



FIELD KIT

Vermeer Corporation

Environmental Solutions
Pella, Iowa 50219 USA

FIELD CAMPAIGN KIT #:	IK004078	DATE:	3 June 2021
<i>For Dealer Reference: Service Bulletin #: SVC2021-103</i>			
Trailer Frame Crack Inspection and Temporary Frame Repair Kit			

CAMPAIGN TYPE:	Mandatory – Product Safety
CAMPAIGN CATEGORY:	Kit and Bulletin

MACHINE/ ATTACHMENT MODEL(S):	SERIAL NUMBERS:		
	Included	Excluded	Kit version
AX19	101 – 342, 1001 – 1043	None	Temporary kit versions: <ul style="list-style-type: none"> • IK01: Inspection procedure. No visible cracks. • IK02: Cracks <1 in (2.54 cm). No parts required. Drill holes only. • IK03: Cracks >1 in (2.54 cm) + frame is not deformed. Order parts to gouge and add weld backer plates onto frame. • IK04: Cracks >1 in (2.54 cm) + frame is deformed. Contact EV service to order replacement frame.

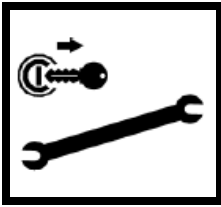


Purpose: TRAILER FRAME FAILURE MAY OCCUR. Crack(s) can develop in the trailer main frame **during brush chipping**, which can result in severe damage to the brush chipper frame. The maintenance manual requires the machine owner/operator perform a 100-hour machine frame inspection. If crack(s) develop and are not identified during this maintenance frame inspection, the frame can bend and/or distort, resulting in loss of stability while towing. Vermeer Corporation's evaluation indicates cracks may begin to form in the trailer main frame when the machine has **greater than 1,000 engine hours**.

DEATH OR SERIOUS INJURY POSSIBLE. If the brush chipper's trailer main frame is cracked or fails before or during towing of the brush chipper on public roadways, this may increase the risk of a crash due to the loss of control of the brush chipper and towing vehicle. **Death or serious injury is possible.** Property or equipment damage may also occur.

Special tools and conditions:

- Welder



WARNING: Failure to use shutdown procedure can result in unexpected hazard(s). Death or serious injury could result due to entanglement, crushing, cutting, or other hazardous contact. Follow shutdown procedure after operating, before performing any service or maintenance, and before transporting.

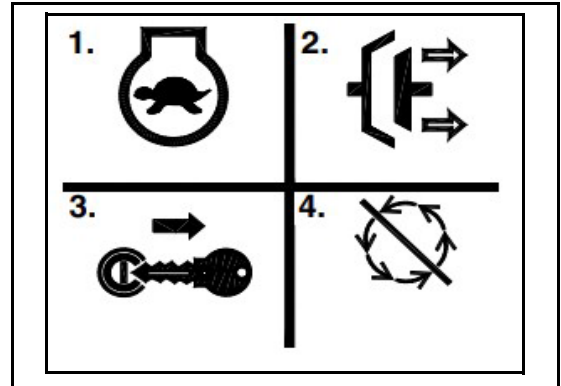
Shutdown procedure: AX19

Stopping the engine

NOTICE: For your safety and the safety of others, use the shutdown procedure before working on the machine for any reason, including servicing, cleaning, unclogging, inspecting or transporting the chipper. A variation of this procedure may be used if so instructed within this manual or if an emergency requires it.

When stopping the engine, use the following shutdown procedure:

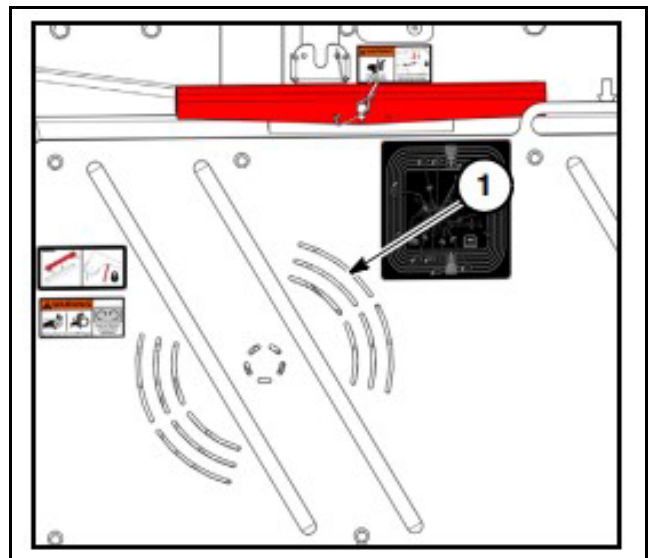
1. Move *Feed Control Bar* to NEUTRAL.
2. Reduce engine speed to LOW RPM.



