APPROVAL FOR RELEASE FOR USE:

POSITION:	NAME:	DATE:	POSITION:	NAME:	DATE:
Mfg. Eng	Eric Mensen	1/14/2025	QA MANAGER	John Berry	1/14/2025
DE Approval	V Stevenson	1/14/2025			

CHANGE CONTROL:*

REV:	DATE:	ECO #	DESCRIPTION OF CHANGE:	
A	3/7/2016	---	Release - A1 Adding effective date	JDR
B	4/7/2016	17734	Removed serial plate locations. Edited other errors.	JCP
C	6/2/2016	17779	Edited spelling errors and clarified cable tie notes.	JCP
D	12/13/2016	18198	Added info on pipe sealant and reworking decals.	JCP
E	3/16/2017	18396	Bolt installation method - 7.2.1	VGS
F			Created during switch to ENOVIA – No Change	
G	11/8/2019	21182	Added and revised wire termination details in 11.3 and 11.4	JLB
H	2/19/2020		Update to Section 7.3.4 and 16.1.1; Clarification on witness marks.	JEB
J	9/8/2020	23719	Update to Section 11.3.2.1; Added plug clarification; Added Cotter pin Illustrations to 7.5.3; Added Section 21: Weldments (from Z0244) to this document; Removed section 21.5; Changed Tolerances in 21.6.3.1 and 21.6.3.2 and 21.6.3.3 and 21.6.3.4;	JLB/VGS
K	10/18/2022		Added 11.4.5, updated logo (QOS 79068 / 69234)	JEB
L	4/3/2023	25944	Added 7.8 Fastener Torque Specification . Added 7.9 Fertilizer Plumbing Applications Added 7.10 Threaded Electrical Connector Torque Added 8.2.5 Torque Values (ft-lbs)	VGS
M	12/1/23	26837	ADDED 7.11 GRAIN CART PANEL ALIGNMENT ADDED 11. ELECTRONICS (Refer to Z0298 for electronics workmanship) ADDED 7.12 BULKHEAD INSTALLATION ON ROTO-MOLDED TANKS ADDED 11.3.6 Harnesses shall not be routed from inside to outside of toolbar or outside to inside of toolbar within the wing flex point between wing flex cylinder mounts ADDED 19.4 The parts within a boxed X bundle**	
N	1/14/25	28075	Update to section 7.3.5. Colors used for marking to be specified per hardware used. Added 7.3.7. Routine torque sequence Added 7.3.7.1. Identify in work instructions Added 11.3.7. Discrete wires shall not run through holes or openings without abrasion protection Added 11.3.8. Running harnesses thru openings without abrasion protection is non-preferred	

Note:

This document directly contributes to the configuration of Kinze products and is under the control of Kinze Engineering through the ECO process.

Kinze personnel must submit all related change requests via ECR.
Suppliers must submit change requests through the Kinze Purchasing or QA Departments.

The control of copies resulting from further distribution of this document is the responsibility of each individual distribution activity.

Table of Contents

1. PURPOSE

- This document is intended to describe Kinze Manufacturing Inc. best practices and expectations not covered elsewhere. These standards are intended to communicate the current best known practices ensuring a highest quality product and to enable consistency throughout product families.

2. SCOPE

- The standards outlined in this document apply to all Kinze products
- Certain cases will require exemption from the standards listed in Z0310. These exemptions will be listed in one of the documents in section 3.

3. ORDER OF DOCUMENT PRECEDENCE

3.1. Kinze issued deviations.

3.2. Local dimensional tolerances and specifications within the engineering drawing (and external to the drawing title block) and/or part routing.

3.3. Manufacturing work instructions

3.4. Z0310 [This Document]

4. RESPONSIBILITIES

4.1. Kinze Operations Management shall communicate all expectations to production operators and awareness of any updates.

4.2. Kinze Operators shall follow these standards.

4.3. ME Process Owner shall maintain documentation and ensure appropriate changes are applied. See reference documents;

4.3.1. Z0244- Kinze Fabrication Standard

4.3.2. Z0247- Safety Label Standards

4.3.3. Z0254- Paint Standards

4.3.4. Z0299-4900 Electronic Requirements

5. BACKGROUND

- There have been several policies implemented in operations throughout the years to improve quality. The majority of these were unwritten rules appplicable to all products unless otherwise specified by the section 3 hierarchies.
- It is inefficient to document these “umbrella” standards in engineering drawings or work instructions.
- The need to capture and document all the standards, best practices, and provide a change control procedure was established.

6. GENERAL

6.1.1. Product not meeting the requirements of this technical specification, the material specification, the drawing and/or the purchase order, is subject to rejection. Defects may be detected at any point in the manufacturing or inspection process.

6.1.2. It is required that all specified drawings, inspection, and work instructions are available and strictly followed at the work station. It is the responsibility of each individual to notify the appropriate department of any existing errors or discrepancies that make following the instructions impractical.

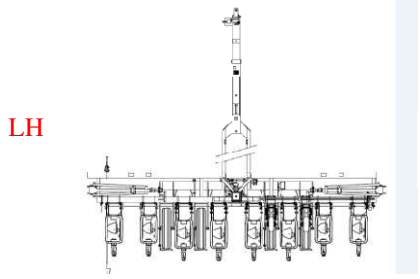
6.1.3. In the interest of efficient manufacturing practices, all defects must be noted and resolved/recorded at the earliest possible process step rather than sending it downstream.

6.1.4. Sending product out with a QOS citing manufacturing issues, to be addressed at a later date, is not acceptable standard operating procedure.

7. STANDARDS

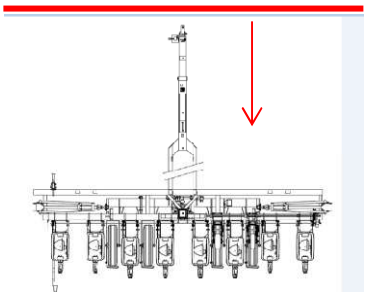
7.1. STANDARD POSITIONS

7.1.1. Left hand (LH) and right hand (RH) sides of the planter are determined by standing behind the planter opposite the hitch.



7.2. INSTALLATION METHODS

7.2.1. When possible, unless otherwise specified, bolts or screws shall be inserted such that the head of the fasteners are visible to the customer from front of the machine.



From the front of the planter you should be seeing the heads of the bolts not nuts

7.2.2. Torque all fasteners with the proper tool. Refer to work instructions if available. Otherwise, ask supervisor what equipment should be used.

7.3. WITNESS MARKS

7.3.1. This standard applies to all hardware used on all product lines.

7.3.2. Application of a witness mark indicates that the fastener has been tightened properly.

7.3.3. A witness mark is either a ¼ inch line, or a dot. **Do not use pictures or other drawings as witness marks.**

Examples of acceptable witness marks

7.3.4. Apply the witness mark to the fastener immediately after joint is properly torqued. Unless joint is part of a standard torque pattern as defined in section 16.1, then mark all the joints in the pattern at the completion of the torque sequence. **Do not mark the hardware before installation. Improper procedures for marking hardware will be considered falsification of company documents and will result in immediate disciplinary action, up to and including termination. Deviation from this procedure impacts product reliability and quality.**

- Apply the witness mark to the side of the hardware that is tightened. (i.e. bolt head if you are tightening the bolt, nut side of the bolt if you are tightening the nut.) See examples of acceptable witness marks

7.3.5. Use the chart below to determine what color paint marker is suggested to mark the appropriate fastener. Black = Silver Hardware, White = Dark/Black Hardware, White = All Hyd Fittings, Orange = All Ethernet Connectors.

Example of white witness mark on black screw

7.3.6. For fasteners that are obstructed from view by a hub, dust cover, or other component; place a witness mark on the component that covers the hardware after the hardware is torqued and marked. The hardware under the cover must be marked as well.

7.3.7. When building an assemblyusing a controlled routine torque sequence, one witness mark may be used to indicate that the entire sequence was successfully torqued.

7.3.7.1. When this option is being used, it shall be identified in the work instructions along with where the witness mark should be placed.

7.4. THREAD LOCK

7.4.1. Thread lock is used to prevent unwanted separation of the hardware and comes in the form of a thread lock patch placed by the bolt supplier or thread lock liquid applied during assembly.

