



TECHNICAL SAFETY BULLETIN

TSB No. 2201

STATUS: REVISION 1

SUBJECT: CLUSTER DRILL SAFETY TIE-DOWN LOCATIONS

PRIORITY: 1-SAFETY

RELEASE DATE: 01/21/22

KEYSTONE TECHNICAL BULLETIN INFORMATION

The bulletin was established to provide air inlet safety tie-down locations for various cluster drill models and generations of designs. The methods noted in the drawings are to be used to restrain air hose whip socks at the cluster drill air inlet.

BULLETIN DETAILS

With the various cluster drill designs, the safety tie-down locations and methods differ based on the sizes and design generation. A drawing is created for each method of tie-down and identify the type of cluster drills they cover.

KDT00001: EYE-NUT SAFETY TIE-DOWN

Tie-down method for 2nd Generation cluster drills
Cluster drills 30" to 36"

KDT00002: DRIVE FLANGE SAFETY TIE-DOWN

Tie-down method for 1st Generation cluster drills
All cluster drills that utilize a drive flange

KDT00003: GENERATION 2 SAFETY TIE-DOWN

Tie-down method for 2nd Generation cluster drills
Cluster drills 42" and larger

KDT00004: EYE-NUT SAFETY TIE-DOWN

Tie-down method for 2nd Generation cluster drills
Cluster drills 24" & 26"

The drawings noted above are attached to this TSB for reference.

