Tommy Heated Dryer

SUPPORT GUIDE

10/7/2024

TOMMY CAR WASH SYSTEMS | 648 S Point Ridge, HOLLAND, MI, 49423

Contents

Compatibility List

This document pertains to the following parts:

- E-HD-2020-US-NG
- E-HD-2020-US-PRO
- E-HD-2020-CA-NG
- E-HD-2020-US-NG-K
- E-HD-2020-US-PRO-K
- E-HD-2020-CA-NG-K
- E-HD-2020-US-NG-R-K
- E-HD-2020-US-PRO-R-K
- E-HD-2020-CA-NG-R-K

Section 1: Electrical

1.1 - Electrical Enclosure Parts Location

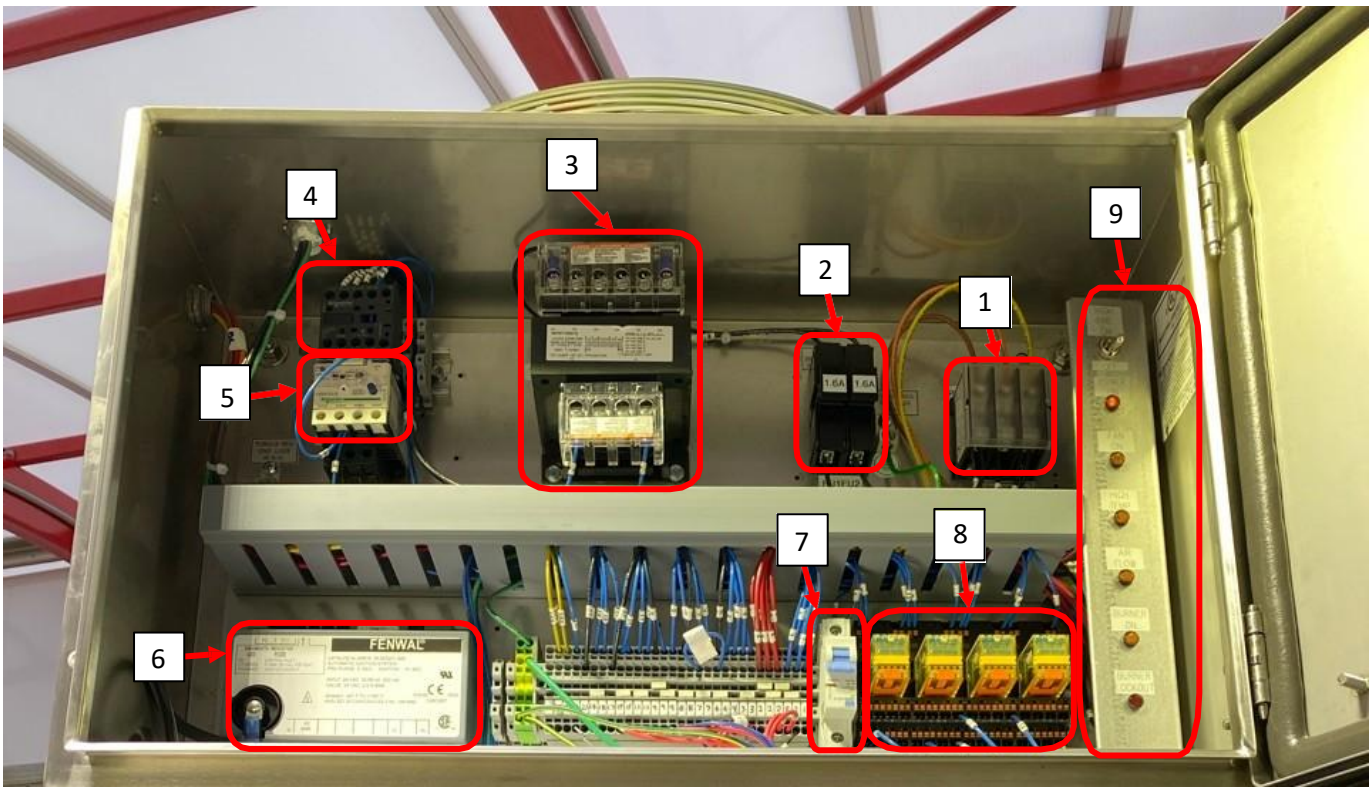

Figure 1 - Electrical Enclosure Parts Location

Item Number	Description	TCWS PN	
1	Power Distribution Block	Factory Part	
2	Fuses	P-HD-1022	
3	Control Power Transformer	P-HD-1012	
4	Motor Contactor	P-HD-1004	
5	Overload Relay	P-HD-1005	
6	Fenwal Flame Safeguard Control	P-HD-1011	
7	24V Circuit Breaker	P-HD-1018	
8	Relay base & relays	P-HD-1007 (base) P-HD-1006 (relay)	