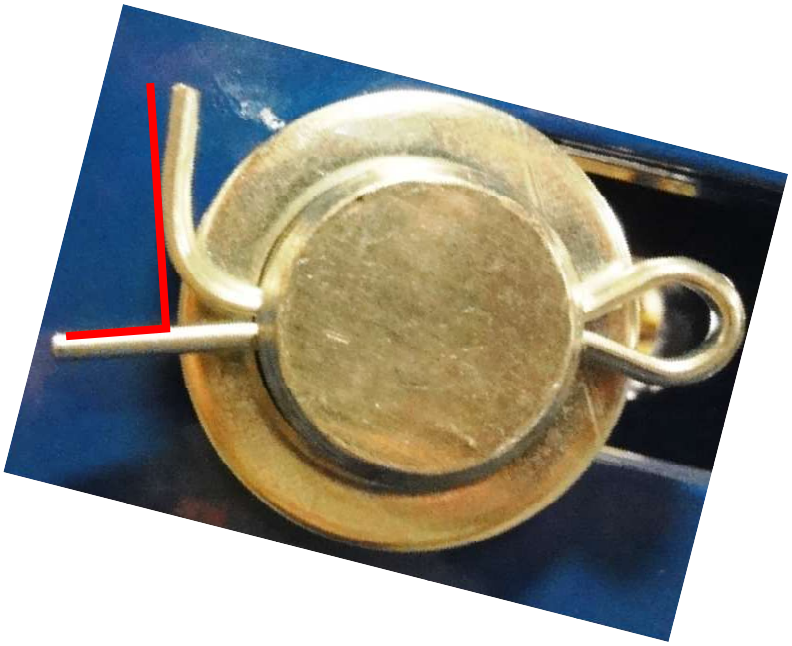
7.4.2. After a thread locked bolt is installed, it must not be rotated. **Do not check the torque on any thread locked bolt.**

7.4.2.1. If the bolt is rotated after installation, it breaks the “lock”; and the bolt must be replaced or additional liquid thread lock added.

Example of thread lock bolt

7.5. COTTER PIN INSTALLATION

7.5.1. When installing a clevis pin, insert the cotter pin with the axis of the eye parallel to the shank of the clevis pin or rod end. Secure the cotter pin by bending the longer prong around the shank of the clevis pin or rod to roughly a 90 degree angle as shown below.

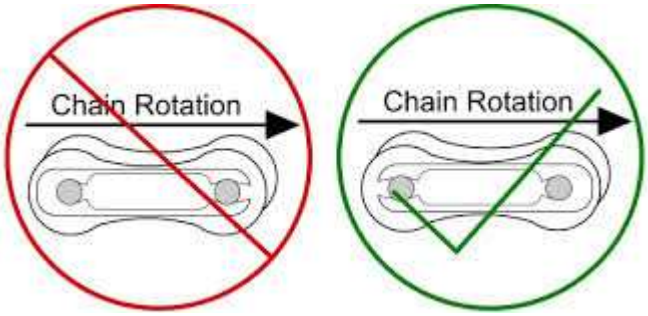


7.5.2. Cotter pins must be secured immediately upon installation.

7.5.3. If more than one cotter pin is used, each must be installed in same direction as others

7.6. DRIVE CHAIN MASTER LINK INSTALLATION

7.6.1. Chain master link retaining clip must be installed opposite of chain rotation direction as shown



7.7. LUBRICATING

7.7.1. Follow standard work sequences for greasing assemblies

7.7.2. Zerks will be greased by the station that installs the components calling for them

7.7.3. All load-bearing pivot pins designed for in-service lubrication shall be pre-lubricated with a suitable assembly lubricant prior to installation.

7.7.4. All splined couplings are to be pre-lubricated with coupling Grease RM90-01.

7.7.5. Apply anti-seize on hub or spindle bolts before installation, i.e. transport, field position wheels

7.7.6. Excess grease and lubricants must be removed from all grease fittings and joints. All drips and spills must be removed.

7.8 FASTENER TORQUE +/- 10% unless otherwise specified:

Electrical and other assemblies using numeric and metric fasteners:

The following recommendations assume 18-8 SS or plated carbon steel screws with at least 5 threads engaged into T-3 or harder aluminum or at least four threads engaged into plated carbon steel or stainless steel.

Values given for 4-40 – M5-1.8 are also applicable for securing FR4 single or multi-layer printed circuit boards. Suggest using 85-90% of these values for G10 boards.

Target the higher end of range for fasteners with pre-applied dry threadlocker and the lower end if fastener is lubricated with wax, oil or liquid threadlocker.

Less thread engagement or threading into other materials such as plastics should be tested to determine the yield point and then use 65 to 75% of yield for assembly torque.

4-40	6 in-lbs
6-32	10 in-lbs
10-32	29 in-lbs
M2.5-0.45	3 in-lb
M3-0.5	7 in-lb
M4-0.7	16 in-lb
M5-0.8	33 in-lb
M8-1.25	11 ft-lb
M10-1.5	22 ft-lb
M12-1.75	36 ft-lb

FASTENER TORQUE (cont)

GRADE 2
No Marks

GRADE 5
3 Marks

GRADE 8
6 Marks

TORQUE VALUES CHART - PLATED HARDWARE

	Grade 2		Grade 5		Grade 8	
Diameter	Coarse	Fine	Coarse	Fine	Coarse	Fine
¼"	50 in-lb	56 in-lb	76 in-lb	87 in-lb	9 ft-lb	10 ft-lb
5/16"	8 ft-lb	9 ft-lb	13 ft-lb	14 ft-lb	18 ft-lb	20 ft-lb
⅜"	15 ft-lb	17 ft-lb	23 ft-lb	26 ft-lb	33 ft-lb	37 ft-lb
7/16"	25 ft-lb	27 ft-lb	37 ft-lb	41 ft-lb	52 ft-lb	58 ft-lb
½"	35 ft-lb	40 ft-lb	57 ft-lb	64 ft-lb	80 ft-lb	90 ft-lb
9/16"	50 ft-lb	60 ft-lb	80 ft-lb	90 ft-lb	115 ft-lb	130 ft-lb[3]
⅝"	70 ft-lb	80 ft-lb	110 ft-lb	125 ft-lb	160 ft-lb	180 ft-lb[2]
¾"	130 ft-lb	145 ft-lb	200 ft-lb	220 ft-lb	280 ft-lb	315 ft-lb[1]
⅞"	125 ft-lb	140 ft-lb	320 ft-lb	350 ft-lb	450 ft-lb	500 ft-lb
1"	190 ft-lb	205 ft-lb	480 ft-lb	530 ft-lb	675 ft-lb	750 ft-lb
1⅛"	265 ft-lb	300 ft-lb	600 ft-lb	670 ft-lb	960 ft-lb	1075 ft-lb
1¼"	375 ft-lb	415 ft-lb	840 ft-lb	930 ft-lb	1360 ft-lb	1500 ft-lb
1⅜"	490 ft-lb	560 ft-lb	1100 ft-lb	1250 ft-lb	1780 ft-lb	2030 ft-lb
1½"	650 ft-lb	730 ft-lb	1450 ft-lb	1650 ft-lb	2307 ft-lb	2670 ft-lb

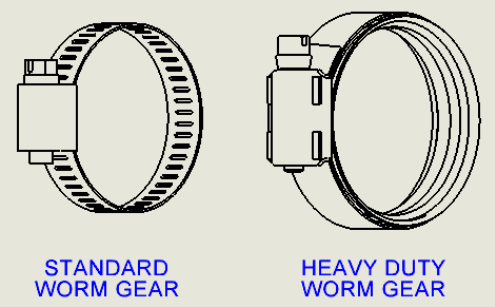
1. Use 350 ft-lb for ¾-16 wheel lug-nuts & lug-bolts.
2. Use 200 ft-lb for 5/8-18 wheel lug-nuts & lug-bolts.
3. Use 125 ft-lb for 9/16-18 wheel lug-nuts & lug-bolts.

Note: Tighten unplated hardware and bolts with prevailing torque nuts approximately 30% higher than values above. Tighten pre-lubricated bolts and those with aniti-seize to 70% of chart value.

