

# CATALOG CODE TI-320-X.XX-XX

TORQUE Nm
0.50
0.75
1.00
1.25
1.50

SHAFT-END TYPE
01 - KNURLED SHAFT
02 - KNURLED ADAPTER
03 - ONE WAY FORWARD
04 - ONE WAY REVERSE
05 - DUAL ENDED KNURLED SHAFT

NOTES:

1. USER MUST DETERMINE FITNESS FOR USE IN APPLICATION.
2. ENVIRONMENTAL CONDITIONS:  
-20 °C TO +80 °C .
3. PRODUCT TORQUE SPECIFICATION:  
±20% DYNAMIC
4. LIFE: 50,000 CYCLES.  
ONE CYCLE CONSISTS OF 120° CW AND 120° CCW AT 10% DUTY CYCLE FOR SPEEDS LESS THAN 100 RPM.
5. MATERIALS:  
PLATED POWDERED METAL HOUSINGS  
HARDENED STEEL TORQUE ELEMENT  
DIECAST KNURLED ZINC SHAFT END  
MINERAL OIL BASED LUBRICANT  
HARDENED STEEL SHAFT  
HARDENED STEEL BEARING  
STEEL RETAINING RINGS
6. FINISH:  
NON-COSMETIC.
7. TORQUE INSERT DESIGNED FOR USE IN PLASTIC OR METAL. SEE INDIVIDUAL CONFIGURATION DRAWINGS FOR ADDITIONAL DETAIL.
- [8] HINGE DESIGNED TO SUPPORT A MINIMAL AXIAL FORCE IN DIRECTION SHOWN, NOT DESIGNED TO SUPPORT AXIAL FORCE IN THE OPPOSITE DIRECTION.
9. CUSTOMER IS RESPONSIBLE FOR CHECKING COMPATIBILITY OF REELL LUBRICANTS WITH PLASTICS USED.
10. OVERALL LENGTH MAY CHANGE DURING SHIPPING.
- [11] NUMBER OF TORQUE ELEMENTS MAY VARY.



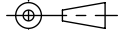
**TDS Precision Products**  
TDS Precision Products GmbH  
Industriestrasse 1a  
CH-8157 Dielsdorf  
T + 41 44 885 30 80  
info@tds-pp.com  
www.tds-pp.com


FOR PATENTS SEE  
Pat.reell.com (PRODUCT CODE: CP10)

SPECIFICATION SUBJECT TO CHANGE

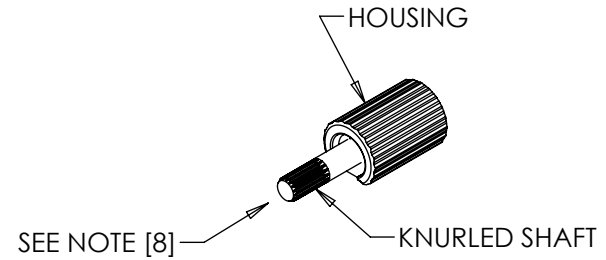
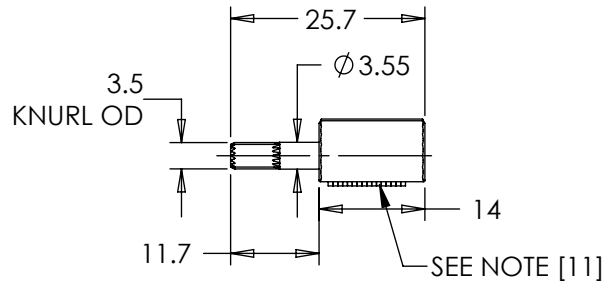
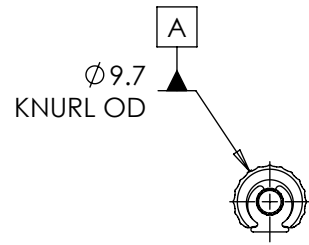
INTERPRET PRINT PER  
ASME Y14.5M-1994  
THIS PRINT IS THE  
CONFIDENTIAL PROPERTY  
OF REELL PRECISION MFG.