9	Diagnostic Panel	See Figure 2	

1.2 - Diagnostic Panel

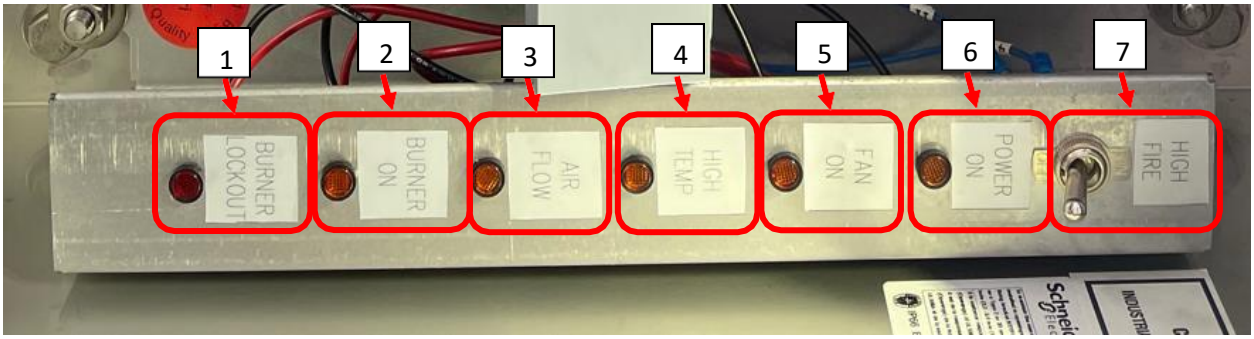

Figure 2 - Diagnostic Panel

Item Number	Description	Function
1	Burner Lockout	Indicator will light if burner has faulted.
2	Burner ON	Indicator will light when burner is operating.
3	Air Flow Indicator	Indicator will light when proper air flow has been met
4	High Temp Indicator	Indicator will light when unit has not overheated. If indicator does not light, the unit has overheated and the high temp limit switch will need to be reset.
5	Fan ON	Indicator will light if the fan is on.
6	Power ON	Indicator will light if unit has power.
7	High/Low Fire Selector	If the switch is in the UP position towards “HIGH FIRE” the unit will be in WINTER MODE. If the switch is in the down position the unit will be in SUMMER MODE.