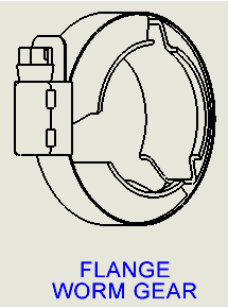
FASTENER TORQUE (cont)

7.9 FERTILIZER PLUMBING APPLICATIONS

Note: Heavy duty worm gear clamps will be used on all high pressure connections.



HOSE CLAMP TORQUE VALUES CHART		
DIAMETER	STANDARD	HEAVY DUTY
1¼"	42 in-lb	75 in-lb
1½"	42 in-lb	75 in-lb
2”	42 in-lb	X



FLANGE CLAMP TORQUE VALUES CHART	
DIAMETER	TORQUE
1"	50-60 in-lb
2”	90-100 in-lb

7.10 THREADED ELECTRICAL CONNECTOR TORQUE

M12-1 Conns 0.7 Nm connector pair mating
M12-1 Conns 0.9 Nm connector mounting nuts

7.11 GRAIN CART PANEL ALIGNMENT

Gaps between panels 3/16” max
Offset from panel to panel +/-3/16”

7.12 BULKHEAD INSTALLATION ON ROTO-MOLDED TANKS

Rubber sealing washer to be on inside of tank
Locking nut to be on outside of tank
All bulkheads to be hand tightened and then taken 1/4 - 1/2 turn beyond hand tight
No leaks are allowed

8. HYDRAULIC

8.1. GENERAL RULES

8.1.1. Following procedures, lubricate all sealing or contact surfaces, O-rings & threads with recommended lubricant, clean hydraulic fluid, or light weight oil

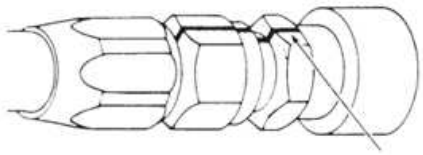
(Recommend applicator: 4 oz. plastic oiler with clear telescoping spout. Ref. WD40 stock# 10034)

8.1.2. After assembly wipe all residual fluid from around the fitting, port, or other component surfaces

8.2. FITTING INSTALLATION PROCEDURE

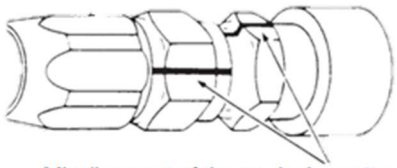
8.2.1. Thread the fitting to the connection until wrench resistance is felt.

8.2.2. Apply a white witness mark across the nut and adapter.



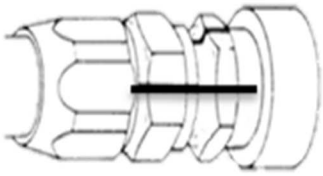
Mark a line on the nut
and adapter before torquing.

8.2.3. Tighten the nut 1 - 2 flats depending on size of fitting. (see Table 8.2.3 below)



Misalignment of the mark shows the
amount which the nut was tightened

8.2.4. Add a final white witness mark across the nut and adapter.



37 Degree Flare Fitting FFWR

Dash Size	Thread Size	Hose & fitting crimped swivel nut connections	Non swivel caps and reducers
		Flats From Wrench Resistance (FFWR)	Flats From Wrench Resistance (FFWR)
-4	7/16-20	2	1/4-1/2
-5	1/2-20	2	1/4-1/2
-6	9/16-18	1 1/2	1/4-1/2
-8	3/4-16	1 1/2	Up to 1/4
-10	7/8-14	1 1/2	Up to 1/4
-12	1 1/16-12	1 1/4	Up to 1/4
-16	1 5/16-12	1	Up to 1/4
-20	1 5/8-12	1	Up to 1/4
-24	1 7/8-12	1	Up to 1/4
-32	2 ½-12	1	Up to 1/4

8.2.3 Table

8.2.5 Torque Values (ft-lbs)

8.2.5.1 Valve Blocks by Component

Solenoid coil nut	4-6 ft/lbs
#10 cavity cartridge	30 ft/lbs
#16 cavity cartridge	90 ft/lbs

8.2.5.2 Cylinder Rod Nuts by Thread Size

½-20	45-55 ft-lb
¾-16	100-115 ft-lb
7/8-14	130-150 ft-lb
1-14	250-275 ft-lb
1 1/8-12	275-300 ft-lb
2 1 ¼- 12	275-300 ft-lb

8.3. PLUGS AND CAPS

8.3.1. To prevent contamination, do not pull plugs out of blocks, or caps off of hydraulic hoses until immediately prior to making connection unless otherwise stated in work instructions

8.3.2. If you see a block with a plug removed prior to use, do not use that block until it has been approved by a supervisor or quality. Bring the block to your supervisor and report the abnormality for tracking within our MDI process.

8.3.3. When pulling caps off hydraulic hoses or plugs out of ports, ensure that no debris gets into hoses or ports

8.4. O-RING BOSS ASSEMBLY

8.4.1. Prior to assembly, remove any contaminants near O-ring port
8.4.2. Remove dust plug from port
8.4.3. Remove any contaminant, including paint, that may be under plug
8.4.4. Inspect fitting for damage, contaminants, and all O-rings are included and properly installed
8.4.5. Fully lubricate boss O-ring & apply at least one drop of lubricant on thread of stud

8.5. ADJUSTABLE O-RING BOSS ASSEMBLY

8.5.1. Remove any contaminants near O-ring port
8.5.2. Remove thread dust plug from port
8.5.3. Remove any contaminant, including paint, that may be under plug
8.5.4. Inspect fitting for contamination, damage, and all O-rings properly installed
8.5.5. Washer should be flat and not move unless force applied
8.5.6. Never assume locknut, washer and O-ring are in proper location for installation

8.6. PIPE ASSEMBLY

8.6.1. Inspect for damage or contamination and cleanliness of threads
8.6.2. Apply appropriate thread sealant to male end of fitting or pipe.
8.6.2.1. Do not cover first two threads at end of fittings
8.6.2.2. Apply in a clockwise direction (same way the fittings are threaded on)
8.6.2.3. Put enough sealant on the threads for 2 turns {ex: The circumference on a 1/2" diameter is roughly 1.6" (2 turns x 1/6 = ~ 3"). Obviously if your threaded pipe has a larger diameter, you will need more tape.}
8.6.3. Install hand tight
8.6.4. Determine final alignment position if installing elbows, tees, or crosses

8.7. PURGING HYDRAULIC SYSTEM FOLLOWING INSTALLATION AND CHARGE OF FLUID

Follow local work instructions on proper procedure

9. DECALS

9.1. APPLICATION CLEANING AND PREP PROCESS

9.1.1. Spray with water and apply

9.1.2. All product decals must be straight. Square to relative surroundings, with no visible gaps or defects from approximately 5' distance, when viewed for 5 seconds. See below illustration to determine what straightness is acceptable.

9.1.3. Do not obstruct view of any decals. (May not always be possible with some options installed)

9.2. DECAL REWORK

9.2.1. Any damaged **decal must be removed and replaced. Review** with the supervisor and QA before and after any rework.

9.2.2. Warm surface with heat source (shrink guns). Remove decal with finger nail or plastic scrapper. **Do not use anything metal!**

9.2.3. Remove adhesive residue with Goo Gone or 3M adhesive remover. Lightly dampen cloth with R7K and wipe surface after using adhesive solvents. ***Caution: Too much R7K will soften the paint***.

