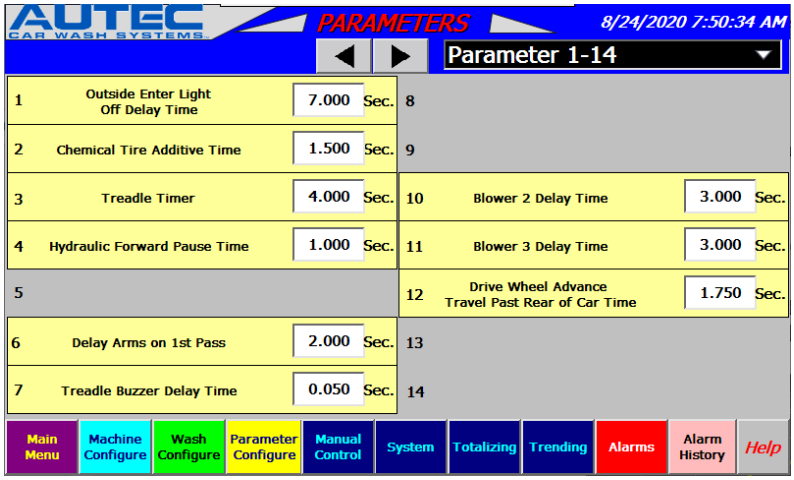


Figure 7 Parameter Configuration Par 1-14

b. To adjust a parameter, press its white **value field**, enter new value using **number keys**, and press the **Enter** button which is outlined in yellow in Figure 8 below.

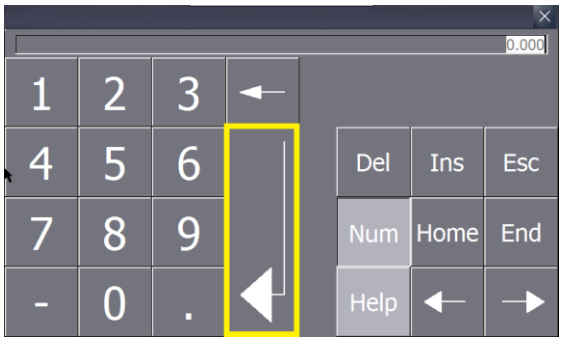


Figure 8 Edit Parameter Value & Press Enter

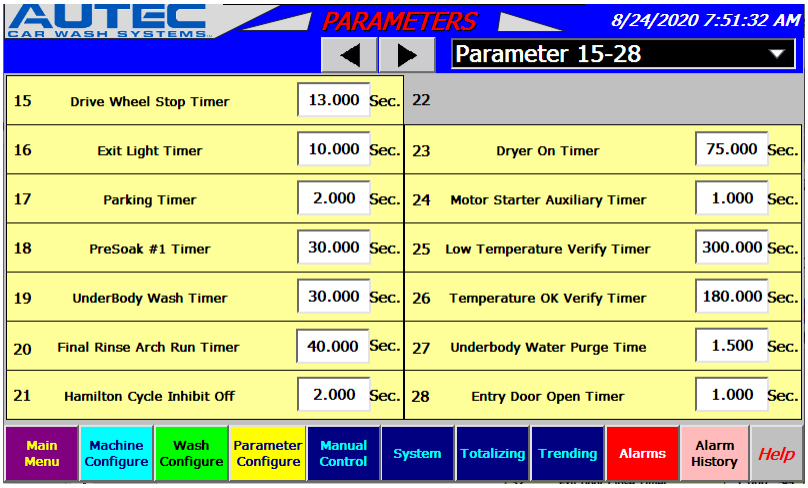


Figure 9 Parameter Configuration Par 15-28

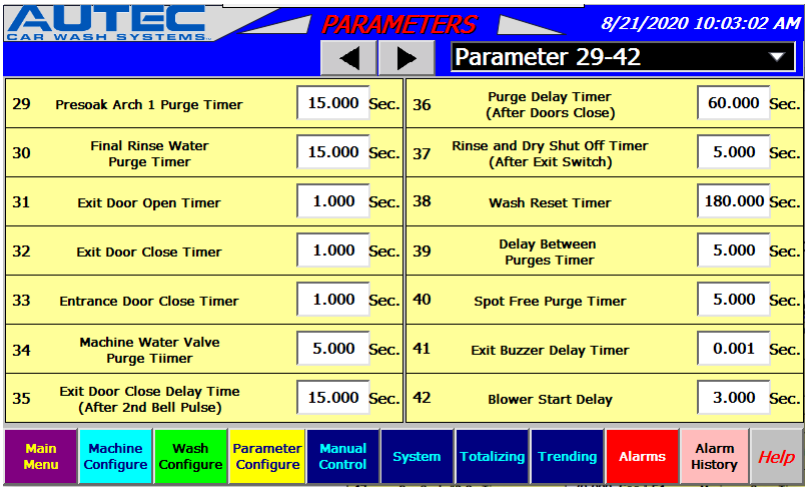


Figure 10 Parameter Configuration Par 29-42

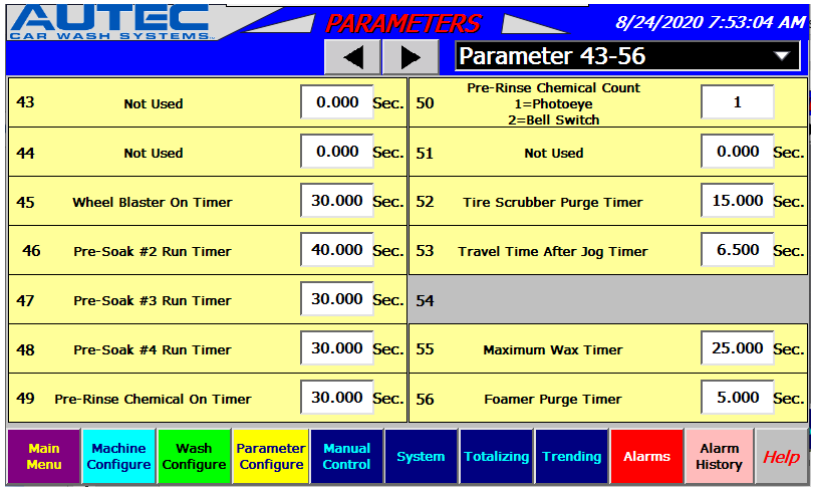


Figure 11 Parameter Configuration Par 43-56

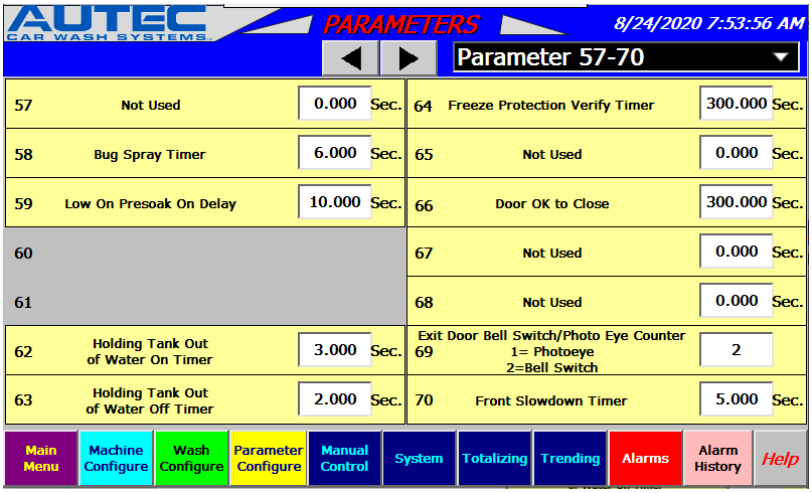


Figure 12 Parameter Configuration Par 57-70

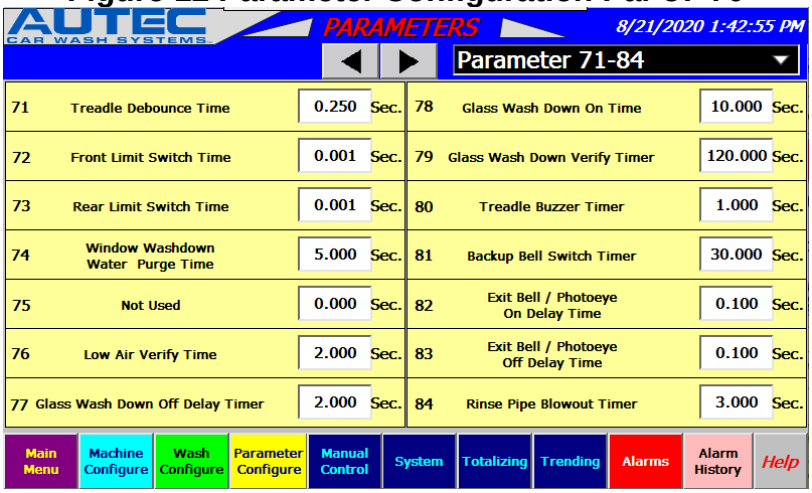


Figure 13 Parameter Configuration Par 71-84

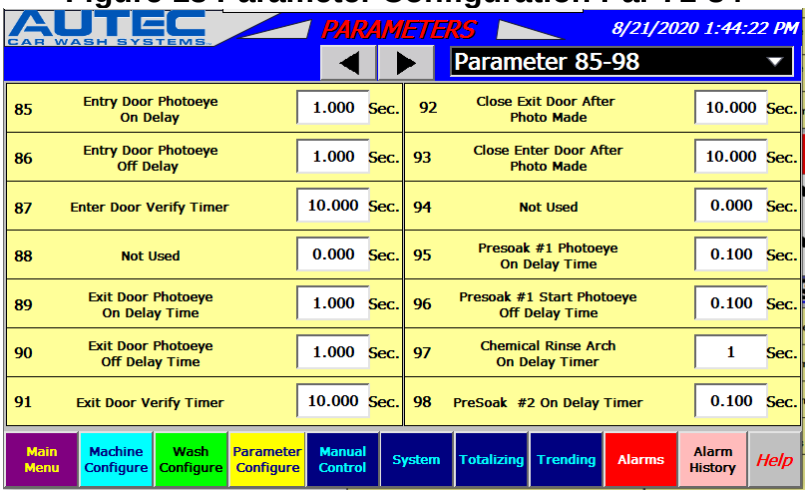


Figure 14 Parameter Configuration Par 85-98

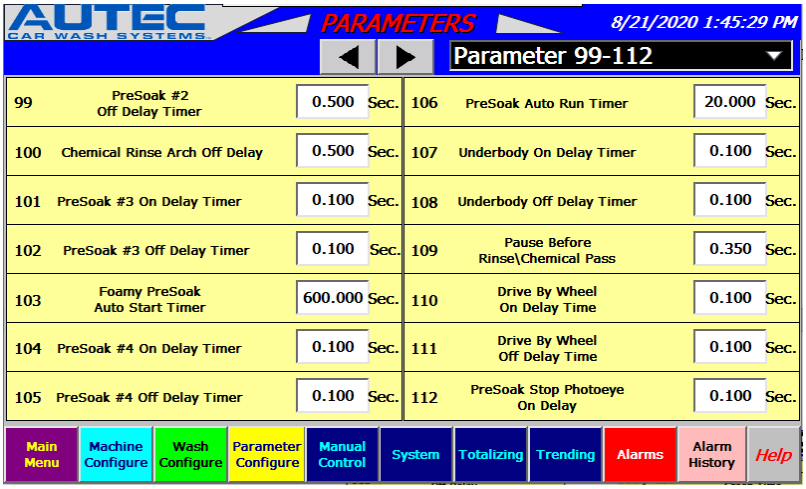


Figure 15 Parameter Configuration Par 99-112

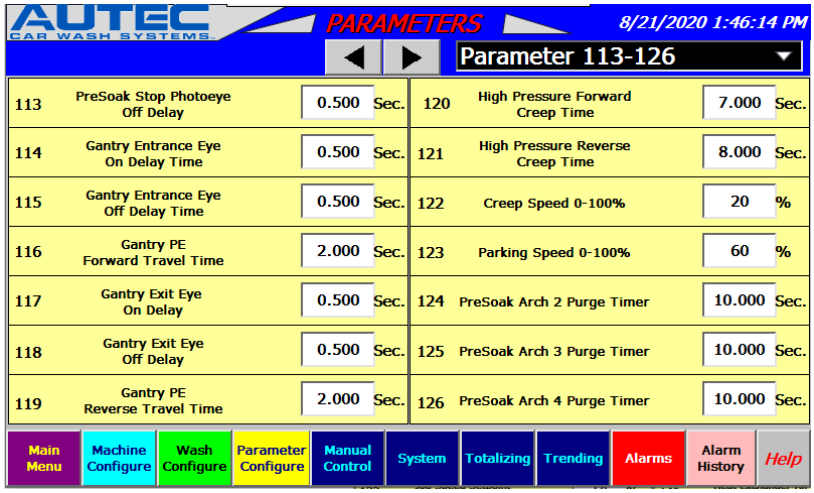


Figure 16 Parameter Configuration Par 113-126

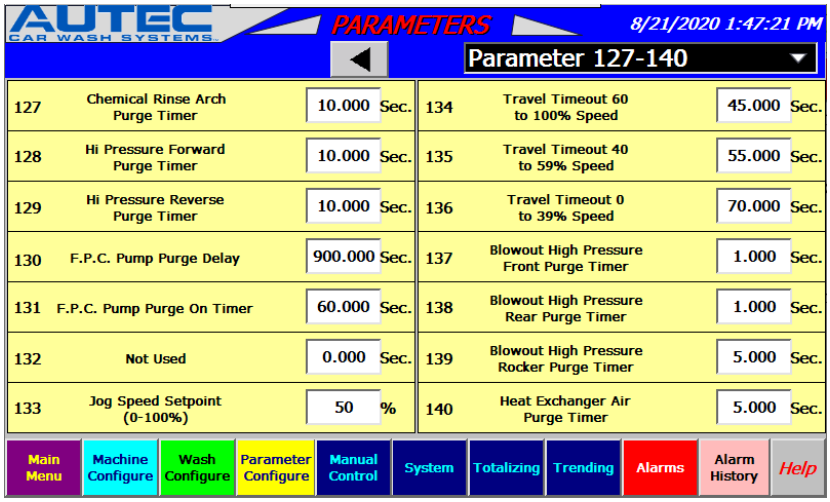


Figure 17 Parameter Configuration Par 127-140

8. Manual Control

The Manual screen allows operation of specific outputs. Before outputs can be energized, the red **Auto/Manual Operation Switch** near the bottom of the screen must be moved to manual. The switch is circled in red in Fig. 18 below.

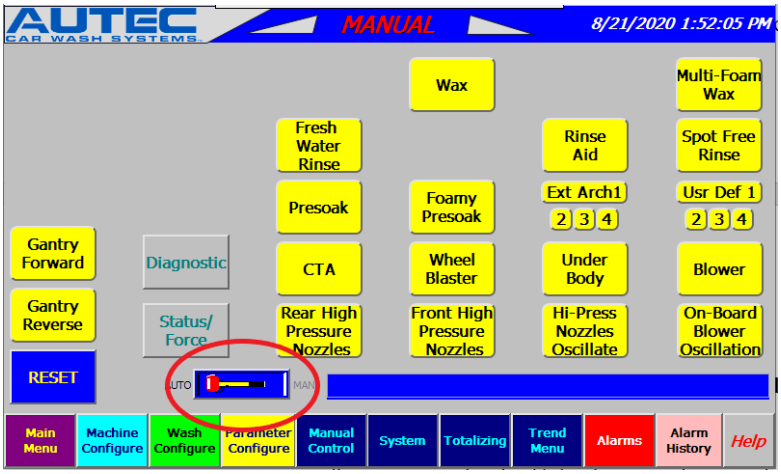


Figure 18 Auto/Manual switch in Auto position

a. Manual Operation Page – Controls for Mechanical Movement

1. Gantry Travel Control

The gantry can be jogged forward or reverse by pressing the Gantry Forward or Gantry Reverse Buttons. The button must remain pressed for the duration of movement.

Reset

Press the reset Button to de-energize all buttons.

Help

The help button will display a text screen with descriptions/instructions.

Status/Force

The Status/Force button will change the panel to the Status/Force screen.

Fresh Water Rinse

Press the Fresh Water Rinse Button to Activate the Fresh Water Rinse Source and Arch. (Note: Both the Free Standing and Gantry Rinse Arch outputs will activate.)

Presoak

Press the Presoak Button to activate the Presoak Chemical Pump. (Presoak chemical injected into the main wash water)

CTA Control

Press the CTA Button to activate the CTA Chemical Pump.

Front/Rear High Pressure Nozzles

Press either the Front or Rear High Pressure Nozzles Button to activate the High Pressure Pump and the Front or Rear Nozzles.

Wax (Colorshield) Control

Press the Wax Button to activate the Wax Chemical Pump and Foaming Air.

Wheel Blaster Control

Press the Wheel Blaster Button to activate the High Pressure Pump and the Wheel Blaster Nozzles.

Multi-Foam Control

Press the Multi-Foam Soap or the Multi-Foam Wax to activate Multi-Foam Chemical Pumps and Foaming Air.

Rinse Aid
Press the Rinse Aid Button to activate the Rinse Aid Pump.
Underbody
Press the Underbody Button to activate the Underbody Wash Feature.
High Pressure Nozzle Oscillate
Press the High Pressure Nozzle Oscillate Button to oscillate the High Pressure Nozzles.
Spot Free Rinse
Press the Spot Free Rinse Button to Activate the Spot Free Rinse Source and Arch. (Note: Both the Free Standing and Gantry Rinse Arch outputs will activate.)
Blower
Press the Blower Button to start the Blower Motors.
Blower Oscillation Control
Press the Blower Oscillation Button to oscillate the Gantry Blowers.

Input / Output Status Screens (Figs. 19 - 28)

Press the Status / Force Button from the Manual Screen to move to the Input / Output Status Screens. These screens allow you to monitor the status of any input or output and allow you to force any Main or Gantry output to energize – if the Auto/Manual switch is in Manual. Energized inputs/outputs will appear green while de-energized inputs/outputs appear yellow. Use the Previous/Next Buttons ◄► near the top left to move between screens. Alternatively, use the drop-down arrows ▽ at the top right of the screen to jump to particular screens.

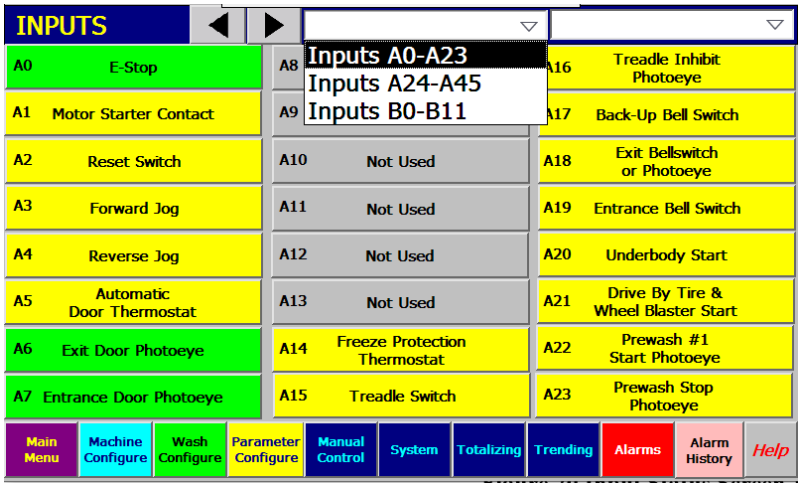


Figure 19 Inputs Drop Down Box

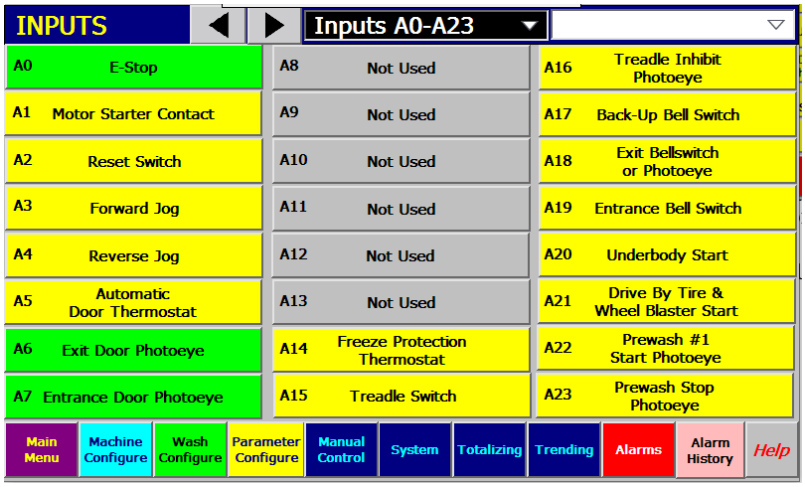


Figure 20 Input Status A0-A23

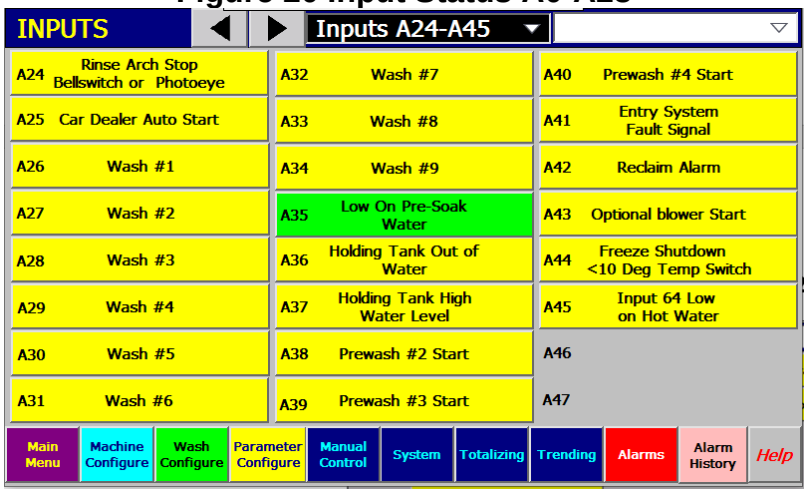


Figure 21 Input Status A24-A45

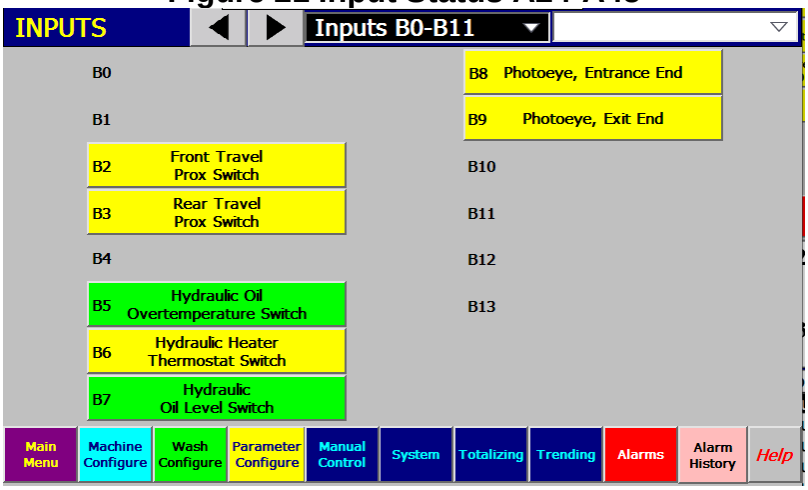


Figure 22 Input Status B2-B9

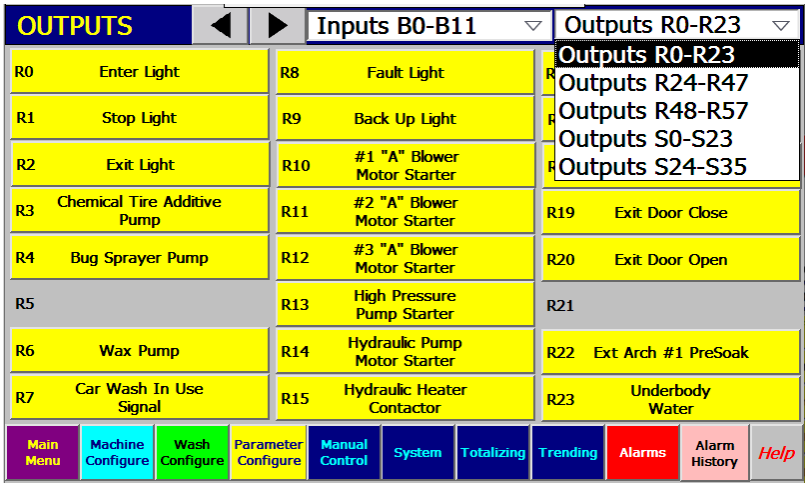


Figure 23 Outputs Drop Down Box

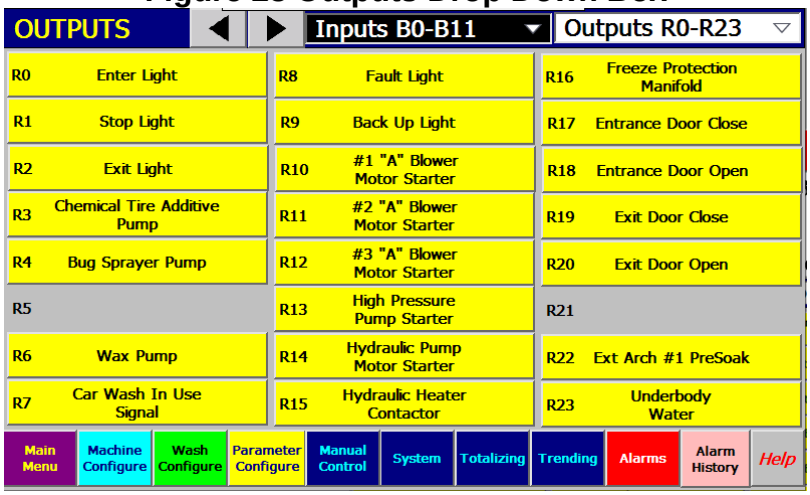


Figure 24 Output Status R0-R23

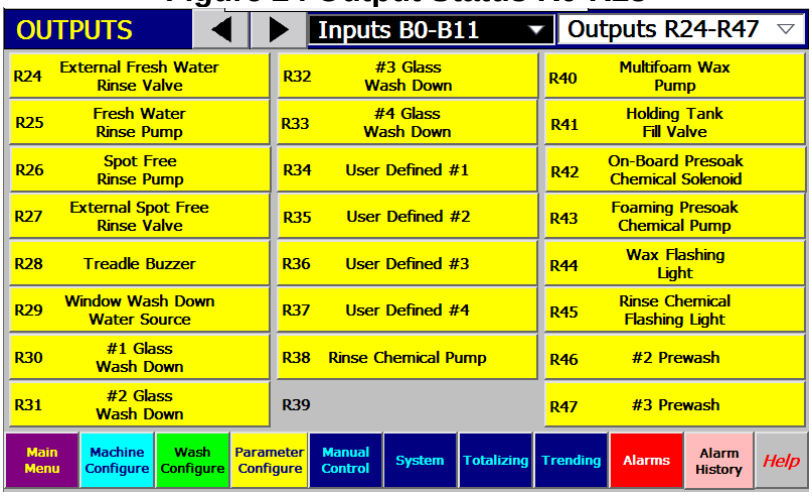


Figure 25 Output Status R24-R47

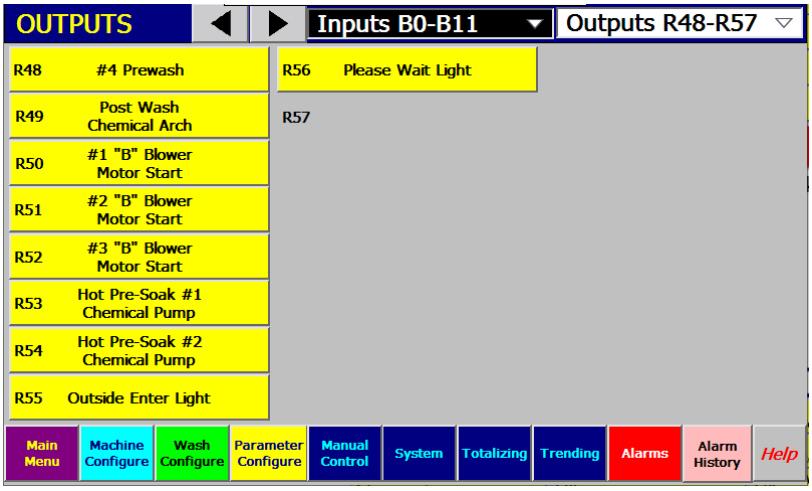


Figure 26 Output Status R48-R57

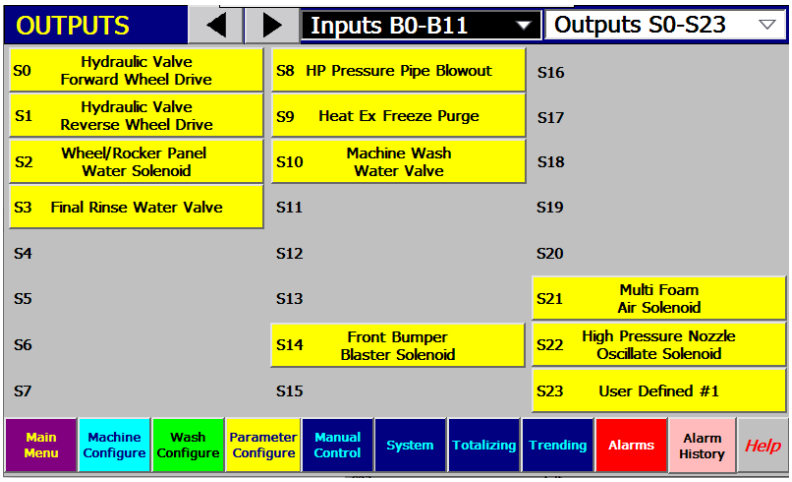


Figure 27 Output Status S0-S23

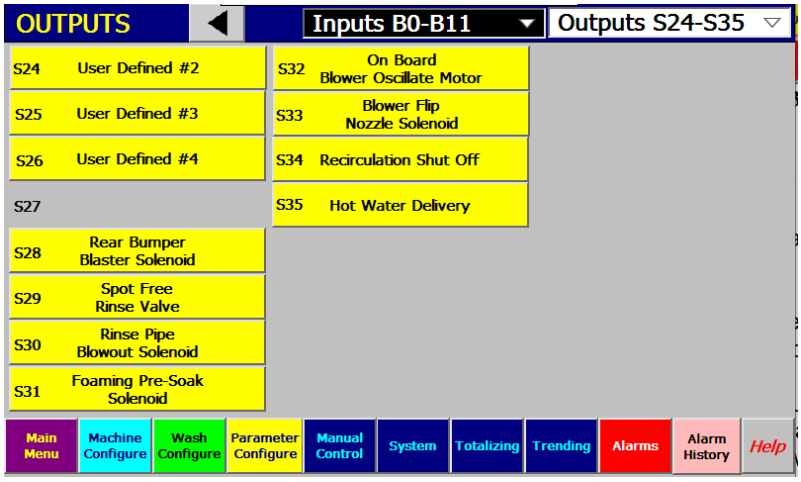


Figure 28 Output Status S24-S35

Diagnostics

This screen helps to see at a glance some of the most common inputs/outputs used.

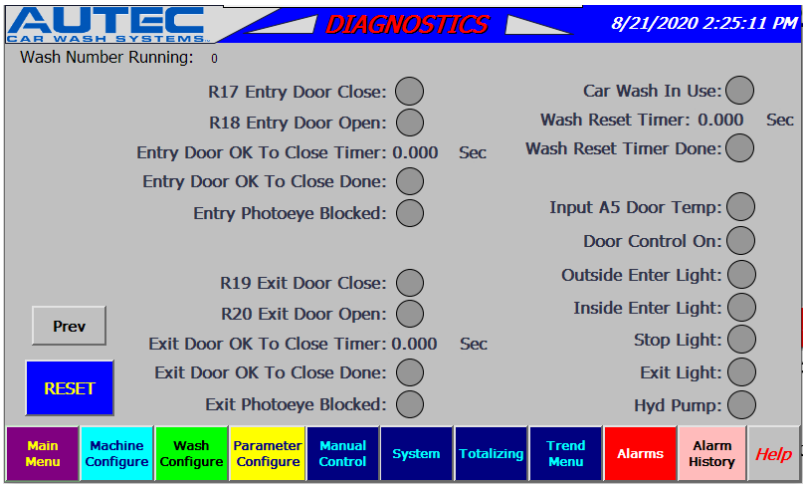


Figure 29 Diagnostic Screen

9. System

The System screen provides a means to update the date and time, clean the screen, and access the Control Panel. The button functions are described below.

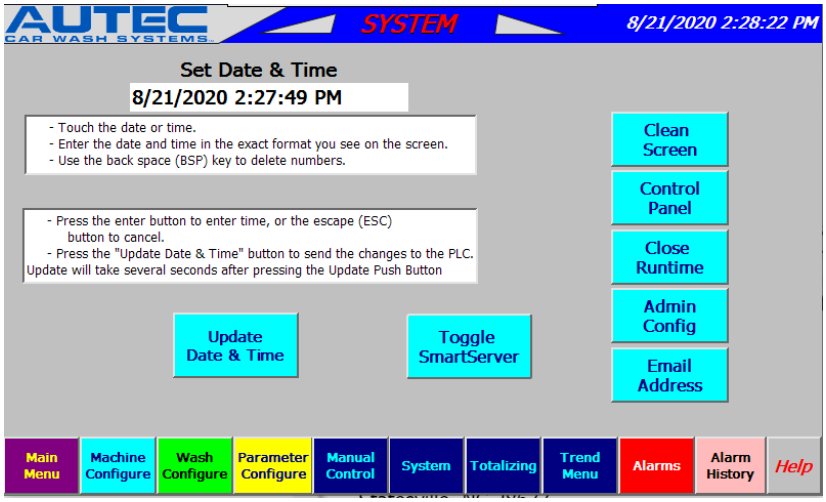


Figure 27 System

a. Update Date & Time

Instructions for setting the date and time are on the screen. Press the **Update Date & Time** button to send the updated info to the PLC.

Toggle SmartServer

Sometimes the display locks up when too many remote connections are made, this button will restart the SmartServer and allow remote connections again.

Clean Screen

To clean the screen, press **Clean Screen** button and the screen will be disabled for 30 seconds, allowing you to clean the screen without accidentally

pressing a button. A status bar will show time available. Use only a soft, clean cloth to wipe the screen.

Control Panel

Is for configuring the touch screen device, which is only done at the Autec factory and not recommended by unathorized personnel.

Close Runtime

This button requires a password to use and should be accessed by authorized personnel only.

Admin Config

This button is used at the AUTEC, Inc facility for their own purposes and requires a password.

Email Address

This feature comes only with the iRAM feature and is configurable at any time by AUTEC, Inc. If the client did not purchase this option at the time of sale they can purchase this option any time after to be able to use this feature. It allows communication of the Machine to up to four email/text addresses whenever an error occurs. This feature also means it is possible for the client to obtain permission to access their machine remotely to be able to reset their machine, change wash packages, monitor all inputs/outputs, and select which wash package a client wishes to give to a customer.

You may fill in up to four e-mail addresses where you wish to receive alerts, and add a subject line. The subject line should include the site location. (Note – You can e-mail a text message to most cellular phones that have text messaging. Consult you cellular phone service provider for the correct e-mail address to utilize this feature or you can use our application notes on “How to setup your Android or iPhone for Router” in this document.) (***Note – Email alerts go out on port 25 & 587. Make sure your ISP is not blocking these ports.***)

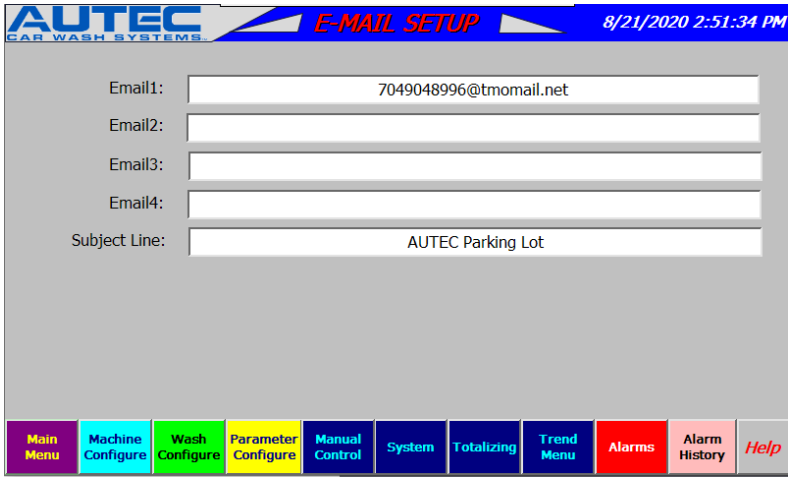


Figure 30 Email Configuration

1. Press in an Email field, and an alpha-numeric screen appears (Fig 31). Type the desired email address. The “@” symbol is found by pressing shift lock (the up arrow) highlighted yellow in Fig 29 below.

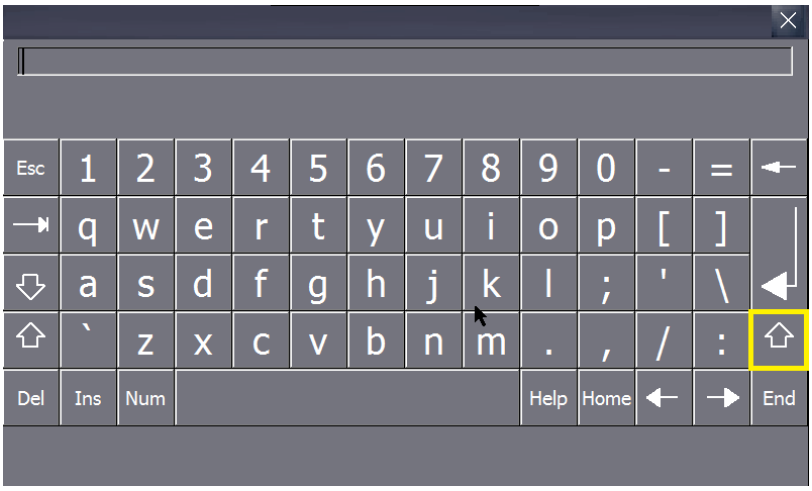


Figure 31 Shift Lock

After pressing shift lock, the “@” symbol appears on the screen, as shown in Fig 32**.**

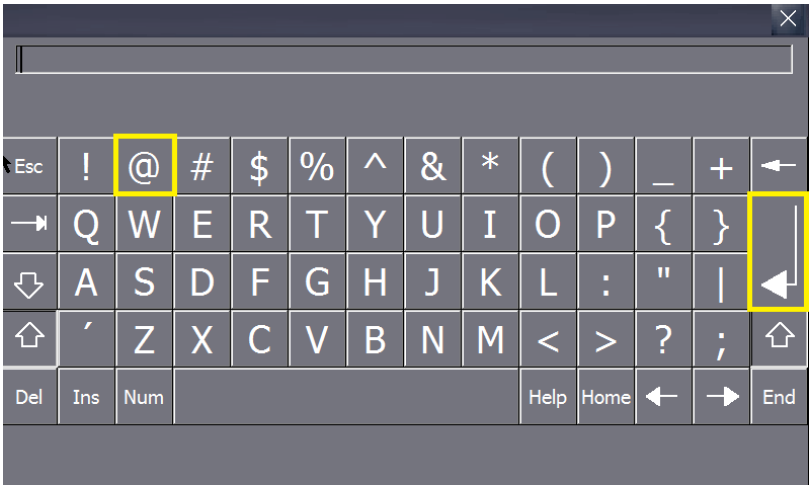


Figure 32 "@" symbol location and Enter Button

When finished typing the email address, press the Enter button, also highlighted in yellow in Fig. 32.

10. Totalizing

Press the **Totalizing** button to view the WASH TOTALS screen (Figure 33) and the RESET TOTALS screen (Figure 34).

a. **Wash Totals** - Tracking of all car washes is accomplished each time a wash has begun for each wash package. You can view all totals on the **Totalizing** screen. This enables you to view totals *Daily*, *Monthly*, *Yearly*, and *Lifetime*

totals. You also have the ability to zero out each wash package's totals or all of them at one time. Every start of a new day the *Daily* totals are reset automatically, every start of a new month the *Monthly* totals are reset automatically, every start of the new year the *Yearly* totals are reset automatically. The only data that is not reset automatically are the *Lifetime Totals*. All of this data is also saved to a USB stick connected to the HMI (Human Machine Interface) or display. The operator can remove the stick, download the data to their PC or laptop, delete the data file and begin collecting the data again once the USB stick is placed back into the USB port on the panel. This allows for charting totals on a continual basis using state-of-the-art charting software or simply in Excel.

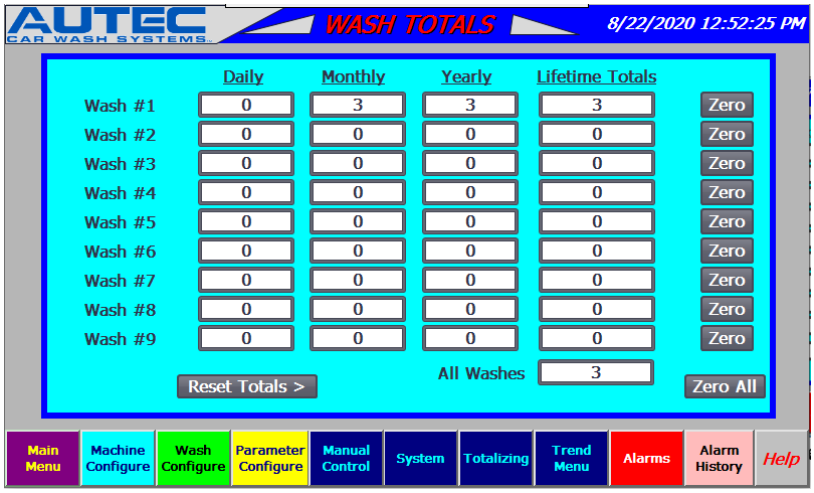


Figure 33 Wash Totals Screen

b. Reset Totals

To view the number of times the machine's Reset Button has been pressed during each wash, press the Reset Totals button located on the WASH TOTALS screen, under the Daily column. This feature can be helpful when troubleshooting. The counters and Zero buttons work the same way on both Totalizing screens. Press the Wash Totals button below the Daily column to return to the WASH TOTALS screen.

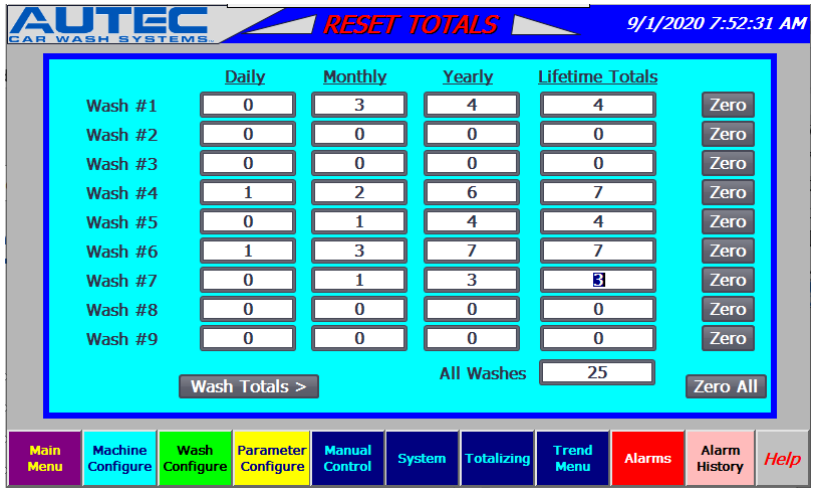


Figure 34 Reset Totals Screen

11. Trending

Press the Trending button to view the All Washes Trending screen.

a. There is a button on the bottom of each screen to access the Trend Menu. This takes you to the Trending Menu where the selection of trending data to be displayed on the trend screen will appear. Trends are for all wash and reset total data only. Only 1 of *Yearly*, *Monthly*, *Daily*, or *Lifetime Totals* can be viewed but up to 9 points of wash totals or reset totals data, can be viewed at one time, but you cannot look at all 9 washes and all 9 resets simultaneously.

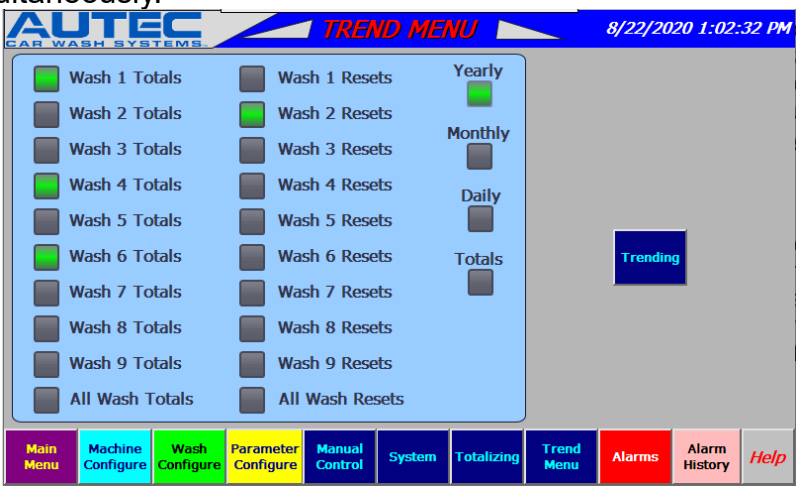


Figure 35 Trend Menu

b. Selecting the “Trending” button on the Trend Menu opens the trending screen and displays the data that is selected on the Trend Menu screen. If there are pounds (#########) in the data area it is because the USB was not inserted into the HMI or there is no data for that period. Once the USB stick is inserted into the USB slot on the HMI, data processing will begin.

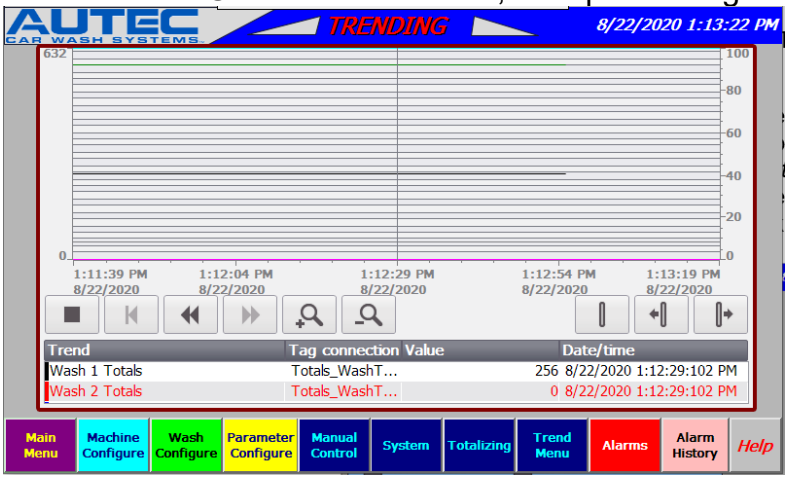


Figure 36 Trending

12. Alarms

Press the **Alarms** button to view active alarm information.

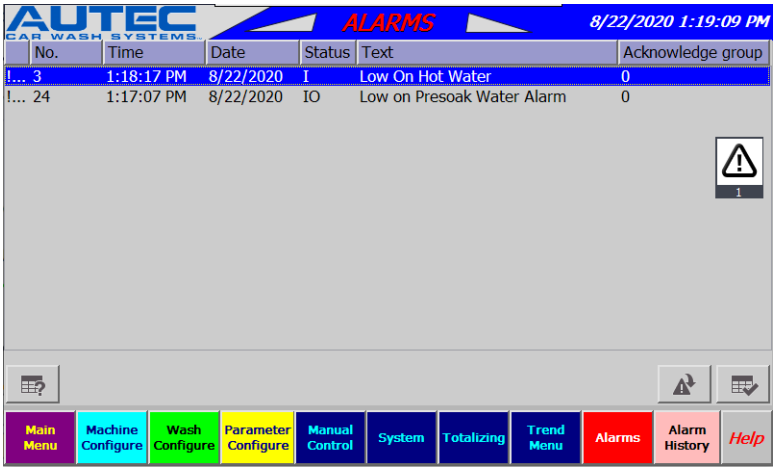


Figure 37 Alarms Screen

a. Press **Alarm History** to see all past faults (Fig 34). Press the **Check** button near the bottom right (highlighted in yellow below) to clear a fault record.