NOTICE: Whenever practical and safe, allow engine to idle for one to five minutes before shutting down after operating at full power. Please consult machine's engine manual for details.

3. Wait for cutter drum to slow.
4. Place *Cutter Drum (Clutch) Lever* in the DISENGAGED position.
5. Shut off remote control if in use.
6. Shut off engine and remove key.
7. Wait for the cutter drum and belt to stop.

NOTICE: The cutter drum will continue to turn for a short time after disengagement. Check that cutter drum rotation has stopped by viewing drive sheave through slots (1) on drive belt shield.



Unless indicated, new parts from kit have callouts with numbers. Callouts with letters indicate existing parts or general items.

Vermeer Corporation weld repair instructions

Scope:

These welding instructions are intended for temporary repair of a partially cracked AX19 frame.

Work area preparation and safety:

The company performing the welding is responsible for supplying the appropriate protective equipment, complying with the appropriate safety regulations (e.g., ANSI Z49.1) and taking appropriate measures to protect their personnel in the welding environment. Further, they are responsible for protecting sensitive equipment and components from the hazards of welding (e.g., shielding electronics, paint, plastics, etc, from the heat, light and sparks of arc welding). Follow the battery and/or controller disconnection specifications in the machine service manual. Disassemble the machine as much as necessary to provide adequate access to the repair areas.

Certifications:

All welding shall be performed by a welder qualified in the position and process used in AWS D14.3/ D14.3M, *Specification for Welding, Earthmoving, Construction, and Agriculture Equipment* or one of the following: AWS B2.1, AWS D1.1, ASME section IX, ISO 9606-1.

Work lead connection (grounding):

Welding or cutting work leads (commonly referred to as grounds or ground clamps) must be attached directly to the weldment being repaired/modified and as close to the point of welding or cutting as practical. Additionally, it must be firmly connected to bare metal (paint removal is usually necessary). In no case shall the ground path be allowed to pass through bearings, electronics, bolted connections or other sensitive components or connections.

Repair instructions:

- 1. Inspect for cracks:** Inspect the existing welds for cracks or other defects. Mark the extent of the cracks or defects to guide cutting/gouging them out. It is recommended that magnetic-particle or dye-penetrant testing is used to verify the full extent of the cracks.
- 2. Drill stop hole:** Drill a 0.375 in (10 mm) or larger diameter hole at the end of the crack to ensure that it does not continue to grow during the repair process. Position the hole in such a way to ensure the entire crack tip is removed.
- 3. Removal of cracked welds:** Cut out any cracked welds in the designated areas. Carbon arc gouging or grinding may be used. Be careful not to remove more material than necessary.
- 4. Reinspect:** Reinspect to ensure the entirety of the crack(s) has been removed. Use the same inspection process selected in step 1 (i.e., visual inspection, magnetic-particle testing, and/or dye-penetrant testing). If any remaining crack is found, repeat steps 1 – 4.
- 5. Prepare weld joints:** Grind (or cut) bevels in each joint to the dimensions in the figure below. Smoothly blend any notches or gouges in the base material. Clean all weld surfaces with a grinder. Surfaces within 0.5 in (12 mm) of weld locations shall be free from any material that will prevent proper welding. This includes moisture, loose or thick mill scale, paint, slag, heavy rust, grease, dirt or any other foreign material that will adversely affect the quality or strength of the weld.

