

The below are MarineMend repair procedures with some photos/descriptions for the spot repairs in the cargo oil tank.

- 1) Spot blasting for area (normally bigger than 2cmx2cm), feathering and taped for bare steel area before touch-up. Please be noted any contamination such as oil/grease should be cleaned before the surface preparation.



2) Spot grinding for small rust spots, such as pinpoint rust. Also feathering and cleaning before touch-up. Please be noted any contamination such as oil/grease should be cleaned up before the surface preparation.



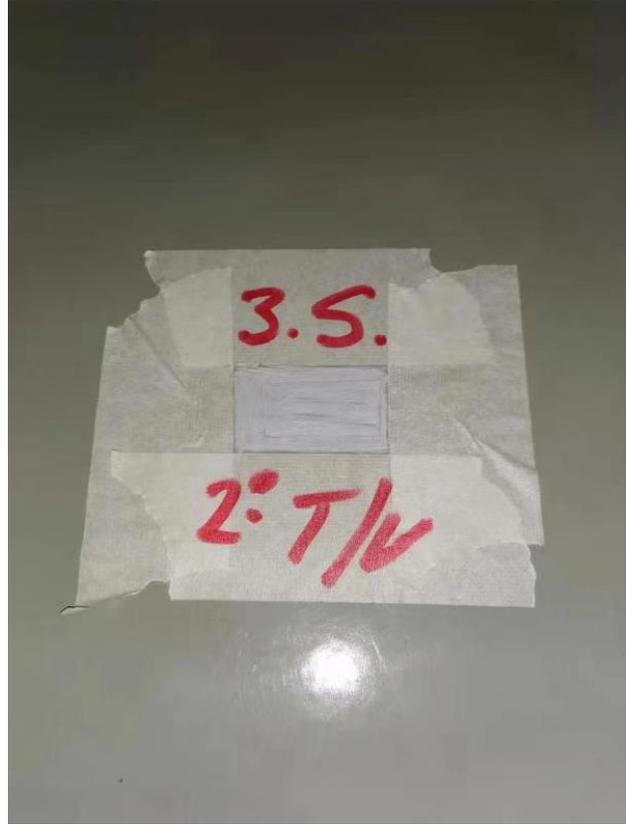
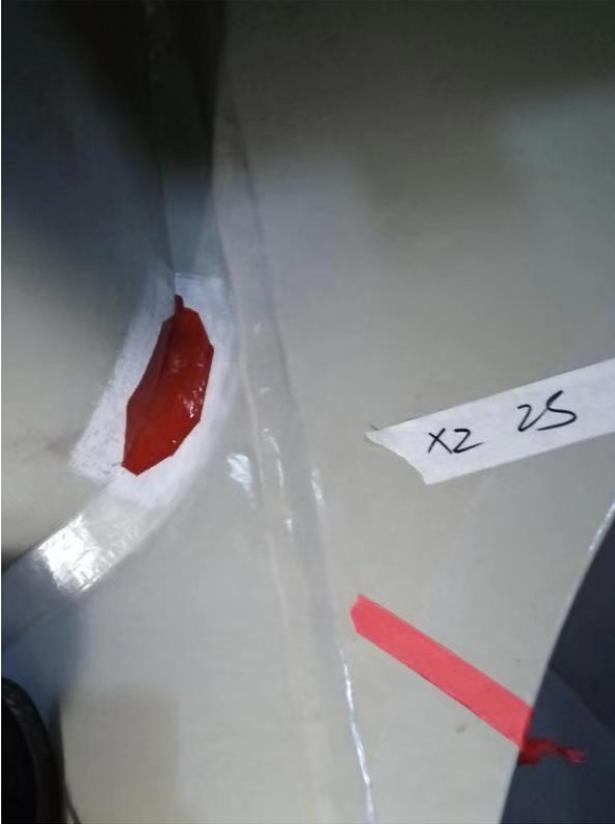
The above photo is the recommended grinding tools for the pinpoint rust area, this grinding head can make some steel profile while not enlarging the bare steel area.

Vacuum blaster with garnet grit (particle size range 0.5~1.5 mm) can also be used for area bigger than 2cm x 2cm. Practically workers will disc grind the big rust area removing the rust first, then vacuum-blasting the bare steel to get the requested surface profile which is expected to be around 75~100 microns.

