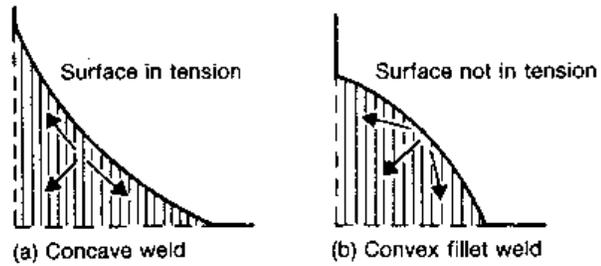


PROCEDURE FOR INSTALLING GROUSER BAR WHILE STILL ON THE BULL DOZERS.

1. This can either be a 2 or 3 person operation. 2 welders and one to turn the track.
2. **The main concern is to keep the seal from over heating from the welding.**
3. In order to do this we suggest the following:
 - a. Tack all the bars on before the first pass is applied.
 - b. Do first pass on one side of the bar and let the shoe rotate to the other welder before the first pass is applied to the other side of shoe.
 - c. Let the shoe rotate back to the first welder before the second pass is applied. (if required) This allows enough time for the shoe, and chain link to cool before more heat is applied to the shoe.
4. Raise one side of the bulldozer so that the track can turn without contacting the ground.
5. Make sure bars and pads are clean before welding. Giving extra attention to ensure all moisture is removed.
6. If bars and pads are cold, preheat lightly with torch to 100 - 200 degrees F. However, if bars and pads are 60 degrees F or over, preheating is not required.
7. Cut bars shorter than full width of the tractor pad - 1/4" to 1/2" short on each end of pad.
8. Tack weld grouser bars on pad at each end and center leaving approximately 1/16" gap, so the grouser bar can move in slightly as the weld shrinks. This gap can be obtained by striking the shoe with a heavy center punch. **Tack welds must be a minimum of 2" in length.**
9. It is important to make sure that the ends of the grouser bar are completely welded to the shoe. Don't leave cavities where the weld was started as this will allow the end of the grouser bar to break off. The picture shows poorly attached grouser bar.



10. Control bead shape or size of the deposited weld. As the hot weld cools, it tends to shrink. When a concave bead cools and shrinks, its outer face is stressed in tension. By using a convex bead, shrinkage cracks can be avoided because the weld can shrink while cooling without stressing the outer face in tension and reduce cracking tendencies.



11. In all cases, a good quality of low hydrogen welding rod or wire should be used. Use proper storage for low hydrogen electrodes and flux to avoid moisture pickup. Any hydrogen present tends to separate out and builds up pressure. This pressure, when combined with shrinkage stresses and any hardening effect of the steel's chemistry, may cause tiny cracks. We recommend using Lincoln Welding Wire as follows:

- a. Electrode Welding E-7018
- b. Mig Welding NS-3M Wire

12. An internal crack can be prevented by limiting the penetration and the volume of weld metal deposited per pass through speed.

13. It is recommended that amperes and wire feed be set as high as the operator can easily handle. The purpose of this is to achieve a fast low penetration weld procedure helping to prevent Carbon from the grouser bar building up in the weld puddle and make it crack sensitive.

The following are for reference only when welding with 3/32" NS3M

	820 Grouser Bar	890 Grouser Bar	910 Grouser Bar
Amperes	250	300	550
Volts	26	28	30
Wire Feed	110"/ min	145"/ min	Set by machine
Travel Speed	9" to 13"/ min	12 to 16"/ min	14 to 18"/ min

14. Avoid quenching or rapid cooling of welds. Do not let the welds come in contact with water, mud, snow etc.

Note: To completely ensure a proper welding procedure, preheating (500^o) prior to welding should be performed. Preheat to remove condensed moisture from plate surfaces. However, this method is impractical and rarely used.

