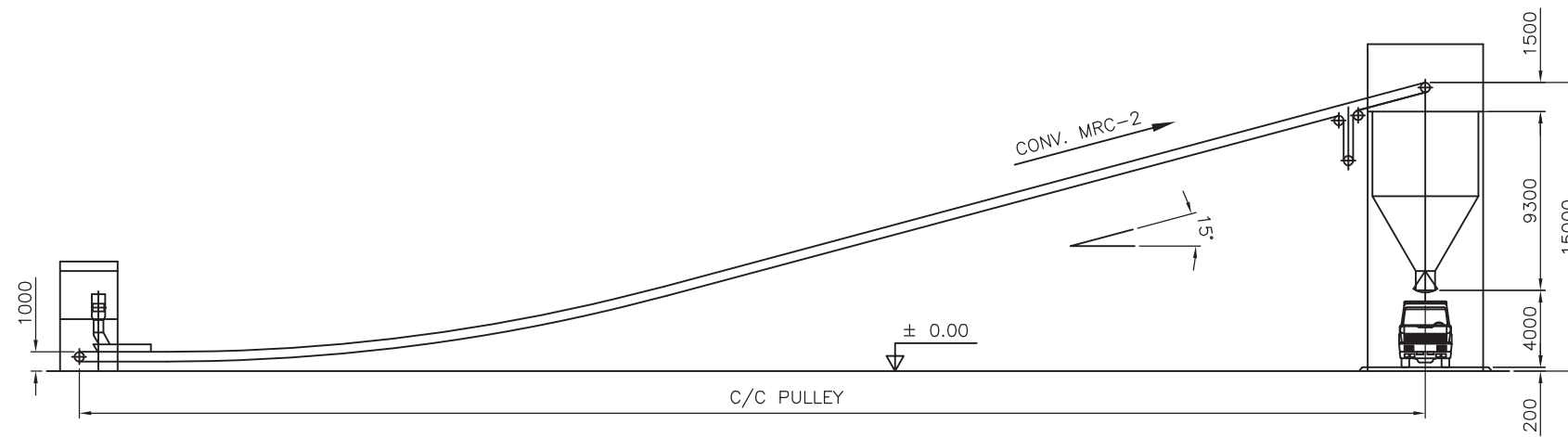
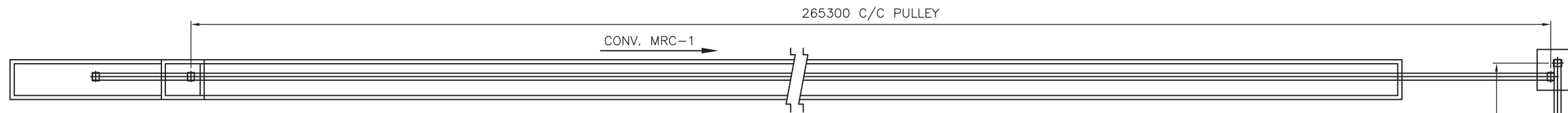
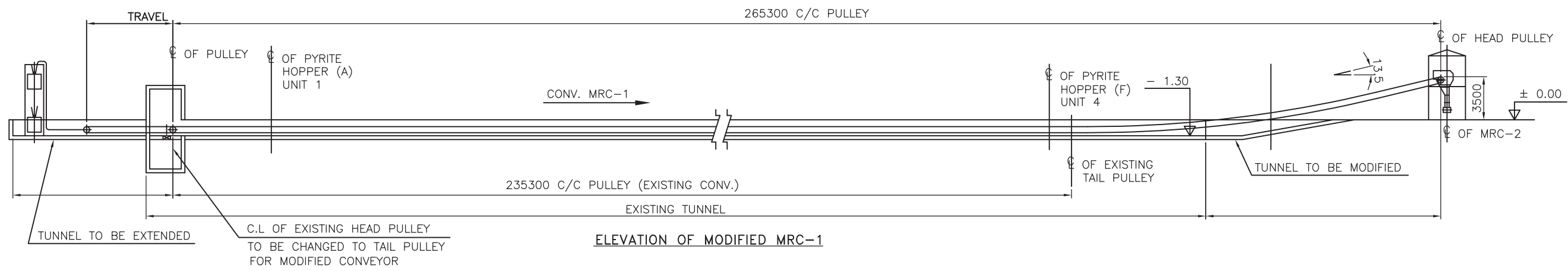




ELEVATION OF NEW MRC-2

C/C PULLEY

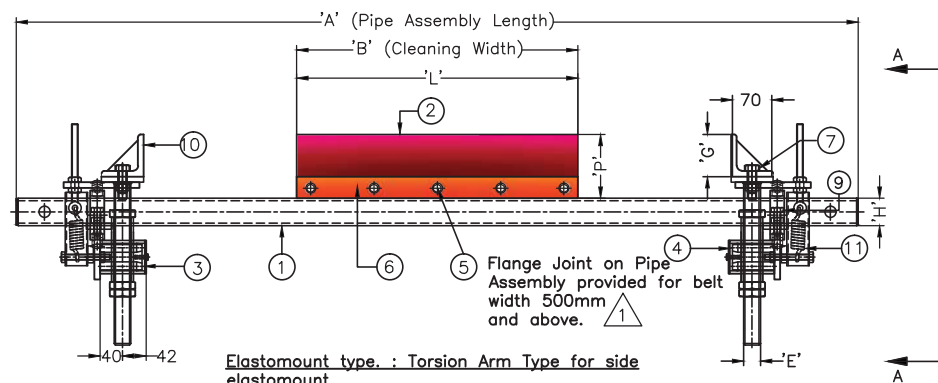
CONV. MRC-2

FOR TENDER PURPOSE ONLY

NOTE :- This drawing shall be used to understand the layout for above ground facilities. Dimensions may vary during detailed engineering as per bidders design.

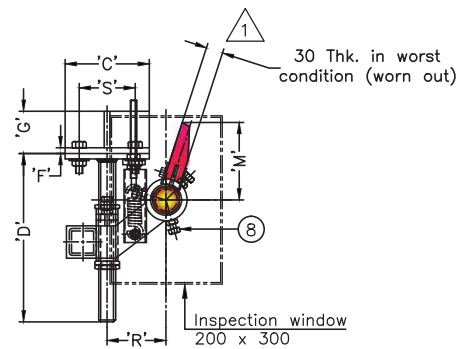
1. ALL DIMENSIONS ARE IN MM, LEVELS IN M.

PROPOSED LAYOUT FOR MODIFIED MILL REJECT SYSTEM (ABOVE GROUND FACILITIES)
RMSG-LAYOUT-TENDER-MRS-001



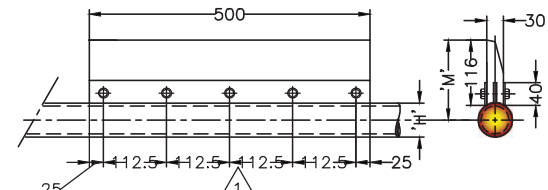
Elastomount type : Torsion Arm Type for side elastomount.
Square Section fabricated hollow pipe with positive configuration of mild steel bar provided with torsion arm and rubber cords in annular spaces of hollow pipe with positive configuration for spring (sprung back) action.

Elevation



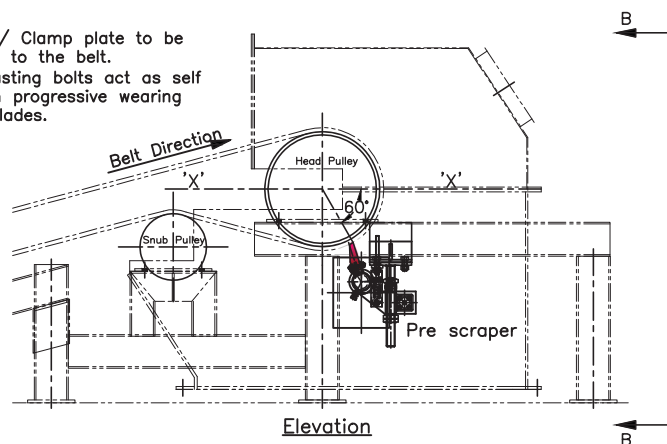
View 'A - A'

Cleaner Blade Details.
Wear Resistant Grade Polyurethane (PU) Blades. Size of the blade is 500mm width x 116mm height x30 mm thk.
Hardness is 85 to 95° Shore 'A' Scale



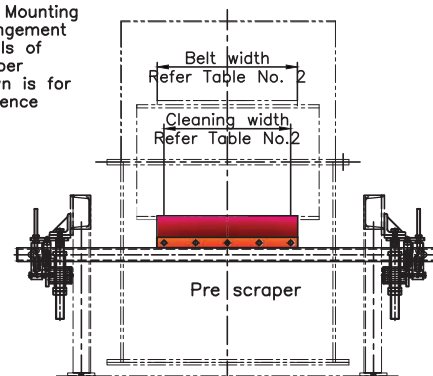
Dimension Details of Blade Assembly

- Note :
1. Mounting Bracket / Clamp plate to be fixed perpendicular to the belt.
 2. Elastomount /adjusting bolts act as self cleaning facility on progressive wearing of belt cleaner blades.



Elevation

- Note :
- This Mounting arrangement details of scraper shown is for reference only.



View 'B - B'

Note:
Pre scraper cleaner blade scraping point will be on 60° from the head pulley center horizontal 'XX' axis.Cleaner blades kept 2 to 3 mm gap from the belt surface.

Table-2

Sr. No.	Belt Width	A	B	C	D	E	F	G	H	'L'	M (Max)	P	R	S	N/L	N1	No. Of Scrapers	Weight In KG.
1	500 mm	1500	500	150	300	30	10	75	ø48.8	500	145	116	105	100	1	5	02 Nos.	28

Details of Equipment & Quantity of scraper.

Sl. No.	Belt width	Quantity	Belt Direction	Conv. No.
1	500mm	01 No.	Uni-Dir.	MRC-1
2	500mm	01 No.	Uni-Dir.	MRC-2

Notes:-

- 1)Inspection and testing shall be as NTPC approved QAP.
- 2)Painting shall be as per NTPC approved painting scheme.

Quantity of scraper
Pre (Primary Scraper)
500 mm Belt Width : 02 Nos.

Table-1

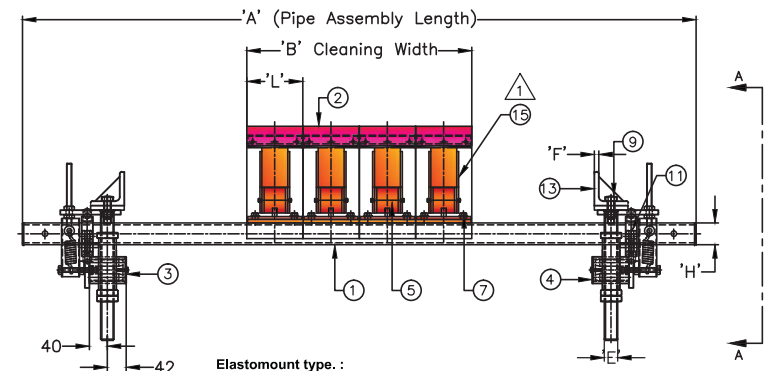
Part No.	Description	Qty.	Material	Specification	Remarks
1	Pipe Assembly	1 No.	MS ERW - 'Heavy Duty'	IS 1239	
2	Cleaner Blade	'N' Nos.	Polyurethane (PU) 30mm thk.	Hardness 85 to 95° Shore Scale 'A'	'N' Refer Table -2
3	Left hand side Elastomount	1 No.	Square Section Fabricated Pipe, Bracket, Torsion Arm with Positive configuration Square Bar, Spindle, Square Section Pipe and Rubber Cords.	IS 2062 for Square Section Pipe, Bracket, Torsion Arm, Square Bar, EN8 for Spindle, and Special Rubber with Cords 60 to 70° Shore Scale 'A'	
4	Right hand side Elastomount	1 No.			
5	Fastener M10 x 50 With washer & lock nut M10	'N1' Nos.	Stainless Steel	SS- 304	'N' Refer Table -2
6	Clamp Plate	2 Nos.	Mild Steel	IS 2062	
7	Fastener M16 x 40	4 Nos.	Stainless Steel	SS- 304	
8	Fastener M10 x 30	6 Nos.	Stainless Steel	SS- 304	
9	Fastener M12 x 40	2 Nos.	Stainless Steel	SS- 304	If Applicable
10	Mounting Bracket	2 Nos.	Mild Steel	IS 2062	
11	Spring Arrangement	2 Nos.	Spring Steel	Spring Steel	

These Pre (Primary) Scrapers are suitable for Uni directional conveyor belts.

NTPC KAHALGAON STAGE-I 4X210MW

TITLE
GA OF BELT CLEANER FOR MRS
(PRIMARY SCRAPER)

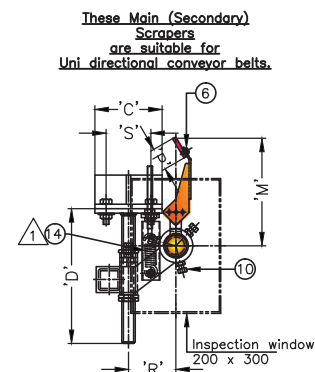
DO NOT SCALE
IF IN DOUBT PLEASE ASK



Elastomount type :
Torsion Arm Type for side elastomount.
Square Section fabricated hollow pipe with positive configuration of mild steel bar provided with torsion arm and rubber cords in annular spaces of hollow pipe with positive configuration for spring (sprung back) action.

Flange Joint on Pipe Assembly provided for belt width 500mm and above.

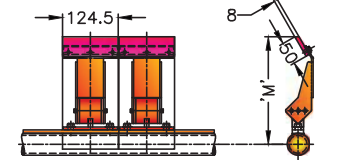
Elevation



View 'A - A'

Cleaner Blade Details.

High Grade Tool Steel (HGTS)
MOC of Material HcHr.
Size of the Blades
124.5mm Width x 50mm Height x 8mm thk.
Hardness of material is 60 to 62 RC.