The portable Clemco vacuum blaster Educt-O-Matic and garnet available onboard can be used for the spot-blasting, but they are not recommended for use now based on the current tank coating condition shown in the file, as spot grinding tools could be used for the pinhole rust spot now without enlarging the bare steel area.

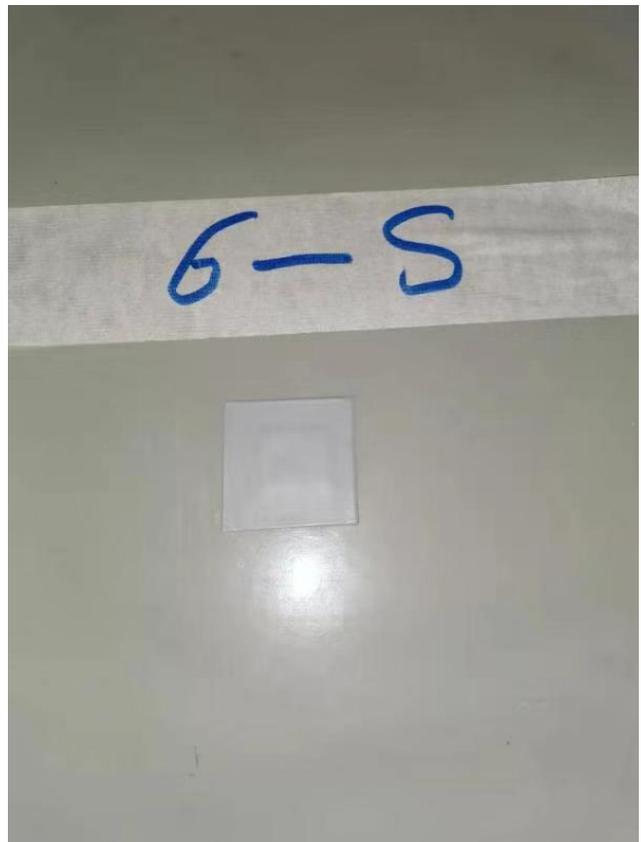
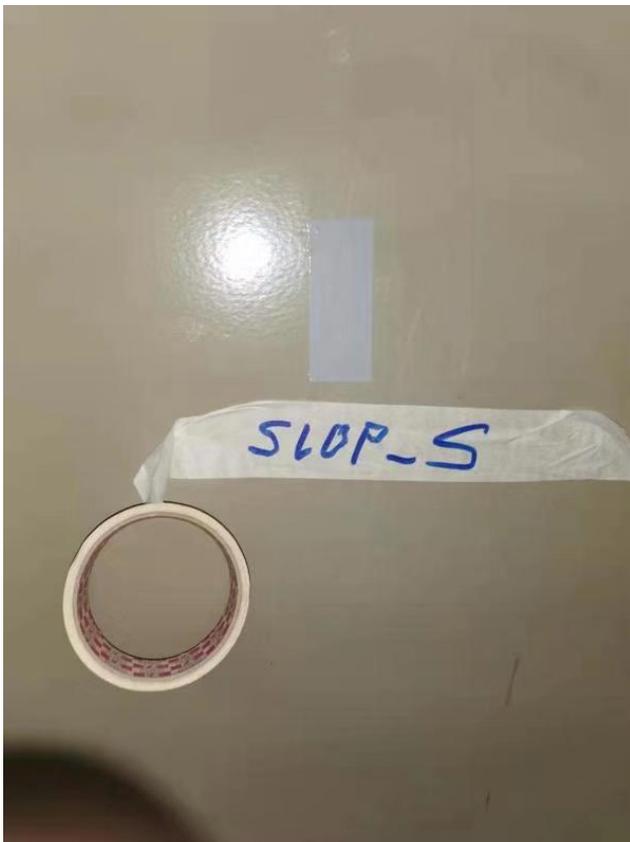
Feathering around the bare steel area, either big or small point, can be done by sandpaper.

3) First touch-up with MarineMend repair kit (Grey color) or MarineLINE 784 (Red color). Please be noted that MEK/Acetone must be used to clean the surface before touch-up.

