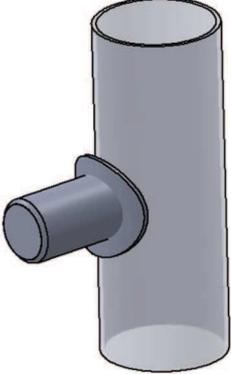
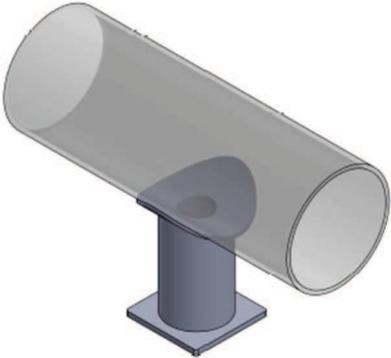
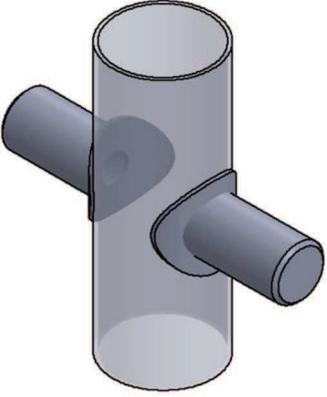
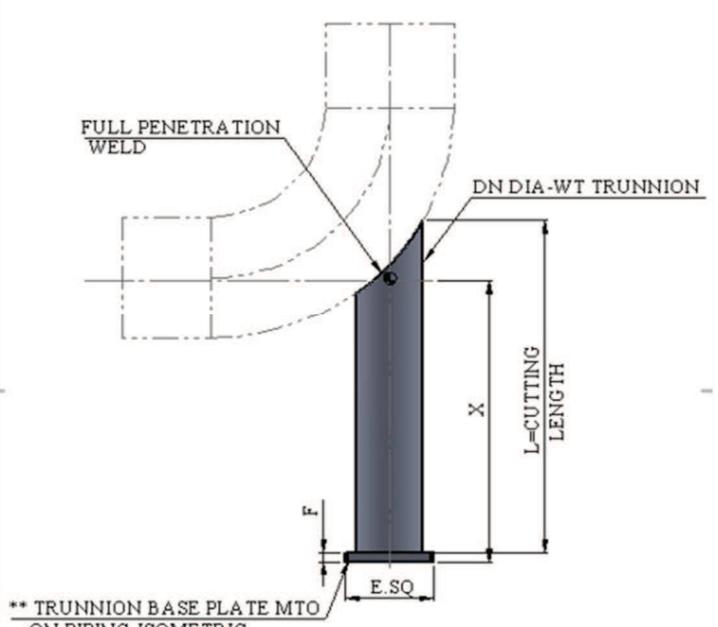


23	TRUNNIONS		
23.1	TS-101 BASE TRUNNION FROM ELBOW 	23.4	TS-104 SINGLE TRUNNION FROM STRAIGHT PIPE 
23.2	TS-102 BASE TRUNNION FROM STRAIGHT PIPE 	23.5	TS-105 DOUBLE TRUNNION FROM STRAIGHT PIPE 

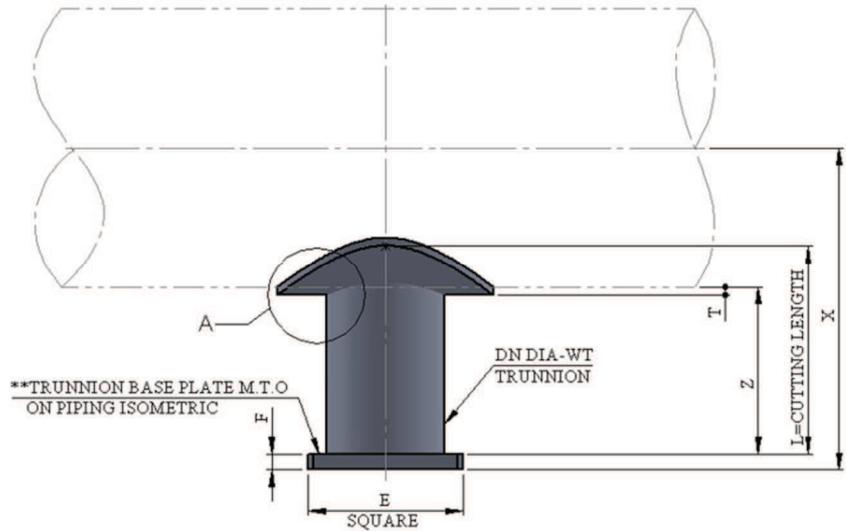
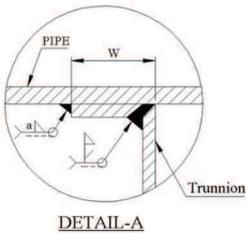
23.1	BASE TRUNNION FROM ELBOW	TS-101
		<p>Example : Typical Information Shown On Piping Isometric: Type TS-101-0150-A Dimensions Noted On Piping iso L= Cutting Length Of Trunnion (mm) X= Cl.Pipe to BOS. Baseplate (mm)</p>