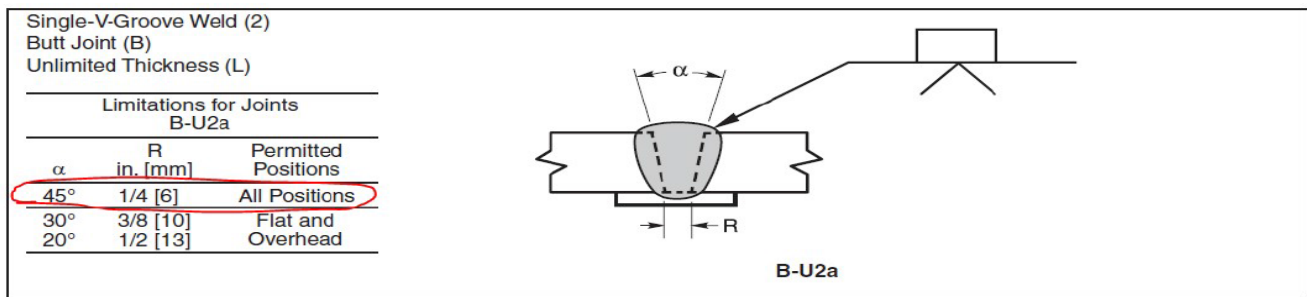
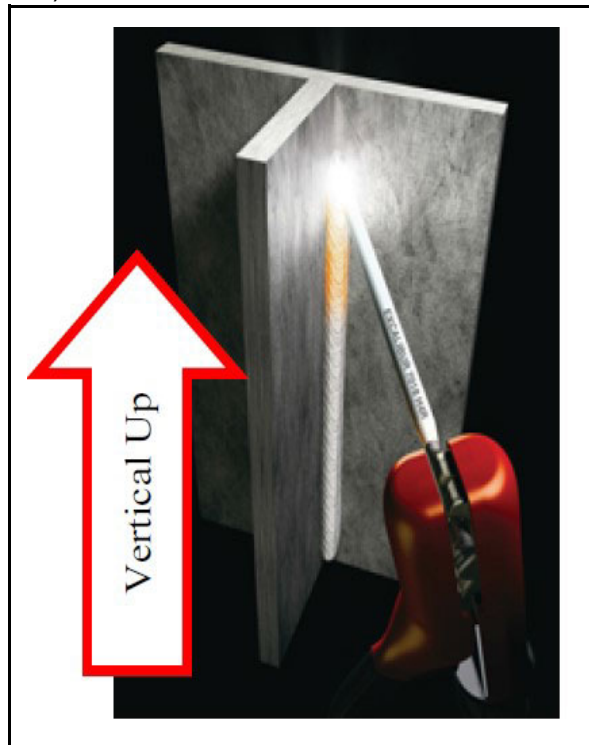


Figure A - Joint preparation and welding guide (source AWS D14.3:1010, Figure A.1)

6. **Preheat:** Before welding, the base metal within 3 in (76 mm) of the weld joint in all directions must be preheated to above 50°F (10°C) before welding or tacking. During welding, the base metal temperature must be maintained above 50°F (10°C) but below 500°F (260°C).
7. **Attach backing:** Pull together or otherwise align parts as needed to match the dimensional requirements in Figure A. Tack in place backing strips as shown in Figure A. Use 0.25 in (6 mm) mild steel material (e.g., 1018 or A36). For welding, use one of the weld processes listed below (GMAW, FCAW or SMAW).
8. **Weld:** Select one (or more) of the weld processes listed below. Fill the groove welds and place fillet welds around the perimeter of the backing where possible. For FCAW and SMAW welding processes, remove all slag in between passes/layers. All grooves must be filled flush or slightly convex, as required in the quality acceptance criteria on page 7. All vertical welds must be made in a vertical up progression (see figure below).



9. **Inspect:** Inspect all welds in accordance with the weld quality acceptance criteria list on page 7. Repair any defective welds and reinspect. If defects (no go) are found, remove and repair them using one of the weld processes listed in this document.

Weld parameters for gas metal arc welding [GMAW/MIG/MAG]:

Environment: This process shall only be used when welding can be performed in a shop environment and only for the weld joints which can be positioned in the flat or horizontal positions. For vertical or overhead welding, FCAW or SMAW is recommended.

Electrode: AWS classification ER70S-3 or ER70S-6 (ER48-S6) (e.g., Lincoln L5 or L56)

Size: 0.145 in (1.2 mm)

Wire feed speed: Minimum 430 IPM (10.9 MPM) - maximum 520 IPM (13.2 MPM) [optimum 450 IPM (11.4 MPM)]

Voltage: Minimum 26 volts - maximum 30 volts (optimum 27.5 volts)

Amperage: Amperage is a function of wire feed speed, but should read in the range of 340 - 370.

Electrode stickout: 0.5 in – 0.75 in (12 mm – 20 mm)

Shielding gas: 95% argon - 5% oxygen or 90% argon - 10% CO₂ at 40 cfh (1.1 cmh)

Position: All welding should be in the flat or horizontal position. Vertical welding shall be uphill. No downhill welding is permissible.

