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High Performance Fans

Fan Relay Harness (FRH)

185 Degree Thermostat Controlled Relay (185FH)

195 Degree Thermostat Controlled Relay (195FH)

Parts Included:

Fan wiring harness with relay and fuse holder

Fan thermostat, 185 degrees / 195 degrees

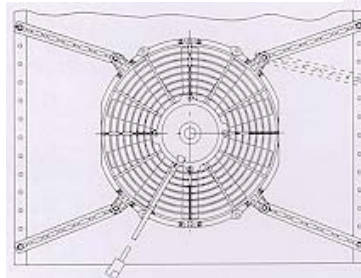
Overview:

We designed the SPAL fan wiring harness to enable the simplest installation of our performance fans. It is compatible with all types of vehicles and can be installed on positive or negative ground vehicles with no modifications.

Installing the fan:

When installing electric cooling fans, it is important to cover as much surface area as possible. Mount the fan as high up on the core as possible. Attach the fan to the small area around the core of the radiator where there is a metal lip that is approximately 1/4" to 3/8". This will allow mounting of the fan(s) without compromising the core of the radiator.

(Please call for fan shroud suggestions).



Wiring:

Mount the relay in a secure place in the engine compartment away from heat sources. Once this is completed, connect the wires per the diagram and notes below.

Red: Connect to the red wire of fan pigtail with pre-terminated yellow crimp.

Gray: Connect to thermostat socket (sending unit) with blue ring crimp connector.

Yellow: Connect to positive battery terminal using the fuse holder and yellow crimp connectors per diagram (see back).

Orange: Connect to ignition switch +12 vdc when engine is in run position. (Hook to constant +12 vdc for the fan to run continuously when the engine is hot even when the ignition switch is off).

Black: Connect ring terminal to chassis ground.

Fuse Holder: Connect fuse holder inline per diagram within 12" of the battery using ring terminal or equivalent.

* Note: On medium profile fans use a 20 amp fuse, on low profile fans use a 15 amp fuse

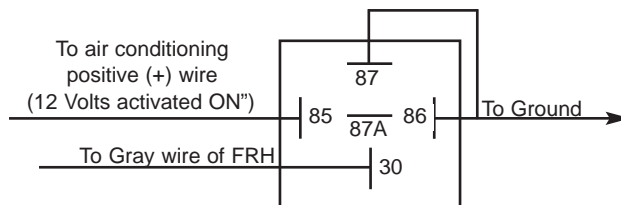
Installing the Thermostat Switch:

The sensor has 3/8" pipe thread. The thermostat supplied with the kit is an OE type that is designed to mount in the cylinder head of the engine. However, any mounting in water jacket is suitable. The 195FH sending unit comes on at 195 degrees and off at 175 degrees. The 185FH module turns on at 185 degrees and off at 165 degrees. The modules will work on the majority of applications. If a different size adapter is needed, the correct size thread adapter can be found at most automotive parts or hardware stores (1/2" adapter included in the kit). Do not use Teflon tape on the sensor it can cause poor electrical contact and incorrect temperature readings.

High Current Applications: See multiple fan wiring diagram on reverse page

Air Conditioning Relay:

Additional FRH required. From the (second) A/C relay, connect Yellow and Orange wires to ground. Connect the Red wire to the sending unit wire of the original fan relay harness. The Gray wire from the A/C relay goes to the +12 volt of the A/C compressor clutch wire. The fan will turn on when the A/C compressor activates.