Section 2: Gas

2.1 – Gas Enclosure Parts Location

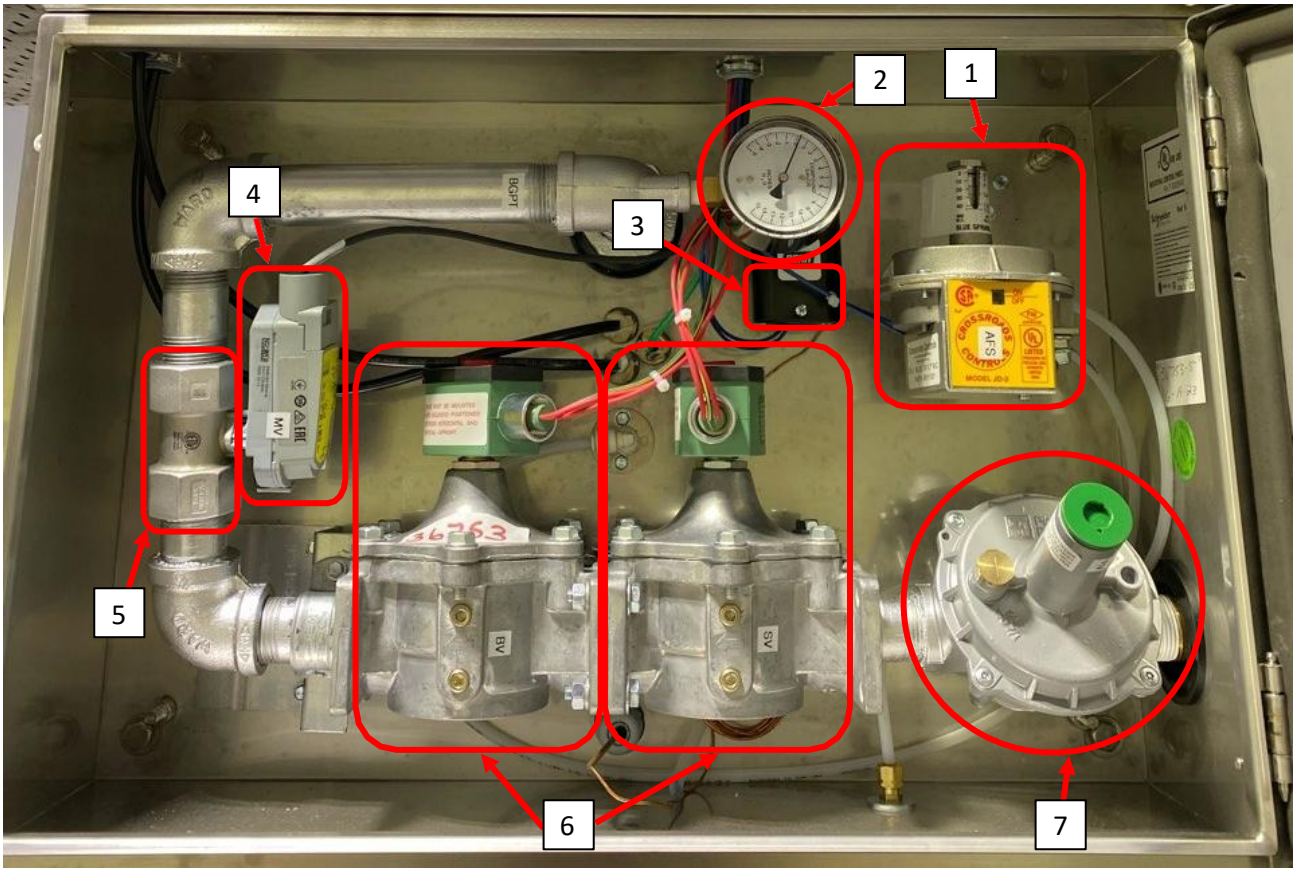

Figure 3 - Gas Enclosure Parts Location

Item Number	Description	TCWS PN
1	Airflow Switch	P-HD-1008
2	Pressure Gauge -6” WC to +10” WC	P-HD-1013
3	High Temp Limit Switch	P-HD-1010
4	Modulating Gas Actuator	P-HYD-2172
5	Modulating Gas Valve	P-HYD-2171
6	Main Gas Valve x 2 Valves	P-HD-1020
7	Pressure Regulator	P-HD-1000

2.2 – High Temperature Limit Switch Reset

Figure 4 - P-HD-1010 – High Temp Limit Switch

Reset High Temperature Limit Switch:

The high temperature limit switch (P-HD-1010) will trip when the temperature of the heated dryer reaches the set point. This switch is a safety feature of the heated dryer. The switch is a mechanical switch. If it trips, it will manually need to be reset. To reset it, press on the “PUSH” button on the top LH corner of the switch.