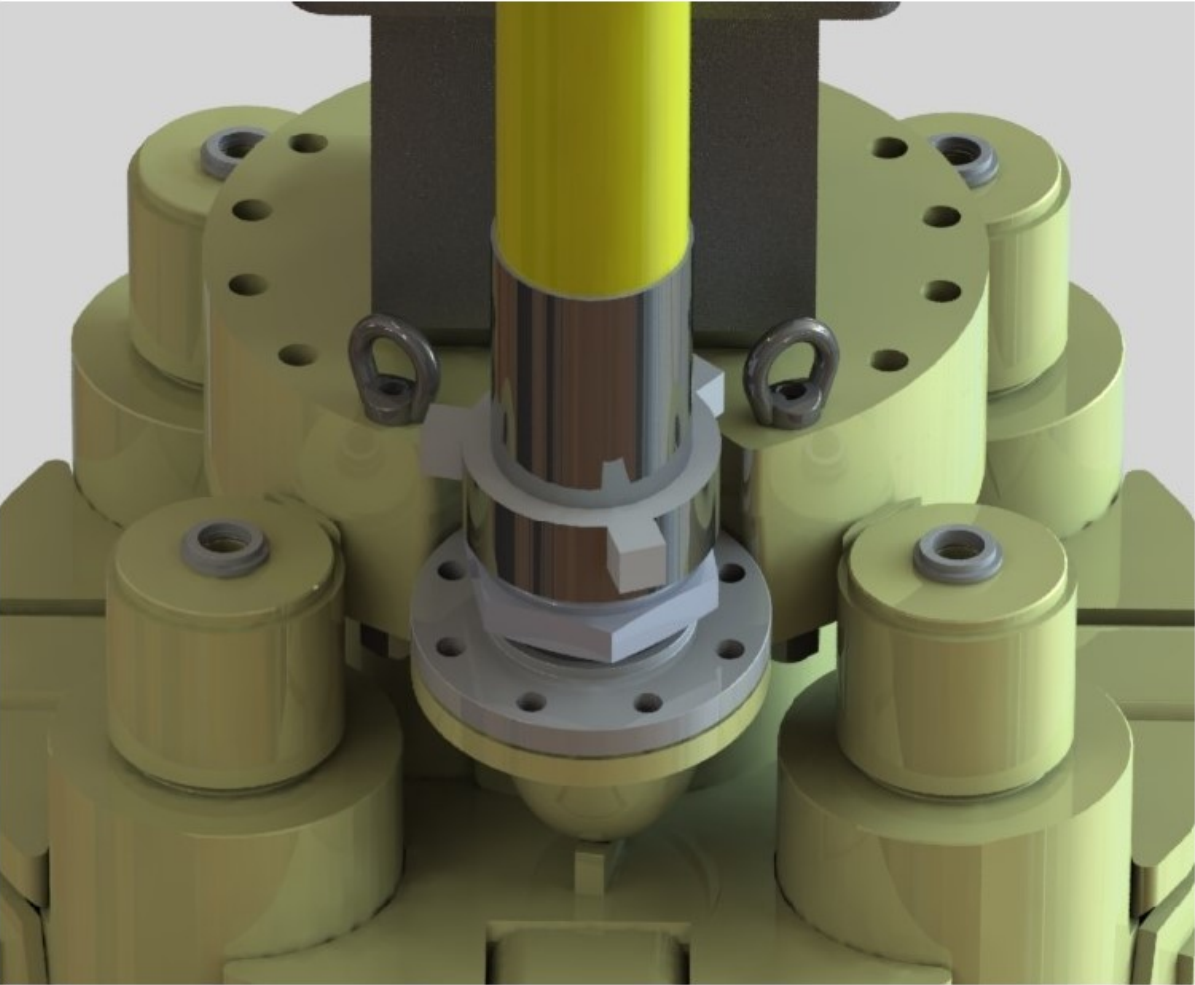
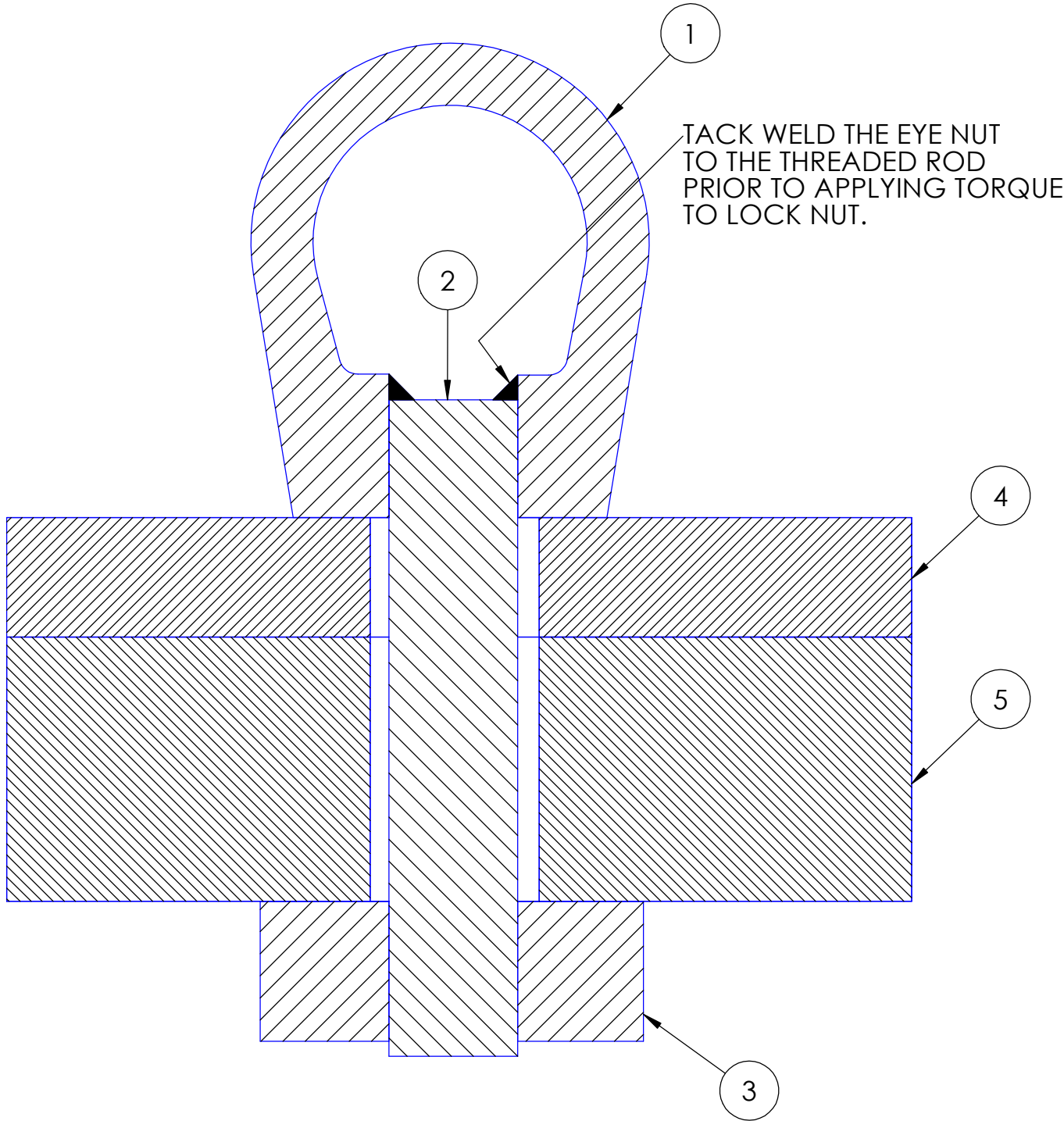
RELATED EQUIPMENT

