

Introduction to Draft Control

A TS... touchscreen kit base package without annunciation, with draft control is suited for Firetube and Watertube boilers, as a stand-alone stack draft control.

- Dynamic graphical display of stack draft pressures provides the operators with visual aid for operation monitoring
- Continuous display of actual stack pressure and setpoint provides monitoring the difference to identify potential stack draft issues
- PID control provides accurate draft pressures for any firing rates or stack pressures
- Continuous stack pressure monitoring plus actuator position feedback provides an accurate control and monitoring process.
- Siemens differential pressure transmitter can cover any draft pressure measurement range. For example: -3.00 to 3.0 IWC. -5.00 to 5.00 IWC, and -10 to 10 IWC
SCC differential pressure transmitter pre-spanned for fixed range (pages 3 - 4).
- Stack damper position monitoring and display. With alarms for open, ignition and closed positions.
- Modbus communication to Siemens LMV linkageless control provides minimum field wiring.
- Can be used as universal draft control system with third party burner controls.
- Modbus TCP/IP for BMS communication
- UL 378 listed

Base Draft Control Main Parts



Name	Related Documents
Touchscreen and control panels	TS-1000, TS-4000, TS-5000
SQM5 actuator	155.517P25
SQM5 coupling	CPBK-1000
SQM5 mounting bracket	CPBK-2000

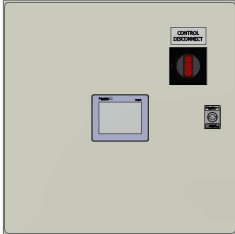
Draft Control Panel Builder

The touchscreen control panel with draft control is comprised of few components in addition to the TS control panel itself. Use the following pages to choose the components needed for your specific application. See TS-1000, TS-4000 or TS-5000 part number selection charts for your complete application.

Auxiliary Components

Base Unit – Qty (1) Required

Draft Control Base Package Option. See TS-1000 for all available options

	<p>TS-3DXS-1XX</p>	<p>Draft control panel PLC based and 3” touchscreen with LMV communication, and no burner boiler annunciation or analog inputs</p>
	<p>TS-6DXS-1XX</p>	<p>Draft control panel PLC based and 6” touchscreen with LMV communication, and no burner boiler annunciation or analog inputs</p>

Differential Pressure Transmitter – Qty (1) Required

Option 1 - One differential pressure transmitter is required per draft control system. Refer to TS-1000/TS-4000/TS-5000 for electrical connections.



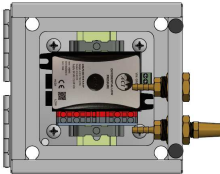
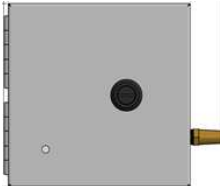

7MF0340-1CA22-1NC6-Z+A02+B21

4-20 mA Siemens differential pressure transmitter, 0-25 IWC, could be spanned to any measurement variations from negative to positive within the measurement range of 25 IWC

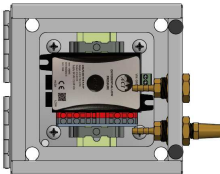
Auxiliary Components (continued)

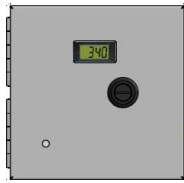
Option 2 - One differential pressure transmitter is required per draft control system. Refer to TS-1000/TS-4000/TS-5000 for specific SCC control system electrical connections with draft control.

SCC Differential Pressure Transmitter w/o Display

	TS-DPA-020X	4-20 mA, no display -2.00 to 2.00 IWC
	TS-DPA-025X	4-20 mA, no display -2.5 to 2.5 IWC
	TS-DPA-030X	4-20 mA, no display -3.0 to 3.0 IWC
	TS-DPA-040X	4-20 mA, no display -4.00 to 4.0 IWC
	TS-DPA-050X	4-20 mA, no display 5.00 to 5.00 IWC
	TS-DPA-100X	4-20 mA, no display -10.0 to 10.0 IWC

SCC Differential Pressure Transmitter w/ Display

	TS-DPA-020D	4-20 mA, with display -2.00 to 2.00 IWC
	TS-DPA-025D	4-20 mA, with display -2.5 to 2.5 IWC



TS-DPA-030D	4-20 mA, with display -3.0 to 3.0 IWC
TS-DPA-040D	4-20 mA, with display -4.00 to 4.0 IWC
TS-DPA-050D	4-20 mA, with display 5.00 to 5.00 IWC
TS-DPA-100D	4-20 mA, with display -10.0 to 10.0 IWC



SCC Differential Pressure Switch



TS-1910-1	0.4 to 1.6 IWC
TS-1910-5	1.4 to 5.5 IWC
TS-1910-10	3.0 to 11.75 IWC

Auxiliary Components (continued)

Coupling – Qty (1) Required

Zero-lash, flexible couplings are available for each SQM5 actuator. Refer to document No. CPBK-1000 for details. Select the characters from the included part number tree to replace the “x’s” as appropriate for your damper and actuator.



CxE6SCA-xxRSA

Flexible couplings for SQM45... actuators

SQM5 Damper Rotary Actuator

SQM5 rotary actuator. Refer to document No. 155.517P25 for complete SQM5 part number legend. Select the characters from the tree below to replace the “x’s” as appropriate for your actuator.

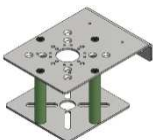


SQM5xx64R1A3x

SQM5 rotary actuator

SQM5 Damper Rotary Actuator

SQM5 bracket. Refer to document No. CPBK-2000 for details. Select the characters from the included part number tree below to replace the “x’s” as appropriate for your bracket.