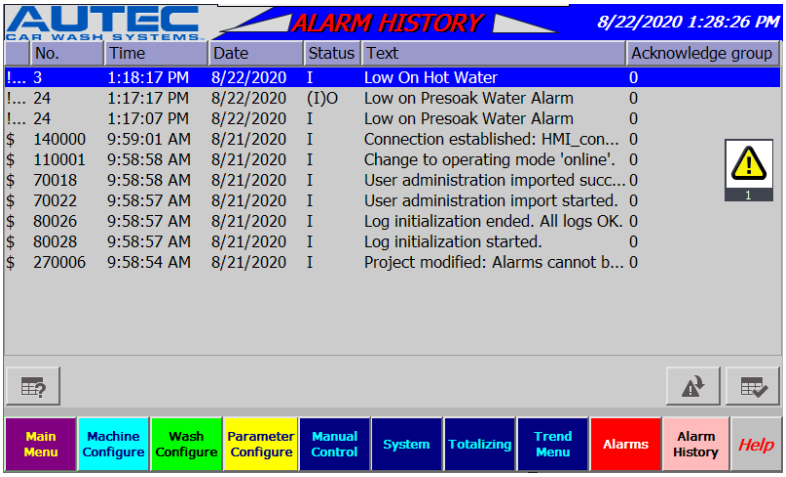


Figure 38 Alarm History

13. Remote Access

For iRAM systems, there is a router (a device that is used to connect the machine to the internet) that can be accessed via phone or computer to interact with the HMI (Human Machine Interface, the display). Depending on the type of router installed, the HMI can be viewed and controlled remotely using the appropriate program which is outlined below. You will have to determine which one is connected to your machine, after September 2019 Stridelinx routers were incorporated.

a. Stridelinx Router

Figure 39 Stridelinx Router

1. The Stridelinx is a black box located in the main control cabinet next to the gray Siemens PLC.
2. There is only one program to download, the Stridelinx app. There is a built-in viewer to tie into the HMI so remote control of the HMI is possible from this program.
   i. For PC usage,
      a. AUTEC must send you an invite so you can create your own username and password to login to the AUTEC account. Send an email to rryen@autec-carwash.com asking for the invitation to join our network and please include the name of the car wash(s) you are associated with. Once in our possession we will send an invitation back to you.
      b. Follow the link in the E-Mail and set up your account. You will need to setup your password before you can access the mobile app or login to your PC. You can also access VNC from this app! You do not need to download VNC viewer unless you like that app to view your display. If you want to use VNC Viewer then go to the VNC Setup.
      c. Download and install the Stridelinx program (the VPN client) from the web at this location: www.StrideLinx.com located under Tools -> VPN Client
      d. Go to Devices -> Select your device -> Info tab and Click CONNECT to secure your connection by VPN.
   ii. For Smartphone usage
      a. Download software in the App store or in Google Play, “Stridelinx VPN”
      b. AUTEC must send you an invite so you can create your own username and password to login to the AUTEC account. Send an email to rryen@autec-carwash.com asking for the invitation to join our network and please include the name of the car wash(s) you are associated with. Once in our possession we will send an invitation back to you.

c. Follow the link in the E-Mail and set up your account. You will need to setup your password before you can access the mobile app or login to your PC. You can also access VNC from this app! You do not need to download VNC viewer unless you like that app to view your display. If you want to use VNC Viewer then go to the VNC Setup.
d. The Figure below shows what the Login screen looks like on your phone, the information should be sent to your email address after you followed the link from the invitation to set them up.

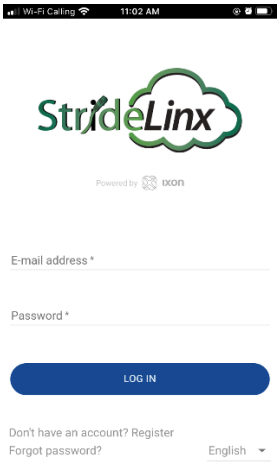


Figure 40 Stridelinx Login

e. The figure below shows the connections that are available with your username and password combo (picture is for illustration only, each username and password could be different based upon how many Stride's you have).

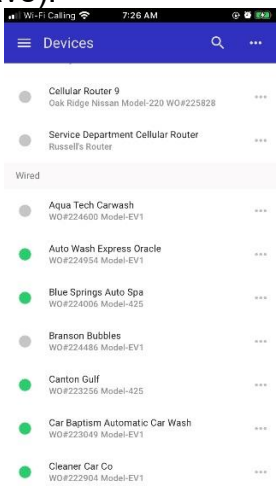


Figure 41 Stridelinx Connections

f. After you click on your device of choice, The figure below shows the connections you can make. You can use the Connect button but you would have to use the external VNC Viewer to then connect to your HMI. There is a "VNC Viewer" button that can directly connect you to your HMI without an exterior program, as marked below.

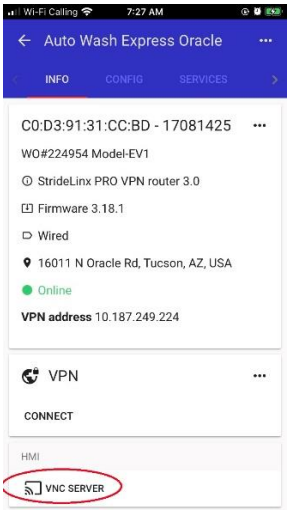


Figure 42 Stridelinx Connection

3. There is a reset button on the Stridelinx router, if this is pushed in it will reset all configuration files for the router and a usb configuration file will be needed to restore the router to its proper configuration or else it will not be able to connect to the internet.

b. eWON Router

Figure 43 eWON Router

1. The e-WON Router is a blue box located in the main control cabinet next to the gray Siemens PLC.
2. This router uses 2 free programs, eCatcher and VNC Viewer. Both programs must be installed and running to access the Touch Panel. These programs run on most computers and mobile devices.
3. Download and install both of these programs to your computer and/or mobile phone:

   eCatcher for computer is freely available at:
   https://www.ewon.biz/cloud-services/talk2m/ecatcher
   eCatcher for mobile phones is freely available at the App Store or Google Play.

   VNC Viewer for computer is freely available at:
   https://www.realvnc.com/en/connect/download/viewer/
   VNC Viewer for mobile phones is freely available at the App Store or Google Play.

4. Run eCatcher and enter your account info that was given to you by AUTEC, Inc. (email Rick Ryen (rryen@autec-carwash.com) or Mark Hopkins (mhopkins@autec-carwash.com) and they will text or email you the info). This is the account (Autec Carwash), your username and password will be sent to you via email. This will allow you to tie into the router located at the

main control panel to the right of the Gray Siemens PLC. Minimize eCatcher.

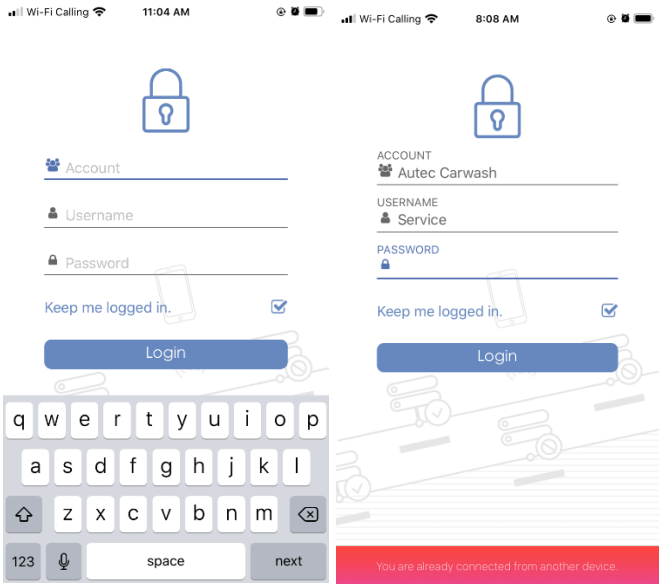


Figure 44 eWON Login

5. Once you have entered all of the above information the app will open up to your menu. This menu will show you the router(s) that you can tie into. NOTE: if no router is showing contact AUTEC, Inc.

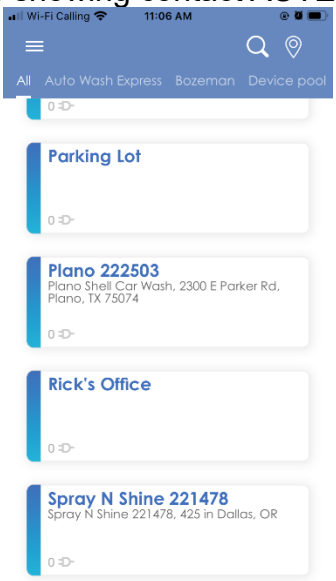


Figure 45

6. Click on the device of choice and press on the connect button.
7. Once you have completed this please go to the VNC Setup.

c. VNC Setup

1. For iPhones Go to the App Store and download “VNC Viewer”, for Androids go to the Play Store and download “Android VNC” App.
2. For this app you will need to create an account in order to use it but it is worth it! Once you have created an account then login to your account using your phone.

3. Run the VNC Viewer app and click File, New Connection as shown in Figure 41. Or You will need to press the “+” button to create a new connection.

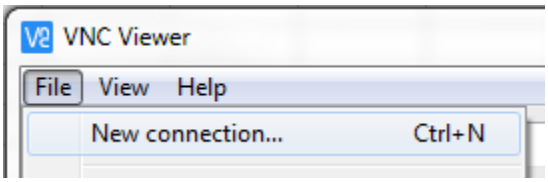


Figure 46 VNC Viewer New Connection

4. Enter the IP address 192.168.11.110 and click OK as shown in Figure 42 below. Enter a name for your car wash site if desired.

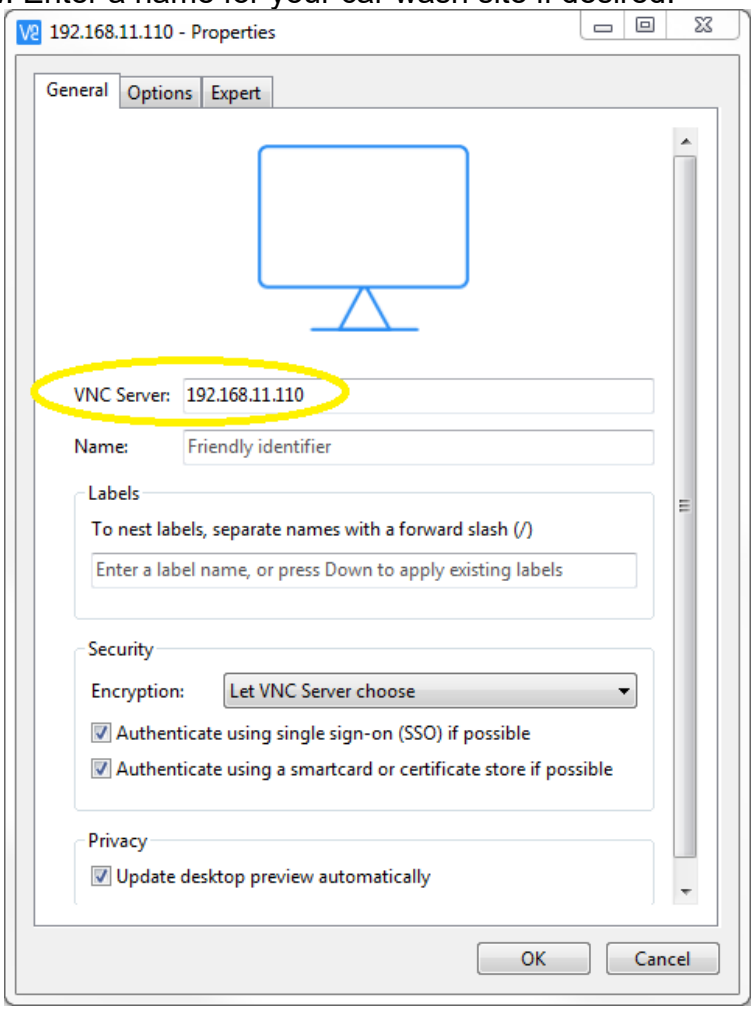


Figure 47 Enter IP address in VNC Viewer

5. You will only have to enter the IP address once, because after connecting for the first time, VNC Viewer will remember the connection and create an icon for it. From then on you will just have to run eCatcher and VNC Viewer, and double-click your site in VNC Viewer as shown in Figure 43 below.

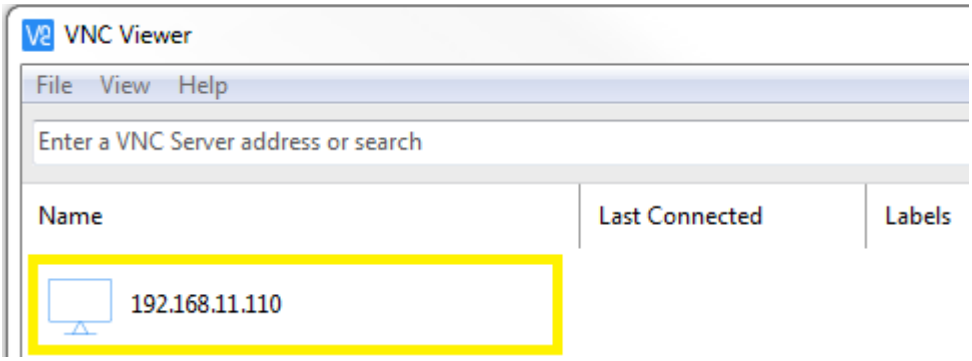


Figure 48 VNC Viewer Connection Icon

6. To end a session and exit remote access you will need to properly log off.

   Do not simply click the red X in the upper right corner of the screen, as this would lead to network issues later on.

   To properly log off, go to the Main Screen and hover your mouse cursor near the top middle of the screen above the AUTEC logo, and a toolbar will appear. Click the X as shown in the yellow box in Figure 44 below, and confirm Yes to disconnect.

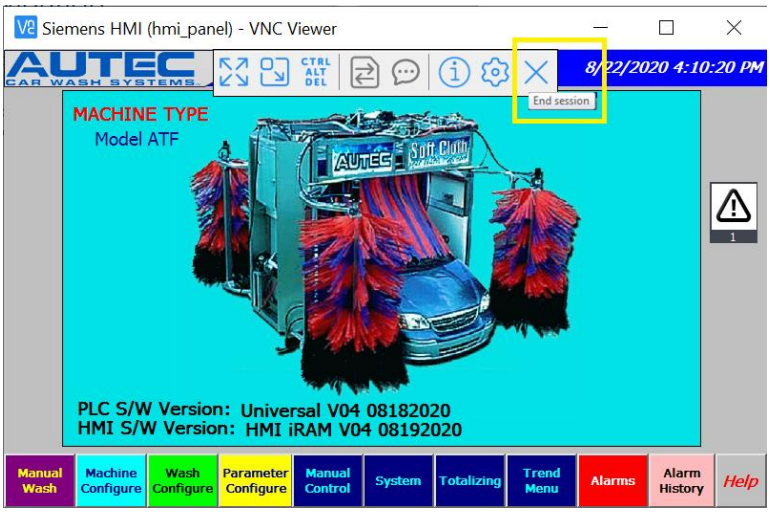


Figure 49 End Session Button Location

7. Some of the features of using remote access include the following:

   a. Interact with any buttons that are located on the HMI.

   b. View and/or clear any active alarms, clear by pushing the Reset button on either the Manual Screen, the Diagnostic Screen, or the Manual Wash Screen.

   c. You can go to the Manual Screen to force Outputs on or off and monitor all inputs or outputs.

   d. Virtually, anything you can do while present at the physical HMI you can do with remote access!

Section 8 – PLC Registers (Parameters) and I/O

Registers – Tables 8.1 & 8.2 detail the registers used for various timers and counters that control the Carwash. The registers are only accessible using the ATP700 Touch Panel. (See Section 7 for detailed instructions). When making register changes, it is advisable to change only one register at a time and verify results to avoid confusion.
Input / Outputs – Tables 8.3-8.4 identifies the Inputs and Outputs in Both the Main Control Panel and the Gantry Junction Box.

Table 8.1 - PLC Timers and Counters (By Name)

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
81	30.0	Backup Bell Switch Timer	Time Back Up Light (output R9A) stays on if no Treadle (input A15) if activated.
42	3.0	Blower Start Delay	Time Delay from Treadle (input A15) deactivation and External Blower Start (output R10)
137	0.1	Blowout High Pressure Front Purge Timer	Freeze protection for front nozzles, **ATF only.**
138	0.1	Blowout High Pressure Rear Purge Timer	Freeze protection for rear nozzles, **ATF only.**
139	0.1	Blowout High Pressure Rocker Purge Timer	Freeze protection for rocker panel nozzles, **ATF only.**
22	0.500	Not Used	Brush rotate pause before changing direction of rotation. Not on ATF
58	6.0	Bug Spray Timer	Time Bug Spray pump (output R4) stays on.
100	0.5	Chemical Rinse Arch Off Delay	Time the photoeye has to be unblocked before deactivating Chemical Rinse Arch.
127	10.0	Chemical Rinse Arch Purge Timer	Time Chemical Rinse Arch (output R49) remains open to purge during freeze protection.
97	1	Chemical Rinse Arch Stop On Delay Timer	Time Rinse Arch Stop Photoeye (input A24) must be blocked before activating eye.
2	1.5	Chemical Tire Applicator	Time CTA pump (output R3) activates each time Entrance Bell Switch is made (input A19).
122	20%	Creep Speed 0-100%	Speed Setting of gantry travel during front and rear slowdown expressed as a percentage of full speed.
6	4.0	Not Used	Delays the “arms in” (S7) output to prevent arms moving too close together with short vehicles on the first pass. Not on ATF
39	5.0	Delay Between Purges Timer	Time delay between each purge during freeze protection.
111	0.1	Drive By Wheel Off Delay	Time the photoeye has to be unblocked before deactivating Wheel Blaster.
110	0.1	Drive By Wheel On Delay Time	Time Drive By Wheel Blaster Start Photoeye (input A21) must be blocked before activating eye.
12	1.75	Drive Wheel Advance	Time machine continues traveling towards the exit after rear arm prox switch (input B1) is made.
15	13.0	Drive Wheel Stop	Time machine remains stationary during rear jog starting after the Drive Wheel Advance Timer (timer #12) expires.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
9	7.0	Not Used	Time driver side arm retracts (output S5) during rear jog starting when the Passenger Arm Retract Timer (timer #13) expires. Not on ATF
14	7.0	Not Used	Time driver side arm retracts (output S5) during rear jog starting when the Passenger Arm Retract Timer (timer #13) expires. Not on ATF
10	3.0	Dryer #2 Delay Time	Starting delay between first blower (output R10) and second blower (output R11).
11	3.0	Dryer #3 Delay Time	Starting delay between second blower (output R11) and third blower (output R12).
23	75.0	Dryer On Timer	Time Blowers stay on unless otherwise deactivated by the Exit Bell switch.
33	1.0	Entrance Door Close	Duration of Entrance Door Close signal (output R17).
93	10.0	Entrance Door Close after Photoeye is re-made	Delay before Entrance Door Close (output R17) signal is generated after Entrance Door Photoeye (input A7) is re-made if broken during door closing.
87	10.0	Entrance Door Close Verify Timer	Time allowed for the Entrance Door to close during which Entrance Door Open (output R18) signal will be generated if Entrance Door Photoeye (input A7) is blocked.
86	1.0	Entrance Door Photoeye Off Delay	Time Entrance Door Photoeye (input A7) must be unblocked before de-activating.
85	1.0	Entrance Door Photoeye On Delay	Time Entrance Door Photoeye (input A7) must be blocked before activating.
116	1.0	Gantry PE Reverse Travel Time	Time Gantry continues Reverse travel after Gantry Entrance Photoeye Off Delay (timer #115) is satisfied.
28	1.0	Entry Door Open Timer	Duration of Entrance Door Open signal (output R18).
69	2.0	Exit Bell / Photoeye Counter	Specifies if Exit Switch (input A18) is photoeye (Solenoid of 1) or bellswitch (Solenoid of 2).
83	0.1	Exit Bell / Photoeye Off Delay	Time Exit Photoeye (input A18) must be unblocked before de-activating.
82	0.1	Exit Bell / Photoeye On Delay	Time Exit Photoeye (input A18) must be blocked before activating.
32	1.0	Exit Door Close	Duration of Exit Door Close signal (output R19).
92	10.0	Exit Door Close after Photoeye is re-made	Delay before Exit Door Close (output R19) signal is generated after Exit Door Photoeye (input A6) is re-made if broken during door closing.
35	15.0	Exit Door Close Delay	Time delay between Exit Bell Switch 2nd pulse (input A18) and Exit Door Close signal (output R19).
66	300.0	Door OK to Close	Time Exit & Entrance Door will close if no condition exists to open the doors or just on a timed basis.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
91	10.0	Exit Door Close Verify Timer	Time allowed for the Exit Door to close during which Exit Door Open (output R20) signal will be generated if Exit Door Photoeye (input A6) is blocked.
31	1.0	Exit Door Open	Duration of Exit Door Open signal (output R20).
90	1.0	Exit Door Photoeye Off Delay	Time Exit Door Photoeye (input A6) must be unblocked before de-activating.
89	1.0	Exit Door Photoeye On Delay	Time Exit Door Photoeye (input A6) must be blocked before activating.
16	10.0	Exit Light	Time Exit light (output R2A) stays on after treadle is deactivated (input A15).
20	40.0	Final Rinse Arch Run Timer	Time Rinse Arches (outputs R24 & R27) stay on unless otherwise deactivated by exit bell switch (input A18) or Rinse Arch Stop (input A24).
30	15.0	Final Rinse Water Purge Timer	Time Final Rinse Arch (output R24) remains open to purge during freeze protection.
56	5.0	Foamer Purge Timer	Time Foamer Air (outputs S11 & S13) will stay on to purge foamer after chemical pump shuts off.
106	20	Foaming Pre-Soak Auto Run	Time Pre-Soak Pump (output R43) runs during automatic re-circulation.
130	900	Foaming Pre-Soak Purge Delay	Time delay between Foamy Pre-Soak Chemical Pump activation (output R42) during Freeze Protection.
131	60	Foaming Pre-Soak Purge On Timer	Time Foamy Pre-Soak Chemical Pump activates (output R43) during Freeze Protection.
103	600	Foamy Pre-Soak Auto Start Timer	Time interval between Pre-Soak Pump (output R43) start for automatic re-circulation.
64	300.0	Freeze Protection Verify Timer	Time temperature must remain below the set point before shutting down the wash and activating freeze protection.
1	7.0	Outside Enter Light Delay Time	Start delay timer to turn off Drive Forward light and turn on the Please Wait light.
72	0.001	Front Limit Switch Time	(For older designs where prox switches were pointed down towards the floor) These delays prevented false prox switch activation when the proxes would pick up objects other than the vehicle.
70	3.25	Front Slowdown	Time Machine Creep Speed (output S8) is activated after receiving signal from Front Arm Prox Switch (input B0)
120	7.0	Fwd High Pressure Creep Time	Time Creep Speed is activated during Forward Travel of High Pressure Wash to increase time on rear of vehicle.
115	2.0	Gantry Entrance Photoeye Off Delay Time	Time Entrance Gantry Photoeye (input B9) must be unblocked before de-activating eye.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
114	1	Gantry Entrance Photoeye On Delay Time	Time Entrance Gantry Photoeye (input B9) must be blocked before activating eye.
118	2.0	Gantry Exit Photoeye Off Delay	Time Exit Gantry Photoeye (input B8) must be unblocked before de-activating eye.
117	1.0	Gantry Exit Photoeye On Delay	Time Exit Gantry Photoeye (input B8) must be blocked before activating eye.
119	1.0	Gantry PE Forward Travel Time	Time Gantry continues Forward after Gantry Exit Photoeye Off Delay (timer #118) is satisfied.
78	10.0	Glass Wash Down On Time	Time each Glass Wash Down Solenoid (outputs R30-R33) opens during Glass Wash Down.
77	2.0	Glass Wash Down Pause Timer	Time between activating each Glass Wash Down Solenoid (outputs R30-R33) during Glass Wash Down.
79	120.0	Glass Washdown Verify Timer	Time Machine must sit idle after wash before activating Glass Wash Down sequence.
21	2.0	Hamilton Cycle Inhibit Off	Time Wash In Use (output R7) turns off after each wash if a Hamilton Entry System is used.
140	0.05	Heat Exchanger Air Purge Timer	Freeze protection for heat exchanger.
63	2.0	Holding Tank High Off	Float switch for high pressure pump (input A37) off delay.
62	3.0	Holding Tank High On Timer	Float switch for high pressure pump (input A37) on delay.
4	1.0	Hydraulic Forward Pause Time	Time Machine Travel (outputs S0 & S1) and Brush Rotation (outputs S14 & S15) pause when reversing direction.
133	50%	Jog Speed Setpoint (0-100%)	Speed Setting of gantry travel during Manual Jog expressed as a percentage of full speed.
76	2.0	Low Air Verify Time	Time Air Pressure Switch (input B4) must be deactivated before Low Air Fault.
59	10	Low on Pre-Soak Time	Time Low Pre-Soak Switch (input A35) must be deactivated before Low Pre-Soak Fault.
26	180.0	Low Temp OK	Time temperature must remain above the setpoint before deactivating door operation.
25	300.0	Low Temp Verify Timer	Time temperature must remain below the setpoint before activating door operation. Also, extinguishes Enter Light (output R0A)
34	5.0	Machine Water Valve Purge Timer	Time Machine Water Solenoid (output S10) remains open to purge during freeze protection. Not on ATF
55	25.0	Maximum Wax Time	Maximum time Wax pump (output R6, R40) will run during any given wash or chemical pass.
54	25.0	Not Used	Maximum time soap pumps (outputs R5, R39) will run during any given wash or chemical pass. Not on ATF

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
61	7.0	Not Used	Time Mitter Down Signal (output S4) is sent to lower mitter. Not on ATF
24	1.0	Motor Starter Auxiliary	Time allowed for the Motor Starter Auxiliary Contact (input A1) to activate after the Hydraulic Motor Starter (output R14) is energized, otherwise machine shuts down.
22	0.500	Not Used	Brush rotate pause before changing direction of rotation. Not on ATF
41	0.0	Not Used	Not Used
43	0.0	Not Used	Not Used
44	0.0	Not Used	Not Used
51	0.0	Not Used	Not Used
57	0.0	Not Used	Not Used
65	0.0	Not Used	Not Used
67	0.0	Not Used	Not Used
68	0.0	Not Used	Not Used
75	0.0	Not Used	Not Used
88	0.0	Not Used	Not Used
94	0.0	Not Used	Not Used
132	0.0	Not Used	Not Used
123	60%	Parking Speed 0-100%	Speed Setting of gantry travel during parking (homing) expressed as a percentage of full speed.
17	4.0	Parking Timer	Time Machine travels towards the exit end (Not “Home at Exit”) or entrance end (“Home at Exit”) of the track after reversing direction on the last pass or during homing.
8	5.0	Not Used	Time passenger arm retracts (output S6) during rear jog starting after rear arm prox switch (input B1) is made. Not on ATF
13	5.0	Not Used	Time passenger arm retracts (output S6) during rear jog starting after rear arm prox switch (input B1) is made. Not on ATF
109	0.35	Pause Before Rinse/Chemical Pass	Time the photoeye has to be unblocked before starting Rinse/Chemical Pass
49	30.0	Post Wash Chemical On Timer	Time Post Wash Chemical Arch (output R49) stays on unless otherwise deactivated by the exit bell switch (input A18) or Rinse Arch Stop (input A24).
50	1	Rinse Arch Stop Counter	1 = Photoeye 2 = Bell Switch. Specifies if Rinse Arch Stop (input A24) is photoeye (Value of 1) or bellswitch (Value of 2).
18	30.0	Pre-Soak #1	Time pre-soak (output R22) stays on after being activated by Pre-Soak Start (input A22) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
95	0.1	Pre-Soak #1 Photoeye On Delay Time	Time Pre-Soak Photoeye (input A22) must be blocked before activating eye.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
96	0.1	Pre-Soak #1 Start Photoeye Off Delay Time	Time the photoeye has to be unblocked before deactivating Pre-Soak #1.
99	0.1	Pre-Soak #2 Off Delay Time	Time Pre-Soak #2 Photoeye (input A38) has to be unblocked before deactivating Pre-Soak #2.
46	30.0	Pre-Soak #2 On Timer	Time Pre-Soak #2 (output R46) stays on after being activated by Pre-Soak #2 Start (input A38) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
98	0.1	Pre-Soak #2 Photoeye On Delay Timer	Time Pre-Soak #2 Start Input Photoeye (input A38) must be blocked before activating Pre-Soak #2.
47	30.0	Pre-Soak #3	Time Pre-Soak #3 (output R47) stays on after being activated by Pre-Soak #3 Start (input A39) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
102	0.1	Pre-Soak #3 Off Delay Time	Time the photoeye has to be unblocked before deactivating Pre-Soak #3.
101	0.1	Pre-Soak #3 Photoeye On Delay	Time Pre-Soak #3 Photoeye (input A39) must be blocked before activating eye.
105	0.1	Pre-Soak #4 Off Delay Time	Time the photoeye has to be unblocked before deactivating Pre-Soak #4.
48	30.0	Pre-Soak #4 On Timer	Time Pre-Soak #4 (output R48) stays on after being activated by Pre-Soak #4 Start (input A40) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
104	0.5	Pre-Soak #4 Photoeye On Delay	Time Pre-Soak #4 Photoeye (input A40) must be blocked before activating eye.
124	10.0	Pre-Soak Arch 1 Purge	Time Pre-Soak #2 (output R46) remains open to purge during freeze protection.
125	10.0	Pre-Soak Arch 2 Purge	Time Pre-Soak #3 (output R47) remains open to purge during freeze protection.
126	10.0	Pre-Soak Arch 3 Purge	Time Pre-Soak #4 (output R48) remains open to purge during freeze protection.
113	0.5	Pre-Soak Stop Photoeye Off Delay	Time the photoeye has to be blocked before deactivating Pre-Soak
112	0.1	Pre-Soak Stop Photoeye On Delay	Time Pre-Soak Stop Photoeye (input A23) must be blocked before activating eye.
29	15.0	Presoak Water Purge Timer	Time Pre-Soak (output R22) remains open to purge during freeze protection.
74	5.0	Purge – Glass Washdown	Time Glass Wash Down solenoids (outputs R30-R33) remain open to purge during freeze protection.
128	10.0	Purge – High Pressure Fwd	Time Forward High Pressure Solenoid (output S26) remains open to purge during freeze protection.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
129	10.0	Purge – High Pressure Rev	Time Rear High Pressure Solenoid (output S27) remains open to purge during freeze protection.
27	3.0	Purge – Underbody	Time Underbody solenoid (output R23) remains open to purge during freeze protection.
36	60.0	Purge Delay Timer	Delay between Freeze Option On/Off (timer #64) and activating freeze protection manifold (output R16).
73	0.001	Rear Limit Switch Time	(For older designs where prox switches were pointed down towards the floor) These delays prevented false prox switch activation when the proxes would pick up objects other than the vehicle.
121	8.0	Rev High Pressure Creep Timer	Time Creep Speed is activated during Reverse Travel of High Pressure Wash to increase time on front of vehicle.
37	5.0	Rinse / Dry Shutoff	Delay between Exit Bell Switch (input A18) and Rinse / Blower Shutoff.
84	3.0	Rinse Pipe Blowout	Time Rinse Arch Blow Out (output S29) activates after rinse cycle to purge rinse pipes.
60	3.0	Spare	Spare
40	5.0	Spot Free Purge Timer	Time Free Standing Spot Free Solenoid (output R27) remains open to purge during freeze protection.
52	15.0	Tire Scrubber Purge Timer	Time Wheel Blaster Water Solenoid (output S2) opens to purge during freeze protection.
53	6.5	Travel Time after Jog Timer	Time Machine travels towards entrance end after completing rear jog.
136	70.0	Travel Timeout 0 to 39% Speed	Travel Timeout for any pass programmed between 0 – 39% of full speed.
135	55.0	Travel Timeout 40 to 59% Speed	Travel Timeout for any pass programmed between 40 – 59% of full speed.
134	45.0	Travel Timeout 60 to 100% Speed	Travel Timeout for any pass programmed between 60 – 100% of full speed.
80	1.0	Treadle Buzzer	Time Treadle Buzzer (output R28) sounds when Treadle (input A15) is made.
7	0.05	Treadle Buzzer Delay	Time between pedal being pressed and horn blowing.
71	0.5	Treadle De-bounce	Time Treadle (input A15) must be deactivated to signal end of wash or drive-off.
3	4.0	Treadle Timer	Time Treadle (input A15) must be continuously made before activating wash
108	0.1	Underbody Off Delay Timer	Time the photoeye has to be unblocked before deactivating Underbody.
107	0.1	Underbody Photoeye On Delay	Time Underbody Start Photoeye (input A20) must be blocked before activating eye.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
19	30.0	Underbody Wash Timer	Time Underbody (output R23) stays on after being activated by Underbody Start (input A20) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
5	0.0	Wash Water Delay	No Longer Used
38	180.0	Wash Reset Timer	If the Treadle switch is off and the Hyd pump is on then time for the default period. This will reset the wash on timeout.
45	30.0	Wheel Blaster On Timer	Time Drive By Tire Blaster (outputs R13, S2) stays on after being activated by Drive By Tire Blaster Start (input A21) unless otherwise deactivated by the treadle (input A15).

Table 8.2 - PLC Timers and Counters (By Number)

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
1	7.0	Outside Enter Light Delay Time	Start delay timer to turn off Drive Forward light and turn on the Please Wait light.
2	1.5	Chemical Tire Applicator	Time CTA pump (output R3) activates each time Entrance Bell Switch is made (input A19).
3	4.0	Treadle Timer	Time Treadle (input A15) must be continuously made before activating wash
4	1.0	Hydraulic Forward Pause Time	Time Machine Travel (outputs S0 & S1) and Brush Rotation (outputs S14 & S15) pause when reversing direction.
5	0.0	Wash Water Delay	Not Used
6	4.0	Not Used	Delays the “arms in” (S7) output to prevent arms moving too close together with short vehicles on the first pass. Not on ATF
7	0.05	Treadle Buzzer Delay	Time between pedal being pressed and horn blowing.
8	5.0	Not Used	Time passenger arm retracts (output S6) during rear jog starting after rear arm prox switch (input B1) is made. Not on ATF
9	7.0	Not Used	Time driver side arm retracts (output S5) during rear jog starting when the Passenger Arm Retract Timer (timer #13) expires. Not on ATF
10	3.0	Dryer #2 Delay Time	Starting delay between first blower (output R10) and second blower (output R11).
11	3.0	Dryer #3 Delay Time	Starting delay between second blower (output R11) and third blower (output R12).
12	1.75	Drive Wheel Advance	Time machine continues traveling towards the exit after rear arm prox switch (input B1) is made.
13	5.0	Not Used	Time passenger arm retracts (output S6) during rear jog starting after rear arm prox switch (input B1) is made. Not on ATF
14	7.0	Not Used	Time driver side arm retracts (output S5) during rear jog starting when the Passenger Arm Retract Timer (timer #13) expires. Not on ATF
15	13.0	Drive Wheel Stop	Time machine remains stationary during rear jog starting after the Drive Wheel Advance Timer (timer #12) expires.
16	10.0	Exit Light	Time Exit light (output R2A) stays on after treadle is deactivated (input A15).
17	4.0	Parking Timer	Time Machine travels towards the exit end (Not “Home at Exit”) or entrance end (“Home at Exit”) of the track after reversing direction on the last pass or during homing.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
18	30.0	Pre-Soak #1	Time pre-soak (output R22) stays on after being activated by Pre-Soak Start (input A22) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
19	30.0	Underbody Wash Timer	Time Underbody (output R23) stays on after being activated by Underbody Start (input A20) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
20	40.0	Final Rinse Arch Run Timer	Time Rinse Arches (outputs R24 & R27) stay on unless otherwise deactivated by exit bell switch (input A18) or Rinse Arch Stop (input A24).
21	2.0	Hamilton Cycle Inhibit Off	Time Wash In Use (output R7) turns off after each wash if a Hamilton Entry System is used.
22	0.500	B Not Used	Brush rotate pause before changing direction of rotation. Not on ATF
23	75.0	Dryer On Timer	Time Blowers stay on unless otherwise deactivated by the Exit Bell switch.
24	1.0	Motor Starter Auxiliary	Time allowed for the Motor Starter Auxiliary Contact (input A1) to activate after the Hydraulic Motor Starter (output R14) is energized, otherwise machine shuts down.
25	300.0	Low Temp Verify Timer	Time temperature must remain below the setpoint before activating door operation. Also, extinguishes Enter Light (output R0A).
26	180.0	Low Temp OK	Time temperature must remain above the setpoint before deactivating door operation.
27	3.0	Purge – Underbody	Time Underbody solenoid (output R23) remains open to purge during freeze protection.
28	1.0	Entry Door Open Timer	Duration of Entrance Door Open signal (output R18).
29	15.0	Presoak Water Purge Timer	Time Pre-Soak (output R22) remains open to purge during freeze protection.
30	15.0	Final Rinse Water Purge Timer	Time Final Rinse Arch (output R24) remains open to purge during freeze protection.
31	1.0	Exit Door Open	Duration of Exit Door Open signal (output R20).
32	1.0	Exit Door Close	Duration of Exit Door Close signal (output R19).
33	1.0	Entrance Door Close	Duration of Entrance Door Close signal (output R17).
34	5.0	Not Used	Time Machine Water Solenoid (output S10) remains open to purge during freeze protection. Not on ATF
35	15.0	Exit Door Close Delay	Time delay between Exit Bell Switch 2nd pulse (input A18) and Exit Door Close signal (output R19).

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
36	60.0	Purge Delay Timer	Delay between Freeze Option On/Off (timer #64) and activating freeze protection manifold (output R16).
37	5.0	Rinse / Dry Shutoff	Delay between Exit Bell Switch (input A18) and Rinse / Blower Shutoff.
38	180.0	Wash Reset Timer	If the Treadle switch is off and the Hydraulic pump is on then time for the default period. This will reset the wash on timeout.
39	5.0	Delay Between Purges Timer	Time delay between each purge during freeze protection.
40	5.0	Spot Free Purge Timer	Time Free Standing Spot Free Solenoid (output R27) remains open to purge during freeze protection.
41	0.0	Not Used	Not Used
42	3.0	Blower Start Delay	Time Delay from Treadle (input A15) deactivation and External Blower Start (output R10).
43	0.0	Not Used	Not Used
44	0.0	Not Used	Not Used
45	30.0	Wheel Blaster On Timer	Time Drive By Tire Blaster (outputs R13, S2) stays on after being activated by Drive By Tire Blaster Start (input A21) unless otherwise deactivated by the treadle (input A15).
46	30.0	Pre-Soak #2 On Timer	Time Pre-Soak #2 (output R46) stays on after being activated by Pre-Soak #2 Start (input A38) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
47	30.0	Pre-Soak #3	Time Pre-Soak #3 (output R47) stays on after being activated by Pre-Soak #3 Start (input A39) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
48	30.0	Pre-Soak #4 On Timer	Time Pre-Soak #4 (output R48) stays on after being activated by Pre-Soak #4 Start (input A40) unless otherwise deactivated by the treadle (input A15) or Pre-Soak Stop (input A23).
49	30.0	Post Wash Chemical On Timer	Time Post Wash Chemical Arch (output R49) stays on unless otherwise deactivated by the exit bell switch (input A18) or Rinse Arch Stop (input A24).
50	1	Rinse Arch Stop Counter	1 = Photoeye 2 = Bell Switch. Specifies if Rinse Arch Stop (input A24) is photoeye (Value of 1) or bellswitch (Value of 2).
51	0.0	Not Used	Not Used
52	15.0	Tire Scrubber Purge Timer	Time Wheel Blaster Water Solenoid (output S2) opens to purge during freeze protection.
53	6.5	Travel Time after Jog Timer	Time Machine travels towards entrance end after completing rear jog.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
54	25.0	Not Used	Maximum time soap pumps (outputs R5, R39) will run during any given wash or chemical pass. Not on ATF
55	25.0	Maximum Wax Time	Maximum time Wax pump (output R6, R40) will run during any given wash or chemical pass.
56	5.0	Foamer Purge Timer	Time Foamer Air (outputs S11 & S13) will stay on to purge foamer after chemical pump shuts off.
57	0.0	Not Used	Not Used
58	6.0	Bug Spray Timer	Time Bug Spray pump (output R4) stays on.
59	10	Low on Pre-Soak Time	Time Low Pre-Soak Switch (input A35) must be deactivated before Low Pre-Soak Fault.
60	3.0	Spare	Spare
61	7.0	Not Used	Time Mitter Down Signal (output S4) is sent to lower mitter. Not on ATF
62	3.0	Holding Tank High On Timer	Float switch for high pressure pump (input A37) on delay. †
63	2.0	Holding Tank High Off	Float switch for high pressure pump (input A37) off delay. †
64	300.0	Freeze Protection Verify Timer	Time temperature must remain below the set point before shutting down the wash and activating freeze protection.
65	0.0	Not Used	Not Used
66	300.0	Door OK to Close	Time Exit & Entrance Door will close if no condition exists to open the doors or just on a timed basis.
67	0.0	Not Used	Not Used
68	0.0	Not Used	Not Used
69	2.0	Exit Bell / Photoeye Counter	Specifies if Exit Switch (input A18) is photoeye (Solenoid of 1) or bellswitch (Solenoid of 2).
70	3.25	Front Slowdown	Time Machine Creep Speed (output S8) is activated after receiving signal from Front Arm Prox Switch (input B0).
71	0.5	Treadle De-bounce	Time Treadle (input A15) must be deactivated to signal end of wash or drive-off.
72	0.001	Front Limit Switch Time	(For older designs where prox switches were pointed down towards the floor) These delays prevented false prox switch activation when the proxes would pick up objects other than the floor plates.
73	0.001	Rear Limit Switch Time	(For older designs where prox switches were pointed down towards the floor) These delays prevented false prox switch activation when the proxes would pick up objects other than the floor plates.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
74	5.0	Purge – Glass Washdown	Time Glass Wash Down solenoids (outputs R30-R33) remain open to purge during freeze protection.
75	0.0	Not Used	Not Used
76	2.0	Low Air Verify Time	Time Air Pressure Switch (input B4) must be deactivated before Low Air Fault.
77	2.0	Glass Wash Down Pause Timer	Time between activating each Glass Wash Down Solenoid (outputs R30-R33) during Glass Wash Down.
78	10.0	Glass Wash Down On Time	Time each Glass Wash Down Solenoid (outputs R30-R33) opens during Glass Wash Down.
79	120.0	Glass Washdown Verify Timer	Time Machine must sit idle after wash before activating Glass Wash Down sequence.
80	1.0	Treadle Buzzer	Time Treadle Buzzer (output R28) sounds when Treadle (input A15) is made.
81	30.0	Backup Bell Switch Timer	Time Back Up Light (output R9A) stays on if no Treadle (input A15) if activated.
82	0.1	Exit Bell / Photoeye On Delay	Time Exit Photoeye (input A18) must be blocked before activating.
83	0.1	Exit Bell / Photoeye Off Delay	Time Exit Photoeye (input A18) must be unblocked before de-activating.
84	3.0	Rinse Pipe Blowout	Time Rinse Arch Blow Out (output S29) activates after rinse cycle to purge rinse pipes.
85	1.0	Entrance Door Photoeye On Delay	Time Entrance Door Photoeye (input A7) must be blocked before activating.
86	1.0	Entrance Door Photoeye Off Delay	Time Entrance Door Photoeye (input A7) must be unblocked before de-activating.
87	10.0	Entrance Door Close Verify Timer	Time allowed for the Entrance Door to close during which Entrance Door Open (output R18) signal will be generated if Entrance Door Photoeye (input A7) is blocked.
88	0.0	Not Used	Not Used
89	1.0	Exit Door Photoeye On Delay	Time Exit Door Photoeye (input A6) must be blocked before activating.
90	1.0	Exit Door Photoeye Off Delay	Time Exit Door Photoeye (input A6) must be unblocked before de-activating.
91	10.0	Exit Door Close Verify Timer	Time allowed for the Exit Door to close during which Exit Door Open (output R20) signal will be generated if Exit Door Photoeye (input A6) is blocked.
92	10.0	Exit Door Close after Photoeye is re-made	Delay before Exit Door Close (output R19) signal is generated after Exit Door Photoeye (input A6) is re-made if broken during door closing.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
93	10.0	Entrance Door Close after Photoeye is re-made	Delay before Entrance Door Close (output R17) signal is generated after Entrance Door Photoeye (input A7) is re-made if broken during door closing.
94	0.0	Not Used	Not Used
95	0.1	Pre-Soak #1 Photoeye On Delay Time	Time Pre-Soak Photoeye (input A22) must be blocked before activating eye.
96	0.1	Pre-Soak #1 Start Photoeye Off Delay Time	Time the photoeye has to be unblocked before deactivating Pre-Soak #1.
97	1	Chemical Rinse Arch Stop On Delay Timer	Time Rinse Arch Stop Photoeye (input A24) must be blocked before activating eye.
98	0.1	Pre-Soak #2 Photoeye On Delay Timer	Time Pre-Soak #2 Start Input Photoeye (input A38) must be blocked before activating Pre-Soak #2.
99	0.1	Pre-Soak #2 Off Delay Time	Time Pre-Soak #2 Photoeye (input A38) has to be unblocked before deactivating Pre-Soak #2.
100	0.5	Chemical Rinse Arch Off Delay	Time the photoeye has to be unblocked before deactivating Chemical Rinse Arch.
101	0.1	Pre-Soak #3 Photoeye On Delay	Time Pre-Soak #3 Photoeye (input A39) must be blocked before activating eye.
102	0.1	Pre-Soak #3 Off Delay Time	Time the photoeye has to be unblocked before deactivating Pre-Soak #3.
103	600	Foamy Pre-Soak Auto Start Timer	Time interval between Pre-Soak Pump (output R43) start for automatic re-circulation.
104	0.5	Pre-Soak #4 Photoeye On Delay	Time Pre-Soak #4 Photoeye (input A40) must be blocked before activating eye.
105	0.1	Pre-Soak #4 Off Delay Time	Time the photoeye has to be unblocked before deactivating Pre-Soak #4.
106	20	Foaming Pre-Soak Auto Run	Time Pre-Soak Pump (output R43) runs during automatic re-circulation.
107	0.1	Underbody Photoeye On Delay	Time Underbody Start Photoeye (input A20) must be blocked before activating eye.
108	0.1	Underbody Off Delay Timer	Time the photoeye has to be unblocked before deactivating Underbody.
109	0.35	Pause Before Rinse/Chemical Pass	Time the photoeye has to be unblocked before starting Rinse/Chemical Pass.
110	0.1	Drive By Wheel On Delay Time	Time Drive By Wheel Blaster Start Photoeye (input A21) must be blocked before activating eye.
111	0.1	Drive By Wheel Off Delay	Time the photoeye has to be unblocked before deactivating Wheel Blaster.
112	0.1	Pre-Soak Stop Photoeye On Delay	Time Pre-Soak Stop Photoeye (input A23) must be blocked before activating eye.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
113	0.5	Pre-Soak Stop Photoeye Off Delay	Time the photoeye has to be blocked before deactivating Pre-Soak.
114	1	Gantry Entrance Photoeye On Delay Time	Time Entrance Gantry Photoeye (input B9) must be blocked before activating eye.
115	2.0	Gantry Entrance Photoeye Off Delay Time	Time Entrance Gantry Photoeye (input B9) must be unblocked before de-activating eye.
116	1.0	Gantry PE Reverse Travel Time	Time Gantry continues Reverse travel after Gantry Entrance Photoeye Off Delay (timer #115) is satisfied.
117	1.0	Gantry Exit Photoeye On Delay	Time Exit Gantry Photoeye (input B8) must be blocked before activating eye.
118	2.0	Gantry Exit Photoeye Off Delay	Time Exit Gantry Photoeye (input B8) must be unblocked before de-activating eye.
119	1.0	Gantry PE Forward Travel Time	Time Gantry continues Forward after Gantry Exit Photoeye Off Delay (timer #118) is satisfied.
120	7.0	Fwd High Pressure Creep Time	Time Creep Speed is activated during Forward Travel of High Pressure Wash to increase time on rear of vehicle.
121	8.0	Rev High Pressure Creep Timer	Time Creep Speed is activated during Reverse Travel of High Pressure Wash to increase time on front of vehicle.
122	20%	Creep Speed 0-100%	Speed Setting of gantry travel during front and rear slowdown expressed as a percentage of full speed.
123	60%	Parking Speed 0-100%	Speed Setting of gantry travel during parking (homing) expressed as a percentage of full speed.
124	10.0	Pre-Soak Arch 1 Purge	Time Pre-Soak #2 (output R46) remains open to purge during freeze protection.
125	10.0	Pre-Soak Arch 2 Purge	Time Pre-Soak #3 (output R47) remains open to purge during freeze protection.
126	10.0	Pre-Soak Arch 3 Purge	Time Pre-Soak #4 (output R48) remains open to purge during freeze protection.
127	10.0	Chemical Rinse Arch Purge Timer	Time Chemical Rinse Arch (output R49) remains open to purge during freeze protection.
128	10.0	Purge – High Pressure Fwd	Time Forward High Pressure Solenoid (output S26) remains open to purge during freeze protection.
129	10.0	Purge – High Pressure Rev	Time Rear High Pressure Solenoid (output S27) remains open to purge during freeze protection.
130	900	Foaming Pre-Soak Purge Delay	Time delay between Foamy Pre-Soak Chemical Pump activation (output R42) during Freeze Protection.

