

March, 2015

ROLLWAY®

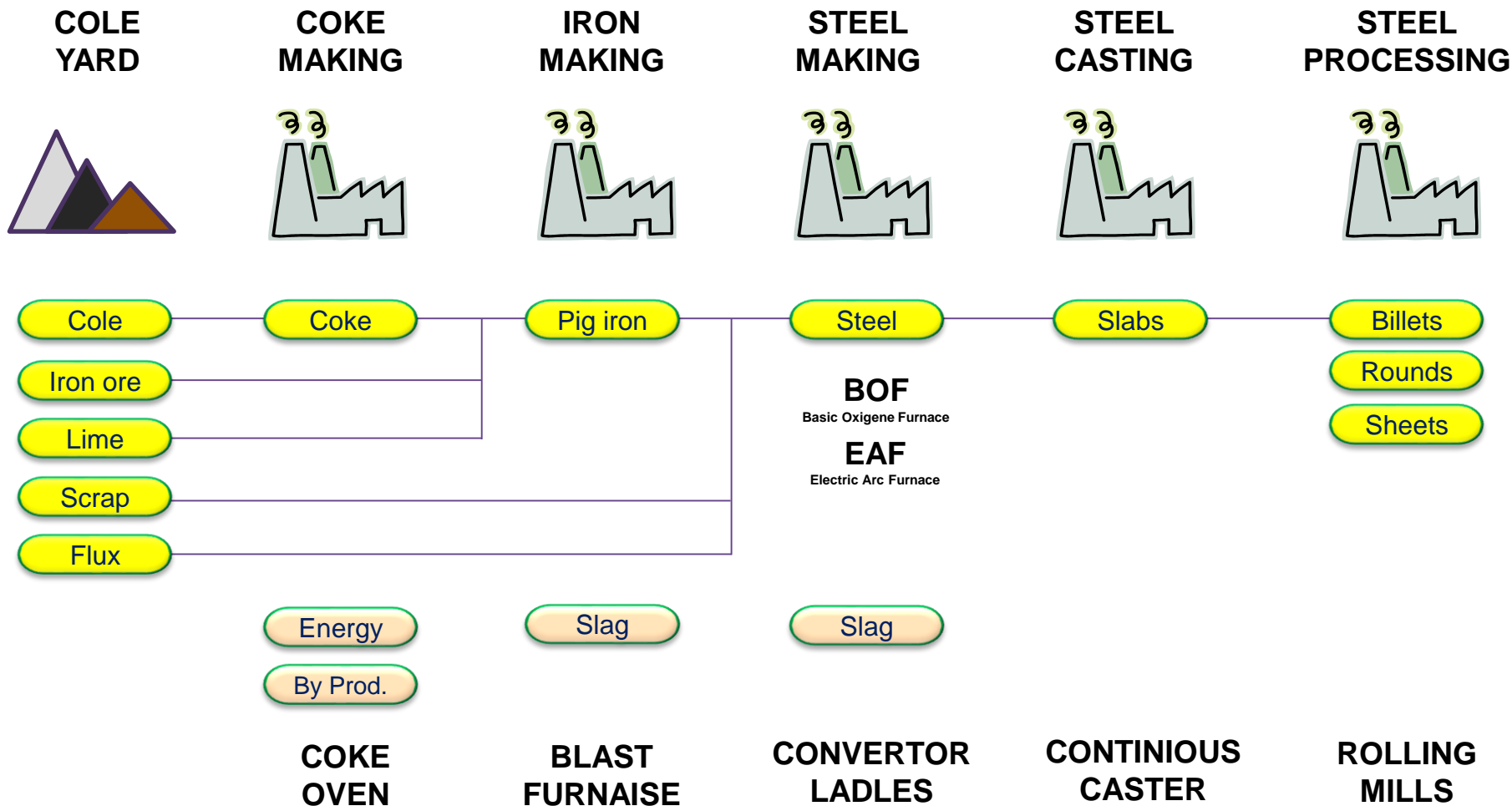


STEEL INDUSTRY BEARINGS

Didier De Keyser
Sr. Application Engineer

REGAL

Integrated Steel Mill Plant



Cole yard Applications



Cranes / Stackers

- > SRB - 20000 series
- > TCRB - T series

Standard bearings

- > Clearance: CN - C3
- > Precision : P0 - P6
- > Steel : 100Cr6 Through Harden



Conveyors

- > SRB 20000 series



Trucks

- > SRB 20000 series
- > CRB N NU NJ series
- > TRB 30000 series

Coke making Applications



Coke Pushing Machine

- > SRB - 20000 series
- > Cam Followers (McGill)

Standard bearings

- > Clearance: CN - C3
- > Precision : P0 - P6
- > Steel : 100Cr6 Through Harden



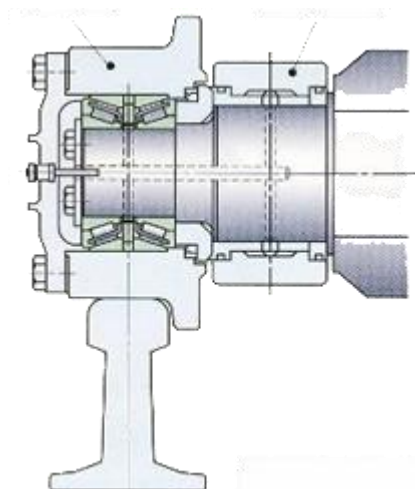
Coke Oven Battery- Coke Side

- > Door system

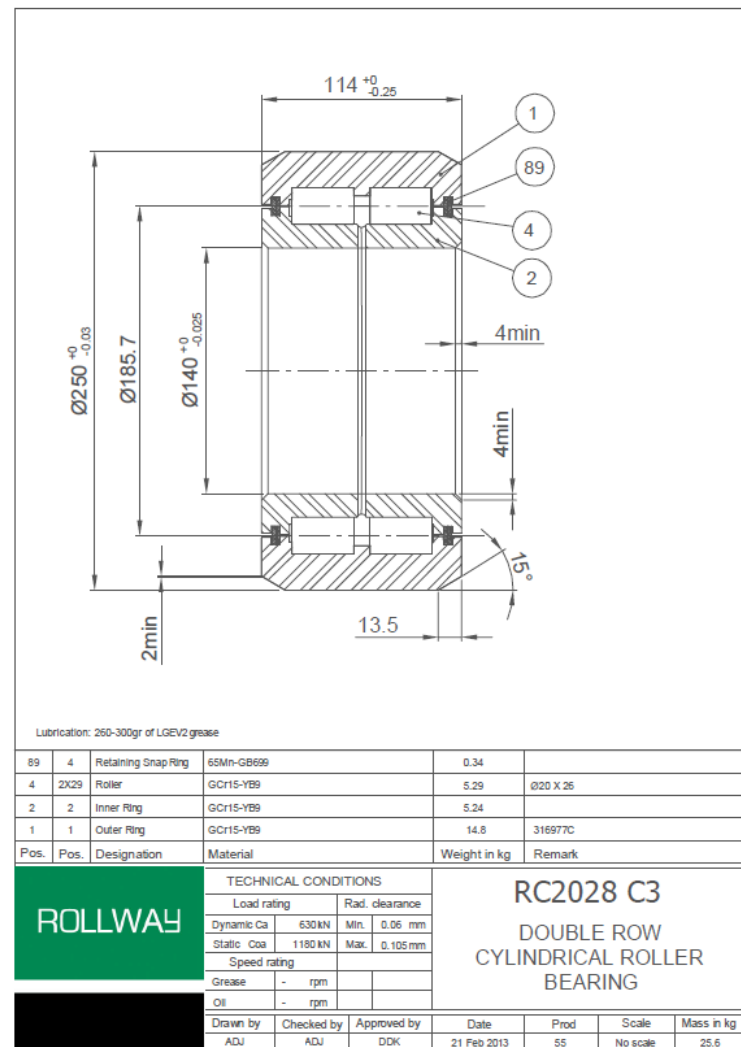
Larry Cars

- > SRB 20000 series

Iron making Applications



- Sintering equipment: inboard roll
- Pugh Ladle Cars: SRB
- Torpedo cars: SRB
- Cranes: ...