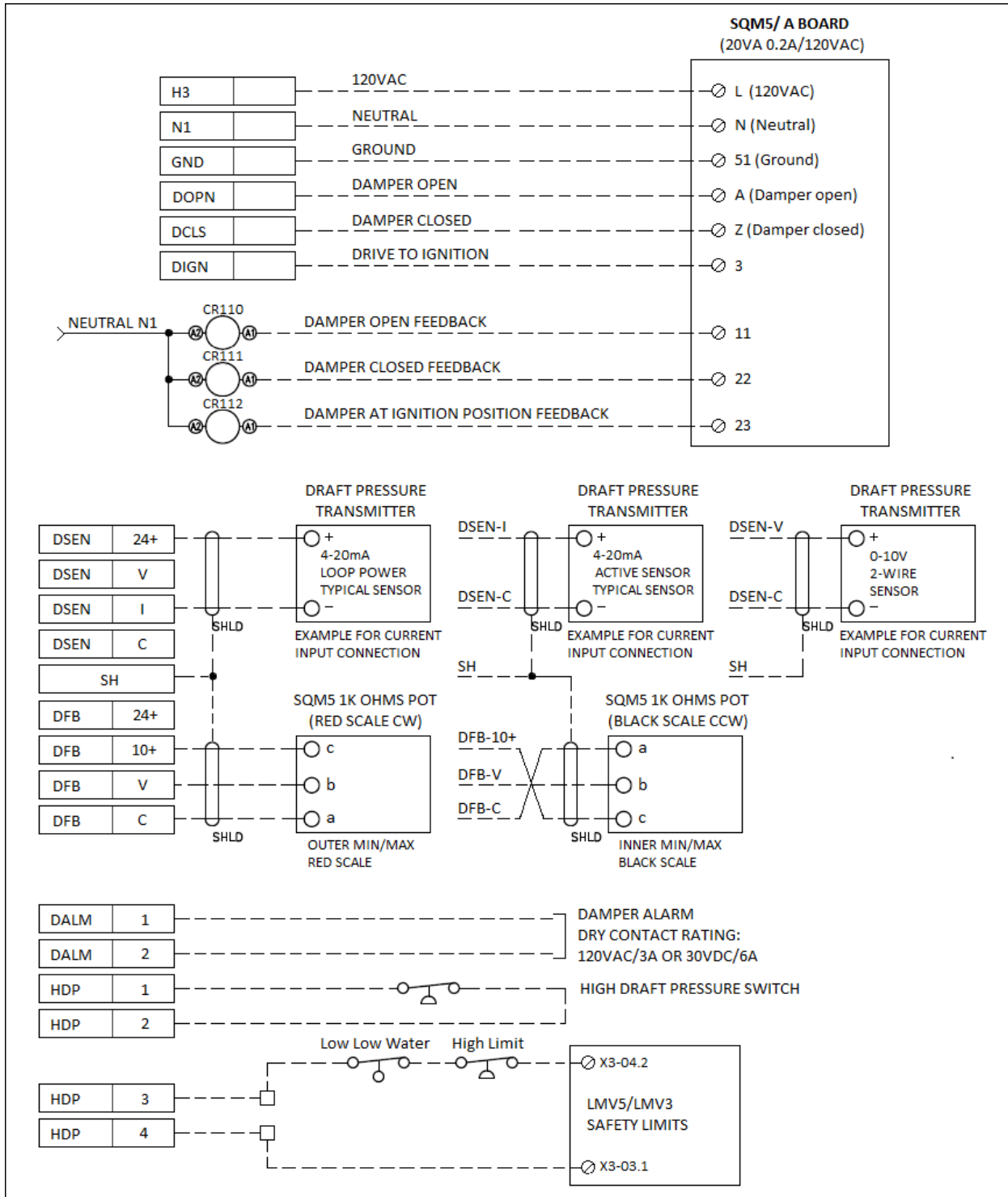


BR-AS21-x4-x-HT

SQM5 bracket assembly

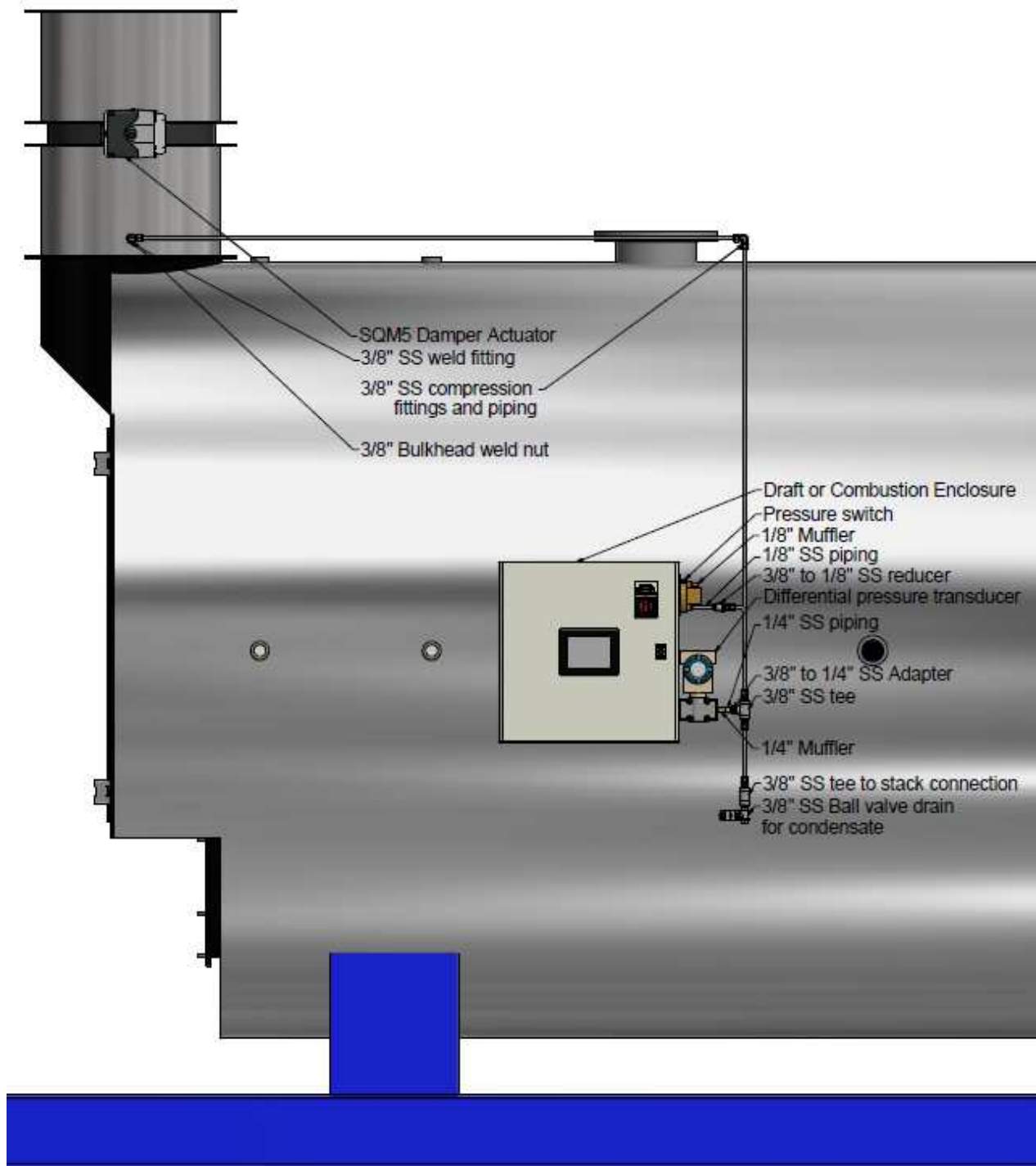
Typical Electrical Field Connections