REGISTER #	DEFAULT (SEC)	NAME	DESCRIPTION
131	60	Foaming Pre-Soak Purge On Timer	Time Foamy Pre-Soak Chemical Pump activates (output R43) during Freeze Protection.
132	0.0	Not Used	Not Used
133	50%	Jog Speed Setpoint (0-100%)	Speed Setting of gantry travel during Manual Jog expressed as a percentage of full speed.
134	45.0	Travel Timeout 60 to 100% Speed	Travel Timeout for any pass programmed between 60 – 100% of full speed.
135	55.0	Travel Timeout 40 to 59% Speed	Travel Timeout for any pass programmed between 40 – 59% of full speed.
136	70.0	Travel Timeout 0 to 39% Speed	Travel Timeout for any pass programmed between 0 – 39% of full speed.
137	0.1	Blowout High Pressure Front Purge Timer	Freeze protection for front nozzles, **ATF only.**
138	0.1	Blowout High Pressure Rear Purge Timer	Freeze protection for rear nozzles, **ATF only.**
139	0.05	Blowout High Pressure Rocker Purge Timer	Freeze protection for rocker panel nozzles, **ATF only.**
140	0.05	Heat Exchanger Air Purge Timer	Freeze protection for heat exchanger, **ATF only.**

Inputs - Main Control Panel (-DC)

A0 ..... E-Stop
A1 ..... Motor Starter Contact
A2 ..... Reset Switch
A3 ..... Forward Jog
A4 ..... Reverse Jog
A5 ..... Automatic Door Thermostat
A6 ..... Exit Door Photoeye (Required for Automatic Doors)
A7 ..... Entrance Door Photoeye (Required for Automatic Doors)
A8 ..... Not Used
A9 ..... Not Used
A10 .... Not Used
A11 .... Not Used
A12 .... Not Used
A13 .... Not Used
A14 .... Freeze Protection Thermostat
A15 .... Treadle Switch
A16 .... Treadle Inhibit Photoeye
A17 .... Back-Up Bell Switch
A18 .... Exit Bell Switch/Photoeye
A19 ... Entrance Bell Switch
A20 ... Under Body Wash Start Input
A21 ... Drive By Tire/Wheel Blaster Start Input
A22..... Presoak #1 Start Photoeye
A23..... Presoak Stop Photoeye
A24..... Photoeye/Bellswitch for Rinse Arch Stop
A25..... Car Dealer Auto/Start
A26..... Wash #1
A27..... Wash #2
A28..... Wash #3
A29..... Wash #4
A30..... Wash #5
A31..... Wash #6
A32..... Wash #7
A33..... Wash #8
A34..... Wash #9
A35..... Low on Presoak Water
A36..... Holding Tank Out of Water
A37..... Holding Tank High Water Level
A38..... Prewash #2 Start
A39..... Prewash #3 Start
A40..... Prewash #4 Start
A41..... Entry System Fault Signal
A42..... Reclaim Alarm
A43..... Optional blower Start- Only on ATF
A44..... Low Temperature Switch Only on ATF
A45..... Low on hot water – Only on ATF

Inputs - Gantry Control Panel (-DC)

B0 ..... Not used in ATF
B1 ..... Not used in ATF
B2 ..... Front Travel Prox Switch (Exit End)
B3 ..... Rear Travel Prox Switch (Entrance End)
B4 ..... Not used in ATF
B5 ..... Hydraulic Oil Overtemp Switch
B6 ..... Hydraulic Heater Thermostat Switch
B7 ..... Hydraulic Oil level Switch
B8 ..... Photoeye, Rear Position (Entrance End)
B9 ..... Photoeye, Front Position (Exit End)
B10 .... Spare
B11 .... Spare

Outputs - Main Control Panel (115 VAC)

R0A.... Inside Enter Light
R1A.... Stop Light
R2A.... Exit Light & Wash Counter
R3 ..... CTA Pump
R4 ..... Bug Sprayer Pump
R5 ..... Not used in ATF
R6 ..... Wax Pump
R7 ..... Car Wash In Use Signal
R8 ..... Fault Light
R9A.... Back Up Light
R10 .... #1 “A” Blower Motor Starter
R11 .... #2 “A” Blower Motor Starter
R12 .... #3 “A” Blower Motor Starter
R13 .... High Pressure Pump Starter
R14 .... Hydraulic Pump Motor Starter
R15 .... Hydraulic Heater Contactor
R16 .... Freeze Protection Manifold
R17 .... Entrance Door Close
R18 .... Entrance Door Open
R19 .... Exit Door Close
R20 .... Exit Door Open
R21 .... Not used in ATF
R22 .... #1 Prewash
R23 .... Underbody Wash Water Solenoid
R24 .... External Fresh Water Rinse Solenoid
R25 .... Fresh Water Rinse Pump
R26 .... Spot Free Rinse Pump
R27 .... External Spot Free Rinse Solenoid
R28 .... Treadle Buzzer
R29 .... Window Wash Down Water Source
R30 .... #1 Glass Wash Down
R31 .... #2 Glass Wash Down
R32 .... #3 Glass Wash Down
R33 .... #4 Glass Wash Down
R34 .... User Defined #1
R35 .... User Defined #2
R36 .... User Defined #3
R37 .... User Defined #4
R38 .... Rinse Chemical Pump
R39 .... Not used in ATF
R40 .... Multifoam Wax Pump
R41 .... Holding Tank Fill Valve
R42 .... On-Board Presoak Chemical Solenoid
R43 .... Foaming Presoak Chemical Pump
R44A…Wax Flashing Light
R45A…Rinse Chemical Flashing Light
R46 .... #2 Prewash
R47 .... #3 Prewash
R48 .... #4 Prewash
R49 .... Post Wash Chemical Arch
R50 .... #1 “B” Blower Motor Start
R51 .... #2 “B” Blower Motor Start
R52 .... #3 “B” Blower Motor Start
R53 .... Hot Presoak #1 Chemical
R54 .... Hot Presoak #2 Chemical
R55A…Outside Enter Light
R56A…Front Please Wait Light
R57 .... Spare

Outputs - Gantry Control Panel (24 VDC or 120 VAC)

S0 ..... Hydraulic Solenoid Forward Wheel Drive
S1 ..... Hydraulic Solenoid Reverse Wheel Drive
S2 ..... Wheel/Rocker Panel Water Solenoid
S3 ..... Final Rinse Water Solenoid
S4 ..... Not used in ATF
S5 ..... Not used in ATF
S6 ..... Not used in ATF
S7 ..... Not used in ATF
S8 ..... HP Pressure pipe blowout
S9 ..... Heat Exchanger freeze protection air purge
S10.... Not used in ATF
S11.... Not used in ATF
S12.... Not used in ATF
S13.... Not used in ATF
S14.... Front High Pressure Solenoid
S15.... Not used in ATF
S16.... Not used in ATF
S17.... Not used in ATF
S18.... Not used in ATF
S19.... Wax Foam Air Solenoid
S20.... Not used in ATF

S21 .... Multi Foam Air Solenoid
S22 .... High Pressure Nozzle Oscillate Solenoid
S23 .... User Defined #1
S24 .... User Defined #2
S25 .... User Defined #3
S26 .... User Defined #4
S27 .... Not Used
S28 .... Rear Bumper Blaster Solenoid
S29 .... Spot Free Rinse Blowout Solenoid
S30 .... Rinse Pipe Blowout Solenoid
S31 .... Foaming Presoak Solenoids (3 total)
S32 .... Gantry Blower Oscillating Motor
S33 .... Blower Flip Nozzle Solenoid
S34 .....Recirculation Shut Off Solenoid
S35 .....Hot Water Delivery Solenoid

Table 8.3 – Inputs: Main Control Panel (-DC)

Terminal Number	I/O Point	Name	Normal Status	Description
A0	a.0	E-Stop	N/C	Emergency Stop Switch(s) kills the input to the PLC and removes power from ES1 relay, which will kill all outputs generating a fatal E-Stop Fault (fault #999). Machine cannot restart until E-Stop Switch is released and Machine is reset.
A1	a.1	Motor Starter Contact	N/O	Auxiliary Contact on Main Motor Starter generates this input. PLC must see input within 1 second of Motor Starter Output (output R14) or Motor Start Fault (fatal fault #996) is generated (usually indicating tripped overload). Machine must be reset to start.
A2	a.2	Reset Switch	N/O	Input to reset machine after Fatal Fault conditions.
A3	a.3	Forward Jog	N/O	Input from jog switch activates Hydraulic Motor Starter (output R14) and Hydraulic Drive Forward (output S0).
A4	a.4	Reverse Jog	N/O	Input from jog switch activates Hydraulic Motor Starter (output R14) and Hydraulic Drive Reverse (output S1).
A5	a.5	Automatic Door Thermostat	N/O	Input from Automatic Door Thermostat starts Low Temp Verify Timer (timer #25), which must time out before Automatic Doors Activate.
A6	a.6	Exit Door Bell Switch/Photoeye	N/O	Input from bell switch or photoeye starts timers for Exit Door Close Delay (timer #35, output R19) and Rinse / Blower Shutoff (timer #37; rinse outputs R24, R25, R26, R27; & blower outputs R10, R11, & R12).
A7	a.7	Entrance Door Photoeye	N/C	Input from Entrance Door Photoeye must be seen before Entrance Door will close.
A8	b.0	Not Used		
A9	b.1	Not Used		
A10	b.2	Not Used		
A11	b.3	Not Used		
A12	b.4	Not Used		
A13	b.5	Not Used		
A14	a.0	Freeze Protection Thermostat	N/O	Input from Freeze Protection Thermostat starts Freeze Options On\Off Timer (timer #64), which must time out to start freeze protection.
A15	a.1	Treadle Switch	N/O	Input from treadle switch stops all pre-wash functions, activates output for treadle buzzer (output R28), stop light (output R1A), and starts Treadle Timer (timer #3).
A16	a.2	Treadle Inhibit Photoeye	N/O	Photoeye locks out treadle switch input to prevent back wheel from starting the car wash.

Terminal Number	I/O Point	Name	Normal Status	Description
A17	a.3	Back-Up Bell Switch	N/O	Input from bell switch to turn on backup light (R9A).
A18	a.4	Exit Door Photoeye (Required for Automatic Doors)	N/C	Input from Exit Door Photoeye must be seen before Exit Door will close.
A19	a.5	Entrance Bell Switch	N/O	Input from Entrance Bell Switch generates Entrance Door Up signal (output R18) and activates CTA pump (output R3, timer #2).
A20	a.6	Underbody Wash Start Input	N/O	Input from Underbody Start Photoeye activates the Underbody (output R23) and activates Underbody Timer (timer #19), which will stop the Underbody when it expires.
A21	a.7	Drive By Tire/Wheel Blaster Start Input	N/O	Input from Drive By Wheel Blaster Bellswitch/Photoeye activates the Drive By Wheel Blaster (outputs R13, S2) and activates Drive By Wheel Blaster Timer (timer #45), which will stop the Drive By Wheel Blaster when it expires.
A22	b.0	Pre-Soak Start Photoeye	N/O	Input from Pre-Soak Start Photoeye activates #1 Pre-Soak (output R22) and starts the Pre-Soak Timer (timer #18) which will stop the #1 Pre-Soak when it expires.
A23	b.1	Pre-Soak Stop Photoeye	N/O	Input from Pre-Soak Stop Photoeye will stop all Pre-Soak outputs (outputs R22 & R23).
A24	b.2	Rinse Arch Stop Photoeye/Bellswitch	N/O	Input from Rinse Arch Stop photoeye or bellswitch stops all rinse arch outputs (outputs R24, R25, R26, R27, & R38)
A25	b.3	Car Dealer Auto/Start	N/O	Input from Auto/Dealer Switch allows automatic start of wash when Treadle input (input A15) is made.
A26	b.4	Wash #1	N/O	Input from Entry System for Wash #1. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A27	b.5	Wash #2	N/O	Input from Entry System for Wash #2. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A28	b.6	Wash #3	N/O	Input from Entry System for Wash #3. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A29	b.7	Wash #4	N/O	Input from Entry System for Wash #4. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A30	a.0	Wash #5	N/O	Input from Entry System for Wash #5. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A31	a.1	Wash #6	N/O	Input from Entry System for Wash #6. PLC will use the last Wash # seen prior to treadle switch input (input A15).

Terminal Number	I/O Point	Name	Normal Status	Description
A32	a.2	Wash #7	N/O	Input from Entry System for Wash #7. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A33	a.3	Wash #8	N/O	Input from Entry System for Wash #8. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A34	a.4	Wash #9	N/O	Input from Entry System for Wash #9. PLC will use the last Wash # seen prior to treadle switch input (input A15).
A35	a.5	Low on Presoak Water	N/C	Loss of input from level sensor in Heated Pre-soak Chemical Tank, which generates non-fatal fault (fault#797) and disables heater.
A36	a.6	Holding Tank out of Water	N/O	N/O held closed float switch to protect pump. Must be jumpered to DC- if not used. Generates fatal fault until A37 is made true.
A37	a.7	Holding Tank high Water Level	N/O	Input from top-level sensor in Holding Tank opens Holding Tank Fill Valve (output R41) and resets machine if faulted from Holding Tank Out of Water Input (input A36).
A38	b.0	Prewash #2 Start	N/O	Input from #2 Pre-Soak Arch Start Photoeye activates #2 Pre-Soak (output R46) and activates #2 Pre-Soak Timer (timer #46) which will stop the #2 Pre-Soak when it expires.
A39	b.1	Prewash #3 Start	N/O	Input from #3 Pre-Soak Arch Start Photoeye activates #3 Pre-Soak (output R47) and activates #3 Pre-Soak Timer (timer #47) which will stop the #3 Pre-Soak when it expires.
A40	b.2	Prewash #4 Start	N/O	Input from #4 Pre-Soak Arch Start Photoeye activates #4 Pre-Soak (output R48) and activates #4 Pre-Soak Timer (timer #48) which will stop the #4 Pre-Soak when it expires.
A41	b.3	Entry System Fault Signal	N/O	Out of Service Input from Entry System generates Fatal Fault (fault #889). Fault must be cleared and machine reset before restart.
A42	b.4	Reclaim Alarm	N/O	Input from Reclaim System generates non-fatal fault (fault #449).
A43	b.5	Spare		
A44	b.6	Spare		
A45	b.7	Spare		

Table 8.4 – Inputs: Gantry Junction Box (-DC)

Terminal Number	I/O Point	Name	Normal Status	Description
B0	11	Not Used	N/O	Input from Front Arm Prox Switch starts Front Slow Down Timer (timer #70) and slows machine until timer expires. Not on ATF
B1	21	Not Used	N/O	Input from Rear Arm Prox Switch starts rear jog sequence. Not on ATF
B2	12	Front Travel Prox Switch	N/O	Input from Front Travel Prox Switch stops forward carriage travel (output S0) and starts Hydraulic Pause Timer (timer #4).
B3	22	Rear Travel Prox Switch	N/O	Input from Rear Travel Prox Switch stops reverse carriage travel (output S1) and starts Hydraulic Pause Timer (timer #4).
B4	13	Not Used	N/C	Loss of input from Low Air Pressure Switch causes a fatal fault (fault #997). The machine must be reset before restarting.
B5	23	Hydraulic Oil Overtemp Switch	N/C	Loss of input from Hydraulic Oil Overtemp Switch causes a fatal fault (fault #998). The machine must be reset before restarting.
B6	14	Hydraulic Heater Thermostat Switch	N/O	Input from Hydraulic Heater Thermostat Switch turns on Hydraulic Heater Output (output R15). †
B7	24	Hydraulic Oil Level Switch	N/C	Loss of input from Hydraulic Oil Level Switch causes a fatal fault (fault #995). The machine must be reset before restarting.
B8	15	Photoeye, Rear Position (Entrance End)	N/C	Loss of input from the Entrance End Photoeye starts the Gantry PE Reverse Travel Timer (timer #116), which stops Reverse Travel (output S1) when it expires.
B9	25	Photoeye, Front Position (Exit End)	N/C	Loss of input from the Exit End Photoeye starts Gantry PE Forward Travel Timer (timer #119), which stops Forward Travel (output S0) when it expires.
B10	16	Not Used - Jumper to DC-		
B11	26	Not Used - Jumper to DC-		

Table 8.5 – Outputs: Main Control Panel

(24 VDC or 120 **VAC)**

Terminal Number	I/O Point	Name	Description
R0A	a.0	Enter Light	Green Light activated by any Wash Input. Extinguished by Treadle Switch (input A15), Backup Bell Switch (input A17), or Low Temp Verify timer (timer #25).

Terminal Number	I/O Point	Name	Description
R1A	a.1	Stop Light	Red Light activated by Treadle Input (input A15). Extinguished if Treadle Input is lost or at completion of Wash.
R2A	a.2	Exit Light	Comes on at completion of Wash and stays on until the Exit Light Timer (timer #16) expires.
R3	a.3	CTA Pump	Activated by Entrance Bell Switch (input A19) and controlled by the CTA Timer (timer #2). Deactivated by Treadle Switch (input A15).
R4	a.4	Bug Sprayer Pump	Activated by the Wash Start and controlled by the Bug Spray Timer (timer #58).
R5	b.5	Not Used	Works in tandem with Foamer Soap Solenoid (output S12) and Water Manifold Soap Solenoid (output S16). If Polyflex cloth is used, the Soap Pump and Water Manifold Soap Solenoid will be energized anytime the side brushes engage the vehicle. Not on ATF
R6	b.6	Wax Pump	Chemical Pump for Wax.
R7	b.7	Car Wash In Use Signal	Output to Entry System. Activated by Wash Start and deactivated when exit light goes out.
R8	b.0	Fault Light	Comes on or flashes during any Fatal Fault condition.
R9A	b.1	Back Up Light	Activated by the Backup Bell Switch (input A17) before Wash starts.
R10	a.0	#1 “A” Blower Motor Starter	Starts after the Blower Start Delay timer (timer #42) expires if programmed in wash. Stays on until Blower On Timer (timer #23) expires or until Rinse/Blower Shutoff Timer (timer #37) expires.
R11	a.1	#2 “A” Blower Motor Starter	Starts after the Blower #2 Delay timer (timer #10) expires if programmed in wash. Stays on until Blower On Timer (timer #23) expires or until Rinse/Blower Shutoff Timer (timer #37) expires.
R12	a.2	#3 “A” Blower Motor Starter	Starts after the Blower #3 Delay timer (timer #11) expires if programmed in wash. Stays on until Blower On Timer (timer #23) expires or until Rinse/Blower Shutoff Timer (timer #37) expires.
R13	a.3	High Pressure Pump Starter	Works in tandem with the High Pressure Forward Solenoid (output S26), the High Pressure Reverse Solenoid (output S27 †), or the Wheel Blaster Water Solenoid (output S2).
R14	a.4	Hydraulic Motor Starter	Starts Hydraulic Motor and is required with all hydraulic related outputs.
R15	a.5	Hydraulic Heater Contactor	Output energizes coil on Hydraulic Heater Relay and is controlled by Hydraulic Heater Thermostat Switch (input B6). †
R16	a.6	Freeze Protection Manifold	Activates N/O Water Solenoids to shutoff water flow and N/C Air Solenoids to purge water lines.
R17	a.7	Entrance Door Close	Energized by Wash Start if in Automatic Door mode. Must have Entrance Door Photoeye input (input A7) to energize.
R18	b.0	Entrance Door Open	Energized by any Wash Input, entrance bell switch (input A19) or if Entrance Door Photoeye input (input A7) is lost.
R19	b.1	Exit Door Close	Energized after Exit Door Close Delay Timer Expires (timer #35) if in Automatic Door mode. Must have Exit Door Photoeye input (input A6) to energize.

Terminal Number	I/O Point	Name	Description
R20	b.2	Exit Door Open	Energized at completion of wash, if treadle Switch input (input A15) is lost during wash, by exit bell switch (input A18), or if Exit Door Photoeye input (input A6) is lost during Exit Door Down Verify Timer (timer #91).
R21	b.3	Not Used	Works in tandem with either the Machine Wash Water Solenoid (output S10) or the Underbody Wash Solenoid (output R23) Not on ATF
R22	b.3	#1 Pre-Soak Arch	Started by Pre-Soak Start Photoeye (input A22). Stopped by Pre-Soak Stop Bellswitch/Photoeye (input A23), Treadle Switch (input A15), or when #1 Pre-Soak Timer (timer #18) expires.
R23	b.5	Under Body Wash Water Solenoid	Activated by the Underbody Start Bellswitch (input A20). Deactivated by the Treadle Switch (input A15), the Pre-Soak Stop Bellswitch\Photoeye (input A23), or the Underbody Timer (timer #19).
R24	b.6	External Fresh Water Rinse Solenoid	Works in tandem with Fresh Water Rinse Pump (output R25). Activated after Treadle Input (input A15) is deactivated and controlled by the Rinse Arch Timer (timer #20) or by the Rinse \ Dry shutoff timer (timer #37). If short bay option is chosen, output is activated at completion of wash.
R25	b.7	Fresh Water Rinse Pump	Works in tandem with either the Gantry Final Rinse Water Solenoid (output S3) or the External Fresh Water Rinse Solenoid (output R24).
R26	a.0	Spot Free Rinse Pump	Works in tandem with either the Gantry Spot Free Final Rinse Solenoid (output S28) † or the External Spot Free Rinse Solenoid (output R27).
R27	a.1	External Spot Free Rinse Solenoid	Works in tandem with Spot Free Rinse Pump (output R26). Activated after Treadle Input (input A15) is deactivated and controlled by the Rinse Arch Timer (timer #20) or by the Rinse \ Dry shutoff timer (timer #37). If short bay option is chosen, output is activated at completion of wash.
R28	a.2	Treadle Buzzer	Activated by the Treadle Switch input (input A15) and controlled by the Treadle Buzzer Timer (timer #80).
R29	a.3	Glass Wash Down Water Source	Energizes after the Glass Wash Down Verify Timer (timer #79) expires. Works in tandem with the Glass Wash Down Outputs 1-4 (outputs R30-R33)
R30	a.4	Glass Wash Down #1	Works in tandem with Glass Wash Down Water Source (output R29) and controlled by the Glass Wash Down On Timer (timer #78).
R31	a.5	Glass Wash Down #2	Works in tandem with Glass Wash Down Water Source (output R29) and controlled by the Glass Wash Down On Timer (timer #78).
R32	a.6	Glass Wash Down #3	Works in tandem with Glass Wash Down Water Source (output R29) and controlled by the Glass Wash Down On Timer (timer #78).
R33	a.7	Glass Wash Down #4	Works in tandem with Glass Wash Down Water Source (output R29) and controlled by the Glass Wash Down On Timer (timer #78).
R34	b.0	User Defined #1	Works in tandem with Gantry User Defined #1 (output S22) if programmed during any pass.
R35	b.1	User Defined #2	Works in tandem with Gantry User Defined #2 (output S23) if programmed during any pass.

Terminal Number	I/O Point	Name	Description
R36	b.2	User Defined #3	Works in tandem with Gantry User Defined #3 (output S24) if programmed during any pass.
R37	b.3	User Defined #4	Works in tandem with Gantry User Defined #4 (output S25) if programmed during any pass.
R38	b.4	Rinse Chemical Pump	Works in tandem with the any of the rinse outputs (outputs R24, R27, S28 †, or S3) if programmed. (Typically used for Drying Agent). †
R39	b.5	Multi Foam Soap Pump	Activates 2nd and 3rd Soap Chemical Pumps. Works in tandem with Multi-foam Air Solenoid Output (output S13). †
R40	b.6	Multi Foam Wax Pump	Activates 2nd and 3rd Wax Chemical Pumps. Works in tandem with Multi-foam Air Solenoid Output (output S13). †
R41	b.7	Holding Tank Fill Solenoid	Controlled by the Holding Tank High Water Level Input (input A37). †
R42	a.0	Gantry Presoak Chemical Solenoid	Works in tandem with the Soap Pump (output R5) and is activated anytime Polyflex side brushes engage vehicle or anytime Foamy Soap is programmed.
R43	a.1	Foaming Pre-Soak Chemical Pump	Chemical pump for Heated Pre-Soak Chemical injected into Pre-Soak Foamer. Works in tandem with Foaming Pre-Soak Air (output S30).
R44A	a.4	Wax Flashing Light	Activated in tandem with Wax pump output (output R6).
R45A	a.2	Rinse Chemical Flashing Light	Activated in tandem with the Rinse Chemical Pump (output R38).
R46	a.3	#2 Pre-Soak Arch	Started by #2 Pre-Soak Start Photoeye (input A38). Stopped by Pre-Soak Stop Bellswitch/Photoeye (input A23), Treadle Switch (input A15), or when #2 Pre-Soak Timer (timer #46) expires.
R47	a.5	#3 Pre-Soak Arch	Started by #3 Pre-Soak Start Photoeye (input A39). Stopped by Pre-Soak Stop Bellswitch/Photoeye (input A23), Treadle Switch (input A15), or when #3 Pre-Soak Timer (timer #47) expires.
R48	a.6	#4 Pre-Soak Arch	Started by #4 Pre-Soak Start Photoeye (input A40). Stopped by Pre-Soak Stop Bellswitch/Photoeye (input A23), Treadle Switch (input A15), or when #4 Pre-Soak Timer (timer #48) expires.
R49	a.7	Post Wash Chemical Arch	Post-Wash Arch to apply Chemical before or after Final Rinse Arch.
R50	b.0	#1 “B” Blower Motor Starter	Starts after the Blower Start Delay timer (timer #42) expires if programmed in wash. Stays on until Blower On Timer (timer #23) expires or until Rinse/Blower Shutoff Timer (timer #37) expires.
R51	b.1	#2 “B” Blower Motor Starter	Starts after the Blower #2 Delay timer (timer #10) expires if programmed in wash. Stays on until Blower On Timer (timer #23) expires or until Rinse/Blower Shutoff Timer (timer #37) expires.
R52	b.2	#3 “B” Blower Motor Starter	Starts after the Blower #3 Delay timer (timer #11) expires if programmed in wash. Stays on until Blower On Timer (timer #23) expires or until Rinse/Blower Shutoff Timer (timer #37) expires.
R53	b.3	Hot Presoak #1 Chemical	Optional output for injection of chemical into high pressure pump.

Terminal Number	I/O Point	Name	Description
R54	b.4	Hot Presoak #2 Chemical	Optional output for injection of chemical into high pressure pump.
R55A	b.5	Outside Enter Light	Enter Light between Entry System and wash entrance.
R56A	b.6	Please Wait Light	Please Wait Light between Entry System and wash entrance.
R57	b.7	Spare	

Table 8.6 – Outputs: Gantry Control Panel

(24VDC or 120 **VAC)**

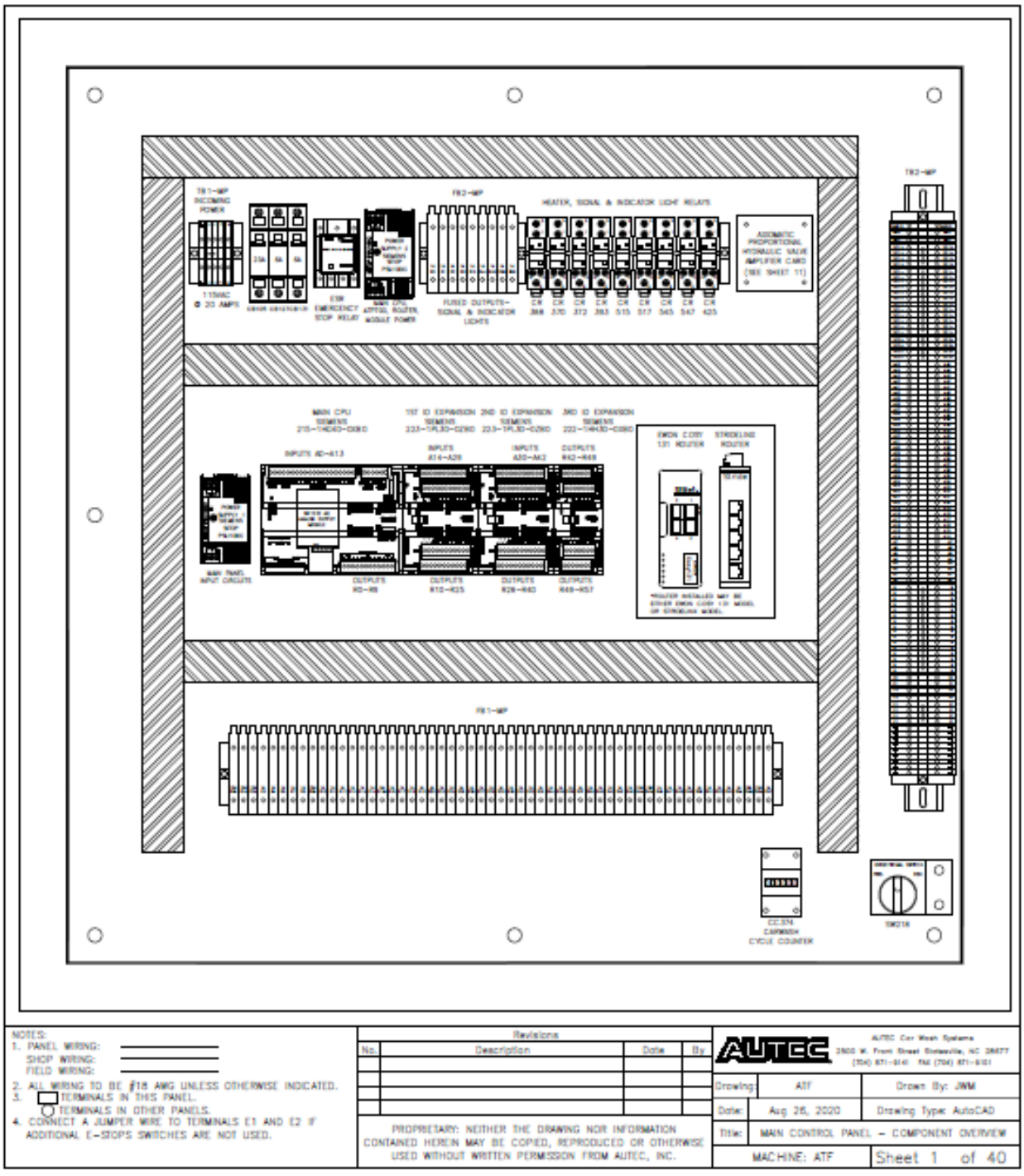
Terminal Number	I/O Point	Name	Description
S0	13	Hydraulic Solenoid Forward Wheel Drive	Activated to move carriage Forward. Requires Hydraulic Motor Starter Output (output R14). CR594
S1	23	Hydraulic Solenoid Reverse Wheel Drive	Activated to move carriage in Reverse. Requires Hydraulic Motor Starter Output (output R14). CR602
S2	16	Wheel Blaster Solenoid	Works in tandem with the High Pressure Pump Starter (output R13) and energized for Drive By Wheel Blaster (input A21) or any pass Wheel Blaster is programmed. Cannot be programmed same pass with HP Wash.
S3	26	Spot Free Final Rinse Solenoid	Works in tandem with Spot Free Rinse Pump (output R26) during a Gantry Rinse Pass.
S4	13	Not Used	Energized prior to any pass including a friction wash. Controlled by the Mitter Down Timer (timer #61). Requires Hydraulic Motor Starter Output (output R14). Not on ATF
S5	23	Not Used	Energized during the Rear Jog. Controlled by the Driver Side Rear Arm Retract Timer (timer #14). Not on ATF
S6	16	Not Used	Energized during the Rear Jog. Controlled by the Passenger Side Rear Arm Retract Timer (timer #13). Not on ATF
S7	26	Not Used	Activated during any Friction Wash Pass. Not on ATF
S8	13	Not Used	
S9	23	Not Used	
S10	16	Not Used	Works in tandem with Wash Water Source Pump (output R21) and is activated during any Friction Wash Pass or if programmed on Rinse\Chemical Pass.
S11	26	Not Used	Energized in tandem with Soap Pump output (output R5) if Foamy Soap is programmed.
S12	13	Not Used	Optional solenoid used with tag-safe function to partially open the front driver's side arm to prevent damage to the vehicle's front tag during rear travel. Also used during the front jog process. Not on ATF
S13	23	Not Used	Optional solenoid used with tag-safe function to partially open the front passenger's side arm to prevent damage to the vehicle's front tag during rear travel. Also used during the front jog process. Not on ATF
S14	16	Front High Pressure Solenoid	Energizes 2 X 3 Turbo Nozzles mounted on front arms to enhance cleaning of windows, mirrors and front grill.
S15	26	Not Used	Output to retract front arms from vehicle during rear jog process to prevent damage to side mirrors. Not on ATF
S16	13	Not Used	Energized during the forward travel portion of any pass including a friction wash. Requires Hydraulic Motor Starter Output (output R14). Not on ATF
S17	23	Not Used	Energized during the reverse travel portion of any pass including a friction wash. Requires Hydraulic Motor Starter Output (output R14). Not on ATF

Terminal Number	I/O Point	Name	Description
S18	16	Not Used	Works in tandem with the Soap Pump (output R5) and is activated anytime Polyflex side brushes engage vehicle or anytime Foamy Soap is programmed.
S19	26	Wax Foam Air Solenoid	Works in tandem with the Wax Pump (output R6) and is activated anytime Foamy Wax is programmed.
S20	13	Not Used	Works in tandem with the Soap Pump (output R5) and is activated anytime Foamy Soap is programmed. Not on ATF
S21	23	Multifoam Air Solenoid	Energized in tandem with Soap Pump output (output R5) if Foamy Soap if required
S22	16	High Pressure Nozzle Oscillate Solenoid	Activated during any Wash Pass including High Pressure Wash. Requires Hydraulic Motor Starter Output (output R14).
S23	26	User Defined #1	
S24	13	User Defined #2	
S25	23	User Defined #3	
S26	16	User Defined #4	
S27	26	Not Used	
S28	13	Rear Bumper Blaster Solenoid	Energizes 2 X 3 Turbo Nozzles mounted on rear arms to enhance cleaning of windows, mirrors and rear bumper.
S29	23	Spot Free Rinse Valve	Works in tandem with Spot Free Rinse Pump (output R26) during a Gantry Rinse Pass.
S30	16	Rinse Pipe Blowout Solenoid	Is activated prior to Gantry Blower Pass. Opens Air Valve to purge Rinse Pipes and opens Dump Water Valve to allow fast purging.
S31	26	Foaming Presoak Solenoid	Activated in tandem with Foamy Pre-Soak Chemical Pump (output R43) if programmed during any Rinse\Chemical Pass.
S32	13	Gantry Blower Oscillate Motor	Energized during any Blower pass. Requires Hydraulic Motor Starter Output (output R14).
S33	23	Blower Flip Nozzle Solenoid	Activated during forward travel of any Blower Pass.

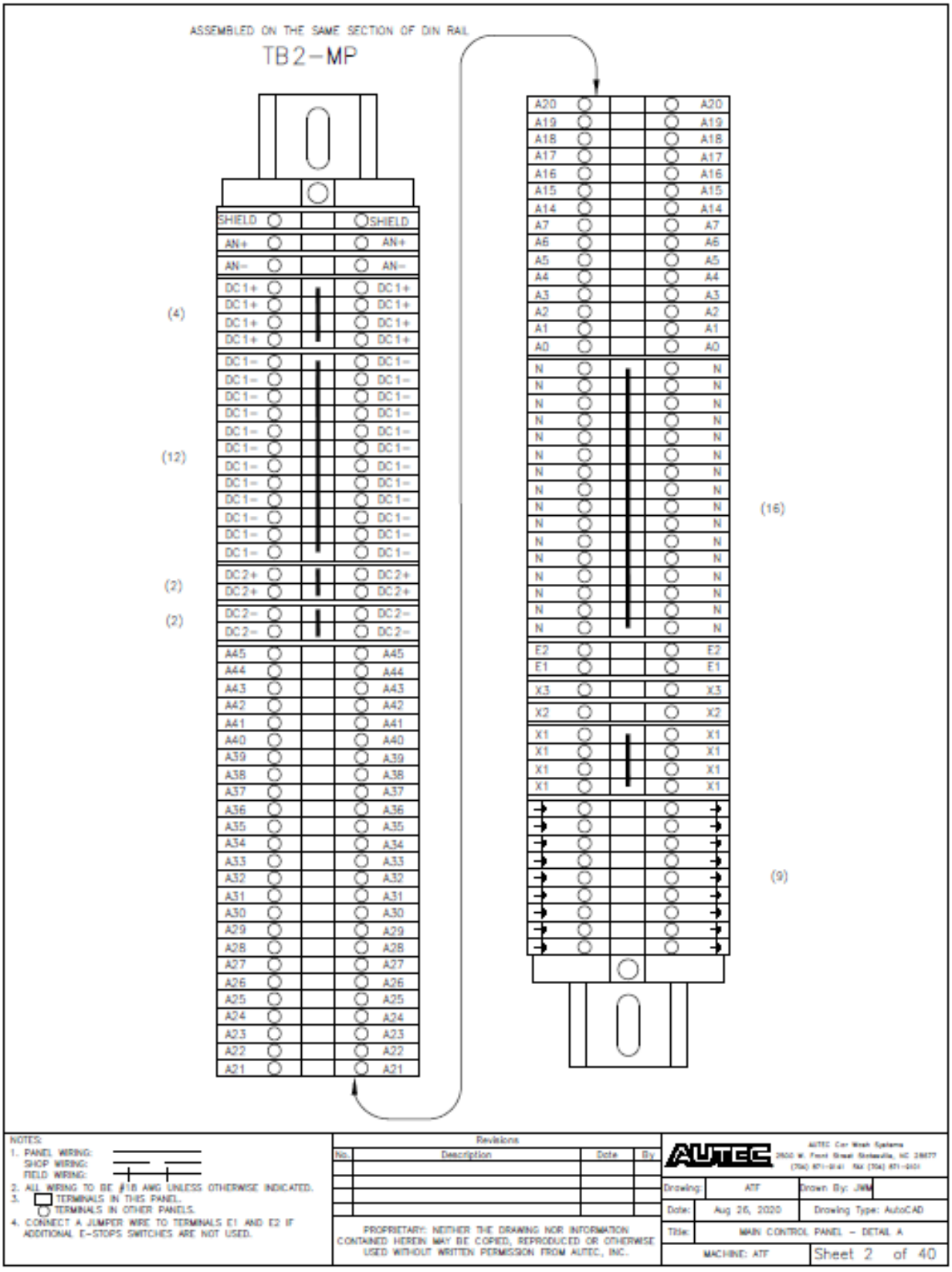
Section 9 – Electrical Drawings – ATF

Drawing	Page
Layout Main Panel Backplane Devices	9-1
Layout Main Panel Terminal Block 2 Detail	9-2
Layout Main Panel Terminal Block 1 Detail	9-3
Layout Main Panel PLC Rack Detail	9-4
Layout Main Panel Fuse Block Detail	9-5
Schematic Main Panel Power & E-Stop	9-6
Schematic Main Panel DC Power & Photoeyes	9-7
Schematic Main PLC CPU Inputs	9-8
Schematic Main PLC EXP Module 1 Inputs	9-9
Schematic Main PLC EXP Module 2 Inputs	9-10
Schematic Main PLC CPU Outputs	9-11
Schematic Main PLC EXP Module 1 Outputs	9-12
Schematic Main PLC EXP Module 2 Outputs	9-13
Schematic Main PLC EXP Module 3 Outputs	9-14
Ethernet Communication Diagram	9-15
Layout Gantry panel Backplane Devices	9-16
Layout Controller Detail Gantry Panel	9-17
Schematic Coupler Mod 0 Comm & Mod 1 Power	9-18
Schematic Coupler Mod 2 Inputs & Mod 3 Outputs	9-19
Schematic Coupler Mod 4 & 5 Outputs	9-20
Schematic Coupler Mod 6 & 7 Outputs	9-21
Schematic Coupler Mod 8 Outputs	9-22
Layout Motor Starter Panel	9-23
Schematic Hydraulics	9-24
Layout Heated Presoak Panel Backplane Devices	9-25
Layout Heated Presoak Panel TB Detail	9-26
Schematic High Pressure Pump Heated Presoak	9-27
Schematic Blower Motors A	9-28
Schematic Blower Motors B	9-29
Layout Boom Stand Junction Box	9-30
Layout Main Panel Backplane Drilling	9-31
Enclosure Drilling Main Panel Door	9-32
Enclosure Layout Main Panel Door	9-33
Layout Gantry Panel Backplane Drilling	9-34
Gantry Enclosure Drilling	9-35
Layout Motor Starter Panel Backplane Drilling	9-36
Motor Starter Enclosure	9-37
Layout Heated Presoak Panel Backplane Drilling	9-38
Motor Circuit Spec Tables	9-39
Symbols & Legend	9-40

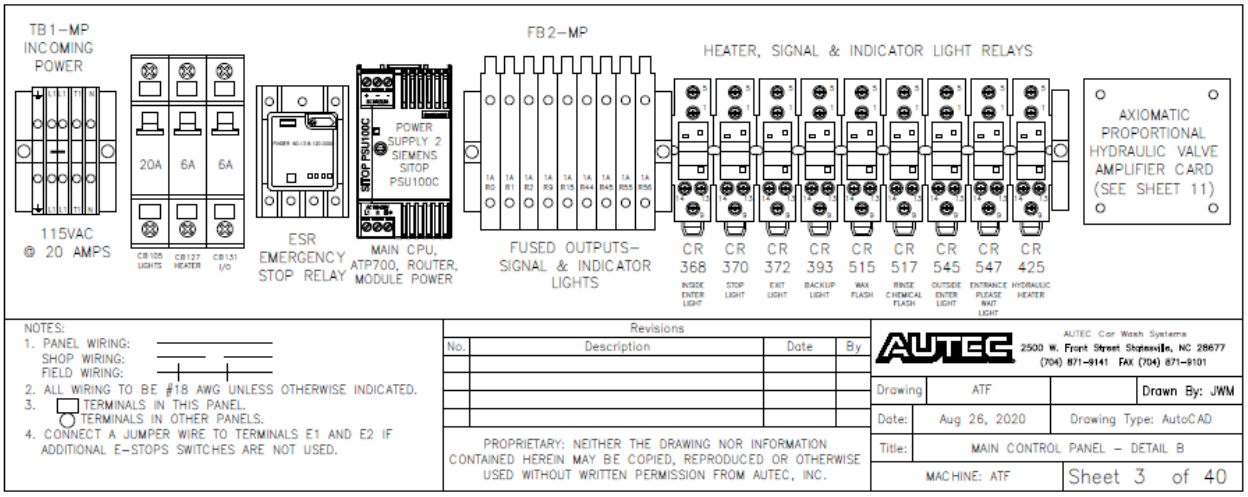
9-1 Layout Main Panel Backplane Devices



9-2 Layout Main Panel Terminal Block 2 Detail



9-3 Layout Main Panel Terminal Block 1 Detail



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. ☐ TERMINALS IN THIS PANEL.
   ○ TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E–STOPS SWITCHES ARE NOT USED.

Revisions

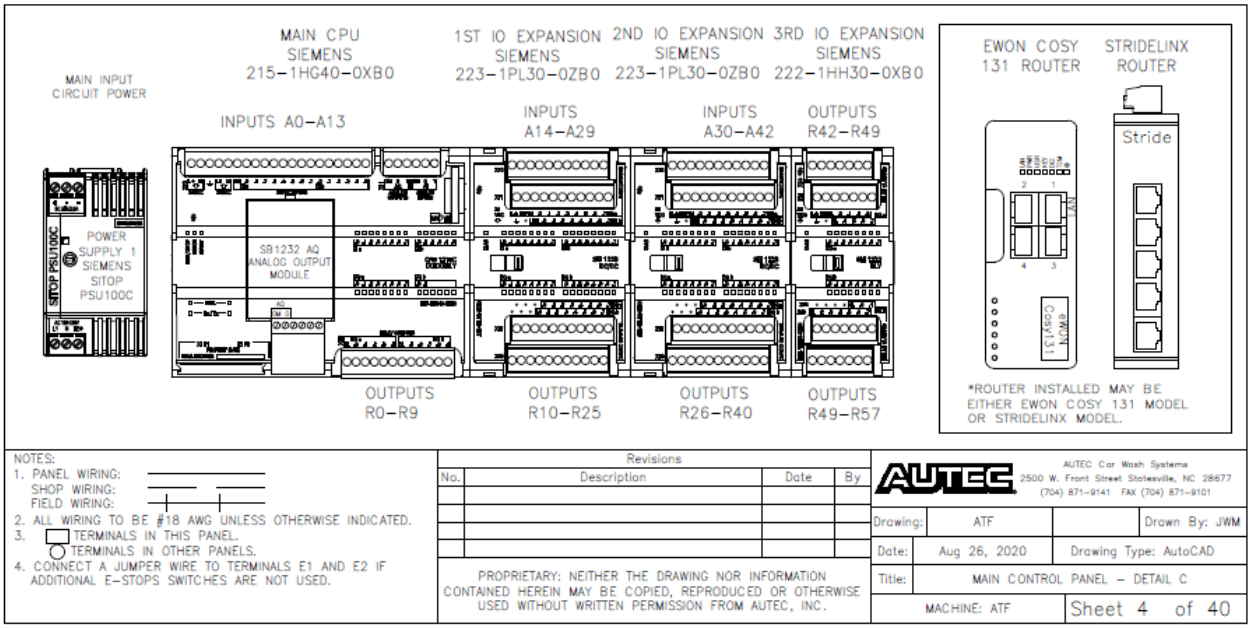
No.	Description	Date	By

PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

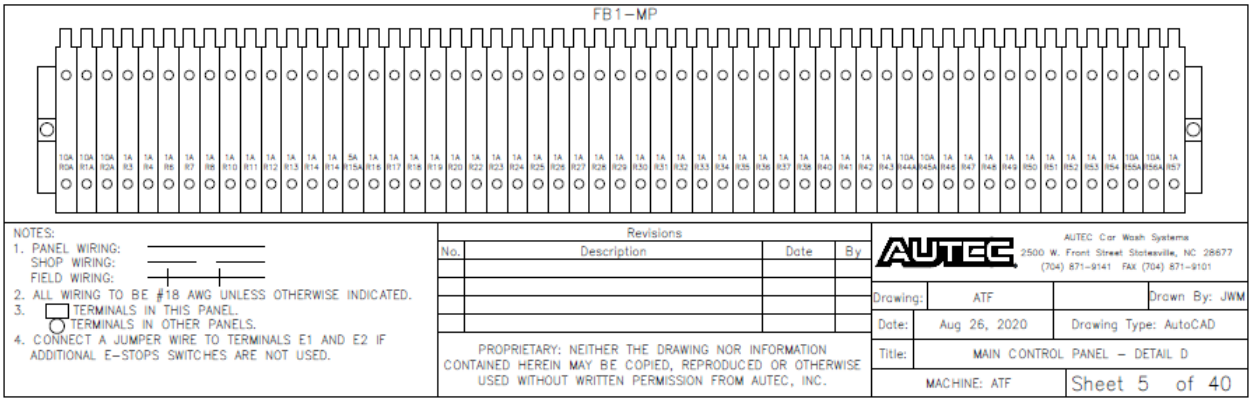
AUTEC Car Wash Systems
2500 W. Front Street Statesville, NC 28677
(704) 871–9141 FAX (704) 871–9101

Drawing	ATF		Drawn By: JWM
Date:	Aug 26, 2020	Drawing Type: AutoCAD	
Title:	MAIN CONTROL PANEL – DETAIL B		
MACHINE: ATF		Sheet 3 of 40	

9-4 Layout Main Panel PLC Rack Detail



9-5 Layout Main Panel Fuse Block Detail



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. TERMINALS IN THIS PANEL.
   TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

