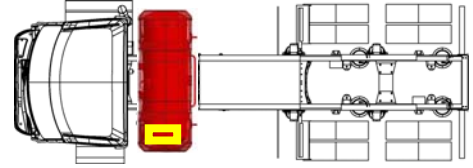


Part Number: 117155

Part Description: Fuel Storage Module (FSM)
180 Gen 2 Back Of Cab



Product Technical Specifications

General Specifications

Designed Location	Back Of Cab (BOC)
Gasoline Gallon Equivalancy (IA)	204.6 GGE
Gasoline Gallon Equivalancy (NIST)	174.3 GGE
Diesel Gallon Equivalancy (IA)	180.0 DGE
Module Weight (Empty)	TBD
Module Weight (Full)	TBD
Total Internal Cylinder Volume	633 ±6 Gallons (2396 ±24L)
Fill Panel Location	Driver's Side (Reference Yellow Box in Illustration)
Cylinder Certifications	Refer to Data Sheet 116892
Service Pressure	3600 psi (24.8 kPa) @ 70°F (21°C)
Minimum Working Pressure	290 psi (2 MPa)
Module Temperature Range	-40°F (-40°C) to 149°F (65°C)
Fill Flow Rate (Standard Fill Receptacle with Filter)*	Average 3.0 DGE/min, up to 10 DGE/min
Fill Flow Rate (Standard Fill Receptacle without Filter)*	Average 4.5 DGE/min, up to 15 DGE/min
Fill Flow Rate (High Flow Fill Receptacle with Filter)*	Average 11.0 DGE/min, up to 30 DGE/min
Fill Flow Rate (High Flow Fill Receptacle without Filter)*	Average 16.0 DGE/min, up to 35 DGE/min

* System fill rates will vary based on ambient temperatures, station pressures, and fuel quality.

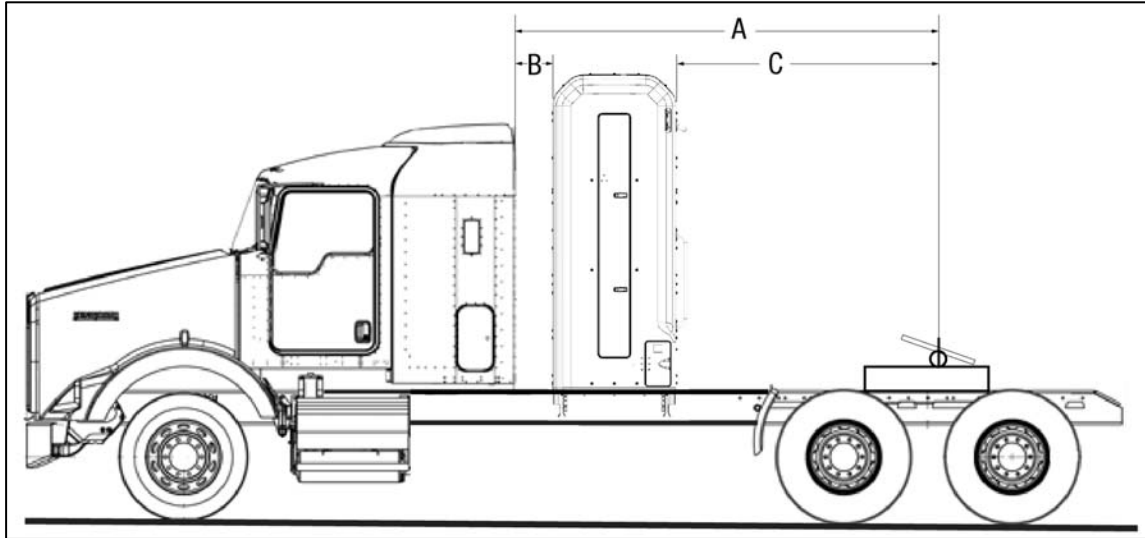
Standard Equipment:

- Grab Handles
- Load Lights
- Standard Flow Fill Valve
- High Flow Fill Valve
- System Pressure Gauge
- High Capacity Coalescent Filter
- High Pressure Regulator
- Fuel Gauge Control Module
- System Vent Valve
- Fuel Door Switch
- Temp Comp Fuel Gauge Output

Features:

- Drop & Go Install
- Easy Service Access
- Grid Friendly Mounting





⚠ DANGER

The FSM has been approved to be installed with the front of the FSM facing forward. The correct installed position can be confirmed with the fill panel on the driver's side of the frame. Failure to install the FSM in the correct approved position may result in death or serious injury.