SQM5 connections with "A" board

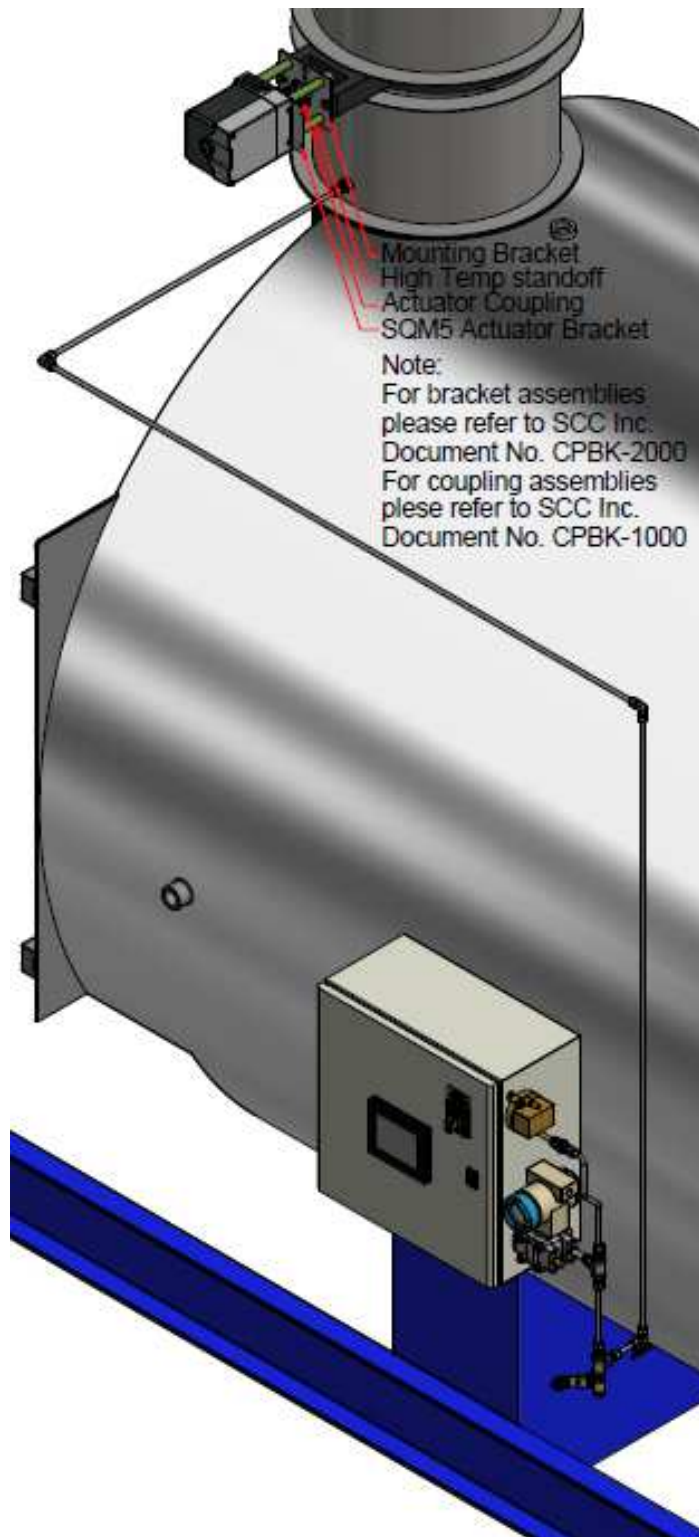


Note: See TS-1000 for all LMV Siemens linkageless control system communication connections