2000079178



Hüttenwerke
Krupp Mannesmann

Hüttenwerke Krupp Mannesmann GmbH * Postfach 25 11 24 * D-47251 Duisburg

11.02.2015

- 1 -

Bitte in allen Zuschriften angeben:

LUTZ ROGALLA GmbH
Wälzlager - Drehverbindungen
In der Au 8a
74889 Sinsheim

Kontrakt

027 / 1102265

Zu den Ihnen vorliegenden
Bedingungen und Versandvorschriften

Einkäufer/Telefon

Langenfurth/0203/9992508

Faxnummer des Einkäufers - E-Mailadresse des Einkäufers

0203/999-46-2508 - sven.langenfurth@hkm.de

Bearbeiter/Abt./Telefon

Langenfurth/CM-M/0203/9992508

Faxnummer des Bearbeiters

0203/999-46-2508

Ihre Lieferantennummer bei uns

19925

Ihr Angebot/Datum

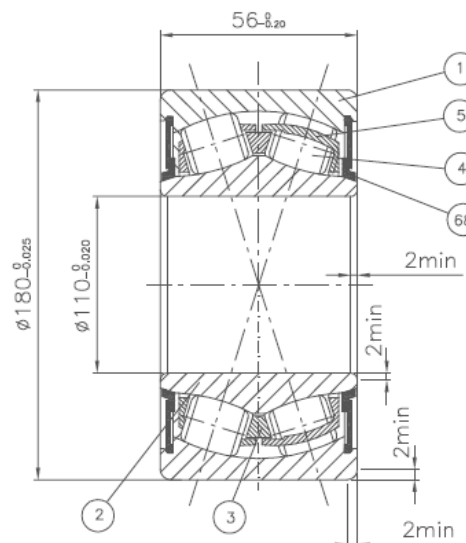
1130296/08.12.2014

Typ : 23122 C W33 2VS 010

Pos.	Material	Preis pro Einheit EUR	Nettowert EUR
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Hersteller : Rollway

Einsatzort : Sinterrostwagen



-Grease: 20 samples are filled with KLÜBER Petamo GHY 443

-Quantity of grease filling: 40g

-Calculation factors: $e=0.26$; $Y1=2.55$; $Y2=3.8$; $Y0=2.5$

68	2	Seal	Viton	
5	2	Cage	Steel - GB/T710	—
4	44	Roller $\phi 17,5 \times 21,5$	GCr15-GB/T18254	—
3	1	Floating rib	GB/T710	—
2	1	Inner ring	GCr15-GB/T18254	—
1	1	Outer ring	GCr15-GB/T18254	—
Pos.	Pcs.	Designation	Material	Note

ROLLWAY

TECHNICAL CONDITIONS

Dynamic Load $C_r = 383 \text{ kN}$	Static Load $C_{or} = 598 \text{ kN}$
Min. radial clearance $= 0.075 \text{ mm}$	Max. radial clearance $= 0.120 \text{ mm}$
Speed Limit: 1738rpm	

Scale
No scale

Date
15 Sept. 2011

Mass
0.57kg

23122 C 2VS 010

SEALED SPHERICAL ROLLER BEARING

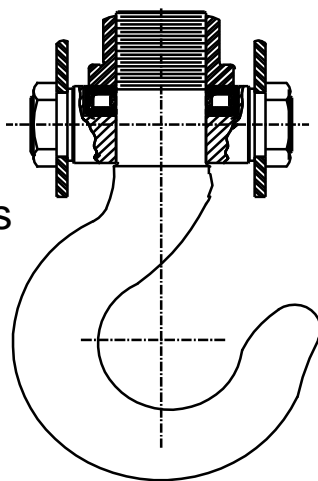
62

Steel making Applications



Overhead Cranes

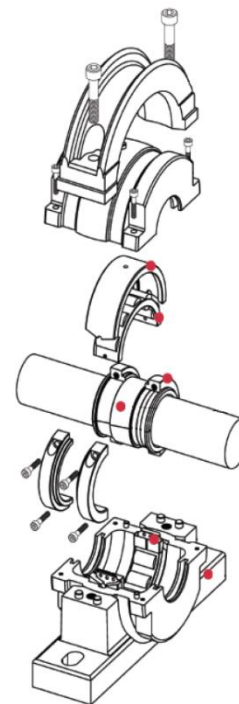
- > SRB 20000 series
- > CRB N NU NJ series
- > Trust Cylindrical bearings



Convertor

Driven side: Spit SRB

Loose bearing: SRB



Steel making: bearing opportunity

Typical applications:

- *Convertor tilting mechanism*
- *Overhead cranes*

Operating condition:

- *High temperature, Heavy shock loads, very low speed, rocking*



Bearings:

- *Convertor*

Drive side: large size (Split) SRB

Loose side: Large size SRB d= 1100mm

- *Cranes / Hooks*

Full complement CRB, CRB

Thrust bearing for the crane hook

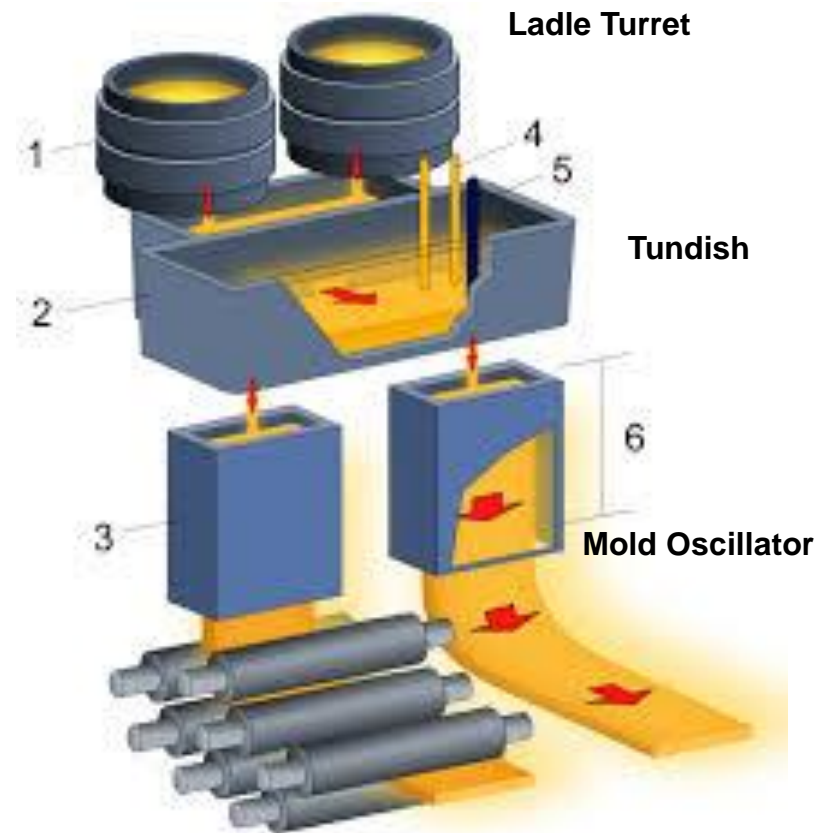


Continuous Casting Applications



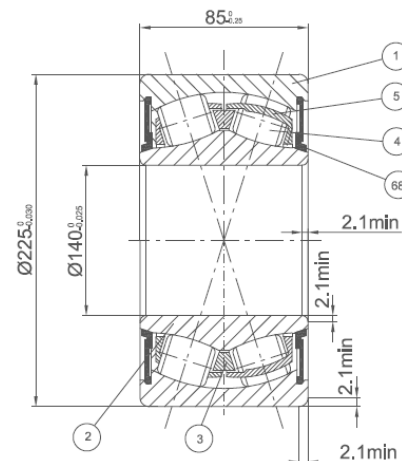
Overhead Cranes
Ladle Turret
Segment rolls
Conveyors

>



Continuous casting conveyor roll application

Customer: HKM - Germany



• Greased Chevron Texaco Uth-Plex synthetis EP (016)
• Grease rate 50%

68	2	Seal	FKM 08 - GB/T710		2VS: High temperature seal
5	2	Cage	08 or 10 - GB/T710		
4	44	Roller	GC15-GB/T18254		
3	1	Floating ring	FTD-CSBTS TC98L74		Ø21x31
2	2	Inner ring	GC15-GB/T18254		
1	2	Outer ring	GC15-GB/T18254		
Pos.	Pcs.	Designation	Material	Weight In kg	Remark

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TECHNICAL CONDITIONS

Load rating		Radial clearance	
Dynamic Cr	625 kN	Min	0,19mm
Static Cor	1066 kN	Max	0,24mm
Speed rating		Factors	
Grease	1200rpm	e	0,26
Oil	-	Yo	2,50

24128 C 2VS C4 016
Sealed Spherical Roller Bearing

Drawn by	Checked by	Approved by	Date	Prod	Scale	Mass In kg
CHK	SNB	DDK	05 March 2015	63	No scale	13,2

Casting bearing Opportunity

Typical applications:

- Ladle Turret
- Segmented rolls (between 60 and 150 rolls)
- Conveyor rolls (SRB)

Operating condition:

- High temperature, Heavy loads, very low speed, Roll deflection, exposed to ingress of water & foreign particles



Bearings:

• **Ladle Turret**

Verry large slewing rings 4 - 8 m

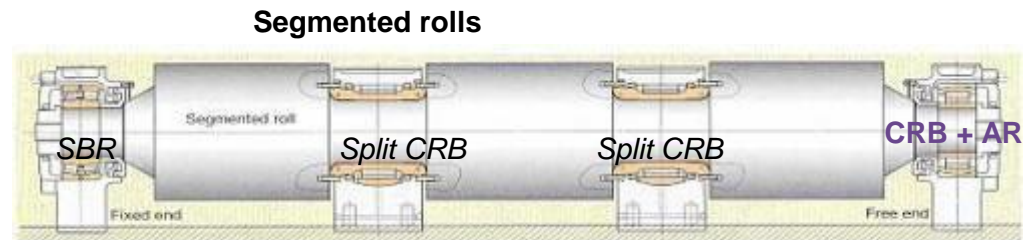
Plain SRB

• **Segment rolls**

SRB C4

Splitted CRB

CRB with aligning ring (RUB)

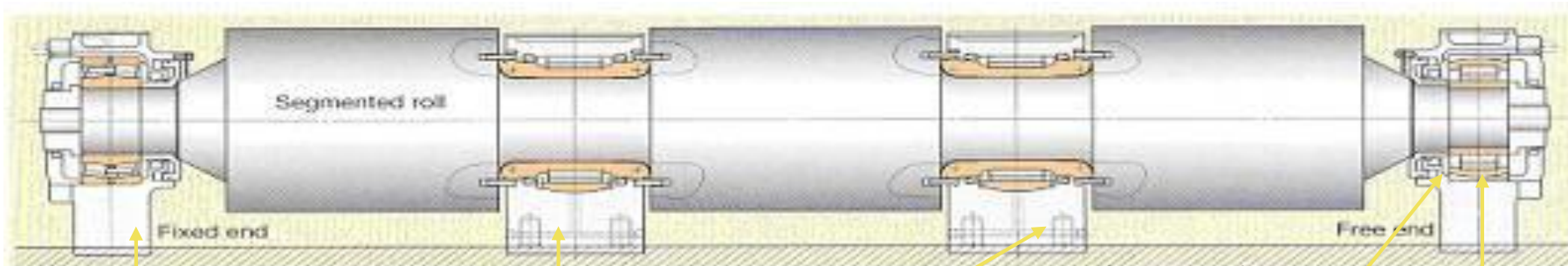


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Segmented rolls

Operating condition:

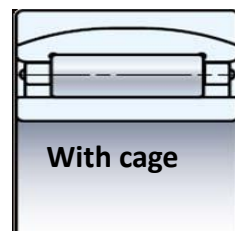
High temperature, Heavy loads, very low speed, Roll deflection, exposed to ingress of water & foreign particles



