

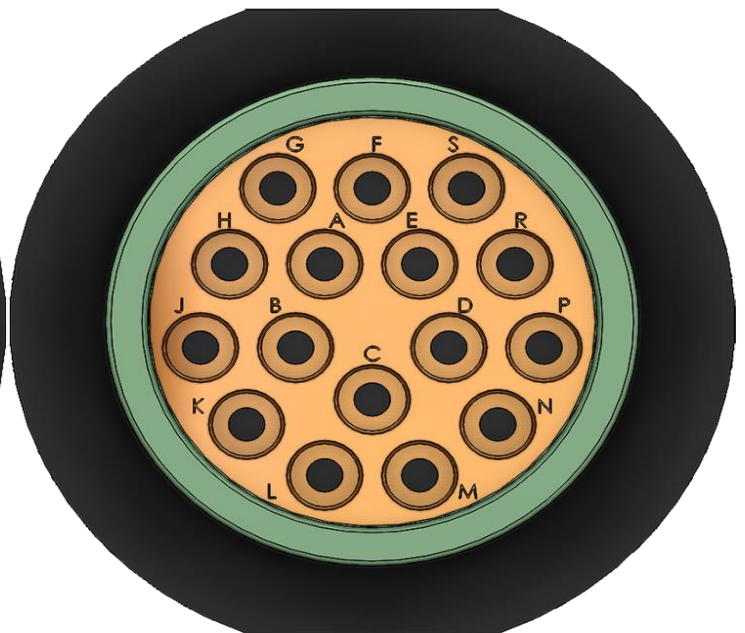
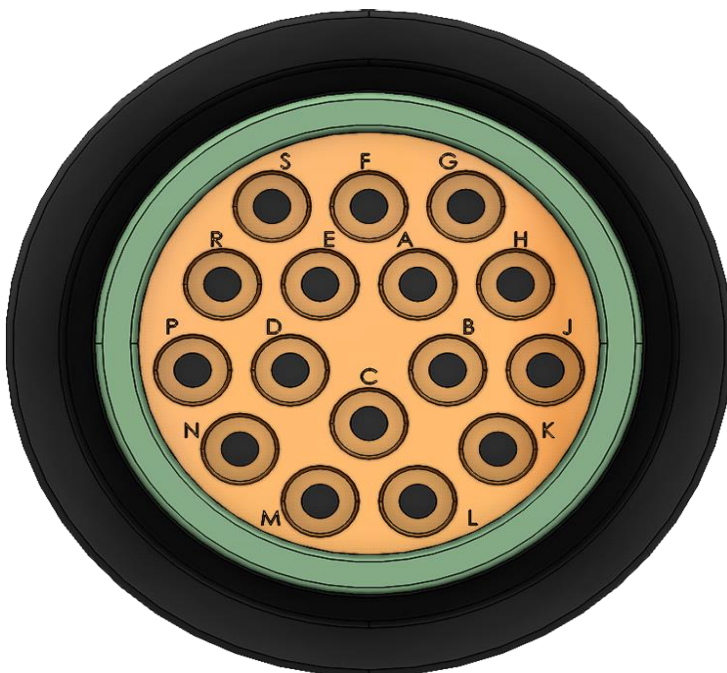
INSTALLATION INSTRUCTIONS

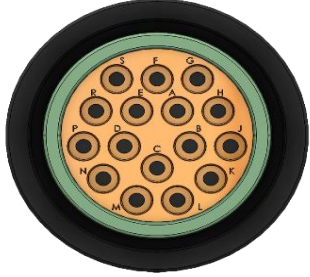
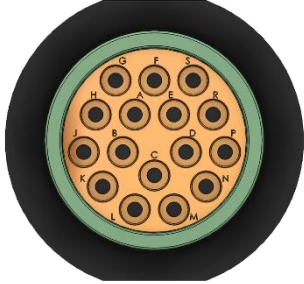