9.2.4. Reapply decal.

10.POST PROCESSING

10.1. Post processing (rework) is considered any modification of parts or assemblies after they have been manufactured. **This includes grinding, drilling, excessive bending, hammering, cutting, or reaming.**

10.2. Any rework to allow parts to conform during assembly is not permitted unless the following conditions have been met:

10.2.1. Issue has been recorded on MDI Abnormality tracking log for investigation

10.2.2. Production support has Initiated Deviation Approval Request to QA

10.2.3. M.E. and Supervisor have approved rework procedure. DE approval is required if potential for function, structure or durability degradation exists

10.2.4. Completed product rework must be verified and validated by QA prior to release

10.2.5. Any piece part or multiple part rework must follow the FO/LO/Periodic process with QA involved

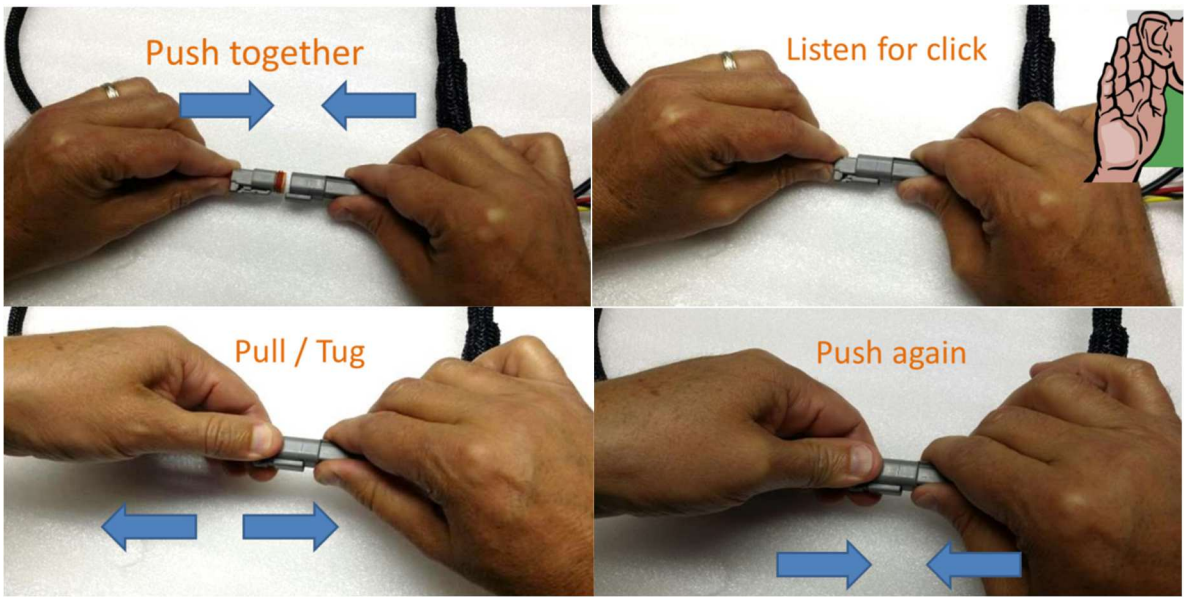
11. ELECTRONICS (Refer to Z0298 for electronics workmanship)

11.1. CONFIGURATIONS

After initial programming configuration, always reboot and confirm the configuration was saved.

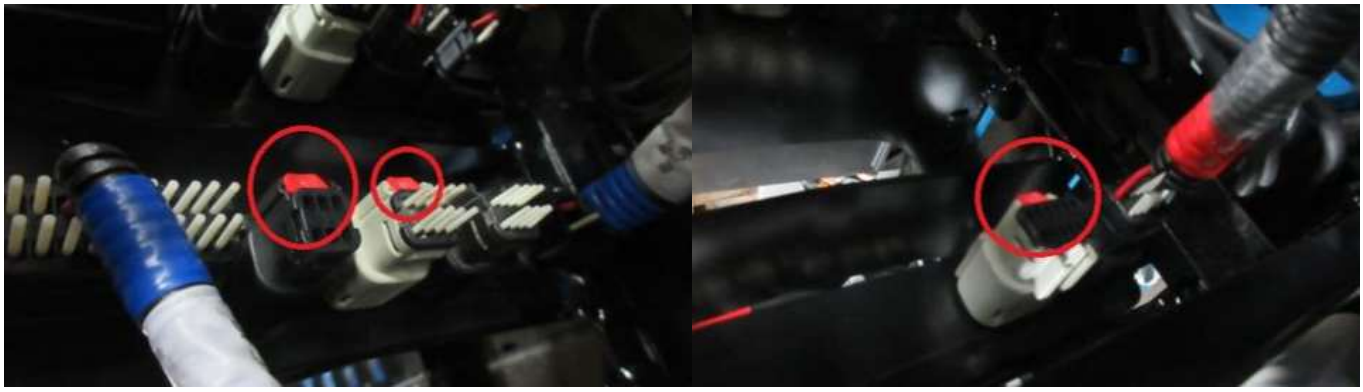
11.2. ELECTRICAL CONNECTIONS

11.2.1. Proper procedure for electrical connections



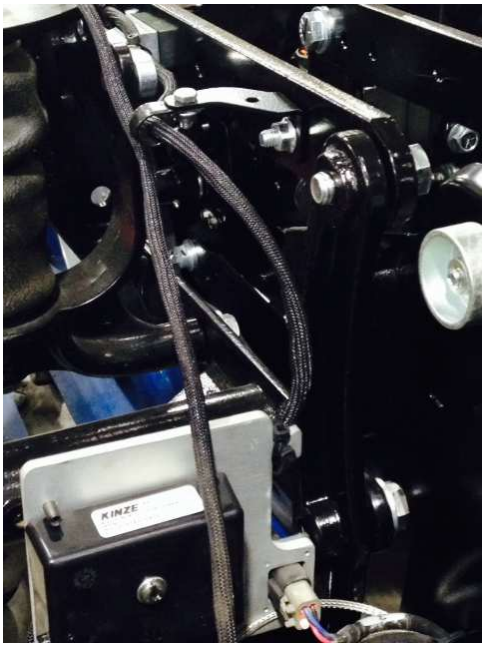
11.2.2. Proper procedure for electrical connections

Push red tab down to lock connection if equipped



ELECTRICAL ROUTINGS AND TERMINATIONS

11.2.3. Leave enough slack in harness or hose flex points so that in its tightest flex position there is still additional slack. Zip ties should be loose enough to not damage or indent protective coating.

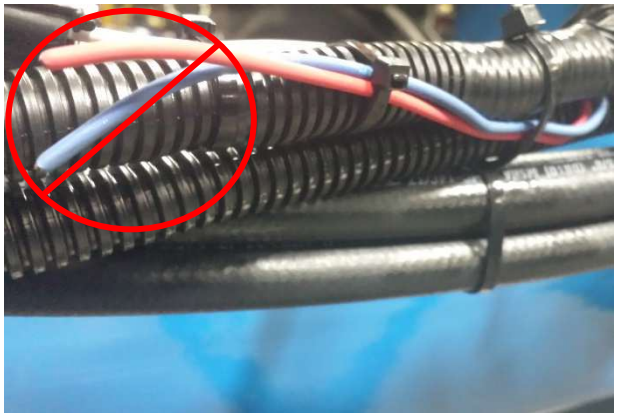


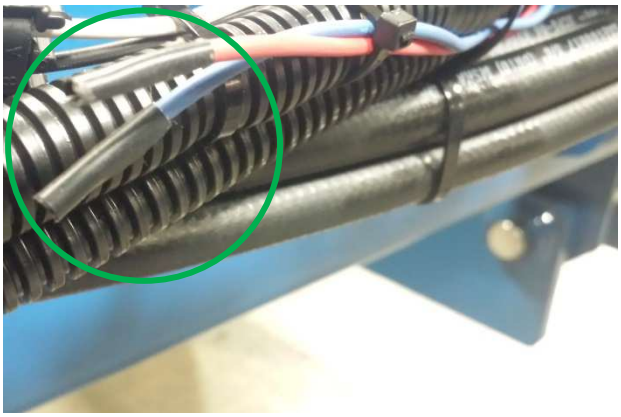
11.2.4. Electrical wiring that does not terminate must be capped and secured in a manner that prevents free movement and shall ensure no possible contact with any other wire or metal surface and no water can pool between exposed terminals. Several examples are illustrated below.

11.2.4.1. Exposed connectors which could pool water between live terminals must be plugged with sealed mating connector (e.g., 3-pin female Weather Pack connector must be plugged with 3-pin male dust plug assembly.) Wire end does not need to be plugged if it is pointing down and cannot collect water.

11.2.4.2. Exposed fork terminals must be taped over with black electrical tape to prevent shorting (e.g., unused terminals on point row clutch harnesses)

11.2.4.3. Unterminated wire ends must be individually wrapped with black electrical tape to prevent shorting (e.g, unterminated wires on work light harnesses.)