Weld parameters for flux core arc welding [FCAW]

Environment: Protect the weld area from wind and moisture.

Electrode: AWS classification E71T-1M (E491T-1M) (e.g., Lincoln Ultracore 71A85)

Size: 0.052 in (1.3 mm) or 0.063 in (1.6 mm)

Wire feed speed: Minimum 200 IPM (5.1 MPM) - maximum 500 IPM (12.7 MPM) [optimum 450 IPM (11.4 MPM)]

Voltage: Minimum 23 volts - maximum 30 volts

Amperage: Amperage is a function of wire feed speed, but should read in the range of 220 - 370.

Electrode stickout: 0.75 in – 1 in (20 mm – 25 mm)

Shielding gas: See electrode manufacturer recommendation [usually 75Ar/25CO₂ @ 40 cfh (1.1 cmh)]

Position: Flat, horizontal, vertical and overhead positions are permissible. Vertical welding shall be uphill. No downhill welding is permissible.

Weld parameters for shielded metal arc welding [SMAW/MMA]:

Environment: Protect the weld area from wind and moisture.

Electrode: AWS classification E7018 (E4918) or equivalent

Size: 0.125 in (3.2 mm) or 0.156 in (1.0 mm)

Polarity: Direct current electrode positive

Amperage: 110 – 135 amps for 0.125 in (3.2 mm) and 125 – 200 amps for 0.156 in (4.0 mm)

Position: Flat, horizontal, vertical and overhead positions are permissible. Vertical welding shall be uphill. No downhill welding is permissible.

Electrode condition:

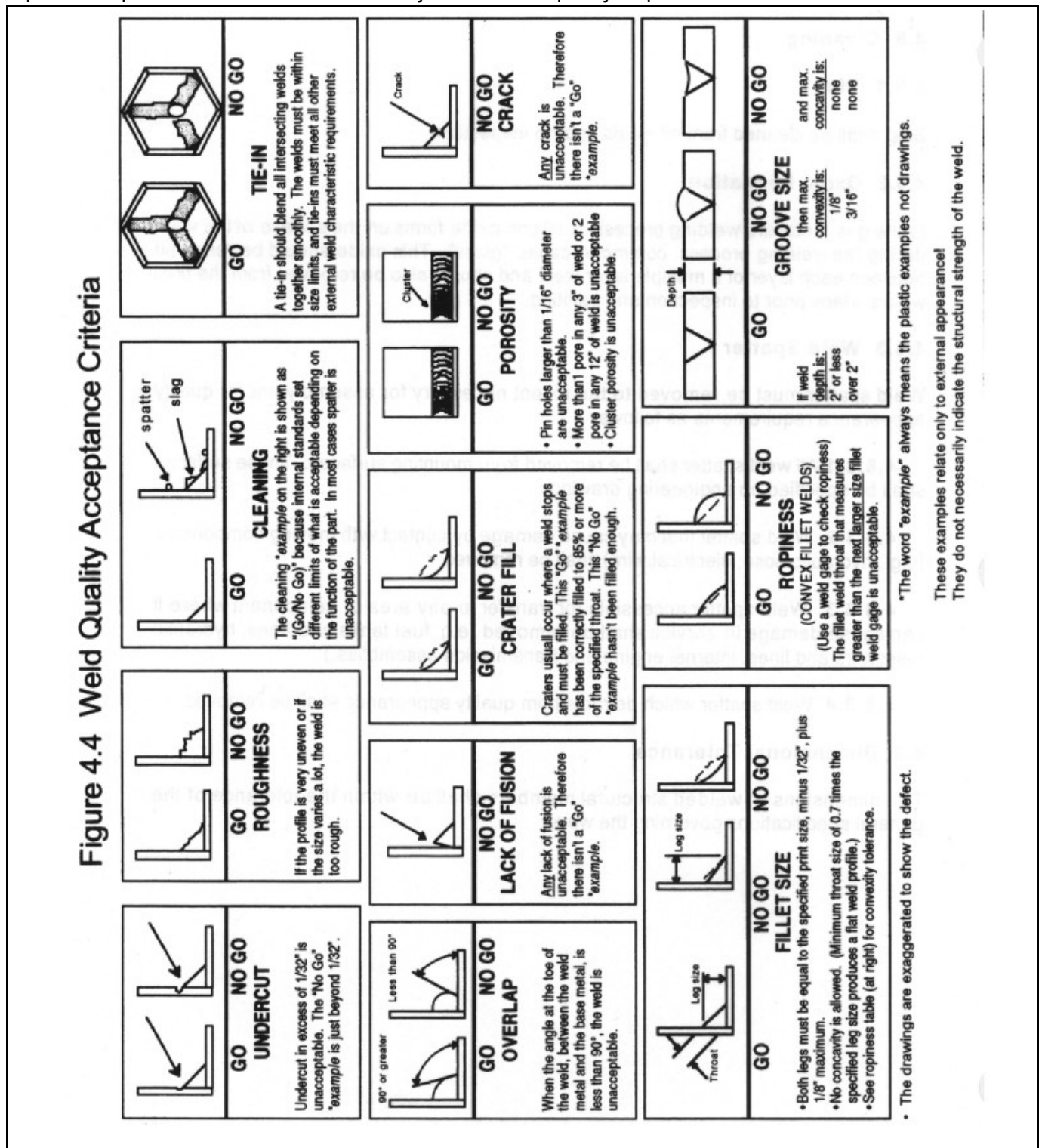
- All electrodes shall conform to AWS specification A5.1 and should be purchased in hermetically sealed containers or should be baked by the user in an oven for one hour between 500°F and 800°F (260°C and 430°C) prior to use.
- Immediately after opening the hermetically sealed container, electrodes should be stored in ovens held at a temperature of at least 250°F (120°C).
- After hermetically sealed containers are opened or after electrodes are removed from baking or storage ovens, the electrode exposure to the atmosphere should not exceed four hours. If electrodes have been exposed to the atmosphere for more than four hours, they shall be rebaked in an oven for one hour between 500°F and 800°F (260°C and 430°C).
- Electrodes should be rebaked no more than one time.
- Electrodes that have been wet shall not be used.