Revisions

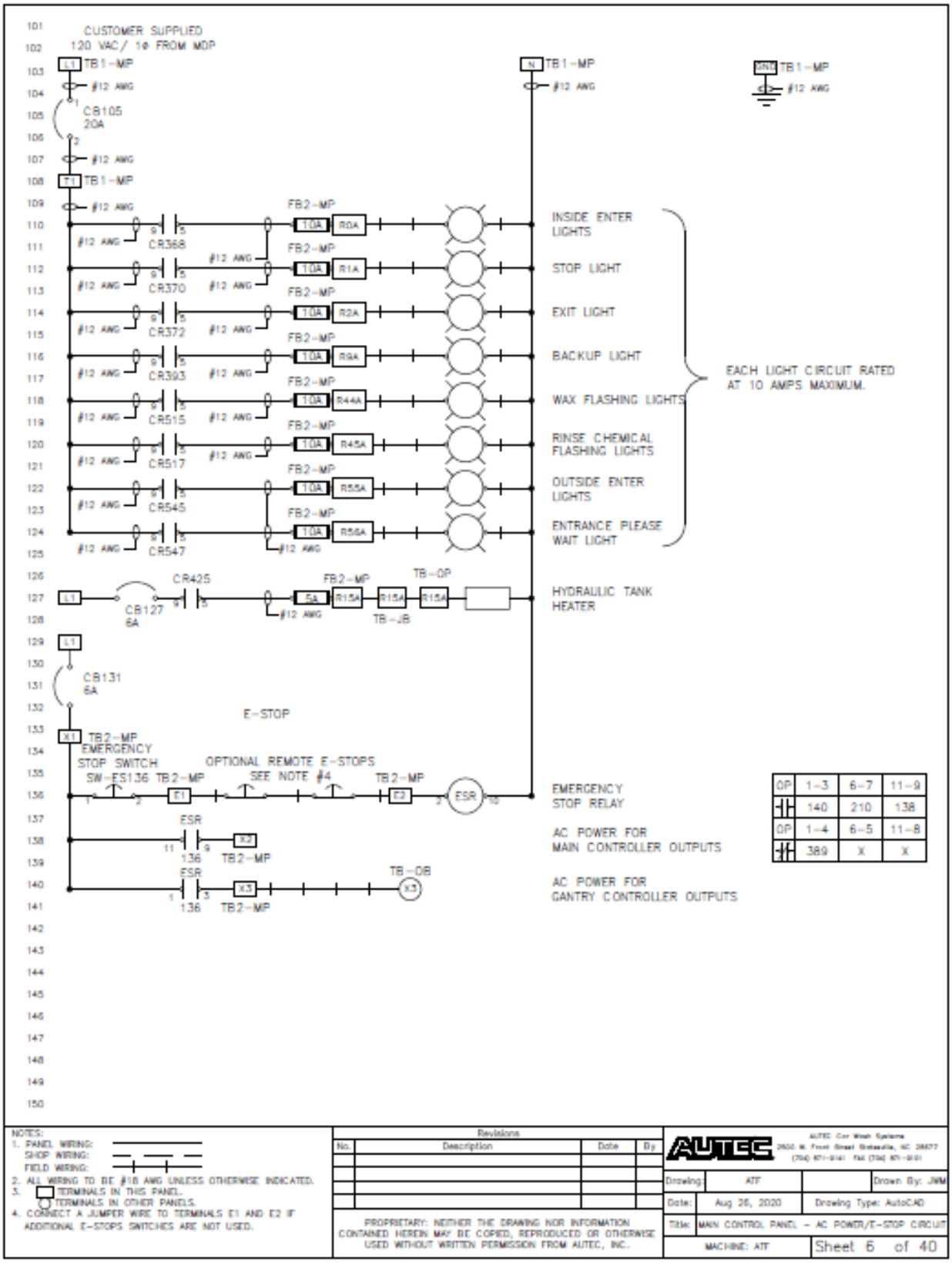
No.	Description	Date	By

PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

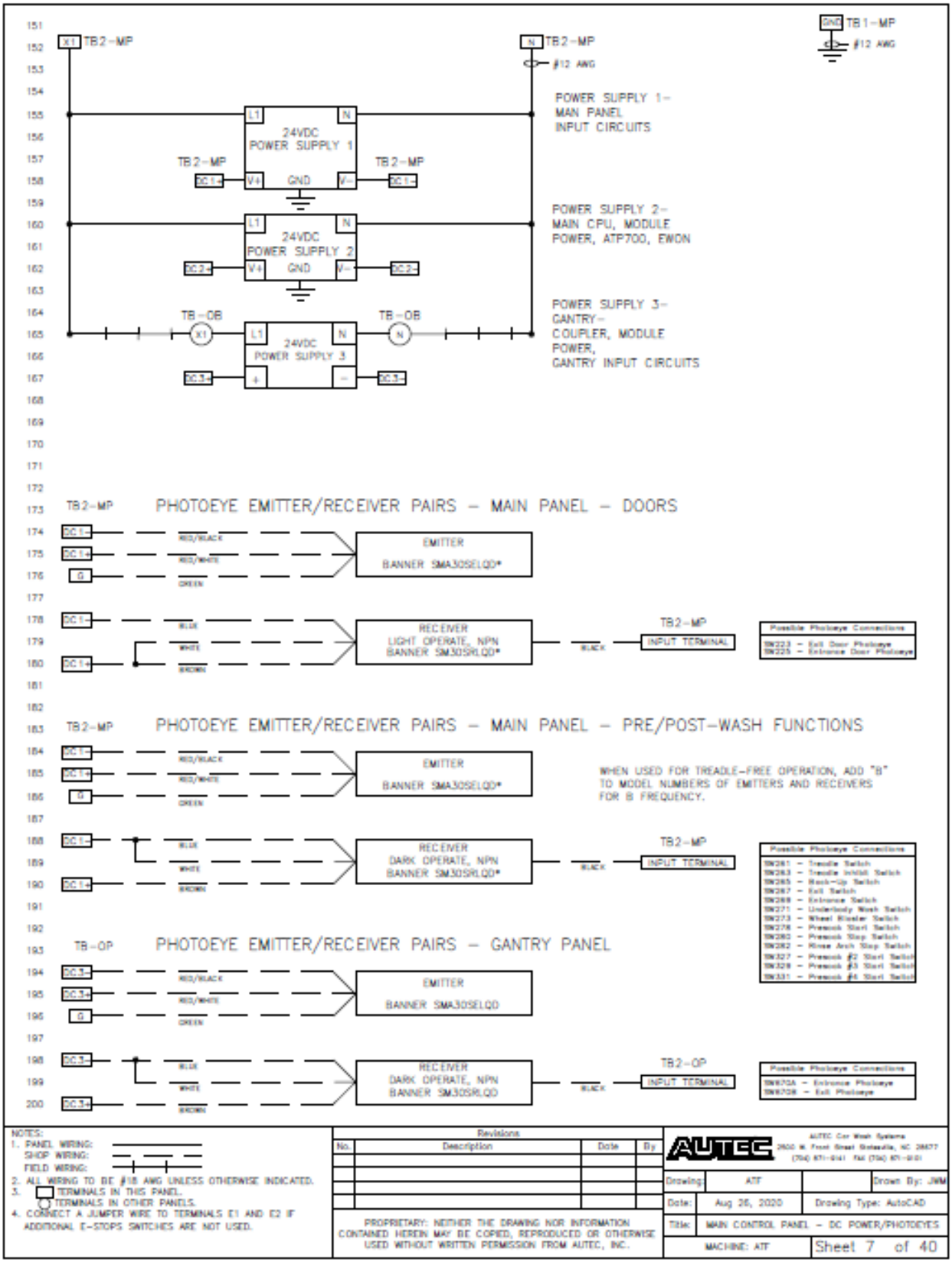
AUTEC Car Wash Systems
2500 W. Front Street Statesville, NC 28677
(704) 871-9141 FAX (704) 871-9101

Drawing:	ATF		Drawn By: JWM
Date:	Aug 26, 2020	Drawing Type: AutoCAD	
Title:	MAIN CONTROL PANEL – DETAIL D		
MACHINE: ATF		Sheet 5 of 40	

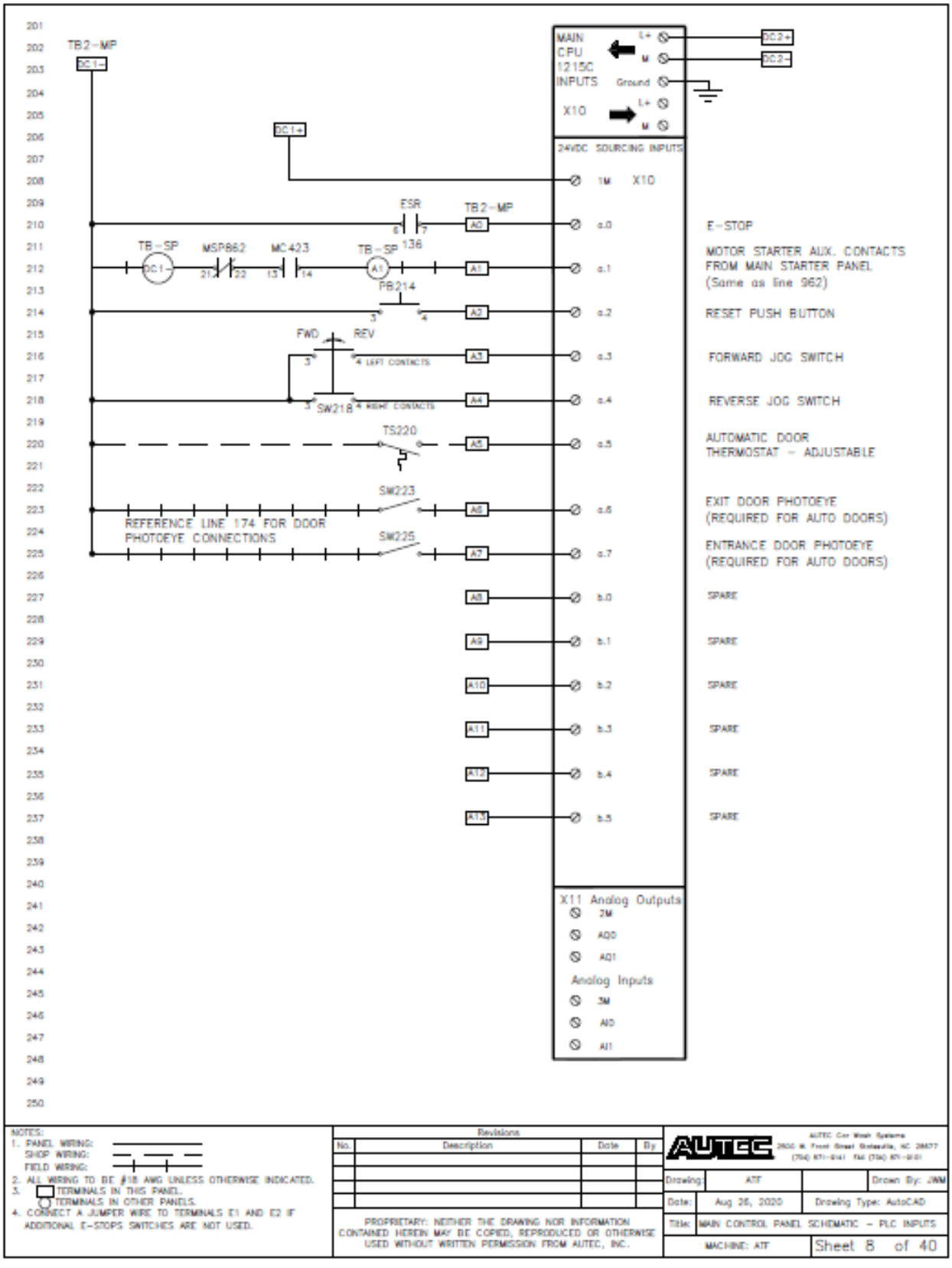
9-6 Schematic Main Panel Power & E-Stop



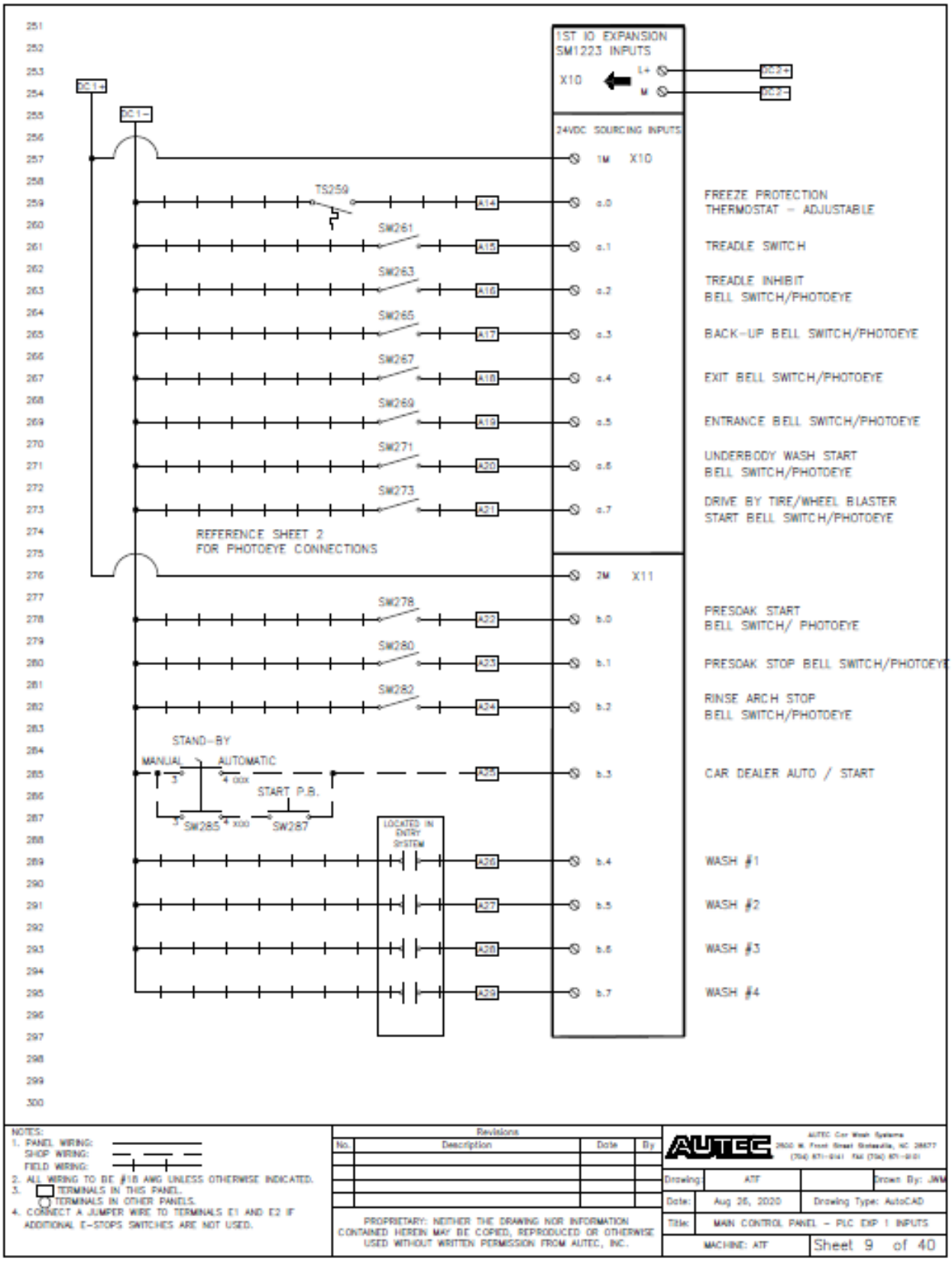
9-7 Schematic Main Panel DC Power & Photoeyes



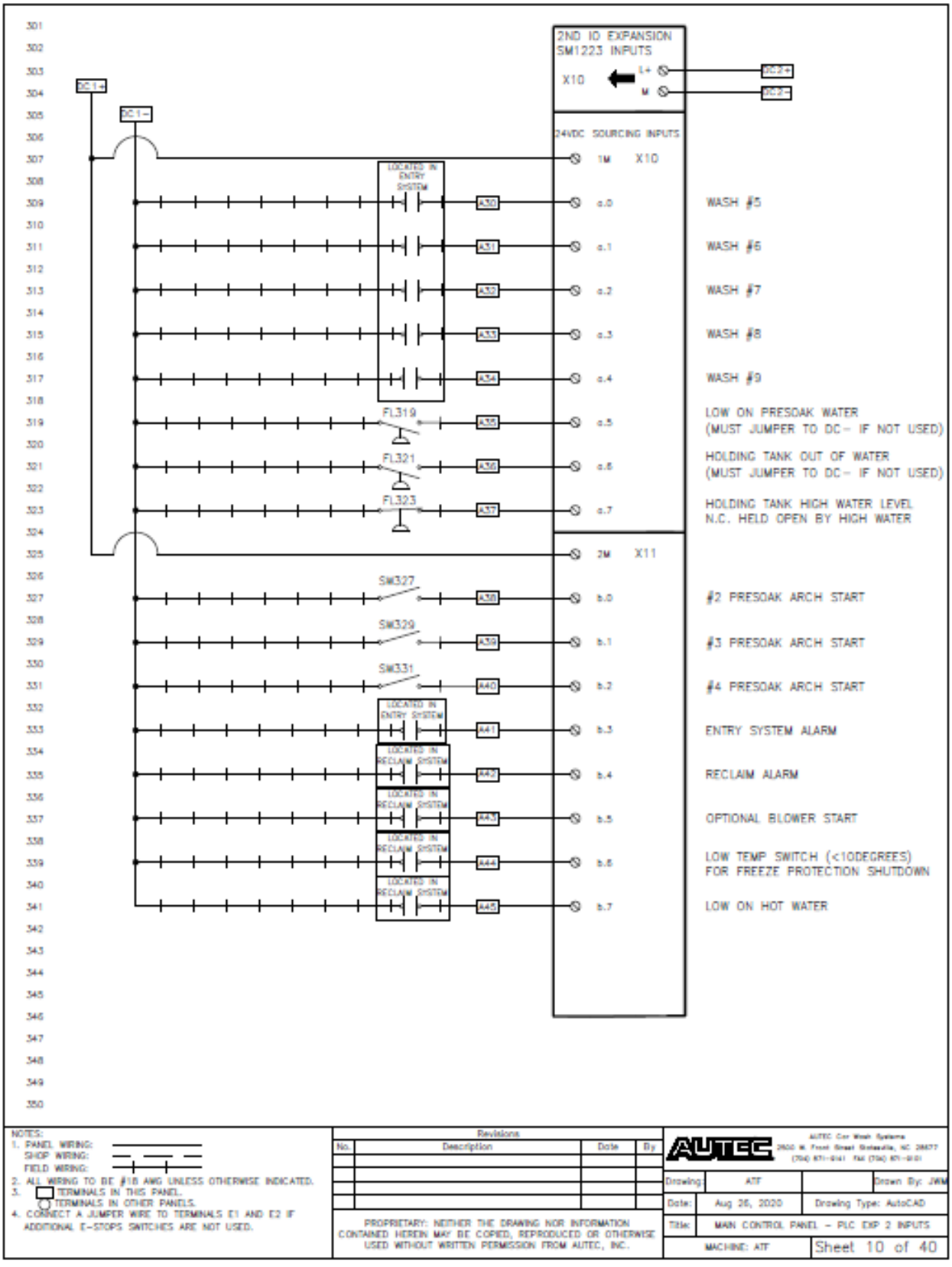
9-8 Schematic Main PLC CPU Inputs



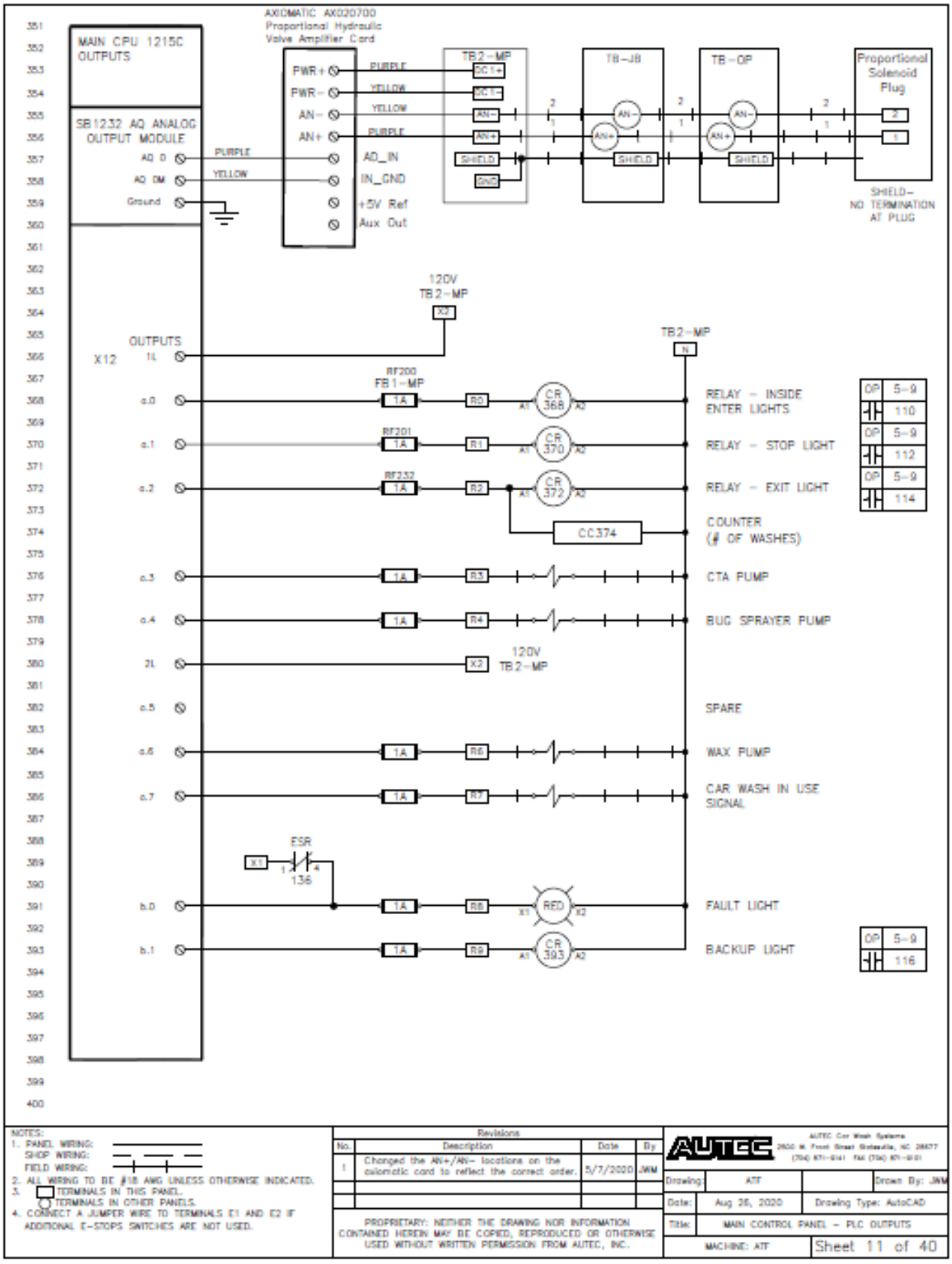
9-9 Schematic Main PLC EXP Module 1 Inputs



9-10 Schematic Main PLC EXP Module 2 Inputs



9-11 Schematic Main PLC CPU Outputs



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. TERMINALS IN THIS PANEL.
   TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

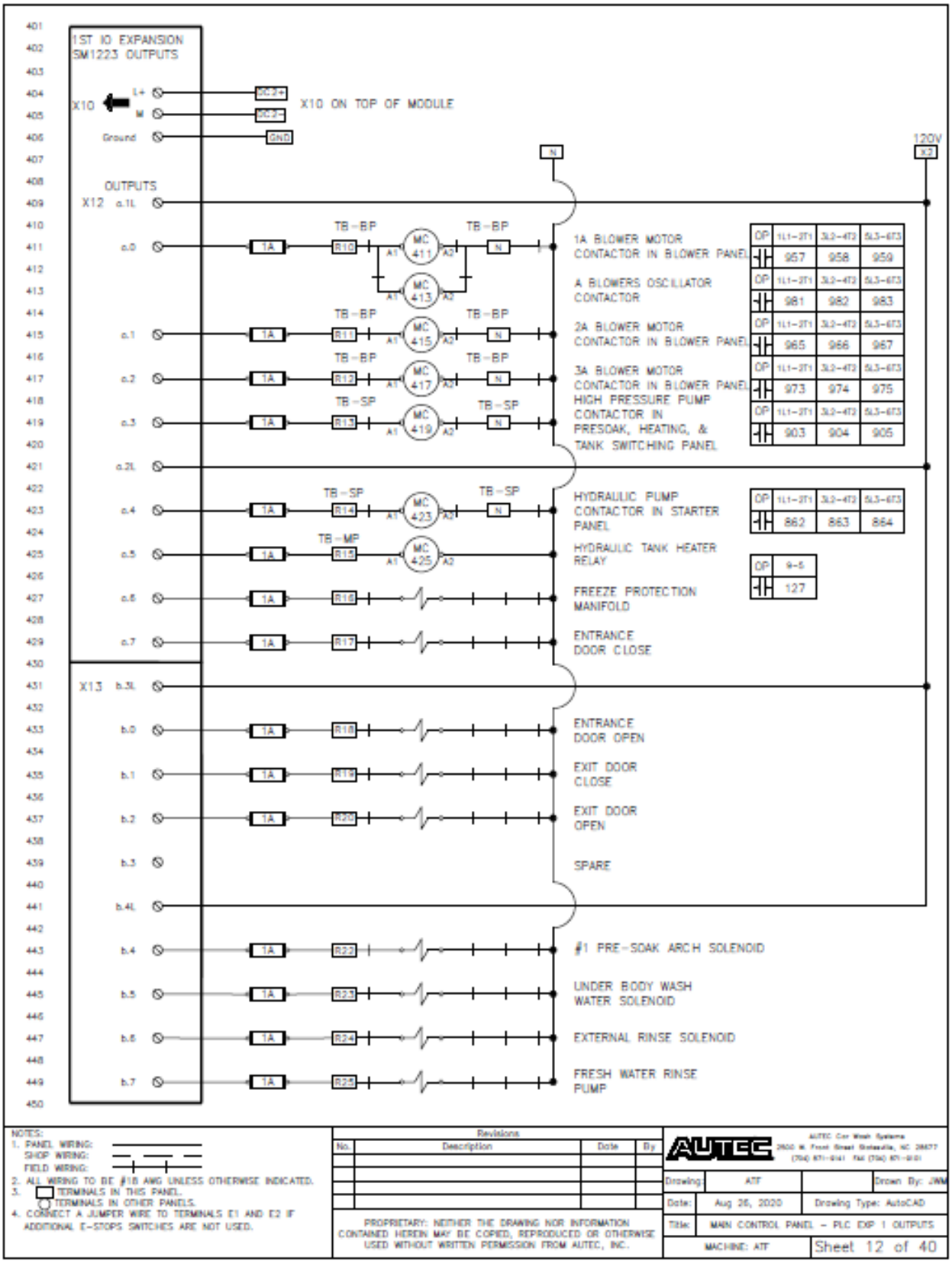
Revisions			
No.	Description	Date	By
1	Changed the AN+/AN- locations on the automatic card to reflect the correct order.	5/7/2020	JWM

PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

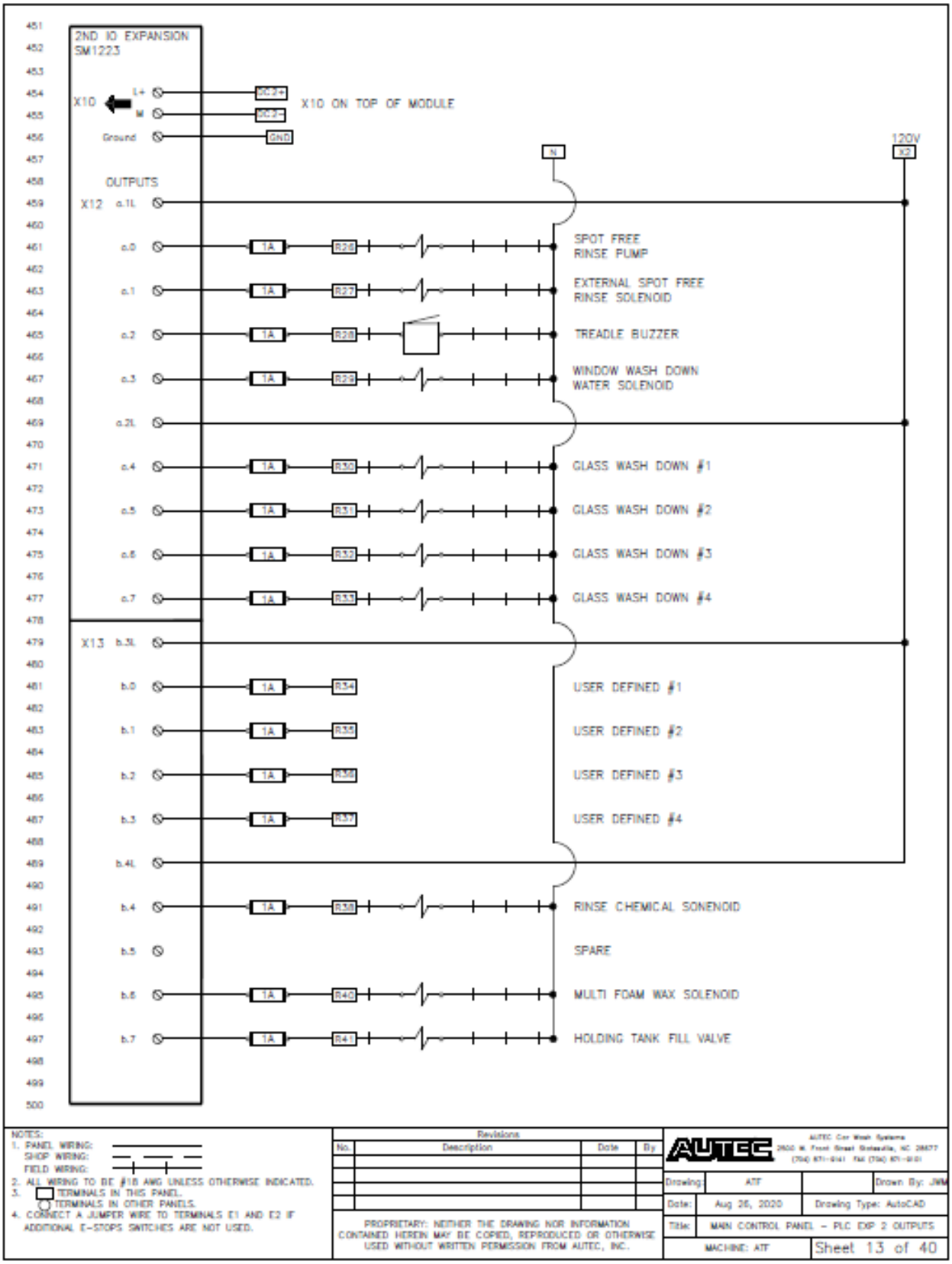
AUTEC Car Wash Systems
2600 W. Front Street Statesville, NC 28677
(704) 871-9141 Fax (704) 871-9101

Drawing:	ATF		Drawn By: JWM
Date:	Aug 26, 2020	Drawing Type: AutoCAD	
Title:	MAIN CONTROL PANEL - PLC OUTPUTS		
MACHINE: ATF		Sheet 11 of 40	

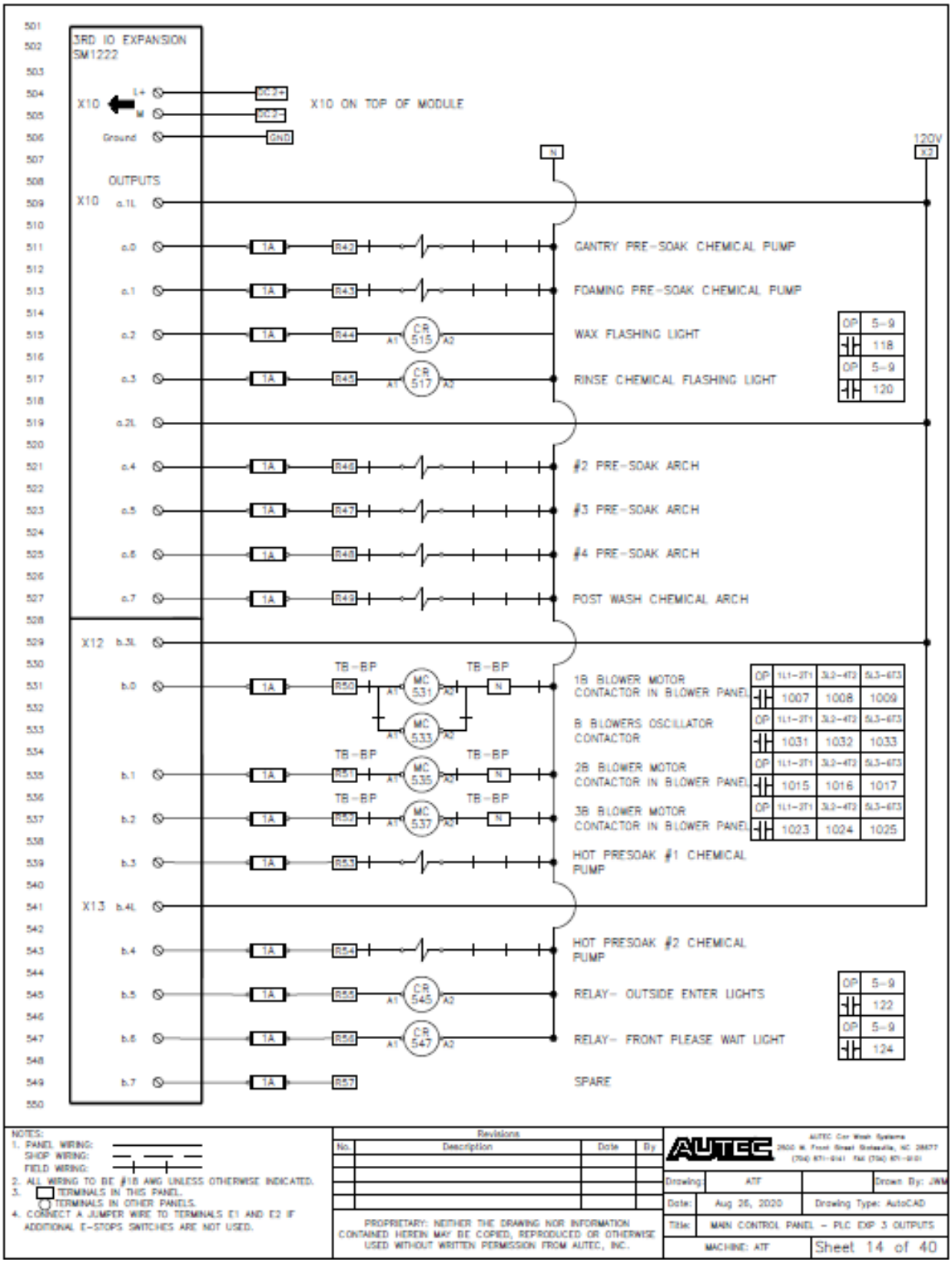
9-12 Schematic Main PLC Module 1 Outputs



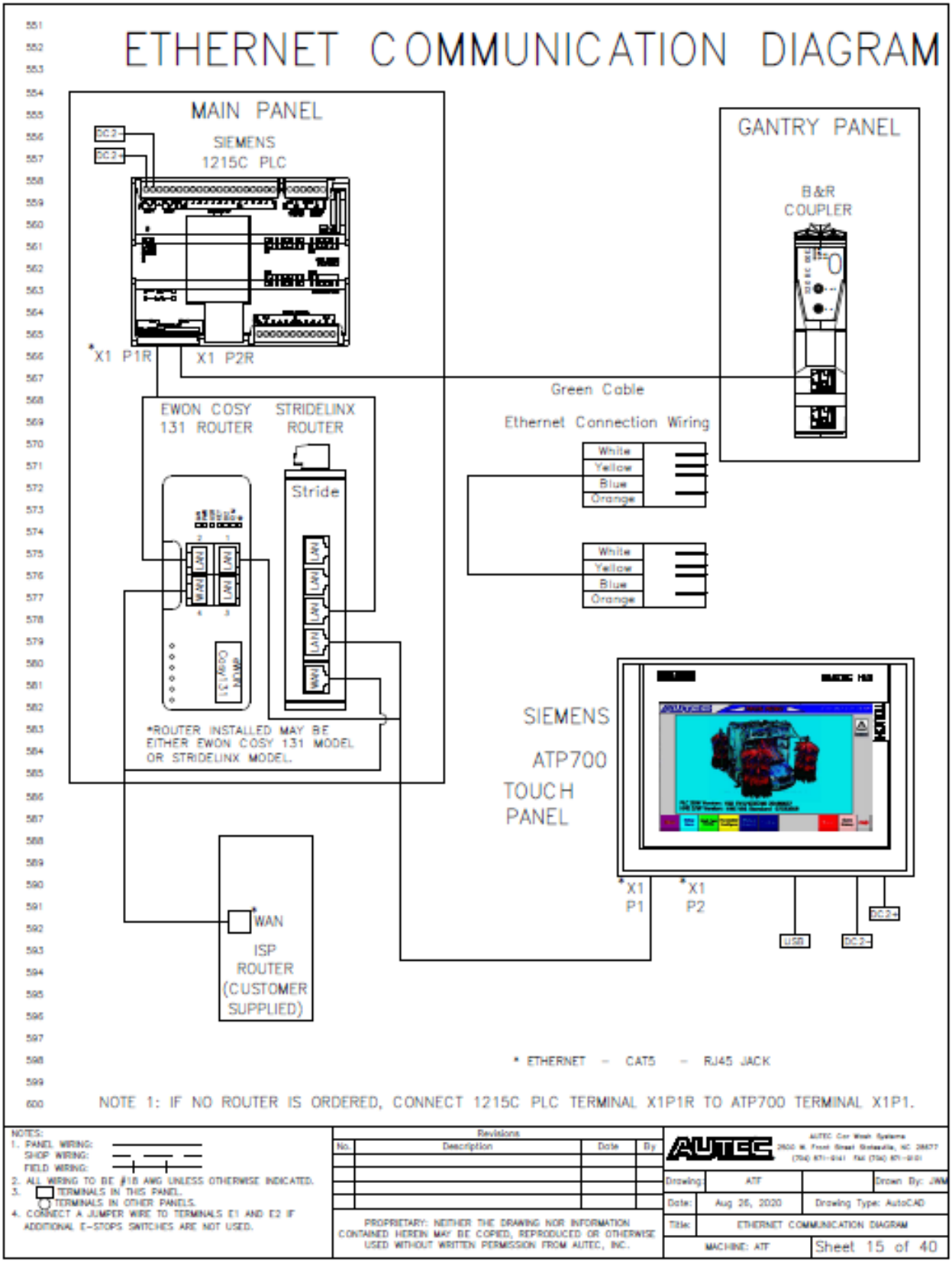
9-13 Schematic Main PLC EXP Module 2 Outputs



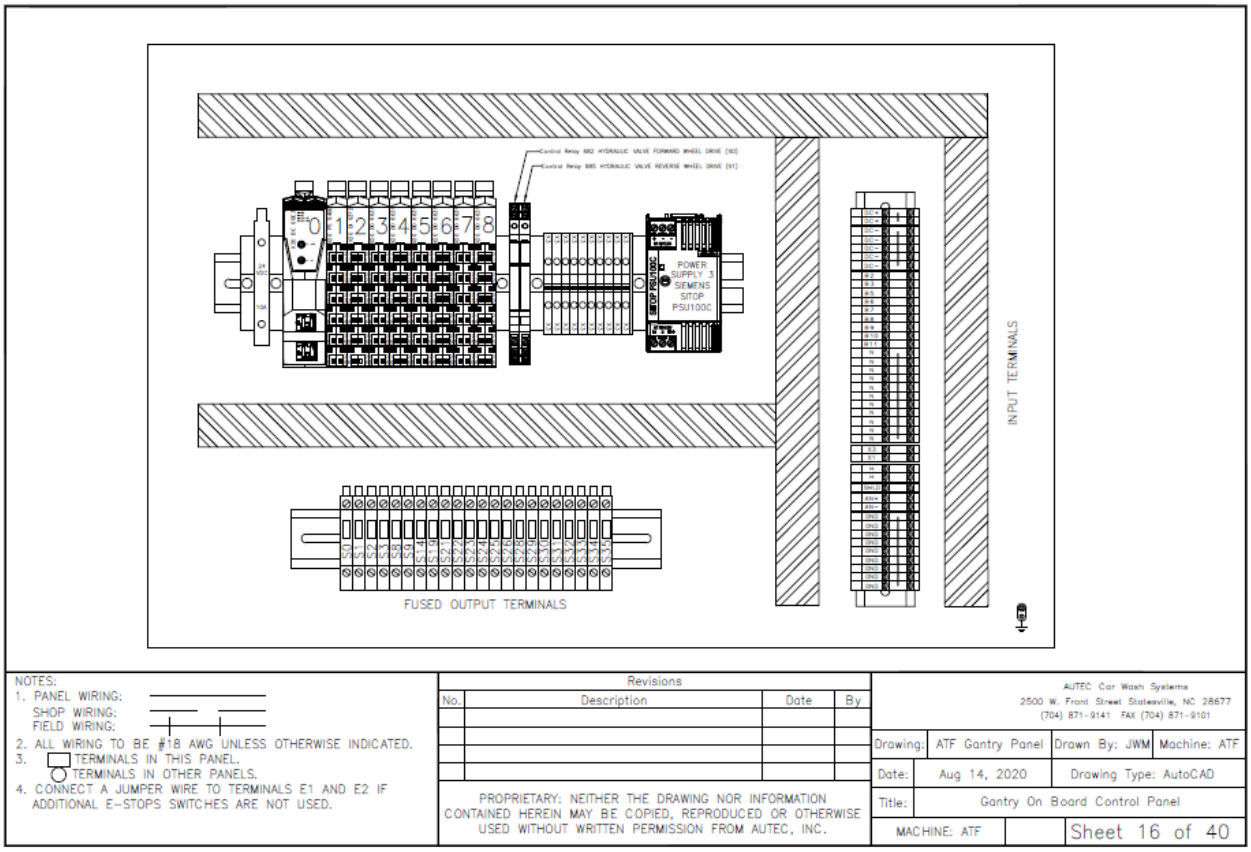
9-14 Schematic Main PLC EXP Module 3 Outputs



9-15 Ethernet Communication Diagram



9-16 Layout Gantry panel Backplane Devices



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. TERMINALS IN THIS PANEL.
   TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

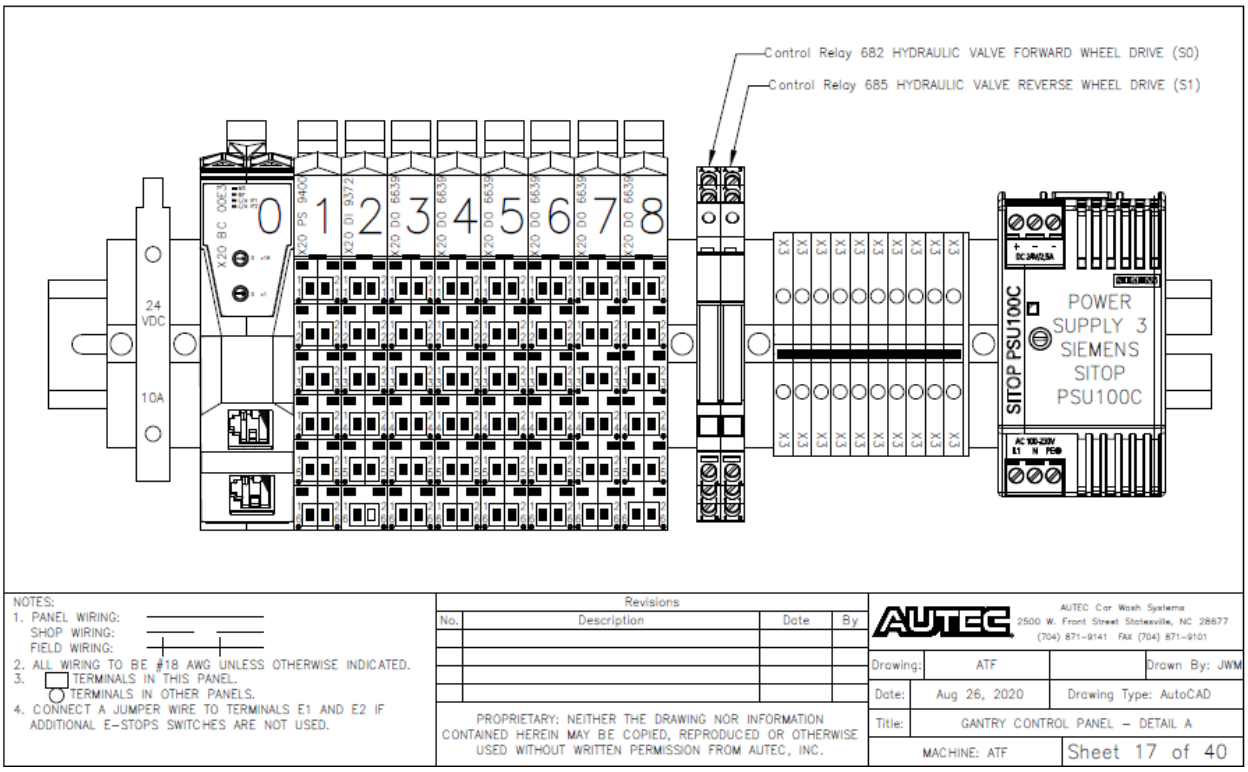
Revisions			
No.	Description	Date	By

PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

AUTEC Car Wash Systems
2500 W. Front Street Statesville, NC 28677
(704) 871-9141 FAX (704) 871-9101

Drawing:	ATF Gantry Panel	Drawn By: JWM	Machine: ATF
Date:	Aug 14, 2020	Drawing Type: AutoCAD	
Title:	Gantry On Board Control Panel		
MACHINE: ATF		Sheet 16 of 40	

9-17 Layout Controller Detail Gantry Panel



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. ▭ TERMINALS IN THIS PANEL.
   ○ TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

Revisions

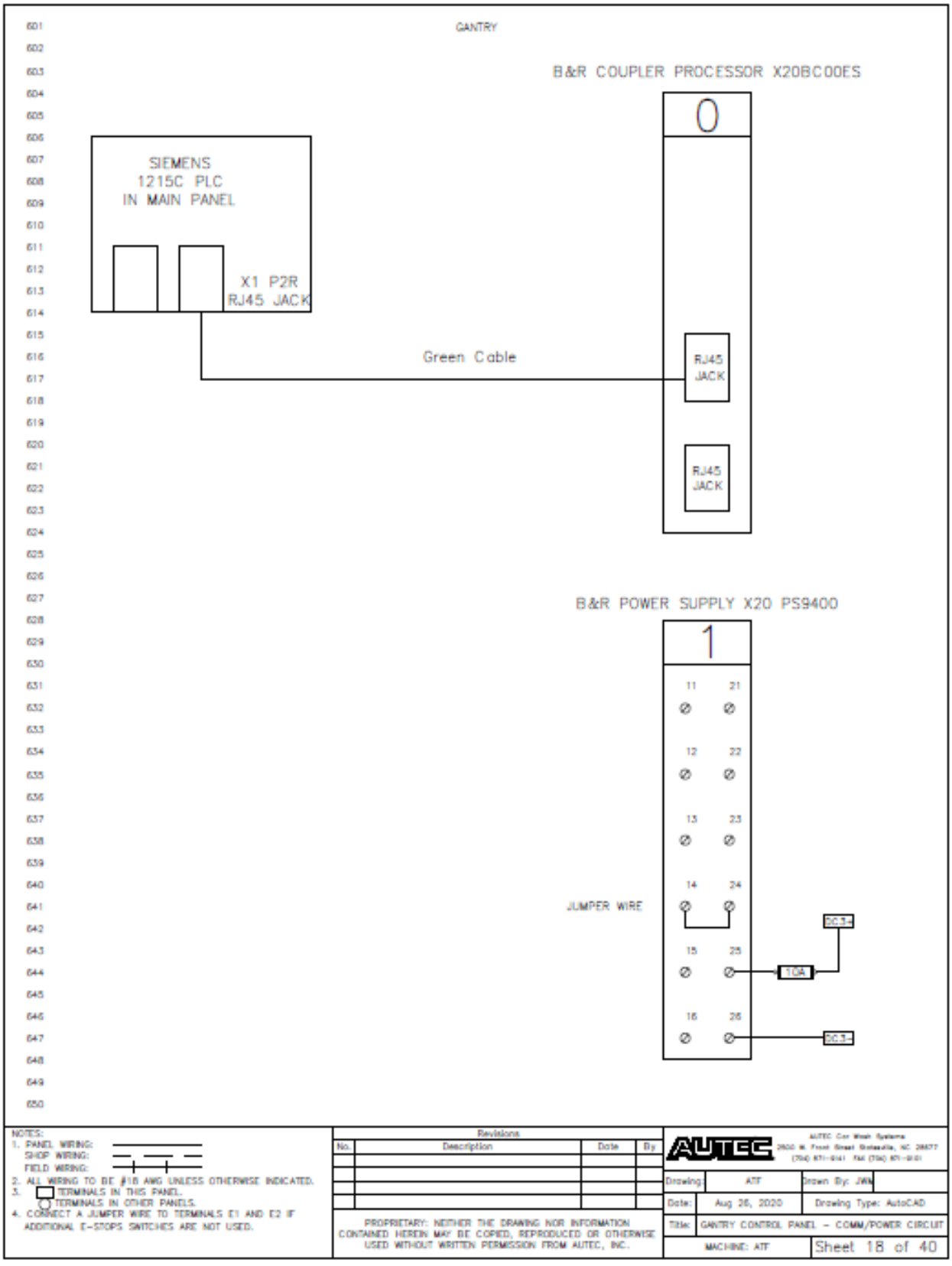
No.	Description	Date	By

PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

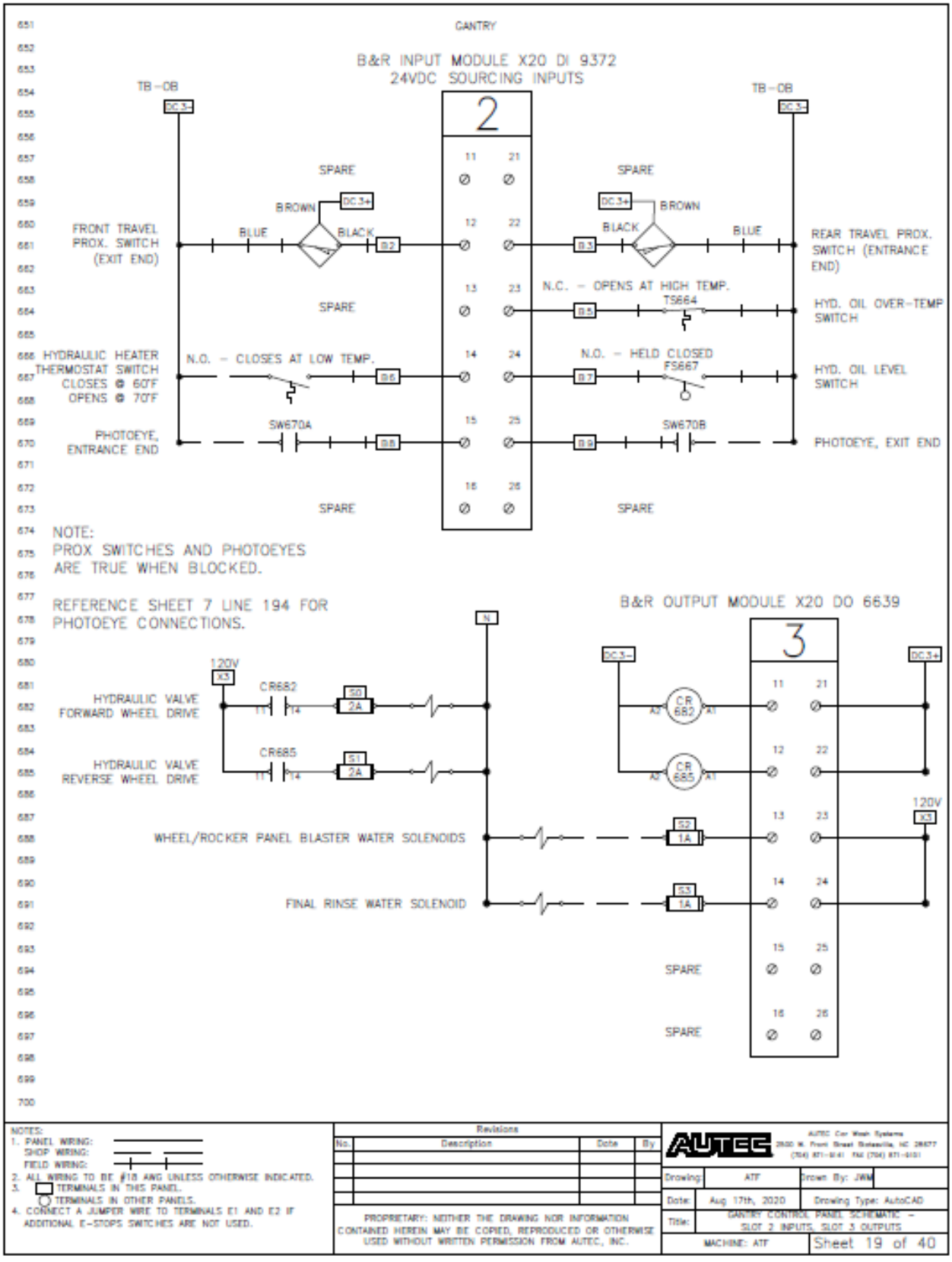
AUTEC Car Wash Systems
2500 W. Front Street Statesville, NC 28677
(704) 871-9141 FAX (704) 871-9101