General Vehicle Requirements

- Minimum Distance Between Cab and Kingpin (A) 114.8" (2917mm)
- Minimum Distance Between Cab and FSM (B) 5.0" (127mm)
- Minimum Distance Between FSM and Kingpin (C)* 70.0" (1778mm)

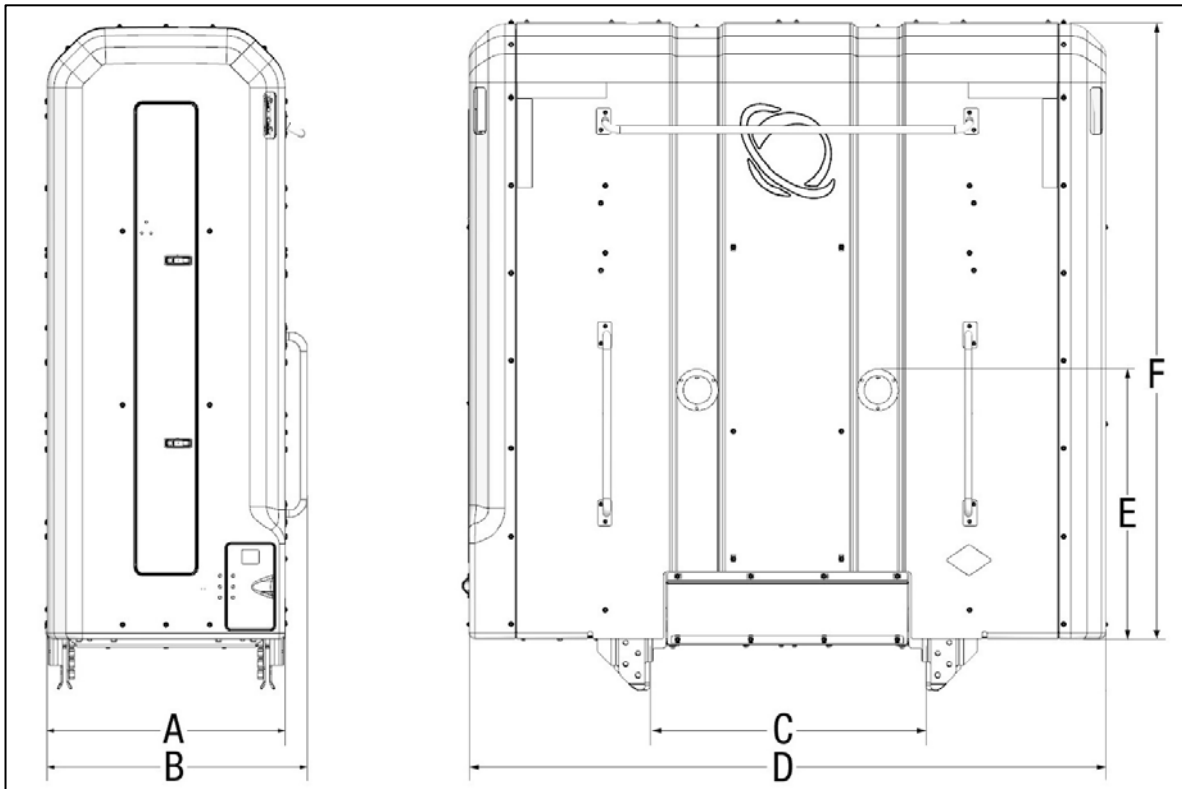
** Verify measurement with the 5th wheel in the forward most position. Trailers with non-standard (42" or 48") kingpins may require additional wheelbase and clearance.*

Electrical Requirements

- Voltage Range 12-16 VDC
- Nominal Current Draw 2.0 A
- Peak Current Draw 3.5 A
- Electrical Interface Connector Deutsch HDP30-18-14 PN

Fluid Specifications

- Coolant Type Glycol / Phosphate Based Coolant
- Coolant Flow Minimum ½ gal/min
- Coolant Concentration Not to Exceed 60/40 Concentration



FSM Dimensions

Depth of CNG Fuel Storage Module (A)	36.9" (936mm)
Depth of CNG Fuel Storage Module with Handles (B)	39.6" (1005mm)
Allowable Frame Width (C)	33.7"-34.5" (857-876mm)
Width of CNG Fuel Storage Module (D)	89.1" (2264mm)
Height of Load Light (E)	37.5" (954mm)
Height of the CNG Fuel Storage Module (Above Frame) (F)	104.2" (2647mm)