2.3 – High Temperature Limit Switch Set Point

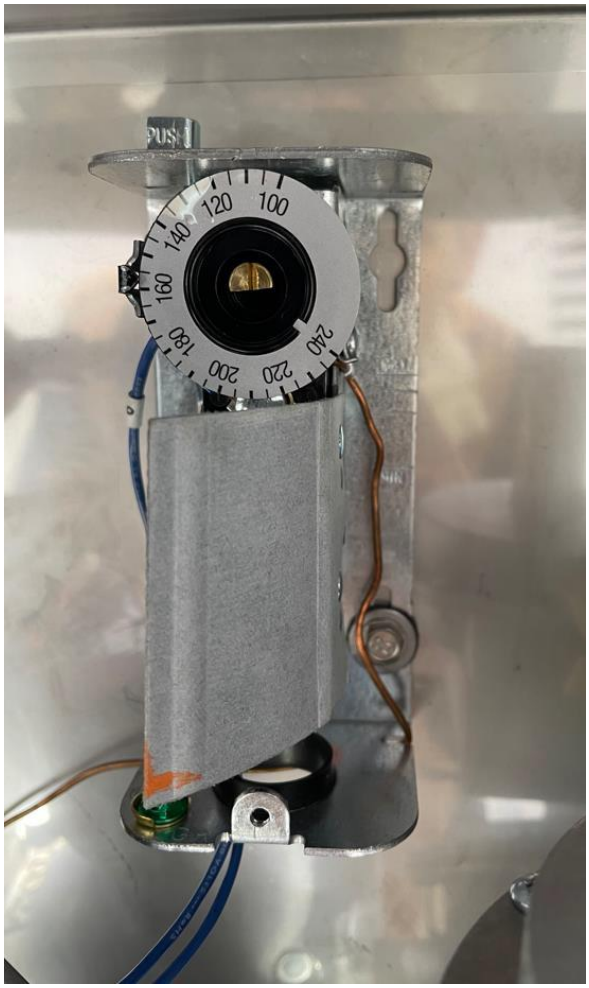

Figure 5 - Change the Set Point of the High Temp Limit Switch

Changing the Set Point

The high temperature limit switch is factory set to 180F. If adjusting is needed, remove the cover. Then stick a flat headed screwdriver in the brass screw of the center of the temperature adjuster and adjust the set point as needed. Install the cover back on the switch.

DO NOT SET THE SETPOINT HIGHER THAN 180F. This puts the unit at risk of overheating!!!!