Drawing:	ATF		Drawn By: JWM
Date:	Aug 26, 2020	Drawing Type: AutoCAD	
Title:	GANTRY CONTROL PANEL – DETAIL A		
MACHINE: ATF		Sheet 17 of 40	

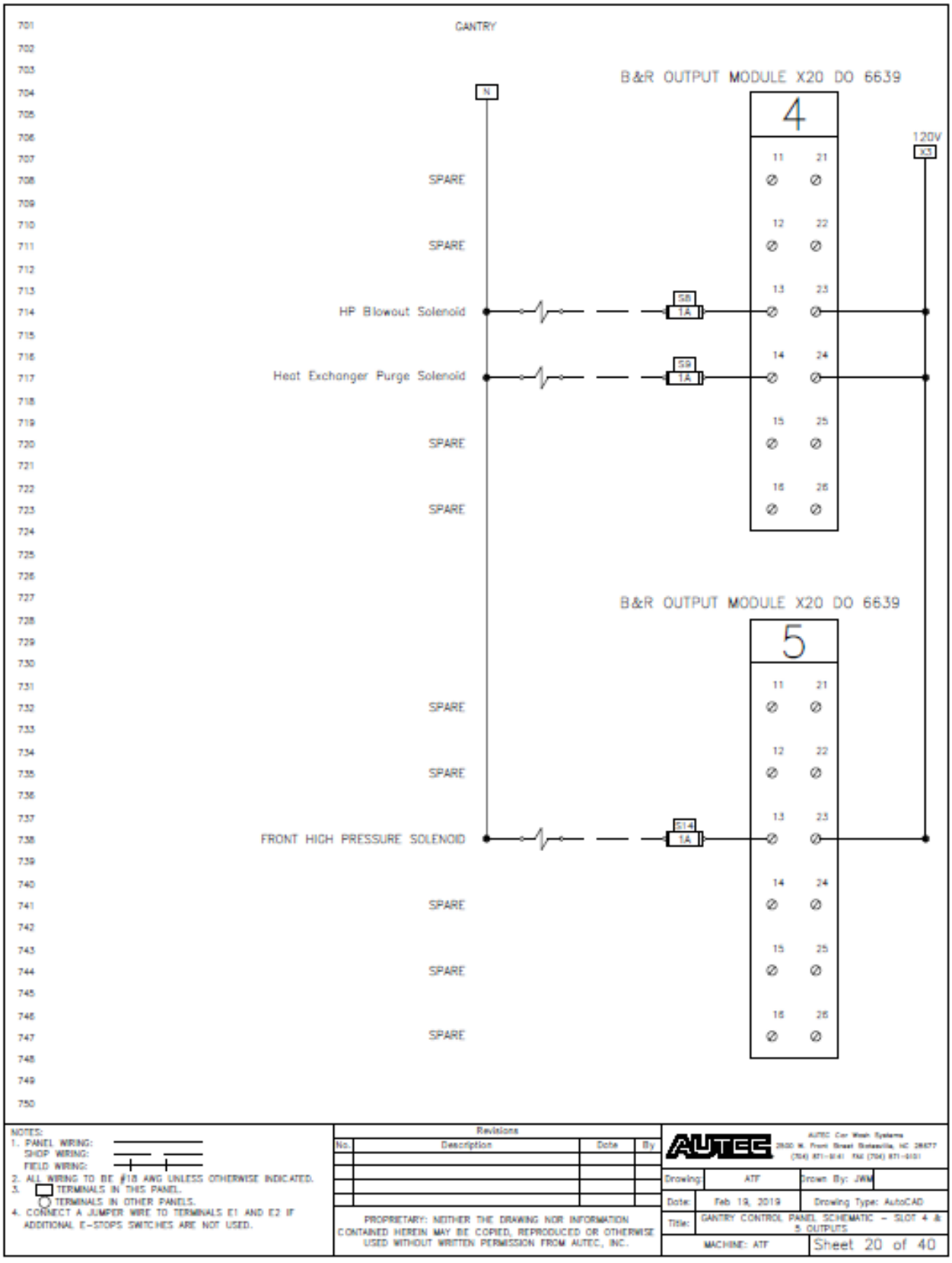
9-18 Schematic Coupler Mod 0 Comm & Mod 1 Power



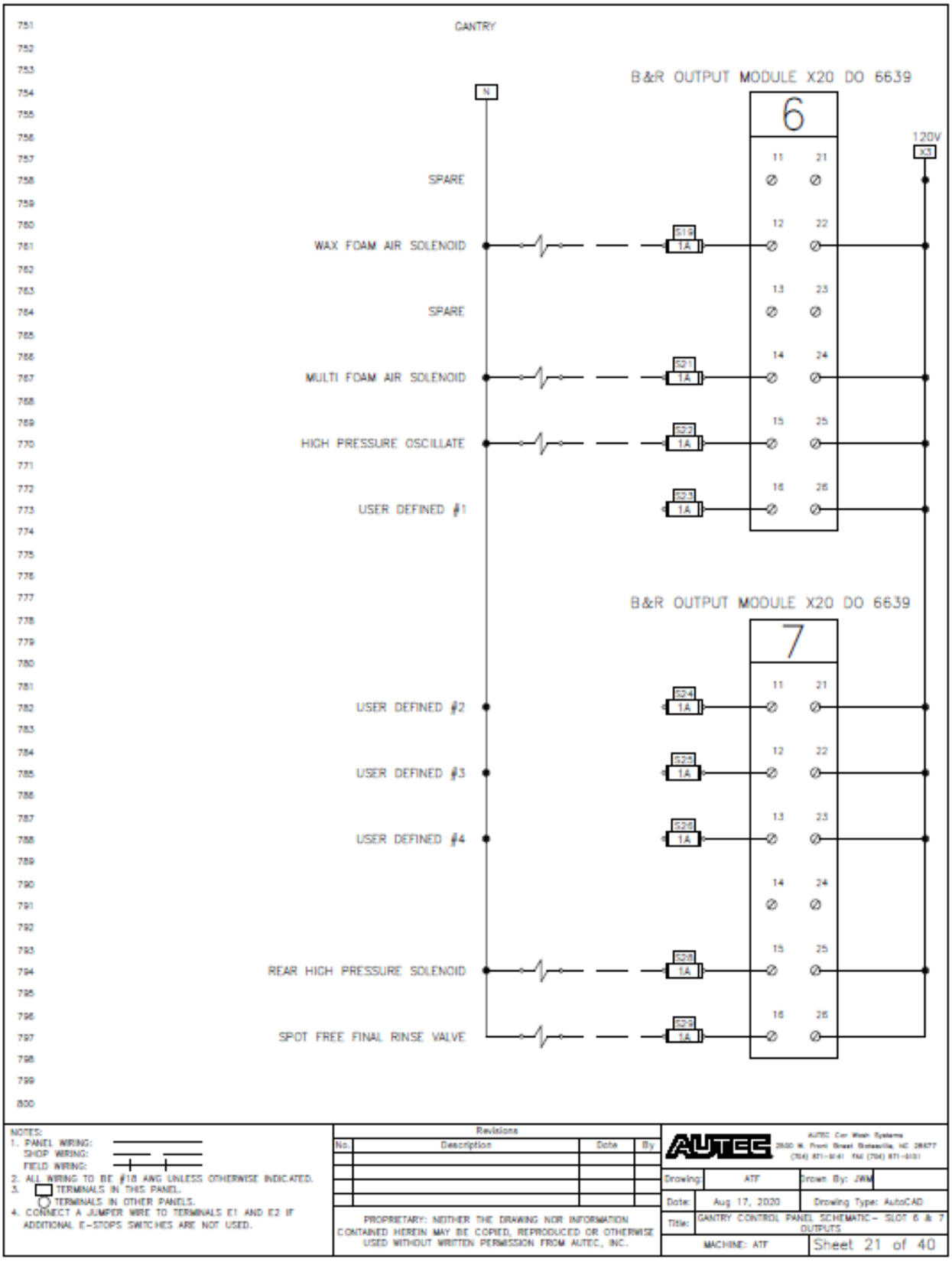
9-19 Schematic Coupler Mod 2 Inputs & Mod 3 Outputs



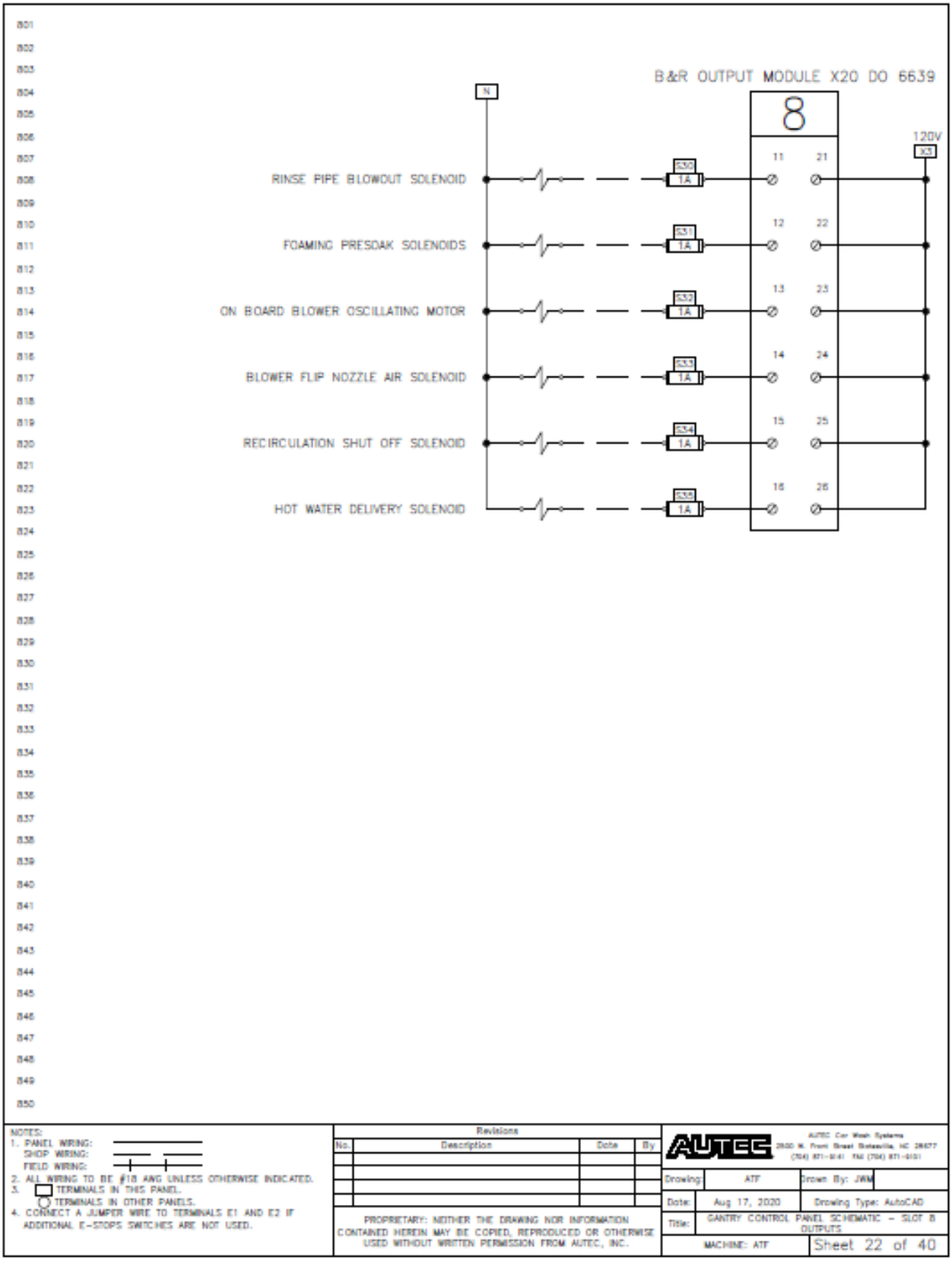
9-20 Schematic Coupler Mod 4 & 5 Outputs



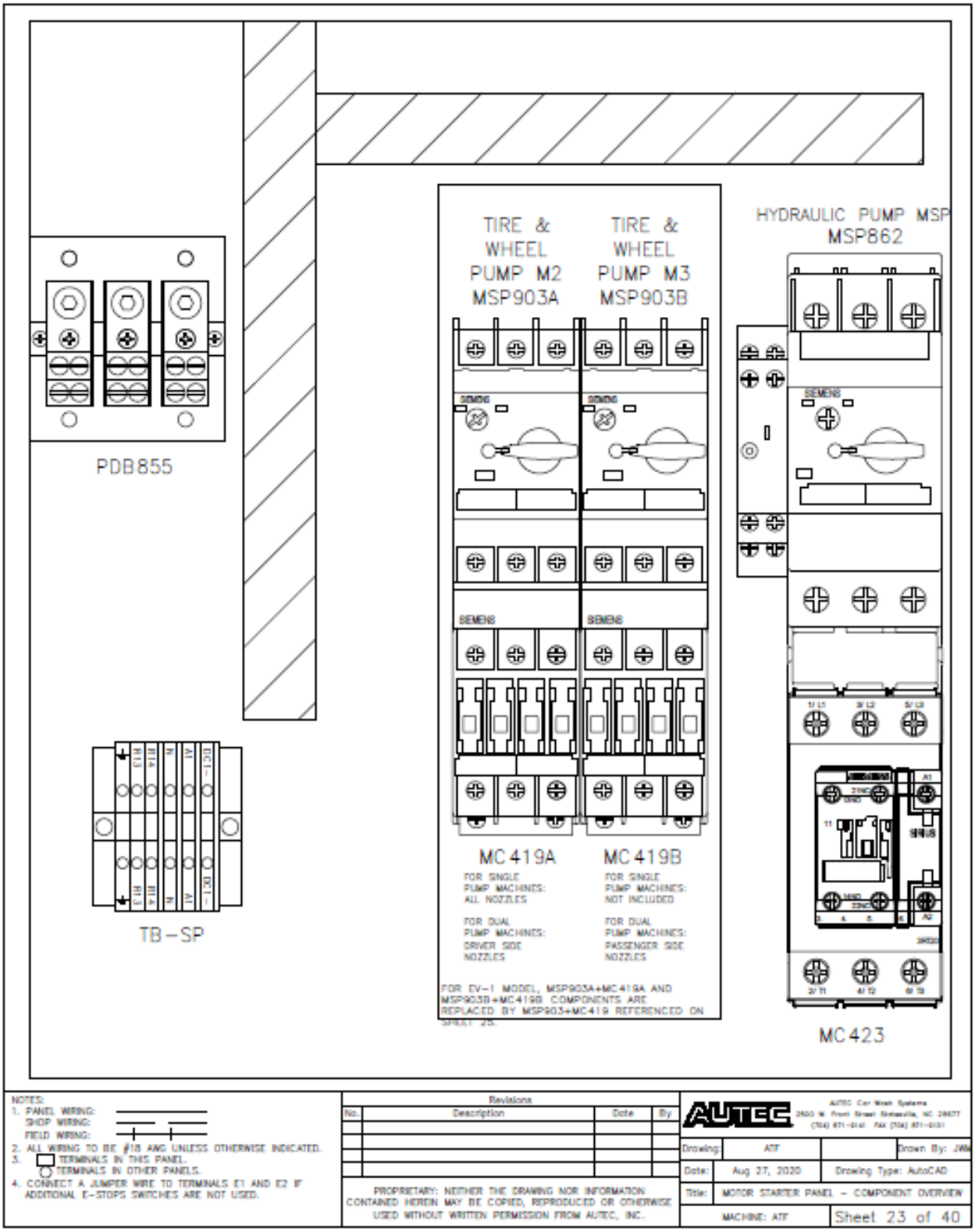
9-21 Schematic Coupler Mod 6 & 7 Outputs



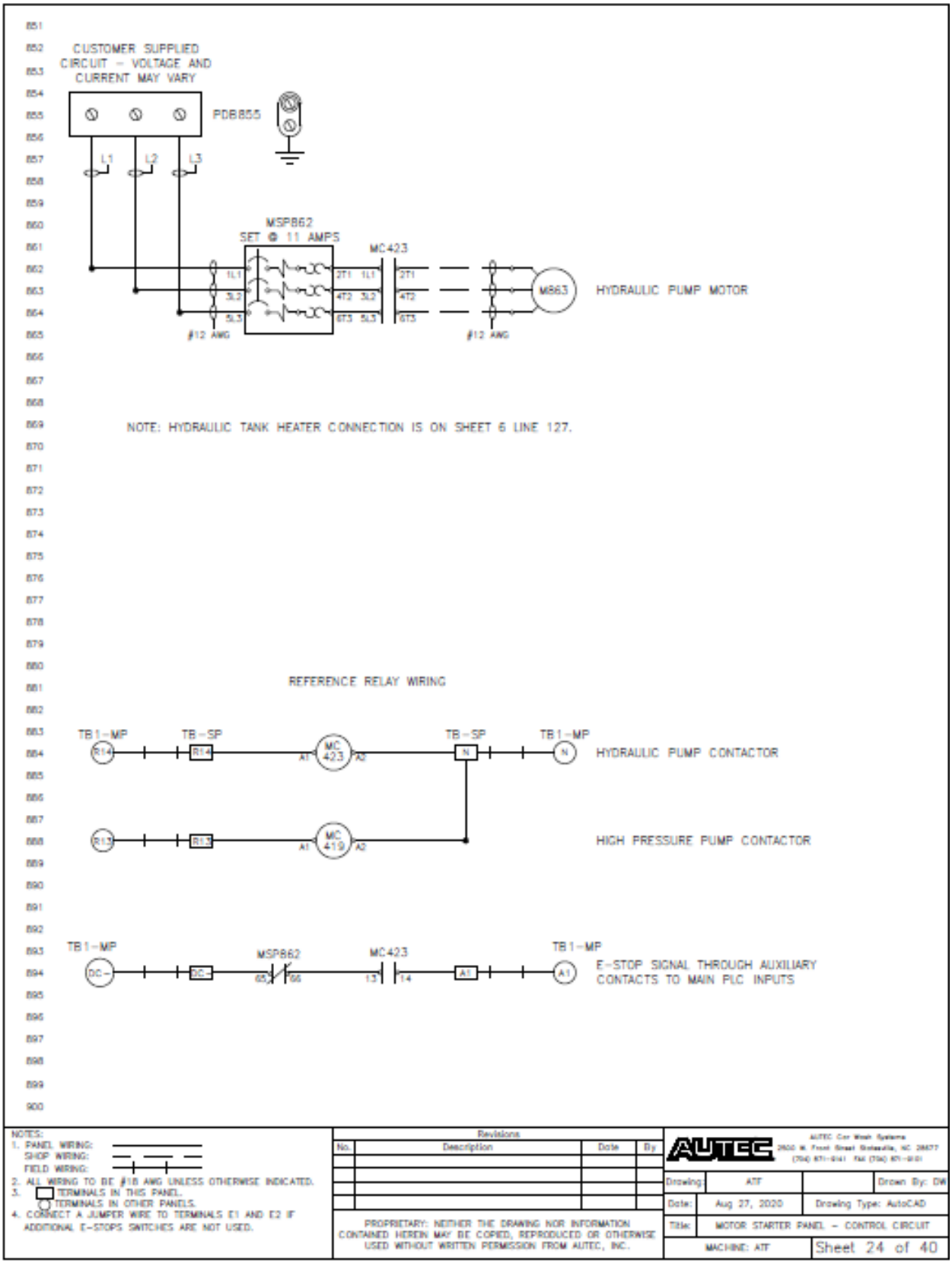
9-22 Schematic Coupler Mod 8 Outputs



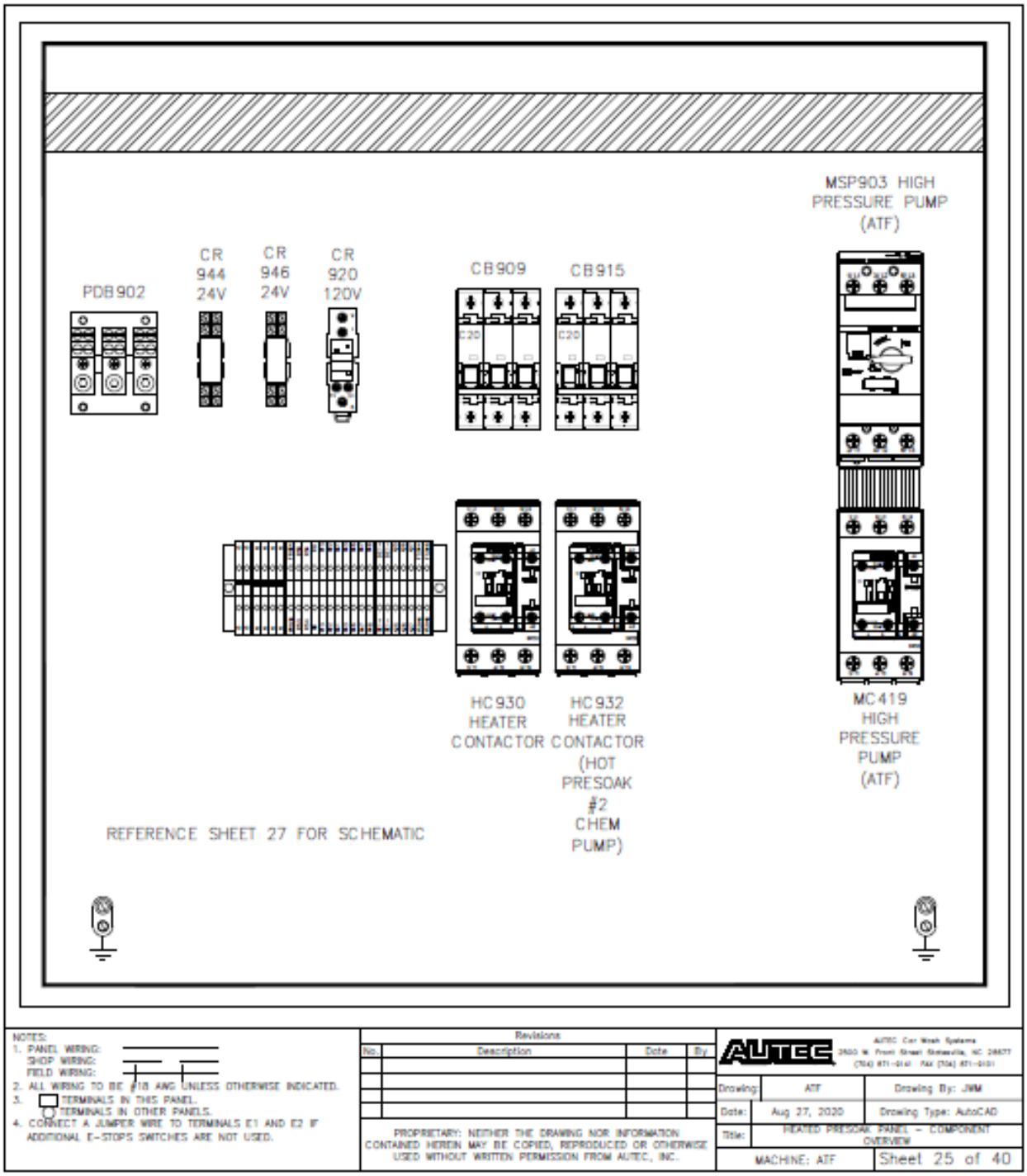
9-23 Layout Motor Starter Panel



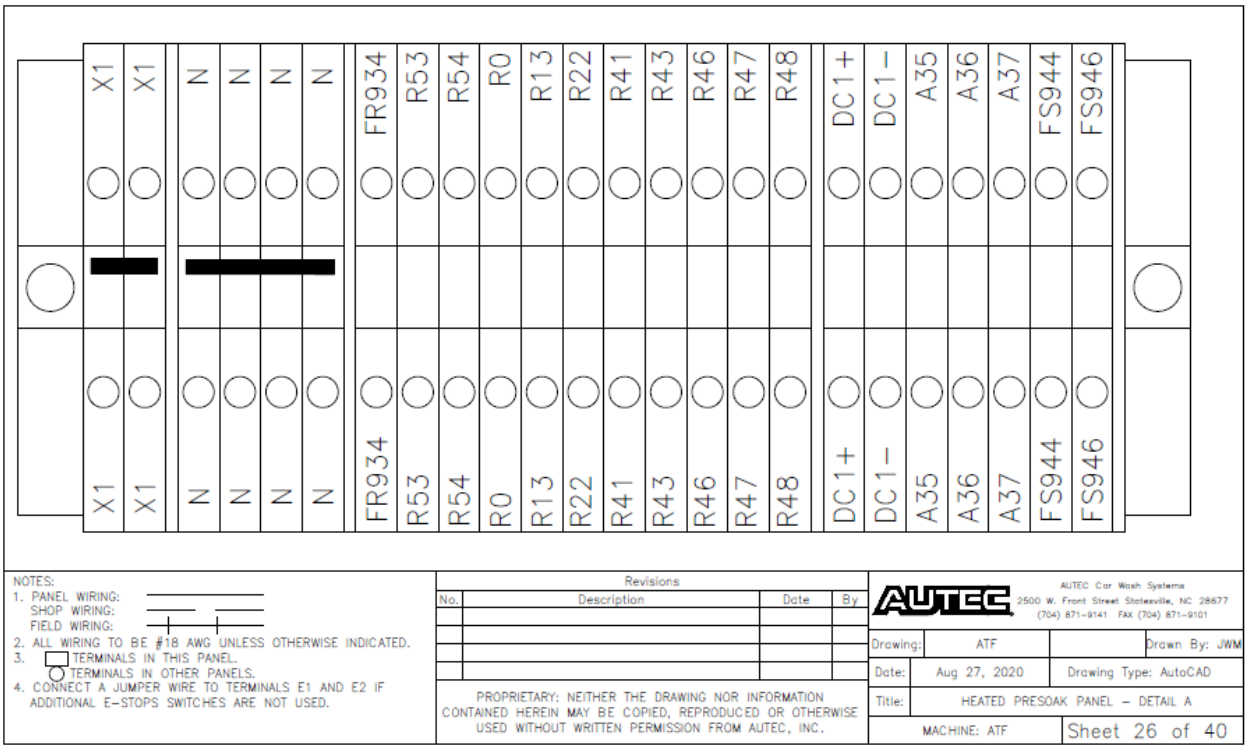
9-24 Schematic Hydraulics



9-25 Layout Heated Presoak Panel Backplane Devices



9-26 Layout Heated Presoak Panel TB Detail



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. ▭ TERMINALS IN THIS PANEL.
   ○ TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

Revisions			
No.	Description	Date	By

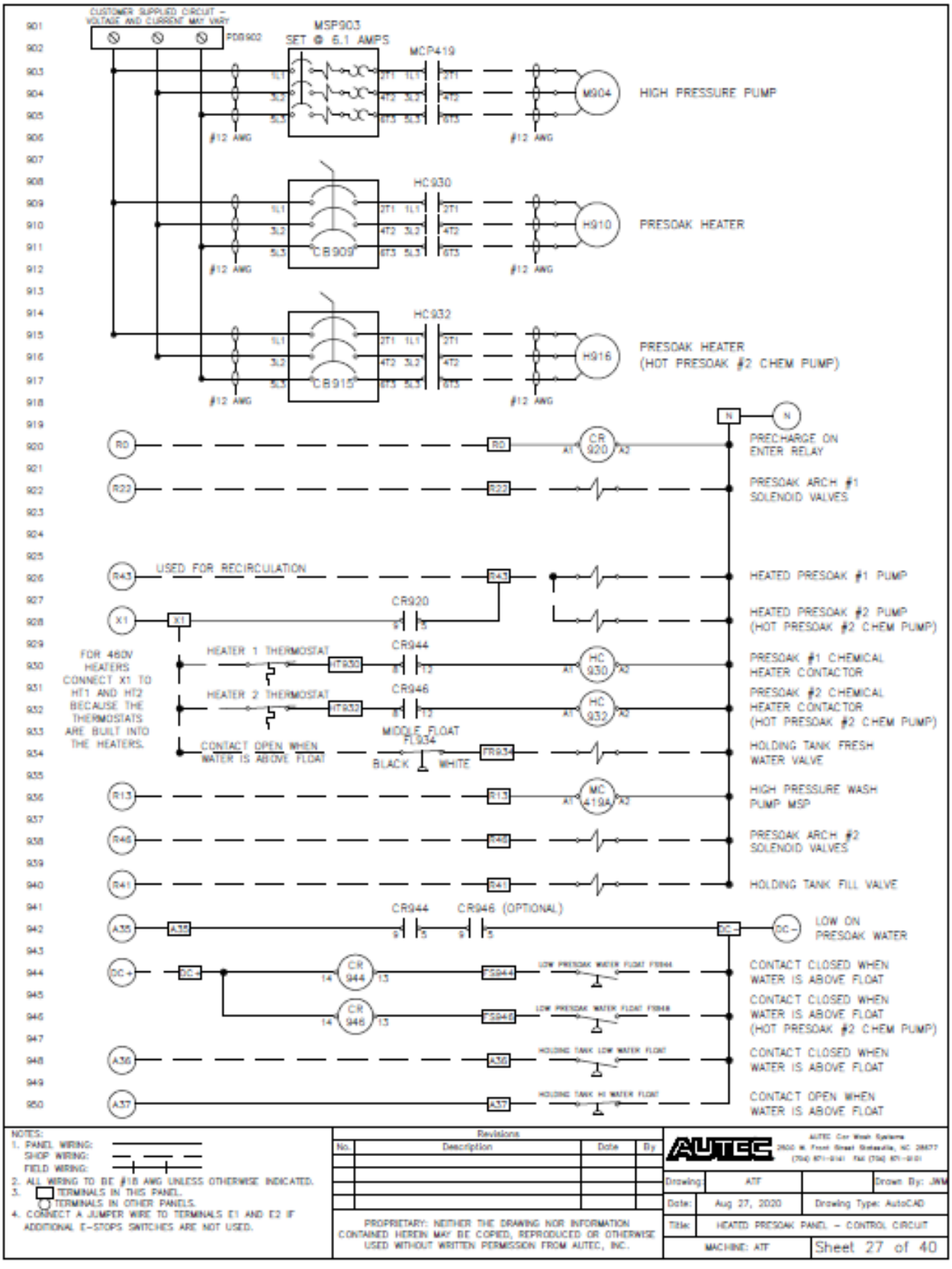
PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

AUTEC

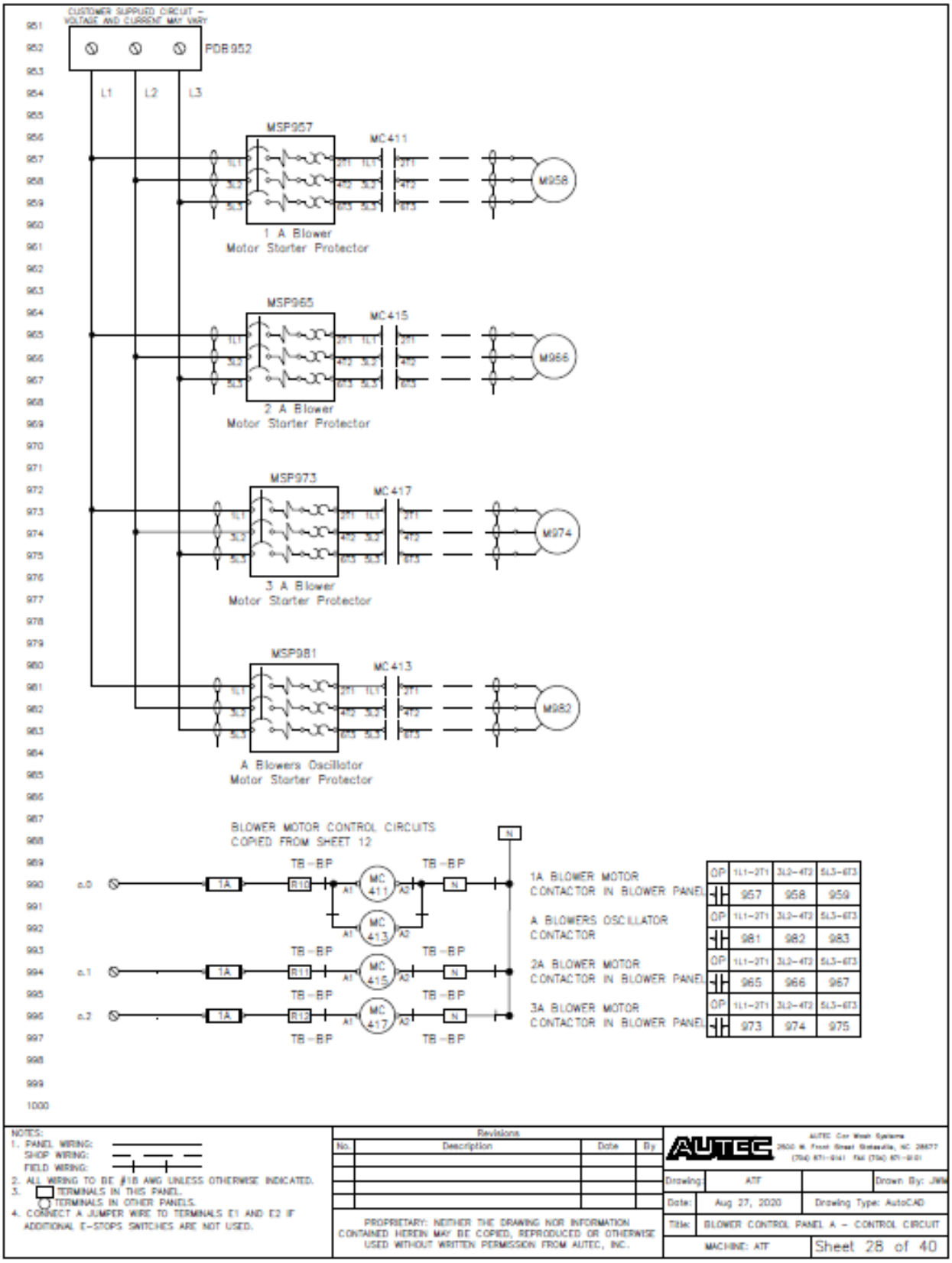
AUTEC Car Wash Systems
2500 W. Front Street Statesville, NC 28677
(704) 871-9141 FAX (704) 871-9101

Drawing:	ATF		Drawn By: JWM
Date:	Aug 27, 2020	Drawing Type: AutoCAD	
Title:	HEATED PRESOAK PANEL – DETAIL A		
MACHINE: ATF		Sheet 26 of 40	

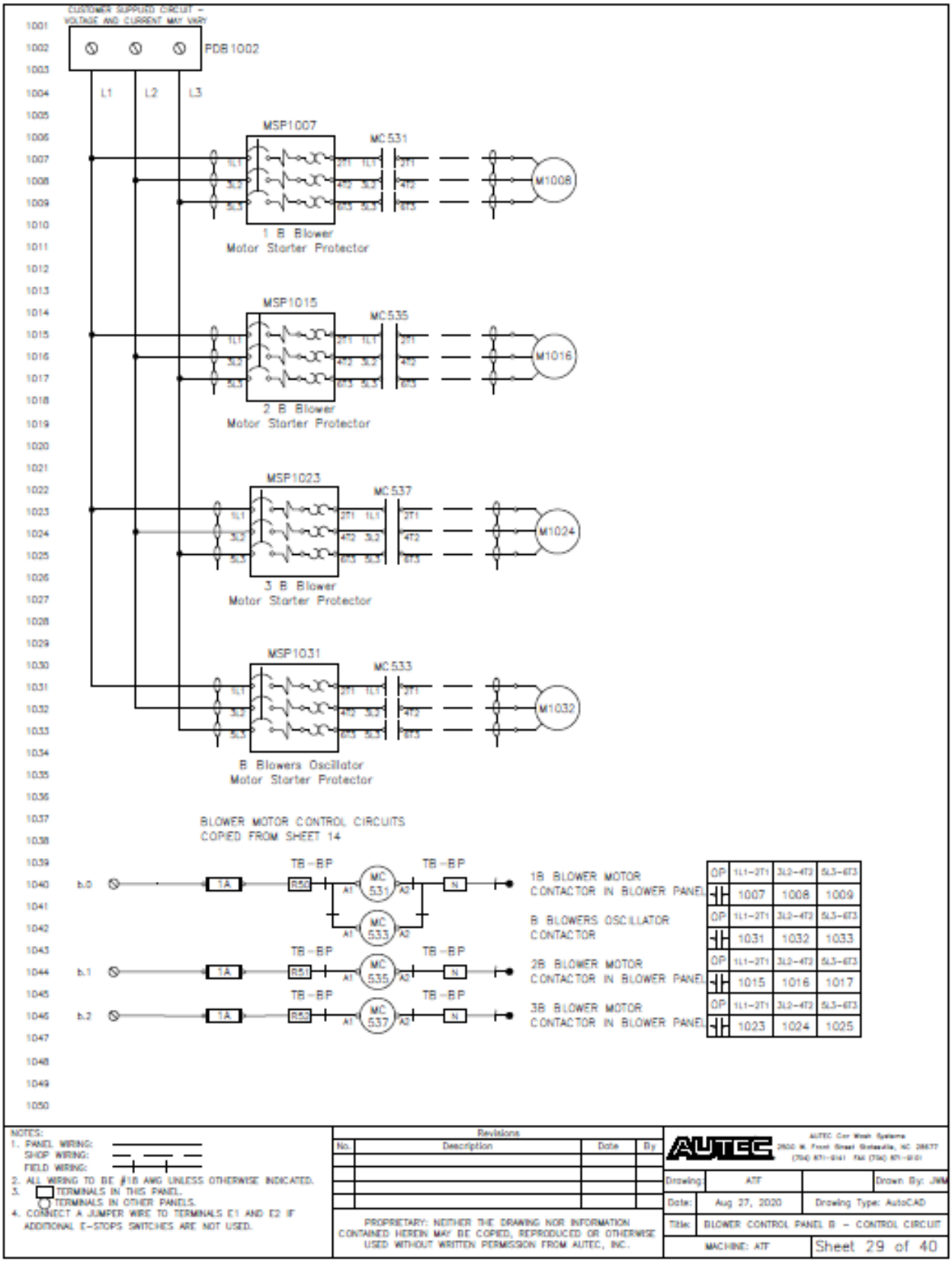
9-27 Schematic High Pressure Pump Heated Presoak



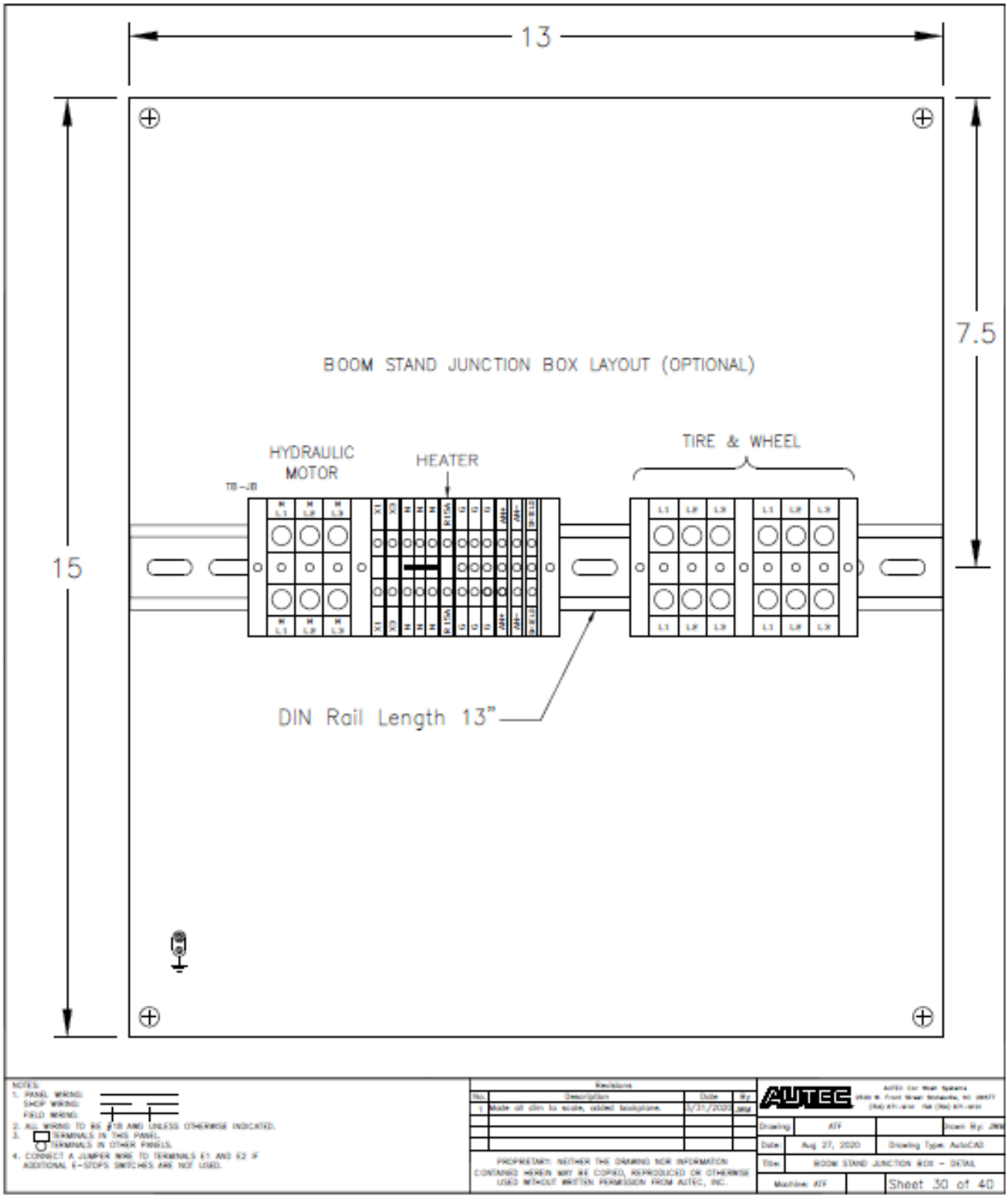
9-28 Schematic Blower Motors A



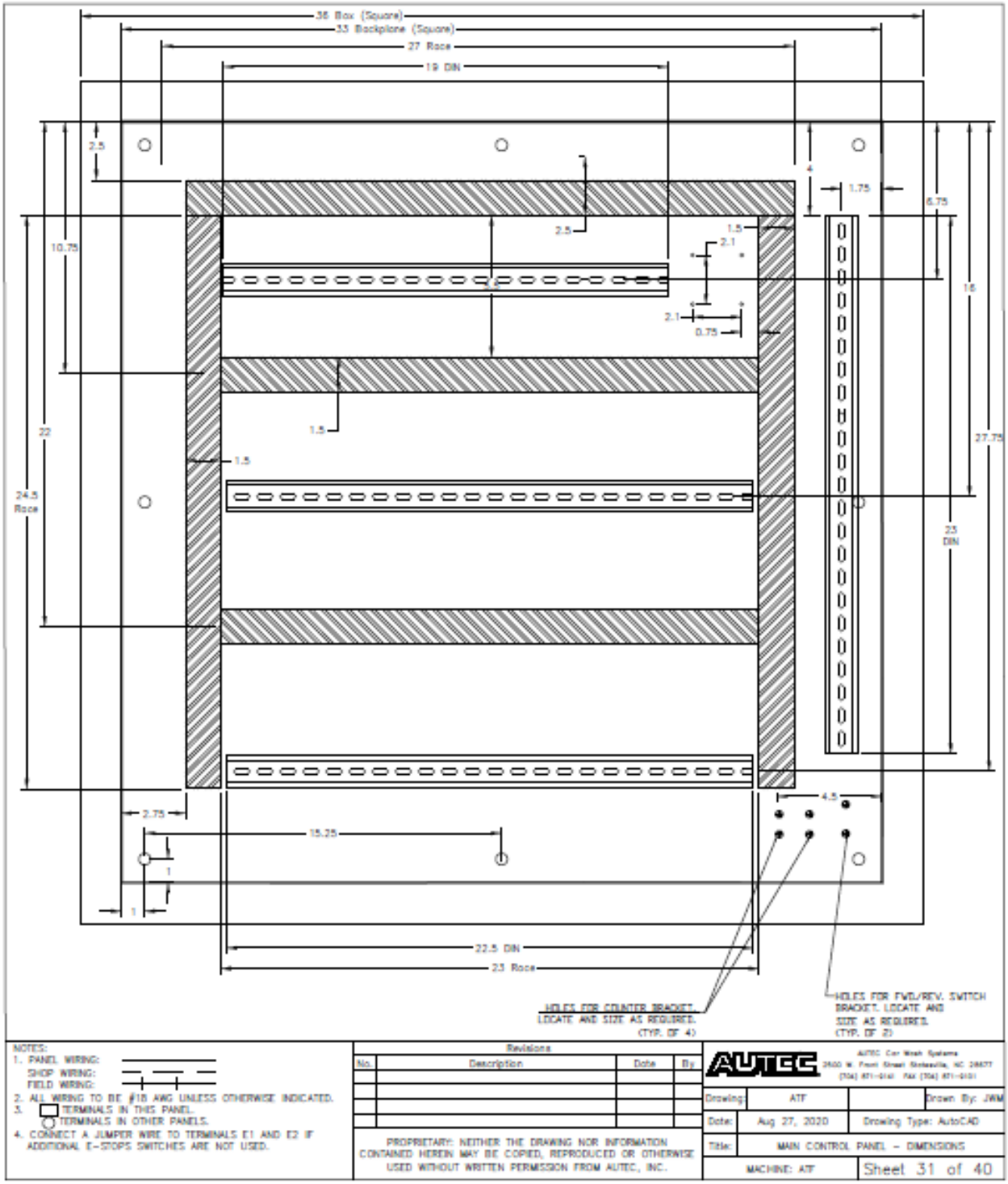
9-29 Schematic Blower Motors B



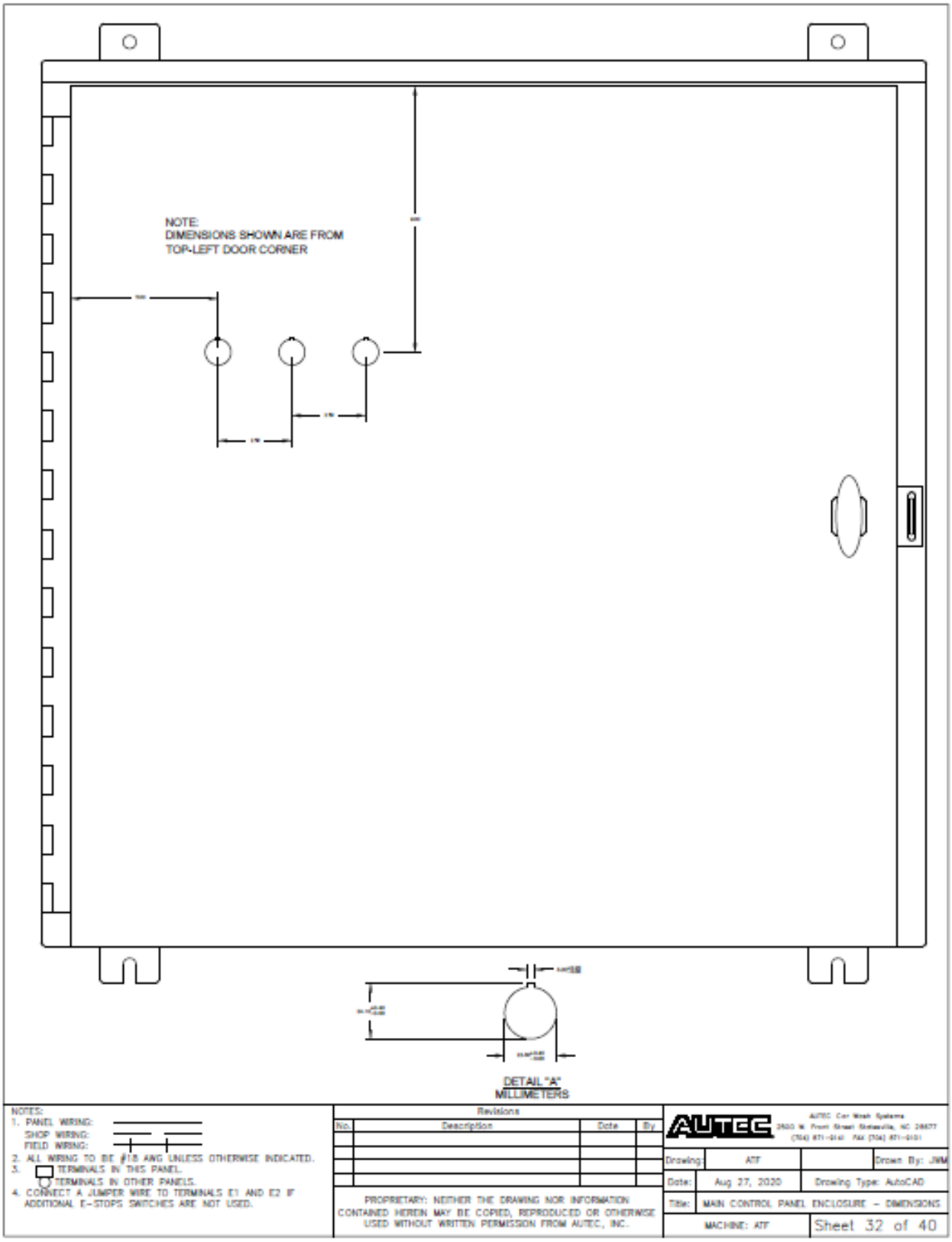
9-30 Layout Boom Stand Junction Box



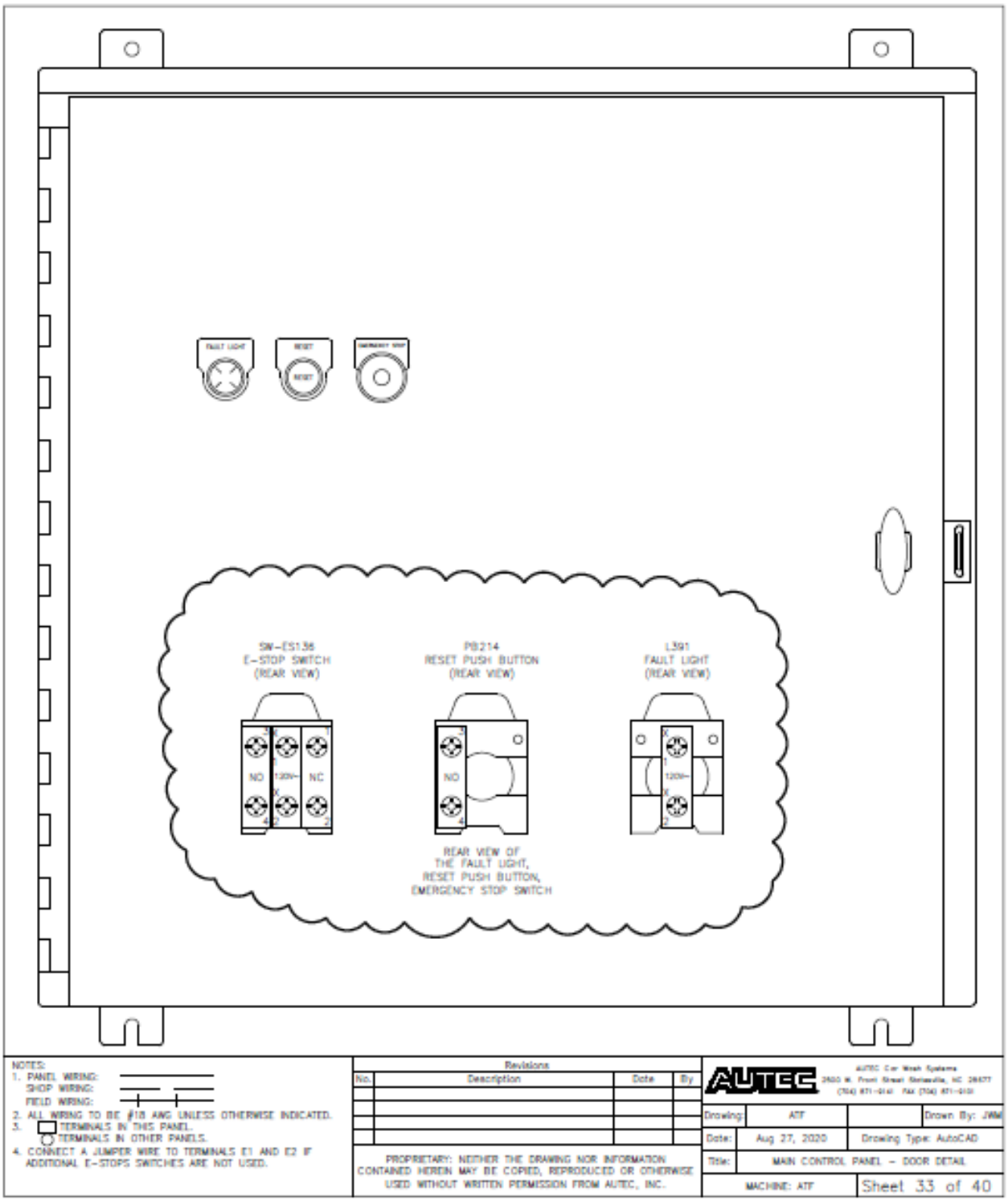
9-31 Layout Main Panel Backplane Drilling