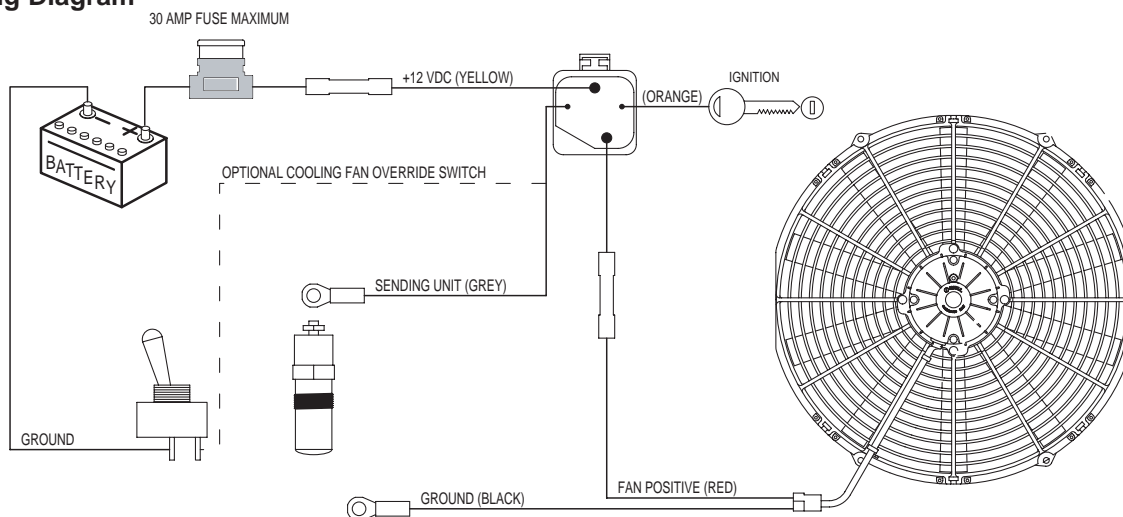
Tech Support Line: 800 - 454 - 7725

General Information:

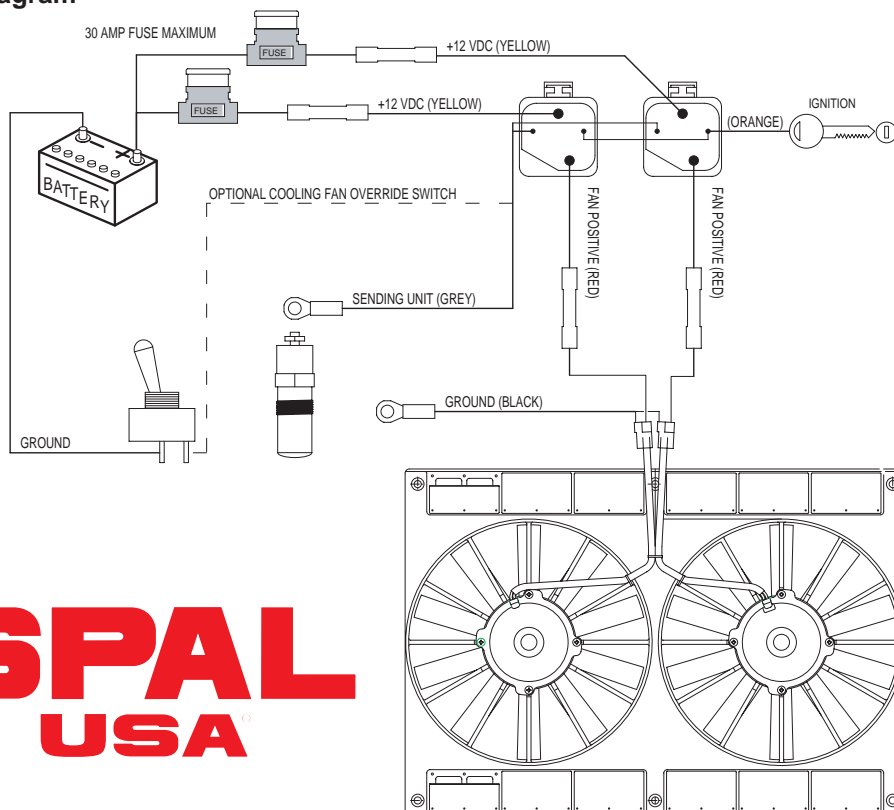
If the vehicle has overheating problems, there can be many causes. Step one is to determine what is causing the vehicle to overheat. The chart below provides several problem, cause and solutions to overheating. Please contact our technical advisors at 800-454-7725 with any additional questions.

Problem	Cause(s)	Solution(s)
Engine overheats at idle and low speeds	Poor air flow through radiator	Install electric fan or duct air into engine compartment.
	Poor engine ventilation	Install SPAL fan and make sure engine compartment can vent hot air.
	Insufficient radiator	Have the core cleaned or replaced with an appropriate size.
	Engine idle circuit too lean	Enrich idle circuit.
	Engine timing too advanced	Retard timing.
Engine overheats continuously	Poor radiator / engine combination	Install sufficient radiator.
	Defective or stuck thermostat	Install new thermostat.