11.3. ELECTRICAL ROUTINGS WITH HYDRAULICS

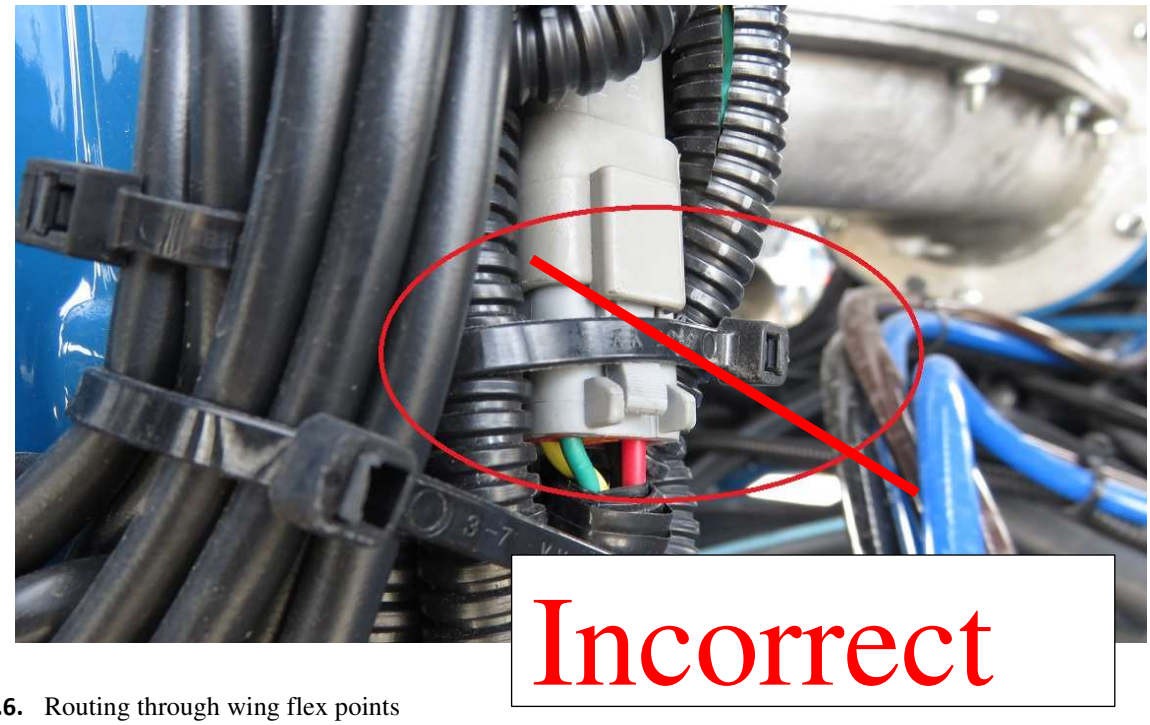
11.3.1. Unless otherwise specified in a local drawing note, electrical harnesses shall not be tied directly to hydraulic hoses. Electrical harnesses should be cable tied together separately. Hydraulic hose cable ties and electrical harness cable ties can then be attached to one another.

11.3.2. If crossing hydraulic lines with a wire harness, the harness must be routed over hydraulic lines unless otherwise specified.

11.3.3. Harnesses shall be routed over or around hose brackets, but not through them.

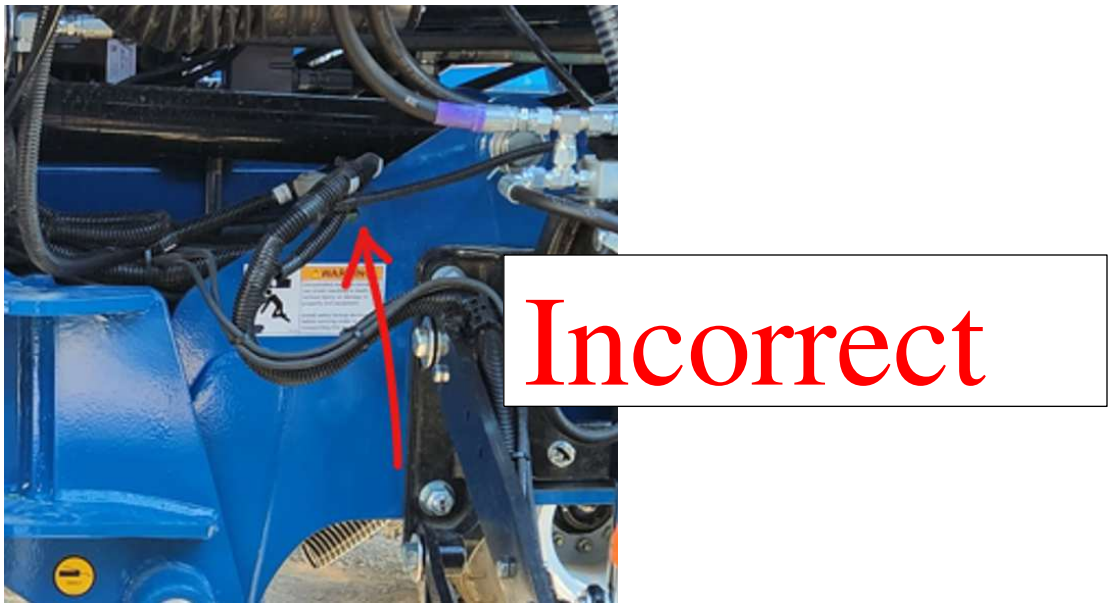
11.3.4. All hoses and wiring not connected at either end must be secured in place.

11.3.5. Cable ties shall **NOT** be placed over connector latches.



11.3.6. Routing through wing flex points

Harnesses shall not be routed from inside to outside of toolbar or outside to inside of toolbar within the wing flex point between wing flex cylinder mounts



11.3.7. Discrete wires shall not run through holes or openings without abrasion protection.

11.3.8. Running harnesses through openings without abrasion protection is non-preferred.

12.CABLE TIES

12.1. A cable tie may be installed by hand or by using a tensioning tool to apply a cable tie to a specific degree of tension. Regardless of installation type, all cable ties must be cut flush to avoid a sharp edge which might otherwise cause injury.

12.2. Cable ties shall be installed as needed for proper dressing / protection of wire harness. Cable ties shall be applied at a rate of one tie every 12” - 18” for adequate spacing.

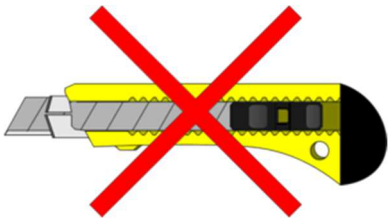
12.3. For either harnesses or hoses, adequate slack is determined at the tightest flex position. In this position, there must be adequate slack to avoid excessive stretch or damage.

12.4. Zip ties should be loose enough to avoid damage or indentation to protective coating

13. FLEXIBLE TUBING

13.1. PROPER CUTTING

When cutting flexible tubing, use tube cutters only. **A utility knife is not acceptable**. If you do not have the proper tools, contact your supervisor

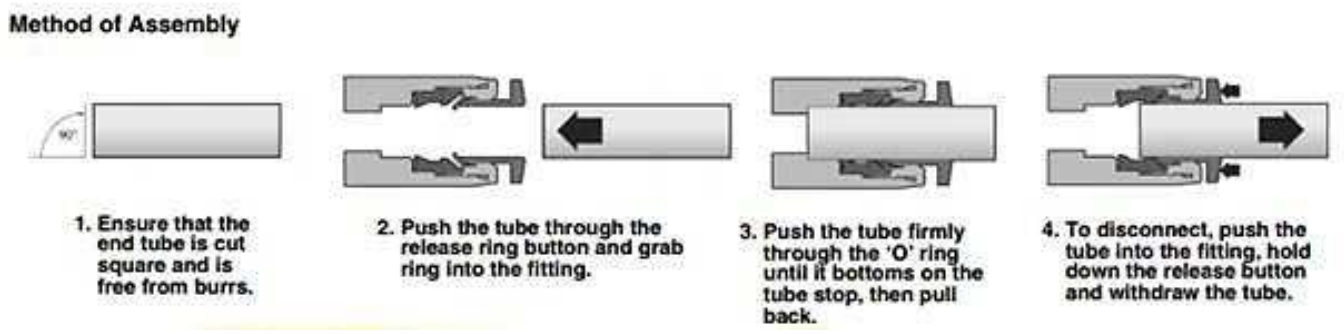


13.2. QUICK CONNECTION COUPLING

13.2.1. If connection is ever detached, full length of tubing previously inserted must be cut off with the proper tool (see 13.1) which removes barb deformities for proper seating

13.2.2. Air lines must be routed <u>over</u> hydraulic lines unless locally specified

13.2.3. See below



14.WELD STAMPS/LOCATIONS

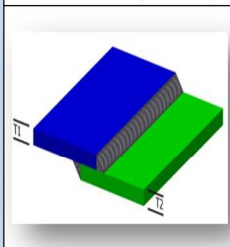
14.1. PART STAMPING PROCEDURE

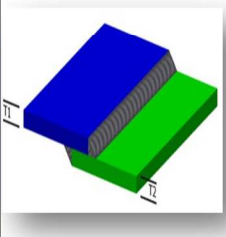
Please view Quality Document **QA-P751-02 Part Stamping Procedure** for responsibilities, procedures and exceptions

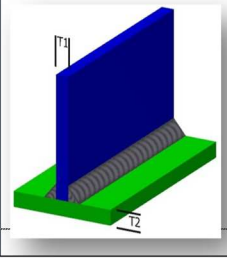
14.2. LOCATIONS

Work instructions will have proper stamp locations listed. If they do not, please contact supervisor to ensure work instructions are revised to include this information.

