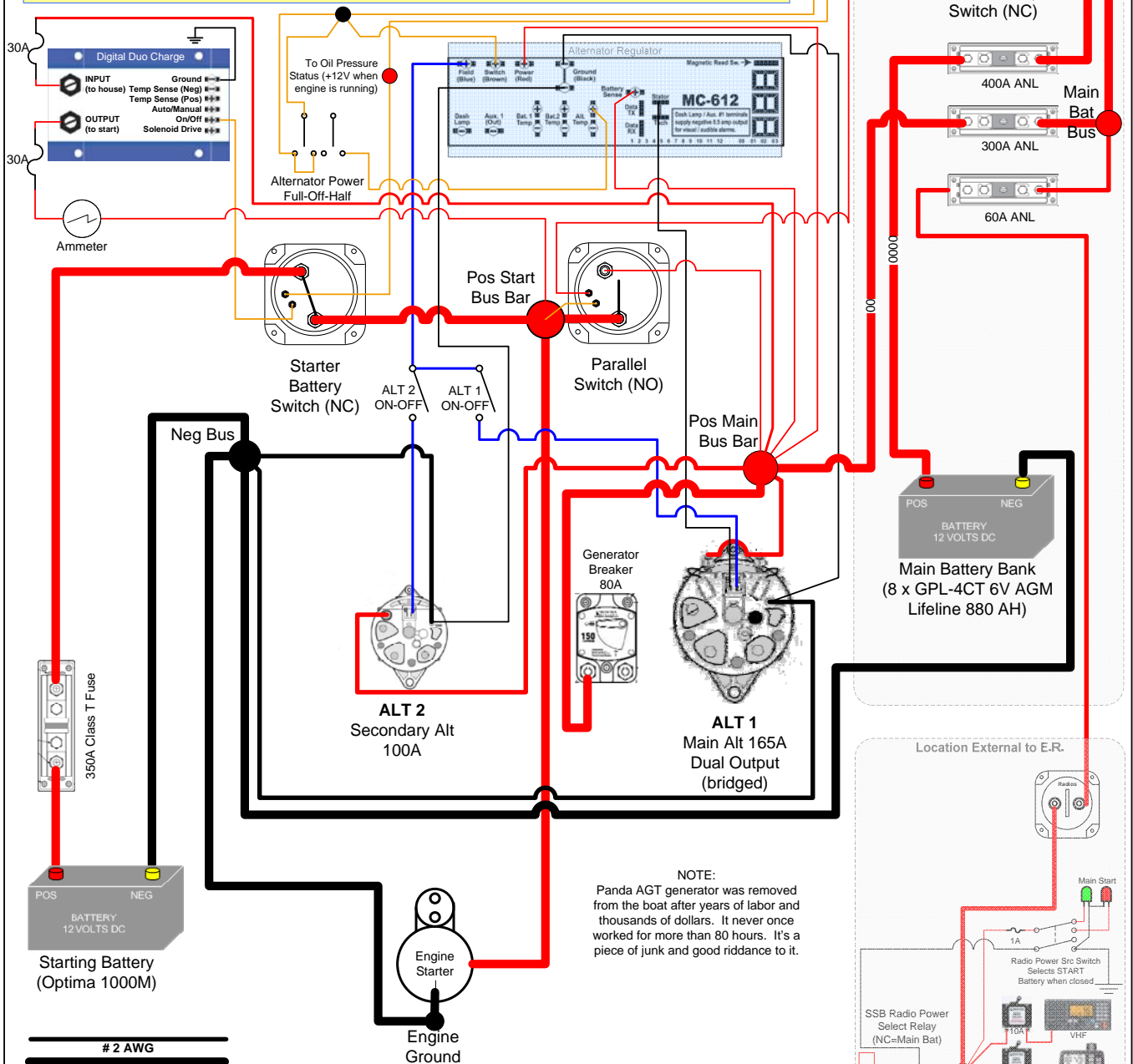


# LOGIC TABLE FOR BATTERY AND PARALLEL SWITCH SETTINGS

SWITCHES			REGULATR	CHARGING SRC FOR	STARTER	HOUSE	GEN OK
MAIN	START	PARALLEL	pwr*/switch**	START	MAIN	POWER	TO RUN (eng off)
X	X	O	YES / YES	DDC	Alt1+Alt2	Main Batt	Yes (Start from Main)
X	O	O	YES / YES	None	Alt1+Alt2	Main Batt	Yes (Start from Main)
X	O	X	YES / YES	None	Alt1+Alt2	Main Batt	Yes (Start from Main)
X	X	X	YES / YES	Alt1+Alt2	Alt1+Alt2	Main+Start	No
O	O	O	NO / NO	None	None	None	No
O	X	O	NO / YES	None	None	Start Batt	No
O	O	X	NO / NO	None	None	None	No
O	X	X	YES / YES	Alt1+Alt2	None	Start Batt	No***

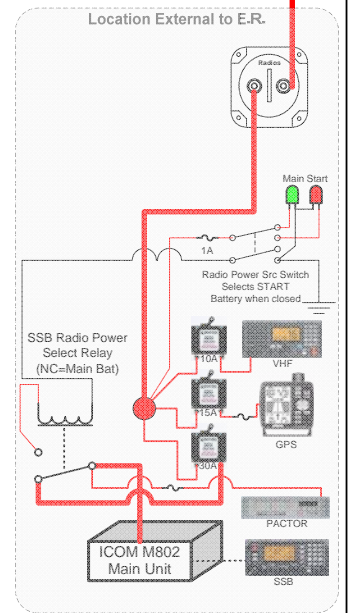
\* pwr = YES indicates the Pos Start Bus Bar is energized to 12VDC and thus Power is supplied to the MC-612.  
 \*\* Switch = YES means Alternator Regulator Switch (brown wire) is energized to 12V when the engine is running (0V when eng stopped)  
 \*\*\* Voltage sense for Generator is on Main Batt, thus cannot charge Start Batt with Genset directly, only through DDC.  
 Note: Radios and Pumps are on separate circuits and have independent power sources.



NOTE:  
 Panda AGT generator was removed from the boat after years of labor and thousands of dollars. It never once worked for more than 80 hours. It's a piece of junk and good riddance to it.

SV BEATRIX - KELLY-PETERSON 44 #286 (1980)

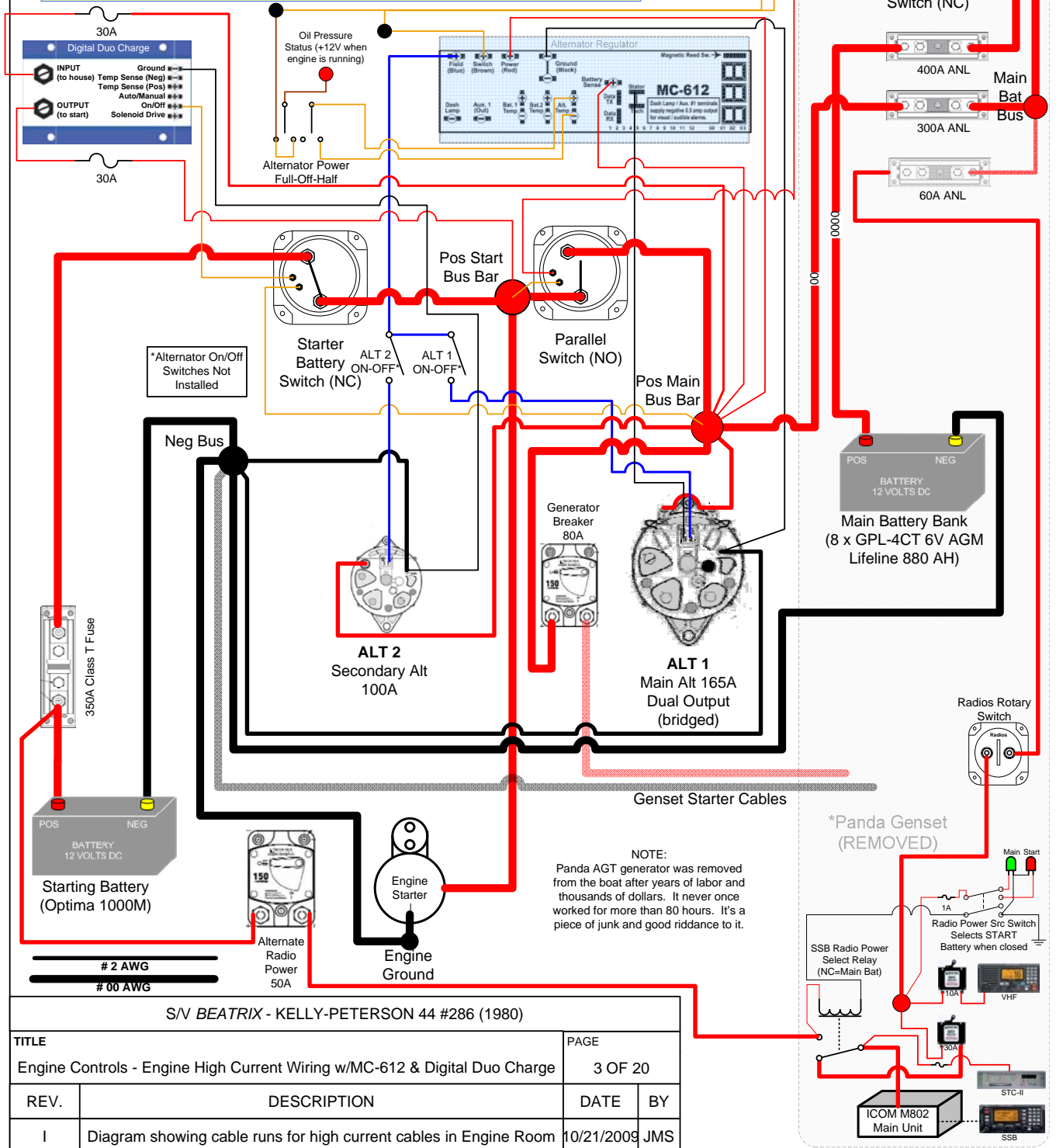
TITLE		PAGE	
Engine Controls - Simplified Combined Two Alternator Installation		2 OF 20	
REV.	DESCRIPTION	DATE	BY
I	Diagram showing cable runs for high current cables in Engine Room	10/21/2009	JMS