Keystone Cluster Drills, Keystone Hole Openers, Keystone Core Barrels

TIE-DOWN METHOD FOR 2ND GENERATION
CLUSTER DRILL SIZES: 30" TO 36"

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MATERIAL
1	2	631438	EYE NUT, 1"-8, PLAIN, 10,000LB	
2	2	631437	THREADED STUD, 1"-8, B7, PLAIN, 9" LONG	
3	2	623808	NUT, LOCK, 1"-8, EX WIDE, EXTREME VIBRATION	
4		FOR REFERENCE	PLATE, KELLY BOX ADAPTER	
5		FOR REFERENCE	PLATE, FLANGE	
6	2	SEE TABLE	SHACKLE (NOT SHOWN)	

SHACKLE SIZING TABLE		
AIR INLET SIZE	PART NUMBER	DESCRIPTION
3"	630446	SHACKLE, 5/8" DIA, 3.25 TON
4"	629898	SHACKLE, 7/8" DIA, 6.5 TON



TIE-DOWN ASSEMBLY INSTALLED IN THE CLOSEST FLANGE HOLES
ON EITHER SIDE OF THE AIR INLET (AS ILLUSTRATED ABOVE)

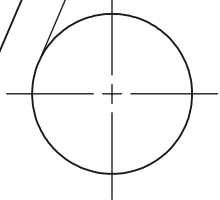
INSTALL ALUMINUM TAG ON ITEM NO. 1 TO REFERENCE TSB 2101

TOLERANCES				PROPRIETARY AND CONFIDENTIAL			KEYSTONE DRILL SERVICES, INC. SOMERSET, PA 15501		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES FRACTIONAL: $\pm 1/16"$ ANGULAR: $\pm 3^\circ$ DECIMALS: .X $\pm .125"$.XX $\pm .060"$.XXX $\pm .030"$				NOTICE: ANYTHING DESCRIBED, SET FORTH, CONTAINED, INCORPORATED IN, OR REFERRED TO ABOVE AND ANYTHING PROVIDED, OBTAINED OR GENERATED WITH REGARD TO ANYTHING SET FORTH ABOVE, SHALL BE OWNED BY AND SHALL REMAIN THE SOLE AND EXCLUSIVE PROPERTY OF KEYSTONE DRILL SERVICES, INC. (KEYSTONE). NONE OF THE SAME MAY BE COPIED WITHOUT THE PERMISSION OF KEYSTONE, AND UPON ITS REQUEST, MUST BE PROMPTLY DESTROYED, OR RETURNED TO KEYSTONE. EVERYTHING SET FORTH ABOVE SHALL BE AND REMAIN STRICTLY CONFIDENTIAL AND MAY NOT BE PROVIDED OR DIVULGED TO ANY OTHER PARTY WITHOUT KEYSTONE'S ADVANCE PERMISSION.			TITLE: EYE-NUT SAFETY TIE-DOWN		
MATERIAL				NAME C.B.			SIZE B	DWG. NO. KDT00001	REV 1
FINISH				DATE 01/21/22			SCALE: 1:24 WEIGHT: SHEET 1 OF 1		
DO NOT SCALE DRAWING				CHECKED XXX					

