

TIMKEN

铁姆肯公司轴承应用 采矿行业

2012年铁姆肯公司中国授权经销商培训大会
2012 Timken China Authorized Distributor Training Conference

2012年8月
August , 2012



Agenda

议程

- Mining Introduction
- 采矿介绍
- Key Global Mining Customers and business history with Timken
- 铁姆肯全球主要采矿设备客户及合作历史
- Mining equipments and bearing application
- 采矿设备与轴承应用
- Information required for bearing selection for a specific application
- 对于特定应用进行轴承选型所需要的信息

Mining Introduction

采矿介绍

Mining Types

采矿类型

Surface Mining (Antaibao) 露天矿（安太堡）

Underground Mining (Shendong) 地下矿（神东）

operating conditions of Mining equipment

采矿设备的运行条件

Typically low speed, high loading, inconstant shock load

通常是低速，高载荷，变化的冲击载荷

Main Bearing Products in Mining Industry

采矿中主要使用的轴承产品

TRB, CRB, SRB

Customers and business history

客户及合作历史

Major Accounts	Business Involvement
■	
■ Caterpillar (US)	70 years
■ Komatsu (Japan)	35 years
■ Joy Global (US)	40 years
■ Bucyrus (US)	45 years
■ P&H (US)	50 years
■ Liebherr (Germany)	25 years
■ Marion (now Bucyrus)	45 years
■ DBT (now Bucyrus)	25 years
■ Jixi Coal Mining (China)	7 years
■ Shijiazhuang Mining (China)	6 years
■ Ti Di Benniu (China)	6 years
■ Taiyuan Heavy (China)	6 years
■ Sany Shengyang (China)	5 years