THIRD ANGLE PROJECTION



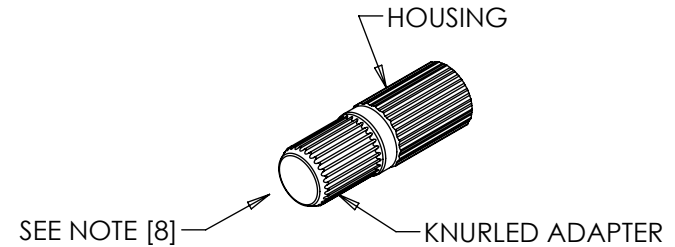
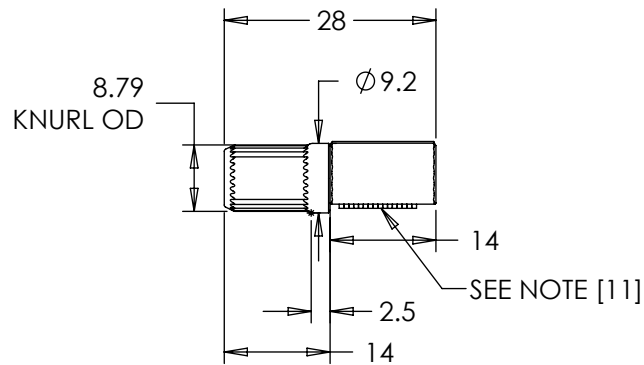
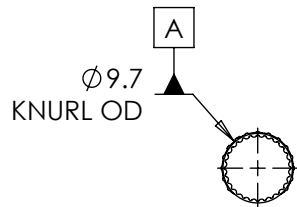
LEVEL	DESCRIPTION	DRAWN	DATE	APPROVED
DRAWN:	HMA	DATE:	16APR12	REFERENCE:
CHECKED:	WJW	DATE:	23AUG13	TITLE:
APPROVED:	WJW	DATE:	23AUG13	
REVISED:	17JUN20	DIMS:	mm	SALES DRAWING
				
PART NO:			TI-320	REV:
			J	
SCALE: 1:1		DO NOT SCALE DRAWING		SHEET 1 OF 8

# TI-320-X.XX-01 (KNURLED SHAFT)



- INTENDED FOR PRESS FIT INTO METALS. CONTACT REELL FOR OTHER MOUNTING OPTIONS.
- APPROXIMATE WEIGHT: 6.5 GRAMS

# TI-320-X.XX-02 (KNURLED ADAPTER)



- INTENDED FOR PRESS FIT INTO PLASTICS. CONTACT REELL FOR OTHER MOUNTING OPTIONS.
- APPROXIMATE WEIGHT: 11.85 GRAMS

ALL DIMENSIONS ARE REFERENCE, SEE CAD MODEL FOR UNSPECIFIED FEATURES.

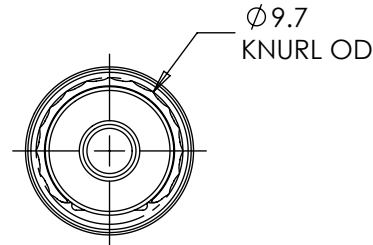
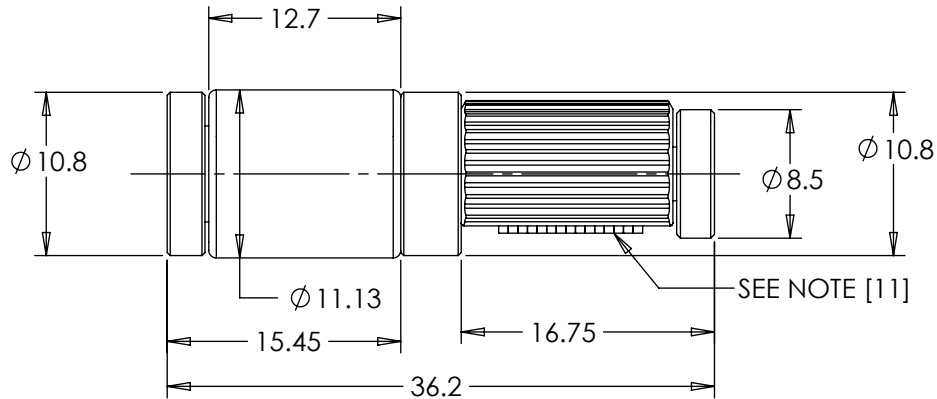
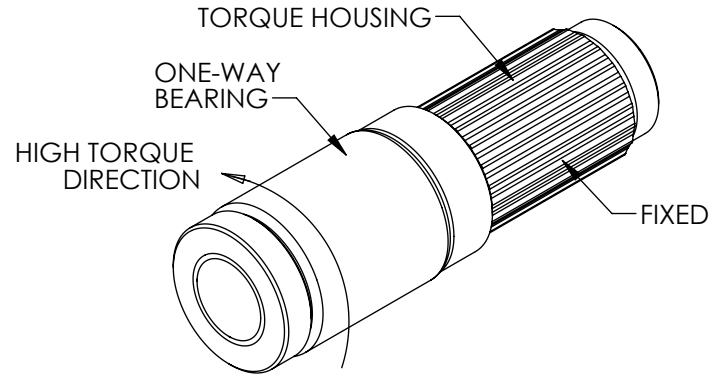
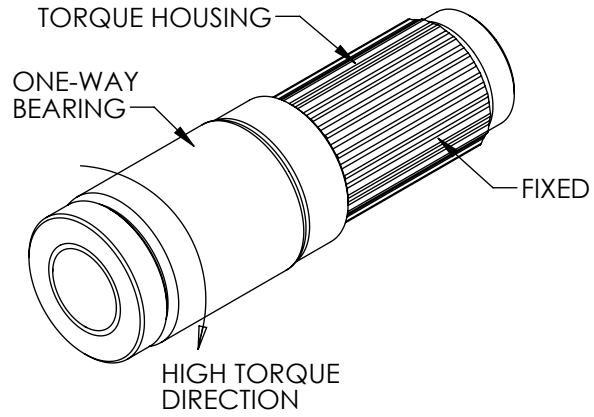
LEVEL	DESCRIPTION	DRAWN	DATE	APPROVED
DRAWN:	HMA	DATE:	16APR12	REFERENCE:
CHECKED:	WJW	DATE:	23AUG13	TITLE:
APPROVED:	WJW	DATE:	23AUG13	
REVISED:	17JUN20	DIMS:	mm	
		PART NO:		REV:
		TI-320		J
REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA		SCALE: 1:1	DO NOT SCALE DRAWING	SHEET 2 OF 8