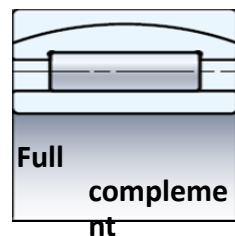
**Fixed Side
SRB**



**Middle Supporting
Split Bearing**



With cage

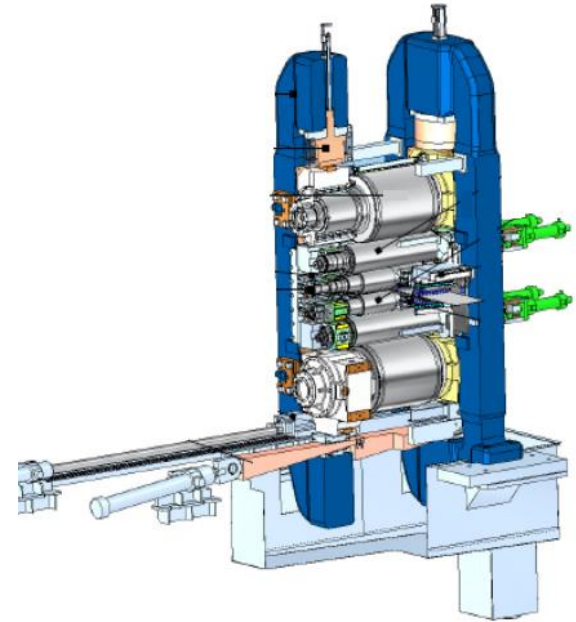


**Full
compleme
nt**

**Floating Side
RUB or CARB**



RUB
Structure



Standard bearings

> ACB / TSRB / 4R TRB / 4R CRT / Open or sealed

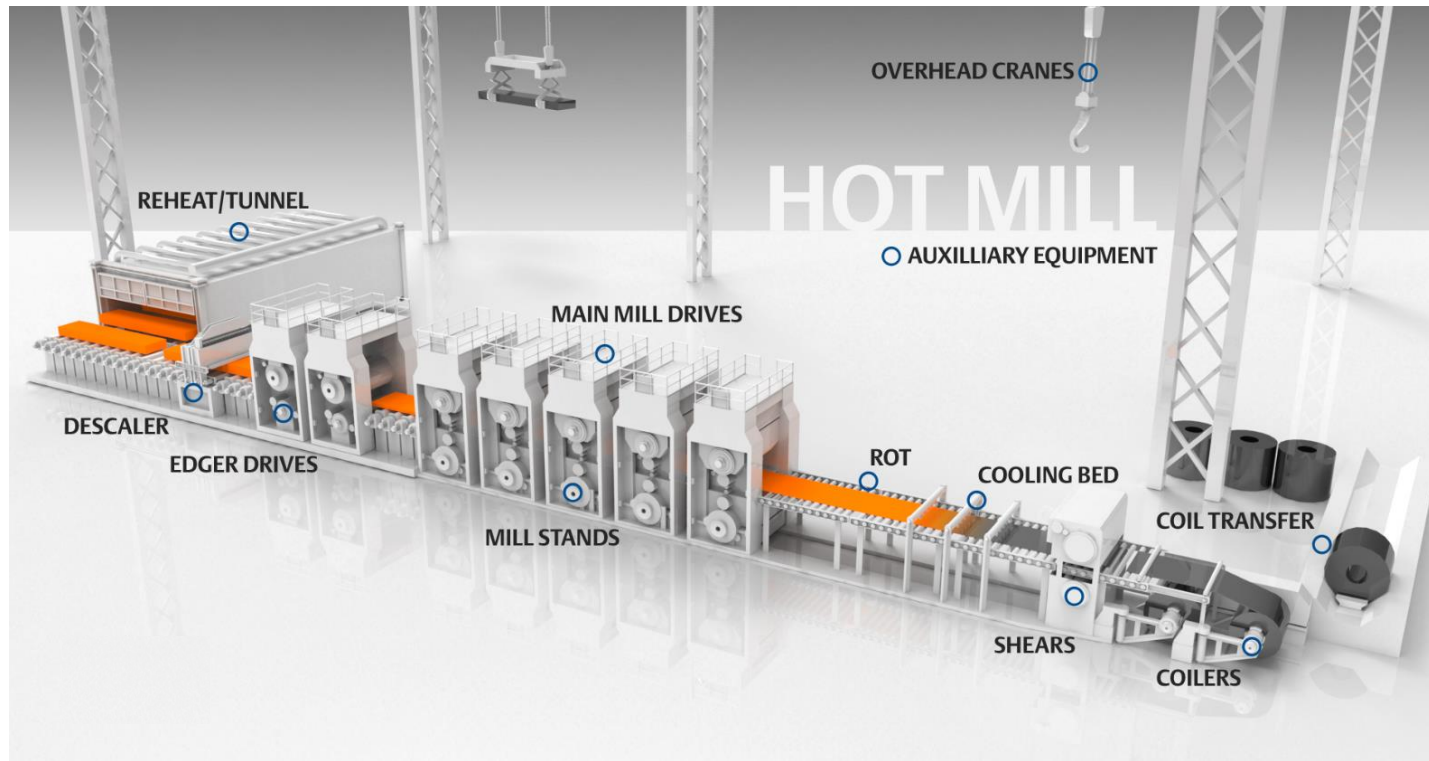
Specific bearings

> Clearance: CN – C4

> Precision : P0 - P6 – P5

> Steel : 100Cr6 Through harden / Case harden

> Oil groove in the inner ring bore



Typical 5 mill stand configuration

- Speed increase due to elongation
- R1 & R2 => 2 roll high mill slab thickness: 20mm => slow speed high torque
- R3 & R4 => 4 roll high mill slab thickness: 10mm => speed increases torque decrease
- R5 => 4 roll high mill slab thickness: < 2.54mm => speed increases torque decrease

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Hot Mill - Visuals

4 hi mill stand



Recoiler



Reheating oven (Water cooled SRB sealed)