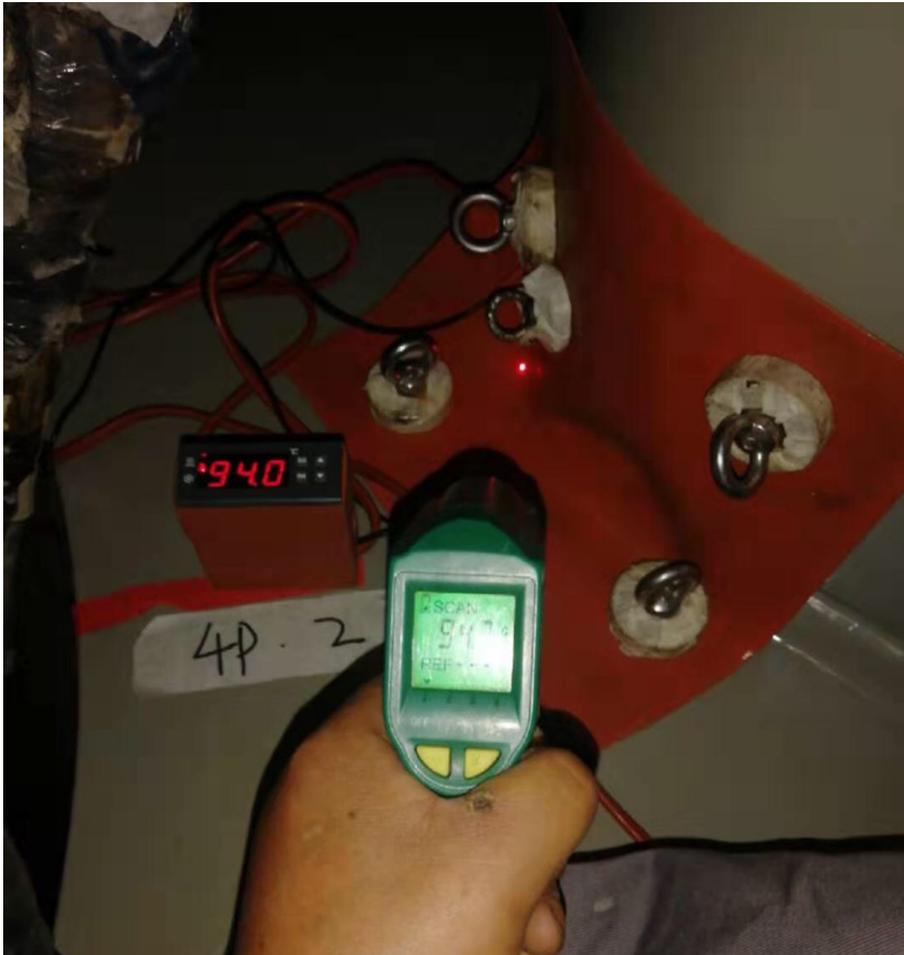


Touch-up with MarineMend repair kit (first coat Grey color). After the first touch-up is hard dry, which may be up to 24 hours depending on the temperature and air flow, sand smoothly by sandpaper before second touch-up.

4) Second touch-up with MarineLINE 784 Grey or MarineMend repair kit Grey after the first touch-up is hard dry, which may be up to 24 hours depending on the temperature and air flow.



- 5) After second coat is hard dry, spot heat curing treatment can be carried out to the touch-up area, including the MarineLINE 784 coating material and MarineMend repair kit. It is very important the heating pad firmly stick to the touch-up area so as to effectively heat cure the touch-ups.
- a. Regarding the heat curing requirements/procedure for MarineMend repair kit, the ship crew can use the heating pad onboard to post heat cure the touch-up area so as to optimize the performance of MarineMend repair kit. After the touch-up is hard dry, use the available heating pad to post heat cure the touch-up for 1 hour@100 degree C. or 24 hours@80 degree C. Please be noted that the set up temperature indicated in the box would be around 20 degree C higher than the actual substrate temperature.
 - b. Regarding the heat curing requirements/procedure for MarineLINE 784 coating material, the ship crew need to use the heating pad onboard to post heat cure the touch-ups. The procedure would be as follows:
 - 1) Set up the starting temperature of the heating pad at 50 degree C;
 - 2) Increase the temperature 10 degree C every 20 minutes, so it would be 120 degree C after 140 minutes.
 - 3) Hold on the temperature at 120 degree C for 12 hours



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