INTERPRET PRINT PER ASME Y14.5M-1994  
THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG.  
THIRD ANGLE PROJECTION

SPECIFICATION SUBJECT TO CHANGE

# TI-320-X.XX-03 (ONE WAY FORWARD)

# TI-320-X.XX-04 (ONE WAY REVERSE)



- INTENDED FOR PRESS FIT INTO METALS. CONTACT REELL FOR OTHER MOUNTING OPTIONS.
- APPROXIMATE WEIGHT: 19.2 GRAMS

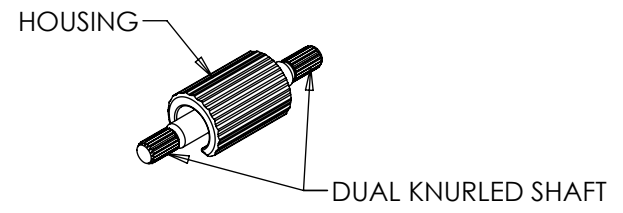
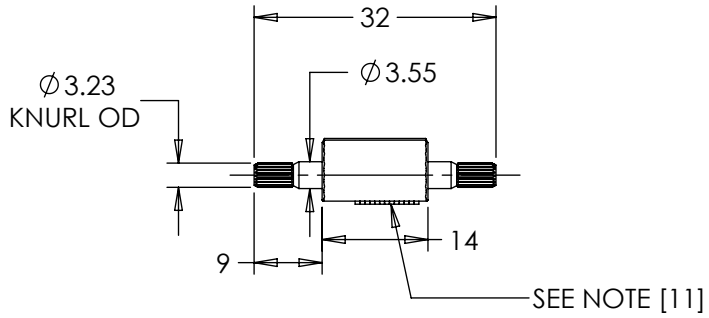
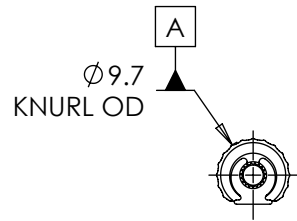
**TDS** Precision Products  
TDS Precision Products GmbH  
Industriestrasse 1a  
CH-8157 Dielsdorf  
T + 41 44 885 30 80  
info@tds-pp.com  
www.tds-pp.com

ALL DIMENSIONS ARE REFERENCE,  
SEE CAD MODEL FOR UNSPECIFIED FEATURES.

LEVEL	DESCRIPTION		DRAWN	DATE	APPROVED
DRAWN:	HMA	DATE: 16APR12	PART NO:		
CHECKED:	WJW	DATE: 23AUG13	TITLE:		
APPROVED:	WJW	DATE: 23AUG13	<b>SALES DRAWING</b>		
REVISED:	17JUN20	DIMS: mm			
INTERPRET PRINT PER ASME Y14.5M-1994 THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG. THIRD ANGLE PROJECTION					DESCRIPTION: <b>TI-320</b> REV: J
REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA			SCALE: 2:1	DO NOT SCALE DRAWING	SHEET 3 OF 8