Equipments ----- Mining Truck

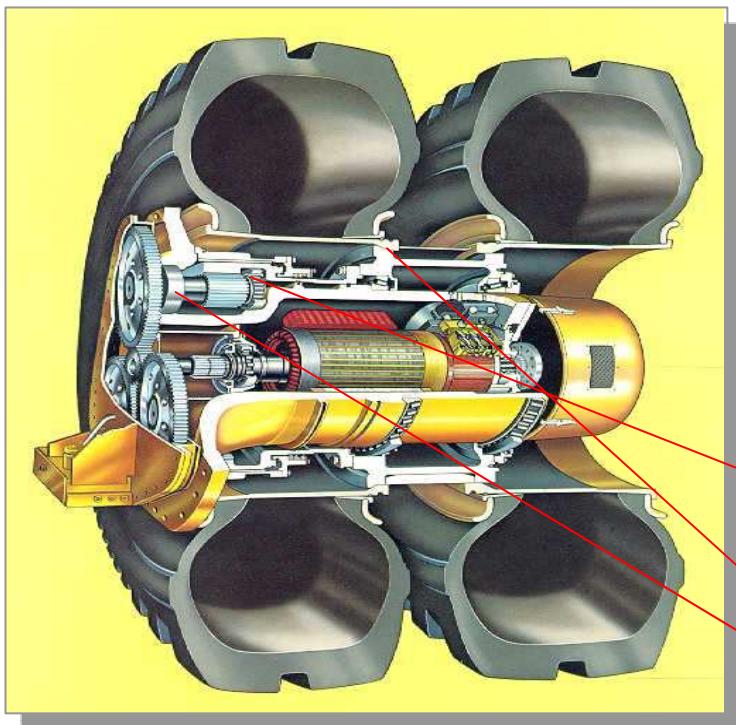
设备 ----- 矿山卡车





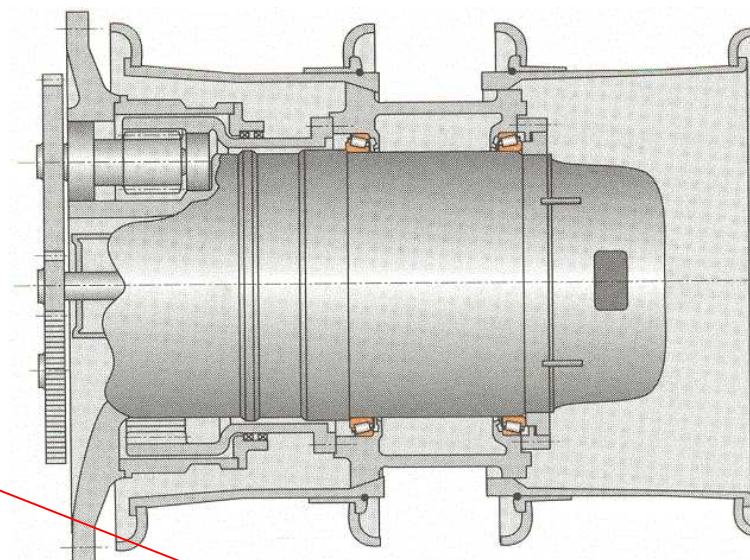
Mining Truck: Electric Wheel

矿山卡车：电动轮



Electric Wheel

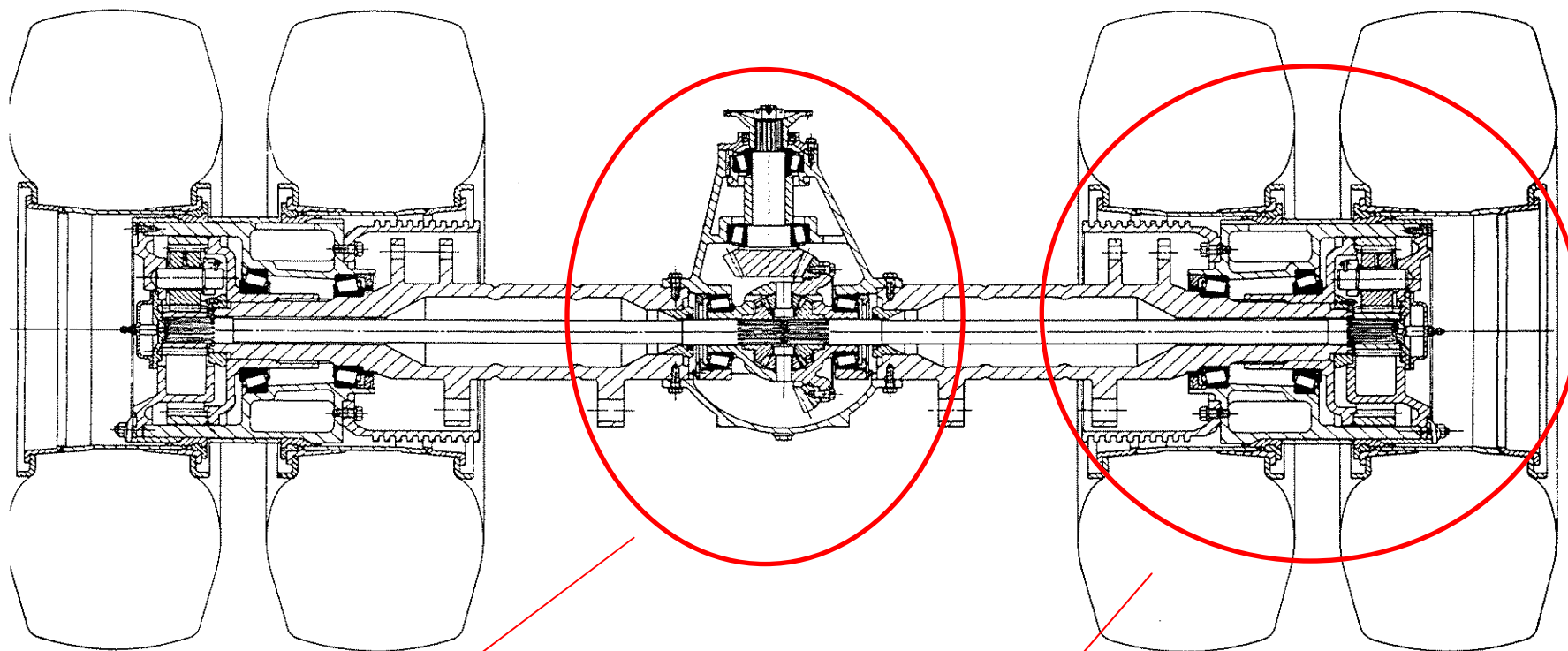
电动轮



TRB(表面渗碳) **CRB**

Mining Truck: Mechanical Driveline

矿山卡车: 机械传动



Axle center : TRB

桥中心: TRB

Wheel End

轮端: TRB

Equipments: Shovel and Dragline

设备：电铲和索斗铲



Bearing Applications:

轴承应用

Sheave 滑轮 ----- TRB

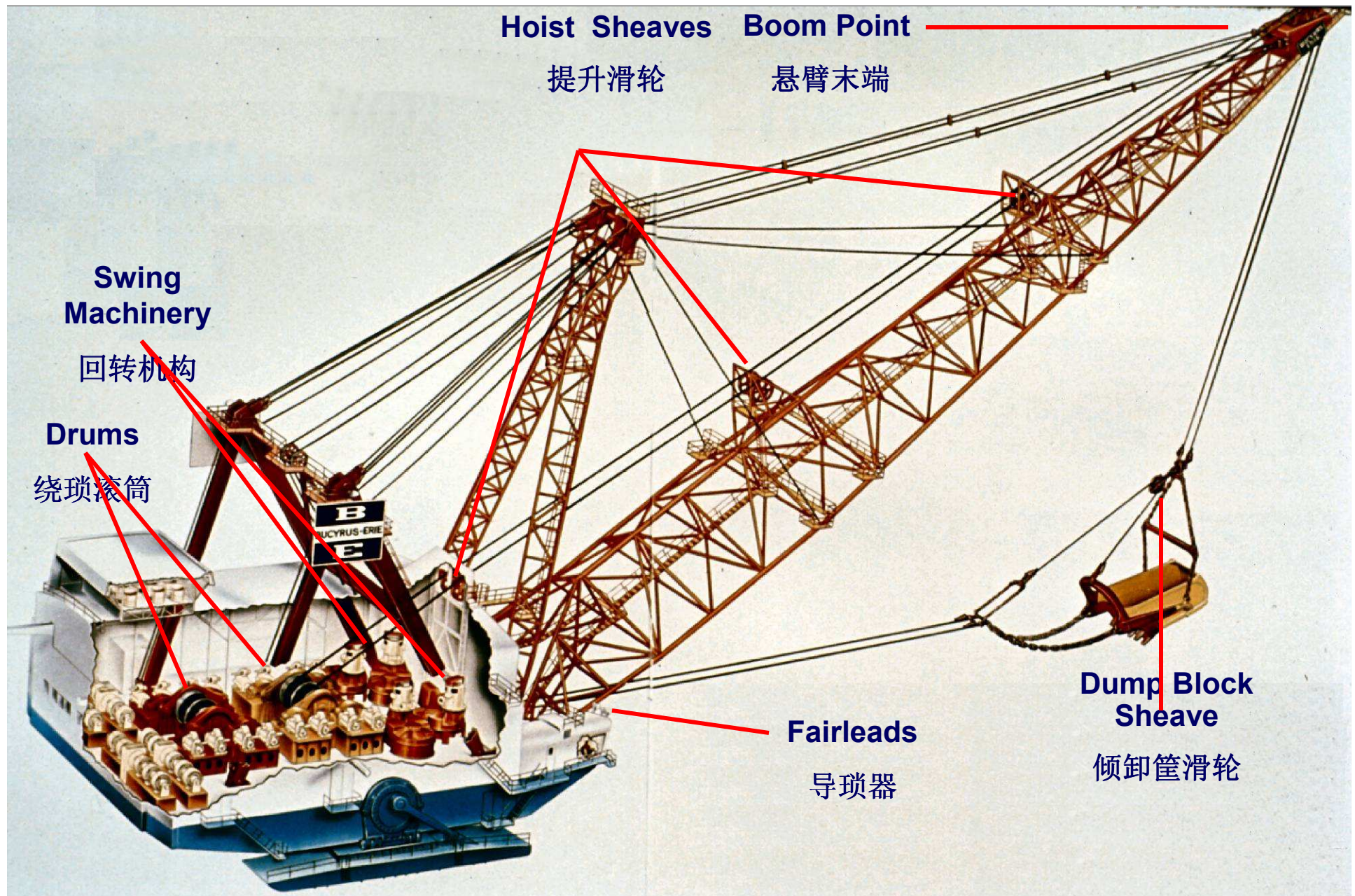
Fairlead 导锁器 ----- TRB

Drag & Hoist Machinery 牵引与提升机构---TRB, SRB,CRB

Swing Machinery 回转机构 ----- TRB, CRB, SRB

Dragline 索斗铲

