SiteRover 300DC

Troubleshooting

The SiteRover circuitry can be split into two halves:

1. A basic add-on HF unit which operates from open circuit/arc voltage of a drooping characteristic rectifier. The main printed circuit board (mounted on back of lateral dividing panel) controls contactor, HF and gas valve functions.

2. A reference generating circuit which can drive the remote control input of suitable electronic controlled power sources. Note for this circuitry to operate the power source must in addition to OCV/arc voltage provide an ac supply in the range 18-50V to the rear panel 12 way Burndy socket. The reference generation pcb and controls are contained entirely in the LHS "module" of the SiteRover. With the exception of the current control and slope down time potentiometers all the reference generating circuitry is on a single pcb vertically mounted along the LHS divider panel.

Both halves of the circuitry can be operated separately making fault diagnosis easier. Note to operate as a simple on/off add on unit set the front panel slope on/off switch " ⎽╱‾╲⎽ " to off (down).

General (see attached sketch)

Open-circuit/arc voltage from the rear panel dins connections supplies rectifier bridge BR via the rear panel 3.15A slow fuse. The rectifier bridge prevents damage that might be caused if the input is accidentally reversed. The bridge output is smoothed by a large off-pcb electrolytic capacitor before being fed to the main HF/contactor/gas control pcb. If the rear panel 3.15A fuse fails, check the rectifier bridge and smoothing capacitor.

To prevent supply voltage spikes from damaging control circuits (eg from engine drives and the like) a clip-cell and ultra fast 3A 20mm fuse are located at the upper LH corner of the main HF/contactor/gas control pcb (viewed from the rear of the SiteRover). If power source OCV is present and the 3.15A rear panel fuse is OK and yet the green front panel indicator light is off suspect the clip-cell and 3AFF fuse. The clip-cell should be checked with an ohmmeter if the fuse has failed (remove the fuse before checking it). Never replace the 3AFF fuse with anything but another ultrafast 3A fuse.

The torch switch circuit is also ultrafast fuse protected. A 2A 20mm FF fuse is mounted on the torch switch filter pcb which is located on the back of the front panel behind the torch switch socket. Never replace an "FF" fuse with a slow or standard fast fuse.

The SiteRover offers both latched and non-latched torch switch operating modes. The latching function is provided by a simple electromechanical latching relay mounted to the main HF/contactor/gas control pcb. Note that once the relay is latched it will remain so until the torch switch is operated for a second time. If the unit is switched off with the torch switch latched, then it will still be latched on when power is turned back on. For this reason a red front panel indicator lamp is illuminated whilst the contactor is energised.

SiteRover Reference Generating Circuit

The reference generating circuit comprises an inverter based power supply developing ± 12V and + 5Vdc supplies from the 18 to 50Vac auxiliary from the power source. Note the dc supplies are isolated from the original ac auxiliary. The auxiliary ac input and dc reference output are via a rear panel mounted 12 way Burndy connector. The ac auxiliary is fuse protected by a rear panel mounted 2A slow fuse. A green indicator lamp on the rear panel illuminates when the slope control pcb is powered.