SPECIFICATION SUBJECT TO CHANGE

# TI-320-X.XX-05 (DUAL ENDED KNURLED SHAFT)



- INTENDED FOR PRESS FIT INTO METALS. CONTACT REELL FOR OTHER MOUNTING OPTIONS.
- APPROXIMATE WEIGHT: 7.25 GRAMS

**TDS** Precision Products  
TDS Precision Products GmbH  
Industriestrasse 1a  
CH-8157 Dielsdorf  
T + 41 44 885 30 80  
info@tds-pp.com  
www.tds-pp.com

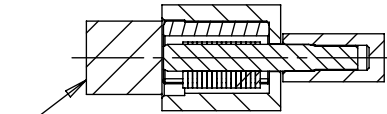
ALL DIMENSIONS ARE REFERENCE,  
SEE CAD MODEL FOR UNSPECIFIED FEATURES.

LEVEL	DESCRIPTION		DRAWN	DATE	APPROVED	
DRAWN:	HMA	DATE:	16APR12	PART NO:		
CHECKED:	WJW	DATE:	23AUG13	TITLE:		
APPROVED:	WJW	DATE:	23AUG13	<b>SALES DRAWING</b>		
REVISED:	17JUN20	DIMS:	mm			
INTERPRET PRINT PER ASME Y14.5M-1994 THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG. THIRD ANGLE PROJECTION			REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA		DESCRIPTION: <b>TI-320</b>	REV: <b>J</b>
SCALE: 1:1    DO NOT SCALE DRAWING    SHEET 4 OF 8						