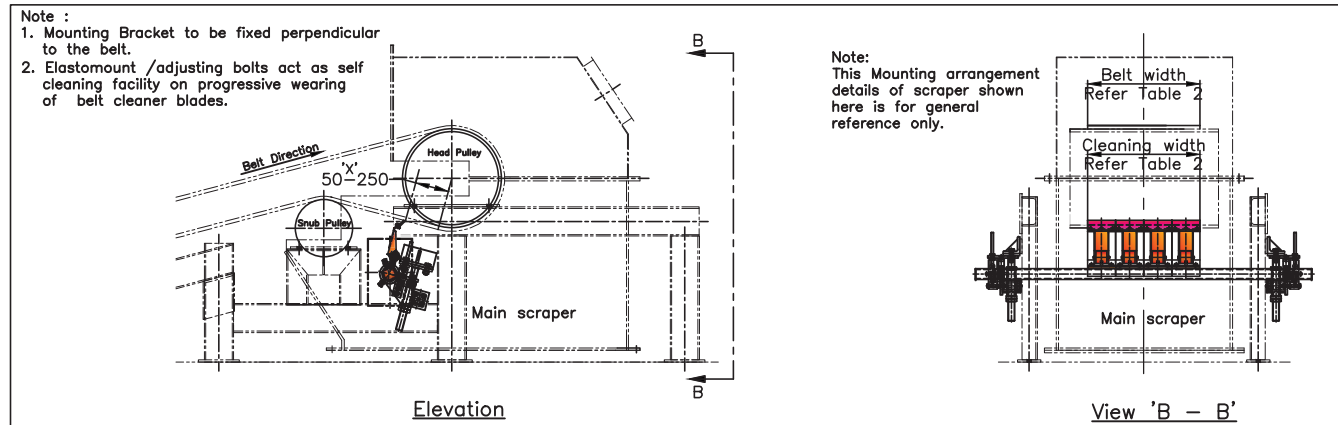


Dimension Details of blade assembly
Uni directional belts

Table - 1

Part No.	Particulars	Qty.	Material	Specification	Remarks
1	Pipe Assembly	1 No.	MS ERW 'Heavy Duty'	IS 1239	
2	Cleaner blade	'N' Nos.	High Grade Tool Steel Size 124.5mm Width x 50mm Height x 8mm thk.	HcHr (High Carbon High Chromium) Hardness 60-62 RC	'N' see Table-2
3	Left hand side Elastomount	1 No.	Square section fabricated pipe, Torsion Arm with Positive configuration bar, Square section pipe and Rubber cords.	IS 2062 for square Section pipe, & EN8 for Spindle, IS 2062 for Torsion Arm & plate and Special Rubber with Cords 65 to 70 Shore Scale 'A'	
4	Right hand side Elastomount	1 No.			
5	Sprung Back Elasto Mechanism	'N' Nos.			'N' see Table-2
6	Fastener M6 x 20	3 'N' Nos.	Stainless Steel	SS - 304	'N' see Table-2
7	Fastener M8 x 25 With washer & lock nut M10	2 'N' Nos.	Stainless Steel	SS - 304	'N' see Table-2
8	Deflector Plate	2 'N' Nos.	Stainless Steel	SS - 304	'N' see Table-2
9	Fastener M16 x 40	4 Nos.	Stainless Steel	SS - 304	
10	Fastener M10 x 30	06 Nos.	Stainless Steel	SS - 304	
11	Fastener M10 x 50	2 Nos.	Stainless Steel	SS - 304	
12	Fastener M10 x 40	8 Nos.	Stainless Steel	SS - 304	If Applicable
13	Mounting Bracket	2 Nos.	Mild Steel	MS IS 2062	
14	Spring Arrangement	2 Nos.	Spring Steel	Spring Steel	
15	Cleaner blade Mounting bracket	4 Nos.	Mild Steel	MS IS 2062	

These Main (Secondary) Scrapers are suitable for Uni directional conveyor belts.



Note :
Main scraper cleaner blade Scraping point will be on 50 - 250 mm from the tangential point.
The cleaner tip and conveyor belt fully surface contact with the pressure of 0.65 to 0.8 kgf/cm² Should not exceed 0.8 kgf/cm²

Table - 2

Sr. No.	Belt Width	A	B	C	D	E	F	G	H	'L'	M	'P'	'R'	'S'	N	No. Of Scrapers	Weight In KG.
1	500 mm	1500	500	150	300	30	10	75	Ø48.8	124.5	250	50	105	100	4	02 Nos.	33

Details of Equipment & Quantity of scraper.

Sl. No.	Belt width	Quantity	Belt Direction	Conv. No.
1	500mm	01 No.	Uni-Dir.	MRC-1
2	500mm	01 No.	Uni-Dir.	MRC-2

Quantity of scraper Main (Secondary Scraper)

500mm Belt Width : 02 Nos.

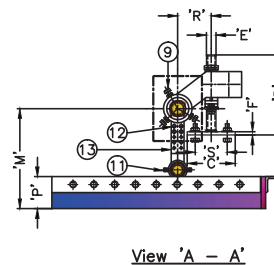
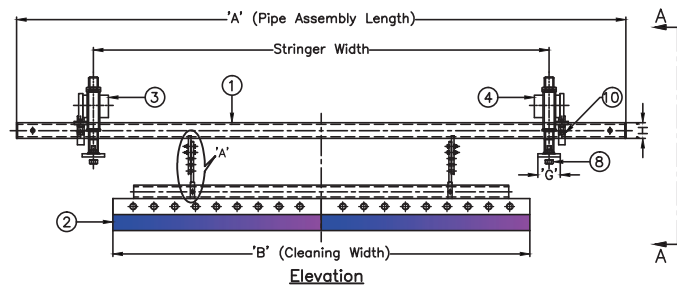
Notes:-

- 1) Inspection and testing shall be as NTPC approved QAP.
- 2) Painting shall be as per NTPC approved painting scheme.

NTPC KAHALGAON STAGE-I 4X210MW

TITLE
GA OF BELT CLEANER FOR MRS
(SECONDARY SCRAPER)

DO NOT SCALE
IF IN DOUBT PLEASE ASK



Dimension 'B' Cleaning width should be more than the belt width as per scraper design requirements and taken in to the consideration of other belt parameters.

- Note :
1. Mounting Bracket / Clamp plate to be fixed perpendicular to the stringer.
 2. Elastomount /adjusting bolts act as self cleaning facility on progressive wearing of belt cleaner blades.

Note :
Internal 'V'-Plough scraper cleaner blade Scraping point will be on 1500 - 2000 mm from the Tail Pulley center. The cleaner tip and conveyor belt fully surface-contact with each other exerting a pressure varying between 30000 N/per sq. m. and 100000 N/per sq.m. max. approximately as per IS - 11592 : 2000.
The cleaner blades and conveyor belt fully surface contact with the pressure of 0.1 to 0.15 kgf/cm² Should not exceed 0.15 kgf/cm²

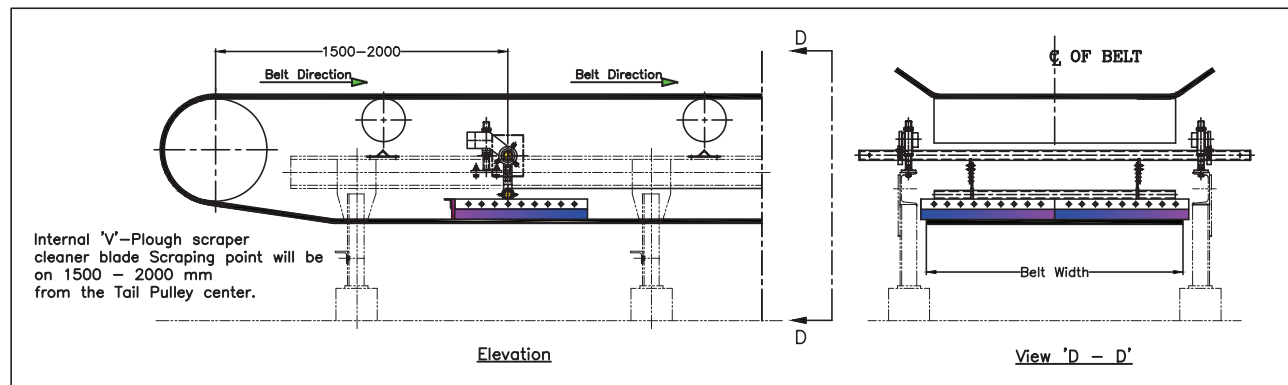


Table-2

Sr. No.	Belt Width	A	B	C	D	E	F	G	H	H1	M (Max)	L	L1	P	R	S	N	N1	No. Of Scrapers	Weight In KG.
1	500 mm	1250	600	150	250	30	10	70	Ø42	Ø32	400	425	150	100	105	100	2	8	02 Nos.	33

Details of Equipment & Quantity of Scraper

Sl. No.	Belt width	Quantity	Belt Direction	Conv. No.
1	500mm	01 No.	Uni-Dir.	MRC-1
2	500mm	02 No.	Uni-Dir.	MRC-2

Notes:-
1) Inspection and testing shall be as NTPC approved QAP.
2) Painting shall be as per NTPC approved painting scheme.

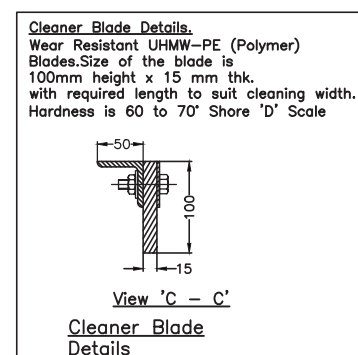
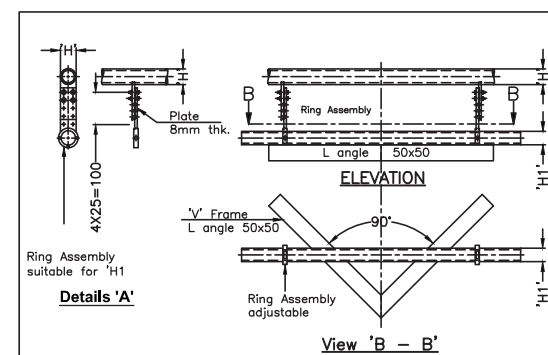


Table-1

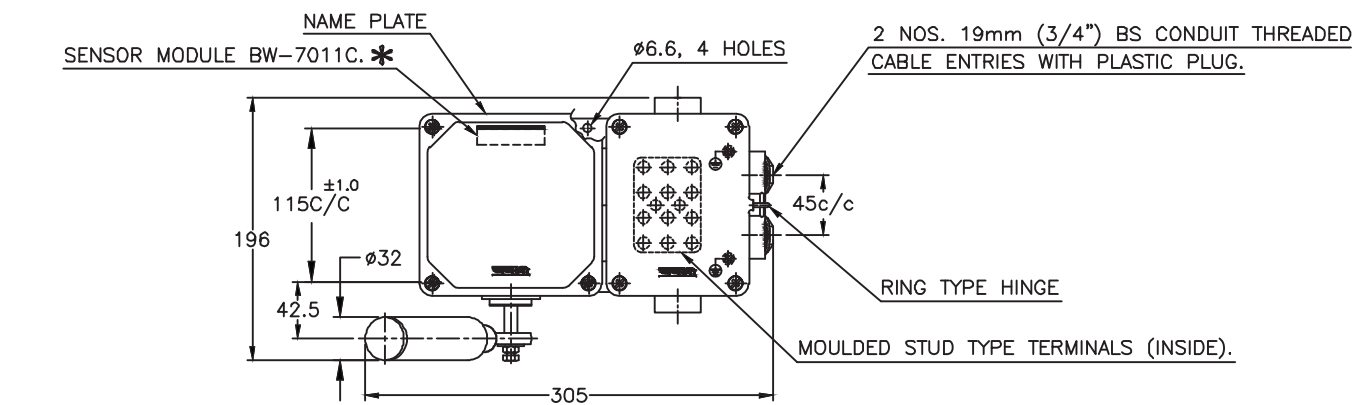
Part No.	Particulars	Qty.	Material	Specification	Remarks
1	Pipe Assembly	1 No.	MS ERW 'Medium Duty'	IS 1239	
2	Cleaner Blade	2 Nos. / Unit	UHMW-PE (Polymer) 15 mm thk.	Hardness 60 to 70 'D' Scale	'N' see Table-2
3	Left hand side Elastomount	1 No.	Square section fabricated pipe, Torsion Arm with Positive configuration bar, Square section pipe and Rubber cords.	IS 2062 for square Section pipe, & EN8 for Spindle, IS 2062 for Torsion Arm & plate and Special Rubber with Cords 65 to 70 Shore Scale 'A'	
4	Right hand side Elastomount	1 No.			
5	Fastener M10 x 40 With washer & lock nut M10	'N1' Nos.	MS Galvanised	IS1364 & 1367	'N1' see Table-2
6	Clamp Plate	2 Nos.	Mild Steel	MS IS 2062	
7	Fixing Frame 'V' Frame	1 No.	Mild Steel	MS IS 2062	
8	Fastener M16 x 40	4 Nos.	MS Galvanised	IS1364 & 1367	
9	Fastener M10 x 30	6 Nos.	MS Galvanised	IS1364 & 1367	
10	Fastener M12 x 40	2 Nos.	MS Galvanised	IS1364 & 1367	
11	Fastener M8 x 25	6 Nos.	MS Galvanised	MS IS 2062	
12	Fastener M8 x 25	8 Nos.	MS Galvanised	MS IS 2062	
13	Connecting Arm	2 Nos.	Mild Steel	MS IS 2062	

These Internal ('V'-Plough) Scrapers are suitable for Uni directional conveyor belts only.

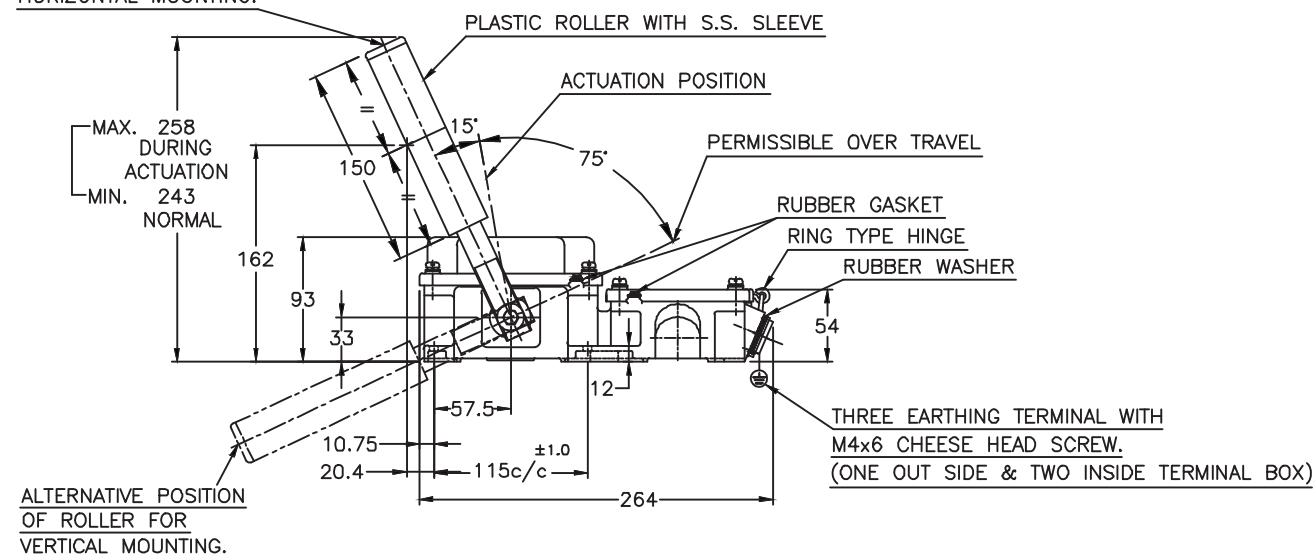
NTPC KAHALGAON STAGE-I 4X210MW

TITLE
GA OF BELT CLEANER FOR MRS
(INTERNAL SCRAPER 'V'-PLOUGH)

DO NOT SCALE
IF IN DOUBT PLEASE ASK



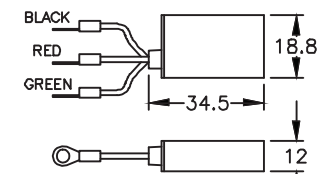
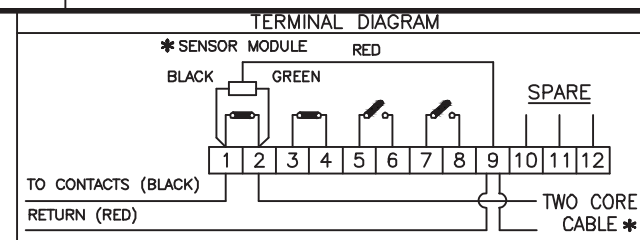
NORMAL POSITION
OF ROLLER FOR
HORIZONTAL MOUNTING.