FSM Vehicle Interface

Coolant Connection	5/8" Hose Barbed
Fuel Outlet Connection	3/4" 37° Flare
System Vent Valve Type	1/4 Turn Valve
Vent Valve Flow Rate (Approximate)	15 GGE/hr
Vent Port Interface	3/8" ORFS
TPRD Outlets (2)	3/8" tube, Swagelok
High Pressure Fuel Inlet/Outlet Connection	3/8" ORFS
High Pressure Fuel Inlet/Outlet Connection	1/2" ORFS

Cylinder Information

CNG Cylinder Service Life	See Cylinder Labels
Recommended Minimum CNG Fuel Quality	SAE J1616
Approved Service Gas	Compressed Natural Gas (CNG)
Cylinder Construction	Type IV
Cylinder Temperature Range	-40°F (-40°C) to 185°F (85°C)
Cylinder Manufacturer	Quantum Technologies

Shipping Information

Shipping Height	TBD
Shipping Width	TBD
Shipping Length	TBD
Shipping Weight (One FSM / Pallet)	TBD
Shipping Weight (Two FSM / Pallet)	TBD

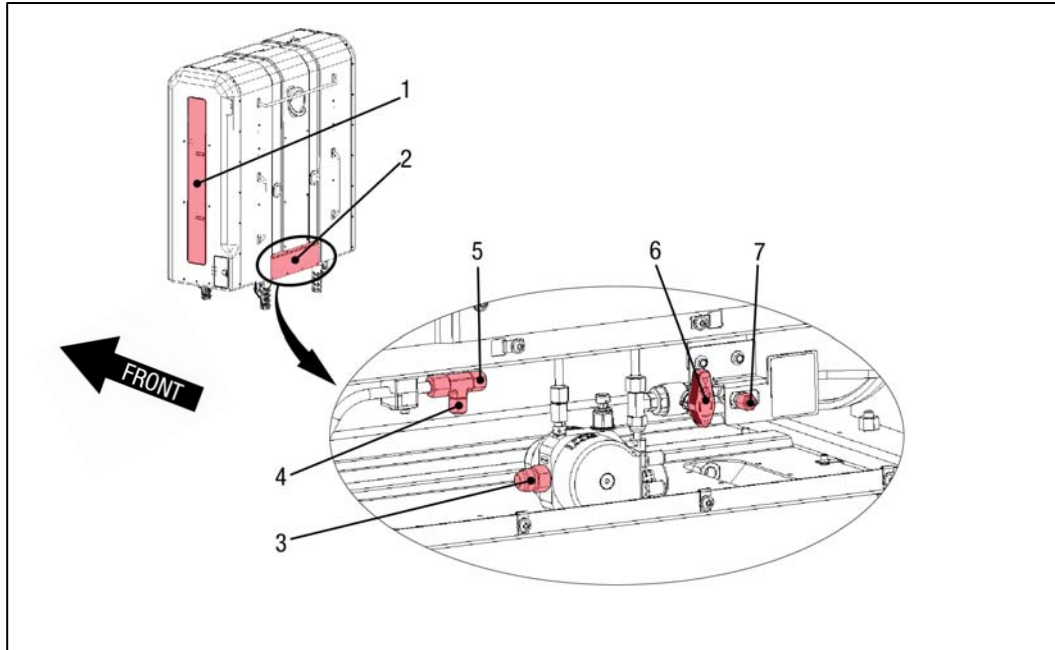
Kit Contents

Installation Kit	Part Number	Applications
Installation Kit - 50X50 Spacing	117299	Freightliner
Installation Kit - 60X50 Spacing	117300	Volvo / Mack
Installation Kit - 75X50 Spacing	117301	PACCAR

Each of the installation kits will contain the installation hardware noted below and four of the brackets from table 2.

Installation Hardware	Part Number	Qty.
Screw – Heavy Hex Flange, M16-2.0 X 60	S1-20298-014	40 - 48
Nut, Crimp Lock, Hex Flange, M16-2.00	N1-20300-006	24 - 32
Eyebolt - Lifting, Metric M12	113723-004	2
Hose Clamp, SAE NO. 10, SS	116510	2

Table 2	Part Number	Qty.
Bracket - Mount, 50X50 Spacing	116385	4
Bracket - Mount, 60X50 Spacing	116784	4
Bracket - Mount, 75X50 Spacing	117159	4