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Where You Turn



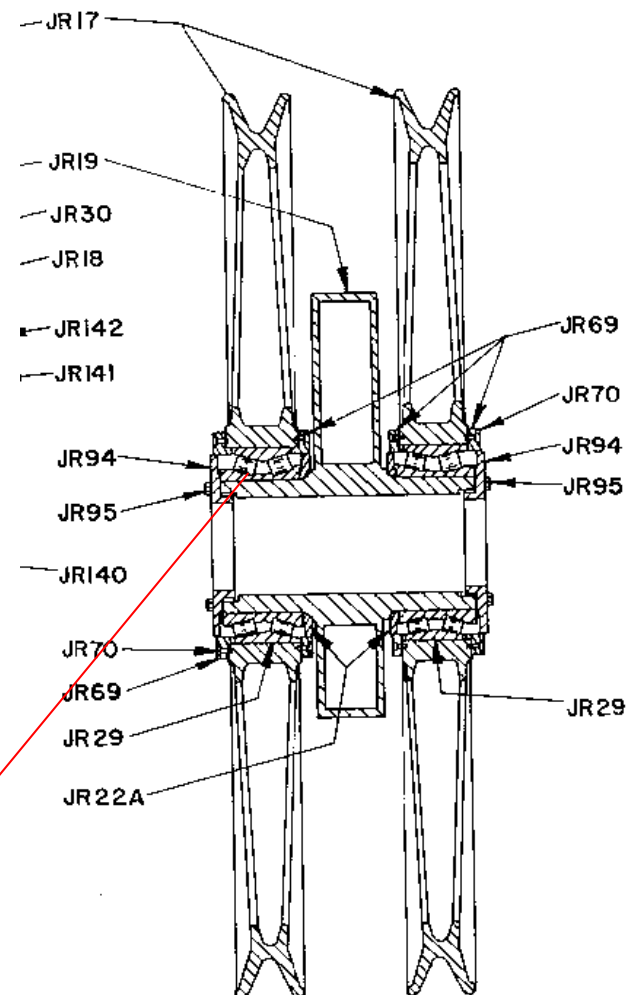
Dragline or Shovel: Boom Point

索斗铲与电铲：悬臂末端



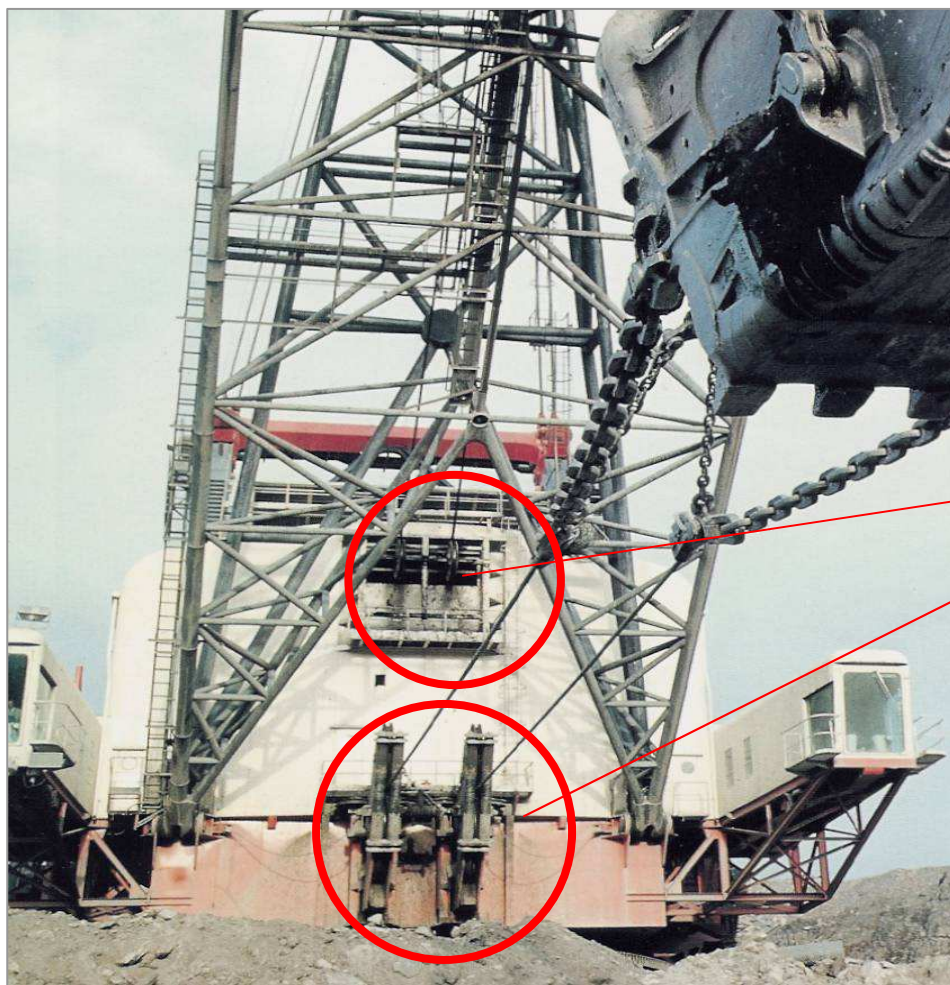