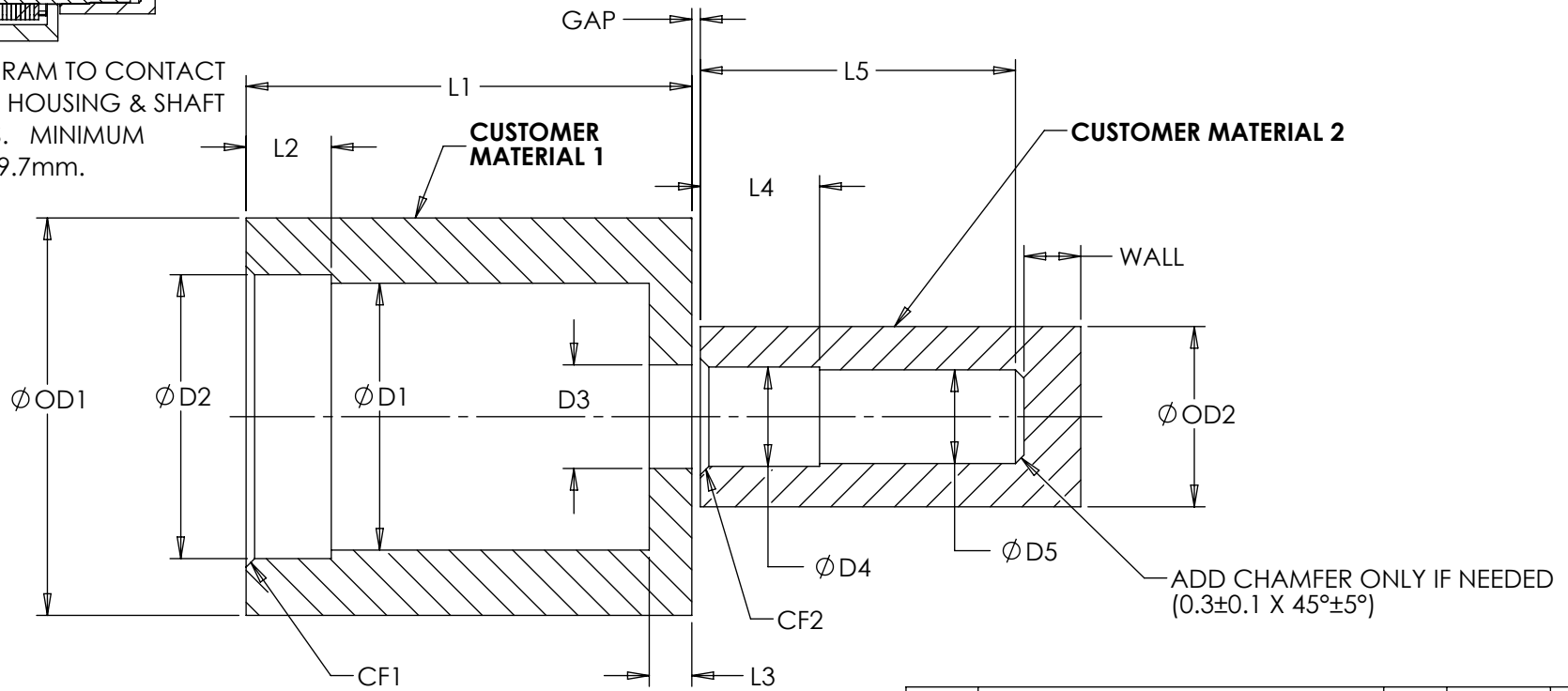
SPECIFICATION SUBJECT TO CHANGE

# TI-320-X.XX-01 CUSTOMER INSTALLATION GEOMETRY

CUSTOMER MATERIAL	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5	CF1	CF2	OD1	OD2	WALL	GAP
DIE CAST ZINC	9.55±0.05	10±0.03	3.65±0.03	3.5±0.03	3.3±0.03	15.7±0.1	3±0.1	1.5±0.1	4.2±0.1	12.5 MIN	0.3±0.1 X 45°±5°	0.3±0.1 X 45°±5°	12 MIN	6 MIN	2 MIN	(0.3)
DIE CAST ALUMINUM				3.63±0.03	3.38±0.015											
MILD STEEL	9.6±0.025			3.63±0.03	3.38±0.015											
WROUGHT ALUMINUM				3.63±0.03	3.38±0.015											



INSTALLATION RAM TO CONTACT BOTH TORQUE HOUSING & SHAFT DURING PRESS. MINIMUM DIAMETER OF 9.7mm.



ADD CHAMFER ONLY IF NEEDED (0.3±0.1 X 45°±5°)

**SCALE 4:1**

CUSTOMER MATERIAL 1 AND CUSTOMER MATERIAL 2 ALIGNMENT TO BE WITHIN 0.15mm IN ANY DIRECTION TO ENSURE PRODUCT PERFORMANCE.

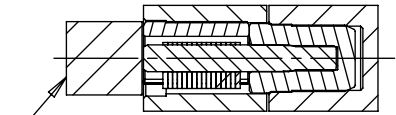
SPECIFICATION SUBJECT TO CHANGE

LEVEL	DESCRIPTION	DRAWN	DATE	APPROVED
DRAWN:	HMA	DATE:	16APR12	REFERENCE:
CHECKED:	WJW	DATE:	23AUG13	TITLE:
APPROVED:	WJW	DATE:	23AUG13	
REVISED:	17JUN20	DIMS:	mm	<h2>SALES DRAWING</h2>
REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA				
		PART NO:	TI-320	REV: J
		SCALE: 1:1	DO NOT SCALE DRAWING	SHEET 5 OF 8

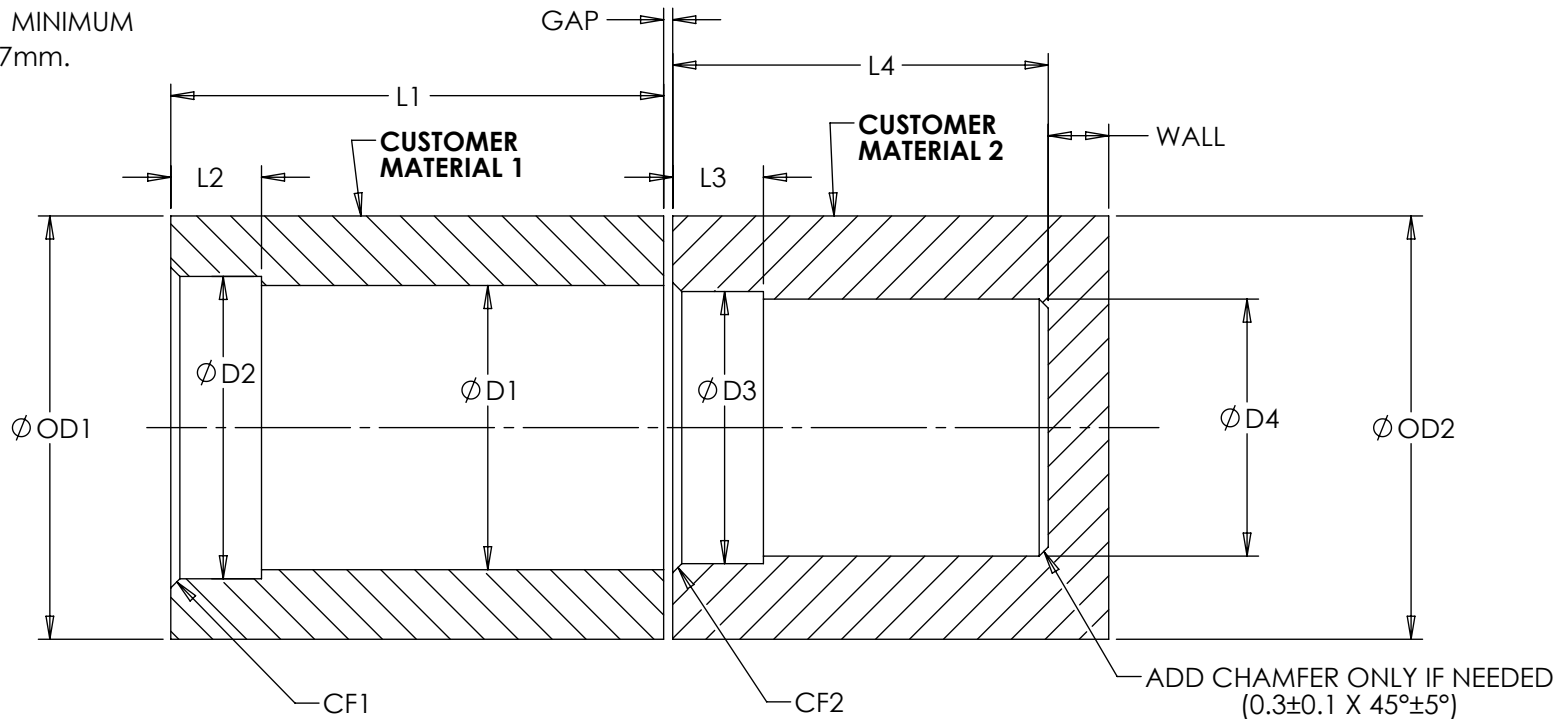
INTERPRET PRINT PER ASME Y14.5M-1994  
THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG.  
THIRD ANGLE PROJECTION