9-32 Enclosure Drilling Main Panel Door



9-33 Enclosure Layout Main Panel Door



NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. TERMINALS IN THIS PANEL.
   TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

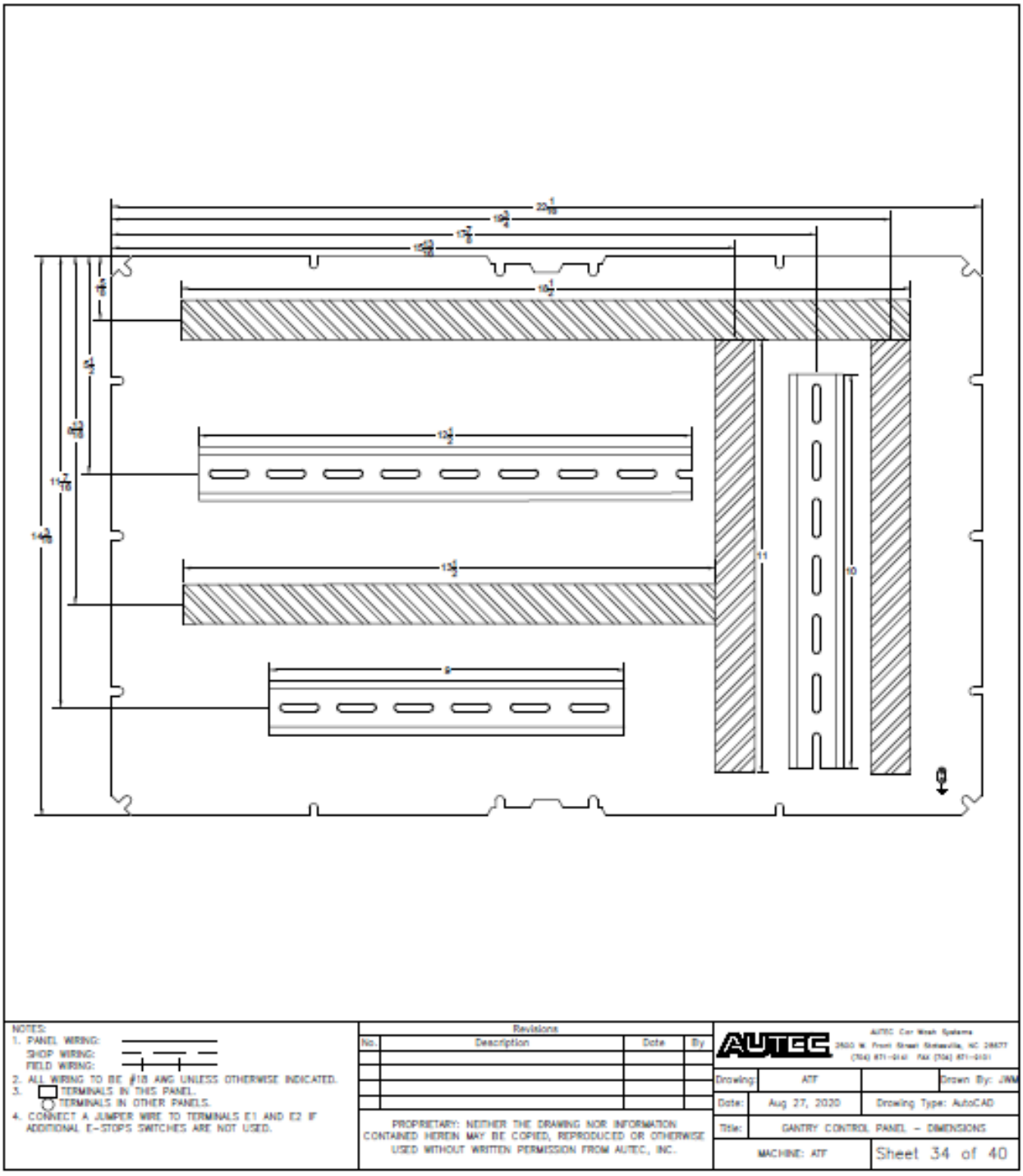
Revisions			
No.	Description	Date	By

PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

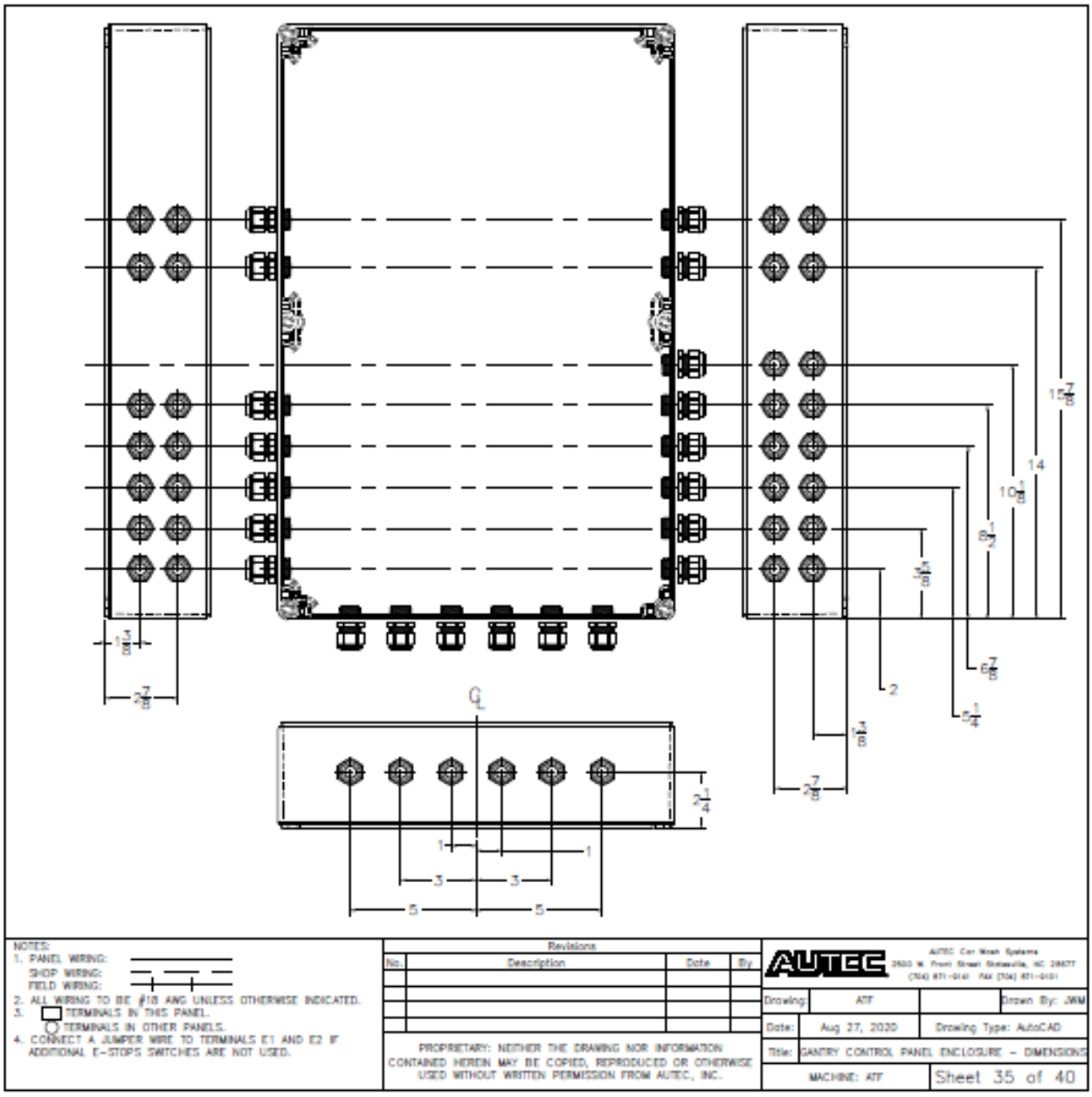
AUTEC Car Wash Systems
2650 W. Front Street Statesville, NC 28677
(704) 871-0141 FAX (704) 871-0103

Drawing:	ATF		Drawn By: JWM
Date:	Aug 27, 2020	Drawing Type: AutoCAD	
Title:	MAIN CONTROL PANEL – DOOR DETAIL		
MACHINE: ATF		Sheet 33 of 40	

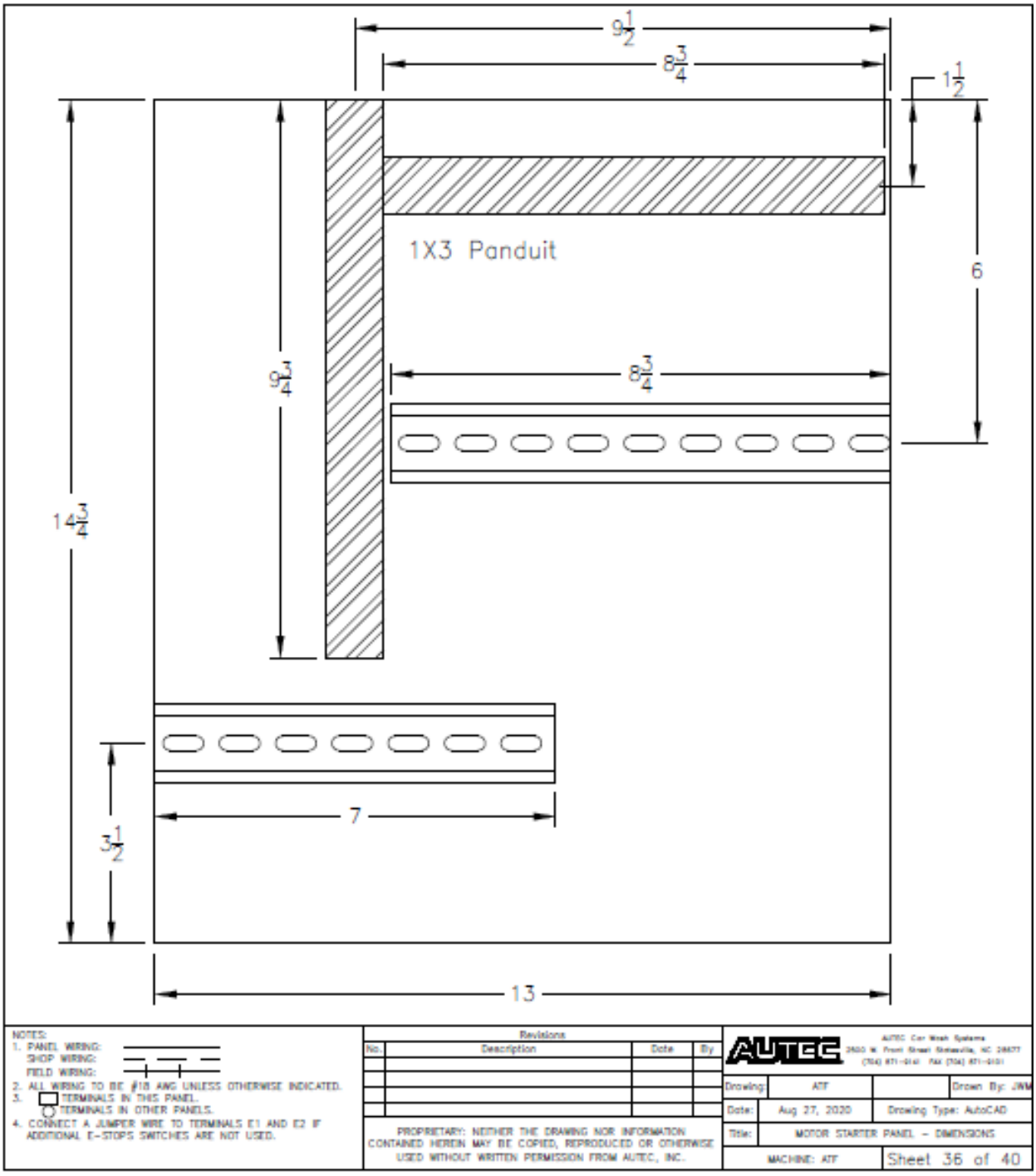
9-34 Layout Gantry Panel Backplane Drilling



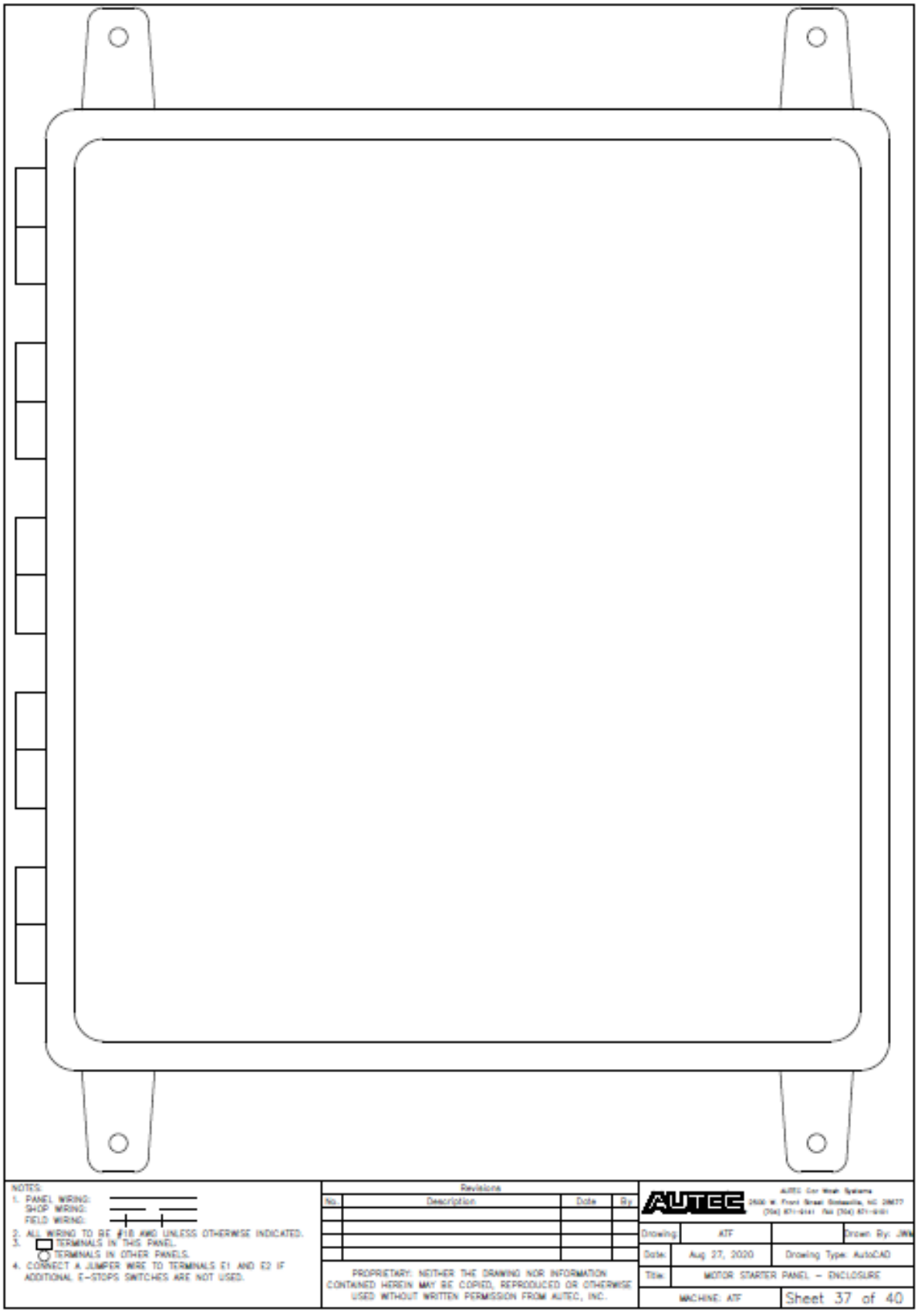
9-35 Gantry Enclosure Drilling



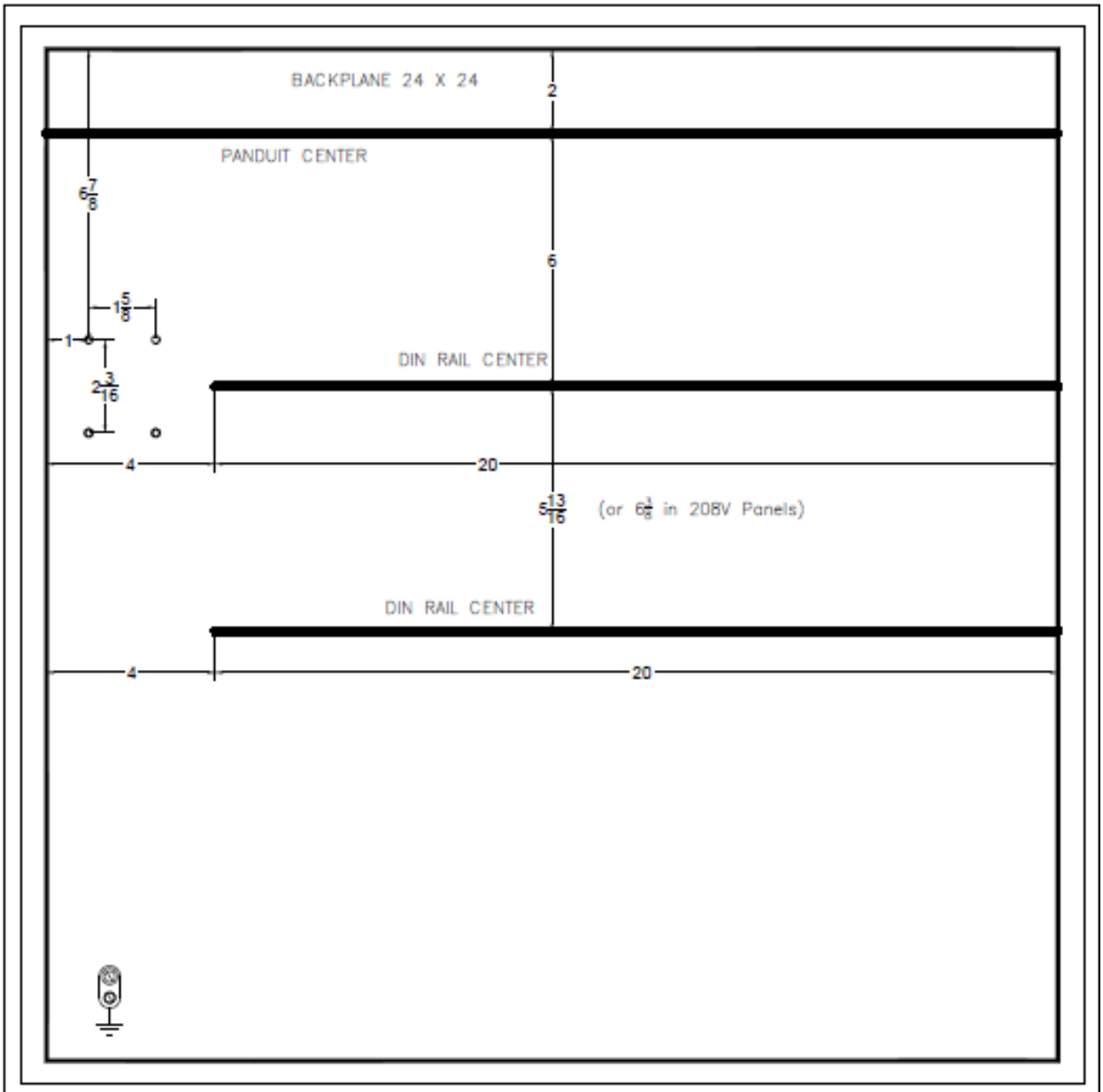
9-36 Layout Motor Starter Panel Backplane Drilling



9-37 Motor Starter Enclosure



9-38 Layout Heated Presoak Panel Backplane Drilling



9-39 Motor Circuit Spec Tables

MOTOR CIRCUIT SPECIFICATIONS

Pump Motors 208/230/460 Volt					Voltage		
Motor		HP	SF	Spec	208	230	460
Hydraulic Pump		10	1.30	Motor Nameplate FLA	26.9	25	12.5
Brand:	Elektrim			Motor Starter Protector (MSP) Setting	33.6	31.3	15.6
Model:	20NCM-3-10-18			Branch Circuit Wire Size (AWG)	10	10	12
EV-1 & Polisher Hydraulic Pump		15	1.15	Motor Nameplate FLA	38.2	34.6	17.3
Brand:	Teco Westinghouse			Motor Starter Protector (MSP) Setting	47.8	43.3	21.6
Model:	AEHH8P NP0154C			Branch Circuit Wire Size (AWG)	6	8	12
Tire & Wheel Pump(s)		5	1.15	Motor Nameplate FLA	13.5	12.2	6.1
Brand:	Teco Westinghouse			Motor Starter Protector (MSP) Setting	16.9	15.3	7.7
Model:	AEHH8P N00054C			Branch Circuit Wire Size (AWG)	10	10	12
EV-1 High Pressure Pump		20	1.15	Motor Nameplate FLA	50.9	46	23
Brand:	Teco Westinghouse			Motor Starter Protector (MSP) Setting	63.6	57.5	28.8
Model:	AEHH8P NP0204			Branch Circuit Wire Size (AWG)	6	6	10
ATF High Pressure Pump		25	1.15	Motor Nameplate FLA	68.6	62	31
Brand:	Toshiba			Motor Starter Protector (MSP) Setting	85.8	77.5	38.8
Model:	0254FT5A21A-P			Branch Circuit Wire Size (AWG)	4	4	8

Blower Motors 208/230/460 Volt					Voltage		
Motor		HP	SF	Spec	208	230	460
Blower		15	1.25	Motor Nameplate FLA	36.2	32.8	16.4
Brand:	Elektrim			Motor Starter Protector (MSP) Setting	45.3	41	20.5
Model:	20NCM-3-15-36/CWF			Branch Circuit Wire Size (AWG)	6	6	12
Blower Oscillator		1/3	1.30	Motor Nameplate FLA	1.5	1.6	0.8
Brand:	Marathon			Motor Starter Protector (MSP) Setting	1.9	2.0	1.0
Model:	5K33JNA 943 K253			Branch Circuit Wire Size (AWG)	12	12	12

Pump Motors 575 Volt					
Motor		HP	SF	Spec	
Hydraulic Pump		10	1.30	Motor Nameplate FLA	10.0
Brand:	Elektrim			Motor Starter Protector (MSP) Setting	12.5
Model:	20NCM-3-10-18			Branch Circuit Wire Size (AWG)	12
EV-1 & Polisher Hydraulic Pump		15	1.15	Motor Nameplate FLA	13.8
Brand:	Teco Westinghouse			Motor Starter Protector (MSP) Setting	17.3
Model:	AEHH8P NP0154C			Branch Circuit Wire Size (AWG)	12
Tire & Wheel Pump(s)		5	1.15	Motor Nameplate FLA	5.9
Brand:	Elektrim			Motor Starter Protector (MSP) Setting	7.4
Model:	20NCM-3-5-18/575			Branch Circuit Wire Size (AWG)	12
EV-1 High Pressure Pump		20	1.15	Motor Nameplate FLA	18.4
Brand:	Teco Westinghouse			Motor Starter Protector (MSP) Setting	23.0
Model:	AEHH8P NP0204			Branch Circuit Wire Size (AWG)	12
ATF High Pressure Pump		20	1.15	Motor Nameplate FLA	18.4
Brand:	TECO Westinghouse			Motor Starter Protector (MSP) Setting	23.0
Model:	AEHH8N EP02045			Branch Circuit Wire Size (AWG)	10

NOTES:
1. PANEL WIRING:
SHOP WIRING:
FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. TERMINALS IN THIS PANEL.
TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

Revisions

No.	Description	Date	By

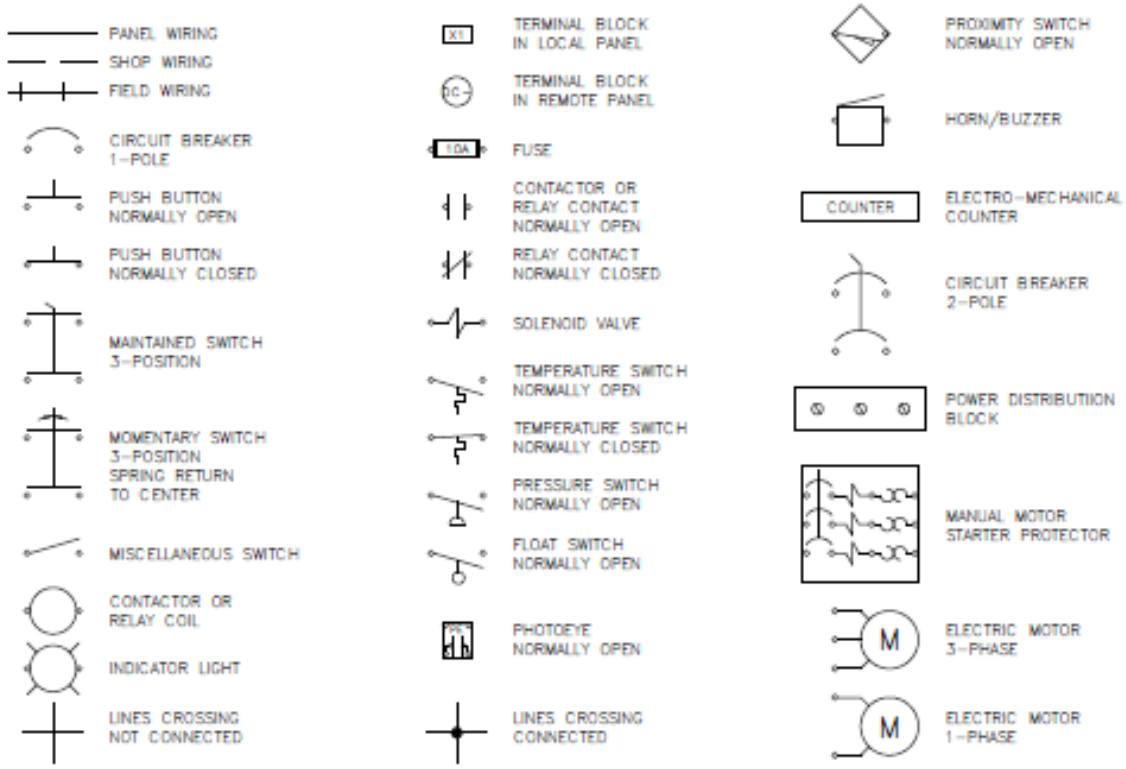
PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

AUTEC

Drawing:	ATF		Drawn By: JRM
Date:	Aug 27, 2020	Drawing Type: AutoCAD	
Title:	MOTOR CIRCUIT SPECIFICATIONS		
MACHINE: ATF		Sheet 39 of 40	

9-40 Symbols & Legend

SYMBOLS



LEGEND

TB = TERMINAL BLOCK
CB = CIRCUIT BREAKER
PS = POWER SUPPLY
CC = COUNTER
ESR = EMERGENCY STOP RELAY
FB = FUSE BLOCK
CR = CONTROL RELAY
PDB = POWER DISTRIBUTION BLOCK
MC = MOTOR CONTACTOR
H = HEATER
HC = HEATER CONTACTOR
MSP = MOTOR STARTER PROTECTOR
PB = PUSH BUTTON
SW = SWITCH
L = LIGHT

TS = TEMPERATURE SWITCH
FS = FLOAT SWITCH
PS = PRESSURE SWITCH
M = MOTOR

TERMINAL BLOCK LEGEND

DESIGNATION	/ LOCATION
TB1-MP	/ MAIN PLC PANEL
TB1-MP	/ MAIN PLC PANEL
TB-OB	/ ON BOARD PANEL
TB-SP	/ MOTOR STARTER PANEL
TB-BP	/ BLOWER PANEL
TB-JB BOX	/ ONBOARD JUNCTION
FB1-MP	/ MAIN PLC PANEL
FB2-MP	/ MAIN PLC PANEL
FB-OB	/ ON BOARD PANEL

NOTES:
1. PANEL WIRING:
   SHOP WIRING:
   FIELD WIRING:
2. ALL WIRING TO BE #18 AWG UNLESS OTHERWISE INDICATED.
3. TERMINALS IN THIS PANEL.
   TERMINALS IN OTHER PANELS.
4. CONNECT A JUMPER WIRE TO TERMINALS E1 AND E2 IF ADDITIONAL E-STOPS SWITCHES ARE NOT USED.

Revisions

No.	Description	Date	By

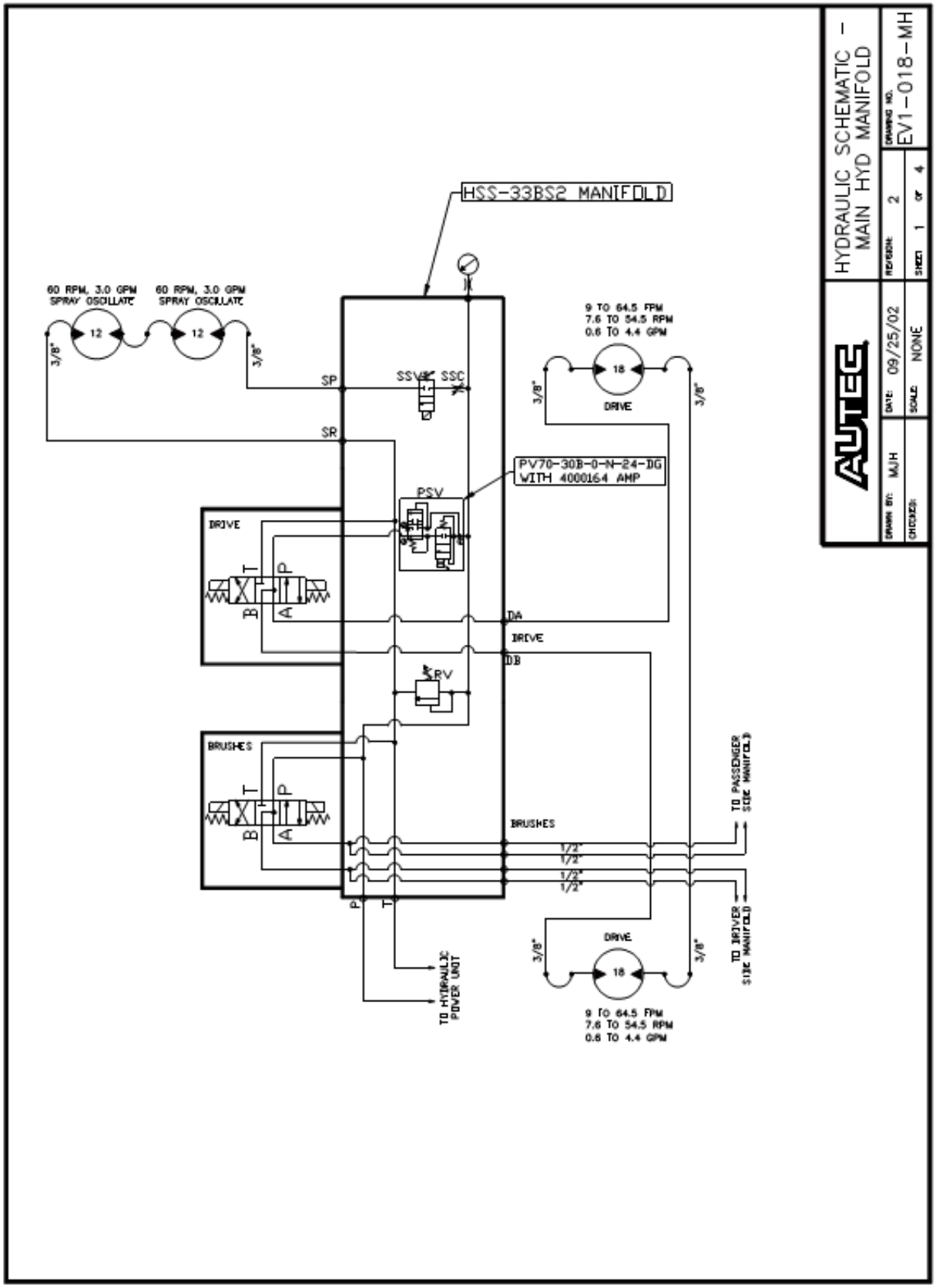
PROPRIETARY: NEITHER THE DRAWING NOR INFORMATION CONTAINED HEREIN MAY BE COPIED, REPRODUCED OR OTHERWISE USED WITHOUT WRITTEN PERMISSION FROM AUTEC, INC.

AUTEC

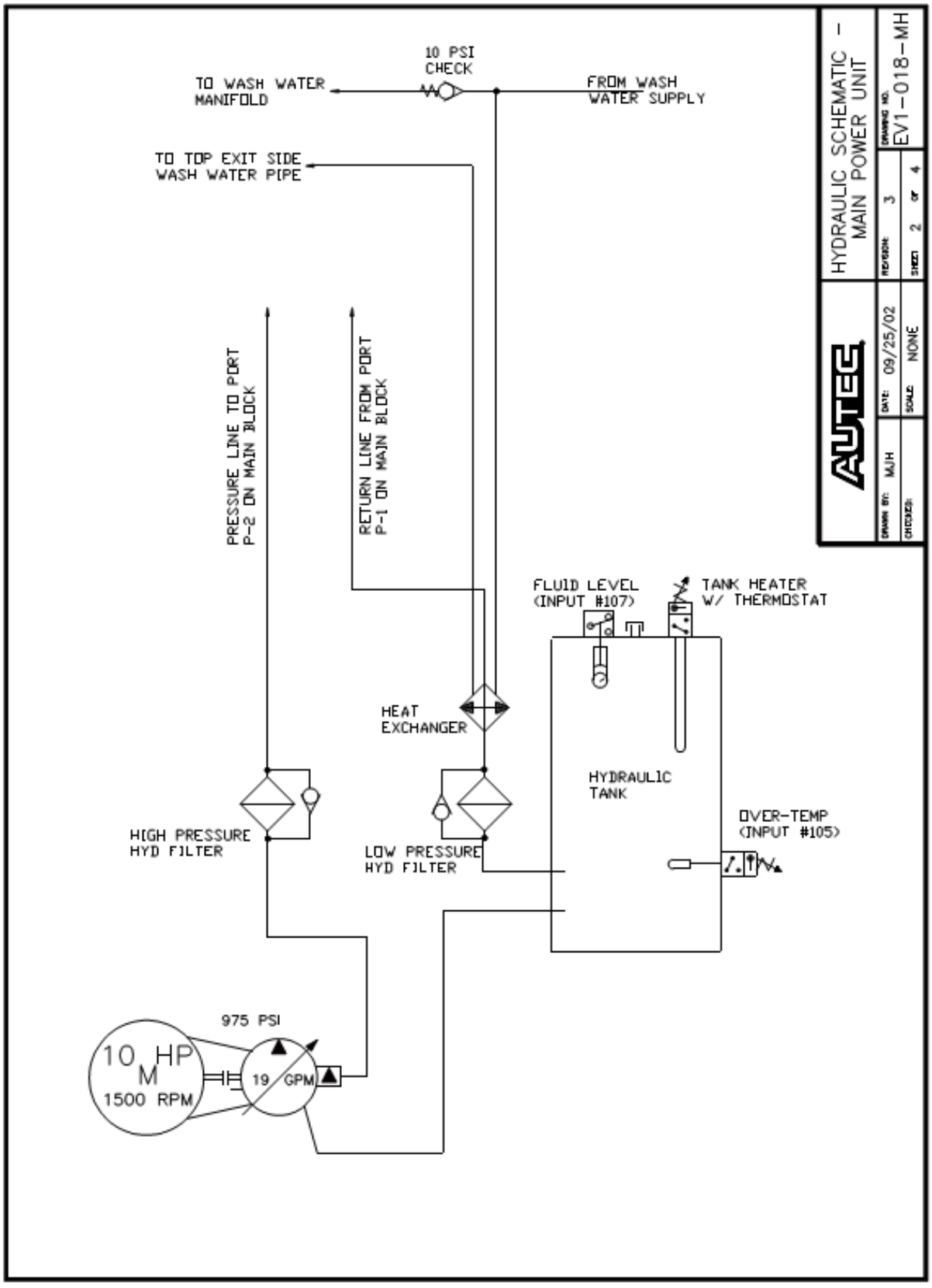
Drawing:	ATF		Drawn By: JWM
Date:	Aug 27, 2020	Drawing Type: AutoCAD	
Title:	SYMBOLS & LEGEND		
MACHINE: ATF		Sheet 40 of 40	

Section 10 – Hydraulic/Water Drawings

Drawing	Page
Main Hydraulic Block	10-1
Hydraulic Power Unit	10-2
Main Hydraulic Assembly	10-3
Main Hydraulic Manifold Left	10-4
Main Hydraulic Manifold Right	10-5
High-Pressure Schematic	10-6
High-Pressure Schematic Sheet 2	10-7
High-Pressure Pumping Station (Optional)	10-8
Heated Pre-Soak Chemical Stand (Optional)	10-9
Low Pressure Water Nozzle Layout	10-10

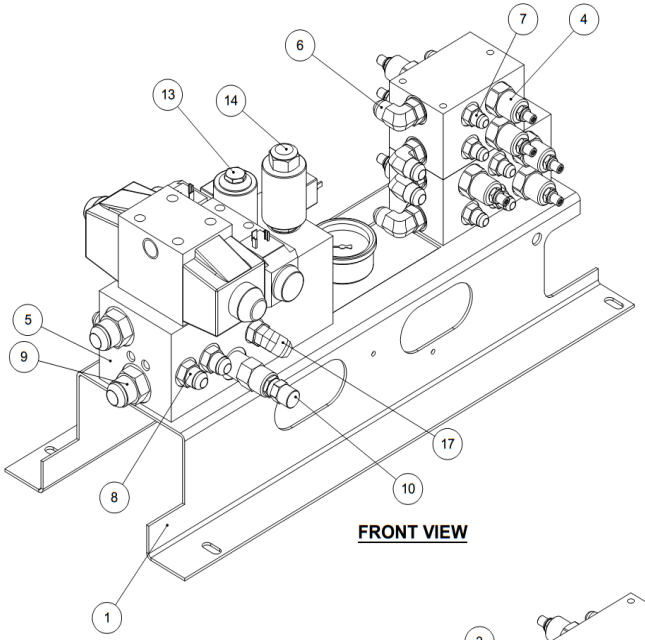


10-1 Main Hydraulic Block

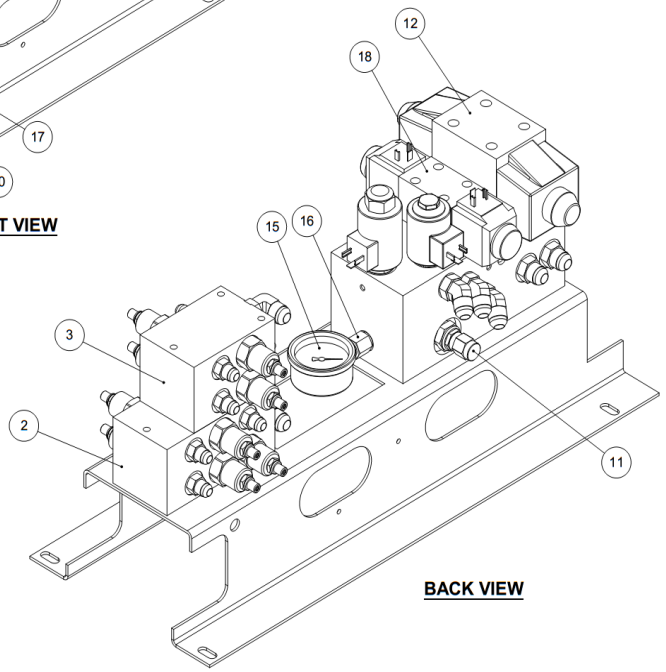


10-2 Main Power Unit

898010



FRONT VIEW



BACK VIEW

BILL OF MATERIALS

ITEM	PART NO	DESCRIPTION	QTY
1	898020	BRKT-HYD MANIFOLD-H	1
2	93585	MANIFOLD-HYD	1
3	93586	MANIFOLD-HYD-SHORT	1
4	91439	VALVE-HYD-FLOW CONTROL-CARTRIDGE-SUN	10
5	91578	MANIFOLD-HYD-MAIN-PROP W/RELIEF	1
6	91196	FTG-HYD-ORG-CON-90 8JIC X 8SAE	4
7	91225	FTG-HYD-CON JIC X NPT	10
8	91227	FTG-HYD-CON JIC X NPT	4
9	91230	FTG-HYD-CON JIC X NPT	2
10	91725	VALVE-HYD-RELIEF-CARTRIDGE	1
11	92507	VALVE-HYD-CART-SPEED/OSC	1
12	92275	VALVE-HYD-4 WAY-41 MAIN/45 BRUSH	1
13	91297	VALVE-HYD-SOL-NC-SPEED/OSC	1
14	93570	VALVE-HYD-CART-PROP	1
15	92529	GAUGE-LIQUID FILLED-2000PSI	1
16	91219	FTG-HYD-ORG-ADAPT 4SAE X 1/4NPT	1
17	96018	FTG-HYD-ORG-CON-45 6JIC X 6SAE	4
18	92129	VALVE-HYD-4 WAY-ATF MAIN	1

REVISIONS	REV	DESCRIPTION	DATE	BY
	C	-	-	-
	B	-	-	-
	A	-	-	-

THIS DRAWING AND ALL INFORMATION ON IT IS THE PROPERTY OF AUTEC, INC. IT IS CONFIDENTIAL AND IS GIVEN TO YOU FOR A LIMITED PURPOSE AND MUST BE RETURNED UPON REQUEST. NEITHER THE DRAWING NOR ANY PART OF IT NOR ANY INFORMATION CONCERNING IT MAY BE COPIED, EXHIBITED OR FURNISHED TO OTHERS WITHOUT THE CONSENT OF AUTEC, INC.

ALL DIMENSIONS ARE IN INCHES.
.X ± .1
.XX ± .06
.XXX ± .030
AGULAR ± 1°
FRACTIONAL ± 1/32

DO NOT SCALE DRAWING.
WORK FROM DIMENSIONS ONLY.

APPROVALS

DRAWING	*	*
CHECKED	*	*
APPROVED	*	*

AUTEC
2500 West Front St. Statesville, NC 1-800-438-3028

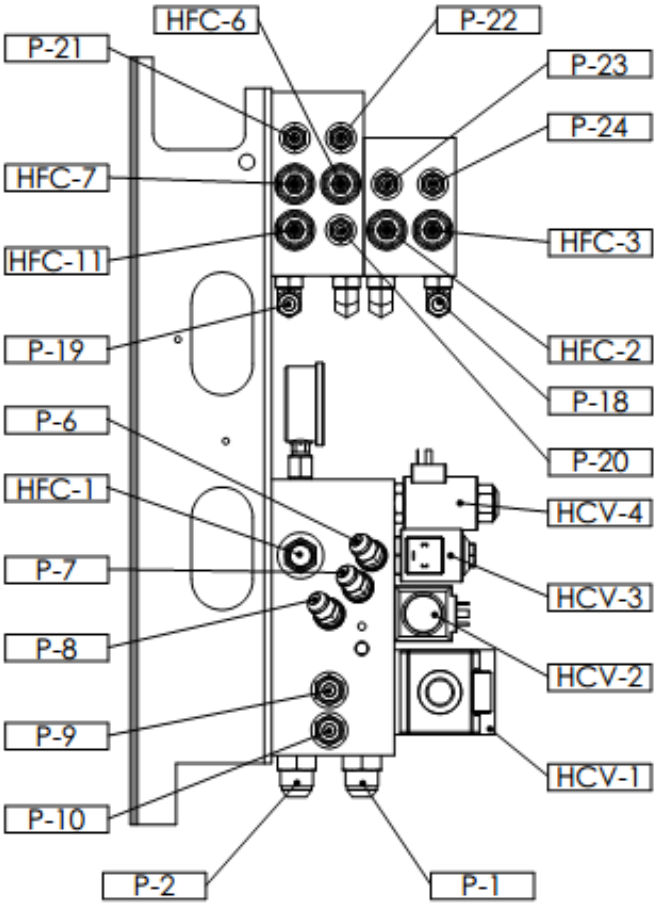
TITLE: MANIFOLD-HYD-ASM-MAIN-H
*

ANGLE PROJECTION

SIZE D | DWG NO 898010 | REV *

SCALE: 1:2 | SOLID WORKS | WEIGHT * | SHEET 1 OF 1

10-3 Main Hydraulic Assembly



PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <INSERT COMPANY NAME HERE>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <INSERT COMPANY NAME HERE> IS PROHIBITED.

