

FRONTIER-MINER

Engineering Specification

Reconditioning Procedure for SL-76 Draft Gear

MES 1.22.3-C

Release Date
11/3/87

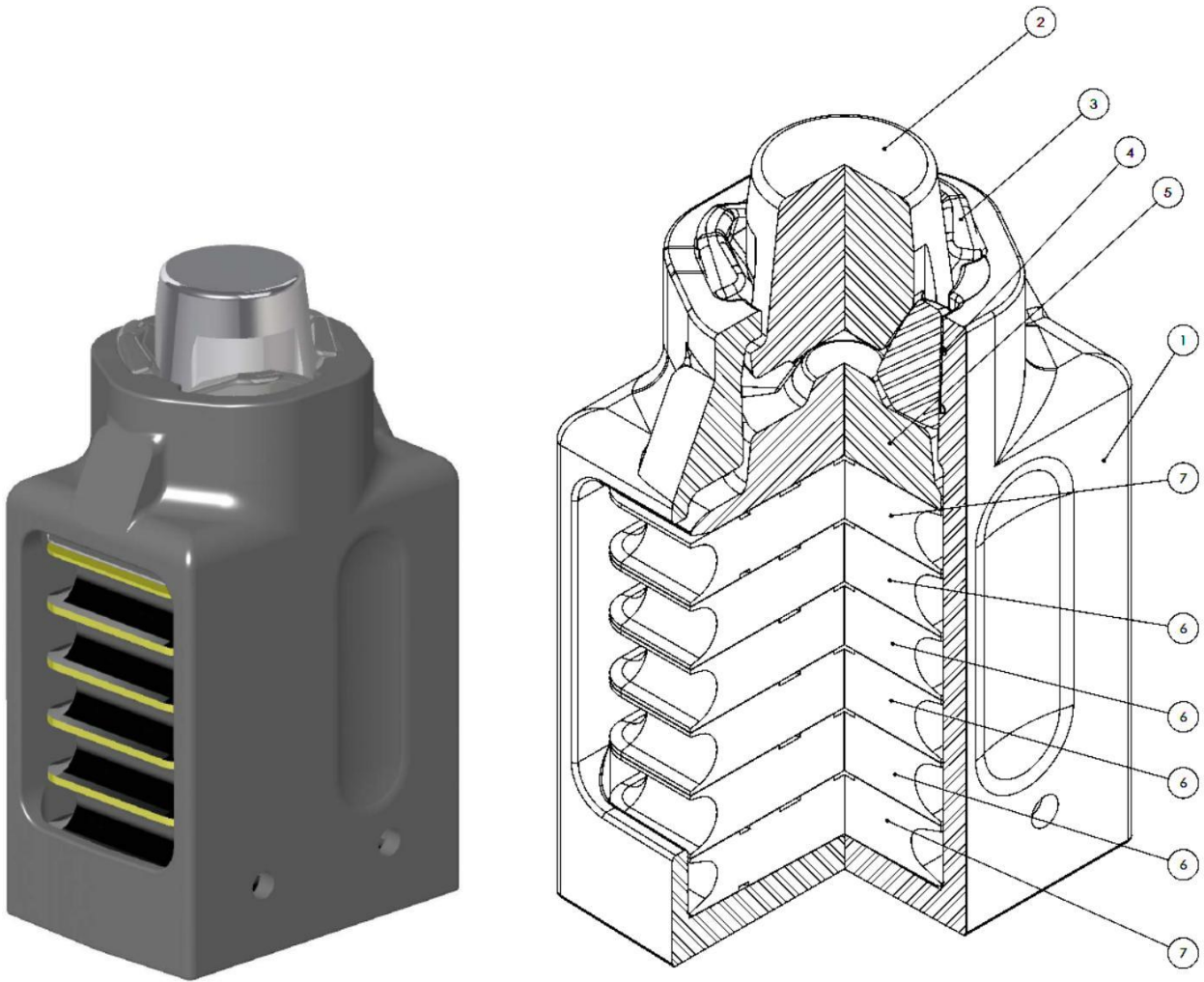
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Prepared by:
ES/SANJAY

Approved by:
CAM/SATISH



SL-76

Parts List

Item	Qty.	Description	Part Number	FASL Drg. No.
1	1	Housing	D11209	FASL/SL/H/0545
2	1	Wedge	D11532	FASL/SL/0956
3	3	Shoe	D11531	FASL/SL/0957
4	3	Bore Insert	D10547	FASL/SL/0955
5	1	Follower	D11530	FASL/SL/0489
6	4	RF-8 Pad	26659	FASL/SL/0958
7	2	RF-9 Pad	26658	FASL/SL/0959

Note: Preshortening Inserts not shown.