TYPE	TRUNNION			BASEPLATE E x E x F (PL-001)
	DN (mm)	NPS in (inch)	Wt. (mm)	
T-TS-101-0025	DN 25	1"	THICKNESS AS PER LINE SPECIFICATION, BUT SEE NOTE ON TRUNNION WALL THICKNESS BELOW.	PL. 100 x 100 x 10
T-TS-101-0040	DN 40	1 1/2"		PL. 100 x 100 x 10
T-TS-101-0050	DN 50	2"		PL. 100 x 100 x 10
T-TS-101-0080	DN 80	3"		PL. 150 x 150 x 10
T-TS-101-0100	DN 100	4"		PL. 150 x 150 x 10
T-TS-101-0125	DN 125	5"		PL. 200 x 200 x 15
T-TS-101-0150	DN 150	6"		PL. 250 x 250 x 15
T-TS-101-0200	DN 200	8"		PL. 300 x 300 x 20
T-TS-101-0250	DN 250	10"		PL. 350 x 350 x 20
T-TS-101-0300	DN 300	12"		PL. 400 x 400 x 20
T-TS-101-0350	DN 350	14"		PL. 450 x 450 x 20
T-TS-101-0400	DN 400	16"		PL. 500 x 500 x 20
T-TS-101-0450	DN 450	18"		PL. 550 x 550 x 20
T-TS-101-0500	DN 500	20"		PL. 600 x 600 x 20
T-TS-101-0600	DN 600	24"		PL. 700 x 700 x 20
T-TS-101-0700	DN 700	28"		PL. 800 x 800 x 20
T-TS-101-0750	DN 750	30"		PL. 850 x 850 x 20
T-TS-101-0800	DN 800	32"		PL. 900 x 900 x 20
T-TS-101-0850	DN 850	34"		PL. 950 x 950 x 20
T-TS-101-0900	DN 900	36"		PL. 1000 x 1000 x 20
T-TS-101-0950	DN 950	38"	PL. 1050 x 1050 x 20	
T-TS-101-1000	DN 1000	40"	PL. 1100 x 1100 x 20	

Trunnion to pipe weld to be full penetration weld.
Weld to baseplate to be $a = 0.7 \times WT.$, but maximum 4mm CFW.
Trunnion thickness : to reduce welding, where the pipe material has a large wall thickness (WT), selection of the trunnion can be made with the same material class but with a thinner WT. down to a minimum WT. of 10 mm. trunnion design to be checked by calculation.
** Std base plate is PL-001 (Other sizes/material allowable).

23.2 BASE TRUNNION FROM STRAIGHT PIPE
TS -102

Example : Typical Information
 Shown On Piping Isometric:
 Type TS-102-0150-A
 Dimensions Noted On Piping ISO
 L= Cutting Length Of Trunnion (mm)
 X= CL. Of Pipe to BOS. Baseplate (mm)
 Z= BOP to TOS. Baseplate