SALIENT FEATURES AND OPERATING DATA :-

- 1) DIE CAST ALUMINIUM ENCLOSURE WITH IP-66 GRADE OF PROTECTION SUITABLE FOR INDUSTRIAL ENVIRONMENT. DULY EPOXY PAINTED (BY POWDER COATING TECHNIQUE) TO SHADE RAL-5012.
- 2) SELF RESET ACTION.
- 3) ROLLER PROVIDED WITH STAINLESS STEEL SLEEVE.
- 4) SPECIALLY MANUFACTURED NORMAL ACTION LIMIT SWITCH WITH CONTACT COMBINATION 2NO+2NC.
- 5) CONTACT RATING 10 Amps. RESISTIVE AT 240V AC, p.f. 0.3.
- 6) INTERNAL WIRING DONE BY 1mm² PVC COATED COPPER WIRE.
- 7) INCORPORATED SENSOR MODULE BW-7011C.*
- 8) WIDE OVER-TRAVEL OF ROLLER PERMISSIBLE WITHOUT DAMAGING CONTACT ACTUATION MECHANISM.
- 9) BUILT-IN TERMINAL BOX INCORPORATING MOULDED STUD TYPE TERMINALS TO RECEIVE 2.5mm² WIRES.
- 10) 2 NOS. 19mm (3/4") BS CONDUIT THREADED CABLE ENTRIES WITH PLASTIC PLUG (TO ACCEPT SINGLE OR DOUBLE COMPRESSION TYPE CABLE GLANDS).
- 11) MOUNTING POSITION VERTICAL OR HORIZONTAL ONLY.
- 12) ALL COVER FASTNERS OF STAINLESS STEEL.
- 13) ALL GASKETS OF NEOPRENE RUBBER.
- 14) OVERALL DIMNS. SUBJECT TO GENERAL TOLERANCE OF ±5%.

*THE MODULES TO BE CONNECTED TO 'GROUP CONTROL PANEL' THROUGH A PAIR OF WIRES. INDICATION (DISPLAY) WILL BE PROVIDED ON THIS PANEL.



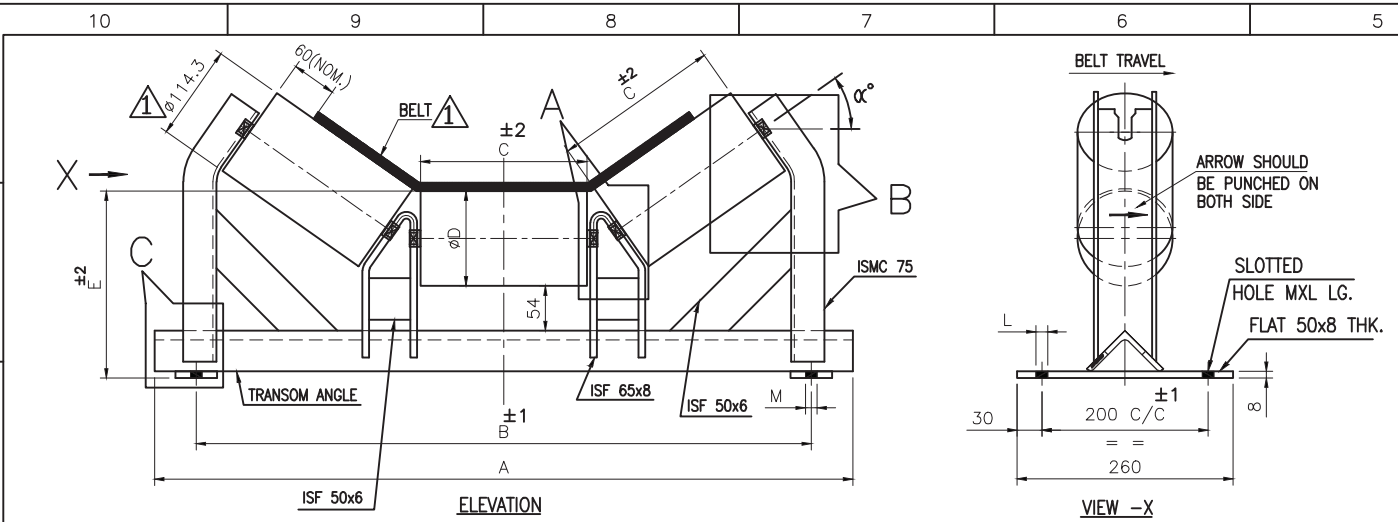
SENSOR MODULE
TYPE:-BW-7011C

SCALE-1:2

NTPC KAHALGAON STAGE-I 4X210MW

MATL.-	N.A.
PROCESS-	N.A.
FINISH-	N.A.
QTY.-	N.A.
SURFACE ROUGHNESS IN MICRONS	▽▽▽ ▽▽ ▽ ▽ ▽ < TO 0.025 0.025 TO 0.05 0.05 TO 0.1 0.1 TO 0.2 0.2 TO 0.4
PERMISSIBLE DEVIATION ON NON TOLERANCED LINEAR MACHINED DIMENSIONS	FROM UP TO 0.5 TO 6 6 TO 30 30 TO 120 120 TO 400 400 TO 1000 1000 TO 2000
PERMISSIBLE DEVIATION	±0.1 ±0.2 ±0.3 ±0.5 ±0.8 ±1.2

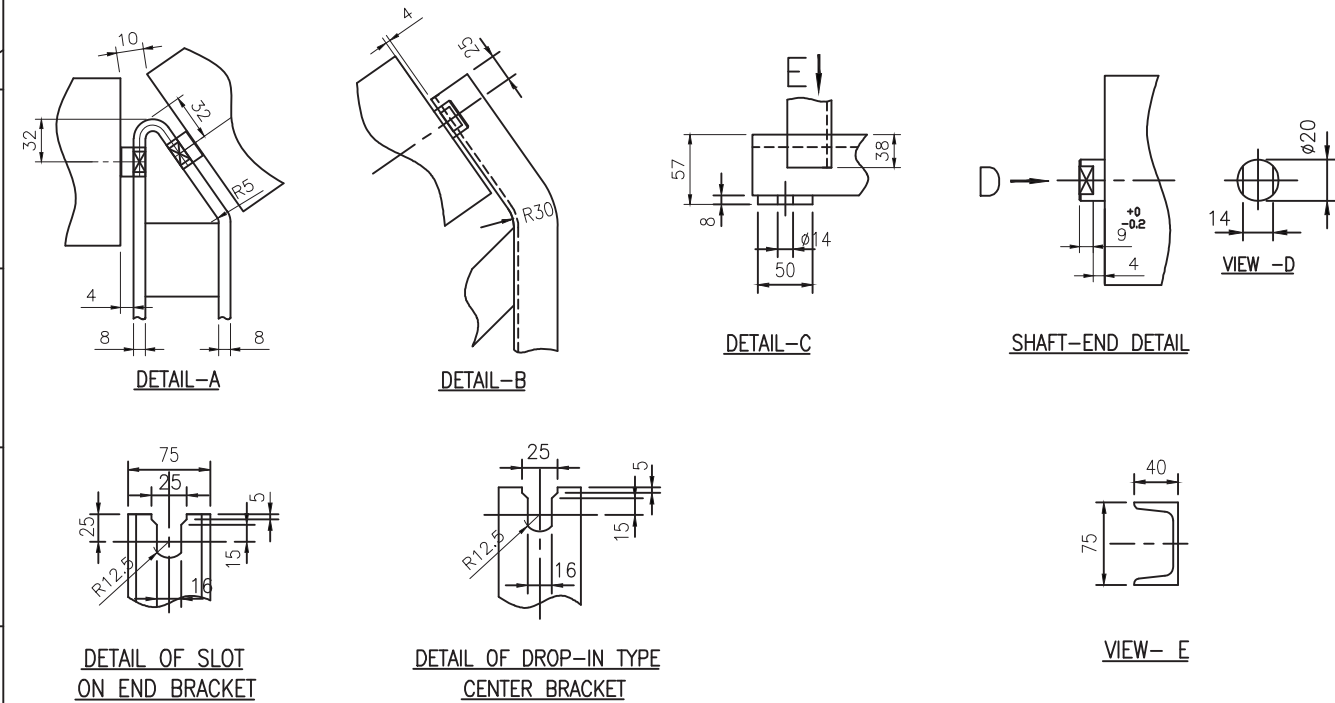
TITLE- **BELT SWAY SWITCH
(ADDRESSABLE TYPE)**



NOTE :-

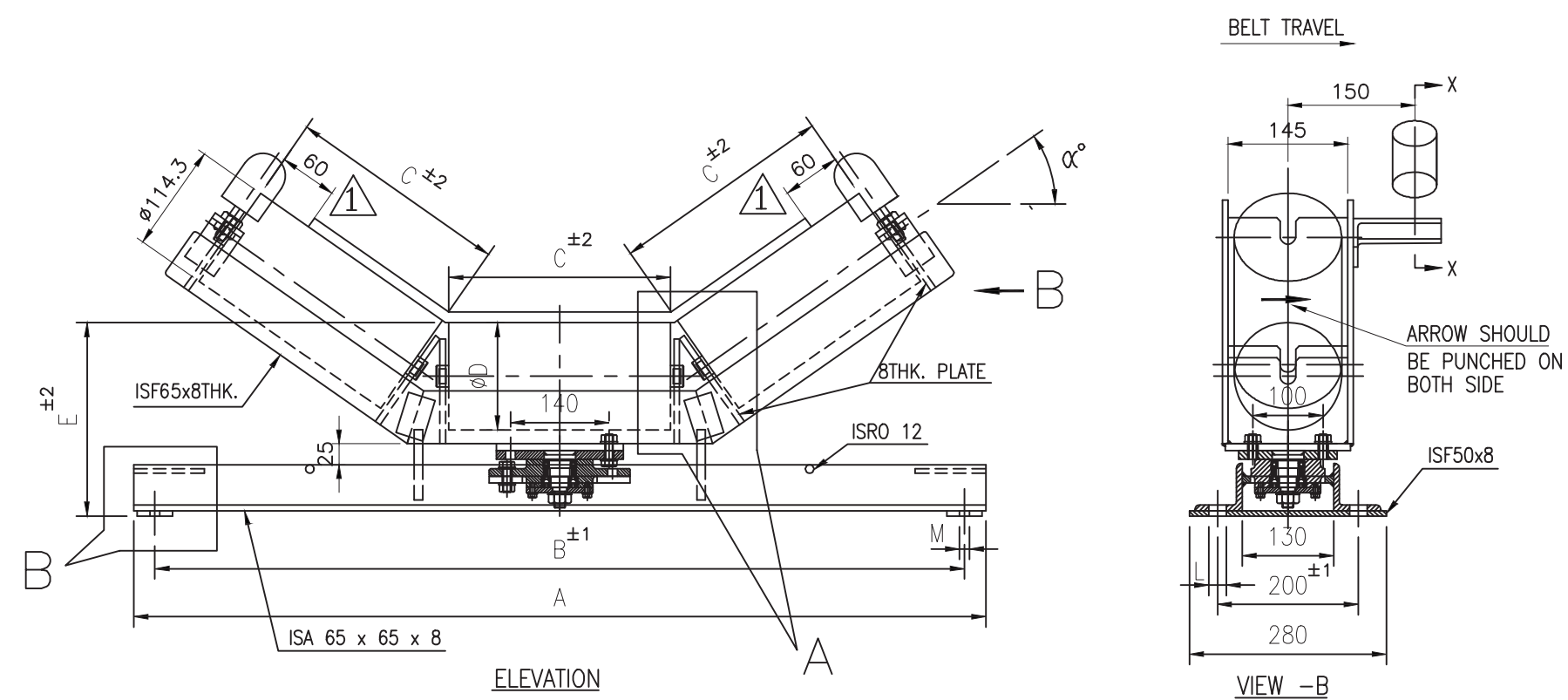
- 1) ALL DIMENSIONS ARE IN mm.
- 2) DESIGN & BEARING LIFE ARE AS PER IS:8598-1987. BEARING LIFE 25,000 HRS. (L-10 LIFE)
- 3) TUBE : ERW, (IS:9295-1983), 4.05 mm Thk.
- 4) BRG.S ARE SEIZE RESISTANT (FAG) & LIFE SEALED LUBRICATED, BRG. NO - 6204
- 5) SHAFT MATERIAL : EN8, BS-970/40C8 BRIGHT BAR AS PER IS:1570 (UNIFORM DIA.)
- 6) IDLERS WILL BE PROVIDED WITH DOUBLE LABYRINTH SEALING.
- 7) IDLERS WILL BE DUST PROOF, WATER PROOF & WEATHER PROOF AGAINST HIGH VELOCITY WATER JET.
- 8) FRICTION FACTOR=0.02.
- 9) MOUNTING DIMENSIONS ARE AS PER IS:8598-1987, TYPE 'B'.
- 10) Ai VALUE OF IDLER FOR MANUFACTURING SHALL BE 1.5 lbs.
- 11) DIRECTION OF BELT TRAVEL SHALL BE MARKED ON THE FRAME BY EMBOSSING/PUNCHING.
- 12) ALL MAKE SHALL BE AS PER NTPC APPROVED VENDOR LIST.

B.W.	DESIG-NATION	A	B	C	øD	E	L	M	α°	GD ² VALUE	BRG. NO.	TRANSOM ANGLE	APPROX. WT. OF			REMARK
													EACH IDLER ROLL	EACH BRACKET	EACH IDLER SET	
500	U	840	740	200	ø114.3	225	25	14	10	0.14kgm ²	6204	65 x 65 x 6	4.1 Kg.	13.50 Kg.	25.80 Kg.	TRANSITION
500	V	840	740	200	ø114.3	225	25	14	20		6204	65 x 65 x 6	4.1 Kg.	14.50 Kg.	26.80 Kg.	TRANSITION
500	W	840	740	200	ø114.3	225	25	14	35		6204	65 x 65 x 6	4.1 Kg.	15.70 Kg.	28.00 Kg.	CARRYING

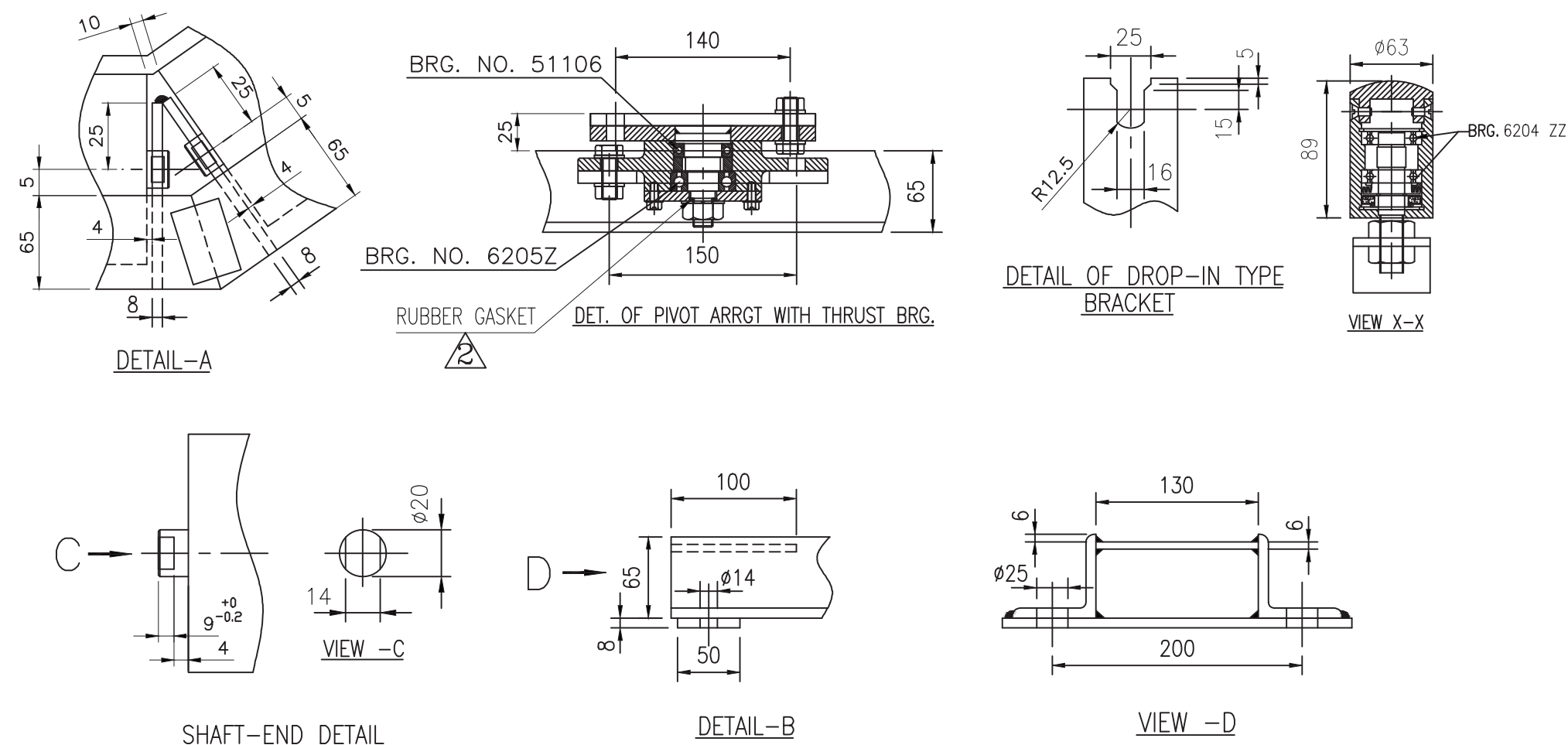


NTPC KAHALGAON STAGE-I
4X210MW

TITLE G.A. & DATA SHEET OF CARRYING IDLER



B.W.	DESIG-NATION	A	B	C	ØD	E	L	M	α°	 GD² VALUE	BRG. NO.	APPROX. WT. OF			REMARK
												EACH IDLER ROLL	EACH BRACKET	EACH IDLER SET	
500	X	790	740	200	Ø114.3	225	25	14	35	0.14kgm²	6204	4.1 Kg.	42.80 Kg.	55.1 Kg.	