FUEL CELL SUBHARNESS KIT

Document: 19-0340







Support: info@radiumauto.com

WIRE PIN	WIRE LABEL	COMPONENT DESCRIPTION	RADIUM FCST-X PART NUMBERS													
			20-1990-00	20-1990-01	20-1990-02	20-1990-03	20-1991-00	20-1992-00	20-1992-01	20-1992-02	20-1992-03	20-1993-00	20-1995-00			
FUEL PUMPS	1	A	FP1+	FUEL PUMP 1 POSITIVE	FP1+	FP1+	FP1+	FP1+	FP1+	FP1+	FP1+	FP1+	FP1+	---	---	
		B	FP1-	FUEL PUMP 1 NEGATIVE	FP1-	FP1-	FP1-	FP1-	FP1-	FP1-	FP1-	FP1-	FP1-	---	---	
		A	BP1W	BRUSHLESS PUMP 1 WHITE	BP1W	---	---	---	---	---	---	---	---	---	BP1W	---
		B	BP1B	BRUSHLESS PUMP 1 BLUE	BP1B	---	---	---	---	---	---	---	---	---	---	---
		C	BP1O	BRUSHLESS PUMP 1 ORANGE	BP1O	---	---	---	---	---	---	---	---	---	---	---
		B	BP1R	BRUSHLESS PUMP 1 RED	---	---	---	---	---	---	---	---	---	---	BP1R	---
	C	BP1G	BRUSHLESS PUMP 1 GREEN	---	---	---	---	---	---	---	---	---	---	BP1G	---	
	2	C	FP2+	FUEL PUMP 2 POSITIVE	FP2+	---	FP2+	FP2+	FP2+	FP2+	---	FP2+	FP2+	---	---	
		D	FP2-	FUEL PUMP 2 NEGATIVE	FP2-	---	FP2-	FP2-	FP2-	FP2-	---	FP2-	FP2-	---	---	
		D	BP2W	BRUSHLESS PUMP 2 WHITE	BP2W	---	---	---	---	---	---	---	---	---	BP2W	---
		E	BP2B	BRUSHLESS PUMP 2 BLUE	BP2B	---	---	---	---	---	---	---	---	---	---	---
		F	BP2O	BRUSHLESS PUMP 2 ORANGE	BP2O	---	---	---	---	---	---	---	---	---	---	---
		E	BP2R	BRUSHLESS PUMP 2 RED	---	---	---	---	---	---	---	---	---	---	BP2R	---
	3	F	BP2G	BRUSHLESS PUMP 2 GREEN	---	---	---	---	---	---	---	---	---	---	BP2G	---
		E	FP3+	FUEL PUMP 3 POSITIVE	FP3+	---	---	FP3+	FP3+	FP3+	---	---	FP3+	---	---	
F		FP3-	FUEL PUMP 3 NEGATIVE	FP3-	---	---	FP3-	FP3-	FP3-	---	---	FP3-	---	---		
G		BP3W	BRUSHLESS PUMP 3 WHITE	BP3W	---	---	---	---	---	---	---	---	---	---	---	
L	H	BP3B	BRUSHLESS PUMP 3 BLUE	BP3B	---	---	---	---	---	---	---	---	---	---	---	
	J	BP3O	BRUSHLESS PUMP 3 ORANGE	BP3B	---	---	---	---	---	---	---	---	---	---	---	
	K	BGND	BRUSHLESS PUMP SHARED GROUND	BGND	---	---	---	---	---	---	---	---	---	BGND	---	
LIFT	G	LFP+	LIFT FUEL PUMP POSITIVE	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	LFP+	
	H	LFP-	LIFT FUEL PUMP NEGATIVE	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	LFP-	
	L	LBPRO	LIFT BRUSHLESS PUMP RED/ORANGE	---	---	---	---	LBPRO	LBPRO	---	---	---	---	LBPRO	LBPRO	
	M	LBPB	LIFT BRUSHLESS PUMP BLACK	---	---	---	---	LBPB	LBPB	---	---	---	---	LBPB	LBPB	
	N	LBPW	LIFT BRUSHLESS PUMP WHITE	---	---	---	---	LBPW	LBPW	---	---	---	---	LBPW	LBPW	
	P	LBPGB	LIFT BRUSHLESS PUMP GREEN/BLUE	---	---	---	---	LBPGB	LBPGB	---	---	---	---	LBPGB	LBPGB	
LEVEL	S	FLS1	FUEL LEVEL SWITCH 1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	FLS1	
	S	FLS2	FUEL LEVEL SWITCH 2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	FLS2	