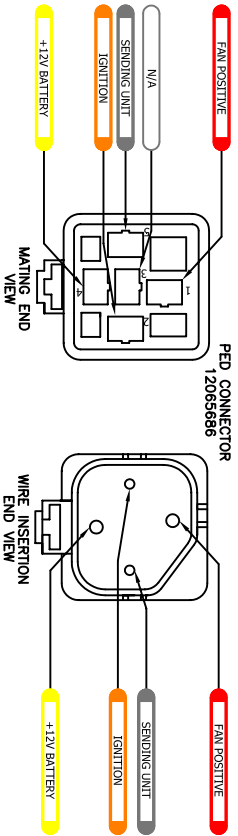
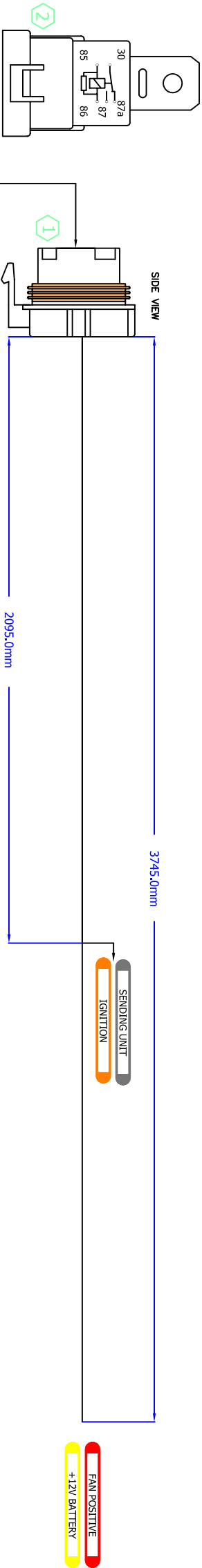
Single Fan Wiring Diagram



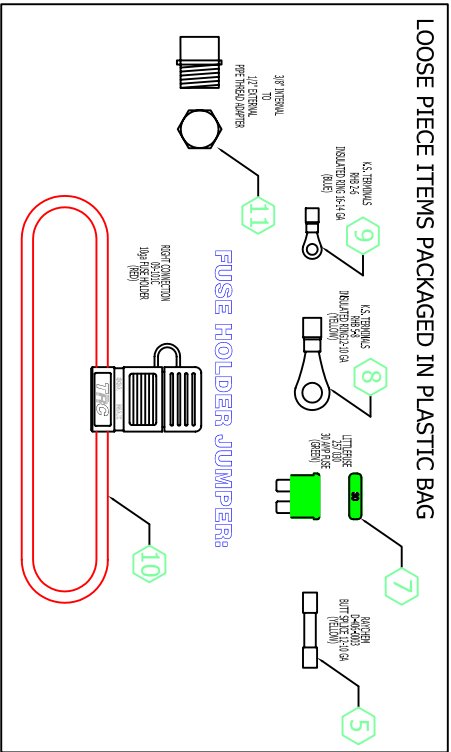
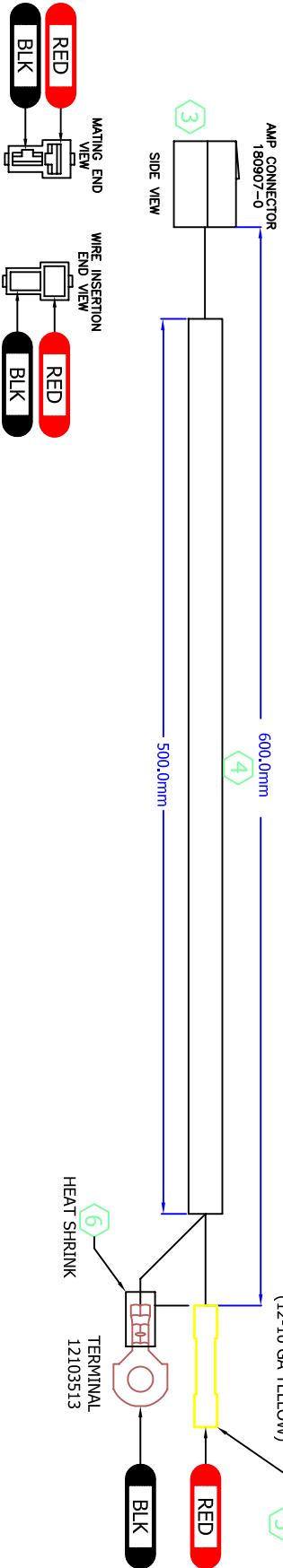
Multiple Fan Wiring Diagram