Bearing at boom point position supports the weight of the shovel bucket and the ore.

悬臂末端的轴承受物料以及倾卸筐的总重量



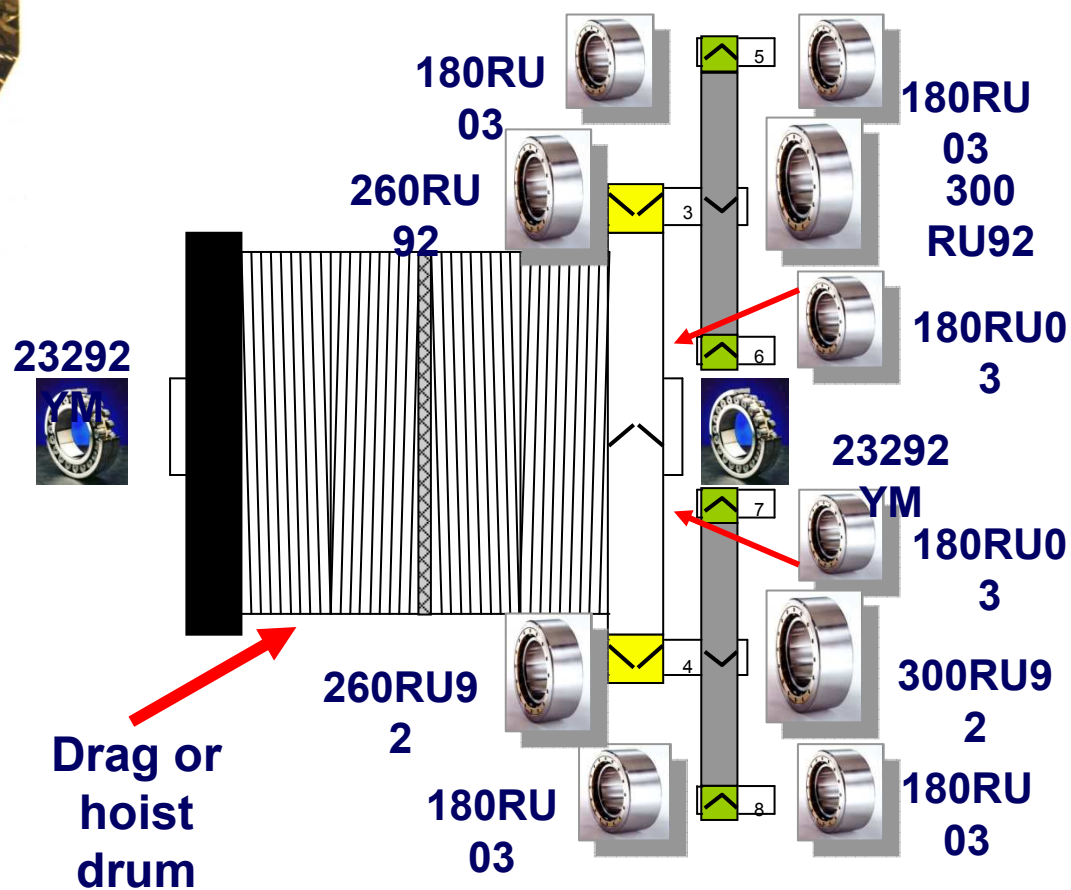
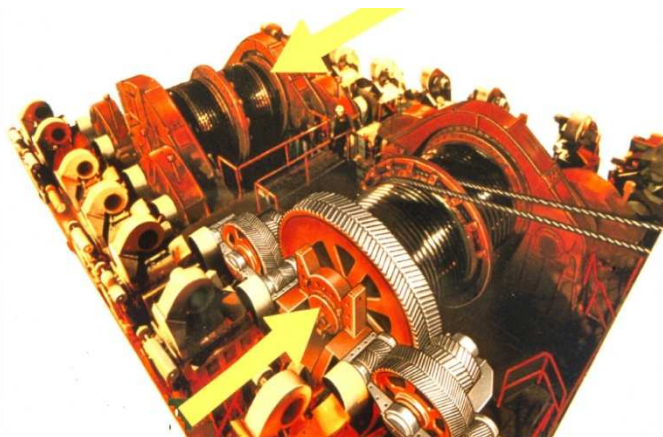
2TS-IM