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CAUTION: USE A HIGH DEGREE OF CARE WHEN DISMANTLING AND ASSEMBLING THIS DRAFT GEAR.

I. Disassembly

- A. Position the gear in the pad removal press, close and lock the safety door and disassemble the pad stack.
- B. Take the gear out of the fixture and remove the remaining components for inspection.
- C. Turn the housing upright with the rollover mechanism for inspection.

II. Inspection and Repair

All the gages mentioned in this document are listed on Gage Index No. GSL-76-R. The proper gage application is illustrated on each respective gage drawing.

A. Housing

Friction surface must be smooth. Sharp edges due to wear must be removed by grinding. Gouged areas can be blended in if they are no more than 1/16" deep x 1" long in the vertical direction. Make sure bronze "H" Bore Inserts are not broken, or missing. Replace damaged inserts as required if possible.

Rear wall flatness is checked with Gage No. 27257 or FASL/SL/0970

Maximum outside dimensions must be checked with Gage No. 29632 or FASL/SL/0981

Wall thickness in the bore area must be checked with Gage No. 28148 or FASL/SL/0973

Maximum top bore diameter is to be checked with Gage No. 28150 or FASL/SL/0974

Maximum bottom bore diameter is first checked with Gage No. 28187 or FASL/SL/0977. If the housing passes this gage the bottom bore diameter is acceptable. If the housing fails Gage No. 28187 or FASL/SL/0977, it can still be used if it meets both Gage No. 28151 or FASL/SL/0975 and Gage No. 28168 or FASL/SL/0976

Note: Failure to meet any of the above gage requirements is cause for rejection. Box gage rejects may be corrected by grinding and/or pressing, provided other dimensional requirements are maintained.

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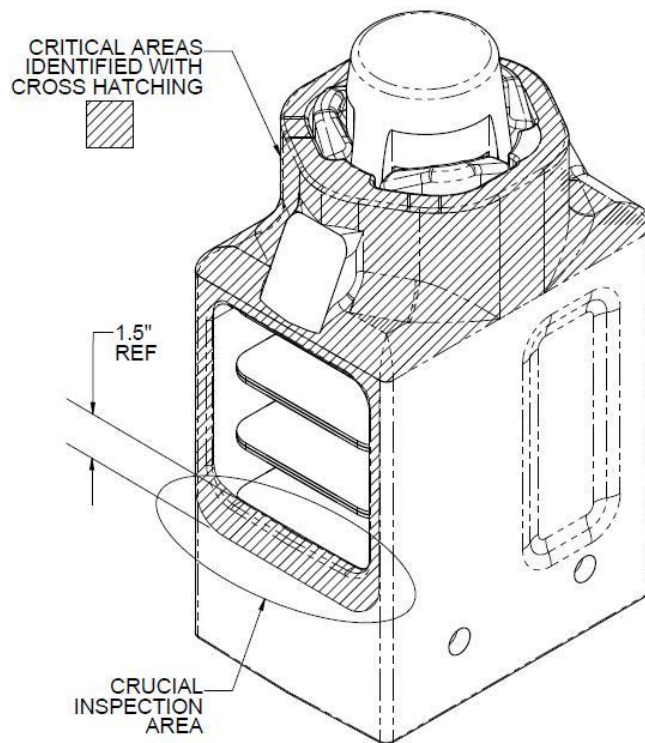
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Visible cracks. Housings with cracks exceeding 1" in length shall be scrapped.

Housings with a total combined crack length exceeding 4" shall be scrapped.

Cracks up to 1/8" in depth and up to 1" in length can be ground out. The affected area is to be blended smoothly into the surrounding surface. Housings with cracks exceeding 1/8" in depth shall be scrapped. The surface must be ground down to completely eliminate the crack for depth measurement.

Welding to renew worn surfaces and minor casting defects are permissible in non-critical areas. All welds are to be ground smooth to the surface. The welding parameters are found in the appendix. See illustration below for critical areas. Total weld repair on a single housing not to exceed 4" of total weld length.



Torch marks. Surface marks may be repaired by welding. Torch marks through a section, other than the bore, may be weld repaired. Reference visible crack weld criteria.