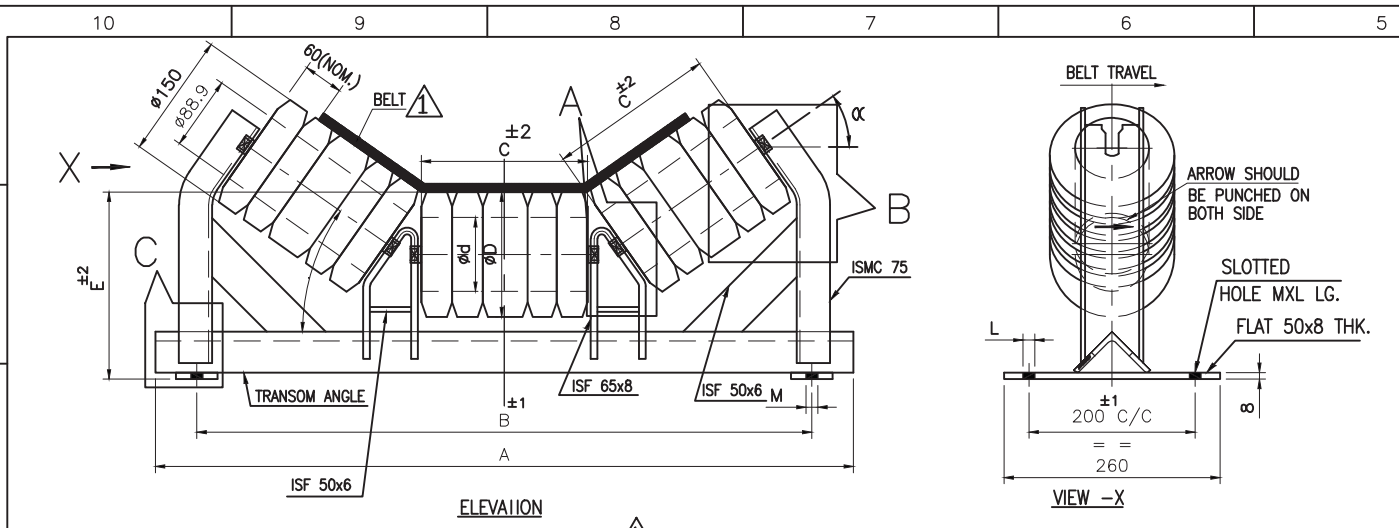


NOTE :-

- 1) ALL DIMENSIONS ARE IN mm.
- 2) DESIGN & BEARING LIFE ARE AS PER IS:8598-1987.
BEARING LIFE 25,000 HRS. (L-10 LIFE) $\triangle 1$
- 3) TUBE : ERW, (IS:9295-1983), 4.05 mm Thk.
- 4) BRG.S ARE SEIZE RESISTANT (FAG) & LIFE SEALED LUBRICATED,
BRG. NO - 6204
- 5) SHAFT MATERIAL : EN8, BS-970/40C8 BRIGHT BAR AS PER IS:1570 (UNIFORM DIA.) $\triangle 1$
- 6) IDLERS WILL BE PROVIDED WITH DOUBLE LABYRINTH SEALING.
- 7) IDLERS WILL BE DUST PROOF, WATER PROOF & WEATHER PROOF AGAINST HIGH VELOCITY WATER JET. $\triangle 1$
- 8) FRICTION FACTOR=0.02.
- 9) MOUNTING DIMENSIONS ARE AS PER IS:8598-1987, TYPE 'B'.
- 10) Ai VALUE OF IDLER FOR MANUFACTURING SHALL BE 1.5 lbs. $\triangle 1$
- 11) DIRECTION OF BELT TRAVEL SHALL BE MARKED ON THE FRAME BY EMBOSsing/PUNCHING. $\triangle 1$
- 12) ALL MAKE SHALL BE AS PER NTPC APPROVED VENDOR LIST. $\triangle 1$

NTPC KAHALGAON STAGE-I
4X210MW

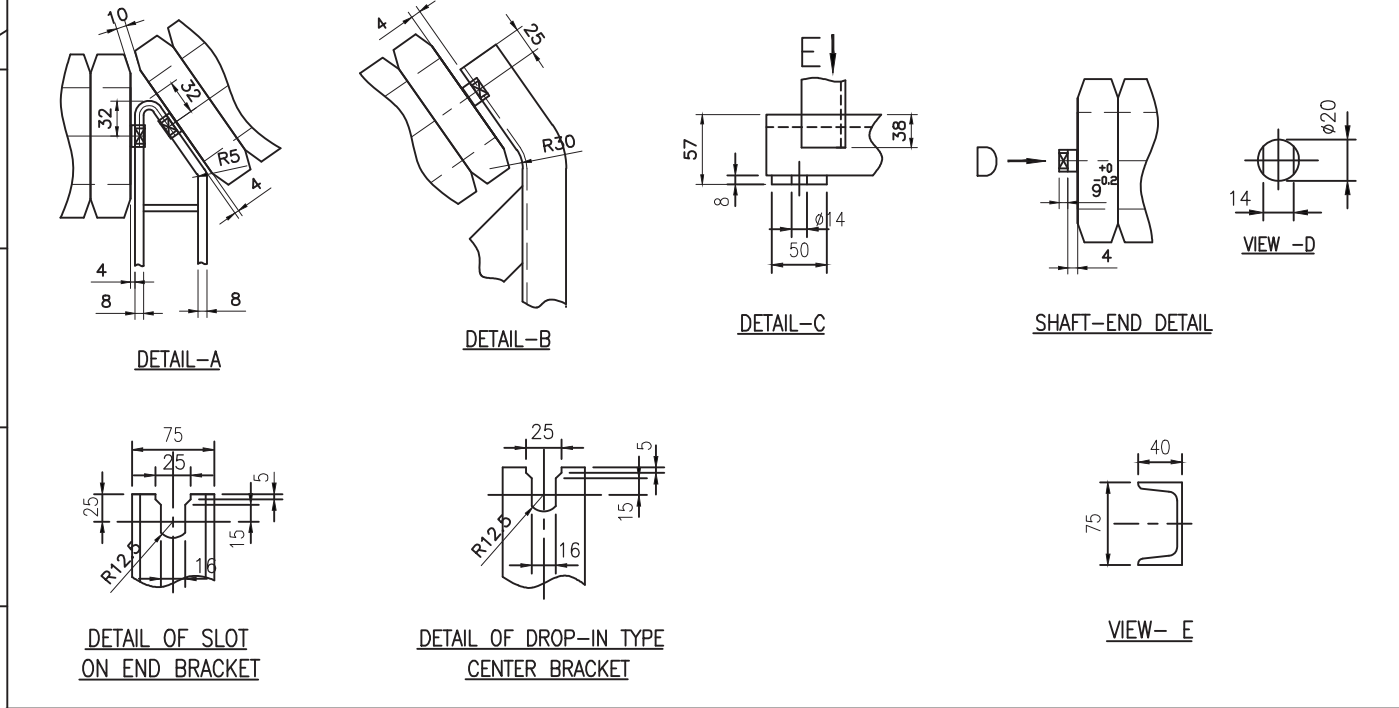
TITLE	G.A. & DATA SHEET OF SELF ALIGNING CARRYING IDLER
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- NOTE :-**
- 1) ALL DIMENSIONS ARE IN mm.
 - 2) DESIGN & BEARING LIFE ARE AS PER IS:8598-1987. BEARING LIFE 25,000 HRS. (L-10 LIFE)
 - 3) TUBE : ERW, (IS:9295-1983), 4.05 mm Thk.
 - 4) BRG.S ARE SEIZE RESISTANT (FAG) & LIFE SEALED LUBRICATED, BRG. NO - 6204
 - 5) SHAFT MATERIAL : EN8, BS-970/40C8 BRIGHT BAR AS PER IS:1570 (UNIFORM DIA.)
 - 6) IDLERS WILL BE PROVIDED WITH DOUBLE LABYRINTH SEALING.
 - 7) IDLERS WILL BE DUST PROOF, WATER PROOF & WEATHER PROOF AGAINST HIGH VELOCITY WATER JET.
 - 8) FRICTION FACTOR=0.02.
 - 9) MOUNTING DIMENSIONS ARE AS PER IS:8598-1987, TYPE 'B'.
 - 10) Ai VALUE OF IDLER FOR MANUFACTURING SHALL BE 1.5 lbs.
 - 11) DIRECTION OF BELT TRAVEL SHALL BE MARKED ON THE FRAME BY EMBOSSING/PUNCHING.
 - 12) ALL MAKE SHALL BE AS PER NTPC APPROVED VENDOR LIST.
 - 13) IMPACT RUBBER RING - NATURAL RUBBER.

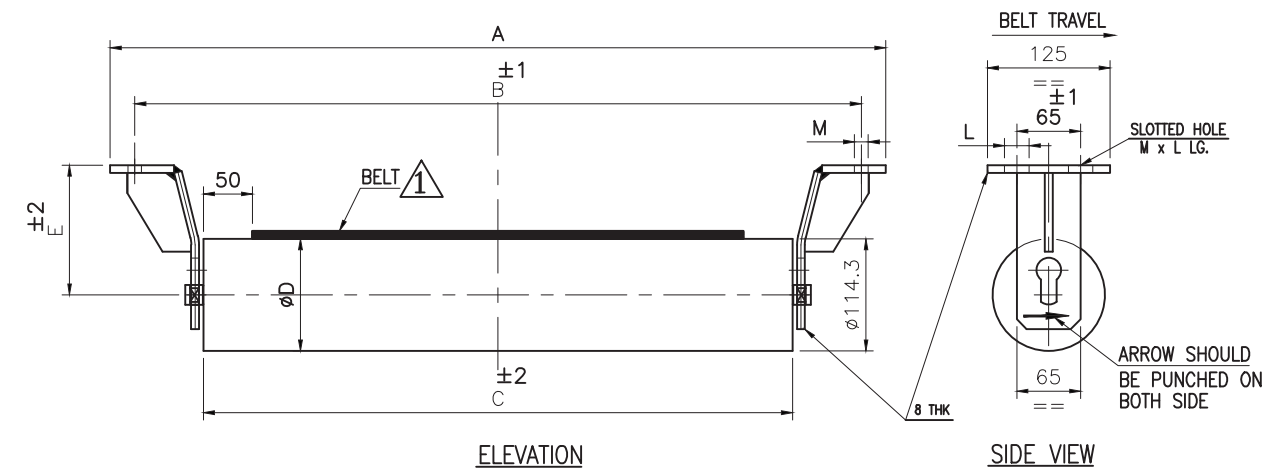
B.W.	DESIG-NATION	A	B	C	ØD	Ød	E	L	M	α°	GD ² VALUE	BRG. NO.	TRANSOM ANGLE	APPROX. WT. OF			REMARK
														EACH IDLER ROLL	EACH BRACKET	EACH IDLER SET	
500	X	840	740	200	Ø150	Ø88.9	225	25	14	35	0.14kgm ²	6204	65 x 65 x 6	4.9 Kg.	15.10 Kg.	29.80 Kg.	

RUBBER PROPERTIES			
Sl No.	Particulars	Method of Check	Value
1	Specific Gravity	Manufacturer Std.	1.5 Max.
2	Hardness	IS 3400 Part-2	60±5° Shore - A Scale
3	Abrasion Loss	DIN 53516	300 mg. Maximum
4	Tensile Strength	IS 3400 Part-1	170 min. kg/sq.cm min.
5	Elongation at Break	IS 3400 Part-1	>350%



**NTPC KAHALGAON STAGE-I
4X210MW**

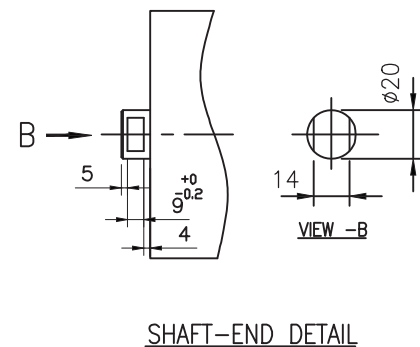
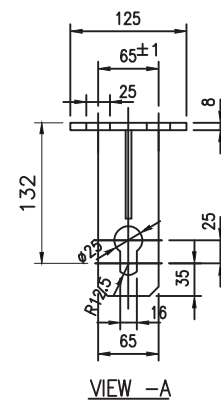
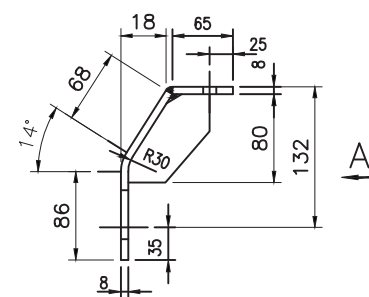
TITLE G.A. & DATA SHEET OF IMPACT IDLER