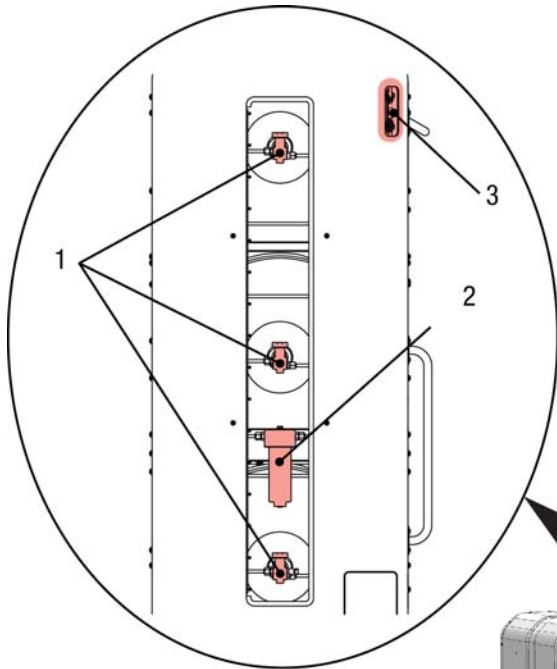


Component Location

- (1) Cylinder Access Door
- (2) Access Panel
- (3) Fuel Outlet Pipe (3/4" Connection, 37° Flare)
- (4) High Pressure Fuel Inlet/Outlet Pipe* (1/2" ORFS 8-6-6 Connection)*
- (5) High Pressure Fuel Inlet/Outlet Pipe* (3/8" ORFS 8-6-6 Connection)*
- (6) System Vent Valve
- (7) System Vent Cap

**For frame mounted cylinder connection*

Component Location

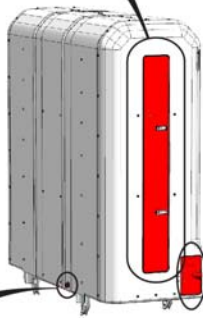
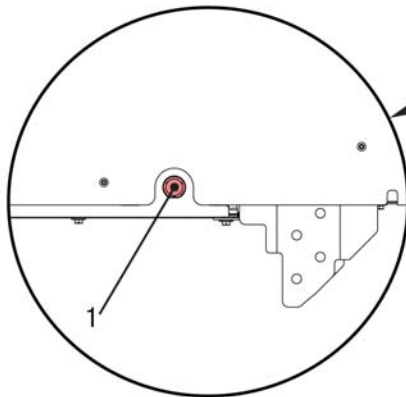


Cylinder Access Door

- (1) Cylinder Manual Shut-Off Valves
- (2) High-Pressure Coalescing Filter
- (3) PRD Outlet Ports