Repair Tag. After inspection and repair, a tag with "RT WHM" and the month and year of repair is welded to each housing. Locate the tag on the bore/shoulder area so it does not interfere with the application of the gages.

Note: The letter "P" will be added after the letters "RT" after passing the hammer test and final inspection.

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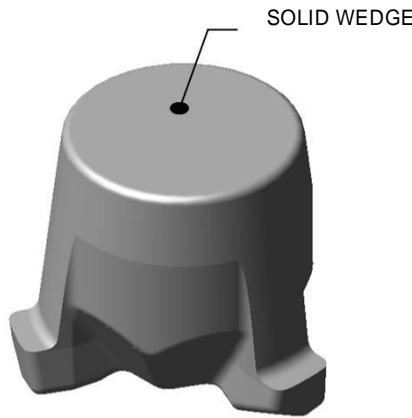
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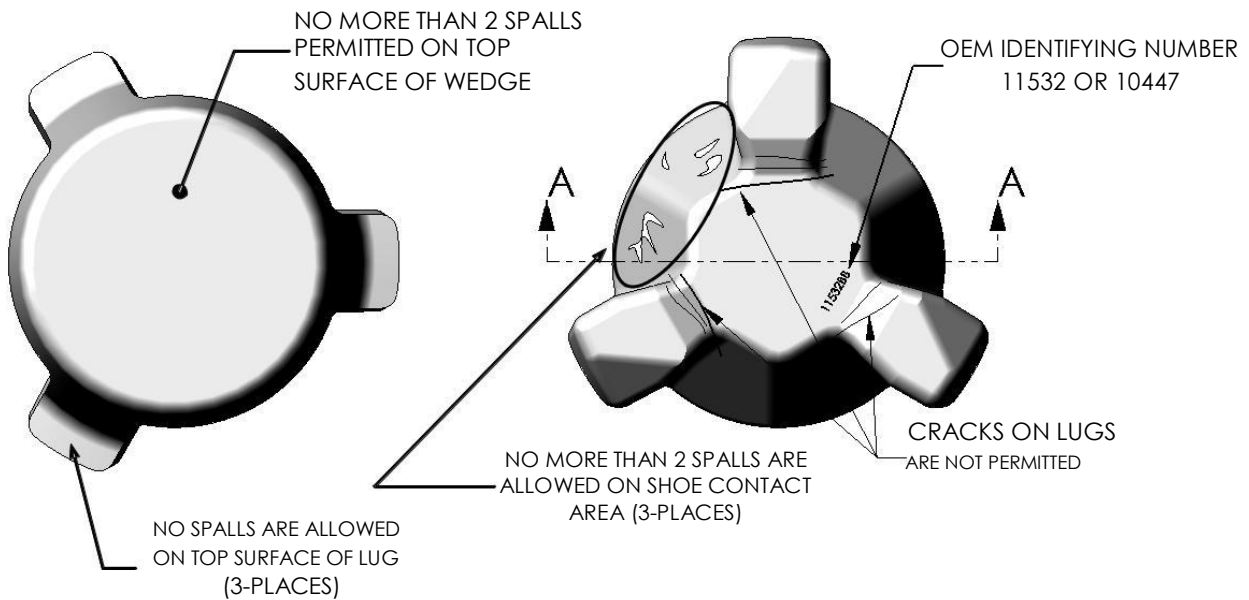
B. Wedge

All wedges must be shot blasted prior to visual inspection. No cracks are allowed on the lugs. Torch marks, severe cracking, severe spalling and excessive wear are not allowed anywhere on the part. Only one lug may be spalled and the spall must not exceed 1/4" x 1/4". Check the thickness and flatness of wedge with gage number 40748 or FASL/SL/0983



Visually inspect the wedge using the following criteria:

- Scrap all wedges that have a spall greater than .25 in² (1/2" x 1/2") anywhere on the wedge.
- Scrap all wedges that have more than two spalls on the shoe contact area.
- Scrap all wedges that have a spall on the top surface of lug.
- Scrap all wedges that have more than two spalls on the top surface of wedge.