Limitations:

These welding instructions are intended for use only as directed by Vermeer Corporation.

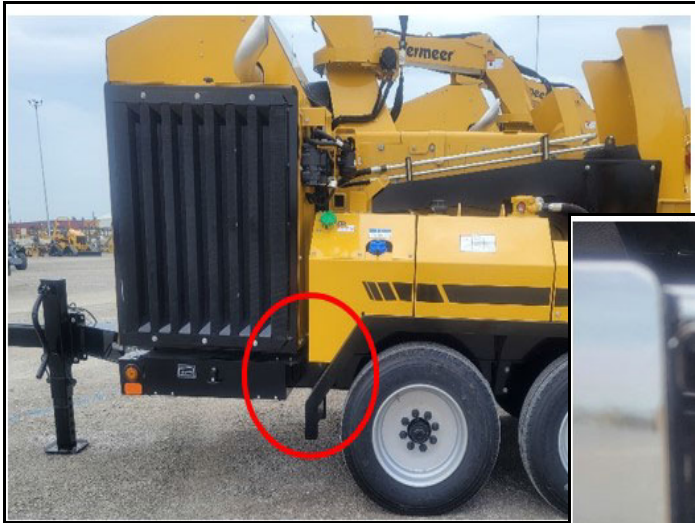
Weld quality acceptance criteria:

All welding shall be in accordance with the figure below. Any welds that do not conform (no go) must be repaired to bring them back into compliance (go). It is the responsibility of the company performing the repair to inspect the welds and ensure they meet these quality requirements.



Procedure: IK01 – No visible cracks

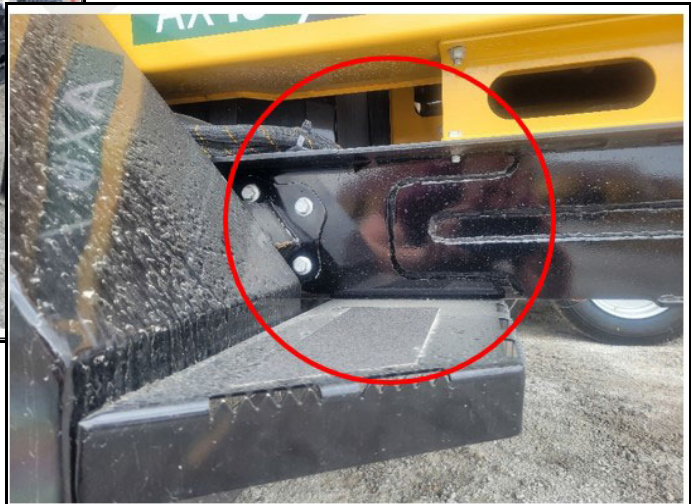
1. Inspect machine for cracks. Examples shown below.