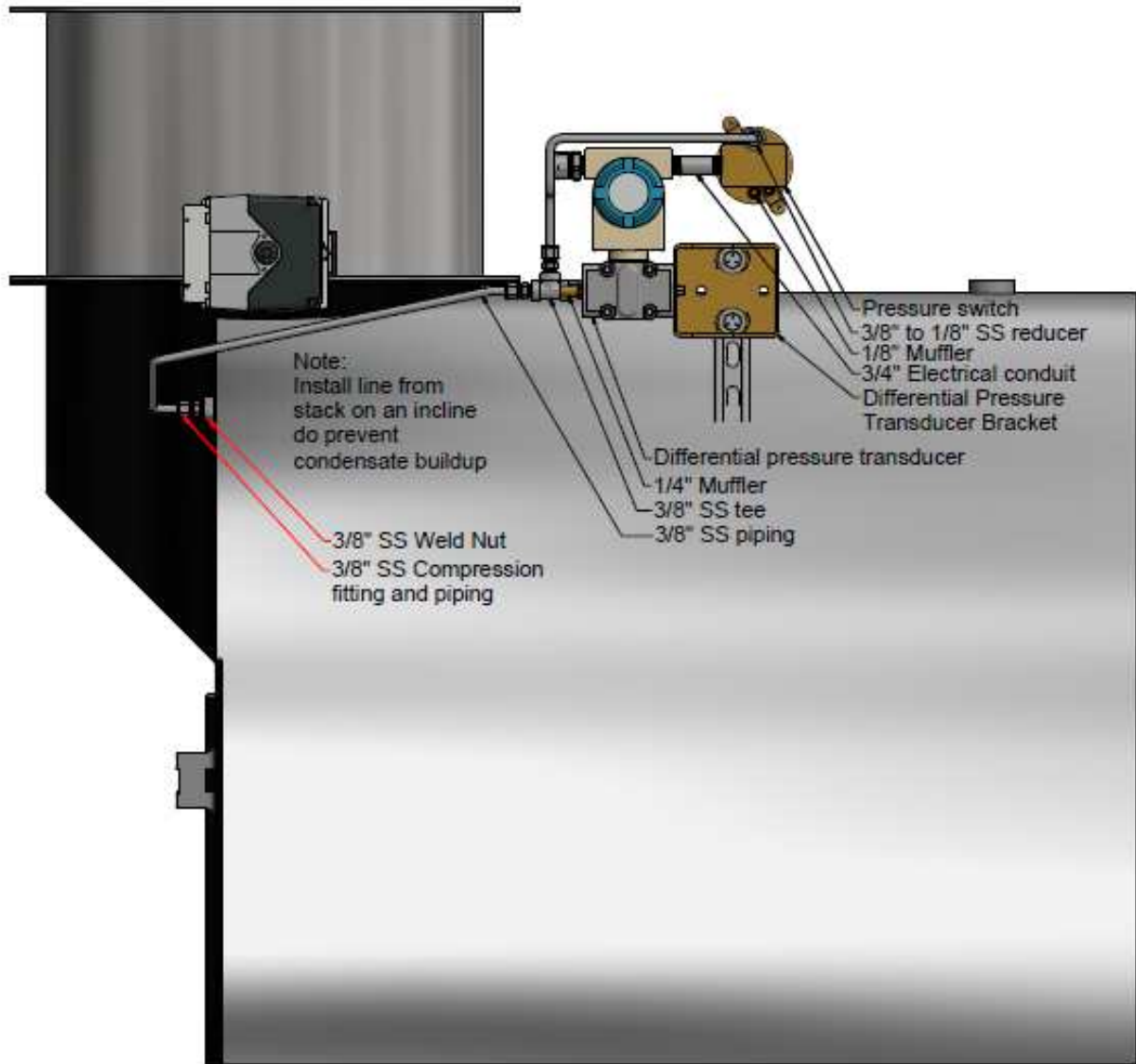
Typical Piping and Installation



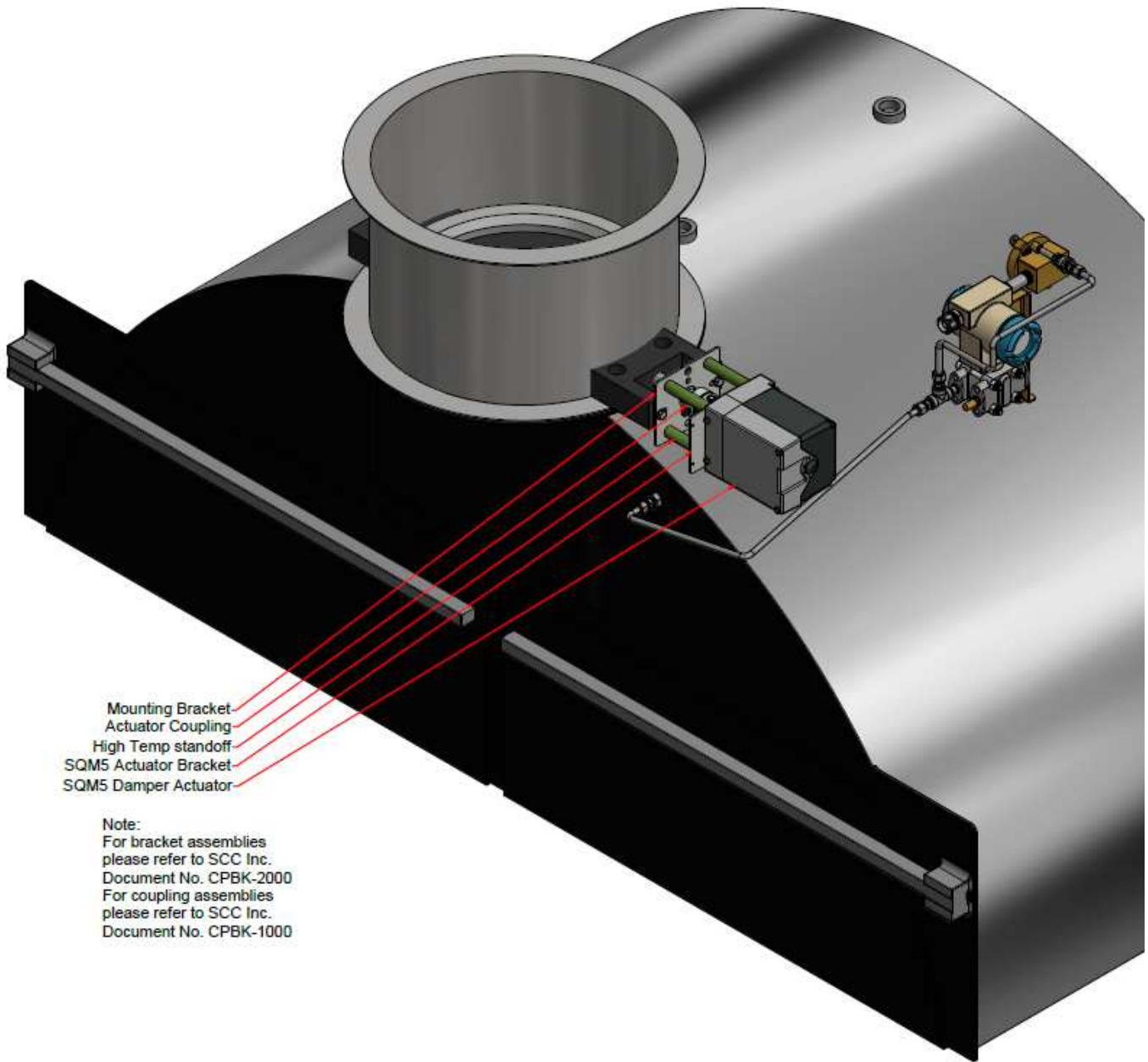
Typical Piping and Installation (continued)