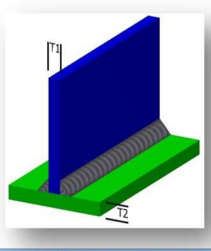
15.WELD PROCEDURE STANDARDS

	Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
	lat or Horizontal Lap Joint- 1F/2F	*T1*	*T2*	*AWS Class*	*Wire Form*	*In./(mm)*	*Mix Ratio (%)*	*CFH (LPM)*	*(V)*	*(A)*	*IPM (CMPM)*	*IPM (CMPM)*	*In. (mm)*
Similar Thickness		16G (1.50)	16G (1.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	16.2	110	200 (508)	10.28 (26.11)	1/2 (12.7)
		12G (2.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18	120	230 (584.20	12.85 (32.63)	1/2 (12.7)
		10G (3.57)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	**35**	19	135	250 (635)	15 (38.1)	1/2 (12.7)
		7G (4.80)	7G (4.80)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26	260	325 (825.5)	30 (76.2)	1/2 (12.7)
		1/4" (6.35)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	14.5 (36.8)	1/2 (12.7)
		3/8" (9.50)	3/8" (9.50)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	15 (38.1)	1/2 (12.7)
		1/2" (12.7)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	15 (38.1)	1/2 (12.7)
		5/8" (15.9)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	10.9 (27.6)	3/4 (19.05)
		3/4" (19.0)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	10.9 (27.6)	3/4 (19.05)

	Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
	lat or Horizontal Lap Joint- 1F/2F	*T1*	*T2*	*AWS Class*	*Wire Form*	*In./(mm)*	*Mix Ratio (%)*	*CFH (LPM)*	*(V)*	*(A)*	*IPM (CMPM)*	*IPM (CMPM)*	*In. (mm)*
Dissimilar Thickness		16G (1.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	16.2	110	200 (508)	10 (25.4)	1/2 (12.7)
		12G (2.50)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18	120	230 (584.20)	12.41 (31.52)	1/2 (12.7)
		10G (3.57)	7G (4.80)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	19	135	250 (635)	15.65 (39.75)	1/2 (12.7)
		7G (4.80)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	260	345 (876)	20 (50.8)	1/2 (12.7)
		1/4" (6.35)	3/8" (9.50)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	12.4 (31.5)	1/2 (12.7)
		3/8" (9.50)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	17.1 (43.4)	1/2 (12.7)
		1/2" (12.7)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	17.1 (43.4)	1/2 (12.7)
		5/8" (15.9)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	12.8 (32.5)	3/4 (19.05
		3/4" (19.0)	7/8" (22.2)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	12.8 (32.5)	3/4 (19.05)

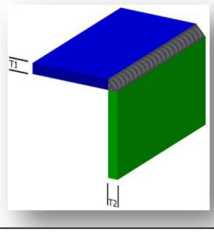
	Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
	Flat or Horizontal Tee Joint- 1F/2F	*T1*	*T2*	*AWS Class*	*Wire Form*	*In./(mm)*	*Mix Ratio (%)*	*CFH (LPM)*	*(V)*	*(A)*	*IPM (CMPM)*	*IPM (CMPM)*	*In. (mm)*
Similar Thickness		16G (1.50)	16G (1.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18	145	230 (584.2)	11.25 (28.57)	1/2 (12.7)
		12G (2.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18.5	150	250 (635)	12.85 (32.63)	1/2 (12.7)
		10G (3.57)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	19.5	160	260 (660.4)	15 (38.1)	1/2 (12.7
		7G (4.80)	7G (4.80)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26	260	325 (825.5)	21.1 (53.5)	1/2 (12.7)
		1/4" (6.35)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	15 (38.1)	1/2 (12.7)
		3/8" (9.50)	3/8" (9.50)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	13.8 (35)	1/2 (12.7)
		1/2" (12.7)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	340	240 (610)	13.8 (35)	1/2 (12.7)
		5/8" (15.9)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	9.7 (24.6)	3/4 (19.05)
		3/4" (19.0)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	9.7 (24.6)	3/4 (19.05)

Dissimilar Thickness



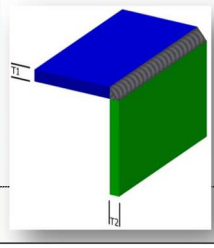
Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
Flat or Horizontal Tee Joint- 1F/2	*T1*	*T2*	*AWS Class*	*Wire Form*	*In./(mm)*	*Mix Ratio (%)*	*CFH (LPM)*	*(V)*	*(A)*	*IPM (CMPM)*	*IPM (CMPM)*	*In. (mm)*
	16G (1.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18	145	230 (584.2)	10 (25.4)	1/2 (12.7)
	12G (2.50)	10G (3.57)	ER70S-6	Solid	.035" (.9)	90/10 Ar-CO_2	35	18.5	150	250 (635)	12 (30.48)	1/2 (12.7)
	10G (3.57)	7G (4.80)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	19.5	160	260 (660.4)	14.4 (36.57)	1/2 (12.7)
	7G (4.80)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	260	345 (876)	16.3 (41.4)	1/2 (12.7)
	1/4" (6.35)	3/8" (9.50)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	13.8 (35)	1/2 (12.7)
	3/8" (9.50)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	15 (38.1)	1/2 (12.7)
	1/2" (12.7)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	15 (38.1)	1/2 (12.7)
	5/8" (15.9)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	12.8 (32.5)	3/4 (19.05)
	3/4" (19.0)	7/8" (22.2)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	12.8 (32.5)	3/4 (19.05)

Similar Thickness



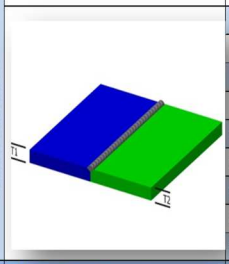
Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
at or Horizontal Corner Joint 1F/	*T1*	*T2*	*AWS Class*	*Wire Form*	*In./(mm)*	*Mix Ratio (%)*	*CFH (LPM)*	*(V)*	*(A)*	*IPM (CMPM)*	*IPM (CMPM)*	*In. (mm)*
	16G (1.50)	16G (1.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	16	120	200 (508)	12.85 (32.63)	1/2 (12.7)
	12G (2.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	17.6	135	230 (584.2)	12.85 (32.63)	1/2 (12.7)
	10G (3.57)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	19.1	160	250 (635)	15 (38.1)	1/2 (12.7)
	7G (4.80)	7G (4.80)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26	260	325 (825.5)	25.7 (65.2)	1/2 (12.7)
	1/4" (6.35)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	21 (53.3)	1/2 (12.7)
	3/8" (9.50)	3/8" (9.50)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	10.2 (25.9)	1/2 (12.7)
	1/2" (12.7)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	10.2 (25.9)	1/2 (12.7)
	5/8" (15.9)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	12.4 (31.4)	3/4 (19.05)
	3/4" (19.0)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	12.4 (31.4)	3/4 (19.05)