2.4 – Burner

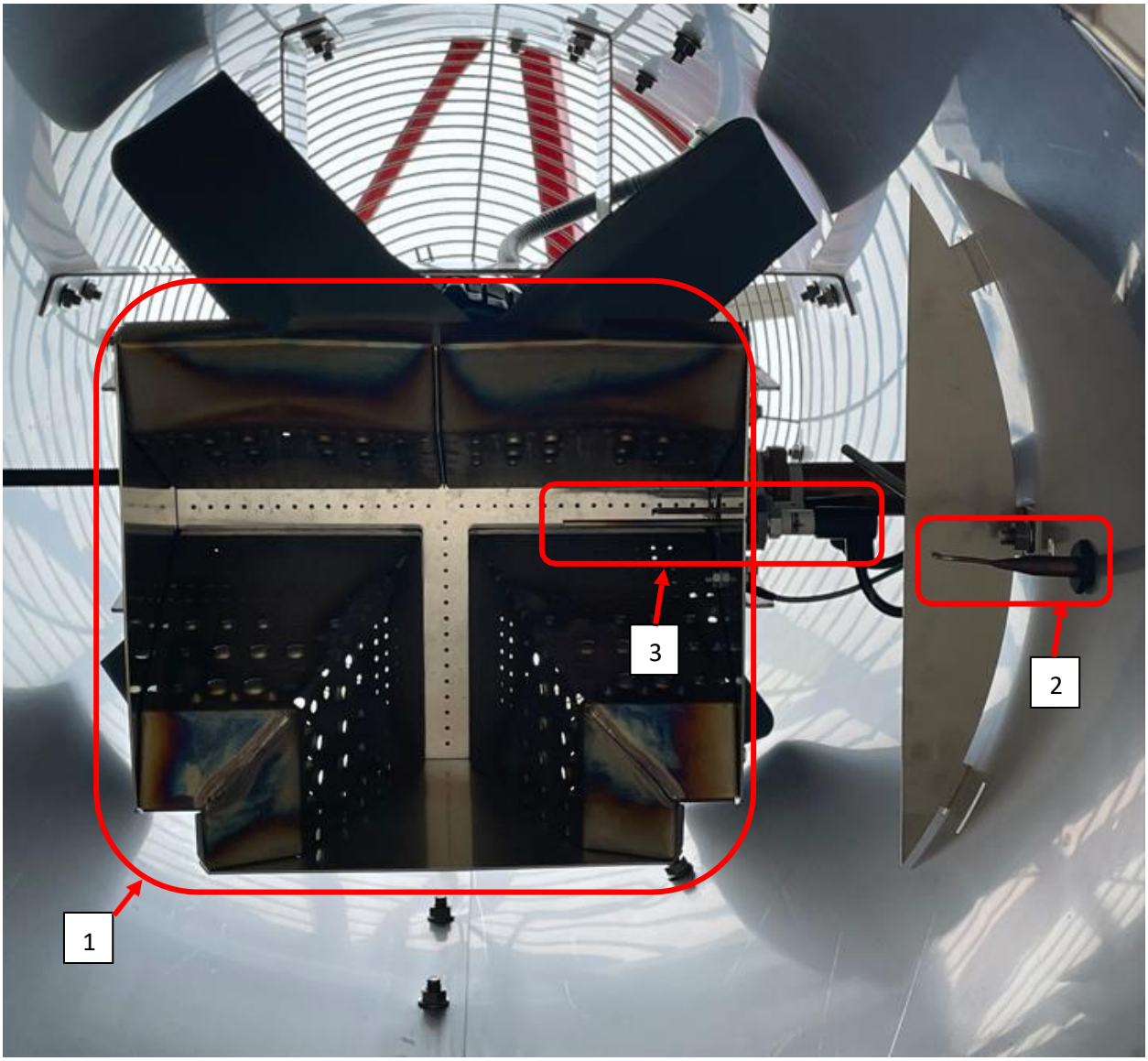

Figure 6 - Burner Parts Location

Item Number	Description	TCWS PN
1	Burner	P-HD-1014
2	High Temp Limit Switch (Probe)	P-HD-1010
3	Spark & Flame Rod (single unit)	P-HD-1009
4	Propeller (CW)	P-HD-1002 (behind burner)
5	3.0 HP Electric Motor	P-HD-1003 (cannot see in image – behind propeller)
6	Inlet Guard	P-HD-1019 (guard on inlet of drum)

2.5 – External Gas Gauge Assembly

Figure 7 - External Gas Gauge Assy (P-HD-1021)

The heated dryer ships with an external ball valve with an incoming gas pressure gauge. This assembly (P-HD-1021) ships loose with the heated dryer. It should either be in a box or inside the gas train cabinet during shipment.

This assembly allows gas pressure to be shut off to the individual unit, as well as measure the incoming gas pressure to the unit. The pressure gauge has units of inches of water column (I.W.C or " WC). This is a standard unit of measure for gas applications.

On the inside of the gas train cabinet door (lower cabinet), the incoming pressure requirements will be listed. The minimum gas pressure requirement is 8.5" W.C. The maximum incoming pressure is 1 psi or roughly 28" W.C.

Section 3: Start-Up & Operation

3.1 – Mode Selection

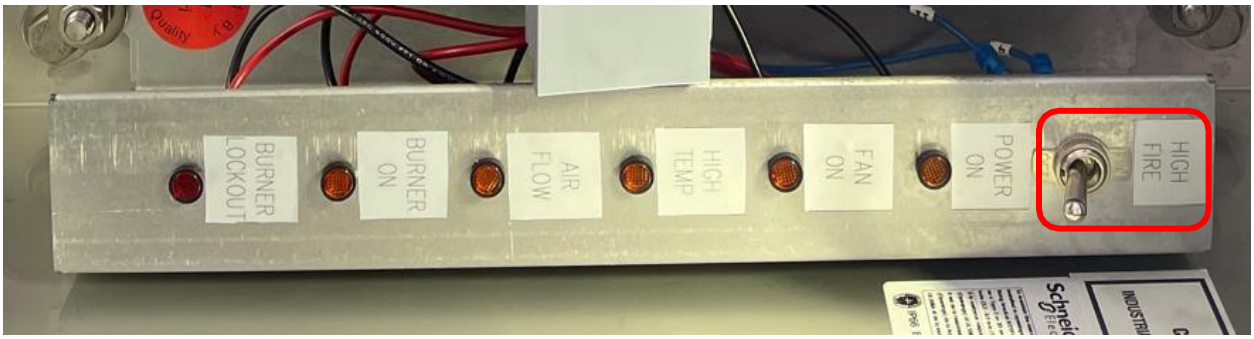

Figure 8 - Diagnostic Panel

On the Diagnostic Panel, there is a toggle switch that changes between HIGH and LOW Fire modes.