# T1-320-X.XX-02 CUSTOMER INSTALLATION GEOMETRY

CUSTOMER MATERIAL	D1	D2	D3	D4	L1	L2	L3	L4	CF1	CF2	OD1	OD2	WALL	GAP
DELRIN	9.3±0.03	10±0.03	9.1±0.03	8.3±0.03	16.3±0.1	3.0±0.1	3.0±0.1	12.5 MIN	0.3±0.1 X 45°±5°	0.3±0.1 X 45°±5°	13.5 MIN	13.5 MIN	2 MIN	(0.3)



INSTALLATION RAM TO CONTACT BOTH TORQUE HOUSING & SHAFT DURING PRESS. MINIMUM DIAMETER OF 9.7mm.



ADD CHAMFER ONLY IF NEEDED (0.3±0.1 X 45°±5°)

SCALE 4:1

CUSTOMER MATERIAL 1 AND CUSTOMER MATERIAL 2 ALIGNMENT TO BE WITHIN 0.15mm IN ANY DIRECTION TO ENSURE PRODUCT PERFORMANCE.

SPECIFICATION SUBJECT TO CHANGE

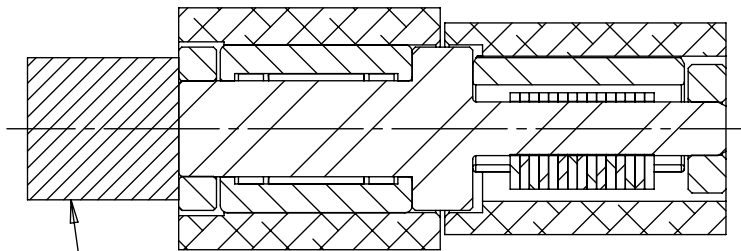
LEVEL	DESCRIPTION	DRAWN	DATE	APPROVED	
DRAWN:	HMA	DATE:	16APR12	REFERENCE:	
CHECKED:	WJW	DATE:	23AUG13	TITLE:	
APPROVED:	WJW	DATE:	23AUG13		
REVISED:	17JUN20	DIMS:	mm	<h2>SALES DRAWING</h2>	
					PART NO:
					<h1>TI-320</h1>
REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA				J	
THIRD ANGLE PROJECTION		SCALE: 1:1		DO NOT SCALE DRAWING	
		SHEET 6 OF 8			

INTERPRET PRINT PER ASME Y14.5M-1994  
 THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG.  
 THIRD ANGLE PROJECTION