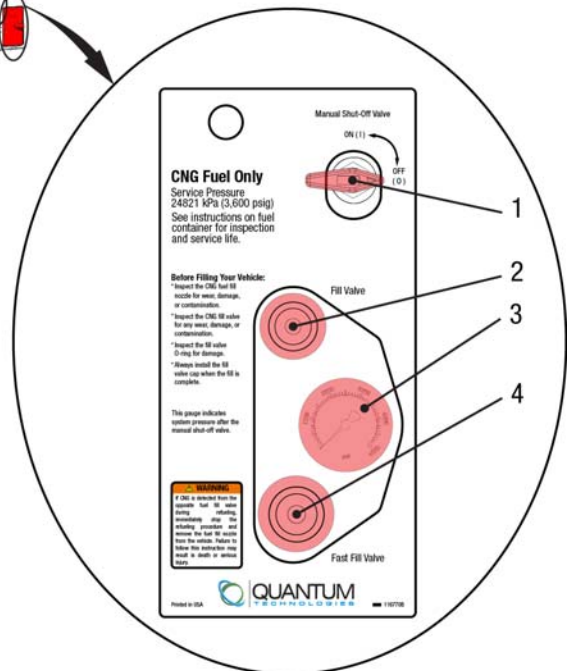
Electrical Interface

- (1) Electrical Connector

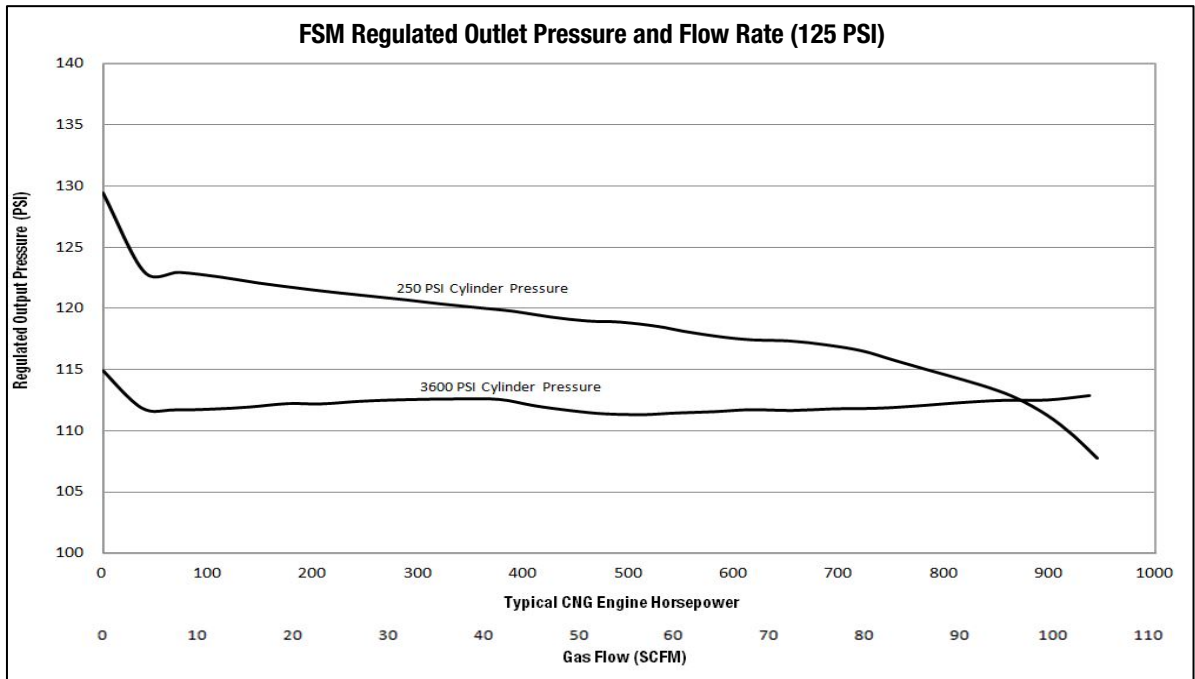


Fill Panel

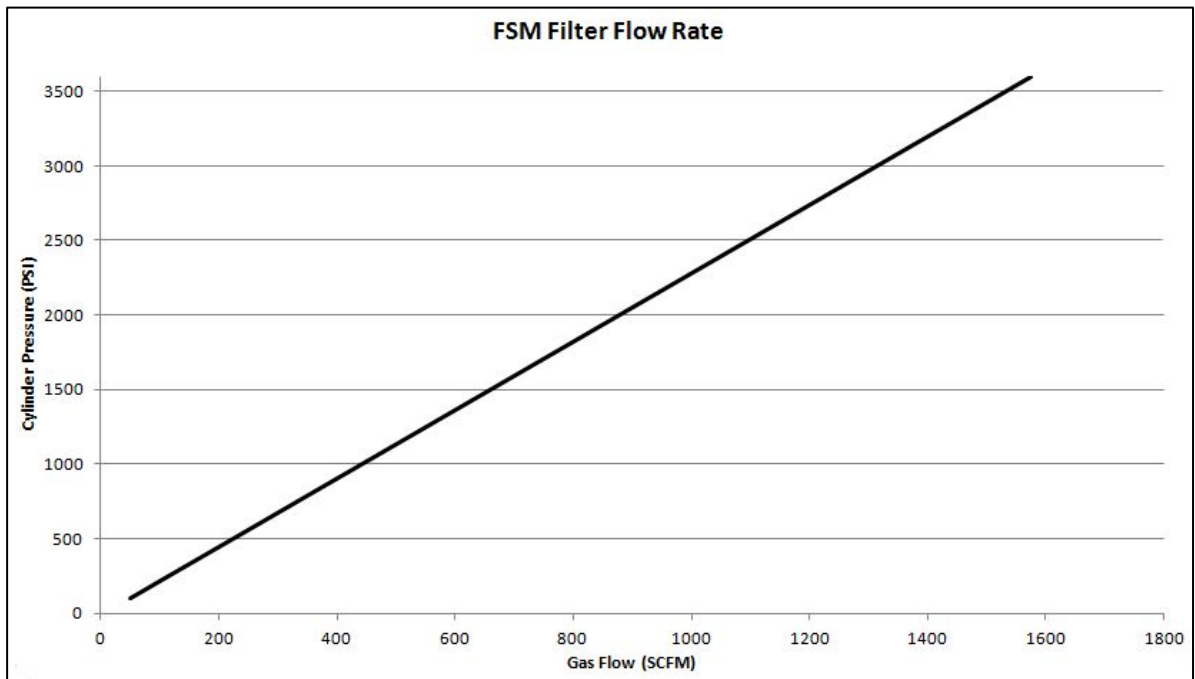
- (1) Manual Shut-Off Valve
- (2) Standard CNG Fill Valve (to 3600 psi)
- (3) CNG Pressure Gauge (0-5000 psi)
- (4) High Flow CNG Fill Valve, ISO 14469-2