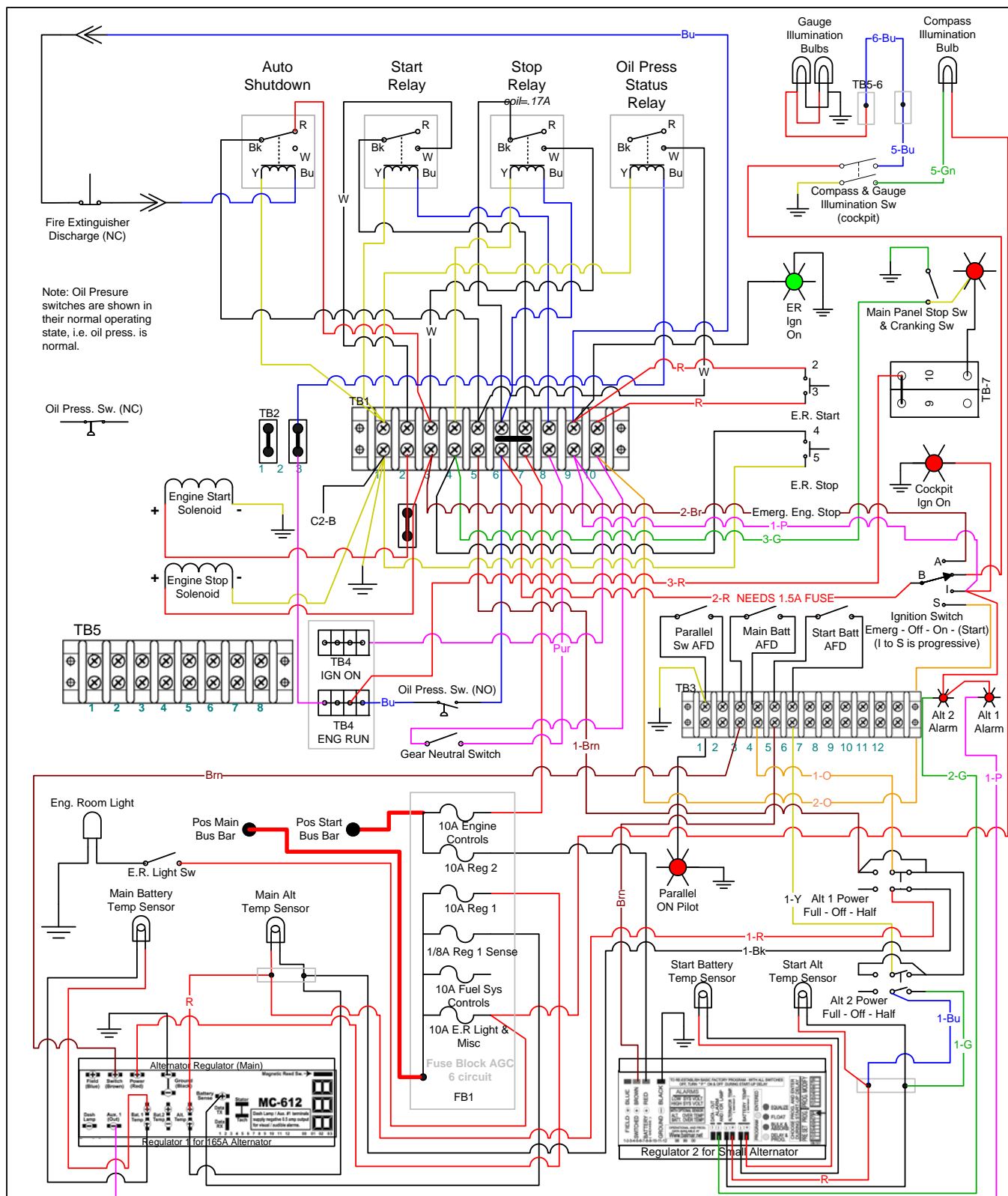


# LOGIC TABLE FOR BATTERY AND PARALLEL SWITCH SETTINGS

SWITCHES		POWER	CHARGING SRC FOR	STARTER	HOUSE
MAIN	START	PARALLEL	REG / DDC	START	POWER
X	X	O	YES / YES	DDC	Alt1+Alt2
X	O	O	YES / NO	None	Alt1+Alt2
X	O	X	YES / NO	None	Alt1+Alt2
X	X	X	YES / YES	Alt1+Alt2	Main+Start
O	O	O	NO / NO	None	None
O	X	O	YES / NO	None	Start Batt
O	O	X	NO / NO	None	None
O	X	X	YES / NO	Alt1+Alt2	None

REG = YES indicates both power and switch connections on the MC-512 are high.  
 This is only when engine is running (0V when eng stopped)  
 DDC = YES means 12V is being supplied to the DDC (Digital Duo Charge) regardless if engine is running or not.  
 Note: Radios and Pumps are on separate circuits and have independent power sources.

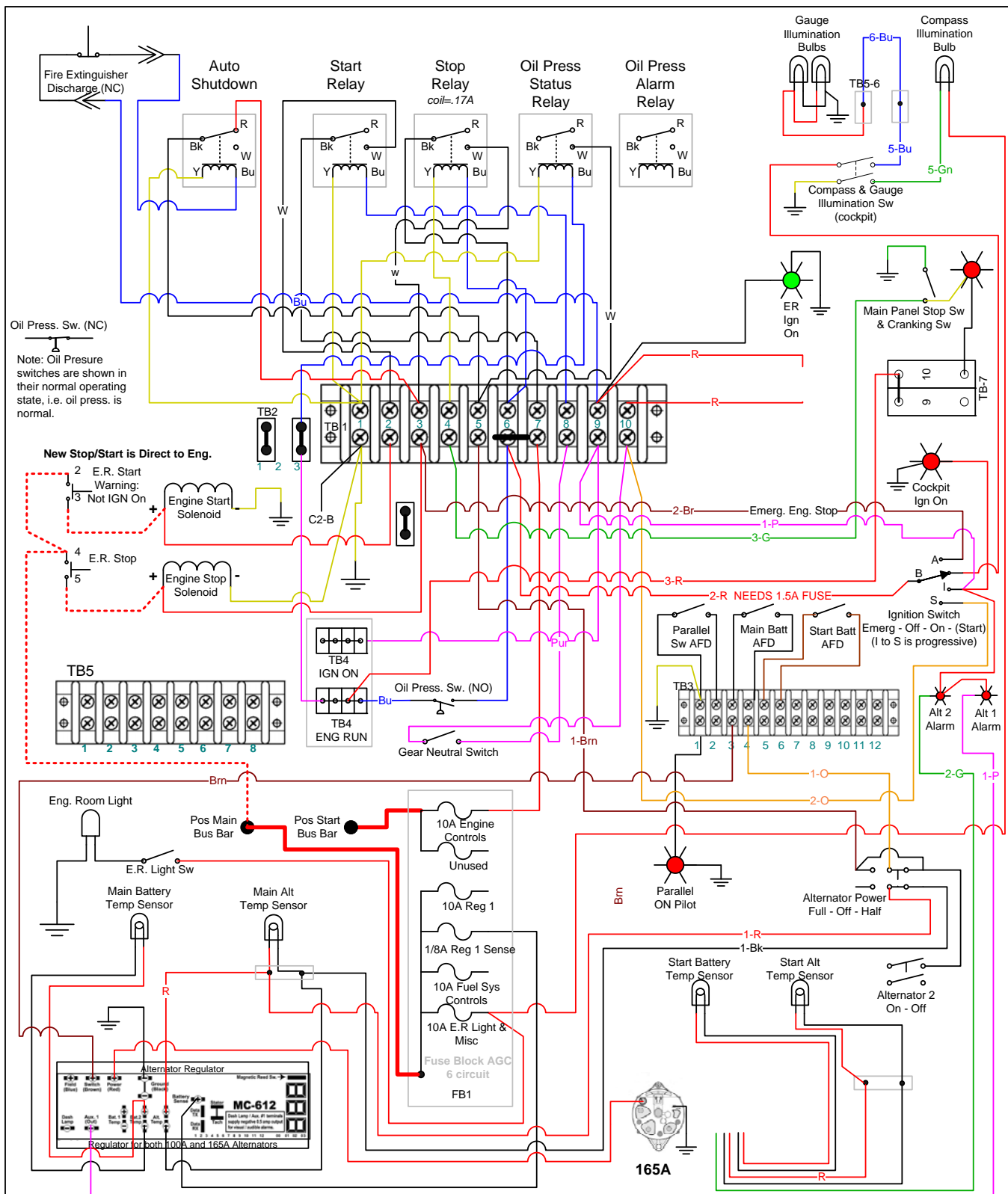




S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

TITLE		PAGE	
Engine Controls - Old Eng & Alt Controls Schematic		4 OF 20	
REV	Wiring Diagram for Engine Control Functions Perkins 4-154 dual alternator	11/02/2002	JMS
I	Remove "Engine Status" Relay, simplify start circuit	10/21/2009	JMS

Note 1. References such as 1-R refer to the signal cable number and conductor color, e.g. Cable #1 - Red.