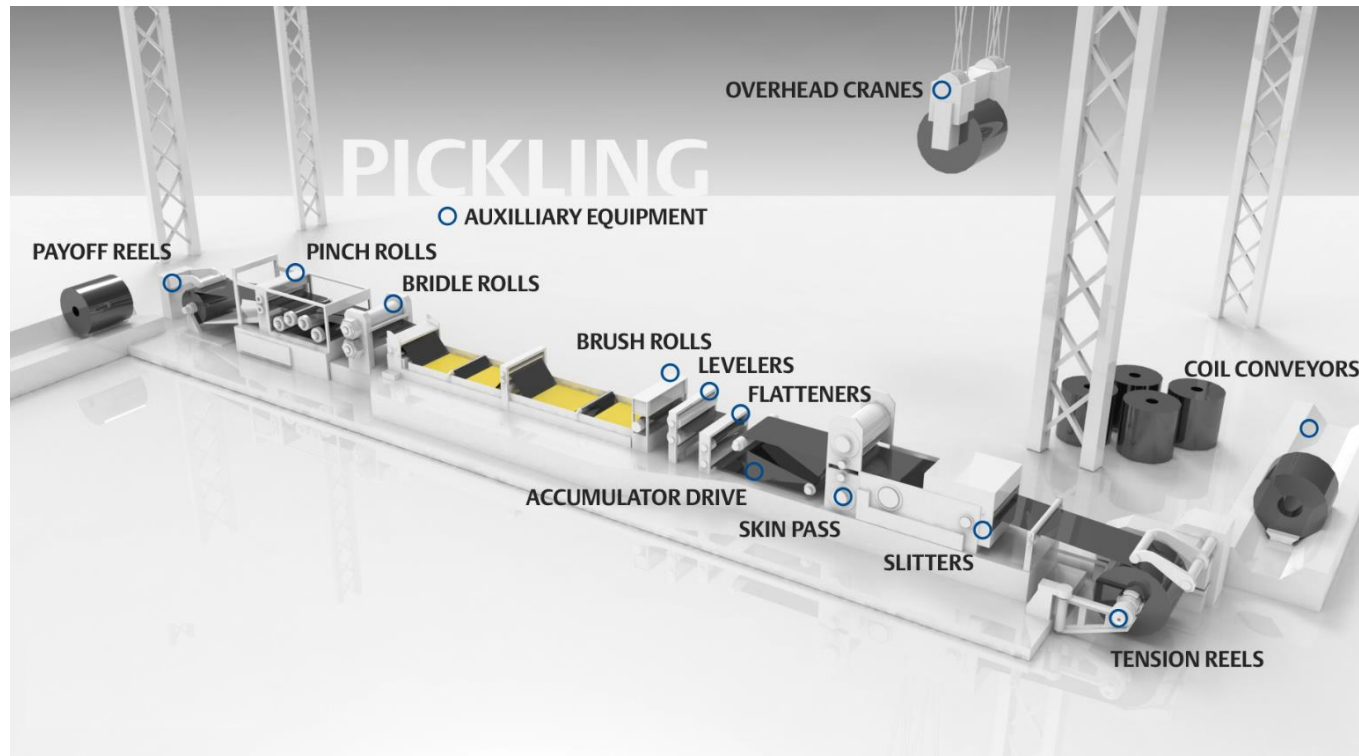


Five-stand 4Hi rolling mills

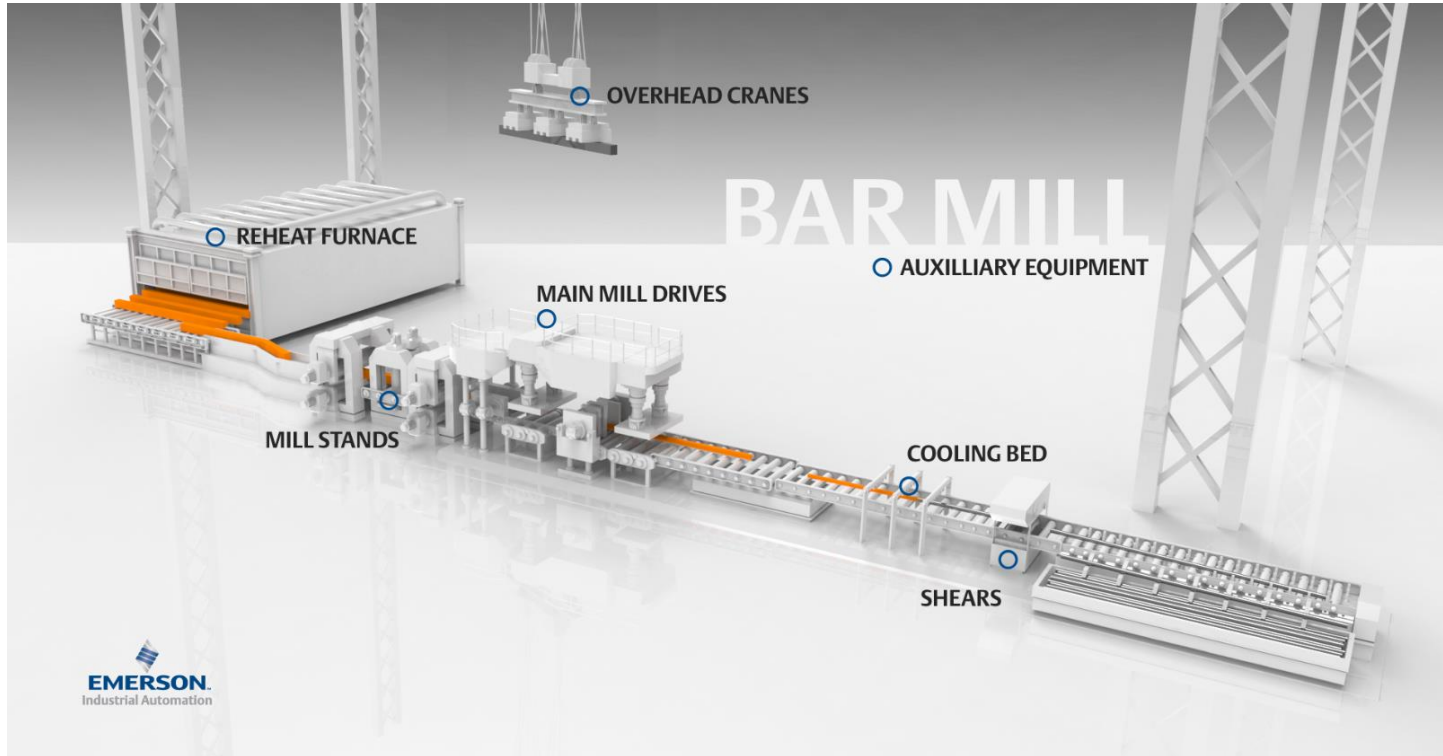




Finish Mill - Pickling

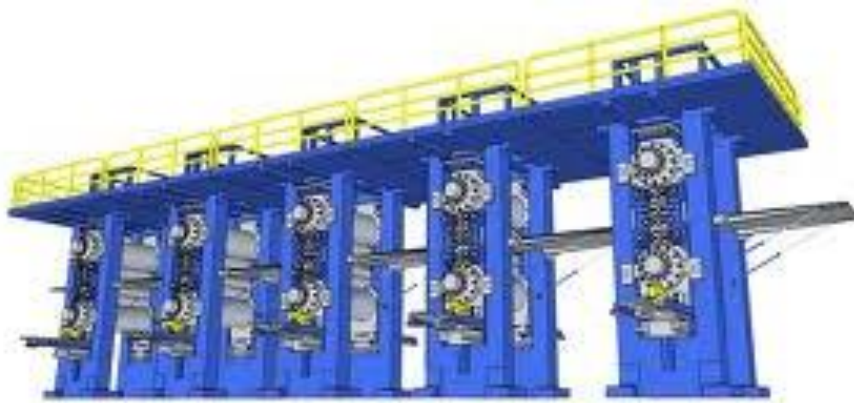


Finish Mill – Bar Mill

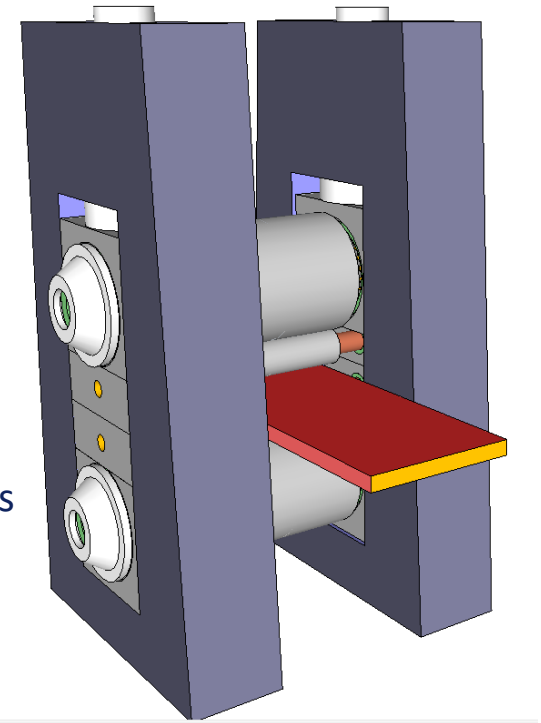


Mill Stand – At the glance

5 stand 4hi mill



1 stand 4 hi mill



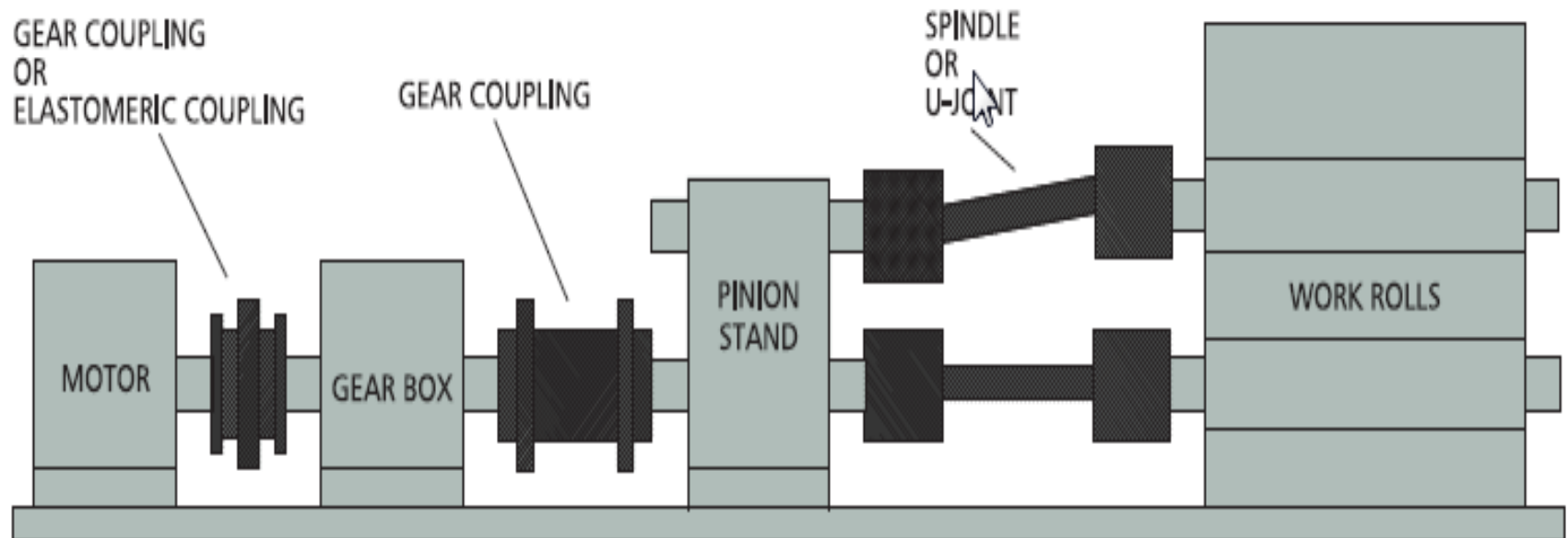
Work roll:

- High speed / Low load /small diameter driven
- Drive chain: electro moter 5MW/ gearbox /pinion stand/ Spindles

Backup roll:

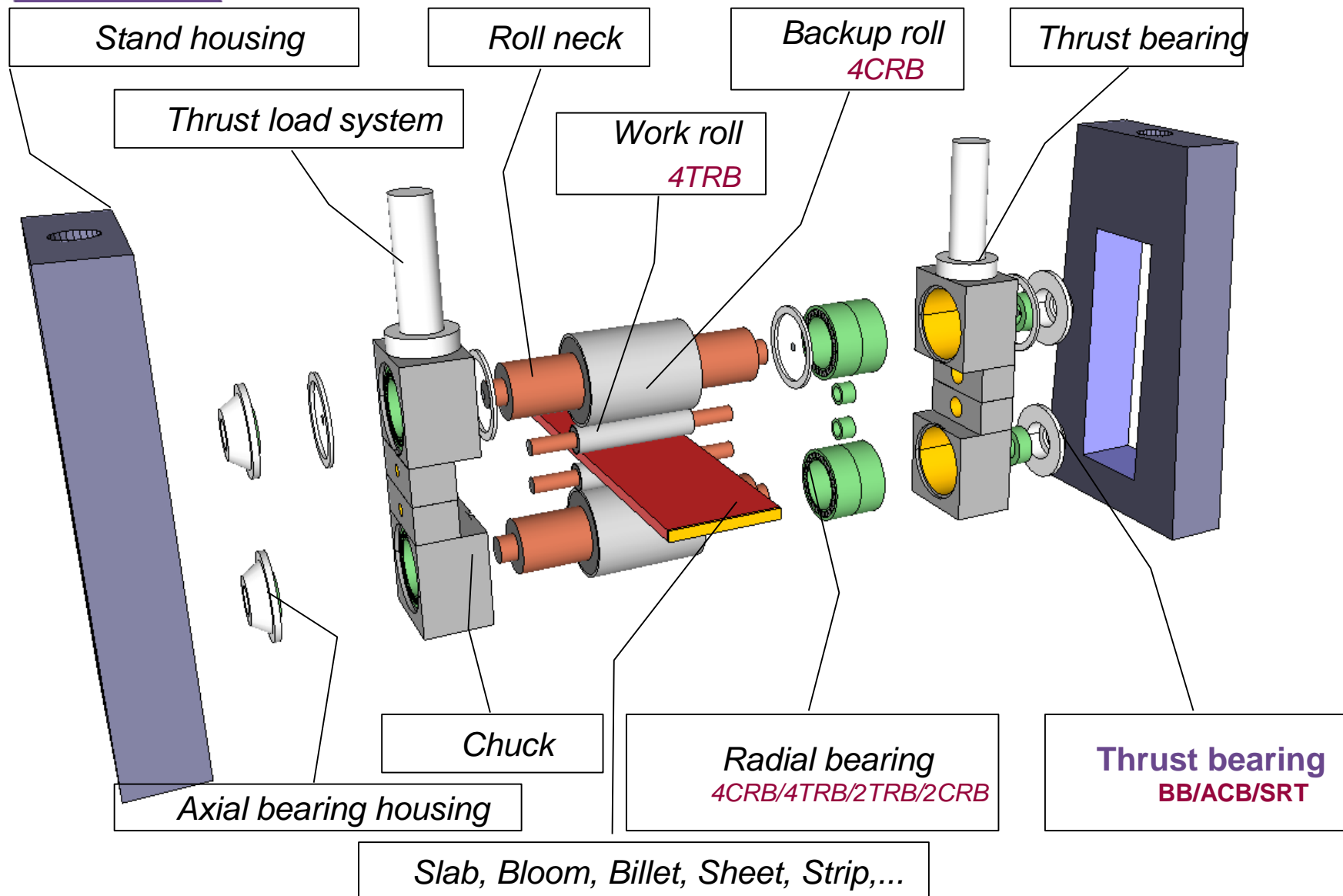
- Slow speed / high load / Free wheeling
- Roll set can be changed 10 per day
- 8 month bearing life
- 1 set in use 1set backup

Mill Stand drive line



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4 High Mill Stand – At the glance



Mill Stand – At the glance

Reversible mill

Multi stand mill: 5 stand

Mill types : 2 high- / 4 high- / 6 high / Multi roller mill stand

Work roll: small diameter, high speed ,low load

Backup roll: large diameter, low speed, high load

Chuck housing / reduced space between the chuck's

Roll neck - shaft seat

Mill stand: bearing opportunity

Typical applications:

- Work roll bearing arrangement
- Backup roll bearing arrangement
- All roll bearing arrangement

Operating condition:

- Lack of mounting space, high temperature, heavy loads, high/speed, roll deflection, exposed to ingress of water & foreign particles

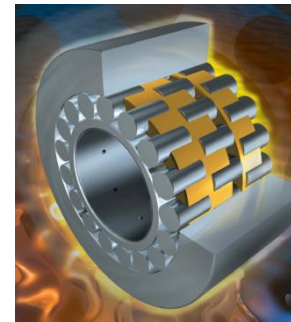
Bearings: Case Carburized/ pine type cage/...