FSM Regulated Outlet Pressure and Flow Rate



Coalescent Fuel Filter Flow Rate



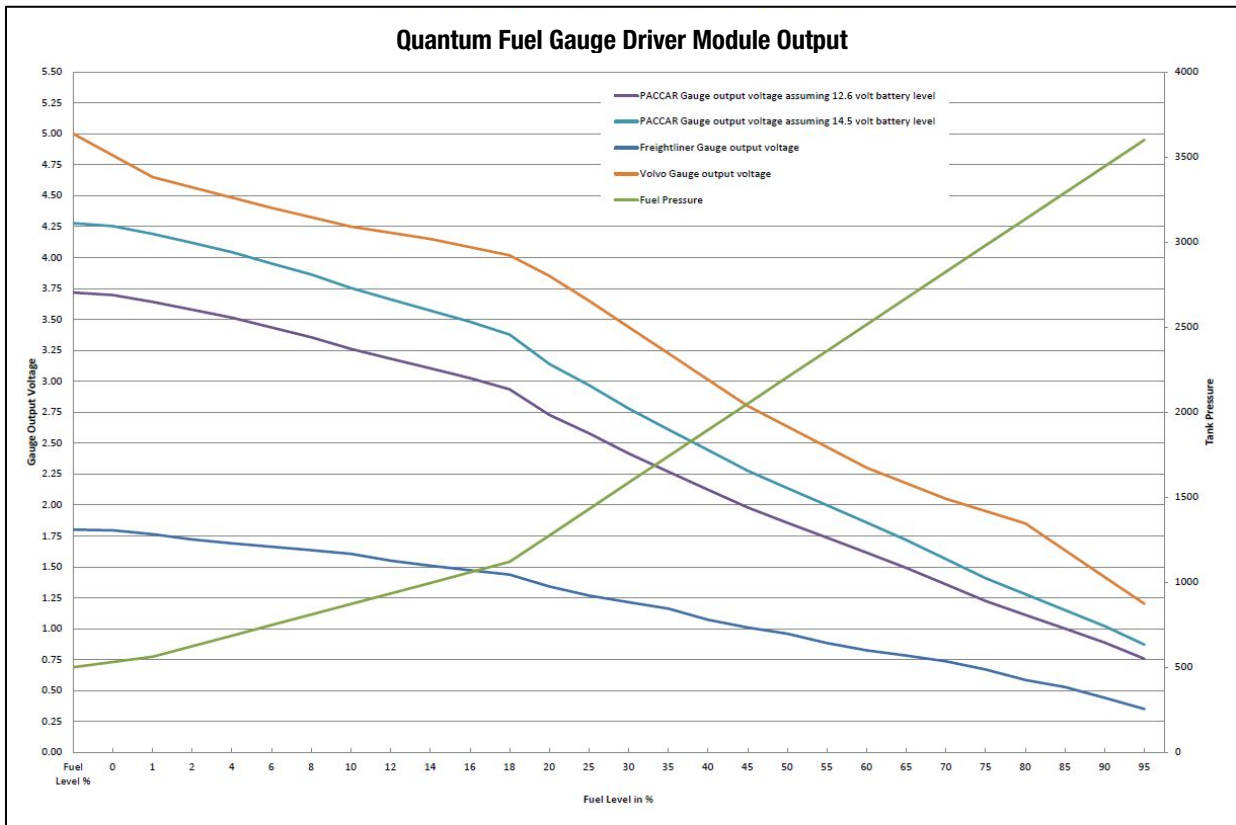
Fuel Flow Data

Regulator Outlet Pressure 125 PSI (8.6 bar)