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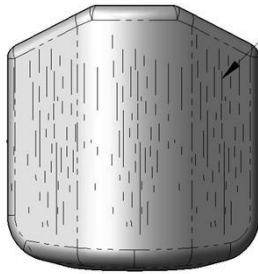
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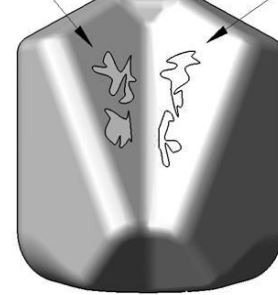
C. Shoe

All shoes must be shot blasted prior to visual inspection. Severe cracks, severe spalls, torch marks and excessive wear are cause for rejection. Mild case crazing is permitted. Excessive wear or gouges greater than 1/32" are not allowed. Check thickness and flatness of shoe with gage number 40749 or FASL/SL/0984 using with shoe cradle gage number 40767 or FASL/SL/0985

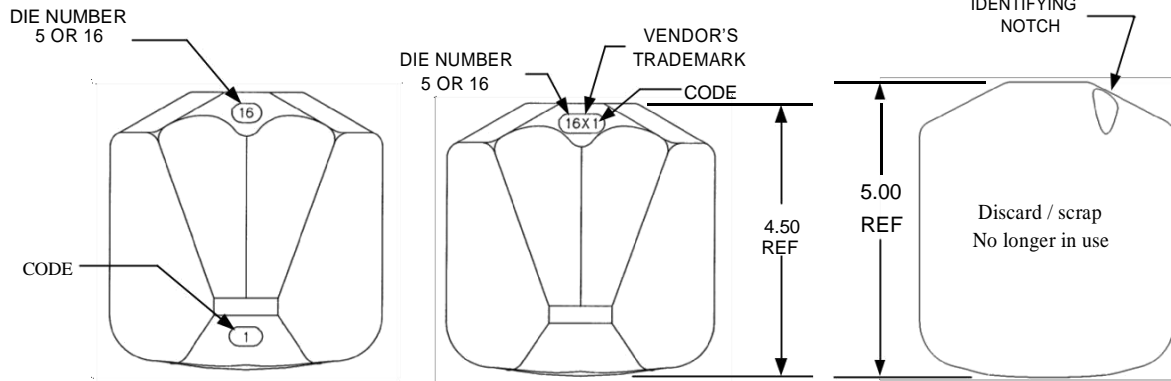
EXCESSIVE WEAR OR GALLING GREATER THAN .032 DEEP IS NOT PERMITTED



NO SPALLING PERMITTED ON THESE SURFACES

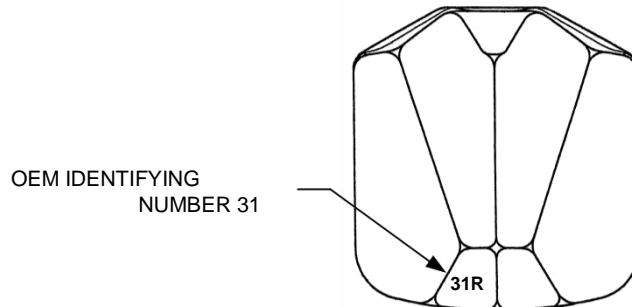


EARLY SHOE IDENTIFICATION



Note: Only shoes identified with a "1" code are to be used in reconditioned gears.

LATER SHOE IDENTIFICATION



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D. Follower

1. All followers must be shot blasted prior to inspection. Check the flange thickness with Gauge No. 40071 or FASL/SL/0982
2. Follower thickness must be checked in the shoe contact areas with Gage No. 28840 or FASL/SL/0980 Refer to Drawing No. 28840 or FASL/SL/0980 for additional information.
3. Sharp edges due to wear must be blended with the surrounding area. Flatness shall be checked visually. Obvious distortion is cause for rejection.

E. Elastomer Pads

No tears, chunking or bond failures are allowed. Refer to the visual inspection criteria in the appendix. The height of the RF-8 and RF-9 pads over the steel plates must be checked with Gage No. 27736 or FASL/SL/0971

III. Reassembly

- A. Only new parts or used parts that pass the inspection of Section II may be used in reconditioning gears.
- B. Below is a list of parts for each unit:

<u>QUANTITY</u>	<u>PART</u>	<u>PATTERN NO.</u>	<u>FASL DRG. NO.</u>	<u>IDENTIFICATION</u>	<u>LOCATION</u>
1	Housing	D-11209	FASL/SL/H/0545	D-11209/SL-76	12-1/2" Wall
1	Wedge	D-11532	FASL/SL/0956	See ID Table Above	Bottom of Wedge
3	Shoe	D-11531	FASL/SL/0957	See ID Table Above	-
1	Follower	D-11530	FASL/MF/0489	40866B or D-11530	Top or Bottom
3	Bore Lube Inserts	D-11547	FASL/SL/0955	"H" Shape Bronze	-
4	Elastomer Pad	26659	FASL/SL/0958	RF-8	Top Plate
2	Elastomer Pad	26658	FASL/SL/0959	RF-9	Top Plate
3	Preshortening Insert	43937 or D-11929	FASL/SL/0954		