STEP	TOOLS NEEDED	INSTRUCTIONS	PHOTO
1		<p>Pinouts shown for the cable mount connector.</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. This connector housing will use the female contacts. 2. There are no pin designations for the following letters: i o q 3. The "subharness" will attach to the fuel cell surge tank terminals and use this cable mount connector. 	
2		<p>Pinouts shown for the bulkhead panel mount connector.</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. This connector housing will use the male pins. 2. There are no pin designations for the following letters: i o q. 3. The "chassis harness" will use this bulkhead panel mount connector and connect wire to components such as: relays, fuses, pump controllers, ECU, ground points, etc. 	
3		<p>Referencing the pinout chart on the first page, find the part number of your FCST-X. Going down that column will show all of the potential components that can be installed for that part number. This does not include extra fuel pumps that were later installed.</p> <p>Search through the labeled ring terminals and pick out the wires that are required for your specific application.</p>	
4		<p>Loosely secure the ring terminals to the corresponding fuel cell surge tank studs (shown blue).</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. It is suggested to use the handle for transferring wires from one side to the other. 2. If a fuel level switch is installed, the ring terminals will likely need to be removed from the wires depending on how those wire will be terminated. 	
5		<p>Find a location to install the aluminum wire connector mount onto the fuel cell.</p> <p>NOTE: The 2 slotted holes (shown) permit the wire connector mount to install along the perimeter of any Radium Engineering RA-Series fuel cell.</p>	
6	5/32" Allen Wrench	<p>There are many ways the wire connector mount can be installed. In the example shown, the wire connector mount is installed on the rear (or front) side of a 6 gallon fuel cell. Look how the mount is rotated outwards (away from the fuel cell surge tank).</p>	

7	5/32" Allen Wrench	In the example shown, the wire connector mount is installed on the side of a 22 gallon fuel cell. Look how the mount is rotated inwards (towards the fuel cell surge tank).	
8		Place the bulkhead panel mount connector through the keyed hole of the wire connector mount. Insert the wave washer and then tighten the large panel nut.	
9		Because wiring specialists are very particular of material choice and assembly procedure, looming is not provided.	
		One option is to use abrasion-resistant expandable sleeving and 2 large pieces of heat shrink, as shown. These components would need to be slid over the wires now. Another popular option is to simply wrap the wires with electrical adhesive cloth (fabric) tape. This would be performed later after the connectors are fully terminated.	
10		There are 2 different black rubber boots provided. These provide extra protection from dirt, debris, water, etc. They have to be slid down the wires now prior to terminating the cable mount connector.	
		The straight boot is shown. The right angle boot will need to be cut for the wires to pass through. Now is the time to decide which will be used for the subharness and which will be used for the chassis harness.	
11		Temporarily install the cable mount connector to the bulkhead panel mount connector. Simply lineup the tabs and spin a quarter turn to lock in place.	
		NOTE: To unmate the connectors, twist 1/4 turn until it unmates from the receptacle.	
12	Wire Cutter	Strategically route all wires to the cable mount connector and cut to length. Strip 3/16" (5mm) of insulation off the end of each wire.	
	Wire Stripper		
	Wire Crimper		
		As shown, these stamped contacts are not the common solid closed barrel type. For both male and female stamped contacts, an open-barrel crimp tool must be used.	

13	Wire Crimper	Crimp the female contacts to all of the wires that will be used for your specific application.	
14		Observe the letters on the backside of the cable mount connector (orange grommet side).	
		While referencing the pinout chart above, fully insert each wire into the appropriate cavity until a click is "felt". Give the wire a tug to confirm it was seated properly.	
15		If a stamped contact ever needs to be removed, there are many extractors available (Deutsch 114010-ZZ shown).	
		From the orange grommet side, snap and slide the tool along the wire fully into the cavity. While holding the tool straight inside the connector with some resistance, simultaneously pull the wire assembly out of the cavity. If there is a struggle releasing the contact, spin the tool 1/4 turn and retry.	
16		For open cavities, there are sealing plugs provided. Simply insert and press the plug into the orange grommet holes.	
17		Shown is an example of a subharness assembly.	
18		Male contacts are included for the bulkhead panel mount connector (chassis harness).	
		However, wiring will need to be purchased separately as it is not provided. NOTE: Automotive grade 10AWG TXL wire was used for the subharness.	