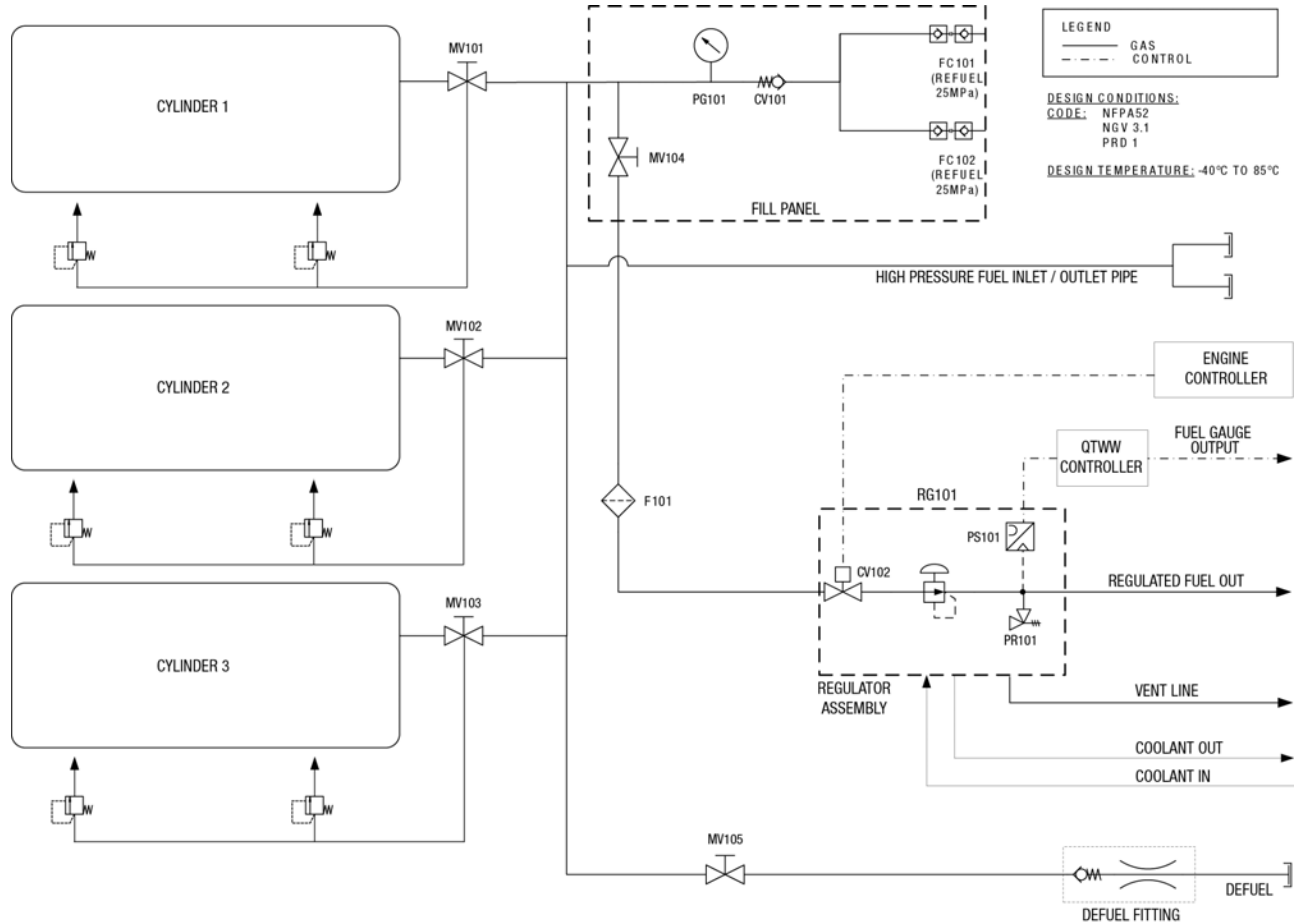
Maximum Regulator Flow @ 250 psi (Inlet) 110 SCFM

* Refer to the FSM Regulated Outlet Pressure and Flow Rate in this brochure for additional information.

Fuel Gauge Driver Module Output Voltages



System Mechanization



- CV101 Check Valve
- CV102 Control Valve, Solenoid
- F101 CNG Coalescent Filter Assembly
- FC101 NGV1 Fill Valve
- FC102 ISO 14469-2 Compliant High Flow Fill Valve
- MV101 CNG Cylinder Manual Shut Off Valve
- MV102 CNG Cylinder Manual Shut Off Valve
- MV103 CNG Cylinder Manual Shut Off Valve
- MV104 FSM Manual Shut Off Valve
- MV105 CNG System Vent Valve
- PG101 Pressure Gauge
- PR101 Pressure Relief Valve
- PS101 Pressure Sensor
- RG101 Regulator

Accessories

Description	Part Number
Gauge – Fuel, Kenworth	116817
Gauge – Fuel, Peterbilt	116816
Gauge – Wire Harness, Vehicle Side, 8 Way	116595
Harness – Pigtail, Fuel Gauge	116819
Harness – Pigtail, Ignition Jumper (Peterbilt 300, 600, 800)	116821
Terminal – Fuel Gauge, Kenworth (T800)	116816
Philips Stow-A-Way Kit	117317
Screw – Heavy Hex Flange, M16 – 2.0 X 40mm	S1-20298-013
10' CNG Low Pressure Flex Hose	116574-003
12' CNG Low Pressure Flex Hose	116574-004
15' CNG Low Pressure Flex Hose	116574-005
18' CNG Low Pressure Flex Hose	116574-006
Fuel Line – Crossover, 1/2"	117287
Fuel Line – Crossover, 3/8"	117288