TIE-DOWN METHOD FOR 1ST GENERATION
DRILLS THAT UTILITIZE DRIVE FLANGE SUPPORTS

SHACKLE SIZING TABLE		
AIR INLET SIZE	PART NUMBER	DESCRIPTION
3"	630446	SHACKLE, 5/8" DIA, 3.25 TON
4"	629898	SHACKLE, 7/8" DIA, 6.5 TON
6"	630935	SHACKLE, 1" DIA, 8.5 TON

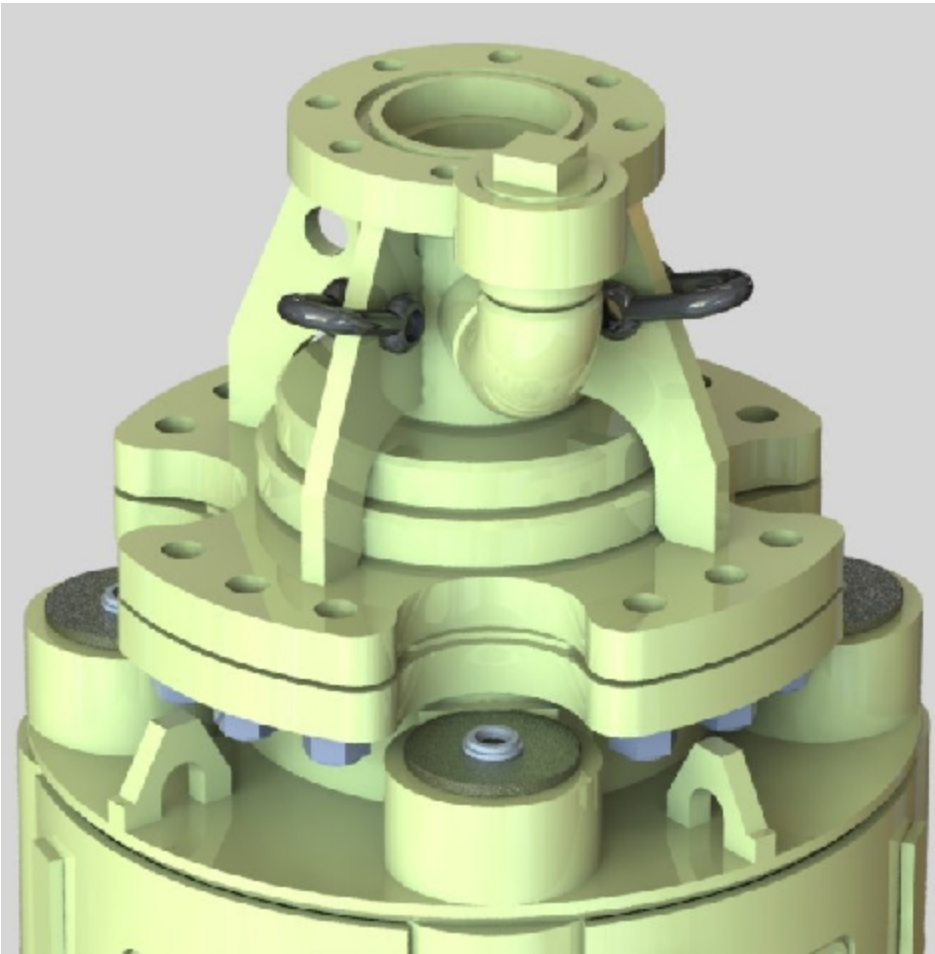
0.50" MINIMUM
ALLOWABLE THICKNESS



GENERAL NOTES:

- 1) MEASURE THE DRIVE FLANGE SUPPORT AS SHOWN ABOVE TO ENSURE MINIMUM ALLOWABLE DIMENSION IS MET.
- 2) INSPECT THE DRIVE FLANGE SUPPORTS FOR ANY DEFORMATION OR CRACKS PRIOR TO ATTACHING SHACKLES.
- 3) INSTALL ALUMINUM TAG ON DRIVE FLANGE SUPPORT TO REFERENCE TSB 2101