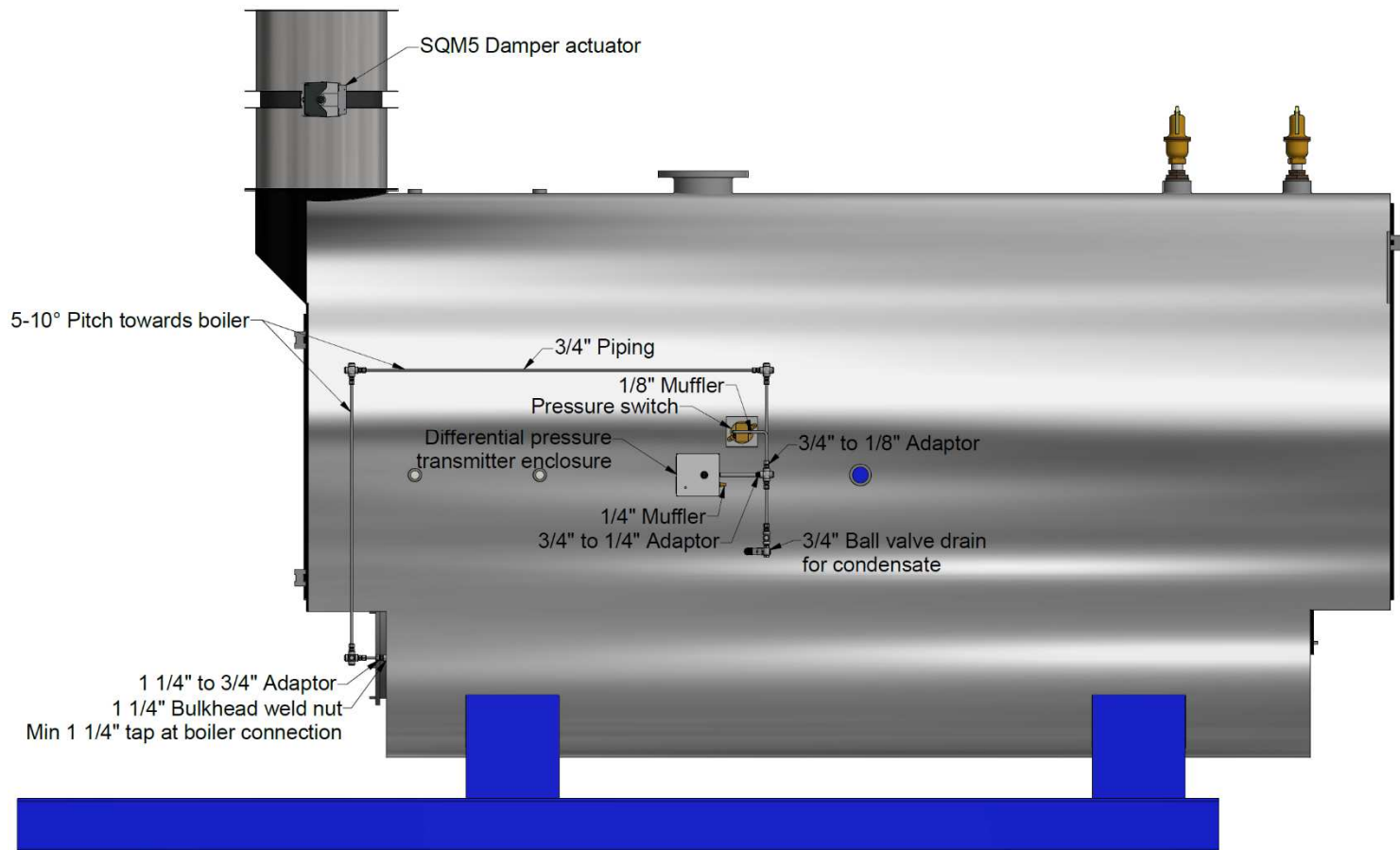
Typical Piping and Installation (continued)



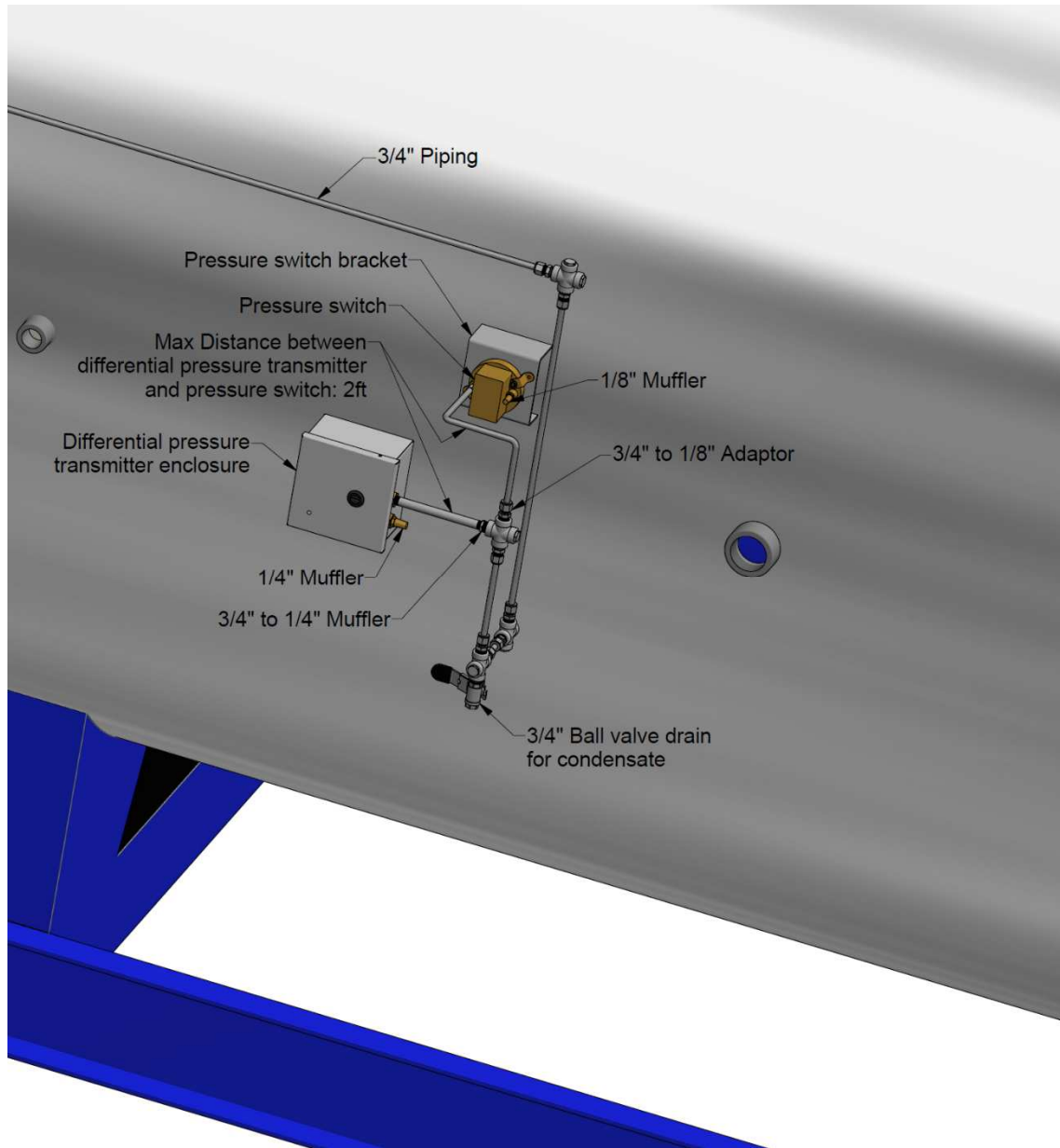
Typical Piping and Installation (continued)