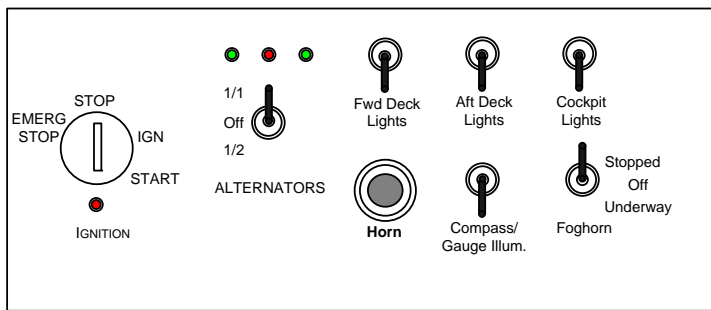
S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

TITLE		PAGE	
Engine Controls - New Eng & Alt Controls Schematic		5 OF 20	
NEW	Wiring Diagram for Engine Control Functions Perkins 4-154 dual alternator	11/02/2002	JMS
I	Remove "Engine Status" Relay, simplify start circuit	10/21/2009	JMS

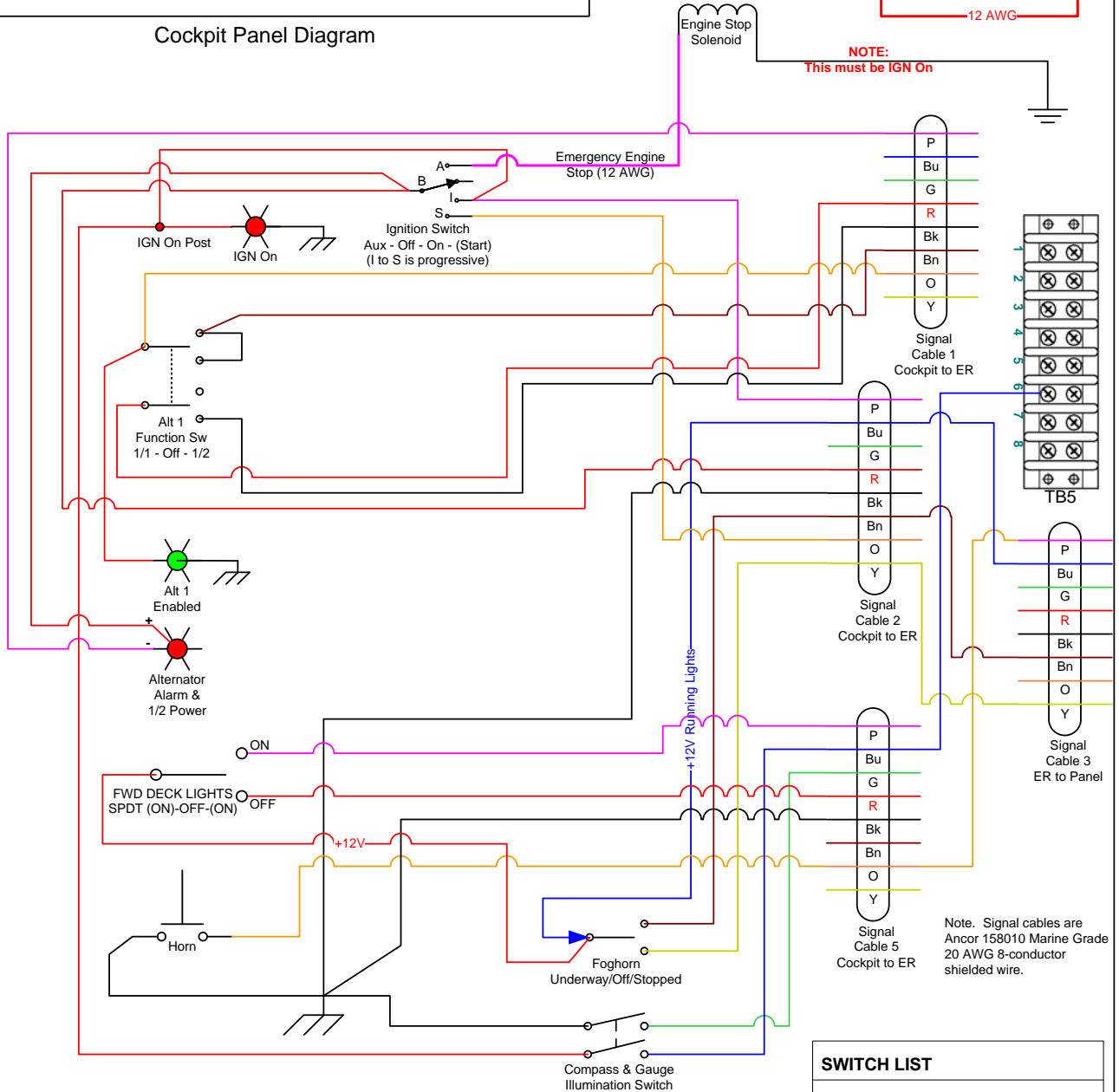
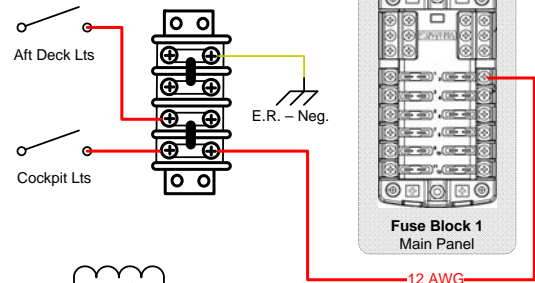
Digital Duo Charge	
INPUT (to house)	Ground
Temp Sense (Neg)	Temp Sense (Pos)
Auto/Manual	On/Off
OUTPUT (to start)	Solenoid Drive

Note 1. References such as 1-R refer to the signal cable number and conductor color, e.g. Cable #1 - Red.





Cockpit Panel Diagram



#### SWITCH LIST

- (1) Ignition switch w/key
- (3) DPDT ON-OFF-ON
- (1) DPDT OFF-ON
- (1) SPST Horn Button OFF-(ON)
- (2) SPST OFF-ON

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

TITLE		PAGE	
Engine Controls - Cockpit Control Panel Schematic		6 OF 20	
REV.	DESCRIPTION	DATE	BY
I	Wiring Diagram for Cockpit Control Panel	10/21/2009	JMS

C1 - SIGNAL CABLE 1	
RUN	Engine Room to Cockpit
COLOR	DESCRIPTION
PUR	1/2 power signal ALT 1 - Reg 1 AUX 1*
BLUE	1/2 power Alt 2 - Alt Temp Sensor (REMOVE)
GRN	1/2 power Alt 2 - Alt Temp Sensor (REMOVE)
RED	1/2 power Alt 1 - Alt Temp Sensor
BLK	1/2 power Alt 1 - Alt Temp Sensor
BRN	+12 VDC from Oil Pressure Switch (Eng. On)
ORN	Alt 1 Brown wire
YEL	DDC Solenoid ("ON")

C2 - SIGNAL CABLE 2	
RUN	Engine Room to Cockpit
COLOR	DESCRIPTION
PUR	IgnitionSwitch "I" (+12VDC Out)
BLUE	+12V input Fogmate Mode Sw (from C2-Blu)
GRN	horn button neg output to C3-PUR
RED	Ignition Switch "B" (+12VDC In)
BLK	Negative Ground
BRN	+12V when Fog Underway selected (output)
ORN	Ignition Switch "S" (Start)
YEL	+12V when Fog Stopped selected (output)