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MATERIAL
1	4	SEE TABLE	SHACKLE (TWO SHOWN BELOW)	



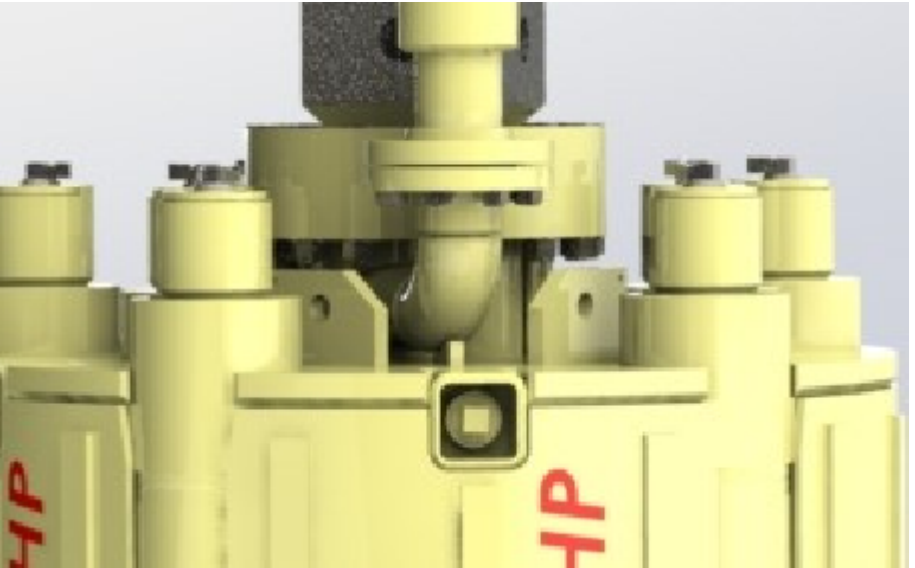
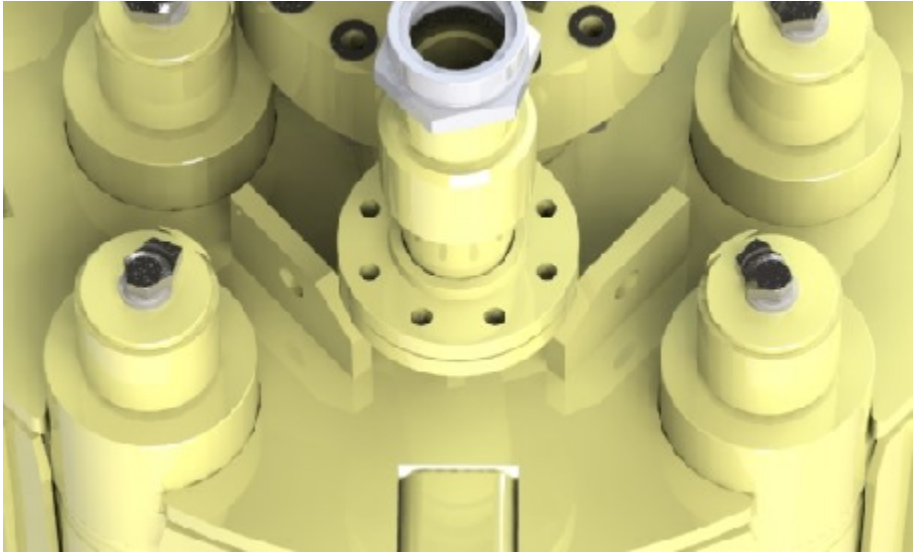
TIE-DOWN SHACKLES INSTALLED IN THE CLOSEST FLANGE HOLES
ON EITHER SIDE OF THE AIR INLET (AS ILLUSTRATED ABOVE)