- **Work roll**

4 TRB open / sealed - lub grooved in bore
Oil film bearings

- **Backup roll**

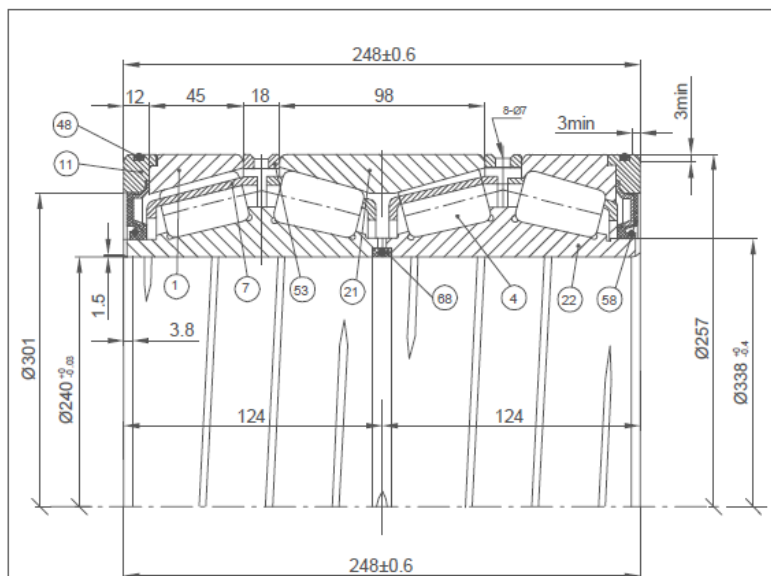
4CRB
Oil film bearings



**Sendzimir Rolling Mill Backup Roller
and Bearing (Backing Bearings)**

REGAL

4TRB



48	2	O-Ring	NBR (Nitrile Butadiene Rubber)	0.0264	320X4 G GB/T3452.1-1992
68	1	Inner Seal	Combined Components	0.0381	Seal 241.5X249.5XG.5
58	2	Main Seal	Combined Components	1.048	Seal FB255X312.6X11
53	2	Outer Spacer	45-GB699	1.47	
11	2	Loose Rib	GCr15-GB/T18254	3.22	
7	4	Cage	08AL-GB13237	3.39	
4	4X32	Roller	GCr15-GB/T18254	18.17	
22	2	Double Cone	GCr15-GB/T18254	19.4	
21	1	Double Cup	GCr15-GB/T18254	10.26	
1	2	Cup	GCr15-GB/T18254	8.78	240KV53302AEgS3CG110U1
Pos.	Pos.	Designation	Material	Weight in kg	Remark

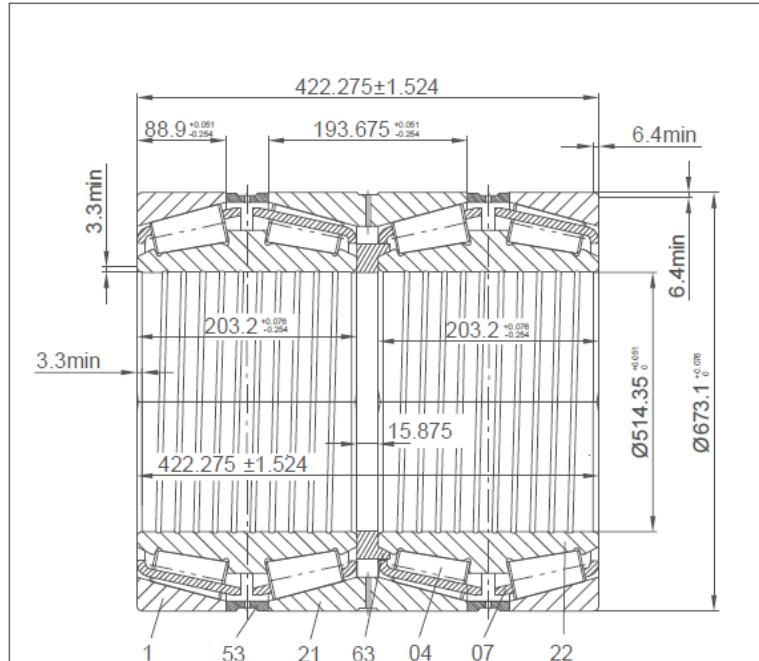
ROLLWAY

TECHNICAL CONDITIONS			
Load rating	Rad. clearance		
Dynamic Ca 1850 kN	Min. 0.10 mm		
Static Coa 4530 kN	Max. 0.12 mm		
Speed rating	Factors		
Grease - rpm	Fw -		
Oil - rpm			

RT2248

SEALED FOUR-ROW TAPERED
ROLLER BEARING

Drawn by	Checked by	Approved by	Rev. Date	Prod	Scale	Mass in kg
JVK	SNB	DDK	15 May 2013	55	No scale	65.8



63	1	Inner spacer	45 - GB699	4.64	
53	2	Outer spacer	45 - GB699	7.86	
07	4	Cage	08AL-GB13237	17.8	
04	4x45	Roller	G20Cr2Ni4A - GB3203	125	
22	2	Inner double ring	G20Cr2Ni4A - GB3203	121	LM2744490
21	1	Outer double ring	G20Cr2Ni4A - GB3203	65.3	LM2744100
1	2	Cup	G20Cr2Ni4A - GB3203	58.8	LM274410
Pos.	Pos.	Designation	Material	Weight in kg	Remark

ROLLWAY

TECHNICAL CONDITIONS			
Load rating	Rad. clearance		
Dynamic Cr 7130 kN	Min. 0.32 mm		
Static Cor 20300 kN	Max. 0.43 mm		
Speed rating	Ax. clearance		
Grease - rpm	Min. 1.52 mm		
Oil - rpm	Max. 2.02 mm		

RT 40 / 514

FOUR ROW TAPERED
ROLLER BEARING

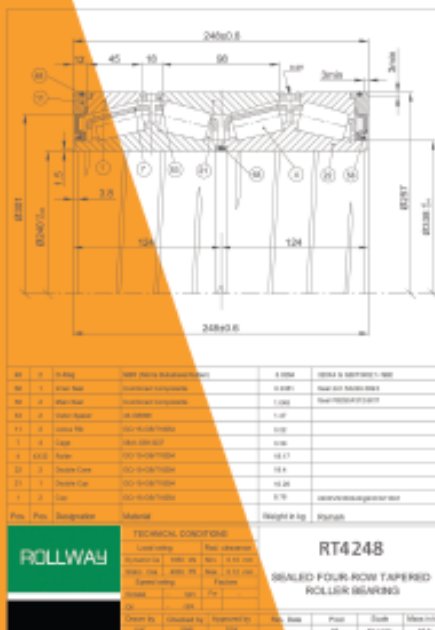
Drawn by	Checked by	Date	Rev	Prod	Scale	Mass in kg
D.De Keyser	G.Moeyensons	11 Dec 2012	0	55	No scale	400