- C. Acceptable housings are to be date tagged and loaded onto the conveyor.
- D. Gears are to be reassembled with used parts when available. At least one new RF-9 and two New RF-8 pads are to be used in each rebuilt gear, positioned at the clutch end of the stack.

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- E. The wedge is placed into the inverted housing, followed by the shoes, then the follower. Place one preshortening insert between the follower and the inside shoulder on the large window side to stabilize the follower during pad insertion.
- F. Lubricate the following surfaces before installing the pads:
1. The pad side of the follower.
 2. Both plates of the pad that are preplaced in the bottom of the housing.
 3. The inner sidewalls of the housing.
 4. The pad plate that rests on the bottom of the assembly fixture.
 5. The top plate of the stack in the assembly fixture, which bears against the vertical ram.

Note: Acceptable lubricants are:

1. Superior Graphite, #130 Suspension
2. Liquid hand soap
3. Liquid dish detergents

Any lubricant used must first be tested to make sure it does not have a detrimental effect of the rubber pads.

- G. Place an RF-9 pad in the bottom of the housing and hold it in place with the special hooks.
- H. Place a new RF-9 pad into the assembly fixture, followed by two new RF-8 pads and then two used RF-8 pads.
- I. Install the pads and check the alignment with Gage No. 28198 or FASL/SL/0978
- J. Move the assembled gear through the rollover mechanism and then to the conveyor system.

IV. Hammer Test

Each gear is tested per AAR Specification M-901B. Gears that fail this test shall be disassembled to determine the cause of failure and corrected, if possible. Reworked gears are then resubmitted for hammer testing. Upon successful completion of the hammer test, the gear is ready for preshortening.

V. Preshortening

Using preshortening block T-616 on the shoes, compress the gear in a press until an insert can clear the shoe and housing lug. Place one preshortening insert on each wedge lug, below the corresponding housing lug. Release the gear slowly to avoid damaging the inserts. Hit the housing with a small sledge hammer to make sure the gear is properly extended against the inserts.

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VI. Final Inspection

After passing the hammer test and preshortening, each gear shall be checked by a Quality Assurance inspector for the following characteristics:

A. Preshortening Inserts

1. One insert per lug.
2. Contact with both wedge and housing lugs.
3. Inserts must be intact.

B. Forgings

1. Proper components and relationship.
2. No broken pieces.
3. No cracks or spalls exceeding the inspection criteria of Section II - B & C.
4. Clutch must be tight.
5. Torch marks are unacceptable.

C. Housings

1. No visible cracks allowed in the housing.
2. Weld repairs must be ground smooth.
3. Repair tag must be properly marked and securely fastened to the housing.
4. Torch marks are unacceptable.
5. Mild gouges less than 1/16" deep in the bore or on the lugs, from the assembly operation, are allowable. If, however, gouged metal is trapped behind the shoes, it must be removed. If gouges are deeper than 1/16", the gear must be rejected.
6. Dents on the top lug surfaces, from the assembly operation, are allowable if less than 1/32" deep. Those greater than 1/32" but less than 1/16" must be blended in by grinding. Dents greater than 1/16" are cause for rejection.

D. Gages

Each gear must meet the following gages:

1. No. 28140 or FASL/SL/0972 - Preshortening length.
2. No. 29632 or FASL/SL/0981 - Box gage.
3. No. 28199 or FASL/SL/0979- Pad stack alignment (final inspection)

The inspector will stamp the letter "P" on the repair tag after the letters "RT" to signify acceptance of the unit.