Dissimilar Thickness

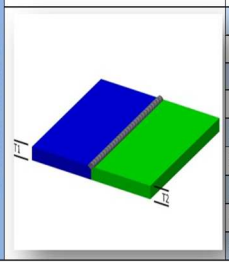


Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
at or Horizontal Corner Joint 1F/	*T1*	*T2*	*AWS Class*	*Wire Form*	*In./(mm)*	*Mix Ratio (%)*	*CFH (LPM)*	*(V)*	*(A)*	*IPM (CMPM)*	*IPM (CMPM)*	*In. (mm)*
	16G (1.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	16.2	110	200 (508)	12.41 (31.52)	1/2 (12.7)
	12G (2.50)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18.5	150	230 (584.2)	10 (25.4)	1/2 (12.7)
	10G (3.57)	7G (4.80)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	19.5	160	250 (635)	15.65 (39.7)	1/2 (12.7)
	7G (4.80)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	260	345 (876)	20 (50.8)	1/2 (12.7)
	1/4" (6.35)	3/8" (9.50)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	12.8 (32.5)	1/2 (12.7)
	3/8" (9.50)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	14.4 (36.5)	1/2 (12.7)
	1/2" (12.7)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	14.4 (36.5)	1/2 (12.7)
	5/8" (15.9)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	17.1 (43.4)	3/4 (19.05)
	3/4" (19.0)	7/8" (22.2)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	17.1 (43.4)	3/4 (19.05)

Similar Thickness

Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
	T1	T2	AWS Class	Wire Form	In./(mm)	Mix Ratio (%)	CFH (LPM)	(V)	(A)	IPM (CMPM)	IPM (CMPM)	In. (mm)
	16G (1.50)	16G (1.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	16	115	200(508)	.25(28.57)31.	1/2(12.7)
	12G (2.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	18	135	230(584.2)	12.41(31.52)	1/2(12.7)
	10G (3.57)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	19	160	250(635)	15(38.1)	1/2(12.7)
	7G (4.80)	7G (4.80)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26	260	325 (825.5)	27.6 (70.1)	1/2 (12.7)
	1/4" (6.35)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	15 (38.1)	1/2 (12.7)
	3/8" (9.50)	3/8" (9.50)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	334	240 (610)	12.86 (32.6)	1/2 (12.7)
	1/2" (12.7)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	334	240 (610)	12.86 (32.6)	1/2 (12.7)
	5/8" (15.9)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	13.8 (35)	3/4 (19.05)
	3/4" (19.0)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	13.8 (35)	3/4 (19.05)

Dissimilar Thickness

Joint Configuration and Position	Material Thickness In. (mm)		Wire Type		Wire Diameter	Gas Type	Gas Flow	Voltage	Amperage	Wire Feed	Travel Speed	Electrode Extension
	T1	T2	AWS Class	Wire Form	In./(mm)	Mix Ratio (%)	CFH (LPM)	(V)	(A)	IPM (CMPM)	IPM (CMPM)	In. (mm)
	16G (1.50)	12G (2.50)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO_2	35	16	115	200(508)	11.25(28.57)	1/2(12.7)
	12G (2.50)	10G (3.57)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO2	35	18	135	230(584.2)	15.65(39.75)	1/2(12.7)
	10G (3.57)	7G (4.80)	ER70S-6	Solid	.035" (.9)	75/25 Ar-CO2	35	19.1	160	250(635)	14.4(36.57)	1/2(12.7)
	7G (4.80)	1/4" (6.35)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	260	345 (876)	15.6 (39.6)	1/2 (12.7)
	1/4" (6.35)	3/8" (9.50)	E70C-6M	Metal Core	.045" (1.2)	90/10 Ar-CO_2	35	26.8	240	345 (876)	11.6 (29.4)	1/2 (12.7)
	3/8" (9.50)	1/2" (12.7)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	18 (45.7)	1/2 (12.7)
	1/2" (12.7)	5/8" (15.9)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.6	340	240 (610)	18 (45.7)	1/2 (12.7)
	5/8" (15.9)	3/4" (19.0)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	14.4 (36.5)	3/4 (19.05)
	3/4" (19.0)	7/8" (22.2)	E70C-6M	Metal Core	1/16" (1.5)	90/10 Ar-CO_2	35	26.9	330	240 (610)	14.4 (36.5)	3/4 (19.05)

16.STANDARD TORQUE PATTERNS

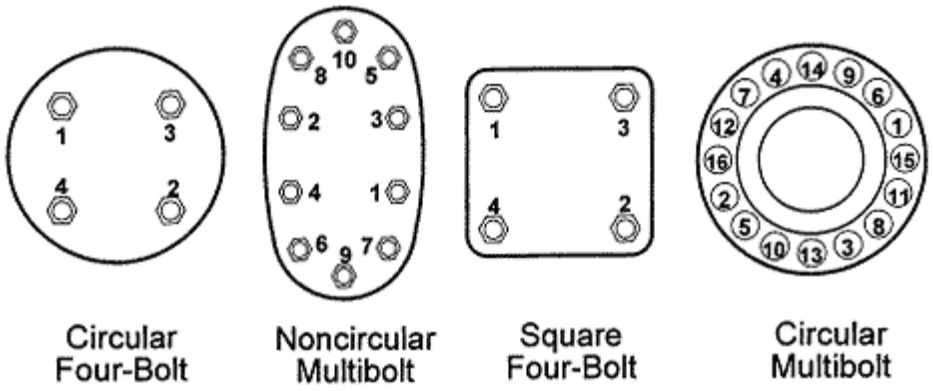
16.1. Seat all fasteners in perscribed order

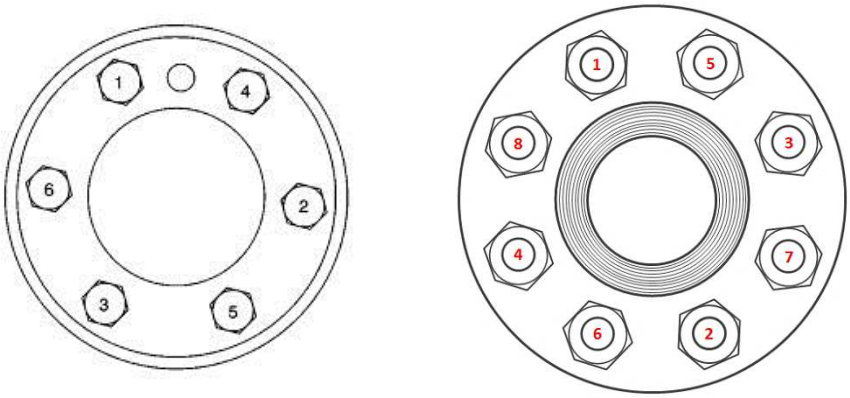
- Applies ONLY when joining two parts together using one type of fastener (such as Rim to spindle hub or row unit faceplate to toolbar)

16.2. Torque bolts to torque requirements in the order prescribed in the following patterns

16.3. Reference Work instructions or Quality check sheet or Z0244 for proper torque requirements

16.4. Standard Torque patterns are as follows:





17.FABRICATION

Please reference **Fabrication Tolerance & Workmanship Z0244**

18.PAINT

Please reference **Paint Standards Z0254,**

19.PART LABELS AND REMOVING

19.1. Anything stored outside must use a poly label

19.2. Remove any storage labels when assembling parts.

19.3. Remove Kanban cards “Notes/Hand written Tags” before applying a new one

19.4. The parts within a boxed X bundle are permitted to have printed part labels or manilla tags attached. (Handwritten part numbers or notes are NOT acceptable)

20. HANDLING, STORAGE, PACKAGING AND PRESERVATION

20.1. All End Of Line (EOL) testing must be performed on any planter brought back in for updating or rework before release, unless otherwise authorized by QA.

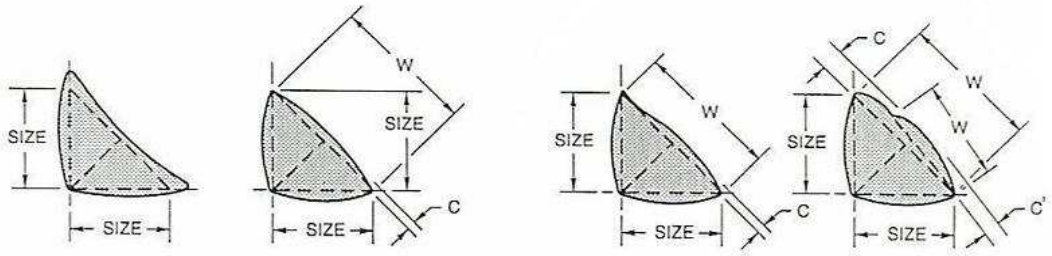
20.2. All parts are to be handled and packaged in a manner that prevents them from being damaged in stacking, storage or transport. Parts that exhibit damage from handling must be identified and dispositioned.