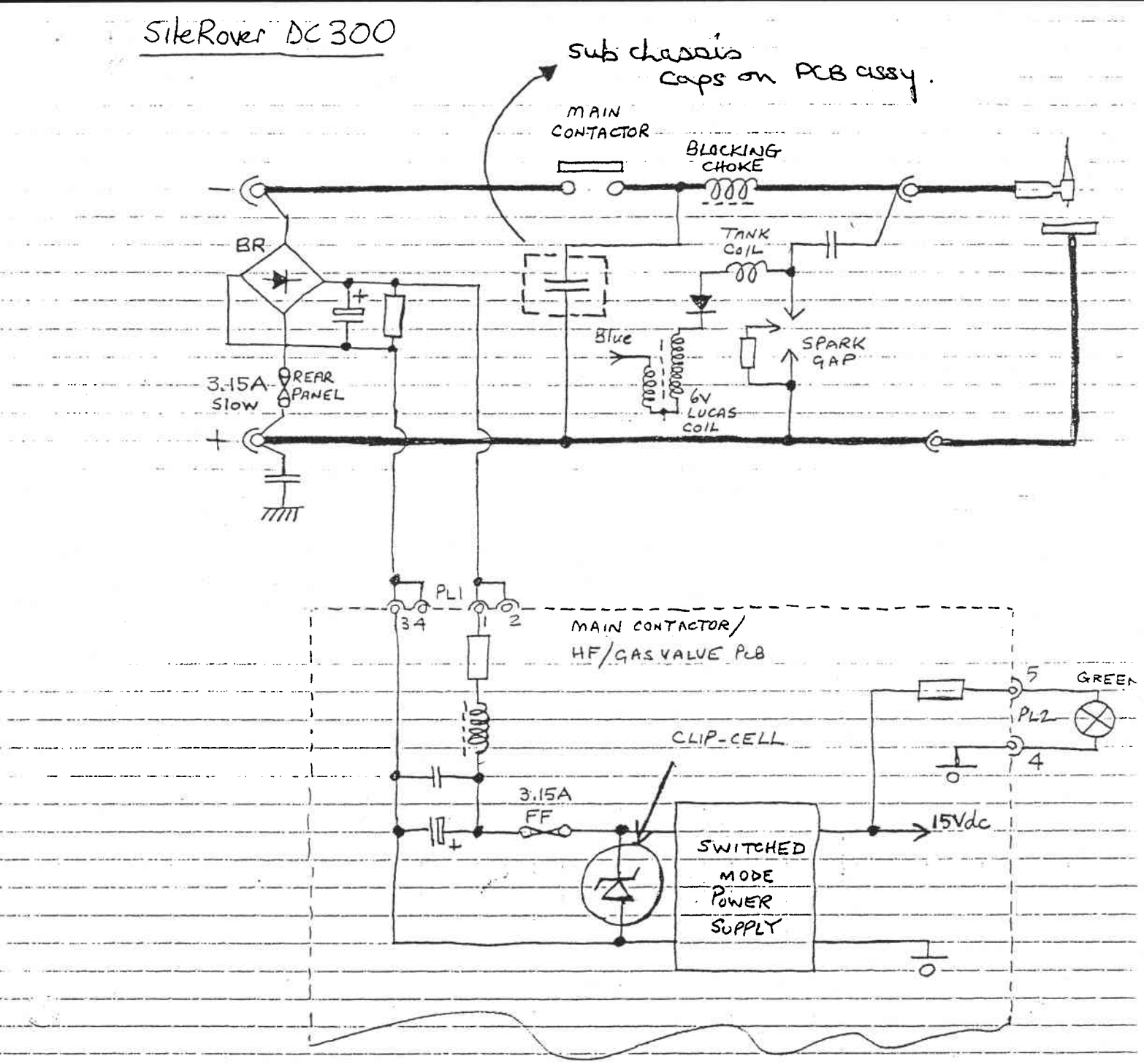
On command from the torch switch and the open-circuit/arc voltage (used to detect arc strike) the reference generator develops a 10V based dc reference signal with slope in and out according to the attached sketch.

The operation and output of the reference generator can be checked by connecting a dc voltmeter between the OV and the RAMP test points on the slope pcb. Disconnect and isolate the blue lead from the 6V lucas coil to disable the HF and pull-off the 2 pin connector PL3 from the lower front of the slope control pcb to simulate an arc condition (OCV = OV), when this is removed the LED marked OCV will go out - this located top RH of the pcb.