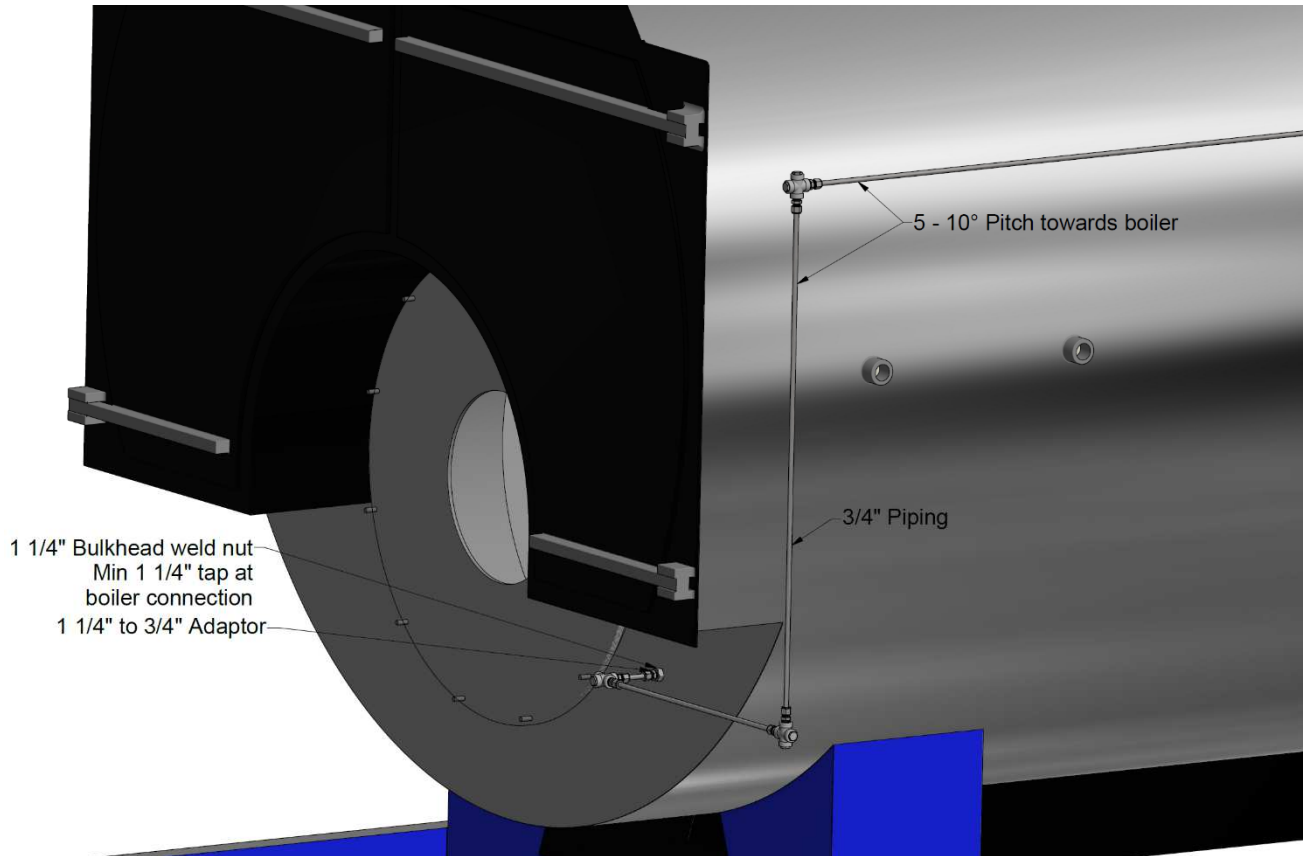
Piping and Installation (Furnace Back Pressure Piping)



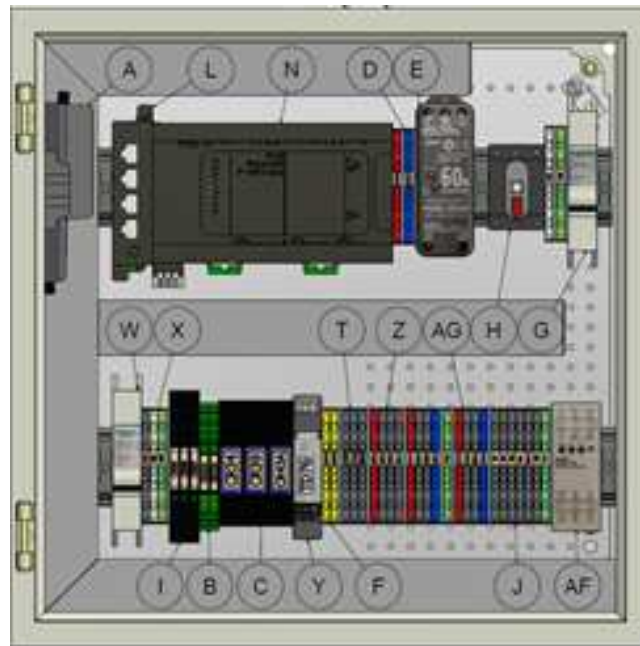
Piping and Installation (continued)



Piping and Installation (continued)



Draft Control Base Package Parts Description



A	BMS Communication BACnet/LON/N2/RTU	BMS communication other than Modbus TCP/IP
B	Solid State Relays (Draft Control Option)	Draft damper open and close relays
C	DPDT Relays (Draft Control Option Only)	Draft control ignition permissive Draft control damper drive open on failure Draft control alarm
D	24 VDC Terminals	24 VDC connections
E	24 VDC Power Supply	24VDC source
F	Field Terminals (Yellow)	Field outputs and control terminals
G	3 Amps Circuit Breaker	120 VAC power isolation
H	16 Amp Non-Fused Disconnect	120 VAC disconnect, only when installed in SCC enclosure