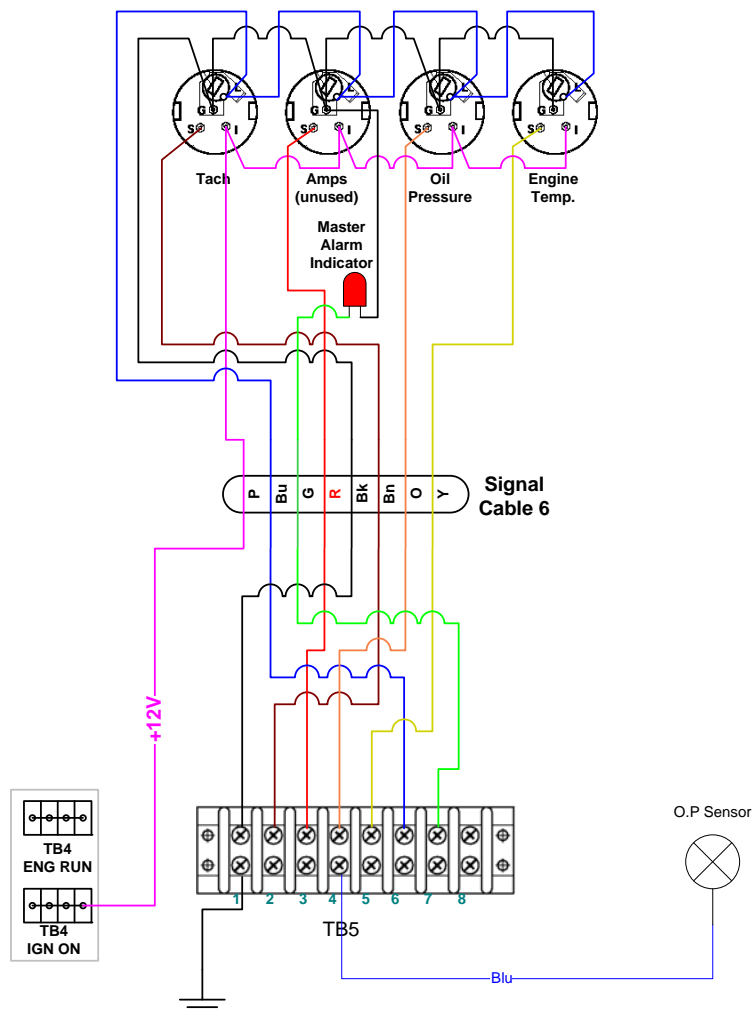
C3 - SIGNAL CABLE 3	
RUN	Engine Room to Main Panel
COLOR	DESCRIPTION
PUR	Electric Horn Button (neg output) frm C2-GRn
BLUE	to C2-Blue from Nav Lt (+12V)
GRN	Engine Stop (mom. connect to Neg)
RED	Hour Meter
BLK	Neg output* when engine is off (to Fogmate) <sup>3</sup>
BRN	FogMate "Underway" mode - cnct to C2-BRN
ORN	Start Battery Voltage Sense Wire
YEL	Fogmate "Stopped" Mode - cncts to C2-YEL

C4 - SIGNAL CABLE 4	
RUN	Engine Room to Status Panel
COLOR	DESCRIPTION
PUR	Oil Pressure Sensor*
BLUE	Starting Battery Continuity
GRN	Ignition "ON"
RED	Parallel "ON" (+12V when batts are parallel)
BLK	Parallel "ON"* (to Neg when batts are parallel)
BRN	High Temp. Sensor*
ORN	Exhaust Temp Sensor*
YEL	Water Flow Sensor*

C5 - SIGNAL CABLE 5	
RUN	Engine Room to Cockpit
COLOR	DESCRIPTION
PUR	Deck Light ON Relay Enable (+12V)
BLUE	Compass / Gauges Illumination Switch (+12V)
GRN	Compass / Gauges Illumination Sw (Neg output)
RED	Deck Light Off Relay Enable (+12V)
BLK	Negative Ground
BRN	Spare
ORN	1/2 power signal Alt 2 - Reg 2 ALARM
YEL	Spare

C6 - SIGNAL CABLE 6	
RUN	Engine Room to Engine Gauge Panel
COLOR	DESCRIPTION
PUR	Ignition ON (+12V)
BLUE	Gauge Illumination
GRN	Master Alarm Indicator
RED	
BLK	Negative Ground
BRN	To Tachometer from Alternator 2 Stator
ORN	Oil Pressure Low Sensor
YEL	Over Temperature Sensor

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)					Note 1. Items marked with an asterisk (*) output battery negative. In the case of sensors, battery negative is the normal situation.	
TITLE  Engine Controls - Signal Cables (Part 1)			PAGE  7 OF 20			
REV.	DESCRIPTION			DATE	BY	Note 2. Signal cables are Ancor 158010 Marine Grade 20 AWG 8-conductor shielded wire.
I	Signal Cable Function List			10/21/2009	JMS	



TB5 - TERMINAL BLOCK 5	
1	Negative Ground
2	To Alternator 2 Stator wire
3	unused
4	To Oil Pressure Sensor
5	To High Temperature Sensor
6	To Gauge Illumination Switch in Cockpit
7	From Alarm Panel (+12V when IGN On)
8	unused

C6 - SIGNAL CABLE 6	
RUN	Engine Room to Engine Gauge Panel
COLOR	DESCRIPTION
PUR	Ignition ON (+12V)
BLUE	Gauge Illumination
GRN	Master Alarm Indicator
RED	
BLK	Negative Ground
BRN	To Tachometer from Alternator 2 Stator
ORN	Oil Pressure Low Sensor
YEL	Over Temperature Sensor

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Engine Gauges		8 OF 20	
REV.	DESCRIPTION	DATE	BY
I	Schematic for Engine Gauges & Master Alarm Light	10/21/2009	JMS



C7 - SIGNAL CABLE 7	
RUN	Instrument/Alarm Panel to Nav Station
COLOR	DESCRIPTION
PUR	
BLUE	
GRN	
RED	
BLK	
BRN	
ORN	
YEL	

C8 - SIGNAL CABLE 8	
RUN	Instrument/Alarm Panel to Instrument Pod
COLOR	DESCRIPTION
PUR	Autopilot Control
BLUE	From Autopilot NMEA OUT to Multi-2000
GRN	From Autopilot Signal GND to Multi-2000
RED	Autopilot Control
BLK	Autopilot Control
BRN	Autopilot Control
ORN	Autopilot Control
YEL	Autopilot Control

C9 - SIGNAL CABLE 9	
RUN	Instrument/Alarm Panel to ER
COLOR	DESCRIPTION
PUR	
BLUE	
GRN	
RED	
BLK	
BRN	
ORN	
YEL	

C10 - SIGNAL CABLE 10	
RUN	Pumps Panel to Main Panel
COLOR	DESCRIPTION
PUR	
BLUE	
GRN	
RED	
BLK	
BRN	
ORN	
YEL	

C11 - SIGNAL CABLE 11	
RUN	
COLOR	DESCRIPTION
PUR	
BLUE	
GRN	
RED	
BLK	
BRN	
ORN	
YEL	

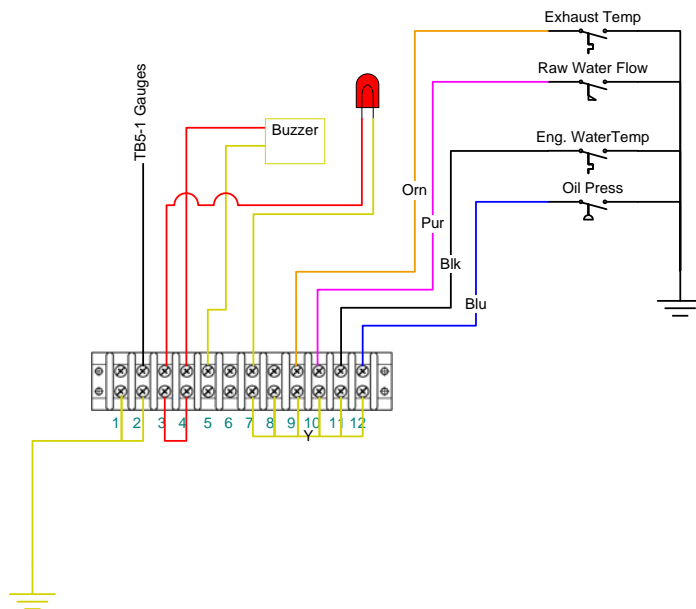
C12 - SIGNAL CABLE 12	
RUN	
COLOR	DESCRIPTION
PUR	
BLUE	
GRN	
RED	
BLK	
BRN	
ORN	
YEL	

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Signal Cables (Part 2)		9 OF 20	
REV.	DESCRIPTION	DATE	BY
I	Signal Cable Function List	10/21/2009	JMS

Note 1. Items marked with an asterisk (\*) output battery negative. In the case of sensors, battery negative is the normal situation.

Note 2. Signal cables are Ancor 158010 Marine Grade 20 AWG 8-conductor shielded wire.