20.3. Parts that are identified as being defective shall continue to be handled as good parts until physically scrapped. If improperly handled, parts that we might otherwise be able to rework cannot be recovered.

21. WELDMENTS

21.1. All welds must meet visual and dimensional acceptance criteria established by AWS D1.1. The exceptions being that Kinze Manufacturing permits no pin holes, and has established an upper tolerance of +1/16" on fillet welds unless otherwise specified.

21.2. Acceptable and Unacceptable Weld Profiles

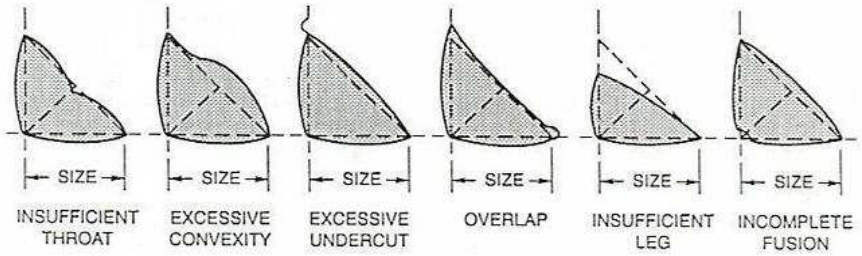


(A) DESIRABLE FILLET WELD PROFILES

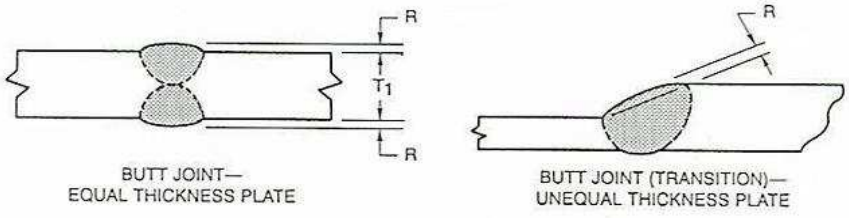
(B) ACCEPTABLE FILLET WELD PROFILES

NOTE: CONVEXITY, C, OF A WELD OR INDIVIDUAL SURFACE BEAD WITH DIMENSION W SHALL NOT EXCEED THE VALUE OF THE FOLLOWING TABLE:

WIDTH OF WELD FACE OR INDIVIDUAL SURFACE BEAD, W	MAX CONVEXITY, C
W ≤ 5/16 in. (8 mm)	1/16 in. (1.6 mm)
W > 5/16 in. TO W < 1 in. (25 mm)	1/8 in. (3 mm)
W ≥ 1 in.	3/16 in. (5 mm)

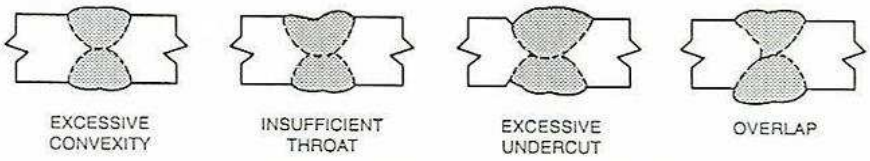


(C) UNACCEPTABLE FILLET WELD PROFILES



NOTE: REINFORCEMENT R SHALL NOT EXCEED 1/8 in. (3 mm). SEE 5.24.4.

(D) ACCEPTABLE GROOVE WELD PROFILE IN BUTT JOINT



(E) UNACCEPTABLE GROOVE WELD PROFILES IN BUTT JOINTS

21.3. All welds shall also meet the following visual inspection requirements as approved by KINZE MFG:

21.3.1. Any crack shall be unacceptable, regardless of size or location.

21.3.2. All craters shall be filled to the full cross section of the weld.

21.3.3. Fillet weld leg sizes shall not be less than specified nominal and be no greater than 1/16 inch of the required leg sizes.

21.3.4. Fillet weld profile shall meet the requirements of Figure A.

21.3.5. Undercut shall not exceed a 1/32 inch.

21.3.6. Any porosity, regardless of size or type, shall be unacceptable.

21.3.7. Any inclusion of any kind shall be unacceptable.

21.3.8. On high carbon steels preheat is recommended if material thickness is 1 inch or greater.

21.3.9. Fillet welds should not exceed 3/8 of an inch in a single pass.

21.3.10. Submerged arc welds that are achieved in a single pass with fillet sizes greater than 3/8” shall conform to AWS D1.1.

21.4. Tack Welds

21.4.1. Tack welds and construction aid welds, not incorporated into welds, shall be removed unless otherwise specified.

21.5. (REMOVED)

21.6. Tolerances

21.6.1. Fixture Tolerance Allowance

21.6.1.1. Weld fixturing may consume no more than 25% of dimensioned feature location tolerances stated in sub paragraph 21.6.3 of this standard.

21.6.2. Joint Dimension Tolerance

21.6.2.1. Fillet Weld Assembly- The parts to be joined by fillet welds shall be brought into as close contact as practicable. The root opening shall not exceed 3/16 inch except in cases involving either shapes or plates 3in or greater in thickness if after straightening and in assembly, the root opening cannot be closed sufficiently to meet the tolerance. In such cases a maximum opening of 5/16 inch may be used, provided suitable backing is used. Backing may be of flux, glass tape, iron powder, or similar materials, or welds using a low hydrogen process compatible with the filler metal deposited. If separation is greater than a 1/16 inch, the legs of the fillet shall be increased by the amount of the opening.

21.6.2.2. Groove Weld Assembly-Partial Joint Penetration Groove Weld Assembly- The parts to be joined by PJP groove welds parallel to the length of the member shall be brought into close contact as practicable. The root opening between parts shall not exceed 3/16 inch except in cases involving rolled shapes or plates 3 in or greater in thickness if, after straightening and in assembly, the root opening cannot be closed sufficiently to meet this tolerance. In such cases a maximum gap of 5/16 inch may be used, provided suitable backing is used and the final weld meets the requirements of the weld size. Tolerances bearing joints shall be in conformance with the applicable contract specifications.

21.6.2.3. Butt Joint Alignment- Parts to be joined at butt joints shall be carefully aligned. Where the parts are effectively restrained against bending due to eccentricity in alignment, the offset from the theoretical alignment shall not exceed 10 % of the thickness of the thinner part joined, or 1/8 inch whichever is smaller. In correcting misalignment, the offset in such cases, the parts shall not be drawn in to a greater slope than ½ inch in 12 inch. Measurement of offset shall be based upon the centerline of parts unless otherwise shown on the drawings.

21.6.3. Part/Feature Location Tolerance

21.6.3.1. (REMOVED

21.6.3.2. (REMOVED)

21.6.3.3. If the dimension for the feature is greater than 60.000" the feature location tolerance shall be within +/-0.1875" of the specified nominal unless locally toleranced.

21.6.3.4. All other dimensioned feature locations shall be within +/-0.090" of specified nominal unless locally toleranced.

21.6.3.5. Angular weldments shall be +/- 3 degree of specified nominal.

21.6.3.6. Right angle (90 degrees) coordinates need not be specified but shall assume 90 degrees as nominal.

21.7. Weld spatter is not acceptable. Essential variables of the process should be adjusted to minimize or eliminate spatter. Any loose spatter (BB's) must be removed from product. Small amounts of burned-in spatter may be acceptable, but process variables must be adjusted to eliminate recurrence. Kinze Quality Assurance is responsible for determination and communication of acceptance/rejection for burned-in spatter.

21.8. Weld Overlap and Wrapping: All material less than 1" thick shall require .25" of weld overlap at every inside and outside corner. This will ensure no gaps between perpendicular welds. This applies to all weldments unless superseded by a work instruction or engineering drawing specification.

21.9. Apply weld lead-in and exit tails as shown when specified to eliminate stress risers.

22. SIGN OFF SHEET

- By signing below you agree that you have read, understand, and will follow Document #Z0310 “Manufacturing Workmanship Standards.”
- Signature must be witnessed by supervisor or manager

Date	Printed Name	Signature	Employee Number