Fairleads : 导锁器



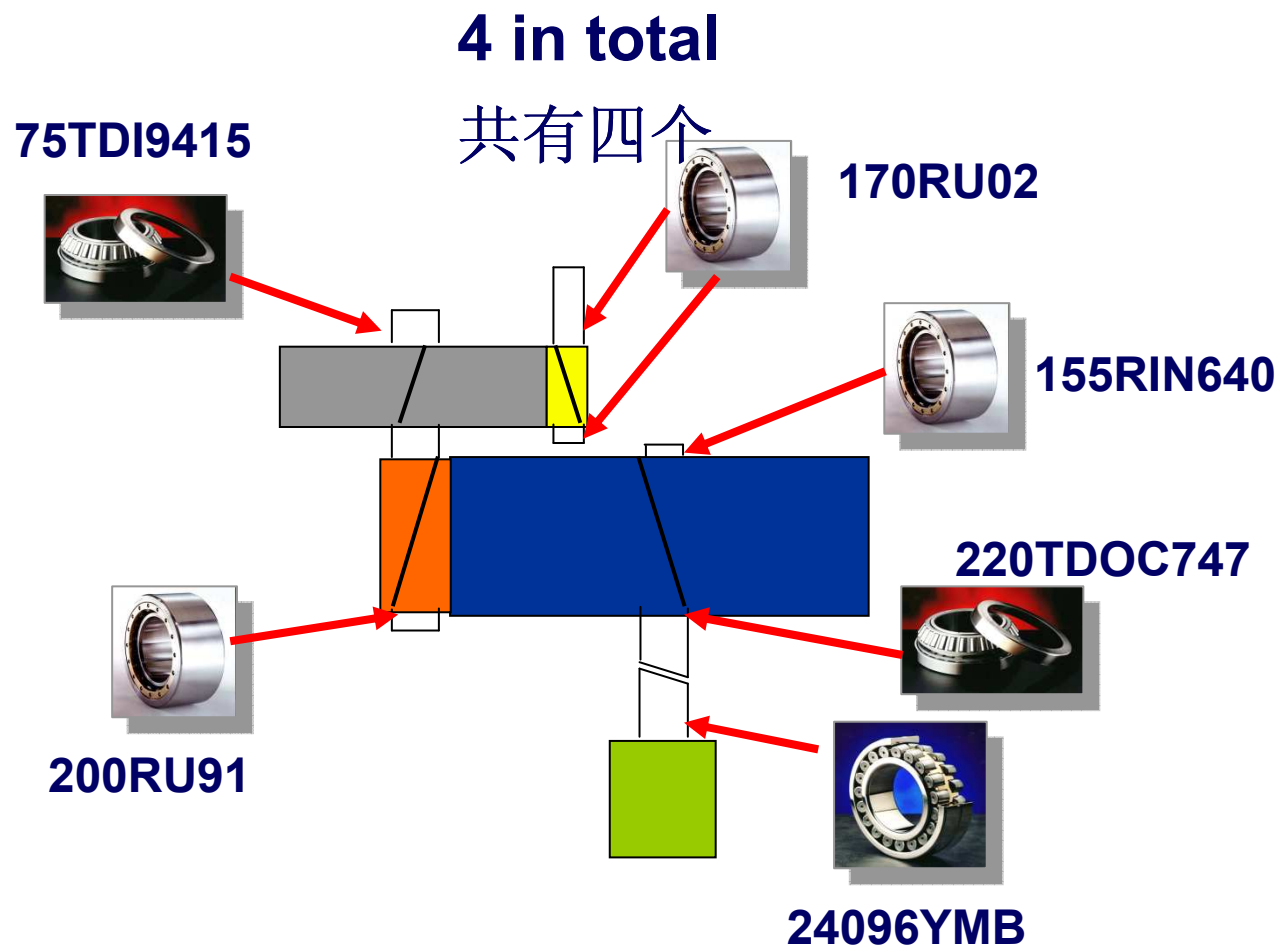
2TS-IM

索斗铲：牵引和提升机构



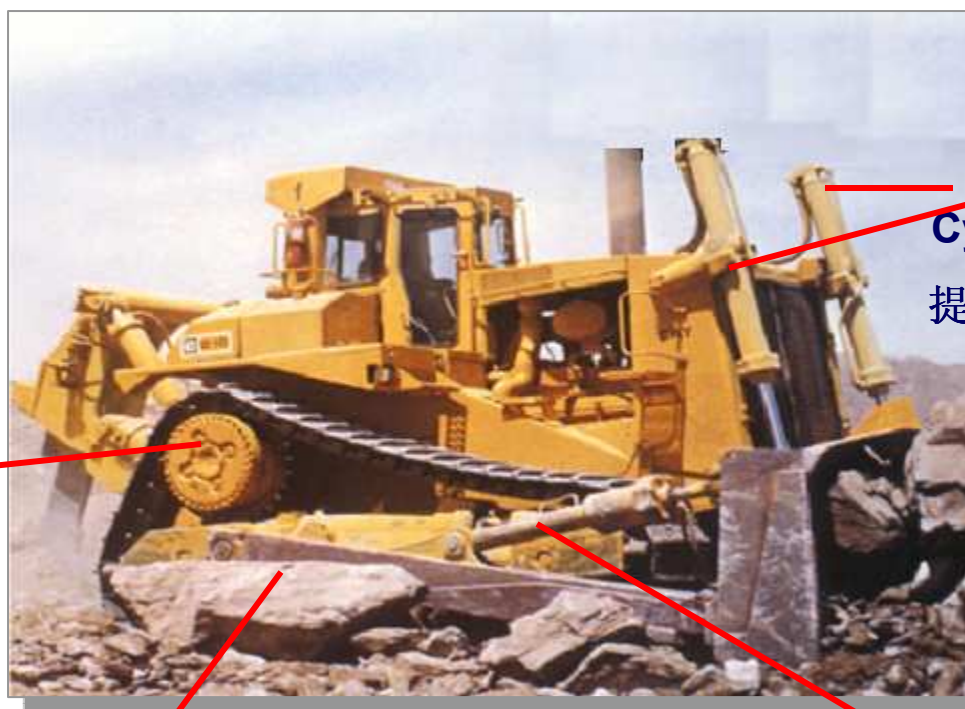
Dragline : Swing Machinery

索斗铲：回转机构



Equipment: Crawler Dozer

设备：履带式推土机



Sprocket: TRB

链轮: TRB

**Lift & Tilt
Cylinders : SPB**

提升液压缸: SPB

Push Blade: SPB

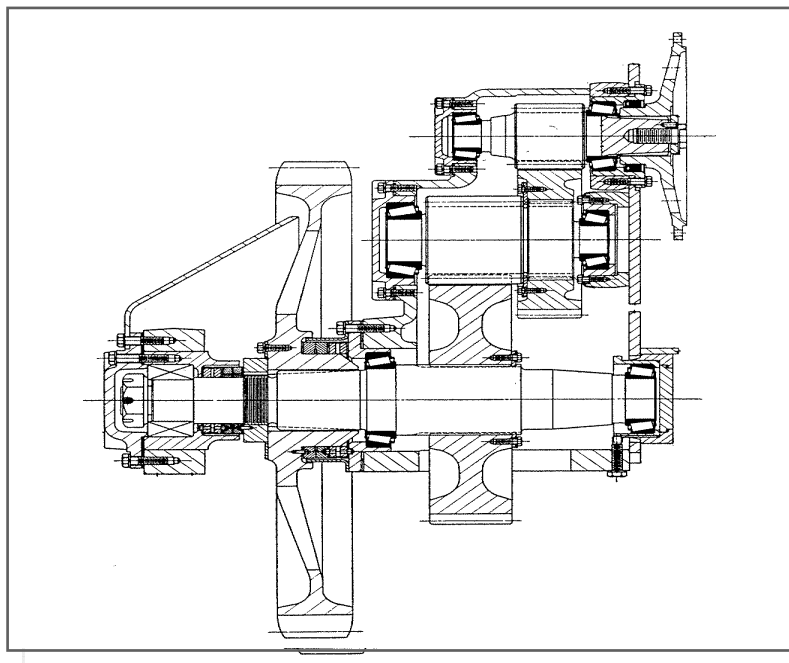
推进块: SPB