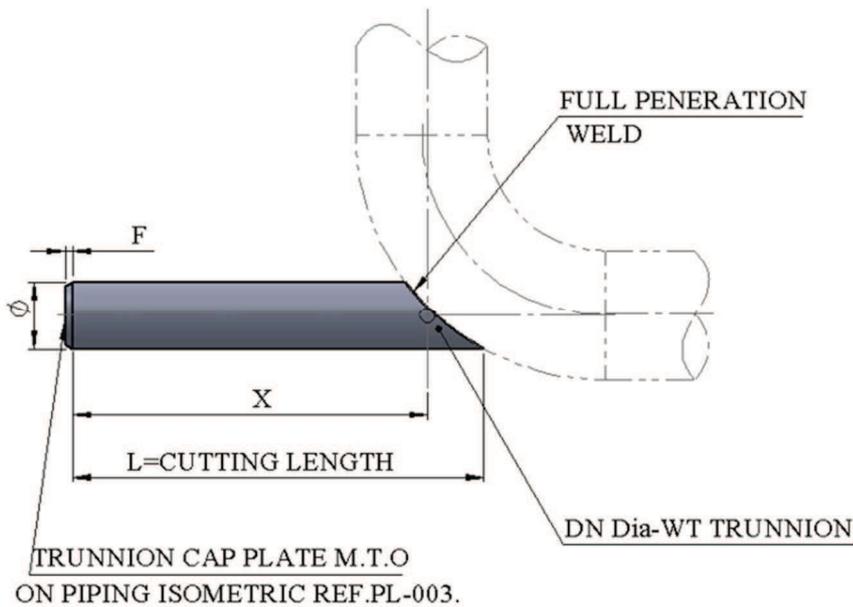


Reinforcement pad Detail.
 Ref- ASME B31.3
 Fig. 328.5.4 pict.3.

Type A : Base Trunnion without pad
 Type B : Base Trunnion with pad

TYPE	TRUNNION			PAD IF REQUIRED		BASEPLATE E x E x F (PL-001)
	DN (mm)	NPS in (inch)	Wt. (mm)	W	T	
T-TS-102-0025	DN 25	1"	THICKNESS AS PER LINE SPECIFICATION, BUT SEE NOTE ON TRUNNION/WEAR PLATE WALL THICKNESS BELOW.	N/A	THICKNESS AS PER THE SPECIFICATION, BUT SEE NOTE ON TRUNNION/WEAR PLATE WALL THICKNESS BELOW.	PL. 100 x 100 x 10
T-TS-102-0040	DN 40	1 1/2"		N/A		PL. 100 x 100 x 10
T-TS-102-0050	DN 50	2"		50		PL. 100 x 100 x 10
T-TS-102-0080	DN 80	3"		50		PL. 150 x 150 x 10
T-TS-102-0100	DN 100	4"		50		PL. 150 x 150 x 10
T-TS-102-0125	DN 125	5"		75		PL. 200 x 200 x 15
T-TS-102-0150	DN 150	6"		75		PL. 250 x 250 x 15
T-TS-102-0200	DN 200	8"		75		PL. 300 x 300 x 20
T-TS-102-0250	DN 250	10"		75		PL. 350 x 350 x 20
T-TS-102-0300	DN 300	12"		75		PL. 400 x 400 x 20
T-TS-102-0350	DN 350	14"		75		PL. 450 x 450 x 20
T-TS-102-0400	DN 400	16"		100		PL. 500 x 500 x 20
T-TS-102-0450	DN 450	18"		100		PL. 550 x 550 x 20
T-TS-102-0500	DN 500	20"		100		PL. 600 x 600 x 20
T-TS-102-0600	DN 600	24"		100		PL. 700 x 700 x 20
T-TS-102-0700	DN 700	28"		100		PL. 800 x 800 x 20
T-TS-102-0750	DN 750	30"		100		PL. 850 x 850 x 20
T-TS-102-0800	DN 800	32"		100		PL. 900 x 900 x 20
T-TS-102-0850	DN 850	34"		100		PL. 950 x 950 x 20
T-TS-102-0900	DN 900	36"		150		PL. 1000 x 1000 x 20
T-TS-102-0950	DN 950	38"	150	PL. 1050 x 1050 x 20		
T-TS-102-1000	DN 1000	40"	150	PL. 1100 x 1100 x 20		

Trunnion to pipe weld to be full penetration weld.
 Weld to baseplate to be $a = 0.7 \times WT$, but maximum 4mm CFW.
 Trunnion and Wear Plate thickness : to reduce welding, where the pipe material has a large wall thickness (WT),
 Section of the trunnion/wearplate can be made with the same material class but with a thinner WT. down to a minimum
 Wt. of 10 mm. Trunnion design to be checked by calculation.
 ** Std base plate is PL-001 (Other sizes/material allowable).