- NOTE :-

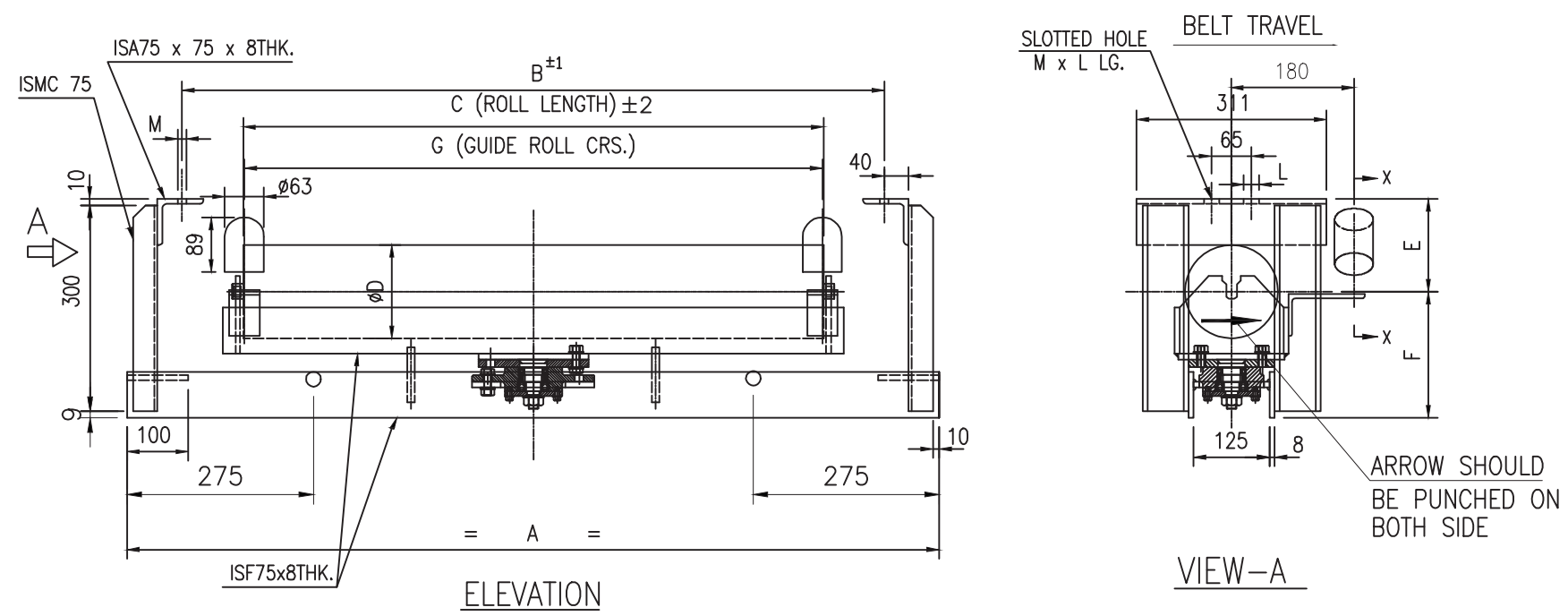
- 1) ALL DIMENSIONS ARE IN mm.
- 2) DESIGN & BEARING LIFE ARE AS PER IS:8598-1987.
BEARING LIFE 25,000 HRS. (L-10 LIFE) 1
- 3) TUBE : ERW, (IS:9295-1983), 4.05 mm Thk.
- 4) BRG.S ARE SEIZE RESISTANT (FAG) & LIFE SEALED LUBRICATED,
BRG. NO - 6204
- 5) SHAFT MATERIAL : EN8, BS-970/40C8 BRIGHT BAR AS PER IS:1570 (UNIFORM DIA.) 1
- 6) IDLERS WILL BE PROVIDED WITH DOUBLE LABYRINTH SEALING.
- 7) IDLERS WILL BE DUST PROOF, WATER PROOF & WEATHER PROOF AGAINST HIGH VELOCITY WATER JET. 1
- 8) FRICTION FACTOR=0.02.
- 9) MOUNTING DIMENSIONS ARE AS PER IS:8598-1987, TYPE 'B'.
- 10) Ai VALUE OF IDLER FOR MANUFACTURING SHALL BE 1.5 lbs. 1
- 11) DIRECTION OF BELT TRAVEL SHALL BE MARKED ON THE FRAME BY EMBOSsing/PUNCHING. 1
- 12) ALL MAKE SHALL BE AS PER NTPC APPROVED VENDOR LIST. 1

S	B.W.	DESIGNATION	A	B	C	ØD	E	L	M	GD ² VALUE	BRG. NO.	APPROX. WT. OF			REMARK
												EACH IDLER ROLL	EACH BRACKET	EACH IDLER SET	
	500	X	790	740	600	Ø114.3	132	25	14	0.073kgm ²	6204	11.25 Kg.	3.0 Kg.	14.25 Kg.	



NTPC KAHALGAON STAGE-I 4X210MW

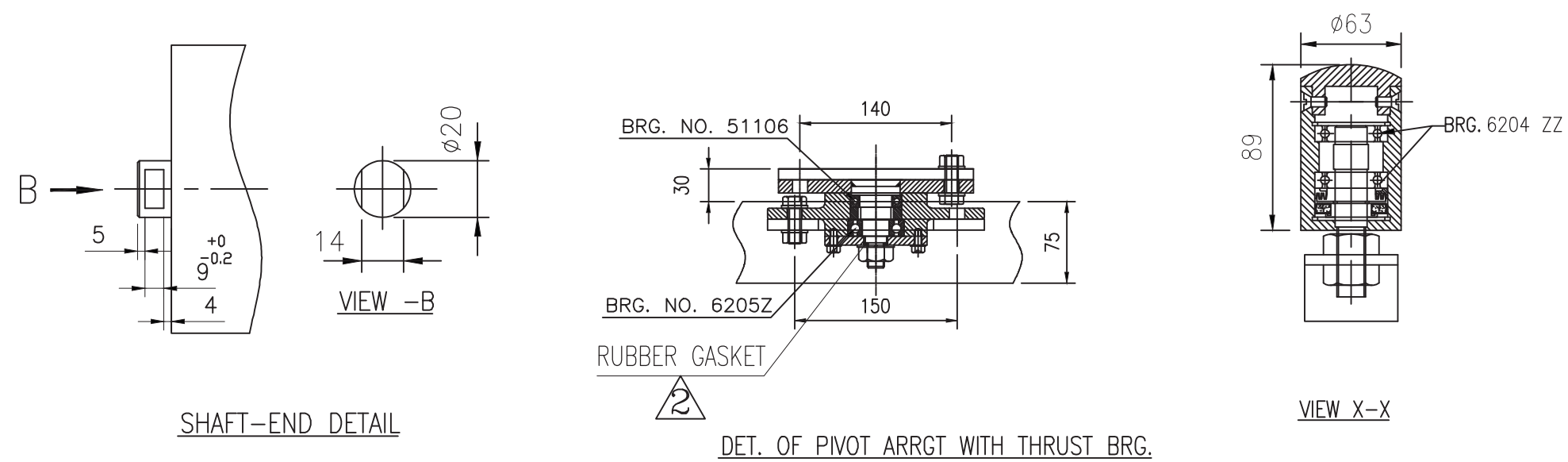
TITLE	G.A. & DATA SHEET OF RETURN IDLER
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NOTE :-

- 1) ALL DIMENSIONS ARE IN mm.
- 2) DESIGN & BEARING LIFE ARE AS PER IS:8598-1987.
BEARING LIFE 25,000 HRS. (L-10 LIFE) $\triangle 1$
- 3) TUBE : ERW, (IS:9295-1983), 4.05 mm Thk.
- 4) BRG.S ARE SEIZE RESISTANT (FAG) & LIFE SEALED LUBRICATED,
BRG. NO - 6204
- 5) SHAFT MATERIAL : EN8, BS-970/40C8 BRIGHT BAR AS PER IS:1570 (UNIFORM DIA.) $\triangle 1$
- 6) IDLERS WILL BE PROVIDED WITH DOUBLE LABYRINTH SEALING.
- 7) IDLERS WILL BE DUST PROOF, WATER PROOF & WEATHER PROOF AGAINST HIGH VELOCITY WATER JET. $\triangle 1$
- 8) FRICTION FACTOR=0.02.
- 9) MOUNTING DIMENSIONS ARE AS PER IS:8598-1987, TYPE 'B'.
- 10) Ai VALUE OF IDLER FOR MANUFACTURING SHALL BE 1.5 lbs. $\triangle 1$
- 11) DIRECTION OF BELT TRAVEL SHALL BE MARKED ON THE FRAME BY EMBOSSING/PUNCHING. $\triangle 1$
- 12) ALL MAKE SHALL BE AS PER NTPC APPROVED VENDOR LIST. $\triangle 1$

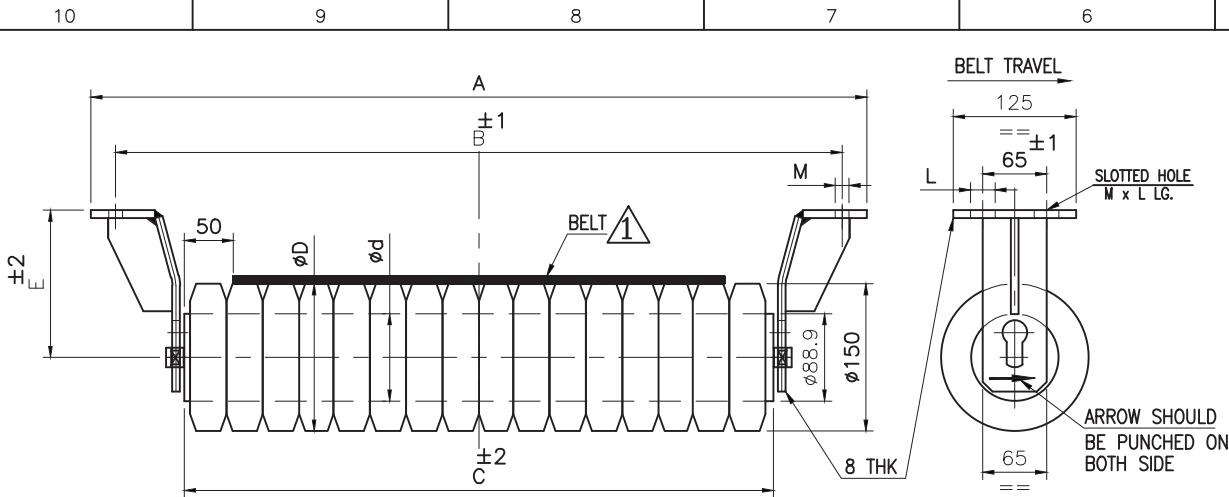
													APPROX. WT. OF			REMARK
B.W.	DESIG- NATION	A	B	C	ØD	E	F	G	L	M	GD ² VALUE	BRG. NO.	EACH IDLER ROLL	EACH BRACKET	EACH IDLER SET	
500	X	930	740	600	Ø114.3	132	187	594	25	14	0.073kgm ²	6204	11.25 Kg.	43.11 Kg.	54.36 Kg.	



NTPC KAHALGAON STAGE-I
4X210MW

TITLE	G.A. & DATA SHEET OF SELF ALIGNING RETURN IDLER
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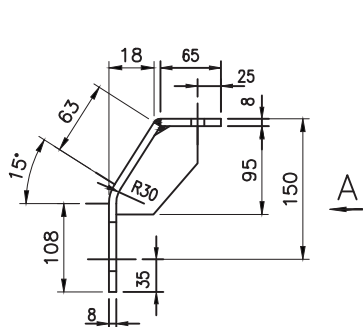
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



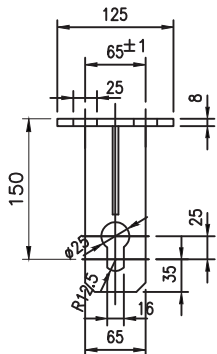
ELEVATION

SIDE VIEW

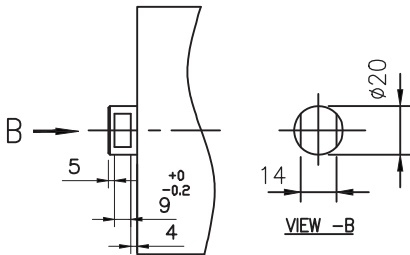
B.W.	DESIG-NATION	A	B	C	øD	ød	E	L	M	GD ² VALUE	BRG. NO.	APPROX. WT. OF			REMARK
												EACH IDLER ROLL	EACH BRACKET	EACH IDLER SET	
500	X	790	740	600	ø150	ø88.9	150	25	14	0.073kgm ²	6204	27.11 Kg.	3.2 Kg.	30.31 Kg.	



DETAIL OF DROP-IN TYPE
BRACKET FOR 500 BW



VIEW -A



SHAFT-END DETAIL

NOTE :-

- 1) ALL DIMENSIONS ARE IN mm.
- 2) DESIGN & BEARING LIFE ARE AS PER IS:8598-1987. BEARING LIFE 25,000 HRS. (L-10 LIFE)
- 3) TUBE : ERW, (IS:9295-1983), 4.05 mm Thk.
- 4) BRG.S ARE SEIZE RESISTANT (FAG) & LIFE SEALED LUBRICATED, BRG. NO - 6204
- 5) SHAFT MATERIAL : EN8, BS-970/40C8 BRIGHT BAR AS PER IS:1570 (UNIFORM DIA.)
- 6) IDLERS WILL BE PROVIDED WITH DOUBLE LABYRINTH SEALING.
- 7) IDLERS WILL BE DUST PROOF, WATER PROOF & WEATHER PROOF AGAINST HIGH VELOCITY WATER JET.
- 8) FRICTION FACTOR=0.02.
- 9) MOUNTING DIMENSIONS ARE AS PER IS:8598-1987, TYPE 'B'.
- 10) Ai VALUE OF IDLER FOR MANUFACTURING SHALL BE 1.5 lbs.
- 11) DIRECTION OF BELT TRAVEL SHALL BE MARKED ON THE FRAME BY EMBOSSING/PUNCHING.
- 12) ALL MAKE SHALL BE AS PER NTPC APPROVED VENDOR LIST.
- 13) IMPACT RUBBER RING - NATURAL RUBBER.