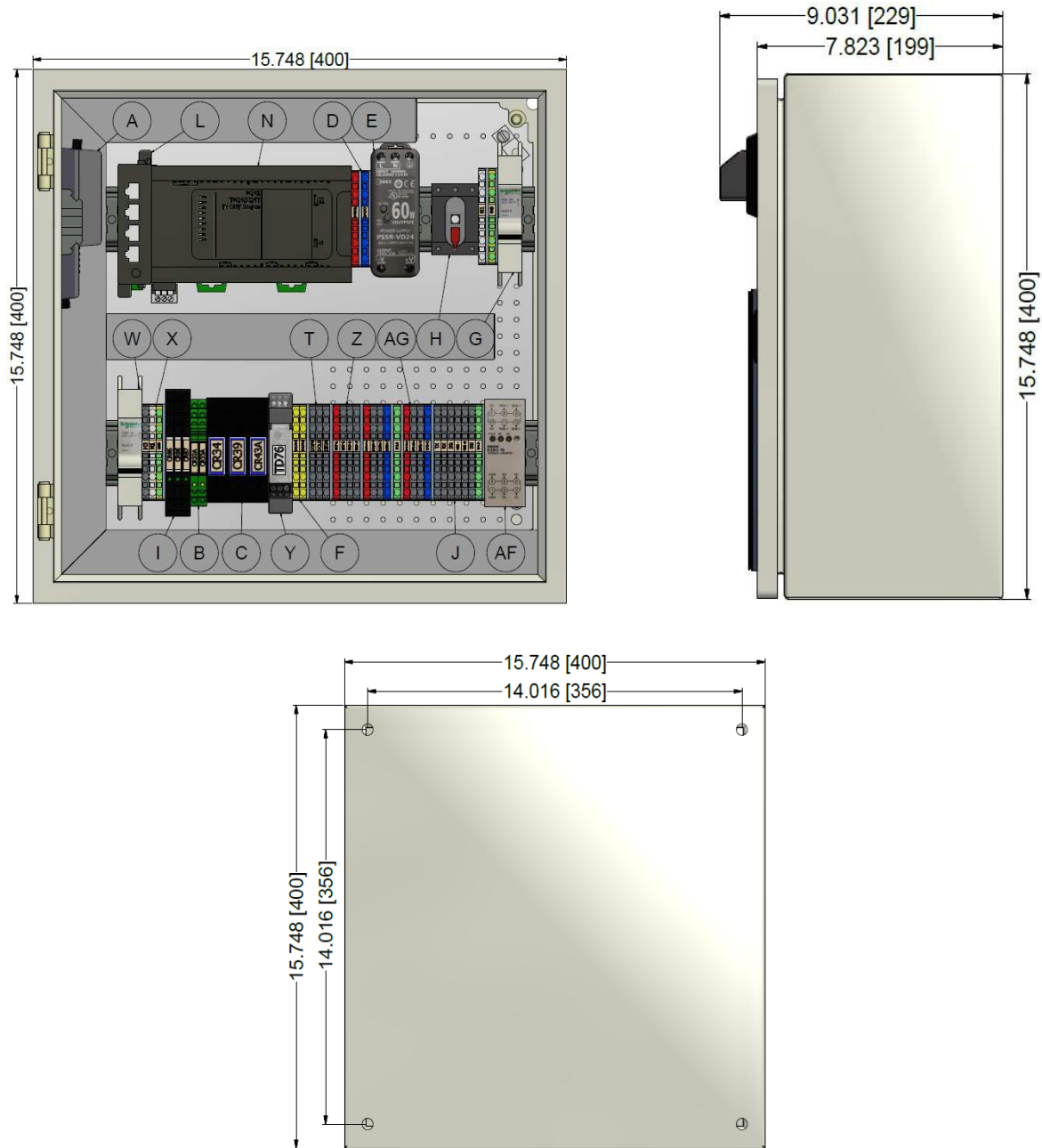
I	120 VAC SPDT Relays	Burner / Boiler alarms ,13 annunciation relays, 3 relays for draft(optional), first in first out.
J	Modbus RS232 and RS485 Terminals	Field Modbus connections to LMV5/LMV3/RWF55/ RWF10
AG	Analog Input Terminals	Field wiring terminals for flow, pressure, temperature, DP pressure, 4-20mA, or 0-10 Volt inputs.
T	Draft Mod Motor Field Terminals	Ignition permissive
W	1 Amp Circuit Breaker	Draft control 120 VAC power isolation
X	120VAC Power Terminals	SQM5 actuator 120VAC power terminals
Y	Off Delay Timer	Draft control, high pressure boiler shutoff, delay timer
Z	Draft Control Terminals	LMV interconnect safety loop and high pressure switch terminals

Note: AF Module only used when the AZL is installed more than 15 feet from the Touchscreen.