23.3 TRUNNION FROM ELBOW
TS-103


Example : Typical Information
 Shown On Piping Isometric:
 Type TS-103-0150-A
 Dimensions Noted On Piping ISO
 L= Cutting Length Of Trunnion(mm)
 X= Cl.Pipe to Trunnion Cap plate (mm)

TYPE	TRUNNION			CAP PLATE (PL-003)	
	DN (mm)	NPS in (inch)	Wt. (mm)	Ø (mm)	F (mm)
T-TS-103-0025	DN 25	1"	THICKNESS AS PER LINE SPECIFICATION, BUT SEE NOTE ON TRUNNION WALL THICKNESS BELOW.	28	6
T-TS-103-0040	DN 40	1 1/2"		42	6
T-TS-103-0050	DN 50	2"		54	6
T-TS-103-0080	DN 80	3"		83	6
T-TS-103-0100	DN 100	4"		108	6
T-TS-103-0125	DN 125	5"		135	6
T-TS-103-0150	DN 150	6"		162	6
T-TS-103-0200	DN 200	8"		213	6
T-TS-103-0250	DN 250	10"		267	6
T-TS-103-0300	DN 300	12"		318	6
T-TS-103-0350	DN 350	14"		350	6
T-TS-103-0400	DN 400	16"		400	6
T-TS-103-0450	DN 450	18"		451	6
T-TS-103-0500	DN 500	20"		502	6
T-TS-103-0600	DN 600	24"		604	6
T-TS-103-0700	DN 700	28"		705	6
T-TS-103-0750	DN 750	30"		756	6
T-TS-103-0800	DN 800	32"		807	6
T-TS-103-0850	DN 850	34"		858	6
T-TS-103-0900	DN 900	36"		908	6
T-TS-103-0950	DN 950	38"	959	6	
T-TS-103-1000	DN 1000	40"	1010	6	

Trunnion to pipe weld to be full penetration weld.
 Weld to capplate to be $a = 0.7 \times WT$, but maximum 4mm CFW.
 Trunnion thickness : to reduce welding, where the pipe material has a large wall thickness (WT),
 Selection of the trunnion can be made with the same material class but with a thinner WT. down to a minimum
 Wt. of 10 mm. Trunnion design to be checked by calculation.

23.4 SINGLE TRUNNION FROM STRAIGHT PIPE
TS-104

Example : Typical Information

Shown On Piping Isometric:

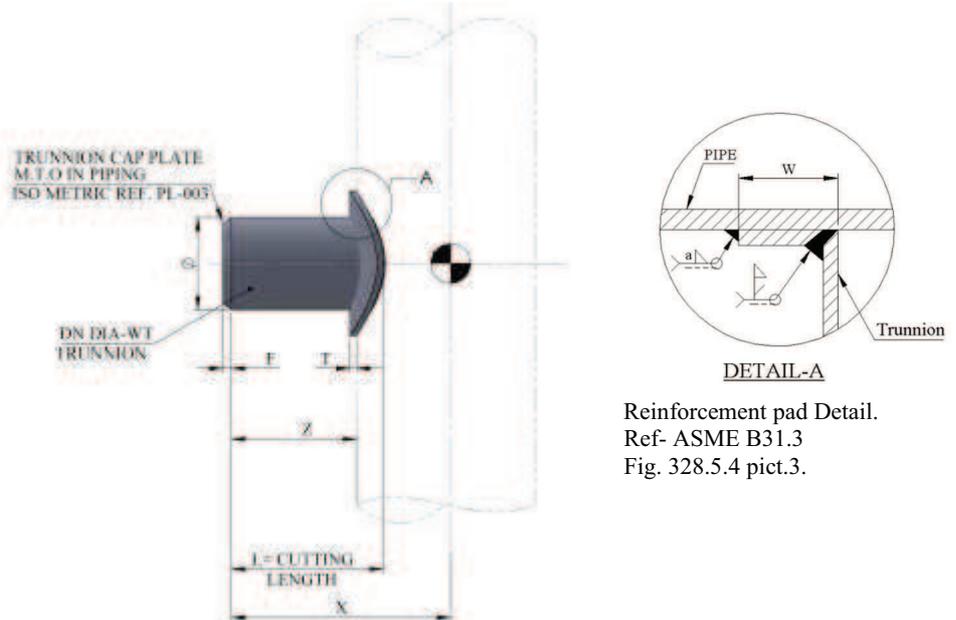
Type TS-104-0150-A

Dimensions Noted On Piping ISO

L= Cutting Length Of Trunnion (mm)

X= CL. Of Pipe to Cap Plate (mm)

Z= Edge of Pipe to Cap Plate (mm)


 Reinforcement pad Detail.
 Ref- ASME B31.3
 Fig. 328.5.4 pict.3.

Type A : Base Trunnion without pad

Type B : Base Trunnion with pad

TYPE	TRUNNION			PAD IF REQUIRED		CAP PLATE (PL-003)	
	DN (mm)	NPS in (inch)	Wt. (mm)	W	T	Ø (mm)	F (mm)
T-TS-104-0025	DN 25	1"	THICKNESS AS PER LINE SPECIFICATION, BUT SEE NOTE ON TRUNNION/WEAR PLATE WALL THICKNESS BELOW.	N/A	THICKNESS AS PER LINE SPECIFICATION, BUT SEE NOTE ON TRUNNION/WEAR PLATE WALL THICKNESS BELOW.	28	6
T-TS-104-0040	DN 40	1 1/2"		N/A		42	6
T-TS-104-0050	DN 50	2"		50		54	6
T-TS-104-0080	DN 80	3"		50		83	6
T-TS-104-0100	DN 100	4"		50		108	6
T-TS-104-0125	DN 125	5"		75		135	6
T-TS-104-0150	DN 150	6"		75		162	6
T-TS-104-0200	DN 200	8"		75		213	6
T-TS-104-0250	DN 250	10"		75		267	6
T-TS-104-0300	DN 300	12"		75		318	6
T-TS-104-0350	DN 350	14"		75		350	6
T-TS-104-0400	DN 400	16"		100		400	6
T-TS-104-0450	DN 450	18"		100		451	6
T-TS-104-0500	DN 500	20"		100		502	6
T-TS-104-0600	DN 600	24"		100		604	6
T-TS-104-0700	DN 700	28"		100		705	6
T-TS-104-0750	DN 750	30"		100		756	6
T-TS-104-0800	DN 800	32"		100		807	6
T-TS-104-0850	DN 850	34"		100		858	6
T-TS-104-0900	DN 900	36"		150		908	6
T-TS-104-0950	DN 900	38"	150	959	6		
T-TS-104-1000	DN 1000	40"	150	1010	6		

Trunnion to pipe weld to be full penetration weld.

 Weld to capplate to be $a = 0.7 \times WT$, but maximum 4mm CFW.

Trunnion and Wear Plate thickness : To reduce welding, where the pipe material has a large wall thickness (WT),

Selection of the trunnion/wearplate can be made with the same material class but with a thinner WT. down to a minimum Wt. of 10 mm. trunnion design to be checked by calculation.

23.5 DOUBLE TRUNNION FROM STRAIGHT PIPE
TS-105

Example : Typical Information

Shown On Piping Isometric:

Type TS-105-0150-A

Dimensions Noted On Piping ISO

L= Cutting Length Of Trunnion (mm)