TOLERANCES				PROPRIETARY AND CONFIDENTIAL		
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MATERIAL				NAME	DATE	
FINISH				DRAWN	C.B.	01/21/22
DO NOT SCALE DRAWING				CHECKED	XXX	XX/XX/XX
			KEYSTONE DRILL SERVICES, INC. SOMERSET, PA 15501			
			TITLE: DRIVE FLANGE SAFETY TIE-DOWN			
SIZE B		DWG. NO. KDT000002		REV 00		
SCALE: 1:5		WEIGHT:		SHEET 1 OF 1		

TIE-DOWN METHOD FOR 2ND GENERATION
CLUSTER DRILL SIZES: 42" AND LARGER

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MATERIAL
1	2	KDC00114	LUG, TIE-DOWN	
2	4	SEE TABLE	SHACKLE (NOT SHOWN)	

SHACKLE SIZING TABLE		
AIR INLET SIZE	PART NUMBER	DESCRIPTION
4"	629898	SHACKLE, 7/8" DIA, 6.5 TON
6"	630935	SHACKLE, 1" DIA, 8.5 TON



GENERAL NOTES:

- ITEM NO. 1 IS TO BE INSTALLED ON EACH SIDE OF THE AIR INLET ON TOP OF THE CLUSTER DRILL CAN (EXAMPLES SHOWN TO THE RIGHT).
 - THE SHACKLE HOLE OF THE LUG IS TO BE WITHIN 1"-2" FROM THE OUTSIDE EDGE OF THE AIR INLET FLANGE (MEASURED HORIZONTALLY).
 - LUGS ARE TO BE POSITIONED BETWEEN MODULES TO PROVIDE SUFFICIENT SPACE FOR WELDING PROCESS.
 - THE CHAMFERRED SIDE OF THE LUG IS TO FACE INWARD TOWARDS THE INLET.
- PRIOR TO PRE-HEAT AND WELDING, REMOVE ANY HAMMERS WITHIN 4" OF THE LUGS TO PREVENT DAMAGE TO O-RINGS.
- FOLLOW THE WELDING PROCEDURE AS SPECIFIED ON TSB NO. 2102 (REFERENCED BELOW)

WELDING SPECIFICATIONS - SHOP ENVIRONMENT (PREFERRED)

- PRE-HEAT AREA OF WELD 300°F SOAK - NOT TO EXCEED 500°F
- FILLER MATERIAL: LINCOLN ELECTRIC ULTRACORE 81Ni2A75-H (OR EQUAL) AWS E81T1-Ni2M-JH4-1/16" DIAMETER
- SHIELDING GAS: 75%-85% ARGON/BALANCE CO2
- MULTI-PASS PER AWS D1.1 STANDARD
- POST COOL: COVER AND ALLOW TO SLOW COOL

WELDING SPECIFICATIONS - FIELD ENVIRONMENT

- PRE-HEAT AREA OF WELD 300°F SOAK - NOT TO EXCEED 500°F
- STICK ELECTRODE: LINCOLN ELECTRIC EXCALIBUR 8018-C1 MR (OR EQUAL) AWS E8018-C1 H4R
- MULTI-PASS PER AWS D1.1 STANDARD
- POST COOL: COVER AND ALLOW TO SLOW COOL

- INSTALL ALUMINUM TAG ON ITEM NO. 1 TO REFERENCE TSB 2101.