REVISIONS			
REV	DESCRIPTION	DATE	BY
00	PRE-PRODUCTION	5-18-99	DSH
01	PRODUCTION	8/9/02	DSH
02	UPDATED DRAWING TITLE BLOCK	9/15/04	NSK
03	UPDATED CONNECTOR AND OVERALL ROUT INFORMATION	7-4-07	DSH
04	UPDATED OVERALL PRINT INFORMATION	10-1-07	DSH/TH



JUMPER:



NOTES:

- DIMENSIONS ARE MEASURED FROM BACK OF CONNECTOR TO CENTER OF BREAKOUTS OR SPLICES (UDS).
- SPLICES TO BE SONIC-WELDED OR SPLICE CLIPPED WITH GLUE-TYPE HEAT SHRINK COVERING 1 1/2" (REF.) ON EACH SIDE OF THE SPLICE AS MEASURED FROM CENTER OF THE SPLICE.
- SUBSTITUTE COMPONENTS MAY BE USED UPON ENGINEERING APPROVAL FROM SPAL-USA.
- ALL WIRES ARE GXL TYPE INSULATION UNLESS OTHERWISE SPECIFIED IN CONDUCTION WITH SAE J-1128. ALL CIRCUITS TO BE MARKED WITH CORRESPONDING CIRCUIT NUMBER AT TWO INCH INTERVALS (REF.)
- HARNESS TO BE COIL-WRAPPED IN DIAMETER NO LARGER THAN 8 INCHES.
- SPLICE LOCATION SHOULD OFFSET ONE ANOTHER BY AT LEAST 2 INCHES.
- SINGLE LINE DRAWING REPRESENTATION MAY CARRY MORE THAN ONE CIRCUIT.
- HARNESS TO BE 100% CONTINUITY CHECKED. FLAG LABEL AT INDICATED LOCATION WITH INFORMATION AS INDICATED. PAPER-TYPE LABEL WITH ADHESIVE BACK. LABEL IS TO BE APPLIED UPON SUCCESSFUL COMPLETION OF ELECTRICAL CONTINUITY CHECKING.
- SPOT TAPING MAY BE USED AS NEEDED TO SECURE HARNESS BUNDLE IN THE MANUFACTURING PROCESS.

PART NO. FAN RELAY HARNESS (FRH)

WIRE	GA	DESCRIPTION	CUT	LOCATION	TERMINAL	APL	TERMINAL
MAIN HARNESS:							
FAN POSITIVE	12	GXL12RED	3765.0mm	1		C	BLUNT CUT
+12V BATTERY	12	GXL12YELLOW	3765.0mm	1		C	BLUNT CUT
IGNITION	18	GXL18ORANGE	2115.0mm	1		C	SCORED BLUNT CUT (7/32")
SENDING UNIT	18	GXL18GRAY	2115.0mm	1		C	SCORED BLUNT CUT (7/32")
JUMPER HARNESS:							
RED	12	GXL12RED	630.0mm	3	5	C	ITEM #5
BLACK	12	GXL12BLACK	630.0mm	3	6	C	ITEM #6

PART NO. FAN RELAY HARNESS (FRH)

ITEM	DESCRIPTION	CODE	PLC
1	S-WAY CONNECTOR	PED	001
2	SEALED RELAY	HELLA	001
3	2-WAY CONNECTOR	AMP	001
4	SLEEVING	PED	500.0mm
5	BUTT SPLICE	RAYCHEM	002
6	HEAT SHRINK	STRAND	1"
7	30 AMP ATC FUSE	LITTLEFUSE	001
8	INS. RING TERM. 12-10GA	KS TERMINAL	001
9	INS. RING TERM. 16-14GA	KS TERMINAL	001
10	10 GA FUSE HOLDER	TRC	001
11	3/8" TO 1/2" PIPE THREAD ADAPTER	---	001

BILL OF MATERIAL

INCHES			
DIMENSION	MIN	MAX	UNIT
ALL DIMENSIONS	+1.0"	-1/2"	
DATE	04	04	1 OF 1

SPAL USA			
TITLE	DATE	REV	BY
FAN RELAY HARNESS (FRH)	04	04	1 OF 1