RUBBER PROPERTIES			
Sl No.	Particulars	Method of Check	Value
1	Specific Gravity	Manufacturer Std.	1.5 gms/cc Max.
2	Hardness	IS 3400 Part-2	60±5' Shore - A Scale
3	Abrasion Loss	DIN 53516	300 mg. Maximum
4	Tensile Strength	IS 3400 Part-1	170 min. kg/sq.cm
5	Elongation at Break	IS 3400 Part-1	>350%

NTPC KAHALGAON STAGE-I
4X210MW

TITLE
G.A. & DATA SHEET OF SELF CLEANING
RETURN IDLER

		Manufacturing Quality Plan for HR Grade Belt				Project :		NTPC NORTH KARANPURA						
		ITEM:		CONVEYOR BELT NN.		NTPC QP NO:		4410-162-QVM-Q-093						
		CONVEYOR BELT NN 315/3, COVER 5/2, HR		BHEL QP NO:		IS-4-WS-682-300-M093 REV.No.-01		Package :						
		SUB-SYSTEM :		ASH HANDLING SYSTEM		Manufacturer QP NO: QAP/17-18/NTPC/20 REV.No.-A1		Contract No :						
		QAP No- SIPL/QAP/21		Date -12/10/17		Page: of....		1 of 6						
								Main Supplier :						
								BHEL						
Sr. No.	Component & Operation	Characteristics	Class	Type of Check	Quantum of Check		Reference Documents	Acceptance Norms	Format of Record	Agency 10				
1	2	3	4	5	M	C/N	7	8	9	D *	M	C	N	
A)		RAW MATERIAL :												
A1	Raw Rubber	a) Volatile matter b) Ash content c) Mooney Viscosity d) Dirt Content e) Plasticity Retention Index	Critical	Physical Chemical Physical Physical Physico-Chemical	Random	Sample per lot	IS:4588/1986 & IS:3660/1985 / SIPL standard #	IS:4588/1986 & IS:3660/1985 / SIPL standard #	Raw Material Analysis Sheet		P	V	V	
A2	Zinc Oxide	a) Moisture Content b) Ignition Test c) Purity d) Particle Size e) Bulk Density f) Acid Insolubility	Critical	Physical Chemical Chemical Physical Physical Chemical	Random	Sample per lot	IS : 3399 / 1993/SIPL standard#	IS : 3399 / 1993/SIPL standard#	Raw Material Analysis Sheet		P	V	V	
A3	Stearic Acid	a) Ash Content b) Melting Point c) Acid Value	Critical	Chemical Physical Physico-Chemical	Random	Sample per lot	IS : 1675/1971	IS : 1675/1971	Raw Material Analysis Sheet		P	V	V	
A4	Carbon Black	a) Moisture Content b) Ash Content c) Iodine Adsorption N d) DBP Absorption e) pH		Physical Chemical Physico-Chemical Physico-Chemical Physico-Chemical	Random	Sample per lot	IS : 7497/1985 and 7498/1985 & SIPL standard#	IS : 7497/1985 and 7498/1985 & SIPL standard#	Raw Material Analysis Sheet		P	V	V	
A5	White Filler	a) Moisture Content b) Ignition Test c) Insolubility d) Particle Size e) pH		Physical Chemical Chemical Physical Physico-Chemical	Random	Sample per lot	IS : 1685/1975/ SIPL Standard	IS : 1685/1975/ SIPL Standard	Raw Material Analysis Sheet		P	V	V	
# SIPL standard : In some cases the values are not defined by standard's in that case SIPL standard values will be referred.														
			* RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, C/NP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"				 एनटीपीसी NTPC							
							For NTPC		DOC. NO.					
							use		REV..... CAT.....		REVIEWED BY		APPROVED BY APPROVAL SEAL	

				Manufacturing Quality Plan FOR HR Grade Belt				Project :		NTPC NORTH KARANPURA			
								Package :		EPC ASH HANDLING PLANT			
				ITEM: CONVEYOR BELT NN,		NTPC QP NO: 4410-162-QVM-Q-093							
						BHEL QP NO: IS-4-WS-682-300-M093 REV.No.-01							
				SUB-SYSTEM : ASH HANDLING SYSTEM		Manufacturer QP NO: QAP/17-18/NTPC/20 REV.No.-A1		Contract No :		CS-4410-001-2-SC-COA-6128 DTD.05-03-2014			
				QAP NO-SIPL/QAP/21 Date -12/10/177		Page: of.... 2 of 6		Main Supplier :		BHEL			
Sr. No.	Component & Operation	Characteristics	Class	Type of Check	Quantum of Check 6		Reference Documents	Acceptance Norms	Format of Record		Agency 10		
1	2	3	4	5	M	C/N	7	8	9	D*	M	C	N
A6	Protective Agent	a) Moisture Content	Critical	Physical	Random	Sample per lot	IS-14293: 2001/SIPL Standard#	IS-14293: 2001/SIPL Standard#	Raw Material Analysis Sheet		P	V	V
		b) Ash Content		Chemical									
		c) Softening Point / Melting Point		Physical									
		d) Solubility		Chemical									
A7	Rubber Chemicals/ Accelerators	a) Moisture Content	Critical	Physical	Random	Sample per lot	IS : 7069-2001	IS : 7069-2001	Raw Material Analysis Sheet		P	V	V
		b) Ash Content		Chemical									
		c) Melting Point		Physical									
		d) Solubility		Physical									
A8	Sulphur	a) Moisture Content	Critical	Physical	Random	Sample per lot	IS : 8851 - 1994 /SIPL Standard#	IS : 8851 - 1994 /SIPL Standard#	Raw Material Analysis Sheet		P	V	V
		b) Ash Content		Chemical									
		c) Purity (sulphur content)		Chemical									
A9	Plastisizer	a) Relative density	Critical	Physical	Random	Sample per lot	SIPL Standard	SIPL Standard	Raw Material Analysis Sheet		P	V	V
		b) Aniline point		Chemical									
		c) Viscosity		Physical									
		d) Volatile Matter		Chemical									
A10	BELTING FABRICS (N-N/E-P)	a) Breaking Strength (warp & weft)	Critical	Physical	Each roll	SIPL Standard	SIPL Standard	Textile Laboratory Testing Report	✓	P	V	V	
		b) Elongation at break (warp & weft)											
		c) Elongation at ref. load (Warp & Weft)											
		d) Adhesion											
		e) Shrinkage (warp & weft)											
		g) No. of threads (warp & weft)											
		h) Thickness											
		i) Width											
j) Weight (GSM)													
# SIPL standard : in some cases the values are not defined by standard in that case SIPL standard values will be referred.													
				* RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"									
				For NTPC		DOC. NO.							
				use		REV..... CAT.....		REVIEWED BY		APPROVED BY		APPROVAL SEAL	

			Manufacturing Quality Plan for HR Grade Belt						Project :		NTPC NORTH KARANPURA					
									Package :		EPC ASH HANDLING PLANT					
			ITEM:		CONVEYOR BELT NN,		NTPC QP NO:		4410-162-QVM-Q-093							
							BHEL QP NO:		IS-4-WS-682-300-M093 REV.No.-01							
			SUB-SYSTEM :		ASH HANDLING SYSTEM		Manufacturer QP NO:QAP/17-18/NTPC/20 REV.No.-A1		Contract No :		CS-4410-001-2-SC-COA-6128 DTD.05-03-2014					
			QAP NO- SIPL/QAP/21		Date -12/10/17		Page: of....		3 of 6		Main Supplier :					
											BHEL					
Sr. No.	Component & Operation	Characteristics	Class	Type of Check	Quantum of Check 6		Reference Documents	Acceptance Norms	Format of Record	D *	Agency 10					
1	2	3	4	5	M	C/N	7	8	9		M	C	N			
A11	RUBBER COMPOUND	a) Rheometric study	Critical	Physical	100%		SIPL Standard	SIPL Standard	SIPL Mill Contol Sheet	✓	P	V	V			
		b) Specific gravity			10%											
		c) Hardness			10%											
		d) Tensile strength			10%											
		e) Elongation at break			10%											
B)		IN-PROCESS :														
B1	Fabric Inspection	a) Length	Major	Visual	Each roll		SIPL Standard	SIPL Standard	Production / Process Control Log Sheet	✓	P	V	V			
		b) Width														
		c) Weaving defects														
		d) Thickness														
B2	Rubber Coating of Fabrics	a) Ply thickness	Critical	Physical	Each Ply		SIPL Standard	SIPL Standard	Production / Process Control Log Sheet	✓	P	V	V			
		b) Ply Width														
		c) Ply Length														
B3	Rubber Cover Sheeting / Calendering	a) Thickness	Major	Physical	Each Sheet		SIPL Standard	SIPL Standard	Production / Process Control Log Sheet	✓	P	V	V			
		b) Width														
		c) Length														
		d) Roll Temperature														
		e) Skim Coating														
		f) Rubber cover for sheeting														
B4	Building	a) Thickness	Critical	Physical	Each belt		IS 1891 Part-1/ SIPL Standard	IS 1891 Part-1/ SIPL Standard	Production / Process Control Log Sheet	✓	P	V	V			
		b) Width														
		c) Length														
		d) Carcass Thickness														
		e) Cover Thickness														
# SIPL standard : In some cases the values are not defined by standard's in that case SIPL standard values will be referred.																
			* RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"													
							For NTPC		DOC. NO.							
							use		REV..... CAT.....		REVIEWED BY		APPROVED BY		APPROVAL SEAL	

LONGITUDINAL JOINT IN WIDTH SHALL NOT BE ACCEPTABLE.

Sr. No.		Component & Operation		Characteristics		Class		Type of Check		Quantum of Check		Reference Documents		Acceptance Norms		Format of Record		Agency		
																		10		
																		10		
																		10		
1		2		3		4		5		6		7		8		9		10		
B5	Moulding (Curing)	a) Curing temperature		Critical	Physical	Each belt		SIPL Standard	SIPL Standard	Production / Process Control Log Sheet		P	V	V						
		b) Curing Time																		
		c) Hydraulic Pressure																		
		d) Belt thickness																		
		e) Width																		
		f) Length																		
B6	Dressing & Sizing	a) Finish Edge (Mould /cut) b)		Major	Visual	100%		SIPL Standard	NTPC Tech. Specification	Production / Process Control Log Sheet		P	V							
B7	Cured Belt Inspection	a) Length		Critical	Visual	Each Belt		IS : 1891 Specification	IS : 1891 Specification	Production Log Sheet Process Control Inspection Forms	✓	P	V	V						
		b) Width																		
		c) Thickness																		
		d) Mapping of Surface defects with type*																		
		e) Repair with Hot Vulcanising method																		
# SIPL standard : In some cases the values are not defined by standard's in that case SIPL standard values will be referred.																				
* RECORDS, IDENTIFIED WITH "TICK" (V) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W" 																				
For NTPC DOC. NO.																				
usc REV..... CAT..... REVIEWED BY APPROVED BY APPROVAL SEAL																				

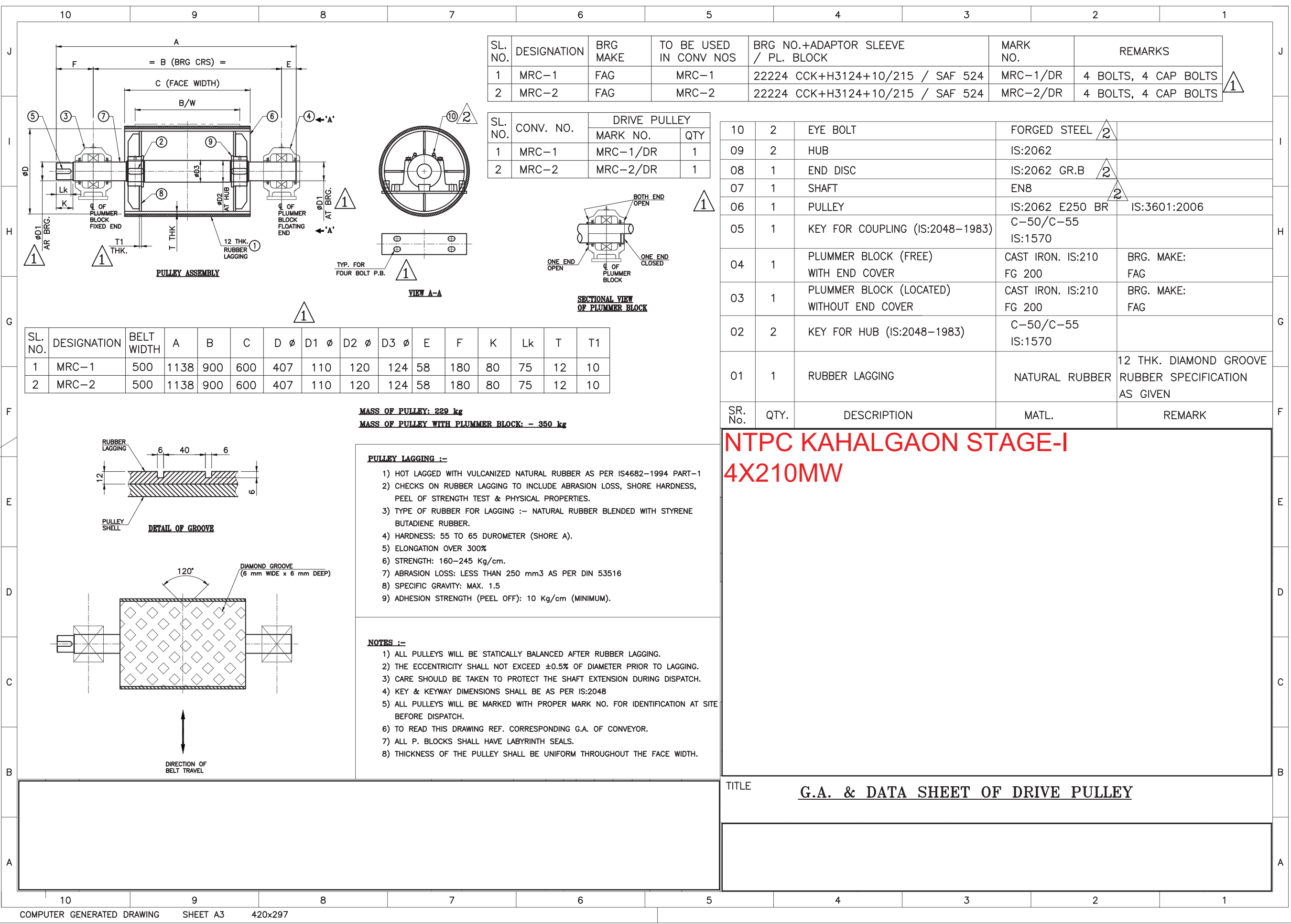
		Manufacturing Quality Plan for HR Grade Belt								Project :		NTPC NORTH KARANPURA						
										Package :		EPC ASH HANDLING PLANT						
		ITEM:		CONVEYOR BELT NN,		NTPC QP NO:		4410-162-QVM-Q-093		Contract No :		CS-4410-001-2-SC-COA-6128						
		SUB-SYSTEM :		ASH HANDLING SYSTEM		BHEL QP NO:		IS-4-WS-682-300-M093 REV.No.-01		Manufacturer QP NO:QAP/17-18/NTPC/20 REV.No.-A1		DTD.05-03-2014						
		QAP NO- SIPL/QAP/21		Date -12/10/172/10/17		Page: of....		5 of 6		Main Supplier :		BHEL						
Sr. No.	Component & Operation	Characteristics	Class	Type of Check	Quantum of Check 6		Reference Documents	Acceptance Norms	Format of Record	Agency 10								
1	2	3	4	5	M	C/N	7	8	9	D *	M	C	N					
C) FINAL INSPECTION OF FINISHED BELT:																		
C1	Dimension	a) surface defects & belt repair	Critical	Physical	100%	sample as per IS:1891 (part-1)	IS:1891 Part-1 1994	IS:1891 Part-1 1994 / NTPC Approved Data sheet	SIPL Laboratory Test report	✓	P	W	W					
		b) Length																
		c) Width																
		d) No. of Plies																
		e) Thickness of Full Belt																
		f) Top & Bottom Cover thickness																
		g) Carcass Thickness																
		h) Edge (Mould/Cut)																
C2	Full thickness (Strength)	a) Breaking Strength (Warp & Weft)	Critical	Physical	100%	sample as per IS:1891 (part-1)	IS:1891 Part-1 1994	IS:1891 Part-1 1994 / NTPC Approved Data sheet	SIPL Laboratory Test report	✓	P	W	W					
		b) Elongation at Ref. Load (Warp)																
		c) Elongation at Break (Warp & Weft)																
		d) Full belt Breaking Strength																
C3	Adhesion (Before and After Ageing)	a) Top Cover to Ply	Critical	Physical	100%	sample as per IS:1891 (part-1)	IS:1891 Part-1 1994 & IS 1891 Part-II 1993	IS:1891 Part-1 1994 & IS 1891 Part-II 1993 / NTPC Approved Data sheet	SIPL Laboratory Test report	✓	P	W	W					
		b) Ply to Ply																
		c) Ply to Bottom Cover																
C4	Troughability	a) Troughability	Critical	Physical	100%		IS:1891 Part-1 1994	IS:1891 Part-1 1994	SIPL Laboratory Test report	✓	P	W	W					
# SIPL standard : In some cases the values are not defined by standard's in that case SIPL standard values will be referred.																		
Signature			* RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE. CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"				 For NTPC use		DOC. NO.		REV..... CAT.....		REVIEWED BY		APPROVED BY		APPROVAL SEAL	

SAMPLE SHALL BE TAKEN FROM ANYWHERE OF BELT LENGTH.

LONGITUDINAL JOINT IN WIDTH SHALL NOT BE ACCEPTABLE.