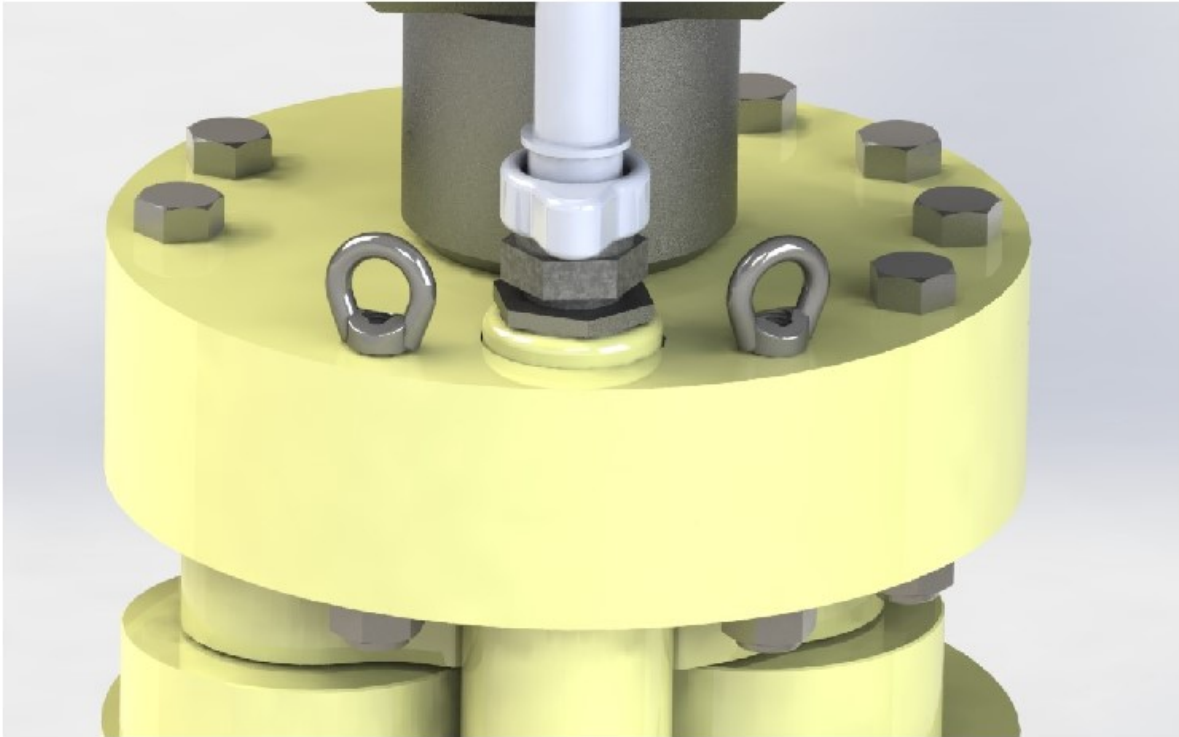
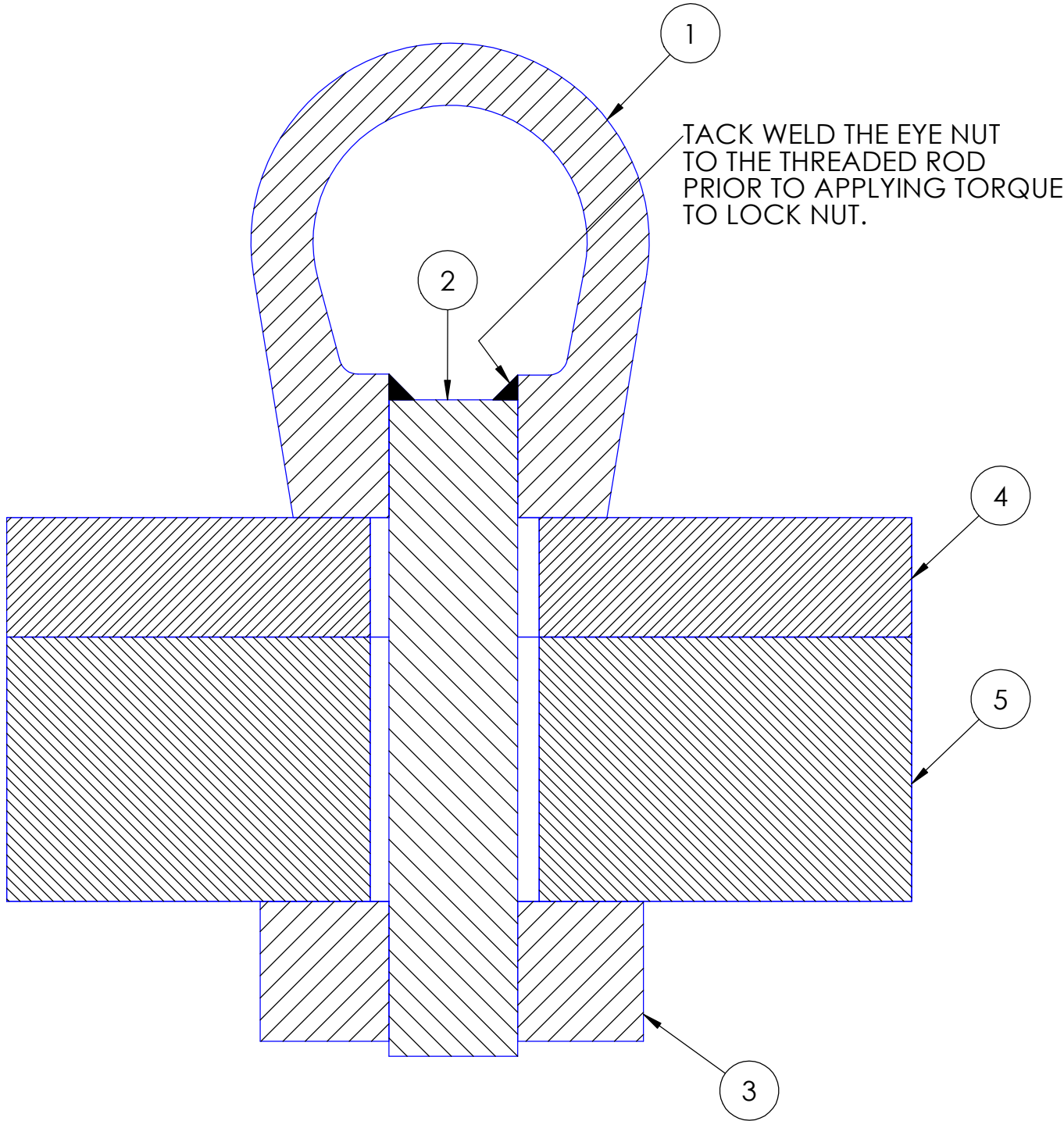
TOLERANCES				PROPRIETARY AND CONFIDENTIAL			KEYSTONE DRILL SERVICES, INC. SOMERSET, PA 15501		
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MATERIAL				NAME DATE			SIZE B	DWG. NO. KDT000003	REV 00
FINISH				DRAWN C.B.			01/21/22		
DO NOT SCALE DRAWING				CHECKED XXX			XX/XX/XX		
							SCALE: 1:24 WEIGHT: SHEET 1 OF 1		