HIGH FIRE – *Winter Mode*

- When the switch is in the UP position towards HIGH FIRE, the heated dryer will operate in the maximum heating capacity (HIGH FIRE)
- HIGH FIRE is for colder months only

LOW FIRE – *Summer Mode*

- When the switch is in the DOWN position towards POWER ON, the heated dryer will operate in the minimum heating capacity (LOW FIRE)
- LOW FIRE is for summer months only

3.2 – Order of Operations

A. Before the ignition control sequence can be initiated, the following safety devices are checked for closure:
    a. Air flow pressure switch ensures the air flow is at or below the maximum allowable to ensure clean combustion and reduced flame disturbance. This includes the fan is running.
    b. The high temperature limit switch ensures the supply air temperature does not exceed the maximum allowable limit for safe operation.
B. With the safety devices described in the above steps verified, the flame safeguard control is enabled to initiate the ignition sequence.
    a. The ignition sequence will attempt to produce a spark ignition within 10s, and if unable to do so, will fault out.
    b. The ignition sequence is as follows: The main valve(s) opens and with the modulating valve at minimum position, the burner is allowed to light with direct spark ignition.
C. The burner will first light in LOW fire.
    a. If HIGH FIRE switch is enabled, the unit will modulate to the HIGH fire setting that was set. (See more information on setting high fire on the next page).
D. If any of the devices discussed in step A are not met, the gas circuit is disabled, the unit goes into lockout, and the burner lockout light is lit.
    a. Before resetting, inspect the unit to determine the cause and take corrective action.

3.3 – Adjusting HIGH FIRE (Winter Mode) Gas Pressure

Tools Required:

- Straight Screwdriver
- Allen Key

Step 1:

- Verify gas is turned on to the unit
- Incoming gas pressure should be between 8.5” WC and 28” WC
- Open gas enclosure lid

Step 2:

- Remove the cap from the gas regulator with the screwdriver
- Under the cap is the adjuster for regulating how much gas pressure is applied during HIGH fire (circled in red below).
- The adjuster is either a screw or hex head. Turning it inward raises the pressure. Backing it out lowers the pressure.
- Turn the heated dryer on in HIGH fire mode
- With the unit on, adjust the screw until the internal gas gauge (circled in yellow) reads steady at 3.5” W.C.
- Install the regulator cap on the regulator

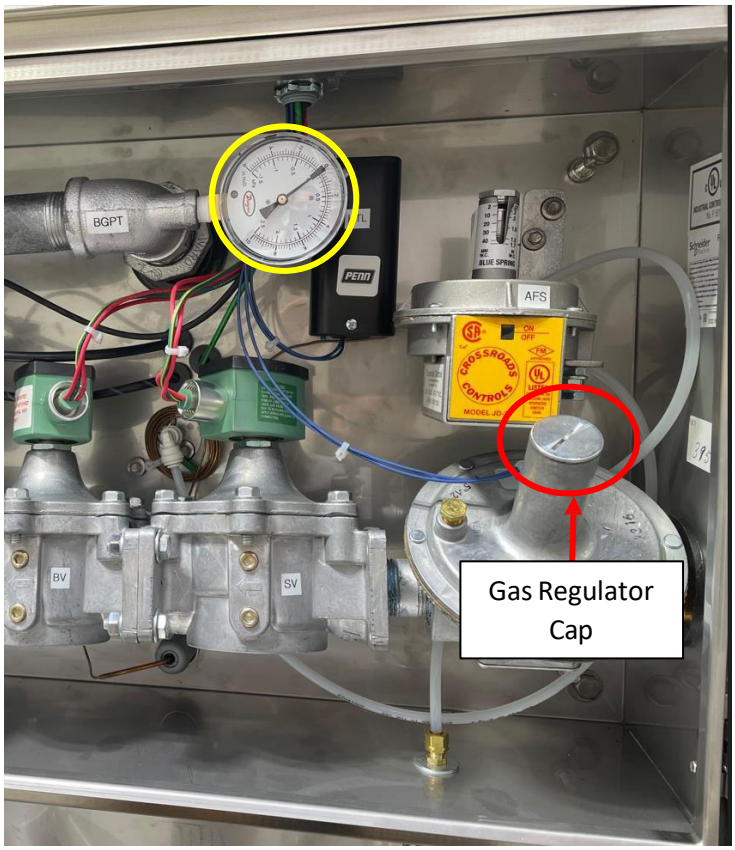

Figure 9 – High Fire Regulator Adjustment

3.4 – Adjusting LOW FIRE (Summer Mode) Gas Pressure

Tools Required:

- Straight Screwdriver

Step 1:

- Verify gas is turned on to the unit
- Incoming gas pressure should be between 8.5” W.C. and 28” W.C.
- Open gas enclosure lid

Step 2:

- The modulating gas actuator (P-HYD-2172) controls the LOW fire (Summer mode)
- The modulating gas actuator can be removed from the gas valve
- Turn on the heated dryer and place the unit in high fire mode
- With unit in high fire, adjust the safety stop. This sets the low fire gas pressure position. *See Figure 11 & 12.*
- After the safety stop has been moved, turn the unit into low fire. Wait until gas pressure has stabilized. Ideal low fire gas pressure is 1.0” W.C.
- It may take a few tries to get the low fire position to 1.0” W.C. Repeat the above steps until this pressure has been established.

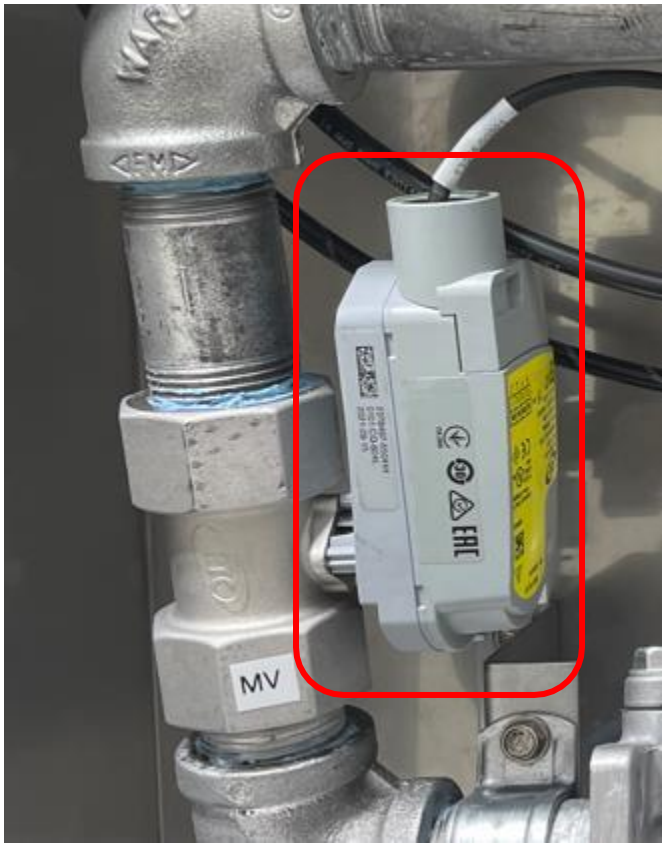

Figure 10 – Modulating Gas Actuator (P-HYD-2172)

Figure 11 – Safety Stop is circled in red. Stop can be removed without any tools. Safety Stop snaps onto actuator.

Figure 12 – to adjust the Safety Stop, during HIGH fire operation, move the stop to a new position along the arc. DO NOT remove the actuator from the valve during HIGH fire operation. The black level will rest against the stop during LOW fire operation.