Potential crack(s) location on left side



Potential crack(s) location on right side



2. If no crack(s) are present, continue using machine.

Procedure: IK02 – Cracks less than 1 in (2.54 cm)

1. Inspect both sides of machine frame per IK01 procedure.
2. If a crack is present:
 - If crack is contained within confines of template (see next page), proceed to step 3.
 - If crack extends past confines of template (see next page), use either IK03 or IK04.
3. Complete **Dealer Inspection Results Report** and submit with photos per service bulletin procedure for IK02.
4. Use template on next page to locate center and drill a 1 in (2.54 cm) diameter hole:
 - Overlay notch of template onto notch of mainframe (verify specified dimensions on template to make sure that template scale was maintained when printed).
 - Recommend to start with a 0.25 in (6.35 mm) diameter hole, then progressively increase drill bit diameter until 1 in (2.54 cm) diameter hole is achieved.

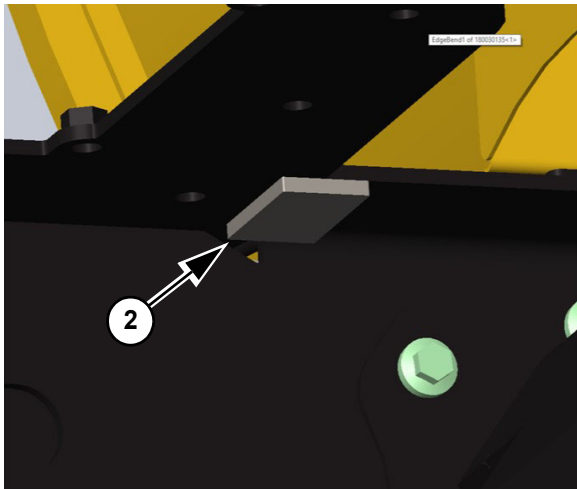
Procedure: IK03 – Cracks greater than or equal to 1 in (2.54 cm) and no frame deformation

1. Inspect both sides of machine frame per IK01 procedure.
2. Complete **Dealer Inspection Results Report** and submit with photos per service bulletin procedure for IK03.
3. Order IK03-4078 from parts distribution center.
4. Qualified welder must gouge and weld backer plates **(1)** and **(2)** per the Vermeer Corporation weld repair procedure on pages 4 – 8. Refer to Figure B for locations to weld backer plates.

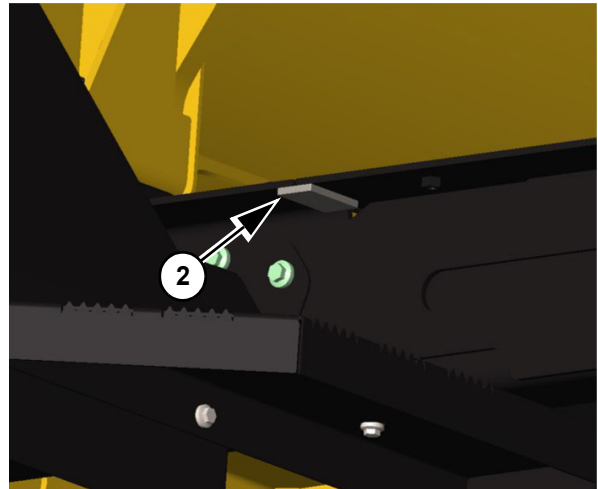
For serial numbers 101 – 136, drill holes in vertical backer plates to accommodate fender fasteners.