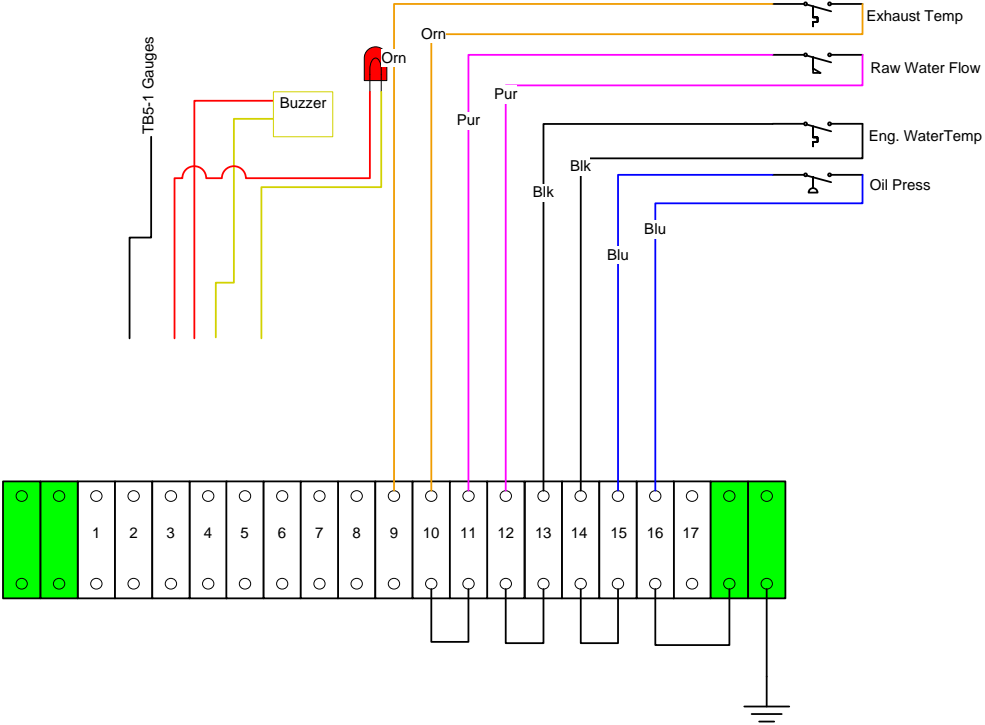
All sensors are normally closed.  
Sensors are open when operating.



S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

TITLE		PAGE	
Engine Controls - Temporary Alarm Panel		10 OF 20	
REV.	DESCRIPTION	DATE	BY
I	Schematic for Engine Gauges & Master Alarm Light	10/21/2009	JMS

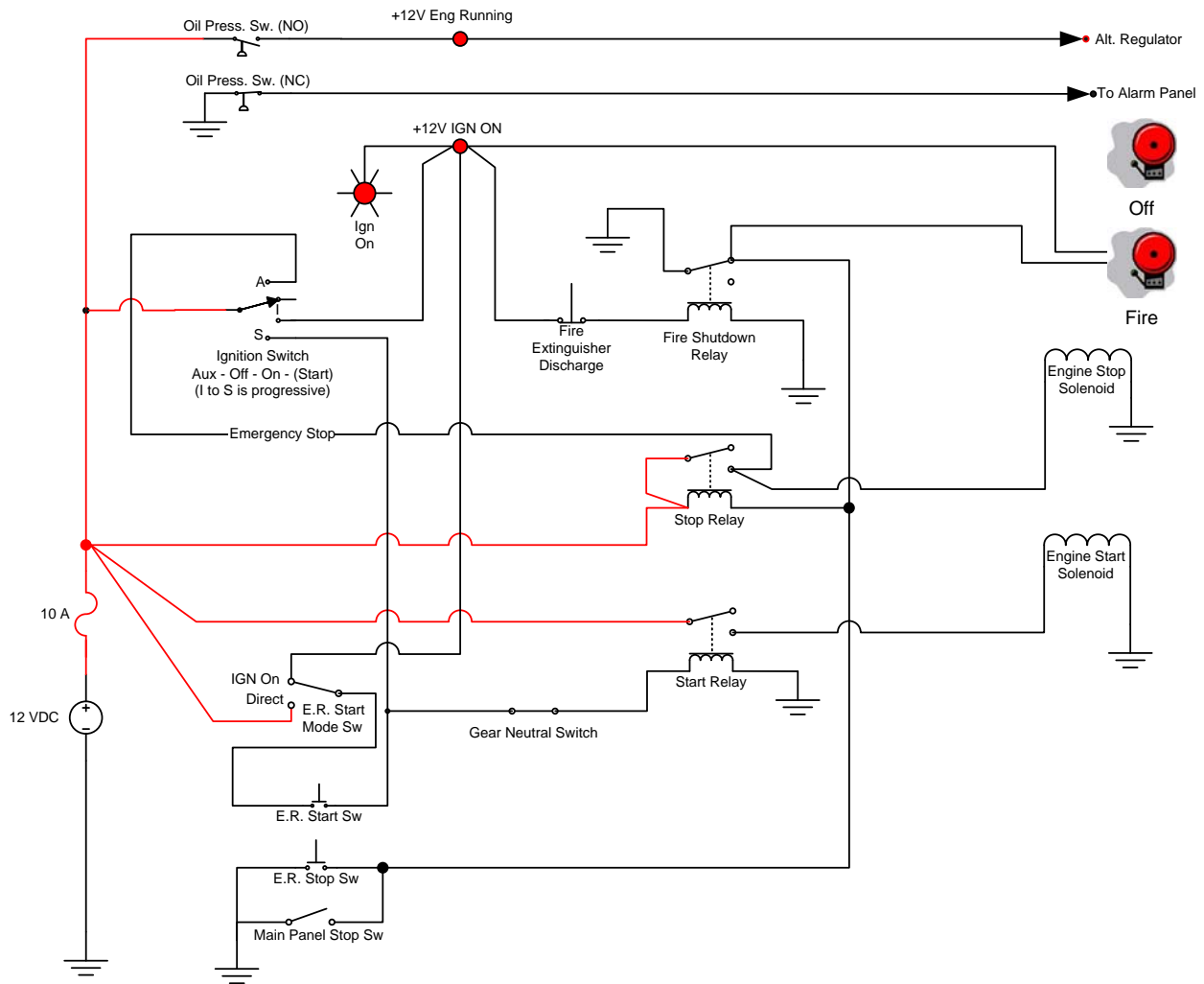
All sensors are normally closed.  
Sensors are open when operating.



S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

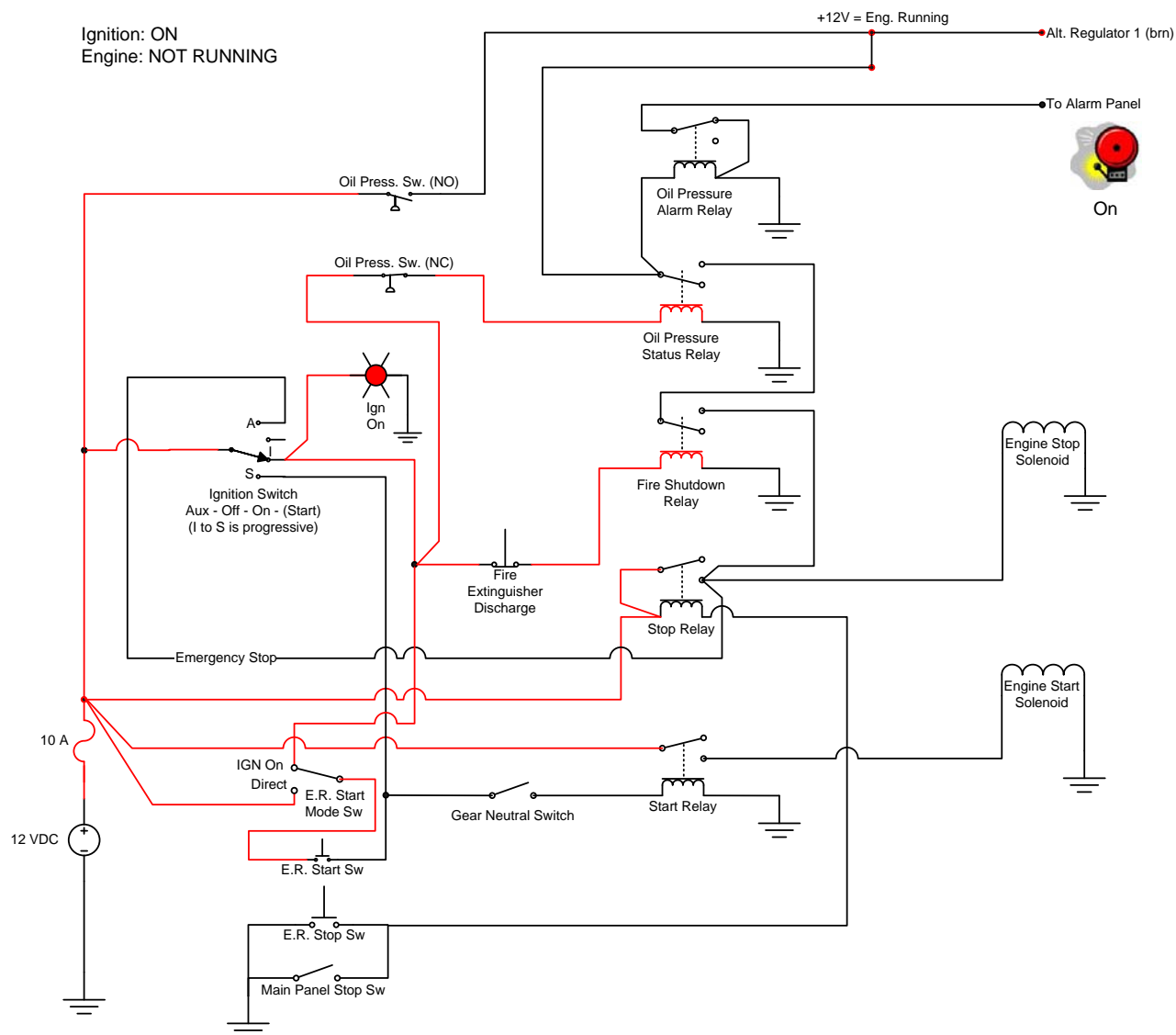
TITLE		PAGE	
Engine Controls - A Better Alarm Circuit (in progress)		11 OF 20	
REV.	DESCRIPTION	DATE	BY
I	Schematic for Engine Gauges & Master Alarm Light	10/21/2009	JMS