		Manufacturing Quality Plan FOR HR Grade Belt						Project :		NTPC NORTH KARANPURA					
		ITEM: CONVEYOR BELT NN		NTPC QP NO: 4410-162-QVM-Q-093		Package :		EPC ASH HANDLING PLANT							
		SUB-SYSTEM : ASH HANDLING SYSTEM		BHEL QP NO: IS-4-WS-682-300-M093 REV.No.-01		Contract No :		CS-4410-001-2-SC-COA-6128							
		QAP No- SIPL/QAP/21 Date -12/10/17		Manufacturer QP NO: QAP/17-18/NTPC/20 REV.No.-A1		Page: of....		6 of 6		Main Supplier : BHEL					
Sr. No.	Component & Operation	Characteristics	Class	Type of Check	Quantum of Check 6		Reference Documents	Acceptance Norms	Format of Record		Agency 10				
1	2	3	4	5	M	C/N	7	8	9	D*	M	C	N		
CS	Cover Rubber Properties	a) Cover Tensile Strength (Before & After ageing)	Critical	Physical	100%	sample as per IS:1891 (part-1)	IS:1891-1993 (Part-II)	NTPC Approved Data sheet	SIPL Laboratory Test report	✓	P	W	W		
		b) Elongation at Break (Before & After ageing)													
		d) Shore-Hardness BEFORE & AFTER AGEING													
		e) Ageing test													
		f) Abrasion Loss													
	g) Angular Tear Strength				ASTM D-624										
D)	PREDISPATCH INSPECTION	a) Packing & Marking	Major	Visual	Each roll	sample as per IS:1891 (part-1)	SIPL Standard	SIPL Standard	Finished Product Department Record/ NTPC Spec.		p	V	-		
Repair Norms i) Patch Repair: Localized rectification of surface blemishes/defects in cured belt by using rubber compound similar to the mother compound up to top carcass may be done followed by vulcanization ii) Buffing/Dough: Entrapment of foreign matters may be buffed suitably In case of buffing, Depth of buffing should not exceed the difference in thickness of the cover rubbers (as measured in test sample for the purpose of acceptance of cover rubber thickness) and the specified minimum cover thickness, where the indentation depth is more, the same may be filled with rubber compound followed by vulcanization locally. The repairs of size up to and including (25 x 25 mm) (625 sq mm) shall not be considered as repair. iii) Filling: a) Maximum number of repairs as per (i) as indicated above shall be limited to 5 per 100 meters of belt length (rounded up to higher unit) b) In case of Patch Repair as per (i) indicated above, the maximum area of each repair shall be limited to (W/5 X W/5) square (W: belt width). ((WITH ONE DIMENSION MAX. LIMITED TO W/5 MAX. WHERE W IS WIDTH OF BELT)). iv) Total Number of repairs as per i) and ii) shall not exceed more than 10 per 100 metre length (rounded upto the next higher unit)															
				*RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE. CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"											
				For NTPC		DOC. NO.									
				use		REV..... CAT.....		REVIEWED BY		APPROVED BY		APPROVAL SEAL			

**** Aging test (Temperature and Duration) shall be as per latest IS 1891 Part 2 1988: Reaffirmed 2014. Datasheet to be revised accordingly before offering the belt for NTPC Inspection**



SL. NO.	DESIGNATION	BRG MAKE	TO BE USED IN CONV NOS	BRG NO.+ADAPTOR SLEEVE / PL. BLOCK	MARK NO.	REMARKS
1	MRC-1	FAG	MRC-1	22224 CCK+H3124+10/215 / SAF 524	MRC-1/DR	4 BOLTS, 4 CAP BOLTS
2	MRC-2	FAG	MRC-2	22224 CCK+H3124+10/215 / SAF 524	MRC-2/DR	4 BOLTS, 4 CAP BOLTS

SL. NO.	CONV. NO.	DRIVE PULLEY	
		MARK NO.	QTY
1	MRC-1	MRC-1/DR	1
2	MRC-2	MRC-2/DR	1

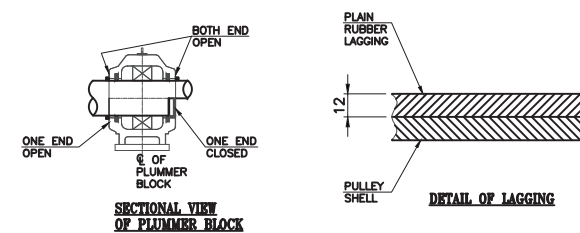
10	2	EYE BOLT	FORGED STEEL	
09	2	HUB	IS:2062	
08	1	END DISC	IS:2062 GR.B	
07	1	SHAFT	EN8	
06	1	PULLEY	IS:2062 E250 BR	IS:3601:2006
05	1	KEY FOR COUPLING (IS:2048-1983)	C-50/C-55 IS:1570	
04	1	PLUMMER BLOCK (FREE) WITH END COVER	CAST IRON. IS:210 FG 200	BRG. MAKE: FAG
03	1	PLUMMER BLOCK (LOCATED) WITHOUT END COVER	CAST IRON. IS:210 FG 200	BRG. MAKE: FAG
02	2	KEY FOR HUB (IS:2048-1983)	C-50/C-55 IS:1570	
01	1	RUBBER LAGGING	NATURAL RUBBER	12 THK. DIAMOND GROOVE RUBBER SPECIFICATION AS GIVEN
SR. No.	QTY.	DESCRIPTION	MATL.	REMARK

NTPC KAHALGAON STAGE-I
4X210MW

- PULLEY LAGGING :-**
- 1) HOT LAGGED WITH VULCANIZED NATURAL RUBBER AS PER IS4682-1994 PART-1
 - 2) CHECKS ON RUBBER LAGGING TO INCLUDE ABRASION LOSS, SHORE HARDNESS, PEEL OF STRENGTH TEST & PHYSICAL PROPERTIES.
 - 3) TYPE OF RUBBER FOR LAGGING :- NATURAL RUBBER BLENDED WITH STYRENE BUTADIENE RUBBER.
 - 4) HARDNESS: 55 TO 65 DUROMETER (SHORE A).
 - 5) ELONGATION OVER 300%
 - 6) STRENGTH: 160-245 Kg/cm.
 - 7) ABRASION LOSS: LESS THAN 250 mm³ AS PER DIN 53516
 - 8) SPECIFIC GRAVITY: MAX. 1.5
 - 9) ADHESION STRENGTH (PEEL OFF): 10 Kg/cm (MINIMUM).

- NOTES :-**
- 1) ALL PULLEYS WILL BE STATICALLY BALANCED AFTER RUBBER LAGGING.
 - 2) THE ECCENTRICITY SHALL NOT EXCEED ±0.5% OF DIAMETER PRIOR TO LAGGING.
 - 3) CARE SHOULD BE TAKEN TO PROTECT THE SHAFT EXTENSION DURING DISPATCH.
 - 4) KEY & KEYWAY DIMENSIONS SHALL BE AS PER IS:2048
 - 5) ALL PULLEYS WILL BE MARKED WITH PROPER MARK NO. FOR IDENTIFICATION AT SITE BEFORE DISPATCH.
 - 6) TO READ THIS DRAWING REF. CORRESPONDING G.A. OF CONVEYOR.
 - 7) ALL P. BLOCKS SHALL HAVE LABYRINTH SEALS.
 - 8) THICKNESS OF THE PULLEY SHALL BE UNIFORM THROUGHOUT THE FACE WIDTH.

TITLE G.A. & DATA SHEET OF DRIVE PULLEY



NTPC KAHALGAON STAGE-I

4X210MW

SL. NO.	DESIGNATION	BRG MAKE	TO BE USED IN CONV NOS	BRG NO.+ADAPTOR SLEEVE / PL. BLOCK	MARK NO.	REMARKS
1	MRC-1	FAG	MRC-1	22220 CCK+H320+10/180 / SAF 520	MRC-1/SB	4 BOLTS, 4 CAP BOLTS
2	MRC-1	FAG	MRC-1	22222 CCK+H322+10/200 / SAF 522	MRC-1/TL	4 BOLTS, 4 CAP BOLTS
3	MRC-2	FAG	MRC-2	22220 CCK+H320+10/180 / SAF 520	MRC-2/SB	4 BOLTS, 4 CAP BOLTS
4	MRC-2	FAG	MRC-2	22220 CCK+H320+10/180 / SAF 520	MRC-2/BD	4 BOLTS, 4 CAP BOLTS
5	MRC-2	FAG	MRC-2	22222 CCK+H322+10/200 / SAF 522	MRC-2/TL	4 BOLTS, 4 CAP BOLTS

PULLEY LAGGING :-

- 1) HOT LAGGED WITH VULCANIZED NATURAL RUBBER AS PER IS4682-1994 PART-1
- 2) CHECKS ON RUBBER LAGGING TO INCLUDE ABRASION LOSS, SHORE HARDNESS, PEEL OF STRENGTH TEST & PHYSICAL PROPERTIES.
- 3) TYPE OF RUBBER FOR LAGGING :- NATURAL RUBBER BLENDED WITH STYRENE BUTADIENE RUBBER.
- 4) HARDNESS: 55 TO 65 DUROMETER (SHORE A).
- 5) ELONGATION OVER 300%
- 6) STRENGTH: 160-245 Kg/cm.
- 7) ABRASION LOSS: LESS THAN 250 mm³ AS PER DIN 53516
- 8) SPECIFIC GRAVITY: MAX. 1.5
- 9) ADHESION STRENGTH (PEEL OFF): 10 Kg/cm (MINIMUM).

NOTES :-

- 1) ALL PULLEYS WILL BE STATICALLY BALANCED AFTER RUBBER LAGGING.
- 2) THE ECCENTRICITY SHALL NOT EXCEED $\pm 0.5\%$ OF DIAMETER PRIOR TO LAGGING.
- 3) CARE SHOULD BE TAKEN TO PROTECT THE SHAFT EXTENSION DURING DISPATCH.
- 4) KEY & KEYWAY DIMENSIONS SHALL BE AS PER IS:2048
- 5) ALL PULLEYS WILL BE MARKED WITH PROPER MARK NO. FOR IDENTIFICATION AT SITE BEFORE DISPATCH.
- 6) TO READ THIS DRAWING REF. CORRESPONDING G.A. OF CONVEYOR.
- 7) ALL P. BLOCKS SHALL HAVE LABYRINTH SEALS.
- 8) THICKNESS OF THE PULLEY SHALL BE UNIFORM THROUGHOUT THE FACE WIDTH.

MASS OF PULLEY: 145 kg

MASS OF PULLEY WITH PLUMMER BLOCK: - 245 kg

TITLE

G.A. & DATA SHEET OF NON-DRIVE PULLEY

PULLEY CALCULATION FOR MRC-1

Maximum Tension in Belt	=	22346	N	Taken from Power & Tension Calculation
Belt Width	=	500	mm	

Selected Belt

Maximum Working Tension in Belt =	Max Tension in Belt / Belt Width		
	=	44.69	Kn/Mtr
630/3 Having Maximum Allowable Tension =	63	Kn/Mtr	
Carcass Thickness	=	4.4	mm

Pulley Diameter Selection

Actual % Tensile Force = Maximum Working Tension x 100 / Maximum Allowable Tension

$$= 44.69 \times 100 / 63$$

$$= 70.9 \%$$

The Calculated Percentage of Tension is in between 60 to 100 %

Hence Selected Pulley Diameters are

Head Pulley	=	406 mm
Tail/Take up Pulley	=	323 mm
Snub/Bend Pulley	=	323 mm

Head Pulley Shaft Calculation

Based on Angular Deflection

Tight Side Tension T1	=	26899	N	Taken from Power & Tension Calculation
Slack Side Tension T2	=	8896	N	
Weight of Head Pulley	=	215	Kg	
Pulley Bearing CRS, l	=	0.9	Mtr	
Arm Length, a = (Bearing CRS - BW)/2 =		0.2	Mtr	
Head Pulley Inclination, Ø	=	15.3	Degree	
Angle of Wrap		210	Degree	
Horizontal Force, H	=	$T1 \times \cos \theta + T2 \times \cos \theta (210 - 180 - \theta)$ 34550.44393 N		
Vertical Force, V	=	$T2 \times \sin \theta - T2 \times \sin \theta (210 - 180 - \theta) + W_{hp}$ 2199.133977 N		
Resultant Force, Tr	=	$(H^2 + V^2)^{1/2}$ 34620.361 N		
Youngs Modulus, E	=	2.1E+11	N/Sq Mtr	
Allowable Angular Deflection, Ψ	=	5	Minute	
	=	0.001453704	Radians	
Calculated Shaft Dia at Hub	=	$\frac{(\text{Resultant} \times a \times 64 \times (l - 2 \times a))^{1/4}}{(\pi \times 4 \times \Psi \times E)^{1/4}}$ 25.130 248.841		
	=	100.99	mm	
Calculated Shaft Dia at Bearing	=	90.99	mm	

Based on Equivalent Torque

Bending Moment, Bm	=	Tr x a / 2	
	=	3462.04	N-Mtr

Torque, Mt	=	Motor Power x 1000 x 60 x / 2 x π x Pulley RPM
	=	4318.995 N-Mtr
Equivalent Torque, Teq	=	$((1.5 \times BM)^2 + (1.25 \times Mt)^2)^{1/2}$
	=	7490.94 N-Mtr
Allowable Shear Stress	=	45000000 N/m ²
Calculated Shaft Dia at Hub	=	$[(Teq \times 16) / (\pi \times Fs)]^{1/3} \times 1000$
	=	94.66 mm
Calculated Shaft Dia at Bearing	=	84.66 mm
Final Selected Head Pulley Shaft Diameter at Bearing in Drawing	=	110 mm

Tail/Take up Pulley Shaft Calculation

Based on Angular Deflection

Tail/Take up Tension, Tt	=	19370 N	Taken from Power & Tension Calculation
Tail Pulley Weight, Wtp	=	200 Kg	
Inclination at Tail Pulley, Ø	=	0 Deg	
Horizontal Force, H	=	Tt x CosØ	
	=	19370 N	
Vertical Force, V	=	Wtp - Tt x SinØ	
	=	1962 N	
Resultant Force, Tr	=	$(H^2 + V^2)^{1/2}$	
	=	19469.113 N	
Pulley Bearing CRS, l	=	0.9 Mtr	
Arm Length, a = (Bearing CRS - BW)/2	=	0.2 Mtr	
Youngs Modulus, E	=	2.1E+11 N/Sq Mtr	
Allowable Angular Deflection, Ψ	=	5 Minute	
	=	0.001453704 Radians	
Calculated Shaft Dia at Hub	=	$\frac{(Resultant \times a \times 64 \times (l - 2 \times a))^{1/4}}{(\pi \times 4 \times \Psi \times E)^{1/4}}$	
	=	21.762	
	=	248.841	
	=	87.45 mm	
Calculated Shaft Dia at Bearing	=	77.45 mm	

Based on Bending Moment

Bending Moment, Bm	=	Tr x a / 2	
	=	1946.911 N-Mtr	
Allowable Bending Stress, Fb	=	90000000 N/m ²	
Calculated Shaft Dia at Hub	=	$[(1.5 \times BM \times 32) / (\pi \times Fb)]^{1/3} \times 1000$	
	=	69.15 mm	
Calculated Shaft Dia at Bearing	=	59.15 mm	
Final Selected Tail/Take Up Pulley Shaft Diameter at Bearing in Drawing	=	100 mm	

Snub Pulley Shaft Calculation

Based on Angular Deflection

Slack Side Tension, T2	=	17792 N	17792N=T2x2 Tension taken from Power & Tension
Snub Pulley Weight, Wsp	=	180 Kg	
Inclination at Tail Pulley, Ø	=	15.3 Deg	
Horizontal Force, H	=	T2 x CosØ	
	=	17161.40559 N	
Vertical Force, V	=	T2 x SinØ - Wsp	
	=	2929.029305 N	