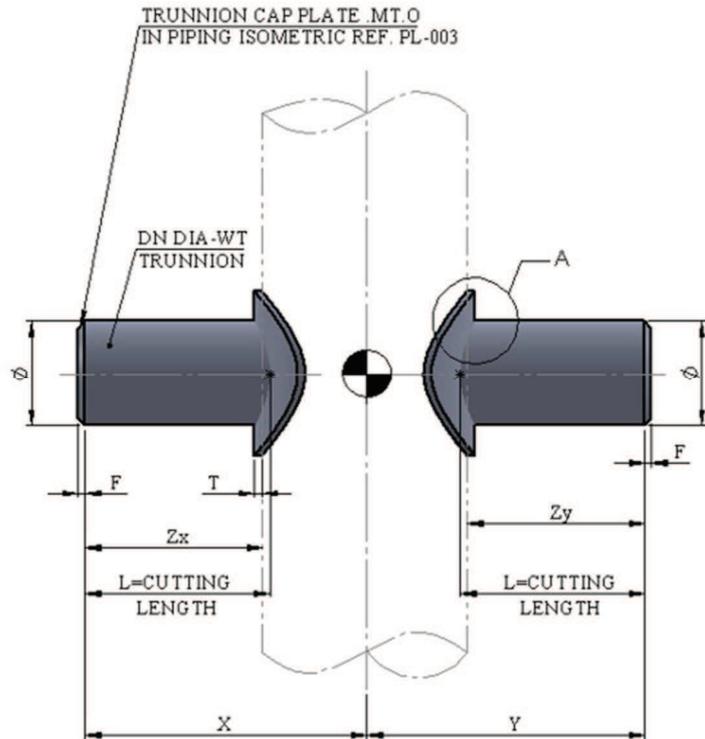
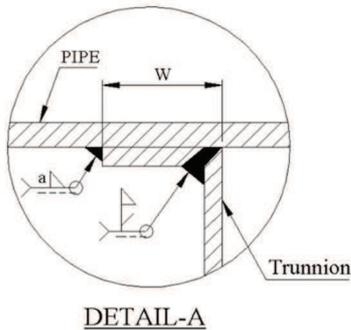
X / Y = CL. Of Pipe to Cap Plate (mm)

Zx / Zy = Edge of Pipe to Cap Plate (mm)

Reinforcement pad Detail.

Ref - ASME B31.3

Fig. 328.5.4 pict.3.



Type A : Base Trunnion without pad

Type B : Base Trunnion with pad

TYPE	TRUNNION			PAD IF REQUIRED		CAP PLATE (PL-003)	
	DN (mm)	NPS in (inch)	Wt. (mm)	W	T	Ø (mm)	F (mm)
T-TS-105-0025	DN 25	1"	THICKNESS AS PER LINE SPECIFICATION, BUT SEE NOTE ON TRUNNION/WEAR PLATE WALL THICKNESS BELOW.	N/A	THICKNESS AS PER THE SPECIFICATION, BUT SEE NOTE ON TRUNNION/WEAR PLATE WALL THICKNESS BELOW.	28	6
T-TS-105-0040	DN 40	1 1/2"		N/A		42	6
T-TS-105-0050	DN 50	2"		50		54	6
T-TS-105-0080	DN 80	3"		50		83	6
T-TS-105-0100	DN 100	4"		50		108	6
T-TS-105-0125	DN 125	5"		75		135	6
T-TS-105-0150	DN 150	6"		75		162	6
T-TS-105-0200	DN 200	8"		75		213	6
T-TS-105-0250	DN 250	10"		75		267	6
T-TS-105-0300	DN 300	12"		75		318	6
T-TS-105-0350	DN 350	14"		100		350	6
T-TS-105-0400	DN 400	16"		100		400	6
T-TS-105-0450	DN 450	18"		100		451	6
T-TS-105-0500	DN 500	20"		100		502	6
T-TS-105-0600	DN 600	24"		100		604	6
T-TS-105-0700	DN 700	28"		100		705	6
T-TS-105-0750	DN 750	30"		100		756	6
T-TS-105-0800	DN 800	32"		100		807	6
T-TS-105-0850	DN 850	34"		100		858	6
T-TS-105-0900	DN 900	36"		150		908	6
T-TS-105-0950	DN 950	38"	150	959	6		
T-TS-105-1000	DN 1000	40"	150	1010	6		

Trunnion to pipe weld to be full penetration weld.

 Weld to capplate to be $a = 0.7 \times WT$, but maximum 4mm CFW.

Trunnion and Wear Plate thickness : To reduce welding, where the pipe material has a large wall thickness (WT),

Selection of the trunnion/wear plate can be made with the same material class but with a thinner WT, down to a minimum

Wt. of 10 mm. Trunnion design to be checked by calculation.