Dimensions

Dimensions in inches; millimeters in brackets

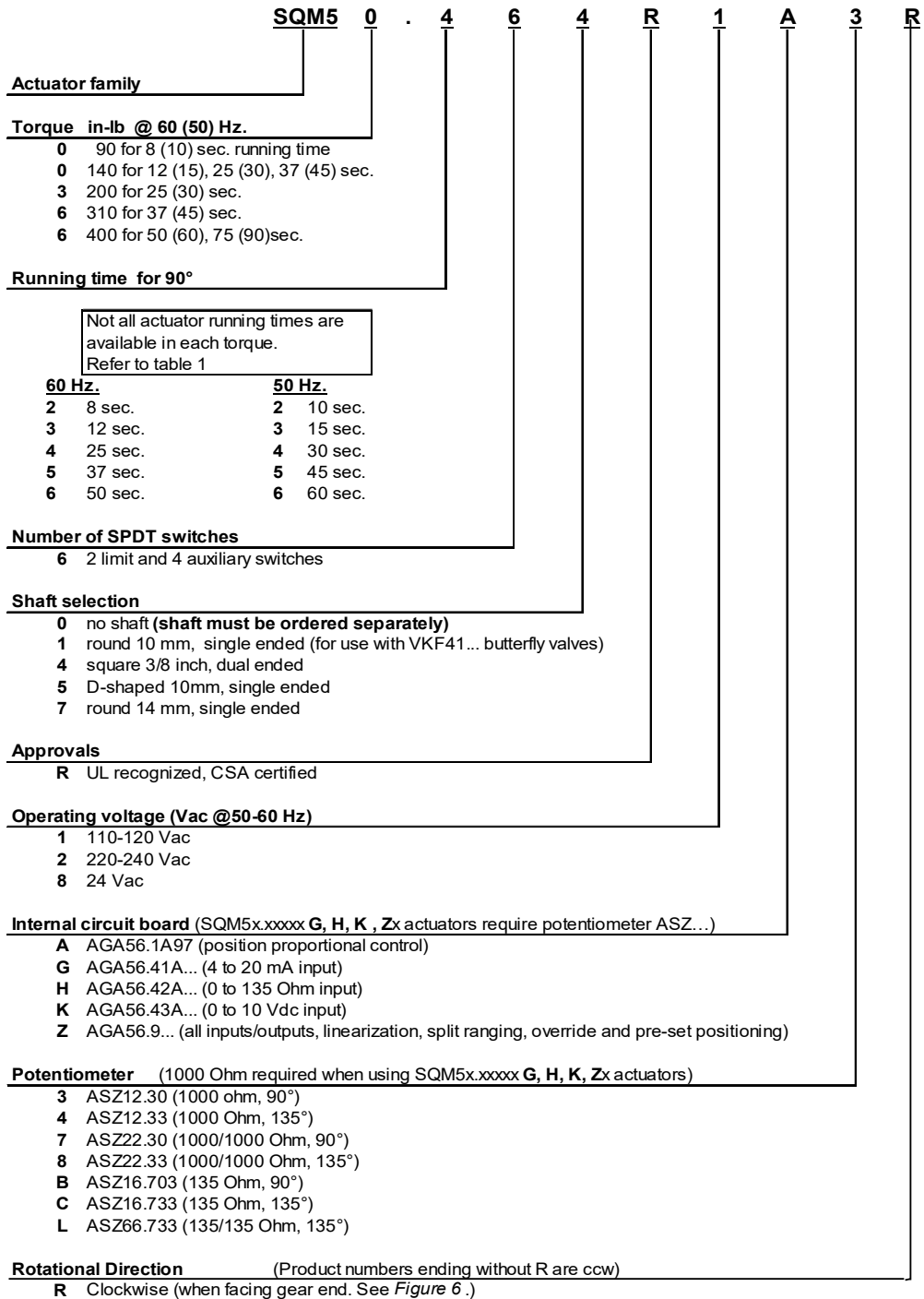
16" X 16" X 8" Stack Draft Enclosure (Base Package)



SQM5 Product Number Identification Legend

For actuator identification only. To select product numbers for ordering, see Table 1.

Figure 1. SQM5... Product Number Identification Legend.



Touchscreen Kit with Draft control part number legend

	TS	-	0	D	8	B	-	2	5	W
Touchscreen										
Touchscreen Size										
3 = 3" touchscreen										
6 = 6" touchscreen										
0 = 10" touchscreen										
C = 3" touchscreen mounted > 15 ft. away from AZL (LMV5 only)										
F = 6" touchscreen mounted > 15 ft. away from AZL (LMV5 only)										
J = 10" touchscreen mounted > 15 ft. away from AZL (LMV5 only)										
Draft Control										
X = No draft control included										
D = Draft control										
Annunciation and Monitoring Options										
X = No annunciation inputs										
1 = Standard annunciation, 13 120VAC inputs										
2 = 13 120VAC annunciation inputs, and 4 analog inputs										
3 = 13 120 VAC annunciation inputs, and 4 RTD 1000 Ohm inputs										
4 = 13 120 VAC annunciation inputs, and 4 RTD 1000 Ohm inputs dedicated for Economizer										
5 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 RTD 1000 Ohm inputs										
6 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 RTD 1000 Ohm inputs dedicated for economizer										
7 = 13 120 VAC annunciation inputs, 4 RTD 1000 Ohm inputs, and 4 RTD 1000 Ohm inputs dedicated for economizer										
8 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 RTD 1000 Ohm inputs, and 4 RTD 1000 Ohm inputs dedicated for economizer										
Building Management Interface (BMS)										
S = Standard, Modbus TCP/IP										
B = BACnet / IP, or Ethernet / IP										
M = BACnet MS/TP, Modbus RTU, or Metasys N2										
L = LonWorks										
N = Profinet										
P = Profibus										
Enclosure Option										
X = No - din rail kit on plate to be mounted into enclosure (Mounted by others)										
1 = NEMA 1										
2 = NEMA 12, includes cover over touchscreen and AZL/RWF (if applicable)										
4 = NEMA 4X (indoor), includes cover over AZL/RWF (if applicable)										
A = NEMA 1 with cooling fan										
B = NEMA 12 with cooling fan, includes cover over touchscreen and AZL/RWF and fan (if applicable)										
C = NEMA 4X with cooling fan, includes cover over touchscreen and AZL/RWF and fan (if applicable)										
6 = NEMA 1, with manual reset Warrick relay										
7 = NEMA 12, includes cover over touchscreen and AZL/RWF (if applicable), with manual reset Warrick relay										
9 = NEMA 4X (indoor), includes cover over AZL/RWF (if applicable), with manual reset Warrick relay										
F = NEMA 1 with cooling fan, with manual reset Warrick relay										
G = NEMA 12 with cooling fan, includes cover over touchscreen, AZL/RWF, and fan (if applicable), with manual reset Warrick relay										
K = NEMA 4X with cooling fan, includes cover over touchscreen, AZL/RWF, and fan (if applicable), with manual reset Warrick relay										
AZL (Option only with enclosure)										
X = No AZL included (Must be selected with din rail kit on plate)										
3 = AZL23.00A9 mounted to front of enclosure										
5 = AZL52.40B1 mounted to front of enclosure										
RWF (Option only with enclosure)										
X = No RWF included										
L = RWF55.50A9 for external load control										
W = RWF55.50A9 for water level control with transformer										
2 = (2) RWF55.50A9 for external load control and water level control - includes 1 transformer										

Approvals

CERTIFICATE OF COMPLIANCE

Certificate Number	20181205-MH62358
Report Reference	MH62358-20170528
Issue Date	2018-DECEMBER-05

Issued to: SCC Inc
1250 Lunt Ave
Elk Grove Vlg IL 60007-5618

This certificate confirms that representative samples of

DRAFT EQUIPMENT
Draft control system , Model(s)TS-1000, TS-4000, TS-5000, and TS-7400. These families are followed with suffixes as shown in ILL. 5.

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 378, Standard for Limit Controls.
Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact your local UL Professional Services Representative at www.ul.com



Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. Product or company names mentioned herein may be the trademarks of their respective owners. © 2020 SCC Inc.