NEXT ASSY | USED ON

APPLICATION

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

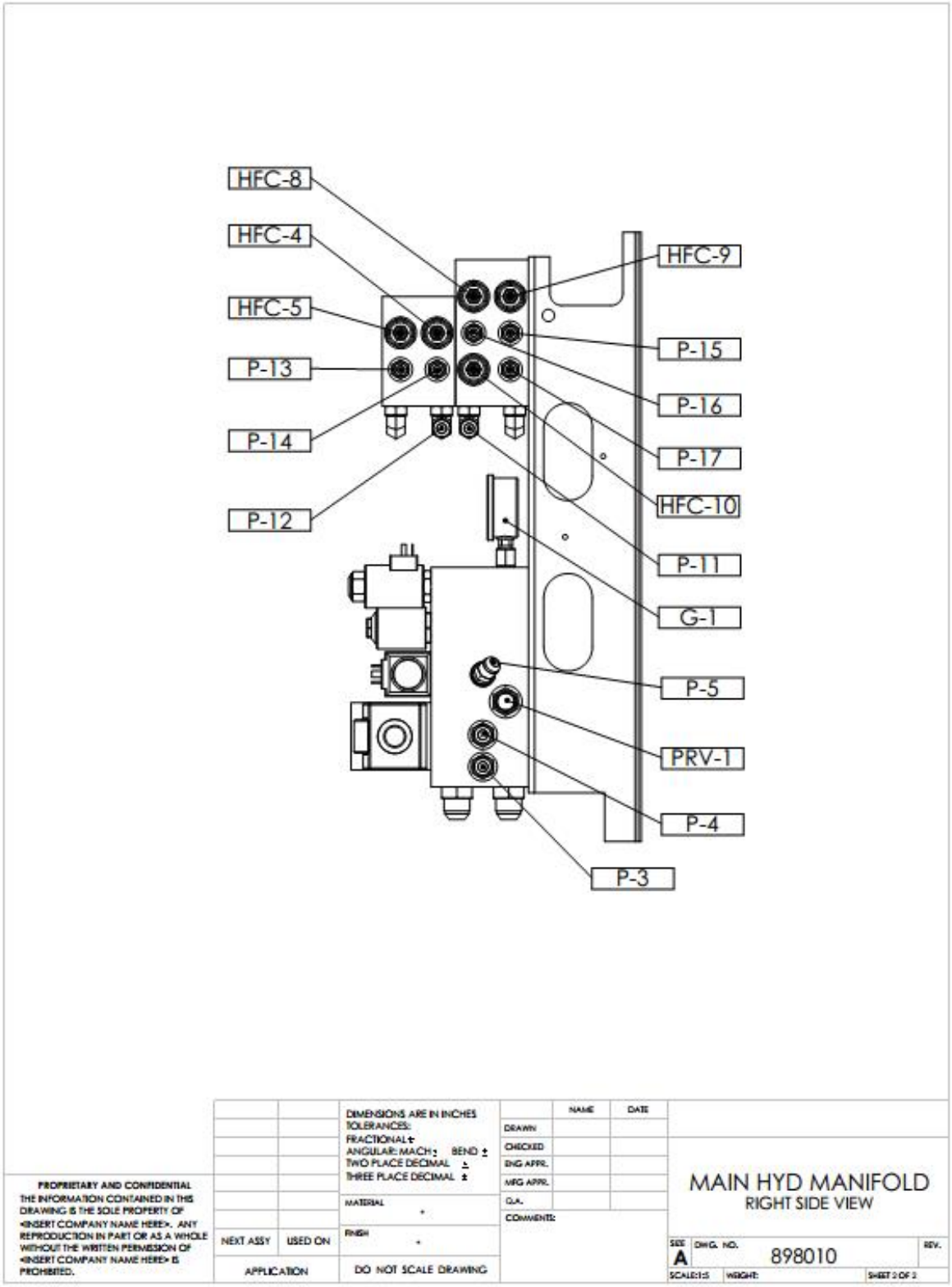
	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

MAIN HYD MANIFOLD
LEFT SIDE VIEW

SIZE A | DWG. NO. 898010 | REV.

SCALE:1:5 | WEIGHT: | SHEET 1 OF 2

10-4 Main Hydraulic Manifold Left View



10-5 Main Hydraulic Manifold Right View

Main Hydraulic Manifold Components

Hydraulic Directional Control Valves – These are either 2 or 4-way valves that start and stop hydraulic flow and/or reverse direction of flow. They include:

1. HCV-2 – Gantry Drive 4-way Valve: Turns on/off and determines direction of gantry travel.

2. HCV-3 – Nozzle Oscillate Valve: Turns on/off nozzle oscillation.

3. HCV-4 – Gantry Drive Proportional Valve: Determines travel speed of gantry.

Hydraulic Flow Control Valves – These valves regulate the speed of rotation or oscillation or various functions controlled by hydraulic motors. To adjust, loosen the jam nut and then turn the adjusting screw in (clockwise) to slow the speed or out (counter-clockwise) to increase the speed. Make sure to re-tighten the jam nut after adjustment. The Flow Control Valves include:

1. HFC-1 – High Pressure Nozzle Oscillate

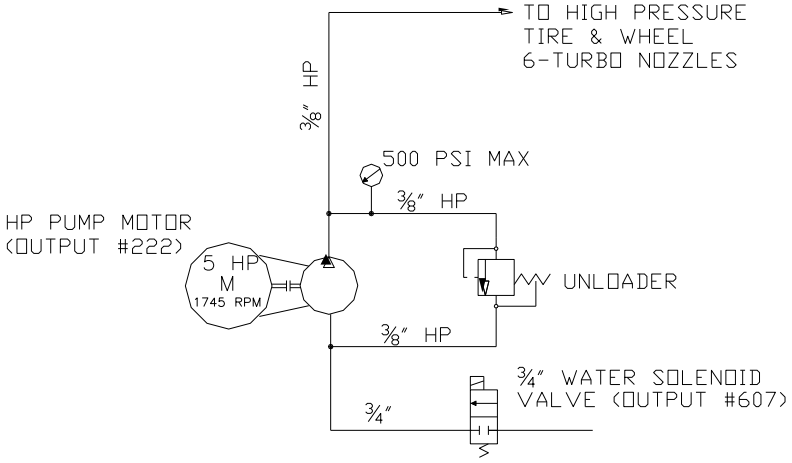
Hydraulic Ports – Plumbing to and from the Main Hydraulic/Distribution Manifold includes:

1. P-1 – Return line to Heat Exchanger (3/4”)
2. P-2 – Pressure line from High Pressure Filter (3/4”)
3. P-3 – Line to Port P-11 on Distribution Manifold (1/2”)
4. P-4 – Line to Port P-12 on Distribution Manifold (1/2”)
5. P-5 – Line to Driver Side Gantry Drive Motor (3/8”)
6. P-6 – Line to Driver Side Nozzle Oscillate Motor (3/8”)
7. P-7 – Line to Passenger Side Nozzle Oscillate Motor (3/8”)
8. P-8 – Line to Passenger Side Gantry Drive Motor (3/8”)
9. P-9 – Line to Port P-19 on Distribution Manifold (1/2”)
10. P-10 – Line to Port P-18 on Distribution Manifold (1/2”)
11. P-11 – Line to Port P-3 on Distribution Manifold (1/2”)
12. P-12 – Line to Port P-4 on Distribution Manifold (1/2”)
13. P-18 – Line to Port P-10 on Distribution Manifold (1/2”)
14. P-19 – Line to Port P-9 on Distribution Manifold (1/2”)

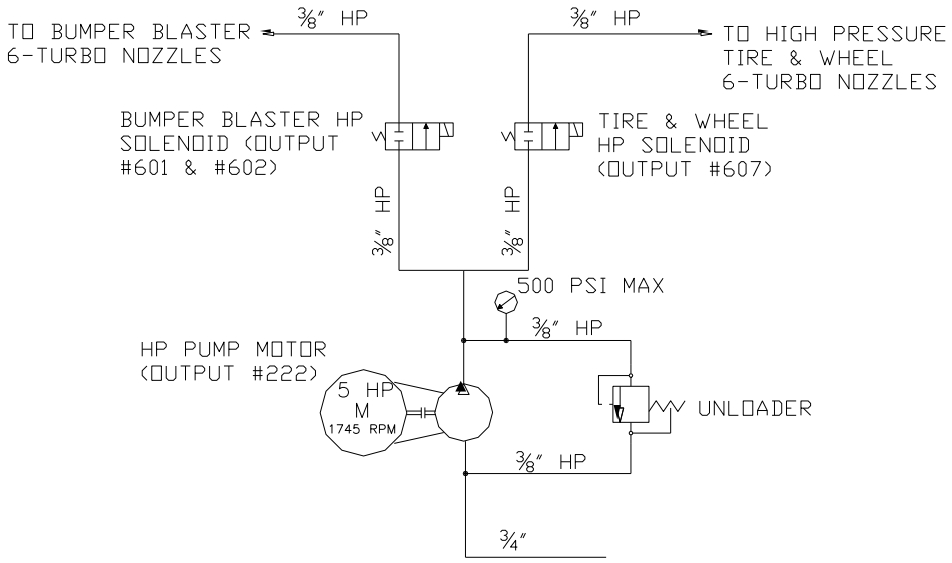
Miscellaneous Items

1. PRV-1 – Pressure Relief Valve set to 1350 psi.

2. G-1 – Pressure Gage – System pressure set to 975 psi.



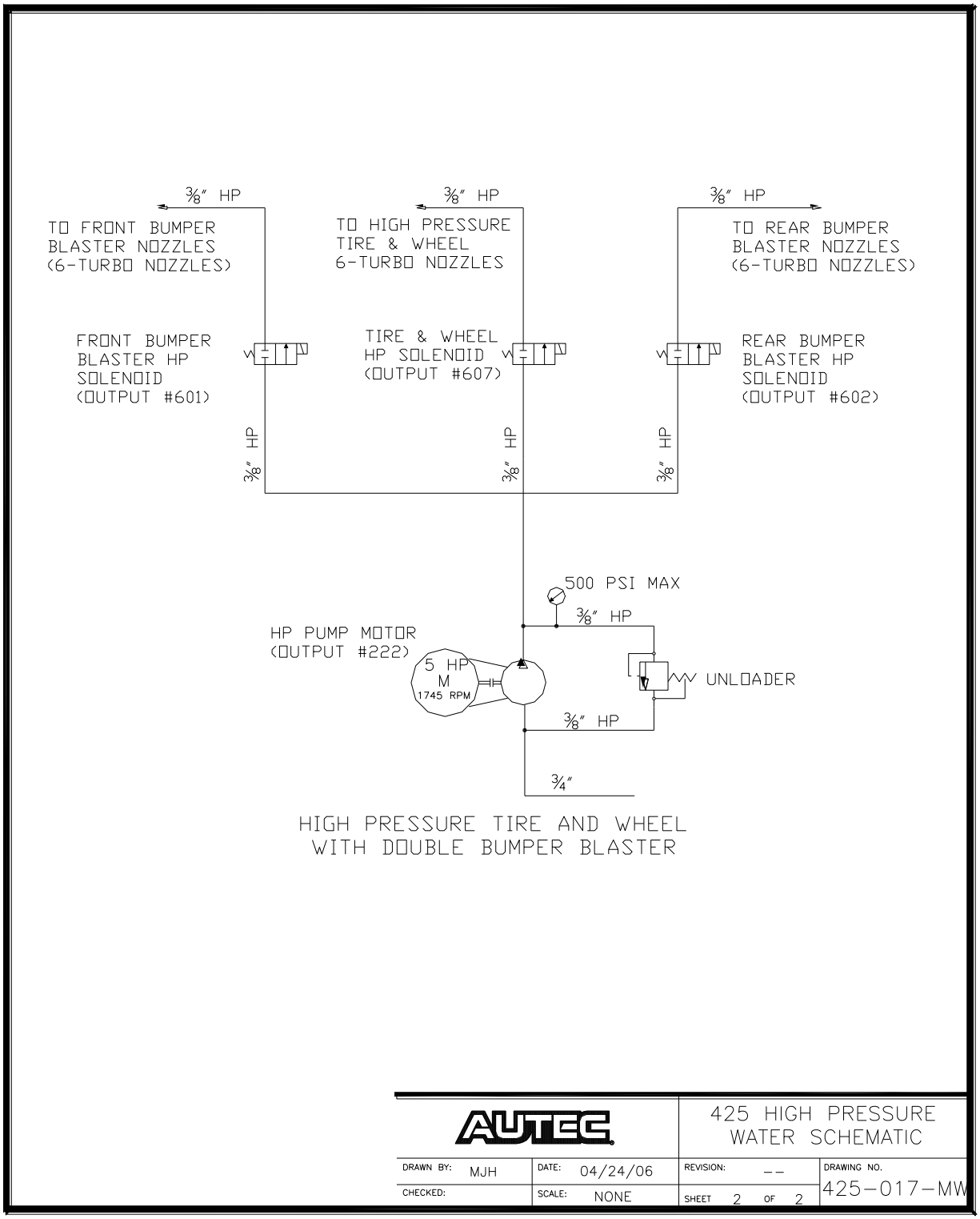
HIGH PRESSURE TIRE AND WHEEL
STANDARD CONFIGURATION



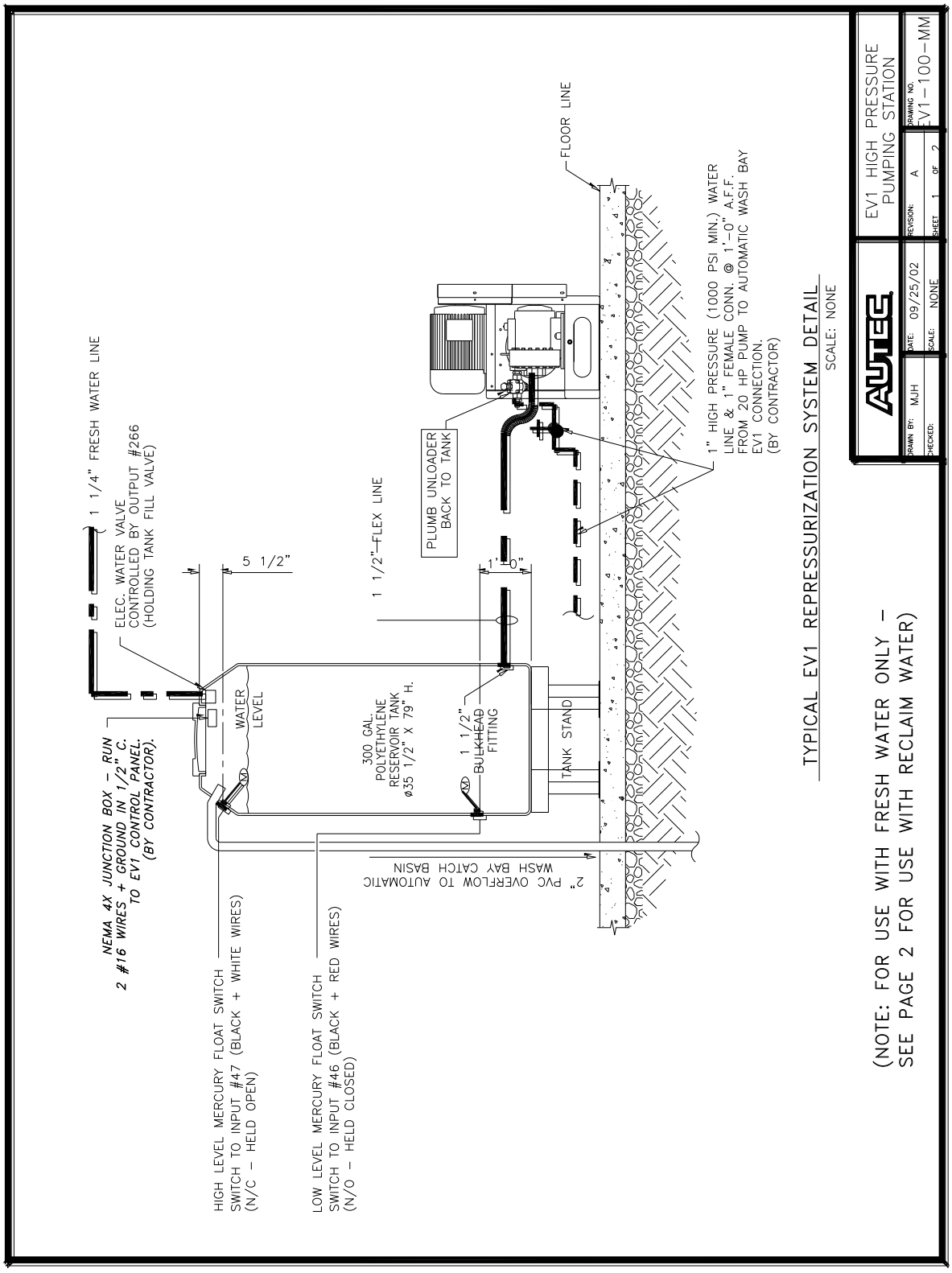
HIGH PRESSURE TIRE AND WHEEL
WITH SINGLE BUMPER BLASTER

AUTEC			425 HIGH PRESSURE WATER SCHEMATIC
DRAWN BY: MJH	DATE: 04/24/06	REVISION: --	DRAWING NO. 425-017-MW
CHECKED:	SCALE: NONE	SHEET 1 OF 2	

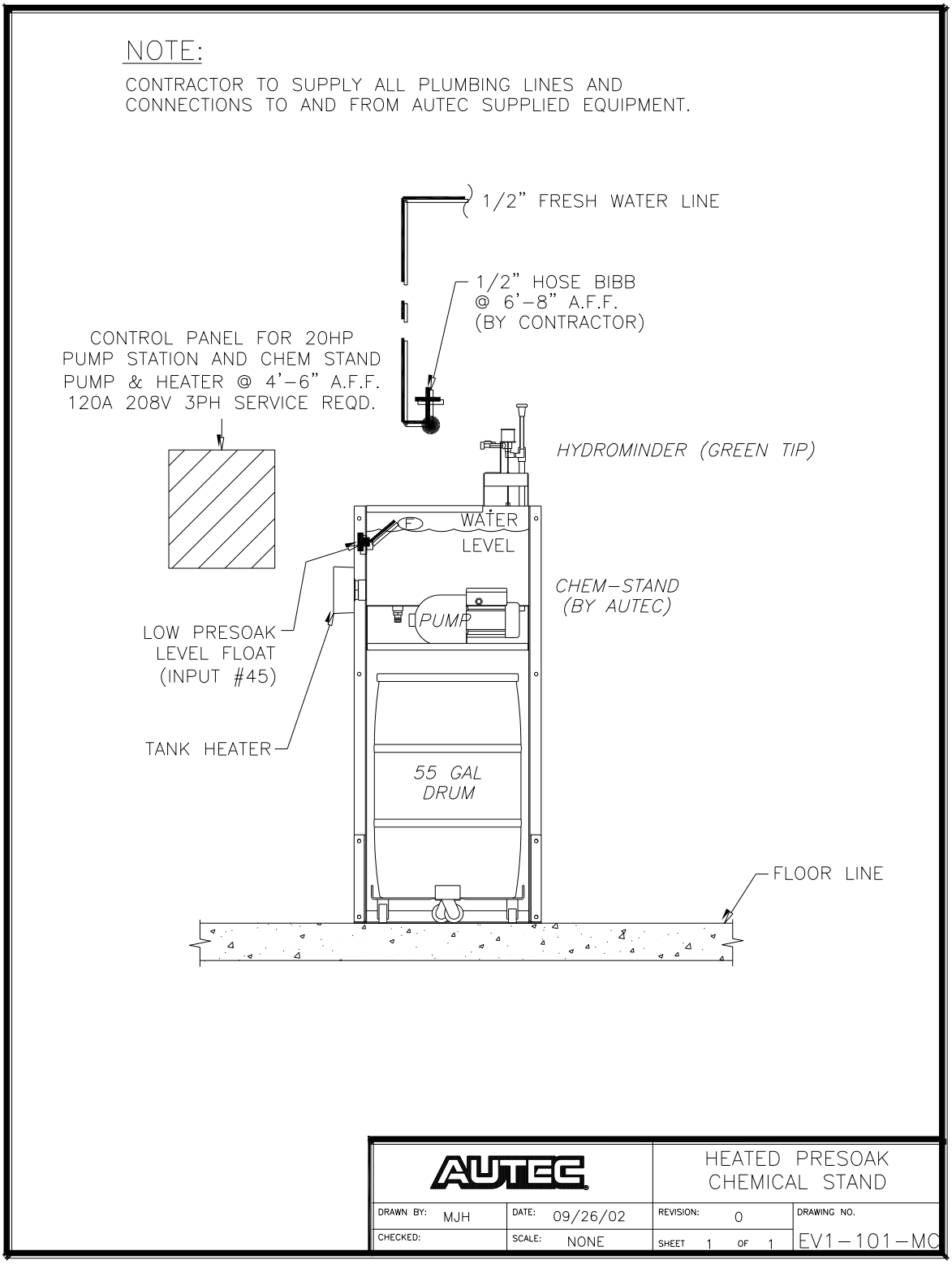
10-6 High-Pressure Schematic



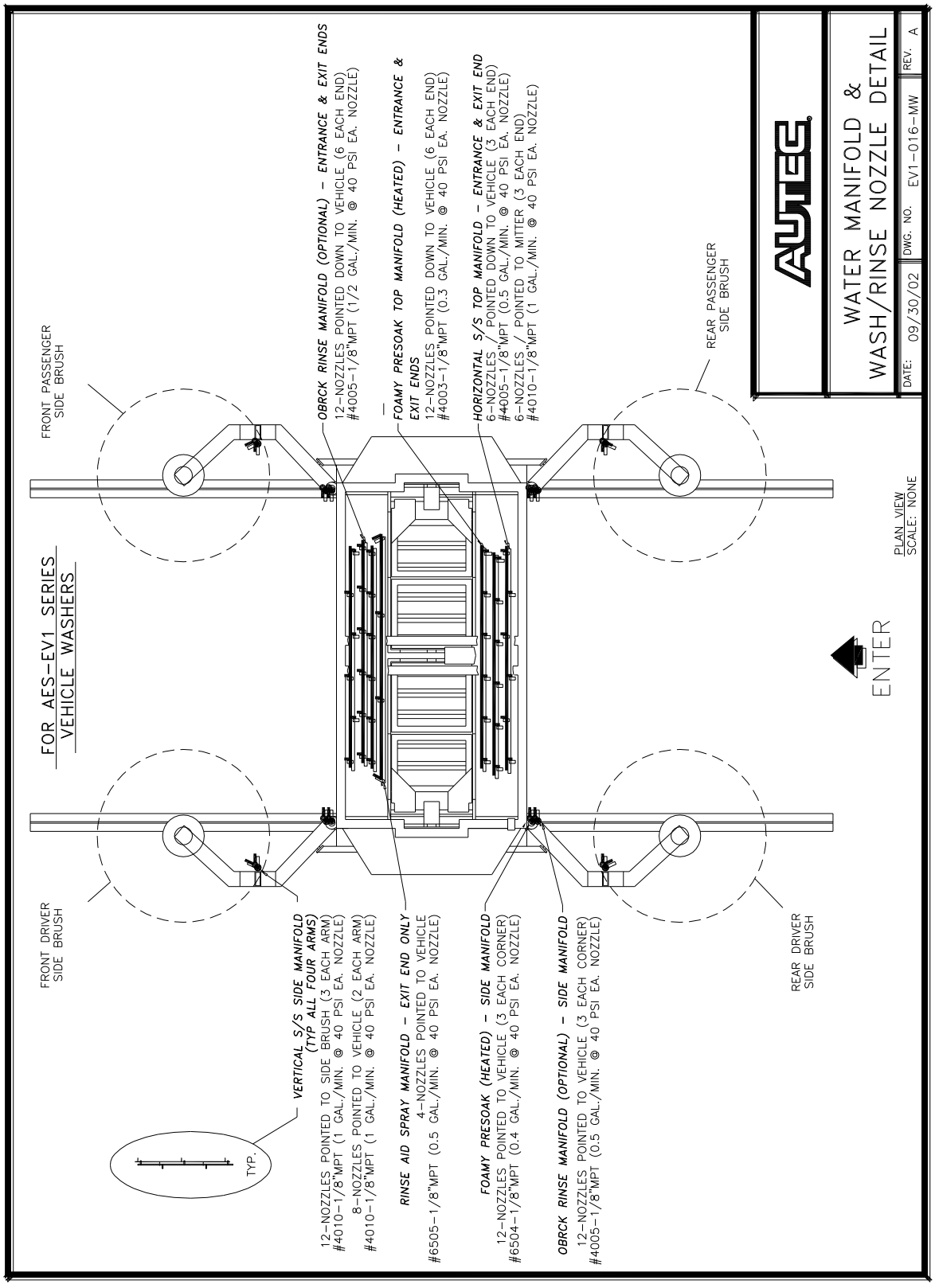
10-7 High-Pressure Schematic Sheet 2



10-8 High Pressure Pumping Station (Optional)



10-9 Heated Pre-Soak Chemical Stand (Optional)



10-10 Low Pressure Water Nozzle Layout

Section 11 - Trouble Shooting

DANGER / WARNING -- Attempting to test electrical components by means of a jumper wire or, in some cases, a test meter, can be hazardous. It is strongly recommended that these procedures be performed by factory trained technicians or licensed electricians only. AUTEC does not encourage the testing of equipment by anyone other than the above-mentioned personnel.

Main Breaker / Overload / Primary Fuses / breakers

a. Power, OK and Run lights on PLC?
   i. Check main 3-phase breaker and disconnect
   ii. Check 3 amp & 5 amp fuses/breakers in panel
b. Flashing back-up light?
   i. Check reset button on overload relay, main panel
c. Light on DC power supply?

Output Fuses

a. Individual glass fuses for each output (mdl 1 - mdl 2)

No Power Outputs (Water, Lights, Solenoids, Etc.)

a. Check PLC output light
b. Check wash program for correct option choice
c. Check neutral wire to output device
d. Check inputs for signal (bell switch, entry system, treadle, etc.)
e. Check ESR relay, X-2, X-3

Power To Outputs But No Operation (Water, Hyd., Air, Etc.)

a. Check source of water, air, etc. (valves, pumps, compressor, etc.)
b. Is hydraulic motor running backward? Check pressure gauge.

Hydraulics not working, 10 or 15 H.P. motor humming

a. Motor single phasing (call electrician)

Machine Won't Move

a. Mechanical
   i. Machine off track?
   ii. Concrete anchors too high?
   iii. Worn out couplings / wheels?
   iv. Trash / cans under proximity switches? On track?
   v. Proximity switches faulty?
   vi. Track grooved from spinning wheels? (See i. - iv. For cause)
   vii. Flow control valves turned off?

Machine not stopping at end of track

a. Proximity switch under machine not sensing prox plate on floor
b. Proximity switch under machine out of order
c. Broken wire between proximity switch and PLC

Machine won't leave end of track, or only travels short distance

a. Check for trash under proximity switches
b. Check for faulty proximity switch
c. Check for dual proximity switch inputs in Gantry Coupler (inputs B2 &B3)
d. Check that the machine is not too far into the prox plate otherwise creep speed may keep it there longer than the travel timeout value allows.

Machine Stopping Prematurely

a. Treadle (too sensitive, cars driving off or rocking?)
b. Fault Indications (see #14)

Machine or Brush Movements Opposite Of Output Signal

a. 4-Way hyd. valve piston jammed at one end of valve
b. Reversed wiring between PLC and valve

Rear Jog Not Working,

a. Input (check input A4 for malfunctioning prox)
b. Output (check outputs for rear arm solenoids)
c. Mechanical (check for closed muffler adjustments on rear arm solenoids)

Continuous Water/Air/Lights

a. Electrical (shorted wires, shorted contacts in output card)
b. Mechanical (trash in solenoid diaphragm or seat, split diaphragm)

Exit light won't go off, or rinse arch won't time out

a. Treadle stuck on? Check input light A15 on first PLC Block
b. Junction box for treadle full of water? Same as above.

Fault Conditions / Flash Codes

a. Solid Fault Light – E-Stop Fault
    i. Reset E-Stop
    ii. Push Reset Button
b. One Stop Light flash, one Enter Light flash – Low Air Pressure
    i. Check Air Compressor / Hoses
    ii. Restore Air Pressure
    iii. Push Reset Button
c. Two Stop Light flashes, one Enter Light flash – High Oil Temp.
    i. Check Hydraulic Heater operation
    ii. Check Coolant Valve operation (Water Based Hydraulics only)
    iii. Push Reset Button after machine cool down

d. Three Stop Light flashes, one Enter Light flash – Overload Relay on Main Starter.
    i. Reset overload relay
    ii. Check for cause of fault
    iii. Push Reset Button
e. Four Stop Light flashes, one Enter Light flash – Communications problem between Main PLC & Gantry Coupler.
    i. Check for loose connectors
    ii. Check for broken cable
f. Five Stop Light flashes, one Enter Light flash – Low Oil Level
    i. Check for leaks
    ii. Replenish Hydraulic Fluid
    iii. Push Reset Button
g. Six Stop Light flashes, one Enter Light flash – Out of Soap
    i. Replenish Soap Supply
    ii. Push Reset Button
h. Seven Stop Light flashes, one Enter Light flash – Treadle Switch
    i. Check for faulty Treadle Switch
    ii. Push Reset Button
i. Eight Stop Light flashes, one Enter Light flash – Low Water in High Pressure Holding Tank
    i. Check Tank Water Level
    ii. If Tank is empty, check fill valves
    iii. If Tank is partially full (above float switch), check float switch
j. Nine Stop Light flashes, one Enter Light flash – Entry System Out of Service
    i. Check Entry System for Problems
k. Ten Stop Light flashes, one Enter Light flash – Both Travel Prox Switches made at same time
    i. Check for metal trash under prox switches (drink can, etc.)
    ii. Check Prox Switches for proper operation
l. Eleven Stop Light flashes, one Enter Light flash – Gantry Travel Time Out (machine takes too long to travel from end to end)
    i. Check Travel Time Out timers (timers #134-136)
    ii. Check travel prox switches
    iii. Make sure machine travels freely from end to end
    iv. Check for any obstructions that machine can hit or grab

Entry System

a. Code Acceptance (try codes for each wash)
b. Power (reset main power to entry system)
c. Refer to mfg. manual for further troubleshooting instructions

High Pressure Pumping Station

a. Power
    i. Is pump running?
    ii. Check motor starter for tripped overload
    iii. Check breaker

b. Water Supply
    i. Check Holding Tank for Low Water
    ii. Check fused outputs
    iii. Check High Pressure Solenoids for Oscillating Nozzles and Rockerpanel Nozzles
c. Trash
    i. Check nozzles for trash
    ii. Check pump valves for trash
d. Pump pressure
    i. Check unloader valve setting
    ii. Check pump valves for trash

Traffic Signals

a. Bulbs (maximum 52 w)
b. Inputs
    i. Check for correctly operating input for light in question (bell switch, treadle etc.)
c. Staying On
    i. Continuous inputs?
    ii. Outputs fused in PLC?

PLC Problems

a. Power, OK, and Run lights?
b. Inputs
    i. Lights coming on for proper inputs?
    ii. Neutral wires connected?
    iii. Swap input cards and test
c. Outputs
    i. Output lights on?
    ii. Swap output cards and test
d. PLC
    i. Program present? (Check w/ Logic Touch)
    ii. Run light on?
    iii. Timers and other registers appear to be correct?

Chemicals

a. Supply Mixture
    i. Check for presence of chemical and premix in buckets

ii. Check operation of Hydrominder

b. Air Pressure
   i. Check for adequate air pressure to chemical pumps
   ii. Check for adequate air pressure to foamers on machine
c. Pumps
   i. Is pump running properly?
   ii. Are pump valves clogged with debris, making pump erratic?
d. Clogged hoses / check valves
   i. Inspect hoses and check valves, suction and pressure
   ii. Does pump operate correctly with suction hose disconnected?
   iii. Does pump operate correctly with pressure hose disconnected?
e. PLC outputs
   iv. Are PLC outputs operating correctly?
   v. Is air solenoid for pump energizing properly?
   vi. Check fuse for output to pump solenoid

Section 12 – How To…

A. How to Setup an Android or iPhone for Remote Connection.

Setting up your Android or iPhone for HMI remote access.

This is to help you setup your Android or iPhone for remote access of your HMI device. This will allow you to reset your machine, view totals, setup your washes, set the time for alarming, or virtually anything you can do by being there at your HMI (Human Machine Interface (the display)) from any remote location.
NOTE: you must have internet access to the router in order to have a connection to your HMI.

**NOTE: You will have only one kind of router, either an e-WON

(a Blue one) or a StrideLinx (a Black one), you must determine which one you have.

For eWON Routers (the router is blue and is located in the main panel next to the PLC):

1. eCatcher Setup:
    A. For iPhones Go to the App Store, for Androids go to the Play Store and download eCatcher.
    B. Open it up and enter your account info that was given to you by AUTEC, Inc. (email Rick Ryen or Mark Hopkins and they will text or email you the info). This is the account (Autec Carwash), your username and password will be sent to you via email. This will allow you to tie into the router located at the main control panel.
    C. Once you have entered all of the above information the app will open up to your menu. This menu will show you the router(s) that you can tie into. NOTE: if no router is showing contact Autec, Inc.
    D. Click on the router of choice and press on the connect button.
    E. Once you have completed this please go to the VNC Setup.

For StrideLinx Routers (the router is black and is located in the main panel next to the PLC):

2. Stridelinx Setup:
    1. Stridelinx VPN: go to the App store and download “Stridelinx VPN”
    2. NOTE: Autec must send you an invite so you can create your own username and password to login to the Autec account. Send an email to mailto:rryen@autec-carwash.com asking for the invitation to join our network and please include the name of the car wash(s) you are associated with. Once in our possession we will send an invitation back to you.

3. Follow the link in the E-Mail and set up your account. You will need to setup your password before you can access the mobile app or login to your PC. You can also access VNC from this app! You do not need to download VNC viewer unless you like that app to view your display. If you want to use VNC Viewer then go to the next step.

3. VNC Setup:

a. For iPhones Go to the App Store and download VNC Viewer.
b. for Androids go to the Play Store and download Android VNC App.
c. For this app you will need to create an account in order to use it but it is worth it!
d. Once you have created an account then login to your account using your phone.
e. You will need to press the "+" button to create a new connection.

Androids:

Enter the following information:

i. Connection: New (create your own name)
ii. Nickname:
iii. Password: 100
iv. Address (IP): 192.168.11.110
v. Port: 5900
vi. Then press Connect.

iPhones:

i. Enter an IP Address: 192.168.11.110
ii. Enter a name for your connection.
iii. The screen will tell you it is an unencrypted connection, press Continue.
iv. It will prompt you for a password: 100
v. You should be connected at this time.

4. Setting up your HMI for Text Messages:

a. Go to the display and press on the System button.
b. Press on the E-Mail button.
c. Enter up to 4 text message formats (see "3" below) or E-mail addresses.
d. At the Subject Line enter your Car wash name and press Enter.
e. Make sure your ISP (Internet Service Provider) does not block ports 25, 587, or 465. If there is another router besides the ISP's also make sure those ports are not blocked.
f. You can test your texting by pressing the "Reset" button. "Back in Service" message will be sent to the texting/email settings that have been programmed.

5. Common Texting formats:

Tbaytel (Canada):807#######@sms.rogers.com
Verizon ##########@vtext.com

AT&T: ##########@txt.att.net
Sprint: ##########@messaging.sprintpcs.com
Cricket: ##########@**sms**.mycricket.com
U.S. Cellular: Phone#@email.uscc.net
T-Mobile/Mint Mobile: ##########@tmomail.net or ##########@mailmymobile.net
Ring Central: ##########@rctext.com

Mobile carrier	SMS gateway domain	MMS gateway domain
Alltel[8]	sms.alltelwireless.com	mms.alltelwireless.com
AT&T[9]	txt.att.net	mms.att.net
Boost Mobile[8]	sms.myboostmobile.com	myboostmobile.com
Cricket Wireless	mms.cricketwireless.net	mms.cricketwireless.net
FirstNet	txt.att.net	mms.att.net
Google Fi[10]		msg.fi.google.com
MetroPCS	mymetropcs.com	mymetropcs.com
Republic Wireless[11]	text.republicwireless.com	
Sprint[8]	messaging.sprintpcs.com	pm.sprint.com
T-Mobile[8]	tmomail.net	tmomail.net
U.S. Cellular[8]	email.uscc.net	mms.uscc.net
Verizon Wireless[12]	vtext.com	vzwpix.com

Virgin Mobile[8]	vmobl.com	vmpix.com

SMS gateway domains for Canadian carriers:

Mobile carrier	SMS gateway domain
Bell Canada[13]	txt.bell.ca
Bell MTS[14]	text.mts.net
Fido Solutions[15]	fido.ca
Freedom Mobile[16]	txt.freedommobile.ca
Koodo Mobile[17]	msg.telus.com
PC Mobile[18]	mobiletxt.ca
Rogers Communications[19]	pcs.rogers.com
SaskTel[20]	sms.sasktel.com
Telus[21]	msg.telus.com

B. How to install the program to your PLC.

1. If there is a router connected to your system call AUTEC, Inc. to have us download the program for you.
2. If there is no router contact AUTEC, Inc. to either send a copy via postal mail, or allow a connection to a secured folder with AUTEC, Inc. so you can download the updated files to the Siemens SD Card for the PLC program. Be sure to have the version you are running available by going to the Main Menu on the HMI. If your HMI is non-functional contact AUTEC, Inc. for other options.
3. You should have received an email inviting you to share our Drop Box in a folder called AUTEC.

4. Follow the prompts as you click on the Drop Box link in your e-mail.
5. Once you are into the folder AUTEC, Open the PLC folder.
6. Insert the Siemens 4MB SD Card into your computer.
7. A folder should popup on the screen from that SD Card, if it does not then open Windows Explorer and open the external drive.
8. Drag the contents from the Drop Box folder to the USB or SD Card. Ignore any messages. You can also copy the files from one drive to the next.
9. It is now ready to be used.
10. To use the Siemens SD Card once the files have been transferred, turn off the PLC.
11. Insert the SD Card at the Main PLC to the upper left under the top cover, there is a slot for the SD Card.
12. Turn the PLC on.
13. Wait for the Run/Stop light to be solid orange and the Maint light to flash orange, this indicates the process is complete.
14. Turn off the PLC, remove the card, then turn the PLC back on.
15. Transference of the PLC program to the PLC is complete.

C. How to install the program to your HMI.

1. For HMI updating (you can leave the unit powered on).
2. A 2GB regular SD Card or a USB Stick is required.
3. If there is a router connected to your system call AUTEC, Inc. to have us download the program for you.
4. If there is no router contact AUTEC, Inc. to either send a copy via postal mail, or allow a connection to a secured folder with AUTEC, Inc. so you can download the updated files to the USB stick or SD Card for the HMI program. Be sure to have the version you are running available by going to the Main Menu on the HMI. If your HMI is non-functional contact AUTEC, Inc. for other options.
5. You should have received an email inviting you to share our Drop Box in a folder called AUTEC.
6. Follow the prompts as you click on the Drop Box link in your e-mail.
7. Once you are into the folder AUTEC, Open the HMI folder.
8. Insert the SD Card or USB stick into your computer.
9. A folder should popup on the screen from that USB or SD Card, if it does not then open Windows Explorer and open the external drive.
10. Drag the contents from the Drop Box folder to the USB or SD Card. Ignore any messages. You can also copy the files from one drive to the next.
11. It is now ready to be used.
12. Remove the storage device from the computer.
13. If it is an SD Card, place the SD Card into the Data Port slot in the back of the HMI

Figure 12-1

14. If it is a USB Stick place it into the back of the HMI (or into the port on the side of the HMI panel by the power cord) in any of the two USB ports provided on the HMI.

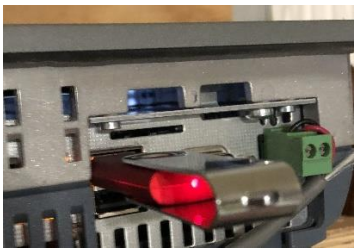


Figure 12-2

15. With the HMI powered on and the program running, go to "System" on the Menu at the bottom of the panel.
16. Press on "Control Panel". This will take you to the HMI's Control Panel outside of the runtime program.

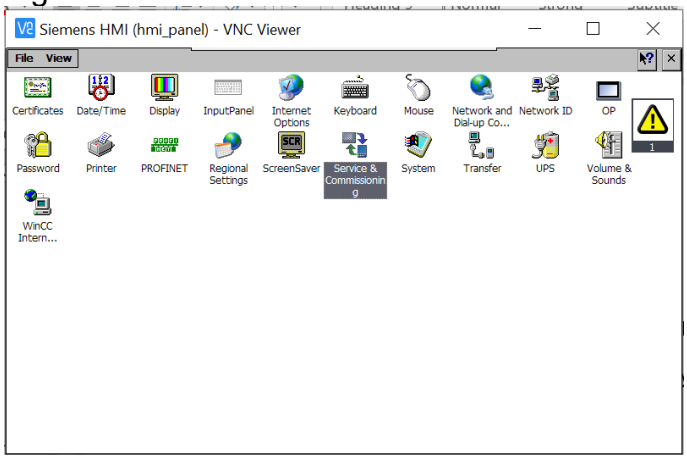


Figure 12-3

17. Double Tap on “Service & Commissioning”.
18. Press on the "Restore" tab, then "Next".

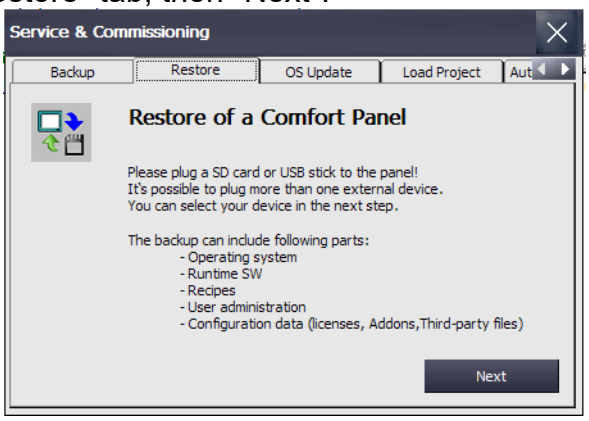


Figure 12-4

19. Under Accessible devices click on the "Storage Card SD" or "Storage Card USB" depending on which media you put in the device, then press on “Next”.

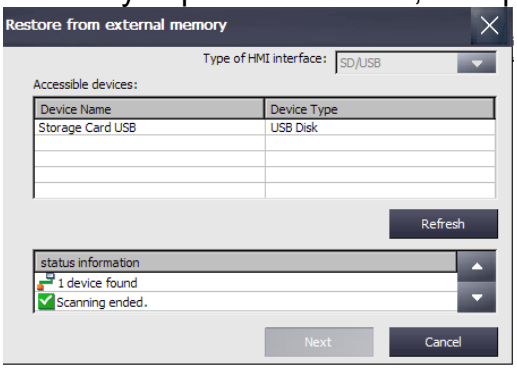


Figure 12-5

20. A file should show under "Backup files on \Storage Card USB" (or "SD"), select the file that says something similar to this: "\TP700 Comfort.Universal HMI V04 08252020.075346.brf".

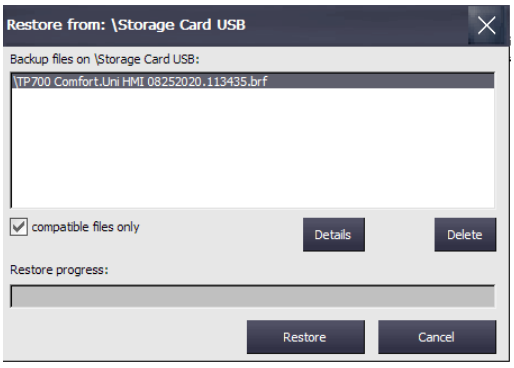


Figure 12-6

21. Click on "Restore". A box will display asking if you want to really restore the backup file. Press “Yes”.

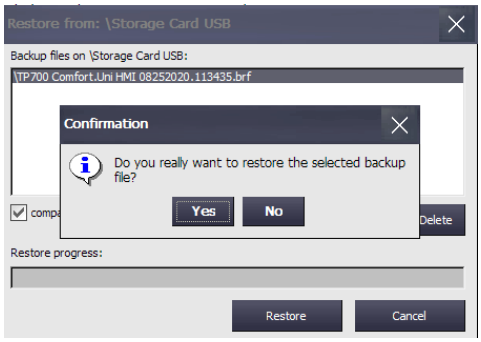


Figure 12-7

22. A box will display showing the progress of the program transferring to the HMI. When this is done you will need to click on "OK".
23. Remove the USB/SD card and restart the HMI.
24. You are finished and the new program should show the new version on the Main Menu.

D. How to obtain Totals reports

3. For any Totals to be saved there must be a USB Stick inserted into the USB port located on the side of the Umbilical HMI panel or inside the panel of the HMI with the port located as in Figure 12-2.

Note: The USB stick is automatically populated on any change of the totals up to 500 instances. The file is called “Wash_And_Reset_Log*.CSV” which can be imported by a number of programs including Excel.

4. Remove the USB stick.
5. Insert the USB stick into a PC or laptop and open the folder containing the drive.
6. Download the file(s) to a PC or laptop.
7. Delete the same data file(s) (that were downloaded) that are on the USB stick.
8. Place the USB stick back into the USB port on the HMI panel.
9. The HMI will automatically begin collecting data again and store it on the USB.

E. How to check the Axiomatic card to the proportional valve

Note: Also steps to check the Analog card from the PLC

1. There are 4 connectors on the right side of the card,

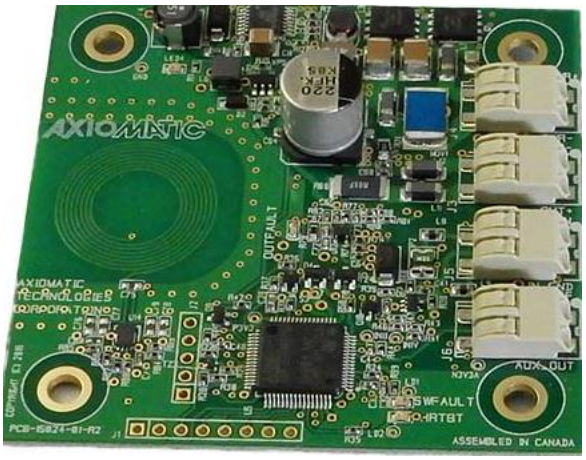


Figure 12-8

2. You want to measure across pins 1&2 24VDC. This should always have 24vdc on the pins.
3. Pins 3&4 = Out - & Out + (2nd plug from the top)
4. Pins 5 & 6 = AD In & In_GND (3rd plug from top)
   NOTE: Don't worry about the 4th plug from the top.
5. You will run the Gantry using the switch in the panel after every setting.
6. Set Parameter 133 to:
   a. 0, run the gantry and measure all pins and record the results (run the gantry at the same time taking measurements).
   b. 25, run the gantry and measure all at the same time.
   c. 50, run the gantry, etc.
   d. 75, etc.
   e. 100, etc.
7. Record all of your findings and email them to me@ rryen@autec-carwash.com

Model AX020700: 4 2-pin push-in terminal blocks (Wago P/N: 2060-402/998-404)
Use 18-20 AWG wire for connection to power and solenoid.

PIN #	FUNCTION
1	POWER +
2	POWER -
3	SOLENOID -
4	SOLENOID +
5	INPUT +
6	INPUT GND
7	+5V REFERENCE
8	AUXILIARY OUTPUT

Figure 12-8

Section 13 – Control of Peripheral Equipment

Peripheral Equipment **Page**

1. AUTOMATIC DOOR CONTROL PACKAGE……190
2. EXTERNAL BLOWER CONTROL……..196
3. RECLAIM SYSTEMS……197
4. R/O (SPOT-FREE SYSTEMS) ……197
5. R/O CHEMICAL SUPPLY (ROCS) ……198
6. ENTRY SYSTEMS……198
7. PRE-SOAK FUNCTIONS……200
8. POST-WASH (RINSE ARCH) FUNCTIONS……201
9. UNDERBODY FUNCTION……203
10. CHEMICAL TIRE APPLICATION (CTA) ……204
11. BUG SPRAYER FUNCTION……208
12. DRIVE BY WHEEL/ROCKERPANEL BLASTER……208
13. TREADLE BUZZER ……210
14. WINDOW WASH DOWN……..211
15. FREEZE PROTECTION……...212

A. Automatic Door CONTROL Package

The AUTEC ATF series carwash equipment comes standard with automatic door control functionality built into the PLC program. However, automatic door operation will require the purchase of safety photoeyes, a thermostat, and possibly an interface box, depending on the type of doors used.

NOTE: Refer to Section 9-7 for Door Photoeye wiring diagram.