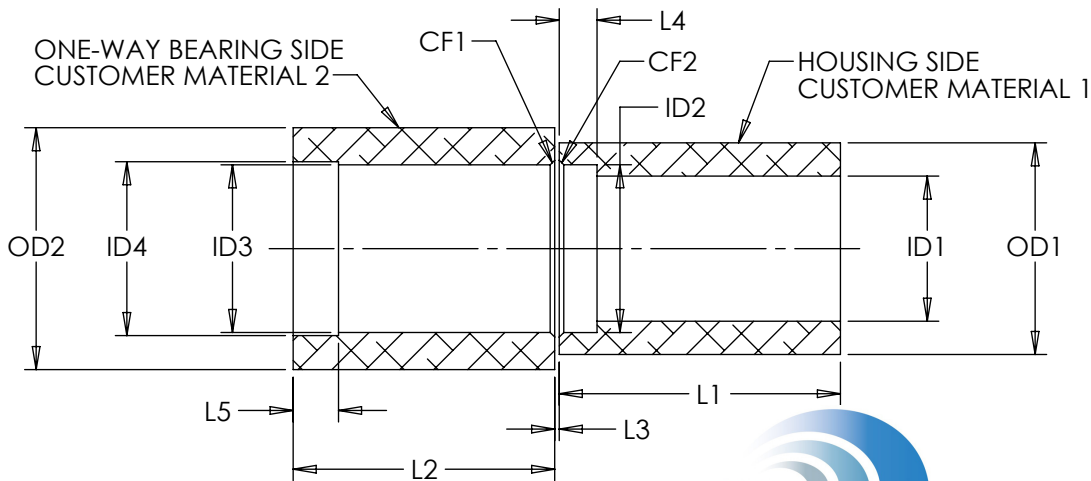
# TI-320-X.XX-03/04 CUSTOMER INSTALLATION GEOMETRY

CUSTOMER MATERIAL	ID1	ID2	ID3	ID4	L1	L2	L3	L4	L5	CF1/CF2	OD1	OD2
DIE CAST ZINC	9.55±0.05	11.1±0.05	11.09±0.015	11.5±0.05	18.6±0.1	17.3±0.1	0.1 MIN	2.5±0.1	3.0±0.1	0.3±0.1 X 45° ±5°	14 MIN	16 MIN
DIE CAST ALUMINUM												
MILD STEEL	9.6±0.025											
WROUGHT ALUMINUM												

## RECOMMENDED MOUNTING FOR TI-320-X.XX-03 (ONE WAY FORWARD) TI-320-X.XX-04 (ONE WAY REVERSE)



INSTALLATION RAM TO CONTACT BOTH RETAINING RING & SHAFT DURING PRESS. MINIMUM DIAMETER OF 9.7mm.



CUSTOMER MATERIAL 1 AND CUSTOMER MATERIAL 2 ALIGNMENT TO BE WITHIN 0.15mm IN ANY DIRECTION TO ENSURE PRODUCT PERFORMANCE.



TDS Precision Products GmbH  
Industriestrasse 1a  
CH-8157 Dielsdorf  
T + 41 44 885 30 80  
info@tds-pp.com  
www.tds-pp.com

INTERPRET PRINT PER ASME Y14.5M-1994  
THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG.