Figure B

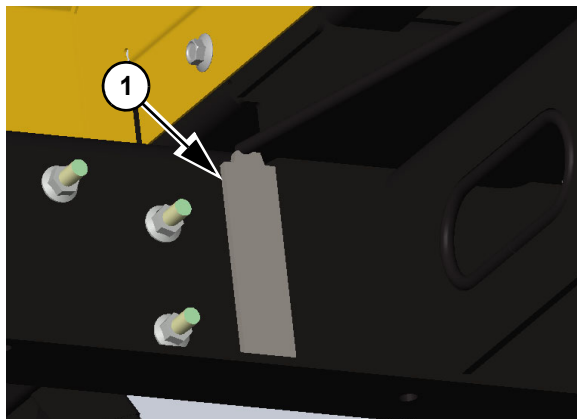
Left side – horizontal backer plate



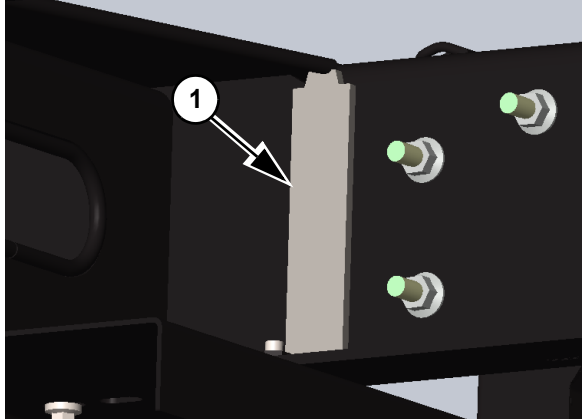
Right side – horizontal backer plate



Left side – vertical backer plate



Right side – vertical backer plate



Procedure: IK04 – Cracks greater than or equal to 1 in (2.54 cm) with frame deformation

1. Inspect both sides of machine frame per IK01 procedure.
2. Complete **Dealer Inspection Results Report** and submit with photos per service bulletin procedure for IK04.

UNIT OWNER COPY
 Insert into parts manual
 for future reference.

Figure 1

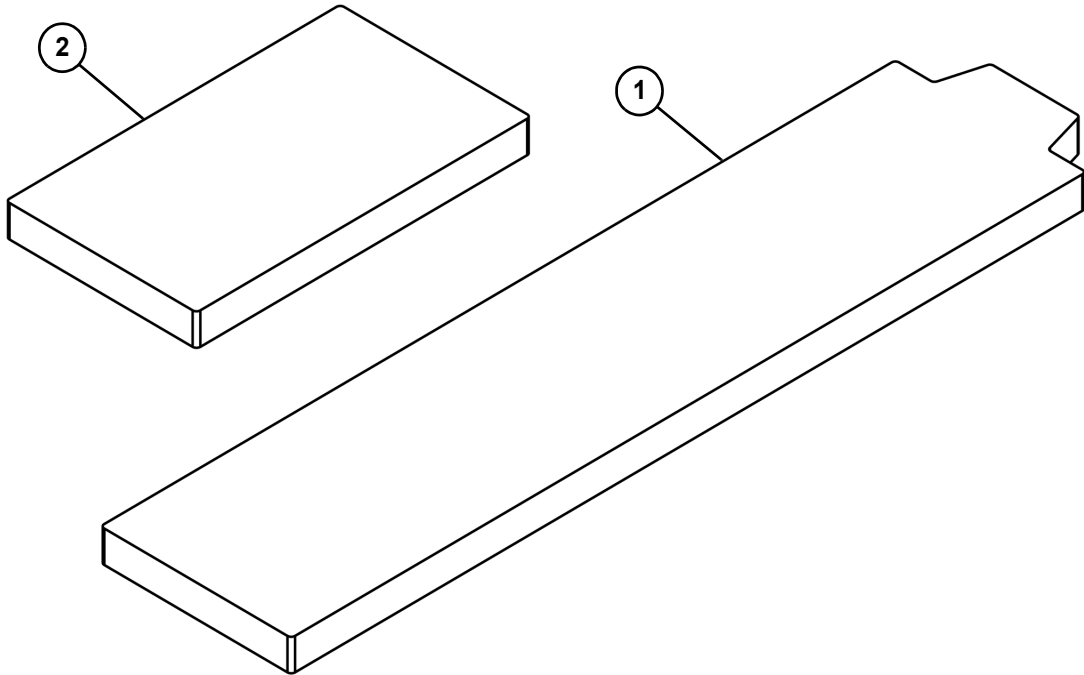


Figure 1 parts list

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>IK01 QTY.</u>	<u>IK02 QTY.</u>	<u>IK03 QTY.</u>	<u>IK04 QTY.</u>
1	163808141	PLATE - VERTICAL BACKER	-	-	2	-
2	163808142	PLATE - HORIZONTAL BACKER	-	-	2	-
		Kit includes all items in Figure 1 parts list.				