Rollway Four Row Tapered Roller Bearing for Steel Industry

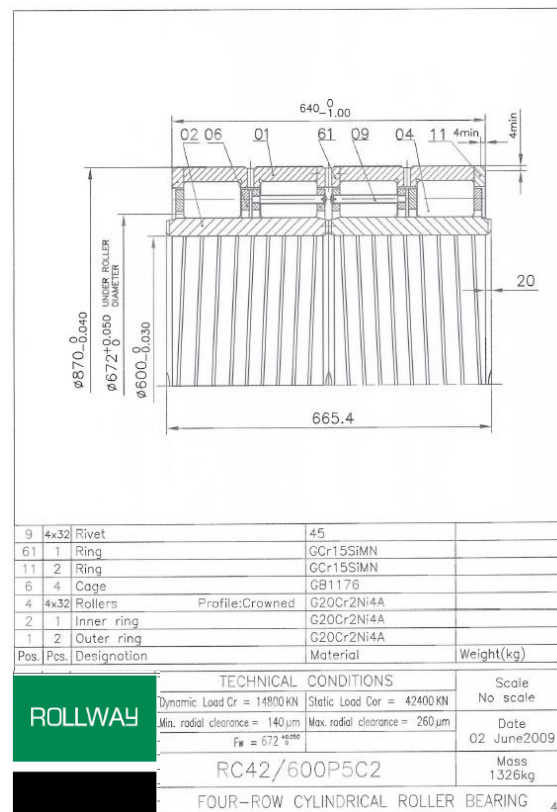
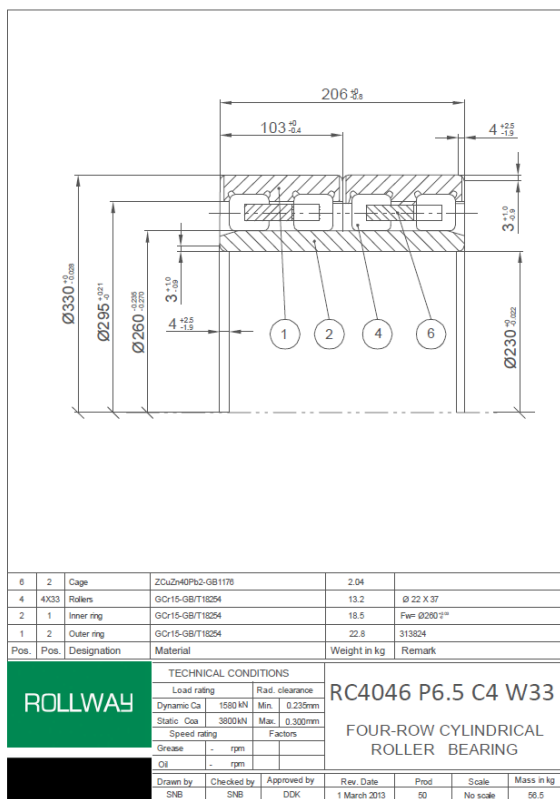
Nomenclature / Special features

- RT4248 CS P6: - R : Rollway
- T4 : 4 row tapered roller bearing
- 2 : Sequence number
- 48 : Bore diameter => d/5 rounded
or
/ XXXX => d rounded
- Superior steel grade
 - Through hardened or case hardened steel (CS)
 - Steel, though pin type- or brass retainer
 - Precision class: P0 - P6 - P5
 - Separable inner ring (L)
 - Lubrication groove in the inner ring bore surface
 - Sealed bearing



Rollway Interchange	Suffix	Alternative Number (*)	Bore (mm)	OD (mm)	Width (mm)
RT4034	CS	47T342418BGWPC550	170	240	180
RT4036		67863DW67820-67820GHC	190	266	188
RT4041	CS	67863DW67820-67821D	206,375	282,575	190,5
RT4043	CS	523835	215,9	268,925	177,8
RT4144		37294403HCC9DB	220	295	315
RT4244		M2442480WM244210-M244210DHC	220,662	314,325	238,714
RT4344		531158 G (F-802018)	220,662	314,325	238,712
RT4048		37294803HCC9DB	240	338	340
RT4148	CS	EE127097DW-TQO	241,478	349,148	228,6
RT4253	CS	BT4B32820HA1C455	266,75	355,60	230,188
RT4071		STF355KV 4853LG53	355,6	488,95	317,5
RT4089		M270700	447,675	635	463,55
RT4192		BT4B331977 E	460	610	360
RT4096		BT4B329007HA1	475	660	460
RT41514	CS	BT4-8045HA3	514,35	673,1	422,275
RT40711	CS	280TQ0815KD1896	711,2	914,4	317,5
RT40950	CS	531069	850	1380	910

(*) Other numbers available on request



For press fit bearings => radial clearance C3-C4

For loose fit => lubrication groove on the bore surface and radial clearance C2

REGAL

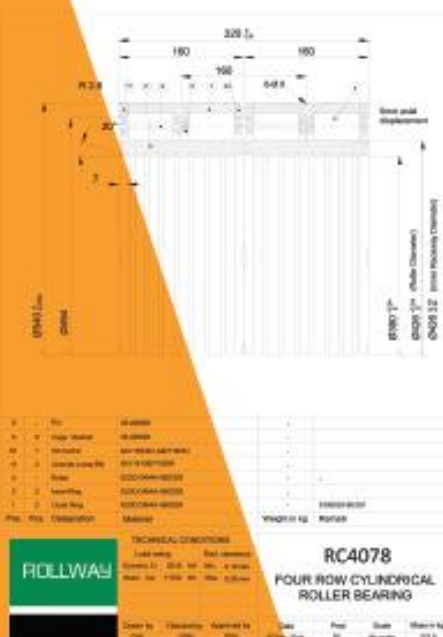
ROLLWAY BEARING NV
Power Transmission Solutions
Hennepinlaan 30
B-2020 Antwerp (Antwerpen) - Belgium
Tel. +32(0)3 407 66 70 Fax. +32(0)3 407 61 38

ROLLWAY

www.rollway-bearing.be
3749 0034 100000001



ISO 9001 CERTIFIED



Nomenclature / Special features

- RC4012 CS P6 - R : Rollway**
- C4 : 4 row cylindrical roller bearing
 - 0 : Sequence number
 - 12 : Bore diameter => d/5 rounded or /XXXX => d rounded
 - Superior steel grade
 - Through hardened or case hardened steel (CS)
 - Steel, though pin type- or brass retainer
 - Precision class: P0 - P6 - P5
 - Separable inner ring (L)
 - Lubrication groove in the inner ring bore surface (LC)
 - Sealed bearing



Rollway Interchange	Suffix	Alternative Number (*)	Bore (mm)	OD (mm)	Width (mm)
RC4024	P6	FC243638	120	180	92
RC4028		314625	145	210	156
RC4029	CS P6	4R2805	145	210	155
RC4134 OR	CS OR	RBC283223401H52VJ202	170	230	180
RC4134 IR	CS IR	LBC283223401H52VJ202	170	230	180
RC4034 OR		L-667622	170	230	150
RC4034 IR		R-667622	170	230	150
RC4036	CS	LC 313612	180	260	188
RC4338		R314049	190	260	200
RC4140	CS LC	313693	200	280	200
RC4568	CS	R314485A	340	480	350
RC40575		BC4-81050HA5	575	740	510
RC40600 OR		L-628518	600	820	570
RC40600 IR		R-628518	600	820	570
RC40690 CB		FCDP138186750HCC9YA6	600	980	750
RC41700 CB		700ARXS2862	700	930	820
RC41850		650RC3504AC4	850	840	840

(*) Other numbers available on request.