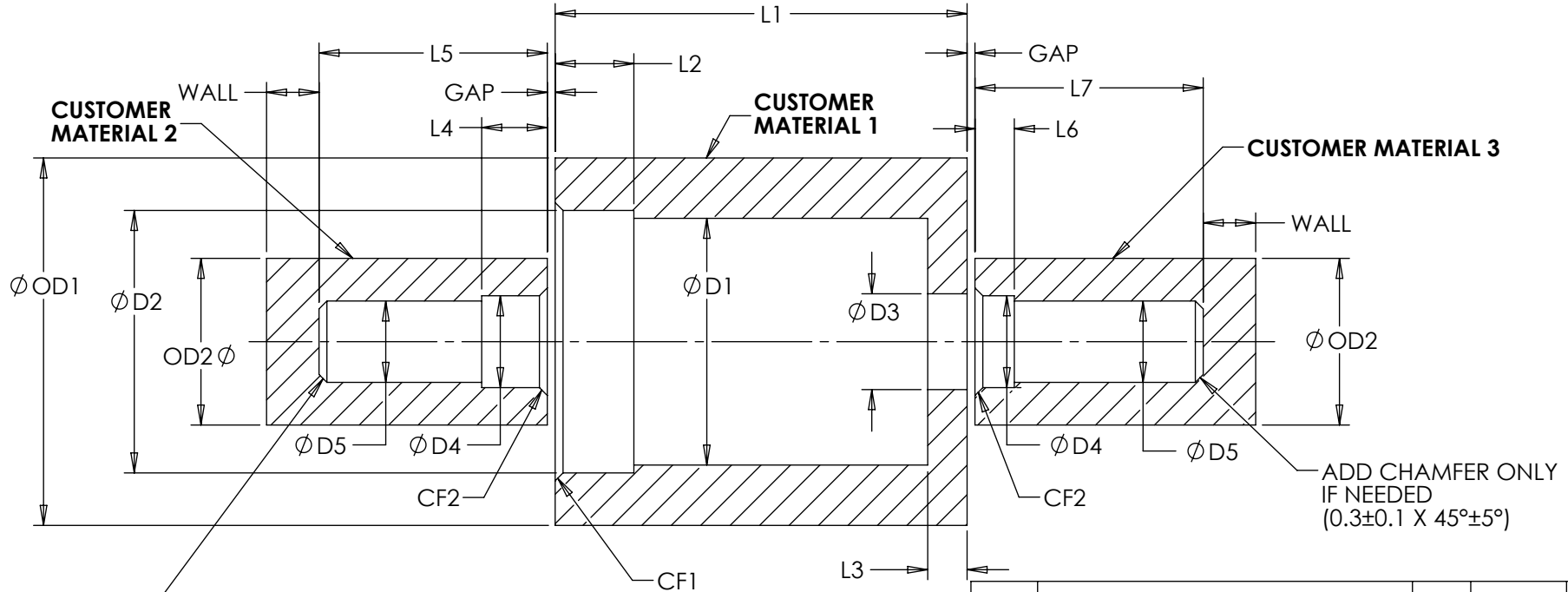
THIRD ANGLE PROJECTION

LEVEL	DESCRIPTION	DRAWN	DATE	APPROVED
DRAWN:	HMA	DATE:	16APR12	PART NO:
CHECKED:	WJW	DATE:	23AUG13	TITLE:
APPROVED:	WJW	DATE:	23AUG13	SALES DRAWING
REVISED:	17JUN20	DIMS:	mm	DESCRIPTION: TI-320
REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA				REV: J
SCALE: 2:1		DO NOT SCALE DRAWING		SHEET 7 OF 8

SPECIFICATION SUBJECT TO CHANGE

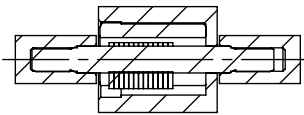
# TI-320-X.XX-05 CUSTOMER INSTALLATION GEOMETRY

CUSTOMER MATERIAL	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5	L6	L7	CF1	CF2	OD1	OD2	WALL	GAP
DIE CAST ZINC	9.55±0.05	10±0.03	3.65±0.03	3.5±0.03	3±0.03	15.7±0.1	3±0.1	1.5±0.1	4.0±0.1	10.5 MIN	2.5±0.1	7.2±0.1	0.3±0.1 X 45°±5°	0.3±0.1 X 45°±5°	12 MIN	6 MIN	2 MIN	(0.3)
DIE CAST ALUMINUM																		
MILD STEEL	9.6 ±0.025	10±0.03	3.65±0.03	3.63±0.03	3.08±0.015	15.7±0.1	3±0.1	1.5±0.1	4.0±0.1	10.5 MIN	2.5±0.1	7.2±0.1	0.3±0.1 X 45°±5°	0.3±0.1 X 45°±5°	12 MIN	6 MIN	2 MIN	(0.3)
WROUGHT ALUMINUM																		



ADD CHAMFER ONLY IF NEEDED  
(0.3±0.1 X 45°±5°)

SCALE 4:1

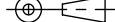


CUSTOMER MATERIAL 1, CUSTOMER MATERIAL 2 AND CUSTOMER MATERIAL 3 ALIGNMENT TO BE WITHIN 0.15mm IN ANY DIRECTION TO ENSURE PRODUCT PERFORMANCE.

SPECIFICATION SUBJECT TO CHANGE

INTERPRET PRINT PER ASME Y14.5M-1994  
THIS PRINT IS THE CONFIDENTIAL PROPERTY OF REELL PRECISION MFG.

THIRD ANGLE PROJECTION



LEVEL	DESCRIPTION		DRAWN	DATE	APPROVED
DRAWN:	HMA	DATE: 16APR12	PART NO:		
CHECKED:	WJW	DATE: 23AUG13	TITLE:		
APPROVED:	WJW	DATE: 23AUG13	SALES DRAWING		
REVISED:	17JUN20	DIMS: mm	DESCRIPTION: TI-320		
REELL PRECISION MANUFACTURING 1259 WILLOW LAKE BOULEVARD SAINT PAUL, MINNESOTA 55110-5103, USA		SCALE: 1:1		DO NOT SCALE DRAWING	SHEET 8 OF 8
REV: J					