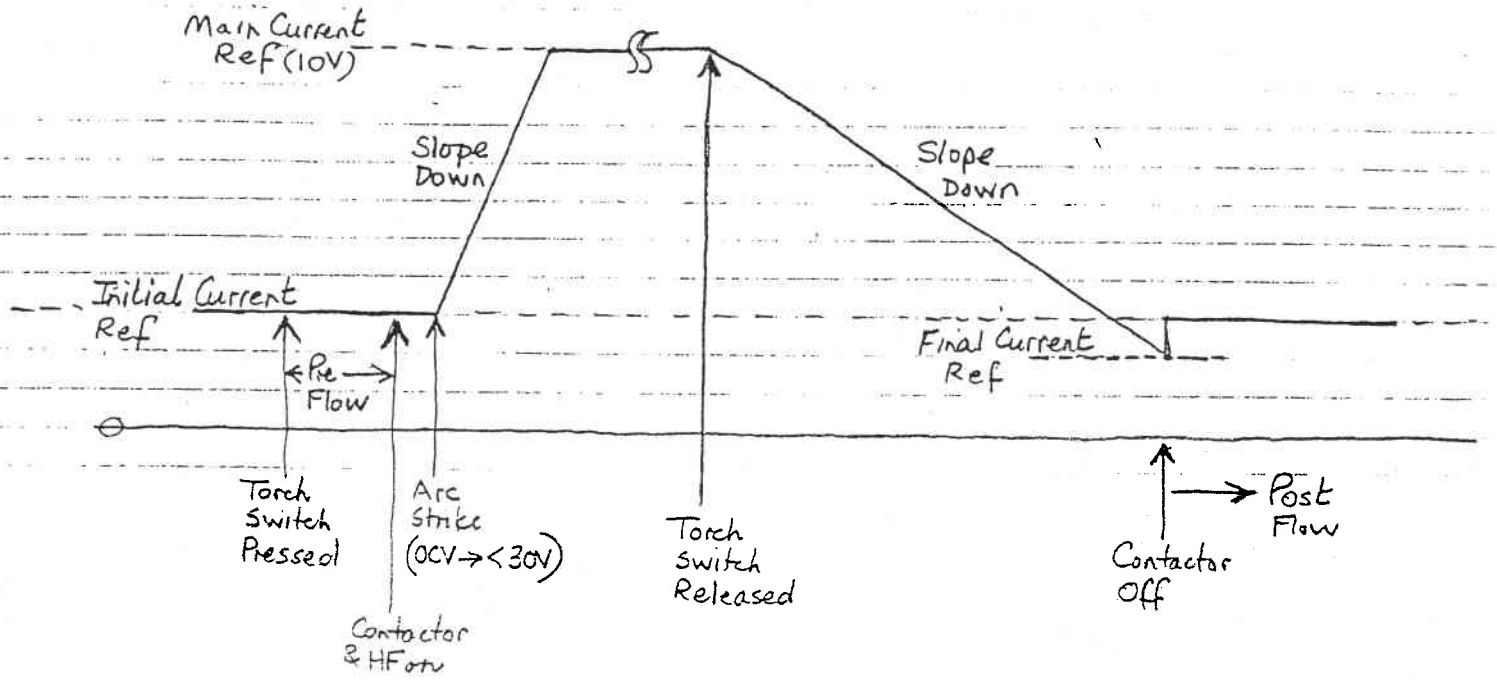
Whilst idling the voltmeter reading will be at the initial level of 2V (corresponding with 20% of 10V full scale). Press the torch switch, the contactor will close and the voltage will slope up to 10Vdc. Release the torch switch and the signal will slope down to 1V, the contactor will drop out and the voltage then revert to its 2V initial level. Note if the initial and final presets (IC & FC) on the pcb have been adjusted since the unit left the factory different starting and finishing voltages can be expected.

The dc reference output to the power source remote control, pins E & F of the rear panel connector, is further scaled by the action of resistor R_{CAL} and the front panel current control potentiometer (10KΩ). Refer to the instruction manual for details. At the factory R_{CAL} is loaded as 5.1KΩ giving a maximum output reference of 6.6V to the power source. This can be seen at OVTP and scaled TP (middle) ie. 6.6V.

SiteRover DC300



SiteRover Reference Output



Main Current Ref: Front panel 'A' control, note range can be internally prefixed between 0-2 and 0-10V dc by changed R_{CAL} (see manual) *

Slope Down: Front panel control, range 0-10 secs

Slope Up: On pcb control, range 0-10 secs (2 seconds from factory)

Start Ref: On pcb control, range 0-100% (20% from factory)

Finish Ref: On pcb control, range 0-100% (10% from factory)

* Factory setting is 0-6.6V dc (200A on the TM 350i)