TIE-DOWN METHOD FOR 2ND GENERATION
CLUSTER DRILL SIZES: 24" & 26"

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MATERIAL
1	2	631994	EYE NUT, 1-1/4"-7, PLAIN, 29,400LB	
2	2	631995*	THREADED STUD, 1-1/4"-7, B7, PLAIN, 9" LONG	
3	2	623879	NUT, LOCK, 1-1/4"-7, EX WIDE, EXTREME VIBRATION	
4		FOR REFERENCE	PLATE, KELLY BOX ADAPTER	
5		FOR REFERENCE	PLATE, FLANGE	
6	2	SEE TABLE	SHACKLE (NOT SHOWN)	

*PURCHASED PN IS IN 3' SECTIONS. NEED TO BE CUT INTO 9" SECTIONS.

SHACKLE SIZING TABLE		
AIR INLET SIZE	PART NUMBER	DESCRIPTION
3"	630446	SHACKLE, 5/8" DIA, 3.25 TON
4"	629898	SHACKLE, 7/8" DIA, 6.5 TON



TIE-DOWN ASSEMBLY INSTALLED IN THE CLOSEST FLANGE HOLES
ON EITHER SIDE OF THE AIR INLET (AS ILLUSTRATED ABOVE)

INSTALL ALUMINUM TAG ON ITEM NO. 1 TO REFERENCE TSB 2101

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MATERIAL				NAME			SIZE	DWG. NO.	REV
FINISH				DATE			B	KDT000004	00
DO NOT SCALE DRAWING				CHECKED	XXX	XX/XX/XX	SCALE: 1:24 WEIGHT:		SHEET 1 OF 1