Resultant Force, Tr	=	$(H^2 + V^2)^{1/2}$	
	=	17409.568	N
Pulley Bearing CRS, l	=	0.9	Mtr
Arm Length, a = (Bearing CRS - BW)/2 =		0.2	Mtr
Youngs Modulus, E	=	2.1E+11	N/Sq Mtr
Allowable Angular Deflection, Ψ	=	5	Minute
	=	0.001453704	Radians
Calculated Shaft Dia at Hub	=	$\frac{(Resultant \times a \times 64 \times (l - 2 \times a))^{1/4}}{(\pi \times 4 \times \Psi \times E)^{1/4}}$	
		21.162	
		248.841	
	=	85.04	mm
Calculated Shaft Dia at Bearing	=	75.04	mm

Based on Bending Moment

Bending Moment, Bm	=	$Tr \times a / 2$	
	=	1740.957	N-Mtr
Allowable Bending Stress, Fb	=	90000000	N/m2
Calculated Shaft Dia at Hub	=	$[(1.5 \times BM \times 32) / (\pi \times Fb)]^{1/3} \times 1000$	
	=	66.62	mm
Calculated Shaft Dia at Bearing	=	56.62	mm
Final Selected Snub	=	90	mm
Pulley Shaft Diameter at Bearing			

PULLEY CALCULATION FOR MRC-2

Maximum Tension in Belt	=	13636	N	Taken from Power & Tension Calculation
Belt Width	=	500	mm	

Selected Belt

Maximum Working Tension in Belt =	Max Tension in Belt / Belt Width
=	27.272 Kn/Mtr
400/3 Having Maximum Allowable Tension =	40 Kn/Mtr
Carcass Thickness =	4 mm

Pulley Diameter Selection

Actual % Tensile Force = Maximum Working Tension x 100 / Maximum Allowable Tension

$$= 27.272 \times 100 / 40$$

$$= 68.18 \%$$

The Calculated Percentage of Tension is in between 60 to 100 %

Hence Selected Pulley Diameters are

Head Pulley	=	406 mm
Tail/Take up Pulley	=	323 mm
Snub/Bend Pulley	=	323 mm

Head Pulley Shaft Calculation

Based on Angular Deflection

Tight Side Tension T1	=	13636	N	Taken from Power & Tension Calculation
Slack Side Tension T2	=	5429	N	
Weight of Head Pulley	=	200	Kg	
Pulley Bearing CRS, l	=	0.9	Mtr	
Arm Length, a = (Bearing CRS - BW)/2 =		0.2	Mtr	
Head Pulley Inclination, Ø	=	15	Degree	
Angle of Wrap		210	Degree	
Horizontal Force, H	=	$T1 \times \cos \emptyset + T2 \times \cos \emptyset (210 - 180 - \emptyset)$ 18415.37588 N		
Vertical Force, V	=	$T2 \times \sin \emptyset - T2 \times \sin \emptyset (210 - 180 - \emptyset) + W_{hp}$ 1962 N		
Resultant Force, Tr	=	$(H^2 + V^2)^{1/2}$ 18519.598 N		
Youngs Modulus, E	=	2.1E+11	N/Sq Mtr	
Allowable Angular Deflection, Ψ	=	5	Minute	
	=	0.001453704	Radians	
Calculated Shaft Dia at Hub	=	$\frac{(\text{Resultant} \times a \times 64 \times (l - 2 \times a))^{1/4}}{(\pi \times 4 \times \Psi \times E)^{1/4}}$ 21.492		
	=	248.841		
	=	86.37	mm	
Calculated Shaft Dia at Bearing	=	76.37	mm	

Based on Equivalent Torque

Bending Moment, Bm	=	Tr x a / 2
	=	1851.96 N-Mtr

Torque, Mt	=	Motor Powerx1000x60x/2xπxPulley RPM
	=	2159.497 N-Mtr
Equivalent Torque, Teq	=	$((1.5 \times BM)^2 + (1.25 \times Mt)^2)^{1/2}$
	=	3873.44 N-Mtr
Allowable Shear Stress	=	45000000 N/m ²
Calculated Shaft Dia at Hub	=	$[(Teq \times 16) / (\pi \times Fs)]^{1/3} \times 1000$
	=	75.98 mm
Calculated Shaft Dia at Bearing	=	65.98 mm
Final Selected Head Pulley Shaft Diameter at Bearing in Drawing	=	90 mm

Tail/Take up Pulley Shaft Calculation

Based on Angular Deflection

Tail/Take up Tension, Tt	=	10224 N	Taken from Power & Tension Calculation
Tail Pulley Weight, Wtp	=	180 Kg	
Inclination at Tail Pulley, Ø	=	0 Deg	
Horizontal Force, H	=	Tt x CosØ	
	=	10224 N	
Vertical Force, V	=	Wtp - Tt x SinØ	
	=	1765.8 N	
Resultant Force, Tr	=	$(H^2 + V^2)^{1/2}$	
	=	10375.366 N	
Pulley Bearing CRS, l	=	0.9 Mtr	
Arm Length, a = (Bearing CRS - BW)/2 =	=	0.2 Mtr	
Youngs Modulus, E	=	2.1E+11 N/Sq Mtr	
Allowable Angular Deflection, Ψ	=	5 Minute	
	=	0.001453704 Radians	
Calculated Shaft Dia at Hub	=	$\frac{(Resultant \times a \times 64 \times (l - 2 \times a))^{1/4}}{(\pi \times 4 \times \Psi \times E)^{1/4}}$	
	=	18.594	
	=	248.841	
	=	74.72 mm	
Calculated Shaft Dia at Bearing	=	64.72 mm	

Based on Bending Moment

Bending Moment, Bm	=	Tr x a / 2	
	=	1037.537 N-Mtr	
Allowable Bending Stress, Fb	=	90000000 N/m ²	
Calculated Shaft Dia at Hub	=	$[(1.5 \times BM \times 32) / (\pi \times Fb)]^{1/3} \times 1000$	
	=	56.07 mm	
Calculated Shaft Dia at Bearing	=	46.07 mm	
Final Selected Tail/Take Up Pulley Shaft Diameter at Bearing in Drawing	=	75 mm	

Snub/Bend Pulley Shaft Calculation

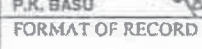
Based on Angular Deflection

Slack Side Tension, T2	=	8143.5 N	8143.5 N=T2x1.5 Taken from Power & Tension Calculation
Snub Pulley Weight, Wsp	=	160 Kg	
Inclination at Tail Pulley, Ø	=	15 Deg	
Horizontal Force, H	=	T2 x CosØ	
	=	7866.016966 N	
Vertical Force, V	=	T2 x SinØ - Wsp	
	=	538.0928938 N	

Resultant Force, Tr	=	$(H^2 + V^2)^{1/2}$	
	=	7884.400	N
Pulley Bearing CRS, l	=	0.9	Mtr
Arm Length, a = (Bearing CRS - BW)/2 =	=	0.2	Mtr
Youngs Modulus, E	=	2.1E+11	N/Sq Mtr
Allowable Angular Deflection, Ψ	=	5	Minute
	=	0.001453704	Radians
Calculated Shaft Dia at Hub	=	$\frac{(\text{Resultant} \times a \times 64 \times (l - 2 \times a))^{1/4}}{(\pi \times 4 \times \Psi \times E)^{1/4}}$	
		17.360	
		248.841	
	=	69.76	mm
Calculated Shaft Dia at Bearing	=	59.76	mm

Based on Bending Moment

Bending Moment, Bm	=	$Tr \times a / 2$	
	=	788.440	N-Mtr
Allowable Bending Stress, Fb	=	90000000	N/m2
Calculated Shaft Dia at Hub	=	$[(1.5 \times BM \times 32) / (\pi \times Fb)]^{1/3} \times 1000$	
	=	51.16	mm
Calculated Shaft Dia at Bearing	=	41.16	mm
Final Selected Snub/Bend	=	65	mm
Pulley Shaft Diameter at Bearing in Drawing			

		SYSTEM EQUIPMENT ELECTRICAL AND C&I		STANDARD FIELD QUALITY PLAN				QP NO.: 0000-999- QOE-T-008 REV.NO. 00 DATE:16-03-2016 PAGE: 1 OF 23 VALID UPTO:15-03-2019		REVIEWED BY  ASHISH SENAPATI DINESH KUMAR  S.H. MALANI P.K. BASU 		APPROVED BY 	
		SUB-SYSTEM OFFSITE PACKAGES (CHP, AHP, AWRS)		CONFORMING TO CODE: NTPC APPROVED DOCUMENTS, O&M AND MANUFACTURER MANUAL									
SL NO.	ACTIVITY AND OPERATION	CHARACTERISTICS/ INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		REMARKS			
1	2	3	4	5	6	7	8	9	D*	10			
A) FOR ALL EQUIPMENTS:													
1.0 MATERIAL RECEIPT													
PLEASE REFER SFQP FOR MATERIAL RECEIPT, STORAGE & PRESERVATION (DOC. NO. 0000-999-QOM-T-023)													
2.0 MATERIAL STORAGE													
PLEASE REFER SFQP FOR MATERIAL RECEIPT, STORAGE & PRESERVATION (DOC. NO. 0000-999-QOM-T-023)													
3.0 PRE-ERECTION													
3.1		Availability of documents: O&M manual, approved drawings, data sheet & Layout drawings	C	V	100%		Availability of documents: O&M manual, approved drawings, data sheet & Layout drawings	Logbook					
B) H.T MOTOR, L.T. MOTOR & GEARED MOTOR													
1.1	DURING STORAGE FOR H.T. MOTORS	Space heaters "ON" if motor is idle & subject to moisture	B	V	100%	Instruction Manual	Instruction Manual	Logbook					
1.2		Rotate shaft by quarter of a revolution every month in storage	B	V	100%	Instruction Manual	Instruction Manual	Logbook					
1.3		Use axial locking cover on shaft extension	B	V	100%	Instruction Manual	Instruction Manual	Logbook					
1.4		If storage is more than six months: a) Check IR & PI values b) Check Bearing conditions and surface	B	V	100%	Instruction Manual	Instruction Manual	Logbook		PI test only for HT Motors. (PI > 2)			
LEGEND: *RECORDS, IDENTIFIED WITH "TICK" (☑) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY FQA ENGINEER IN ASSOCIATION WITH EXECUTING ENGINEER, 'B' SHALL BE WITNESSED BY EXECUTING ENGINEER AND 'C' SHALL BE WITNESSED BY CONTRACTOR'S QUALITY ENGINEER AND NTPC EXECUTING ENGINEER (A & B CHECK SHALL BE NTPC CHP STAGE)													

FORMAT NO.: QS-01-QAI-P-10/F4-R1

ENGG.DIV/QA&I

		SYSTEM EQUIPMENT ELECTRICAL AND C&I	STANDARD FIELD QUALITY PLAN				QP NO.: 0000-999- QOE-T-008 REV.NO. 00	REVIEWED BY ASHISH SENAPATI DINESH KUMAR S.H. MALANI P.K. BASU	APPROVED BY K. K. JOHA
		SUB-SYSTEM OFFSITE PACKAGES (CHP, AHP, AWRS)	CONFORMING TO CODE: NTPC APPROVED DOCUMENTS, O&M AND MANUFACTURER MANUAL				DATE: 16-03-2016 PAGE: 2 OF 23 VALID UPTO: 15-03-2019		
SL NO	ACTIVITY AND OPERATION	CHARACTERISTICS/ INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
		coating on machined surface							
2.0	ERECTION								
2.1		Location of foundation	B	M	100%	Drawing	Drawing	Logbook	
2.2		Remove packing/ locking and clean sleeve bearing	C	V	100%	Drawing	Drawing	Logbook	
2.3		80% minimum contact area between: a) Bottom most packer & concrete (only in case of OPC)	B	V	100%	Drawing	Drawing	Logbook	
		b) Packer to packer	B	V	100%	Drawing	Drawing	Logbook	
		c) Motor Sole plate (base plate) with topmost packer	B	V	100%	Drawing	Drawing	Logbook	
		NOTE: a) Total thickness of shims between motor feet & bed and No. of shims shall be as per manufacturer's standard. b) Shims & packer size minimum 1 cm more than size of motor feet in both length & width	B	V	100%	Drawing	Drawing	Logbook	
2.4		Grouting as per drawing & Manufacturer Standard.	C	V	100%	Drawing/ Grout Manufacture rs instructions	Drawing/Grout Manufacturers instructions	Logbook	

LEGEND: *RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY FQA ENGINEER IN ASSOCIATION WITH EXECUTING ENGINEER, 'B' SHALL BE WITNESSED BY EXECUTING ENGINEER AND 'C' SHALL BE WITNESSED BY CONTRACTOR'S QUALITY ENGINEER AND NTPC EXECUTING ENGINEER (A & B CHECK SHALL BE NTPC CHP STAGE)

FORMAT NO.: QS-01-QA1-P-10/F4-R1

ENGG.DIV./QA&I

		SYSTEM EQUIPMENT ELECTRICAL AND C&I	STANDARD FIELD QUALITY PLAN				QP NO.: 0000-999- QOE-T-008 REV.NO. 00 DATE: 16-03-2016 PAGE: 3 OF 23 VALID UPTO: 16-03-2019		REVIEWED BY  ASHISH SENAPATI DINESH KUMAR S.H. MALANI P.K. BASU		APPROVED BY  K.K. OJHA	
SL. NO.	ACTIVITY AND OPERATION	CHARACTERISTICS/ INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		REMARKS		
1	2	3	4	5	6	7	8	9	D*	10		
3.0	ALIGNMENT & CLEARANCES											
3.1		Axial Bearing clearances in case of sleeve bearings on DE side	A	M	100%	Drawing	Drawing	Logbook			For H.T. Motors only	
3.2		Axial & radial coupling alignment- Dial Gauge	A	M	100%	Instruction Manual	Instruction Manual	Logbook	✓			
3.3		Horizontal & vertical off-sets (if applicable) - Vernier/ feeler gauge	A	M	100%	Driven Equipment drawing	Driven Equipment drawing	Logbook	✓			
3.4		Coupling gaps for equal DE bearings axial clearances on either side of shafts - Vernier/ feeler gauge/dial gauge	A	M	100%	Driven Equipment drawing	Driven Equipment drawing	Logbook				
3.5		Motor stool leveling- Precision Level	A	M	100%	Instruction Manual	Instruction Manual	Logbook	✓		Applicable for Vertical Motors only	
3.6		Contact area between motor bottom flange & top flange of motor stool	B	V	100%		Minimum 80%	Logbook	✓		Applicable for H.T. Vertical Motors only	
3.7		Use insulated bolts & washers for fixing NDE bearing housing with end shields (for insulated bearing)	B	V	100%	Drawing	Drawing	Logbook			For H.T. Motors only	
3.8		Power, Control, Space Heater & RTD cables termination	C	V	100%	Cable Schedule/ Schematic Drawing	Cable Schedule/ Schematic Drawing	Protocol				

LEGEND: *RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
LEGEND TO BE USED: CLASS # : A = CRITICAL, B=MAJOR, C=MINOR; 'A' SHALL BE WITNESSED BY FQA ENGINEER IN ASSOCIATION WITH EXECUTING ENGINEER, 'B' SHALL BE WITNESSED BY EXECUTING ENGINEER AND 'C' SHALL BE WITNESSED BY CONTRACTOR'S QUALITY ENGINEER AND NTPC EXECUTING ENGINEER (A & B CHECK SHALL BE NTPC CIIP STAGE)

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