FSM Module Options

Description	Part Number
RH 25"x90" Slave Module	116691
RH 25"x80" Slave Module	116727

Ordering Options

Name – Description	Part Number	Qty.
Receptacles – Filtered	117305	1
Receptacles - Unfiltered	117306	1
Paint – Standard	117284	1
Paint – Premium	117283	1
Harness, Paccar Interface Gen 2	117266	1
Harness. Freightliner Interface Gen 2	117267	1
Harness, Volvo Interface Gen 2	117265	1

General Maintenance

Quantum recommends inspection of the CNG cylinder and brackets every 3 years or 36,000 miles (60,000 km), whichever comes first. The frequency and level of inspection may vary based on state and local requirements.

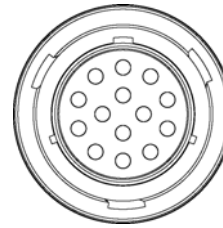
For additional information, refer to the *Type IV Compressed Natural Gas (CNG) Cylinder Installation and Maintenance Guide* available at www.qtw.com.

Drain the coalescing filter as needed or at least every oil change. Change the filter every 36,000 miles or after four successful drains. Refer to the Maintenance Manual for more information.

Drain and service intervals will vary based on fuel quality.

Appendix A – Interface Connections

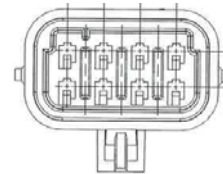
A	Vehicle Ground	H	Fuel Gauge Driver SIG2
B	N/C	J	Fuel Gauge Driver SIG3
C	Ignition Solenoid Pwr	K	Fill Door Sw Input
D	Key Switch 12v Pwr	L	Fill Door Sw RTN
E	F-CAN Hi	M	Fill Box Lighting Pwr
F	F-CAN Lo	N	Lighting Comm GND
G	Fuel Gauge Driver SIG1	P	Load Lights Pwr



Electrical Connector / Interface

PACCAR / Peterbilt / Kenworth – 8 Pin			
A	Vehicle Ground	E	N/A
B	N/A	F	Fill Door Sw Input
C	Ignition Solenoid Pwr	G	Fill Door Sw RTN
D	Key Switch 12v Pwr	H	Fuel Level Signal

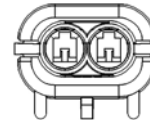
Delphi, M/P 150 Male Connector, 8 way P/N 12047931



Vehicle 8-Pin Connector

2 Pin	
A	GND, .80 WH
B	12V Sw Pwr, .80 YL

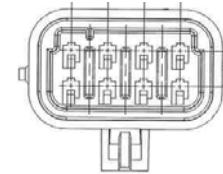
Delphi, M/P 280 Male Connector 2 way
P/N 15300002



Vehicle 2-Pin Connector

Freightliner – 8 Pin			
A	Vehicle Ground	E	N/A
B	N/A	F	Fill Door Sw Input
C	Ignition Solenoid Pwr	G	Fill Door Sw RTN
D	Key Switch 12v Pwr	H	Fuel Level Signal

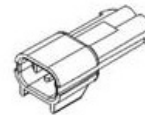
Delphi, M/P 150 Male Connector, 8 way P/N 12047931



Vehicle 8-Pin Connector

2 Pin	
1	GND, .80 BK
2	12V Sw Pwr .80 PK/WH

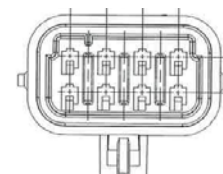
PKC/AEES, 2.8 Male Connector, 2 way
P/N E-5089-001



Vehicle 2-Pin Connector

Volvo / Mack – 8 Pin			
A	Vehicle Ground	E	Fill Door Sw RTN
B	N/A	F	N/A
C	Ignition Solenoid Pwr	G	N/A
D	Key Switch 12v Pwr	H	Fuel Level Signal

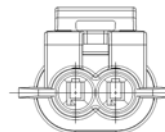
Delphi, M/P 150 Male Connector, 8 way P/N 12047931



Vehicle 8-Pin Connector

2 Pin	
A	GND, .80 WH/OR
B	12V Sw Pwr, .80 GY

Delphi, M/P 150 Female connector, 2 way
P/N 12052644



Vehicle 2-Pin Connector

Interface Harness Options

Part Number	MFR Application	Description	Specifications
117266	PACCAR / Peterbilt / Kenworth	Interface Harness	0-5v Pulse Width Modulated
117267	Freightliner	Interface Harness	0-5v Pulse Width Modulated
117265	Volvo / Mack	Interface Harness	255 Ohms to GND / PWR