Ignition: OFF  
Engine: NOT RUNNING



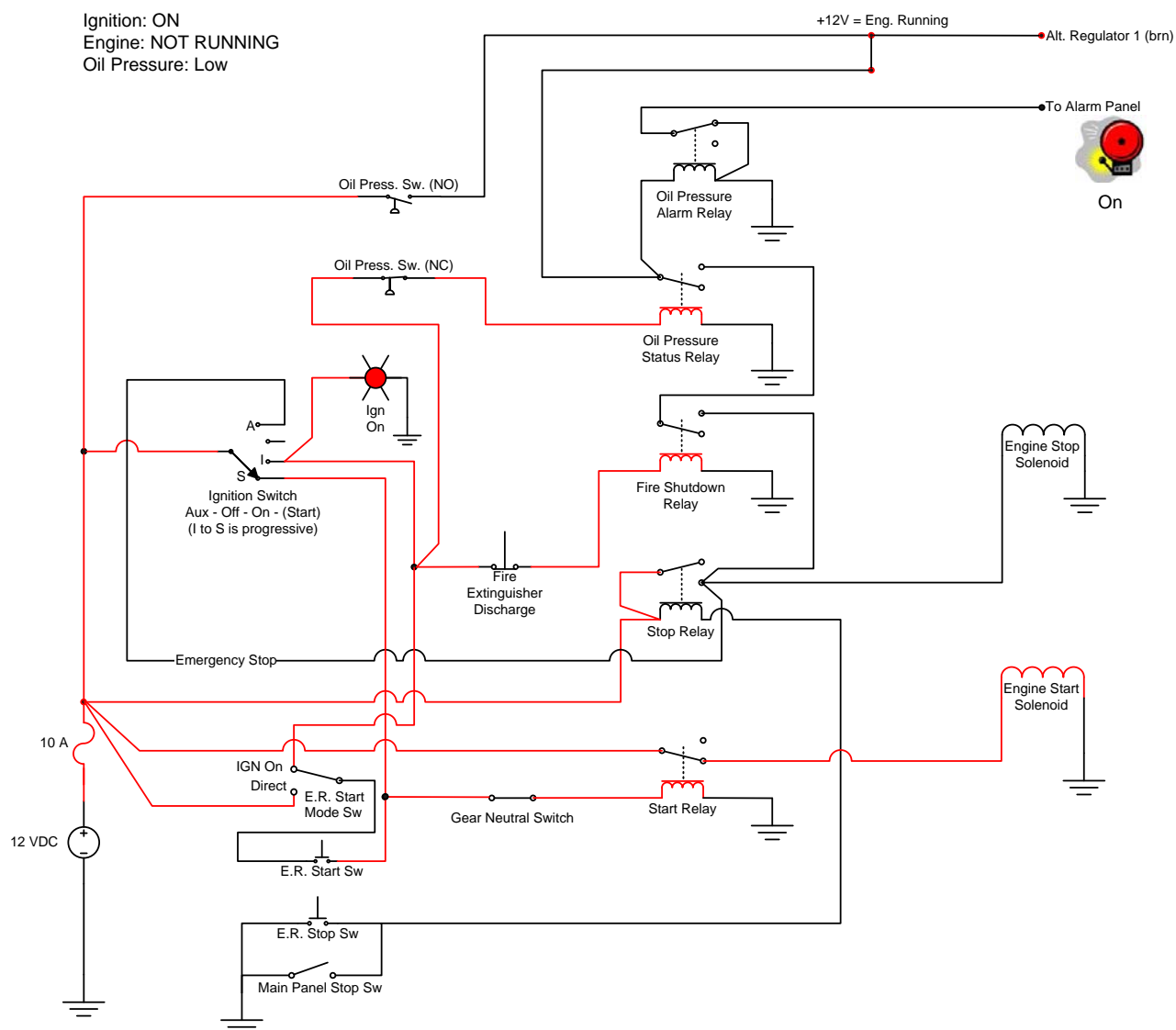
1. Wiring diagram for Perkins 4-154 on *Beatrix*. This Perkins does not require glow plugs or pre-heaters.
2. Relays are standard 30A/40A SPDT automotive relays.
3. There are 5 normal states to this circuit: OFF, IGN ON, IGN RUN, START, STOP.
4. IGN ON state energizes the Fire Shutdown Relay. When IGN is off, this relay stops the engine.
5. START state energizes the Start Relay to actuate the starter solenoid.
6. The stop solenoid is energized when the STOP state is entered by turning off the key, turning IGN to Emergency stop, or pressing one of the two Stop momentary switches (E.R. Stop Sw or Main Panel Stop Sw). Fire shutdown also energizes the stop solenoid.
8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schematic OFF State		12 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS



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6. The solenoid is energized when the STOP state is entered by turning off the key, turning IGN to Emergency stop, or pressing one of the two Stop momentary switches.
7. either in the Engine Room or at the Main Panel are optional.
8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

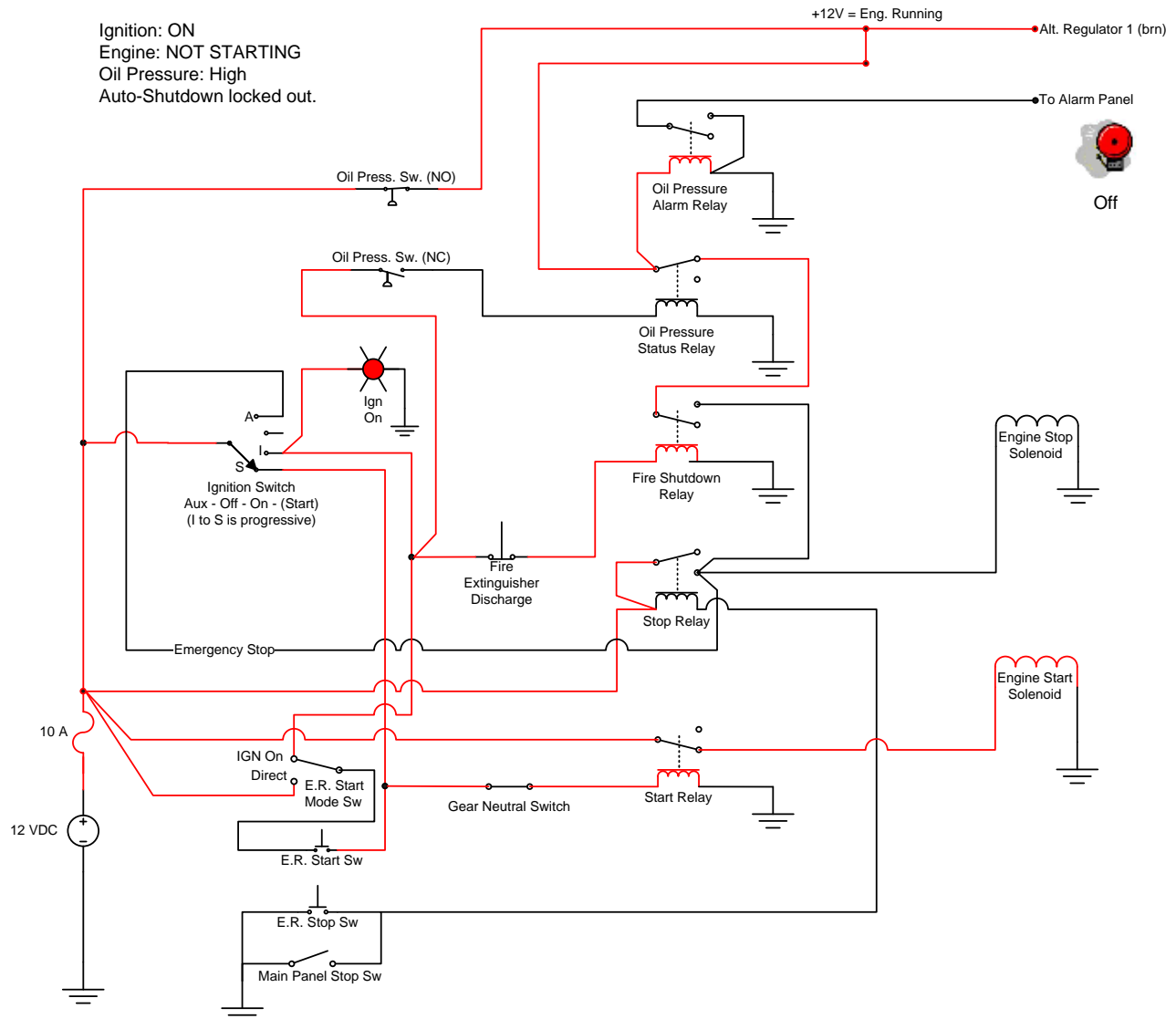
S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schematic IGN ON State		13 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS



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6. The solenoid is energized when the STOP state is entered by turning off the key, turning IGN to Emergency stop, or pressing one of the two Stop momentary switches. either in the Engine Room or at the Main Panel are optional.
8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

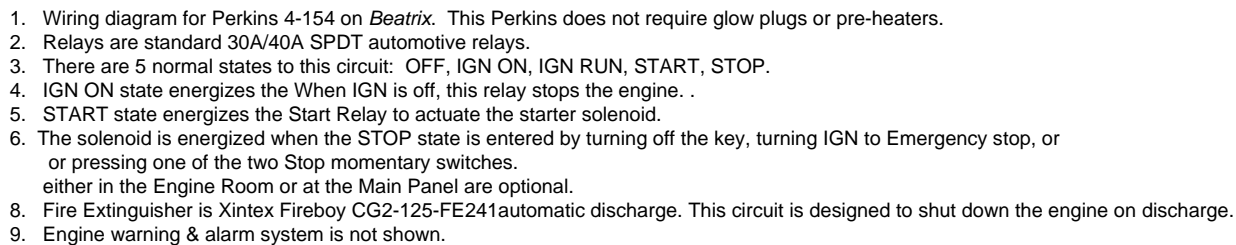
S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schematic START State		14 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS





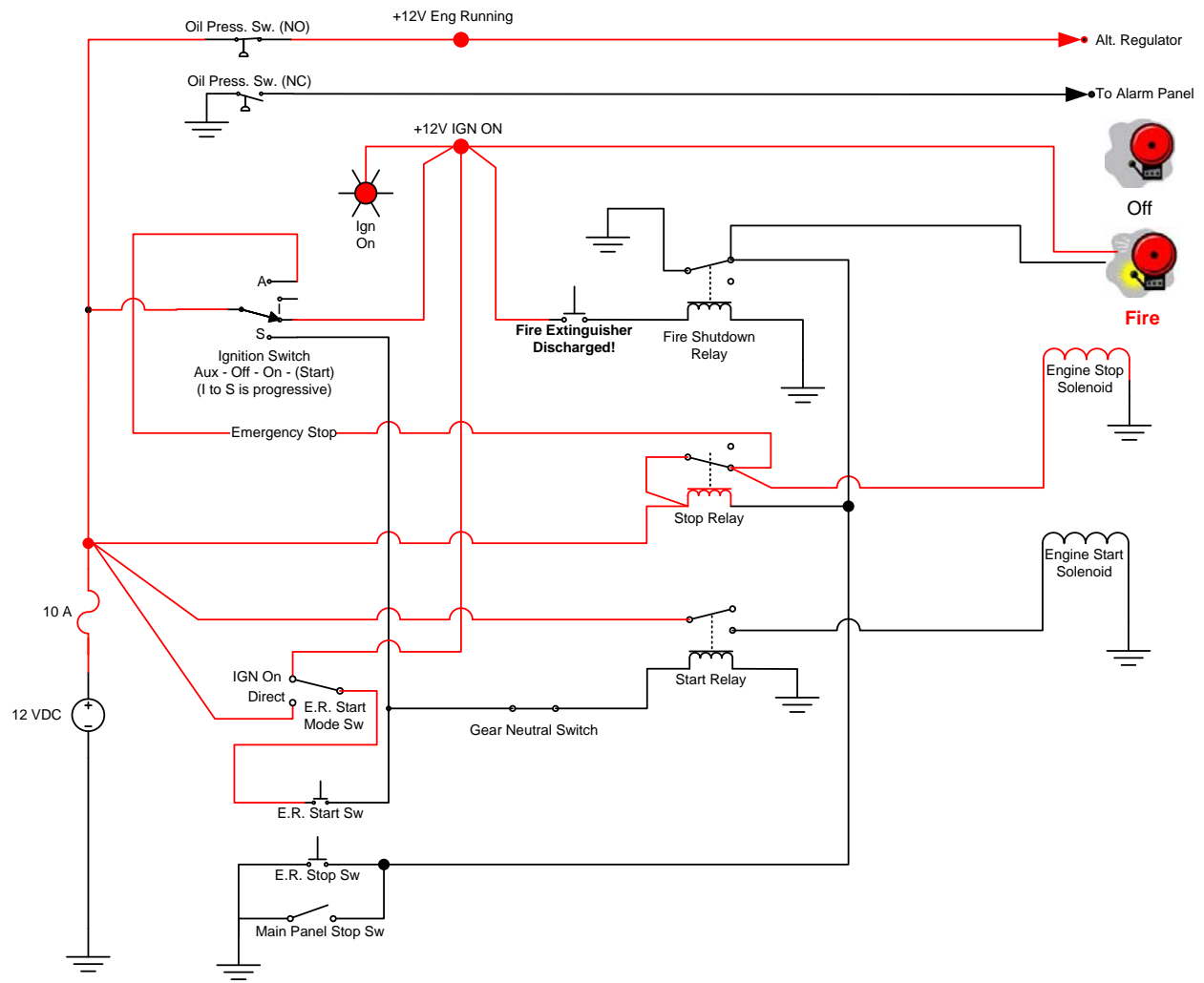
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8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

S/V <i>BEATRIX</i> - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schematic OVERSTART		15 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS



S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schematic IGN RUN State		16 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS

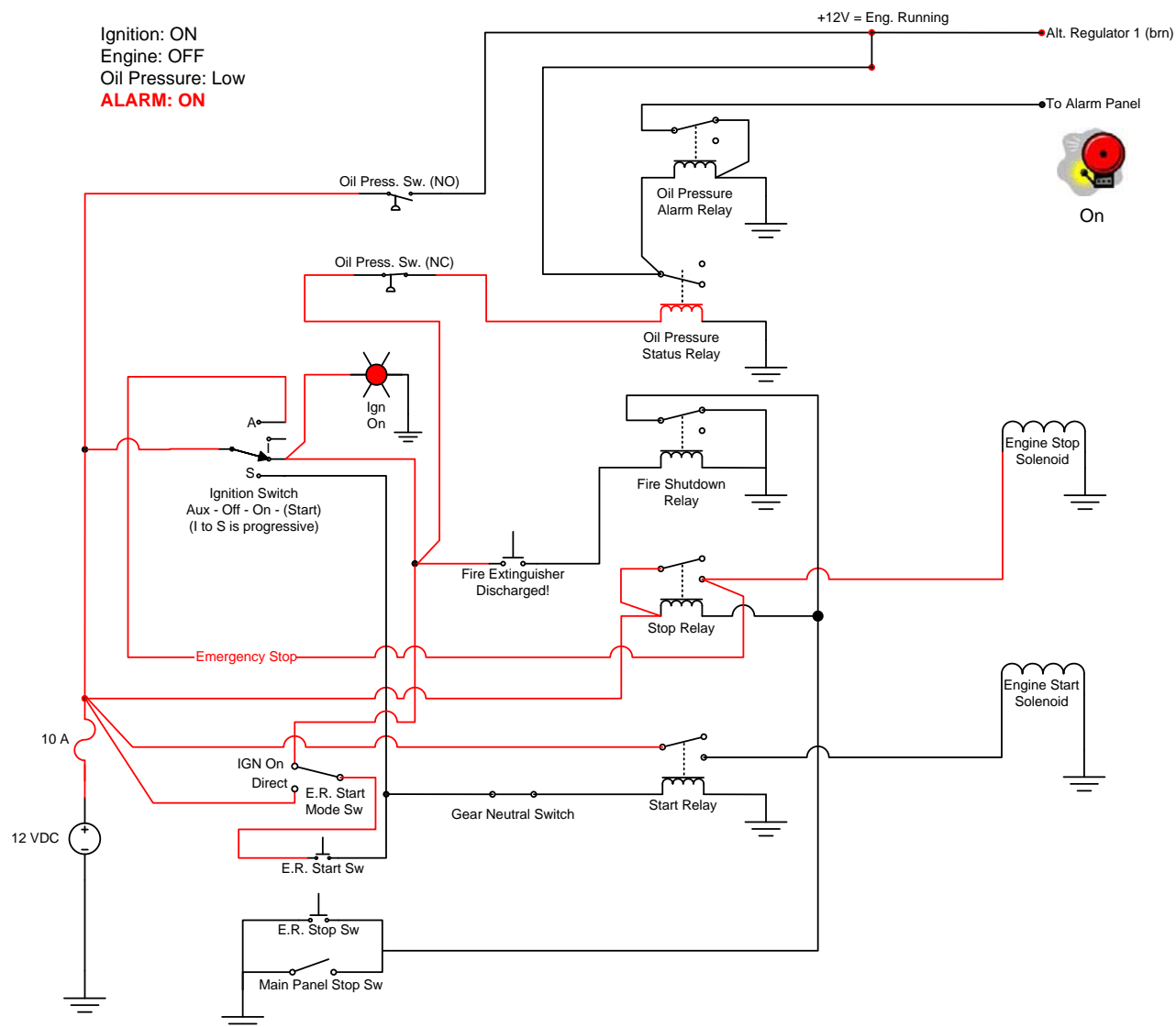
Ignition: ON  
 Engine: RUNNING  
 Oil Pressure: High  
 Alarm: Off