Section 4: Spare Parts

4.1 – Spare Parts List

Description	Tommy PN	Manufacture PN
Modulating valve	P-HYD-2171	SV-1.0NN
Modulating valve actuator	P-HYD-2172	ACT-10.0
Regulating valve w/ red spring	P-HD-1000	RV61-1IN
Pressure Gauge 0-30” WC	P-HD-1001	030DGT
Propeller (CW)	P-HD-1002	MS-23-1/2-11.5XHD
Motor 3.0 HP 460/3 PREM TEFC	P-HD-1003	00318ET3E182T-W22
Motor Contactor	P-HD-1004	LC1K0610B7
Overload Relay	P-HD-1005	LR2K0312
Burner on Relay – CR3, CR12	P-HD-1006	RU4S-A24
Relay Base	P-HD-1007	SU4S-21L
Air Flow Switch – Blue Spring	P-HD-1008	JD-2
High Temp Limit Switch	P-HD-1010	A19ADB-38C
Flame Safeguard	P-HD-1011	35-605201-005
Primary Fuses	P-HD-1022	KLDR01.6
T1 Transformer – 100VA	P-HD-1012	9070T100D19
Air Circulation Guard – 27” dia	P-HD-1019	2ATB9
Ind. Light – 24V AMB w/ 30” WL	NA	1813-X-20-20320
Ind. Light – 24V RED w/ 30” WL	NA	1813-X-20-20310
High Fire ON/OFF switch	NA	90-0003
Circuit Breaker – 24V	P-HD-1018	UMBW-1C1-4
Pressure Gauge -6” to +10” WC	P-HD-1013	LPG4-D9022N
Midco HMA-2A Section – 18” Tee	P-HD-1014	1080810
Midco Inlet Flange – 1-1/2” w/ Pilot	P-HD-1015	1030250
Midco Blank Plate	P-HD-1016	1120255
Midco Brute Pilot Spark & Flame Rod (single unit)	P-HD-1009	1200350
ASCO RedHat 1” 2-Way Normally Closed Gas Solenoid Valve (12VDC)	P-HD-1020	8214G251
Heated Dryer Gas Gauge Assembly	P-HD-1021	Gas Gauge Assembly

Section 5: Troubleshooting

5.1 - Common Issues

Issue	Possible Cause	Possible Remedy
A. Burner not operating	1. See problems "B" through "D"	1. See problems "B" through "D"
	2. High temp limit switch flipped	2. Check and/or replace
	3. Gas turned off to unit	3. Verify gas valve is turned on
	4. Failed air flow switch	4. Check and/or replace
	5. Loose wiring connection at air flow switch	5. Check and tighten
	6. Failed control transformer	6. Check and/or replace
	7. Failed or malfunctioning main gas valve (s)	7. Check and/or replace
	8. Airflow too low, low airflow switch is open	8. Check for reason of insufficient airflow and correct
B. Power Failure	9. Disconnect not turned on	9. Turn to disconnect
	10. Blown fuse	10. Check and/or replace
	11. Main to unit disconnect not on	11. Turn on power at main
C. Motor not operating	12. Disconnect not turned on	12. Turn to disconnect
	13. Blown fuses	13. Check and replace
	14. Main to unit disconnect not on	14. Turn on power at main
	15. Failed motor	15. Check and/or replace
	16. Loose wiring to motor	16. Check and/or replace
	17. Motor overloaded	17. Check for proper speed
	18. Improper supply voltage	18. Check and correct
	19. Motor overheating	19. Check firing rate of unit
D. Fan not operating	20. See problems "B" and "C"	20. See problems "B" and "C"
	21. Bearings seized	21. Check and/or replace
E. Flame will not light	22. Inadequate signal to safeguard control	22. Check micro-Amps or VDC from flame sensor
	23. Loose wires from flame sensor	23. Check and correct
	24. Dirty flame rod	24. Clean and/or replace
	25. Moisture on flame rod leads	25. Check and dry leads. Use di-electric grease inside boot

	26. Defective flame rod	26. Check and/or replace
	27. Defective flame safeguard controller	27. Check and/or replace
	28. Short in flame sensor leads	28. Check and/or replace
F. Unable to achieve HIGH fire	29. Low gas supply pressure	29. Check and adjust
G. Unable to achieve LOW fire	30. Modulating controls improperly set	30. Consult Fenwal 35-605201-005 Manual. Contact vendor.
	31. Faulty amplifier or modulating valve	31. Check and/or replace
H. No gas flow	32. Manual gas valve(s) closed	32. Open manual gas valve(s)
	33. See Problem "A"	33. See Problem "A"
I. Unable to achieve desired discharge temperature	34. Improper gas supply pressure	34. Check and correct
	35. Faulty amplifier or proportioning motor	35. Consult Fenwal 35-605201-005 Manual. Contact vendor.