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A P P E N D I X

Gage Index No. GSL-76-R
Welding Parameters
Used Pad Visual Inspection Criteria

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		FASL
Remarks: * Apply gage 28187 first. If housing is acceptable, do not apply 28151 or 28168, if housing fails gage 28187, it must meet 28151 and 28168 to be acceptable		
Gage Description	Gage No.	Gage No.
.094 FLATNESS GAGE "	27257	FASL/SL/0970
PAD MINI. FREE HT. GAGE	27736	FASL/SL/0971
PRE-SHORTENED DRAFT GEAR LENGTH	28140	FASL/SL/0972
HOUSING WALL THICKNESS GAGE MINI. (BORE)	28148	FASL/SL/0973
HOUSING BORE DIA. GAGE MAXI. TOP BORE DIA.	28150	FASL/SL/0974
* HOUSING BORE DIA. GAGE MAXI.	28151	FASL/SL/0975
* BORE TAPER GAGE	28168	FASL/SL/0976
* HOUSING BORE DIA. GAGE MAXI.	28187	FASL/SL/0977
PAD STACK ALIGNMENT GAGE	28198	FASL/SL/0978
PAD STACK ALIGNMENT GAGE FINAL INSPECTION GAGE	28199	FASL/SL/0979
FOLLOWER MINI. THICKNESS GAGE	28840	FASL/SL/0980
RECONDITIONED HOUSING GO GAGE: (HOUSING BOX GAGE)	29632	FASL/SL/0981
FOLLOWER FLANGE THICKNESS IDENTIFICATION GAGE	40071	FASL/SL/0982
WEDGE RECLAMATION GAGE (NO SEAT)	40748	FASL/SL/0983
SHOE THICKNESS GAGE	40749	FASL/SL/0984
SHOE CRADLE FOR RECLAIMED SHOES	40767	FASL/SL/0985

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MIG WELDING PARAMETERS

Materials

Gas	Trade Name:	Any easily available
	Composition:	3% Oxygen, 88% Argon, 9% CO
Wire	Trade Name:	Linde 83 or equivalent
	Specification:	AWS ER80S-D2
	Size:	.045" / 1.143mm

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Settings

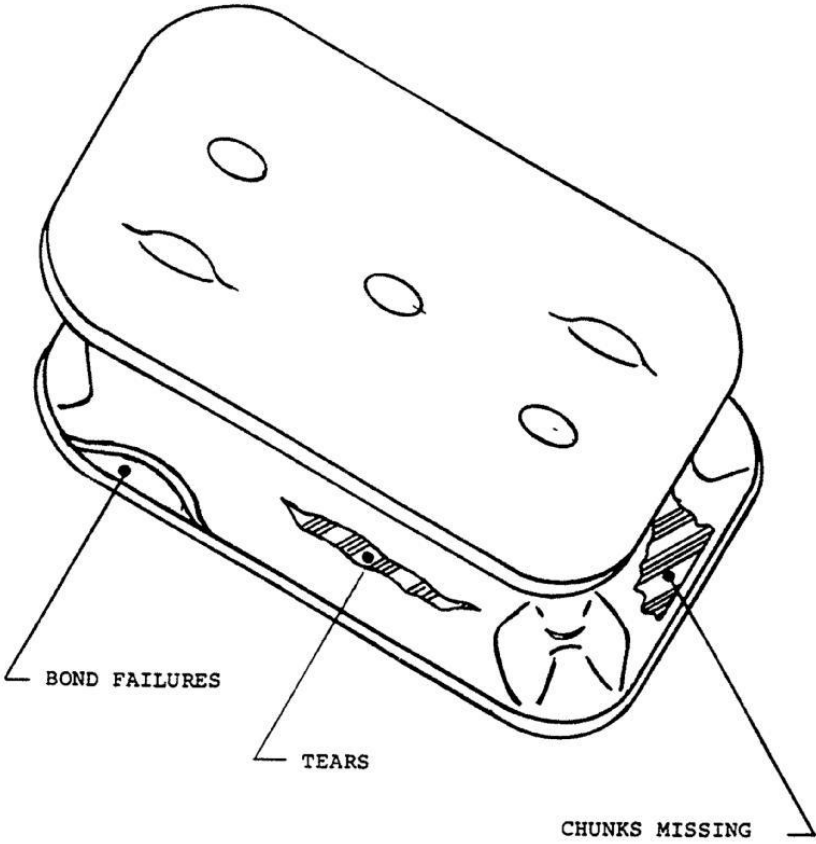
DC Amperage	175
DC Voltage	20
Wire Speed	240 inches / min.
Gas Flow	40 cubic feet / hour

+ The above are a baseline of recommended settings, which may be adjusted as necessary to produce sound welds. Refer to DG-113 in Draft Gear Procedures for more information

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USED PAD VISUAL INSPECTION CRITERIA



REJECTABLE DEFECTS IN ELASTOMER PADS