1. Related I/O and Timers

Inputs	Description
A18	Exit Bellswitch / Photoeye
A15	Treadle Switch
A19	Entrance Bellswitch / Photoeye
A7	Entrance Door Photoeye
A6	Exit Door Photoeye
A5	Automatic Door Thermostat

Outputs	Description
R17	Entrance Door Close
R18	Entrance Door Open
R19	Exit Door Close
R20	Exit Door Open

Timers	Description	Default Value
25	Door Low Temp Verify	300 sec
26	Door Low Temp Ok	300 sec
28	Entrance Door Open Signal Duration	1 sec
31	Exit Door Open Signal Duration	1 sec
32	Exit Door Close Signal Duration	1 sec
33	Entrance Door Close Signal Duration	1 sec
35	Exit Door Close Delay	15 sec
66	Exit Door Close If No Exit Bell	300 sec
85	Entrance Door Photoeye On-Delay	1 sec
86	Entrance Door Photoeye Off-Delay	1 sec
87	Entrance Door Close Verify	10 sec
89	Exit Door Photoeye On-Delay	1 sec
90	Exit Door Photoeye Off-Delay	1 sec
91	Exit Door Close Verify	10 sec
92	Exit Door Close after Photoeye is Re-made	10 sec
93	Entrance Door Close after Photoeye is Re-made	10 sec

2. Program Functionality

a. Door control functionality requires a safety Photoeye on both the entrance and exit door wired normally closed, light operate (i.e. when Photoeye is clear, input is energized). Refer to Fig. 1 for Photoeye wiring. The automatic door control becomes active when the door thermostat input (A5) has an uninterrupted thermostat signal for 5 minutes (timer #25).

b. Once active, the PLC will monitor both the Entrance and Exit Door Photoeyes (inputs A6 & A7). ***At no time will either door close if the respective photoeye is blocked***.

c. If a photoeye is blocked when a door close signal would normally occur, the PLC will wait for the photoeye to clear. Once the photoeye is clear, a door down signal will be generated once the 10 second safety timer (# 92 or 93) expires.

d. If a photoeye becomes blocked within 10 seconds (timers # 87 & 91) of a door down signal, the door will be reopened and behave as described in No. 3 above.

e. Door open and close signals are 120 VAC (1/2 A max load) outputs lasting one second (timers # 28, 31, 32, 33). These are control signals and not intended to power a motor or actuator.

f. Door photoeye and thermostat inputs are 24 VDC.

g. Once active, the door controller will close both the entrance and exit doors if no wash is in progress. If a wash is in progress, the doors will close as specified below.

h. Upon activating a wash or driving over the entrance bell switch, the entrance door will open allowing entry to the wash bay.

i. The Entrance Door will close upon startup of the equipment, or if the equipment never starts, the door will close after a 5 minute safety timer expires (#66).

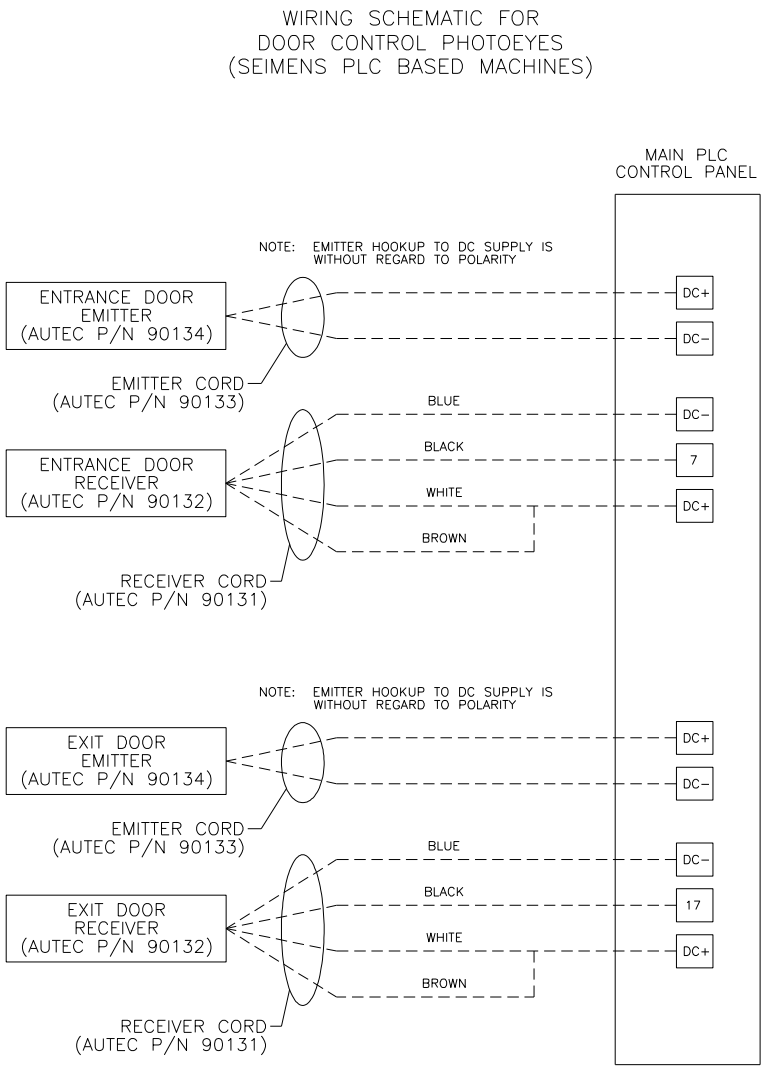
j. The Exit Door will open at the completion of the wash, or if the exit bell switch is triggered. A safety timer (#66) will also start at this point.

k. As the car leaves the bay, it activates the exit photoeye or bellswitch, starting a 15s exit door timer (#35) to close the door. Should the car not activate the photoeye or bellswitch, the doors will close after the safety timer (#66) expires.

l. The automatic door control becomes inactive when the door thermostat input loses the thermostat signal for a continuous 5 minutes (timer #26). The doors will remain closed, however, until the next wash input or entrance bellswitch opens the entrance door and the wash completion or exit bellswitch opens the exit door.

m. An optional Door Control Box is available that provides manual operation for the doors, converts door control signals to the correct voltage, and contains a thermostat to activate automatic door control operation. Safety photoeyes are purchased separately.

n. The manual controls on the Door Control Box will open doors at any time, however they will only close the doors if the safety photoeyes are clear.



Photoeyes are to be wired normally closed, light operate (receiver output conducts when the light beam is clear). This schematic is for Banner SM30 Series, 24VDC photoeyes. For other photoeyes, refer to the manufacturer's instructions for proper installation.

Figure 1 – Door Control Photoeye Wiring

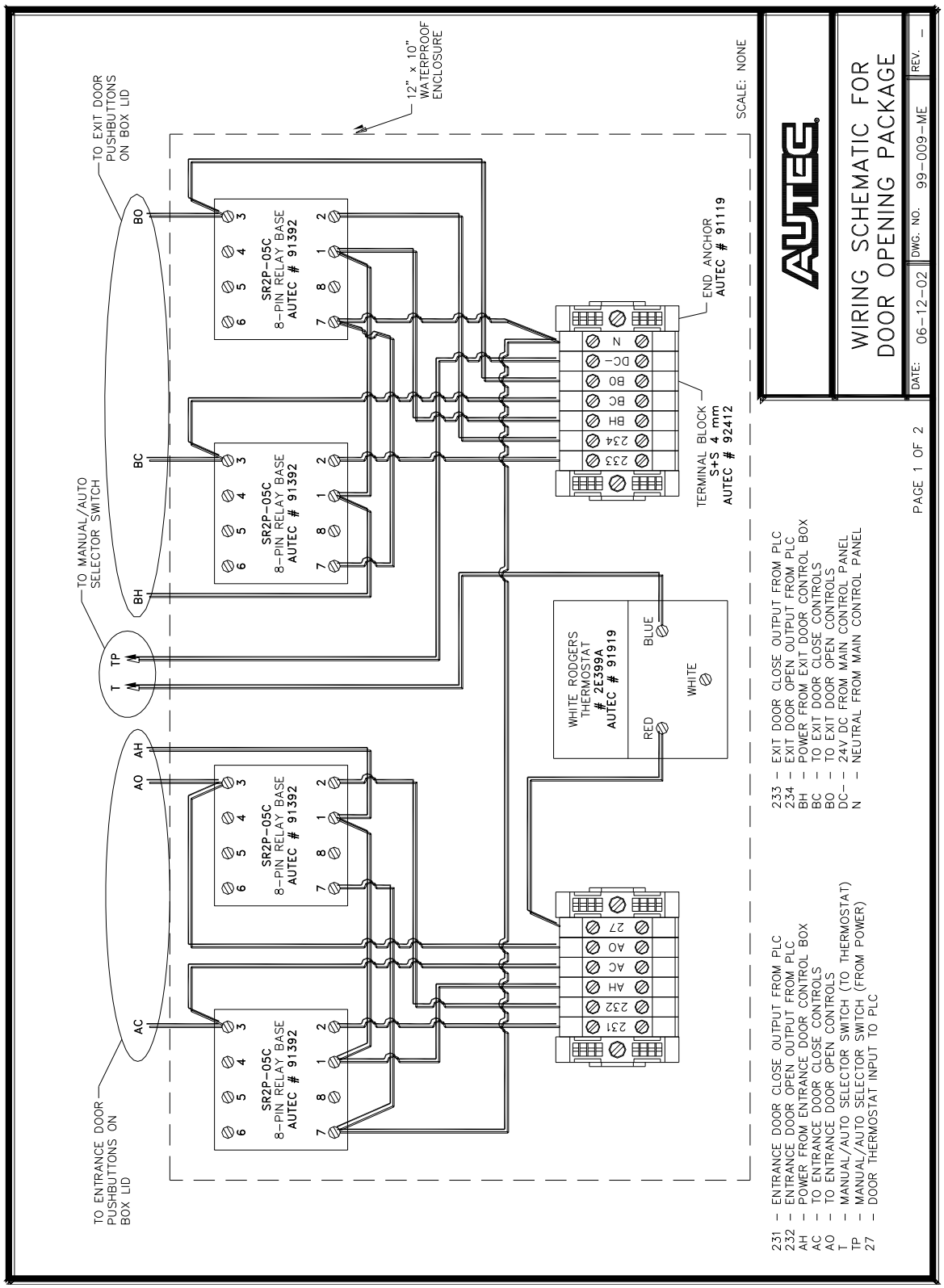


Figure 2 – Optional Door Control Box

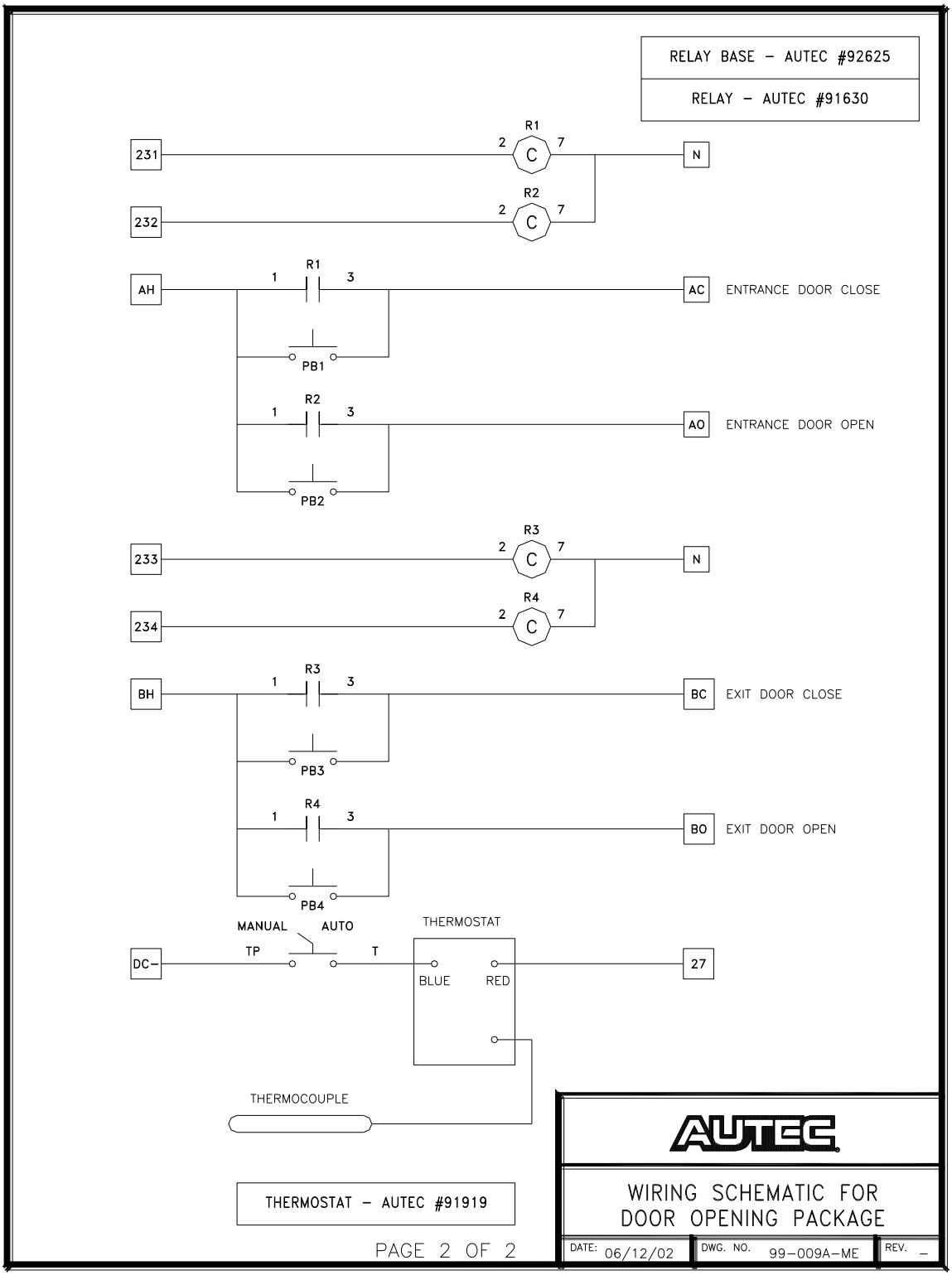


Figure 3 – Wiring Schematic for Optional Door Control Package

B. External Blower Control

AUTEC Carwash Equipment comes standard with external blower control functionality built into the PLC program. The blower controls consist of inputs to start and stop blowers and two sets of programmable blower outputs. One set of blowers, both sets of blowers, or no blowers may be programmed on any given wash package. Each blower set contains three outputs to energize the blower motors. These outputs are stagger-started to reduce the high current draw during start-up.

1. Related I/O and Timers

Inputs	Description
A15	Treadle Switch
A18	Exit Bellswitch / Photoeye

Outputs	Description
R10	#1 Blower Motor Starter
R11	#2 Blower Motor Starter
R12	#3 Blower Motor Starter

Timers	Description	Default Value
10	Blower #2 Delay	6 sec
11	Blower #3 Delay	6 sec
23	Blower On	35 sec
42	Blower Start Delay	5 sec

2. Program Functionality

a. Blower Activation

i. Depending on which sets of blowers are programmed, the first Blower output R10 is activated once the Blower Start Delay timer (#42) expires. The Blower Start Delay timer starts when the vehicle leaves the treadle switch Input A15 at the completion of the wash. Or, if the short bay option is selected in the site setup information, the Blower Start Delay timer will start at the completion of the wash regardless when the car leaves the treadle.

ii. The second blower output R11 starts at the completion of the Blower #2 Delay timer (#10). This timer starts at the completion of the Blower Start Delay timer (#42).

iii. The third blower output R12 starts at the completion of the Blower #3 Delay timer (#11). This timer starts at the completion of the Blower #2 Delay timer (#10).

b. Blower De-Activation

i. All blowers will turn off after the completion of the Blower On timer (#23). This timer starts at the same time the first blower output R10 is activated.
ii. An input from the Exit Bell Switch or Photoeye A18 starts a Blower Shutoff timer (#37) which will turn off all blowers once it expires, regardless if time is still left on the Blower On timer (#23).

C. Reclaim Systems

AUTEC Carwash Equipment comes standard with dedicated reclaim outputs. Refer to reclaim manufacturer's documentation for installation and functionality.

a. Related I/O and Timers

Inputs	Description
A42	Reclaim Alarm

Outputs	Description
R21	Wash Water Source
R23	Underbody Water
R13	High Pressure Pump Starter

D. R/O (Spot-free systems)

AUTEC Carwash Equipment comes standard with dedicated outputs for R/O systems. Refer to R/O system manufacturer's documentation for installation.

1. Related I/O and Timers

Outputs	Description
R26	Spot Free Rinse Pump
R27	External Spot Free Rinse Valve

2. Program Functionality

Wash packages can be programmed to use Spot Free water for both Gantry Rinse and External Rinse (see Section 7). Anytime the program calls for Spot Free water, the Spot Free Rinse Pump (output R26) and the External Spot Free Rinse Valve (output R27) will be activated. Because the Spot Free Rinse Pump is a dedicated output, other functions can also be connected to the Spot Free Pump output to supply spot free water if so desired (see Window Wash Down later in this section).

E. R/O chemical supply (rocs)

The R/O Chemical Supply (ROCS) system supplies R/O water to chemical mixing stations from an existing R/O storage tank. It consists of an air diaphragm pump, air regulator, bladder storage tank, and the appropriate plumbing to transfer R/O water from the R/O storage tank to the Hydrominder feeding a chemical mixing station.

1. Related I/O and Timers

Outputs	Description
R26	Spot Free Rinse Pump
R27	External Spot Free Rinse Valve

2. Program Functionality

Wash packages can be programmed to use Spot Free water for both Gantry Rinse and External Rinse (see Section 7). Anytime the program calls for Spot Free water, the Spot Free Rinse Pump (output R26) and the External Spot Free Rinse Valve (output R27) will be activated. Because the Spot Free Rinse Pump is a dedicated output, other functions can also be connected to the Spot Free Pump output to supply spot free water if so desired (see Window Wash Down later in this section).

F. Entry systems

AUTEC Carwash Equipment can be interfaced with most commercial entry systems. However, only the Unitec WashSelect II offers a two-step selection process to allow the customer to choose between a Touch Free wash and is the only entry system AUTEC recommends.

1. Related I/O and Timers

Inputs	Description
A26	Wash #1
A27	Wash #2
A28	Wash #3
A29	Wash #4

Outputs	Description
R7	Carwash-In-Use Signal

Timers	Description	Default Value
21	Hamilton Cycle Inhibit Off	2 sec

2. Program Functionality

a. Entry System Wiring – Following are some points to keep in mind when installing the entry system. Refer to the entry system manufacturer's documentation for specific installation instructions.

i. The carwash can have up to 9 wash packages programmed at one time.

ii. All wash inputs are 24VDC. You must provide -24VDC from the entry system to the Main PLC Control Panel.

iii. Supply the dry contacts on the Entry System with -24VDC from the Main PLC Control Panel. Wire the dry contact for each wash package on the entry system to the desired wash package on the carwash PLC. If the Entry System does not have dry contacts, you must provide relays to control the -24VDC wash inputs. DO NOT wire an output from the entry system directly to the carwash PLC. Refer to the entry system manufacturer's documentation for specific wiring instructions.

iv. The Wash-In-Use signal from the PLC is 120VAC. You must provide a neutral from the Main PLC Control Panel along with the Wash-In-Use Signal. Refer to the entry system manufacturer's documentation for specific wiring instructions.

v. An entry system alarm input can be monitored by the carwash PLC which is -24VDC and must be supplied from the Main PLC Control Panel. Refer to the entry system manufacturer's documentation for specific wiring instructions.

b. Operation – During normal operation the carwash PLC communicates with the entry system as follows:

i. If the carwash is idle (no wash in progress), the entry system may send a wash input to the carwash PLC.

ii. Once the carwash PLC receives a wash input, it will turn on the green Enter Light and arm the carwash for a vehicle to enter.

iii. After the carwash has been armed with a wash, the first occurrence of an Entrance Bell Switch, any Pre-Wash Start input, or the Treadle Switch input will activate the Wash-In-Use signal.

iv. The Wash-In-Use signal will remain energized until the exit light has timed out after the completion of the wash.

v. Once the Wash-In-Use signal has turned off, the carwash PLC can receive a new wash input.

vi. If an Entry System Fault input (A41) is received, the carwash PLC will register a Fatal Fault and shut down operations.

c. Shut Down – If used with a Unitec system, the carwash PLC can shut down the entry system when the carwash goes out of service. For other brands of entry systems, check with the manufacturer for compatibility.

i. If the carwash PLC registers a fatal fault or goes into freeze protection, the PLC will cycle the Wash-In-Use signal on for one second, off for one second, and then on continuously. This will signal the entry system that the carwash is shutdown which will take the entry system out of service.

ii. While the entry system is out of service, it will not accept any codes, credit transactions, or money.

iii. Once the fault clears or the carwash comes out of freeze protection, the Wash-In-Use signal will turn off which will bring the entry system back in service.

G. Pre-soak functions

The AUTEC 260 series carwash can control 1 Pre-Soak function (in addition to Underbody and CTA applications). Pre-soak functions typically consist of chemical application arches or high pressure blasters mounted at the entrance end of the wash bay prior to the carwash.

1. Related I/O and Timers

Inputs	Description
A15	Treadle Switch
A22	Pre-Soak #1 Start Photoeye
A23	Pre-Soak Stop Photoeye

Outputs	Description
R22	Pre-Soak #1 Start

Timers	Description	Default Value
18	Pre-Soak #1 Duration	30 sec
95	Pre-Soak #1 Photoeye On-Delay	0.1 sec
112	Pre-Soak Stop Photoeye On-Delay	0.1 sec

2. Program Functionality

a. Pre-Soak Programming – Each wash package can have up a pre-soak application programmed (in addition to Underbody or CTA). (Refer to Section 7 for programming wash packages.)

b. Operation

i. The Pre-Soak function is activated by its own input R22 which can be triggered by any suitable device (bell switch, photoeye, proximity sensor, etc.). If photoeyes are used, a Photoeye On-Delay timer # 95 can be used to fine tune when the application will start relative to the photoeye. If a bellswitch or other momentary type of device is used, this timer should be left at its default value (0.1 sec).

ii. Once a Pre-Soak function is activated, a corresponding Pre-Soak Duration timer (#18, 47, 48, or 49) will start. When this timer expires, the Pre-Soak function will be turned off.

iii. A Pre-Soak Stop input (A24) is provided which will override the Pre-Soak Duration timers and extinguish all Pre-Soak functions at one time. This input also has an On-Delay timer (#112) which may be utilized if using a photoeye.

iv. All Pre-Soak functions are terminated when the Treadle Switch input (A15) is recognized regardless of whether the Pre-Soak Duration timers have expired or the Pre-Soak Stop input has occurred.

H. Post-wash (Rinse arch) functions

The AUTEC carwash can control Post-Wash Rinse functions, consisting of Fresh Water or Spot Free Rinse, with the ability to add Rinse Aid chemical. Post wash functions typically consist of a rinse arch or chemical application arch mounted at the exit end of the wash bay, between the carwash and the exit door or any external blowers. Each Post-Wash function is independently programmed and controlled.

1. Related I/O and Timers

Inputs	Description
A18	Exit Bell Switch
A15	Treadle Switch
A24	Rinse Arch Stop Photoeye

Outputs	Description
R26	Spot Free Rinse Pump
R25	Fresh Water Rinse Pump

R38	Rinse Chemical Pump
R24	External Fresh Water Rinse Valve
R27	External Spot Free Rinse Valve

Timers	Description	Default Value
20	Rinse Arch Duration	30 sec
37	Rinse Arch Shut-Off-Delay	5 sec
50	Rinse Arch Stop Counter	1
49	Post-Wash Chemical Arch Duration	30 sec
97	Rinse Arch Stop On-Delay	0.1 sec

2. **Program Functionality**

a. Post-Wash Programming – Each wash package can have up to two Post-Wash applications programmed (in addition to blowers). (Refer to Section 7 for programming wash packages.)

b. Operation

i. All Post-Wash functions are activated when the vehicle leaves the treadle (Input A15) or, if Short Bay Option is programmed (see Section 7), the Post-Wash functions will start as soon the Gantry wash completes. Note: If a drive-off is detected while a wash is in progress, by the loss of the treadle input (A15), the External Rinse Arch programmed for that wash package, if any, will activate automatically to rinse the vehicle.

ii. Depending on what is programmed in the wash package, the appropriate post-wash outputs will energize.

1. External Fresh Water Rinse – Outputs R24 & R25

2. External Spot Free Rinse – Outputs R26 & R27

3. Rinse Chemical Pump (can be plumbed to either arch) – Output R38

4. Post-Wash Chemical Arch – Output R49†

iii. All Post-Wash functions will terminate in one of three ways:

1. The post-wash functions will terminate at the end of their respective duration timers (# 20 or 49). These timers start with the post-wash function.

2. Post-wash functions are stopped by a Rinse Arch Stop input (A24) which can be either a bellswitch or photoeye. If a bellswitch is used then the Rinse Arch Stop Counter (Counter # 50) should be set to 2 which will count two pulses before the input is recognized. If a photoeye is used then leave the Rinse Arch Stop Counter at 1. Also, there is a Rinse Arch Stop On-Delay (timer #97) that can be used with a photoeye to fine tune the timing between the photoeye and the termination of the post-wash arches.

3. The Exit Bell Switch input (A18) will start a Rinse Arch Shut Off-Delay timer (#37 – 5s default) which will shut off both arches when it expires, regardless of whether the arch duration timers have expired.

I. Underbody function

AUTEC ATF series carwashes have dedicated I/O to control an Underbody Wash. The Underbody Wash consists of a spray manifold that mounts on the wash bay floor at the entrance of the carwash. As a vehicle enters the wash bay, a bellswitch or photoeye triggers the underbody spray which remains on until it times out or is stopped by another input. The underbody function is programmable for each wash package (see Section 7 for wash package programming).

1. Related I/O and Timers

Inputs	Description
A15	Treadle Switch
A20	Underbody Start Bellswitch / Photoeye
A23	Pre-Soak Stop Photoeye

Outputs	Description
R23	Underbody Wash Water Valve

Timers	Description	Default Value
19	Underbody Duration	30 sec
107	Underbody Photoeye On-Delay	0.1 sec
112	Pre-Soak Stop Photoeye On-Delay	0.1 sec

2. Program Functionality

a. Underbody Programming – Underbody can be programmed into any wash package. (Refer to Section 7 for programming wash packages.)

b. Operation

i. The Underbody Function is activated by its own input (A20) which can be triggered by any suitable device (bellswitch, photoeye, proximity sensor, etc.). If photoeyes are used, a Photoeye On-Delay timer (#107) can be used to fine tune when the application will start relative to the photoeye. If a bellswitch or other momentary type of device is used, these timers should be left at their default value (0.1 sec).

ii. Once the underbody wash is activated, a corresponding Underbody Duration timer (#19) will start. When this timer expires, the underbody function will turn off.

iii. A Pre-Soak Stop input (A23) is provided which will override the Underbody Duration timer and all Pre-Soak times and extinguish the underbody and all Pre-Soak functions at one time. This input also has an On-Delay timer (#112) which may be utilized if using a photoeye.

iv. The Underbody Function is terminated when the Treadle Switch input (A15) is recognized regardless of whether the Underbody Duration timer has expired or the Pre-Soak Stop input has occurred.

J. Chemical Tire Application (CTA)

AUTEC ATF series carwashes have dedicated I/O to control a Chemical Tire Application (CTA). The CTA option consists of spray nozzles that mount on each side of the wash bay prior to the carwash. A bellswitch, mounted just before the spray nozzles, activates the CTA pump to apply chemical to the vehicle's tires and wheels as it enters the wash bay. The CTA Function is programmable for each wash package (see Section 7 for wash package programming).

1. Related I/O and Timers

Inputs	Description
A19	Entrance Bellswitch / Photoeye

Outputs	Description
R3	CTA Pump

Timers	Description	Default Value
2	CTA Duration	1.5 sec

2. Program Functionality

a. CTA Programming – CTA can be programmed into any wash package. (Refer to Section 7 for programming wash packages.)

b. Operation

i. The CTA chemical pump is activated by the Entrance Bellswitch input (A19) which can be triggered by any suitable device (bell switch, photoeye, proximity sensor, etc.). However, no On-Delay timer is provided with this input.

ii. Once the CTA pump is activated, a corresponding CTA Duration timer (#2) will start. When this timer expires, the CTA pump will turn off.

iii. The CTA pump will activate each time the Entrance Bellswitch input is activated until the Treadle Switch input (A15) is made or the wash package is cancelled.

Installation Procedures

ACTA-1

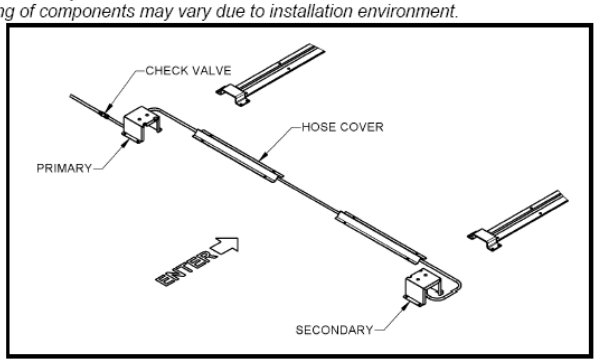
Installation Procedures

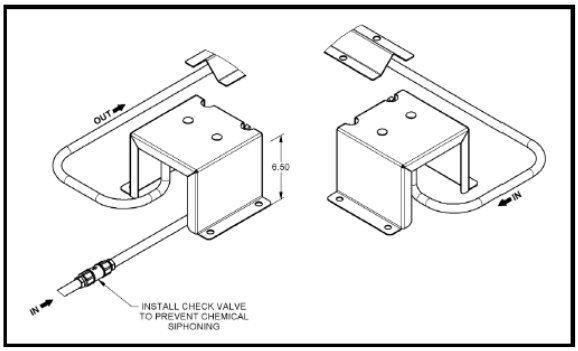
These are factory recommended instructions.
Actual plumbing and mounting of components may vary due to installation environment.

Installation Steps:

1. Install components as shown using 1/2 X 3-3/4 anchor bolts or equivalent.

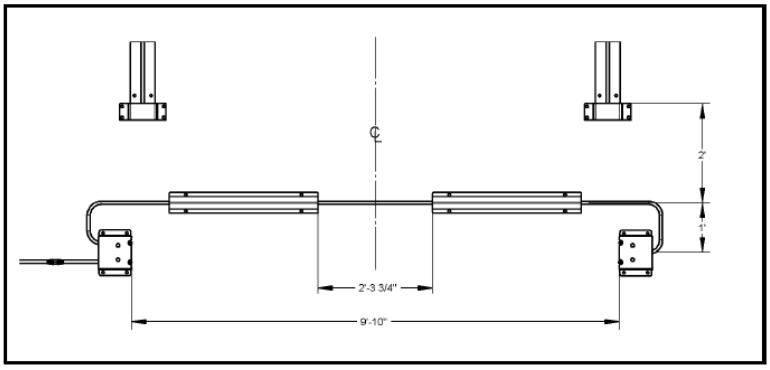
2. Connect hose from chemical pump to Primary Unit.





3. Assemble barbs on check valve and position it inline near the Primary unit.

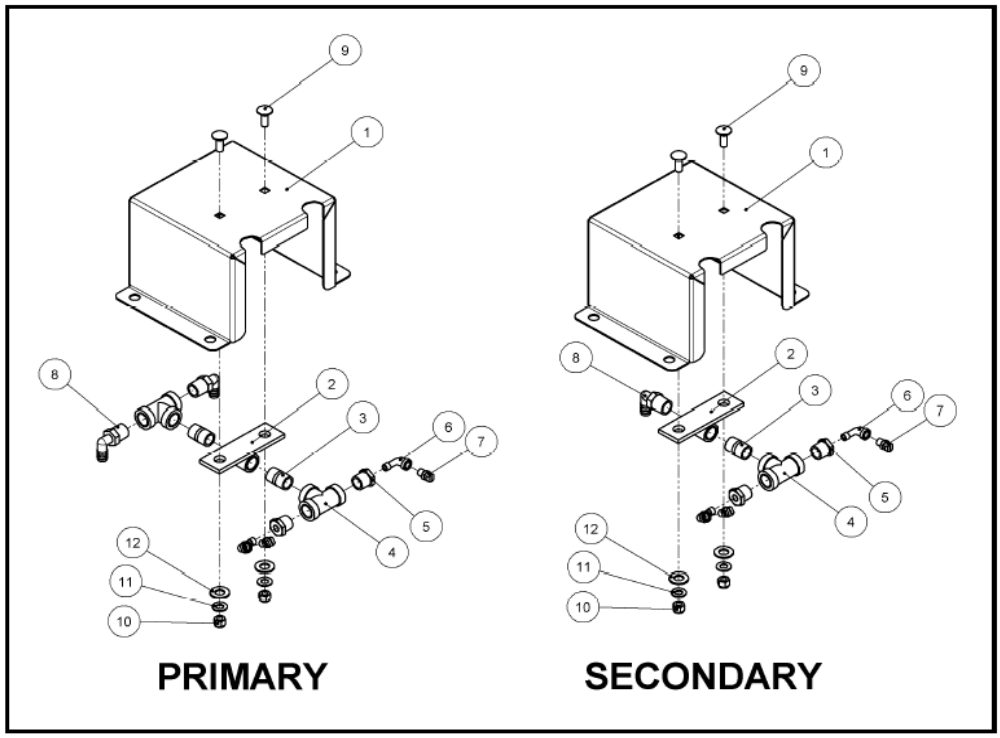
4. Route the hose from the Primary unit, under the Hose Guards, to the Secondary Unit.



Rev 06/29/05

Maintenance and Repair

Maintenance and Repair



Item	Part No	Description
1	884210	CTA-RISER
2	883060	CTA-COUPLING BRKT-WLDASM
3	91742	FTG-NIPPLE-SS 1/2XCLOSE
4	91755	FTG-TEE-SS 1/2
5	91856	FTG-BUSHING-SS 1/2X1/8
6	92085	FTG-ELBO-STRT-90-SS 1/8
7	91708	NOZZLE-SS-4010-1/8
8	91251	FTG-BARB-MALE-90-POLYP 1/2X1/2 NPT
9	99013	BOLT-CARRIAGE 3/8-16 X 1 SS
10	99089	NUT-LOCK 3/8-16 SS
11	99106	WASHER-FLAT 3/8 SAE-SS
12	99099	WASHER-FLAT 1/2 SAE-SS
	92738	VALVE-WTR-CHECK-PVC 1/2 ADJ
	886590	HOSE COVER-SS
	91513	ANCHOR-CONCRETE-1/2X3-3/4
	99065	NUT-HEX 1/2-13 SS

K. Bug sprayer function

AUTEC ATF series carwashes have dedicated I/O to control a Bug Spray function. The option consists of a spray bar that mounts on the wash bay floor, in front of the vehicle, and a chemical pumping station. It applies a chemical to the front of the vehicle prior to the start of the wash to help loosen insect splatter and other road grime. The Bug Sprayer Function is programmable for each wash package (see Section 7 for wash package programming).

1. Related I/O and Timers

Inputs	Description
N/A	N/A

Outputs	Description
R4	Bug Sprayer Pump

Timers	Description	Default Value
4	Treadle Verify	4 sec
58	Bug Sprayer Duration	6 sec

2. Program Functionality

a. Bug Sprayer Programming – The Bug Sprayer can be programmed into any wash package. (Refer to Section 7 for programming wash packages.)

b. Operation

i. The Bug Sprayer is activated by the Treadle Switch input (A15) when a vehicle parks on the treadle.

ii. Once the bug sprayer is activated, a corresponding bug Sprayer Duration timer (#58) will start. When this timer expires, the bug sprayer function will turn off.

iii. If the vehicle leaves the treadle prior to the Treadle Verify timer (#4) expiring, the bug sprayer will deactivate and activate again each time the treadle input is made. Once the Treadle Verify timer (default 4 sec) is satisfied, the bug sprayer will not activate again during the wash in progress.

L. Drive-By Wheel/Rocker panel Blaster

AUTEC carwashes have dedicated I/O to control a Drive-By Wheel/Rockerpanel Blaster function. This option consists of an input to turn on the Gantry High

Pressure Wheel and Rockerpanel Blaster Nozzles as a vehicle is entering the wash bay to blast off as much grime as possible before the first wash pass. It is available on all EV1 series machines; however the 400 series carwash must have the High Pressure Tire and Wheel option. The Drive-By Blaster Function is programmable for each wash package but is typically only used on a friction wash type (see Section 7 for wash package programming).

1. Related I/O and Timers

Inputs	Description
A15	Treadle Switch
A21	Drive-By Rockerpanel Blaster Start

Outputs	Description
R13	High Pressure Pump Starter
S2	Rockerpanel Blaster Water Valve

Timers	Description	Default Value
45	Drive-By Rockerpanel Blaster Duration	30 sec
110	Drive-By Rockerpanel On-Delay	0.1 sec

2. Program Functionality

a. **Drive-By Rockerpanel Blaster Programming** – The Drive-By Rockerpanel Blaster can be programmed into any wash setup but is only recommended for friction wash packages. (Refer to Section 7 for programming wash packages.)

b. **Operation**

i. The Drive-By Rockerpanel Blaster is activated by the Drive-By Rockerpanel Blaster Start input (A21) which can be triggered by any suitable device (bell switch, photoeye, proximity sensor, etc.). If photoeyes are used, a Photoeye On-Delay timer (# 110) can be used to fine tune when the application will start relative to the photoeye. If a bellswitch or other momentary type of device is used, this timer should be left at its default value (0.1 sec).

ii. Once the Drive-By Rockerpanel Blaster is activated, a corresponding Drive-By Rockerpanel Duration timer (#45) will start. When this timer expires, the Drive-By Rockerpanel Blaster function will turn off.

iii. When the vehicle activates the Treadle Switch input (A15), the Drive-By Rockerpanel Blaster will turn off if its timer has not yet expired.

M. Treadle Buzzer

AUTEC ATF series carwashes have an optional Treadle Buzzer function that sounds a buzzer when the vehicle activates the treadle switch. This feature provides an audible signal to help people locate the treadle switch more efficiently. It will also sound the buzzer after the wash completes to signal the driver to exit.

2. Related I/O and Timers

Inputs	Description
A15	Treadle Switch

Outputs	Description
R28	Treadle Buzzer

Timers	Description	Default Value
3	Treadle Switch Verify	4 sec
80	Treadle Buzzer Duration	1 sec

3. Program Functionality

a. Wash Activation – Once a valid wash input has armed the carwash, the Treadle Buzzer will sound anytime the Treadle Switch input (A15) is activated. The duration of the buzzer is determined by the Treadle Buzzer Duration timer (#80). If the vehicle leaves the treadle switch prior to the Treadle Switch Verify timer (#3) expiring, it will resound each time the treadle switch input is activated. Once the Treadle Switch Verify timer has expired, the treadle switch buzzer will not sound again until the completion of the wash.

b. Wash Completion – The treadle buzzer will sound again one time at the completion of the wash in conjunction with the exit light.

N. Window Wash Down

AUTEC ATF series carwashes have an optional Window Wash Down function to help keep glass buildings and windows clean. It utilizes a spray bar mounted above the windows or glass panels to rinse the glass with water between washes. This helps prevent soap and chemicals from drying on the glass thus eliminating residue build up.

1. Related I/O and Timers

Inputs	Description
N/A	N/A

Outputs	Description
R29	Window Wash Down Water Source
R30	Glass Wash Down #1
R31	Glass Wash Down #2
R32	Glass Wash Down #3
R33	Glass Wash Down #4

Timers	Description	Default Value
77	Glass Wash Down Pause	1 sec
78	Glass Wash Down Duration	10 sec
79	Glass Wash Down Verify	30 sec

2. Program Functionality

a. Glass Wash Down Activation – Once the exit light and any external blowers have expired after a wash, the Glass Wash Down Verify timer (#79) starts. If the machine has not been armed with a valid wash input when this timer expires, the glass wash down function will start.

b. Operation – The Wash Down Function will turn on a water source, which could be a pump or a water valve, and then cycles through four water valve outputs. This allows you to wash smaller areas of glass at one time which reduces the size of the water supply required. The following sequence happens when the wash down function activates.

   i. When activated, the wash down function will turn on the window wash down water source output (R29), the glass wash down #1 valve output (R30) and start the glass wash down duration timer (#78).

   ii. Once the wash down duration timer expires, the glass wash down #1 valve output will turn off and the glass wash down pause timer (#77) will start.

iii. After the wash down pause timer expires, wash down #2 valve output will turn on and the wash down duration timer will restart.

iv. This sequence will continue with outputs #3 and #4, each valve staying open for the wash down duration timer and pausing between each for the wash down pause timer.

v. If a valid wash input is recognized by the PLC at any time during the wash down sequence, the wash down function will immediately terminate and reset.

O. Freeze Protection

AUTEC ATF series washers have an optional Freeze Protection function that will shut down the carwash and purge all water lines to prevent freezing. It utilizes a thermostat to initiate freeze protection which takes the wash out of service and shuts off all water sources to the equipment. The system will pressurize all water lines with air and sequentially open each point of use water valve to purge any water from the lines.

1. Related I/O and Timers

Inputs	Description
A14	Freeze Protection Thermostat

Outputs	Description
R22	#1 Presoak Arch Valve
R23	Underbody Wash Water Valve
R16	Freeze Protection Manifold
R7	Wash-In-Use Signal
R24	External Fresh Water Rinse Valve
R27	External Spot Free Rinse Valve
R30	Glass Wash Down #1 Valve
R31	Glass Wash Down #2 Valve
R32	Glass Wash Down #3 Valve
R33	Glass Wash Down #4 Valve
S3	Final Rinse Water Valve
S11	Foamer Air Valve
S28	Spot Free Final Rinse Valve (Gantry)
S2	Rockerpanel Blaster Water Valve
S10	Machine Wash Water Valve

Timers	Description	Default Value
27	Underbody Purge Duration	15 sec
29	Presoak Water Purge Duration	15 sec
30	External Rinse Arch Purge Duration	15 sec

34	Machine Wash Water Purge Duration	15 sec
36	Purge Start Delay	60 sec
39	Delay Between Each Purge	5 sec
40	Spot Free Purge Duration	15 sec
52	Rockerpanel Blaster Purge Duration	15 sec
56	Foamer Purge Duration	5 sec
64	Freeze Protection Verify	300 sec
74	Window Wash Down Purge Duration	5 sec
103	Foaming Presoak Auto Start	600 sec
106	Foaming Presoak Auto Run	30 sec
127	Post Wash Chemical Arch Purge Duration	10 sec
124	#1 Presoak Arch Purge Duration	10 sec
125	#2 Presoak Arch Purge Duration	10 sec
126	#3 Presoak Arch Purge Duration	10 sec
128	High Pressure Forward Purge Duration	10 sec
129	High Pressure Reverse Purge Duration	10 sec

2. Program Functionality

a. **Freeze Protection Activation** – The freeze protection function will activate when the Freeze Protection Thermostat input (A14) is held on continuously for the duration of the Freeze Protection Verify timer (#64). Once the Freeze Protection Verify timer is satisfied, the PLC will monitor the Wash-In-Use signal until a continuous inactive period of five seconds is detected, at which time the freeze protection sequence will start.

b. **Operation** – Once activated, the freeze protection option will perform the following functions.

   i. **Start Hot Water Circulation** – The Foaming Presoak Chemical Pump output (R43) will activate to circulate hot presoak to the machine. The pump will run for the duration of the Foaming Presoak Auto Run timer (#106) and restart intermittently as determined by the Foaming Presoak Auto Start timer (#103) as long as the machine stays in freeze protection mode.

   ii. **Take entry system out of service** – The PLC will turn the Wash-In-Use output (R7) on for one second, then off for one second, and then hold on continuously. This will signal the entry system that the carwash is shut down and take the entry system out of service. The entry system will remain out of service as long as the wash-in-use signal is held on. Once the wash-in-use signal is turned off, the entry system will return to service.

iii. **Shut Wash Bay Doors** – Both wash bay doors will be closed following the rules for door operation. (See the section on AUTOMATIC DOOR CONTROL earlier in this section.)

iv. **Shut off main water** – The Freeze Protection Manifold output (R16) will energize next. This output controls a normally open water valve on the main fresh water line feeding the carwash and a normally closed air valve supplying air to all waterlines. The water valve will close to shut off water to the system and the air valve will open to pressurize the water lines with air. A Purge Start Delay timer (#36) will then start which allows air pressure to build in the waterlines before purging starts.

v. **Purge waterlines** – After the purge start delay timer expires, the system will cycle through opening each water valve on the machine and in the wash bay. Each valve has a corresponding duration timer to control how long the valve stays open. There is also a Delay Between Purge timer (#39) that pauses between the activation of each water valve. The sequence of outputs and duration timers is as follows:

1. Machine Wash Water Valve (output S10, timer #34)
2. Spot Free Final Rinse Valve – Gantry (output S28, timer #40)
3. Fresh Water Final Rinse Valve – Gantry (output S3, timer #30)
4. High Pressure Forward Valve (output S26, timer #128)
5. High Pressure Reverse Valve (output S27, timer #129)
6. Rockerpanel Blaster Water Valve (output S2, timer #52)
7. Underbody (output R23, timer #27)
8. External Fresh Water Rinse Valve (output R24, timer #30)
9. External Spot Free Rinse Valve (output R27, timer #40)
10. Glass Wash Down #1 Valve (output R30, timer #74)
11. Glass Wash Down #2 Valve (output R31, timer #74)
12. Glass Wash Down #3 Valve (output R32, timer #74)
13. Glass Wash Down #4 Valve (output R33, timer #74)
14. #1 Presoak Arch Valve (output R22, timer #29)
15. #2 Presoak Arch Valve (output R46, timer #124)
16. #3 Presoak Arch Valve (output R47, timer #125)
17. #4 Presoak Arch Valve (output R48, timer #126)
18. Post Wash Chemical Arch Valve (output R49, timer #127)

c. **Return to service** – Once the freeze protection thermostat input has been continuously deactivated for the duration of the freeze protection verify timer, the system will terminate the freeze protection function.

i. If the purge sequence is still in process, it must complete before freeze protection is deactivated.

ii. The freeze protection output will deactivate which will close the air valve and open the main water valve.

iii. The wash-in-use signal will deactivate allowing the entry system to come back in service.

iv. The system is now ready to accept a new wash.

Setting up your Android or iPhone for HMI remote access.

This document will assist you with setting up your Android or iPhone for remote access of your HMI device. This will allow you to reset your machine, view totals, setup your washes, set the time for alarming, or virtually anything else you can do in person at your HMI (Human Machine Interface display) from any remote location.

NOTICE: you must have internet access to the router in order to have a connection to your HMI.

StrideLinx

For StrideLinx Routers (the router is black and is located in the main panel next to the PLC):

Stridelinx VPN: go to the App store and download "Stridelinx VPN"

NOTE: AUTEC must send you an invite so you can create your own username and password to login to the AUTEC account. Send us an email asking for the invitation to join our network and please include the name of the car wash(s) you are associated with. Once in our possession we will send an invitation back to you.

Follow the link in the E-Mail and set up your account. You will need to setup your password before you can access the mobile app or login to your PC. You can also access VNC from this app. You do not need to download VNC viewer unless you like to use that app to view your display. If you want to use VNC Viewer go to the next step, if not skip to "Setting up your HMI for text messages".

VNC Setup (optional):

For iPhones Go to the App Store and download VNC Viewer.

For Androids go to the Play Store and download Android VNC App.

For this app you will need to create an account in order to use it.

Once you have created an account then login to your account using your phone.

You will need to press the "+" button to create a new connection.

Androids:

Enter the following information:

a. Connection: New (create your own name)
b. Nickname:
c. Password: 100
d. Address (IP): 192.168.11.110
e. Port: 5900

Then press Connect.

iPhones:

Enter an IP Address: 192.168.11.110

Enter a name for your connection.

The screen will tell you it is an unencrypted connection, press Continue.

It will prompt you for a password: 100

You should be connected at this time.

Setting up your HMI for Text Messages:

Go to the HMI display and press the System button.

Then press the E-Mail button.

Then enter up to 4 text message formats or E-mail addresses.

At the Subject Line, enter your car wash name then press Enter.

Common Texting formats:

Tbaytel (Canada):807XXXXXXX@sms.rogers.com

Verizon 7045551212@vtext.com

AT&T: 7045551212@txt.att.net

Sprint: 17045551212@messaging.sprintpcs.com

Cricket: 17045551212@**sms**.mycricket.com

U.S. Cellular: Phone#@email.uscc.net

T-Mobile/Mint Mobile: 7045551212@tmomail.net or 7045551212@mailmymobile.net

Ring Central: 7045551212@rctext.com

Mobile carrier	SMS gateway domain	MMS gateway domain
Alltel[8]	sms.alltelwireless.com	mms.alltelwireless.com
AT&T[9]	txt.att.net	mms.att.net
Boost Mobile[8]	sms.myboostmobile.com	myboostmobile.com
Cricket Wireless	mms.cricketwireless.net	mms.cricketwireless.net
FirstNet	txt.att.net	mms.att.net
Google Fi[10]		msg.fi.google.com
MetroPCS	mymetropcs.com	mymetropcs.com
Republic Wireless[11]	text.republicwireless.com	
Sprint[8]	messaging.sprintpcs.com	pm.sprint.com
T-Mobile[8]	tmomail.net	tmomail.net
U.S. Cellular[8]	email.uscc.net	mms.uscc.net
Verizon Wireless[12]	vtext.com	vzwpix.com
Virgin Mobile[8]	vmobl.com	vmpix.com

SMS gateway domains for Canadian carriers:

Mobile carrier	SMS gateway domain
Bell Canada[13]	txt.bell.ca
Bell MTS[14]	text.mts.net
Fido Solutions[15]	fido.ca
Freedom Mobile[16]	txt.freedommobile.ca
Koodo Mobile[17]	msg.telus.com
PC Mobile[18]	mobiletxt.ca
Rogers Communications[19]	pcs.rogers.com
SaskTel[20]	sms.sasktel.com
Telus[21]	msg.telus.com