1. Wiring diagram for Perkins 4-154 on *Beatrix*. This Perkins does not require glow plugs or pre-heaters.
2. Relays are standard 30A/40A SPDT automotive relays.
3. There are 5 normal states to this circuit: OFF, IGN ON, IGN RUN, START, STOP.
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5. START state energizes the Start Relay to actuate the starter solenoid.
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8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

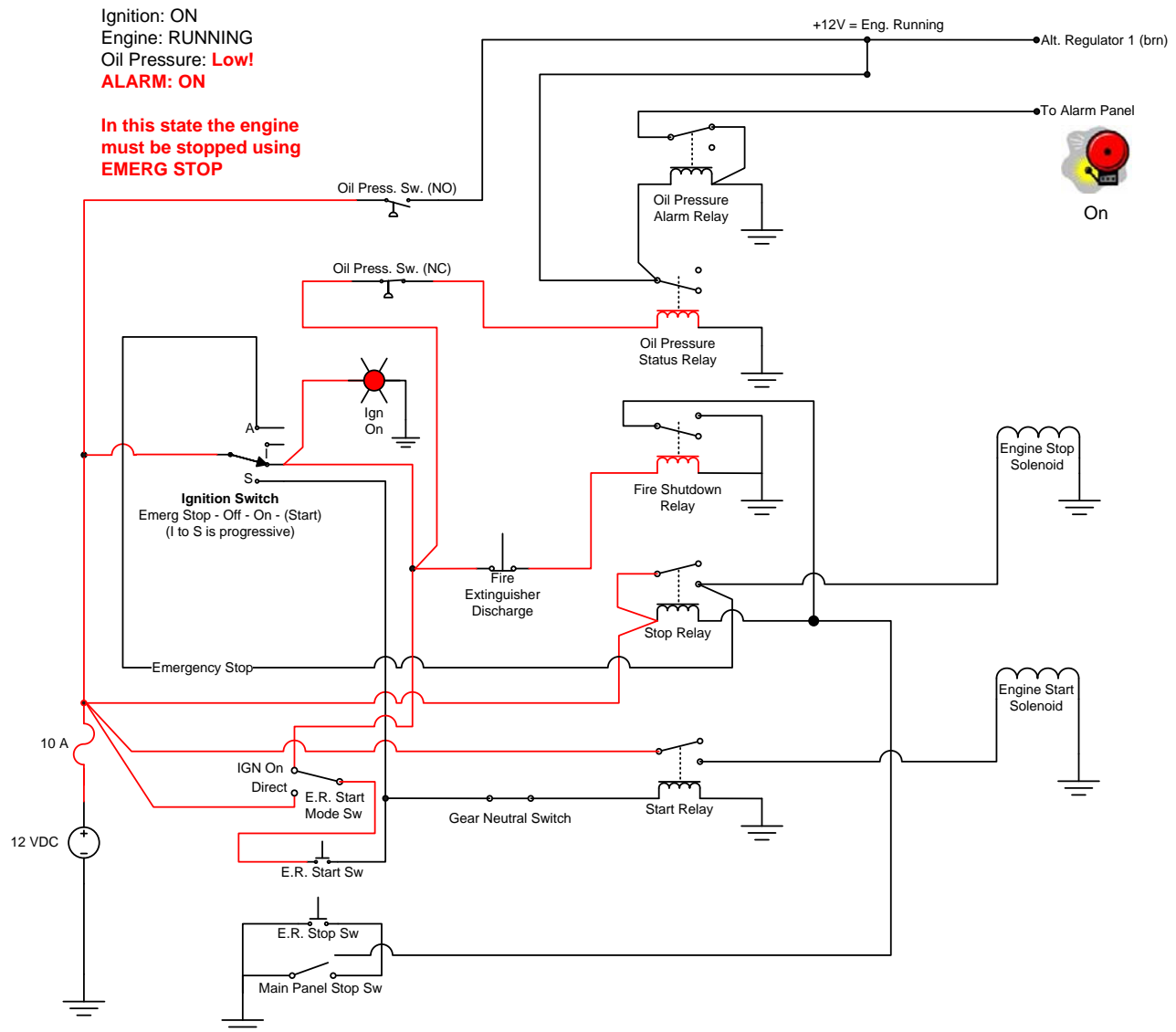
TITLE		PAGE	
Engine Controls - Logical Schematic FIRE Shutdown		17 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS



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7. either in the Engine Room or at the Main Panel are optional.
8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

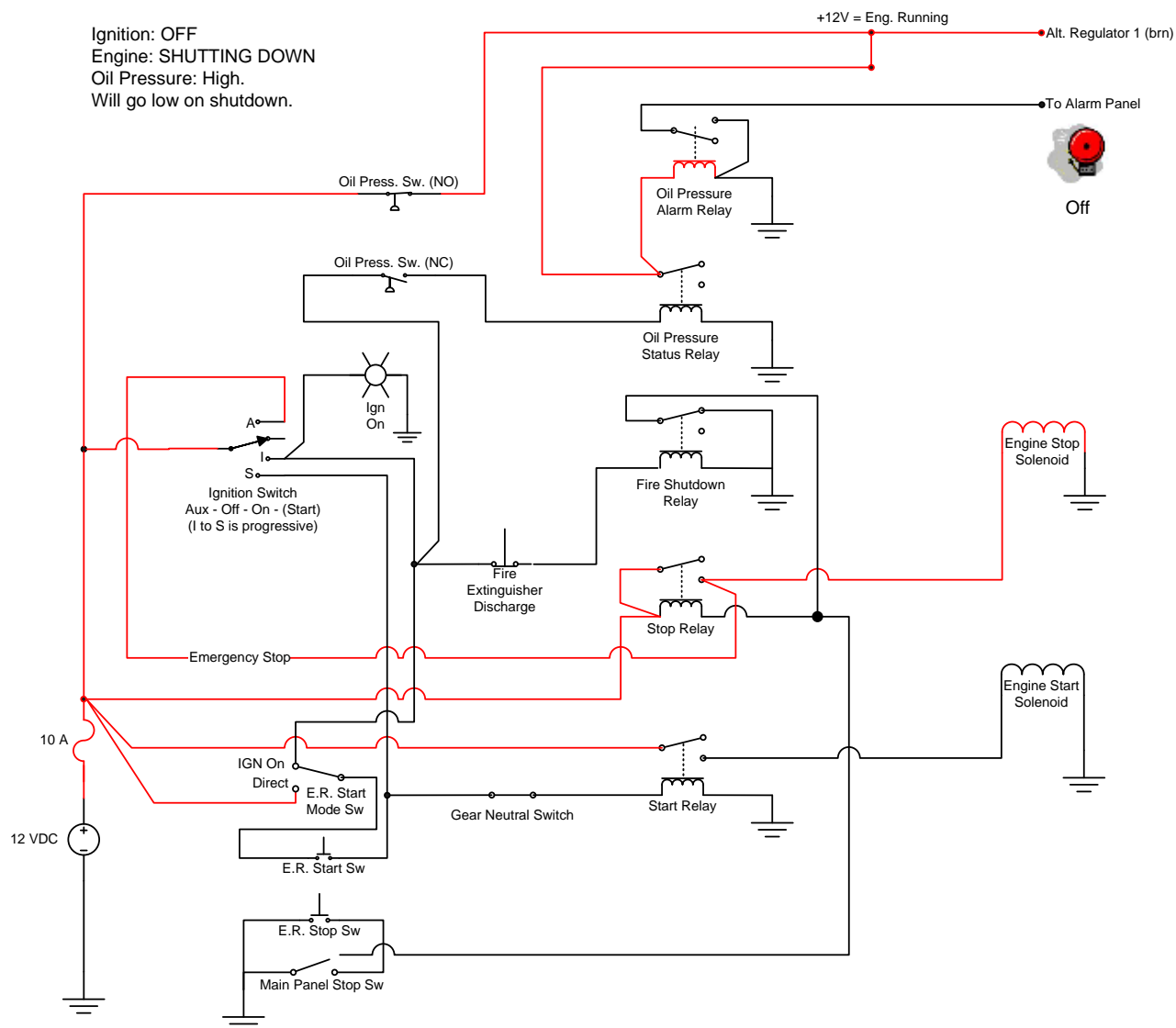
S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)

TITLE		PAGE	
Engine Controls - Logical Schematic FIRE Shutdown Eng Stopped		18 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS



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6. The solenoid is energized when the STOP state is entered by turning off the key, turning IGN to Emergency stop, or pressing one of the two Stop momentary switches.  
either in the Engine Room or at the Main Panel are optional.
8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

S/V BEATRIX - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schematic IGN ERR State		19 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS



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either in the Engine Room or at the Main Panel are optional.
8. Fire Extinguisher is Xintex Fireboy CG2-125-FE241 automatic discharge. This circuit is designed to shut down the engine on discharge.
9. Engine warning & alarm system is not shown.

S/V <i>BEATRIX</i> - KELLY-PETERSON 44 #286 (1980)			
TITLE		PAGE	
Engine Controls - Logical Schema AUTOSTOP State		20 OF 20	
REV.	DESCRIPTION	DATE	BY
A	Gross Logical Wiring Diagram for Engine Stop/Start Functions	09/05/2002	JMS
B	Eliminate "Engine Status" Relay. Simplify start circuit		JMS
I	Simplify to 3 relays. Improved Fire Shutdown & Normal Shutdown	10/21/2009	JMS