**Equalizer Track
Bar: SPB**

平衡块: SPB

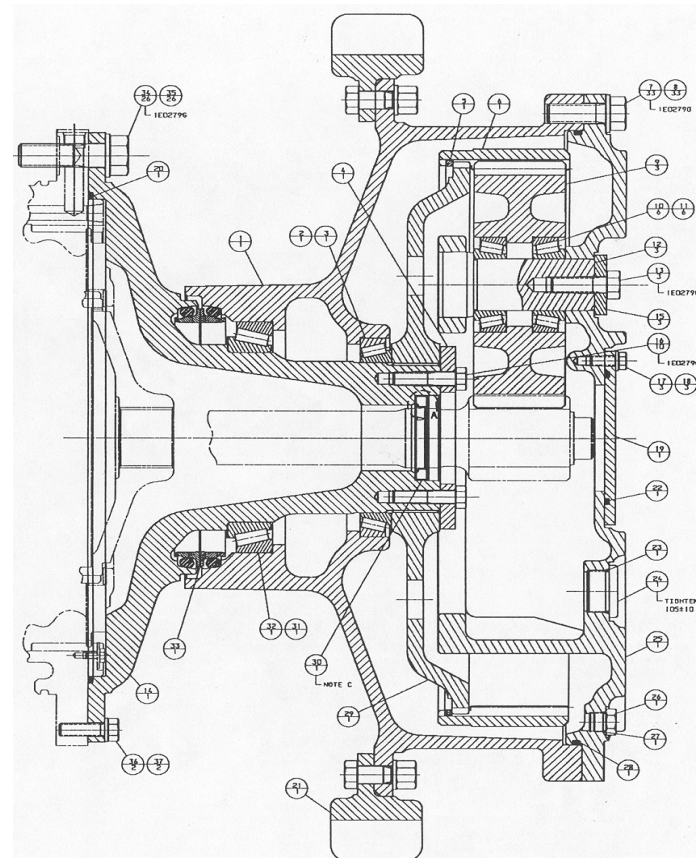
Crawler Dozer: Sprockets

履带式推土机: 链轮



Low-Horsepower Design

低功率设计



High-Horsepower Design

高功率设计

Equipment: Continuous Miner

设备: 连续采煤机



Cutter head : TS

切割头: TS

Ranging Arm: CRB

摇臂: CRB

Gathering head: TS

集聚头: TS



Equipment: Long-Wall Shearer

设备：长壁采煤机

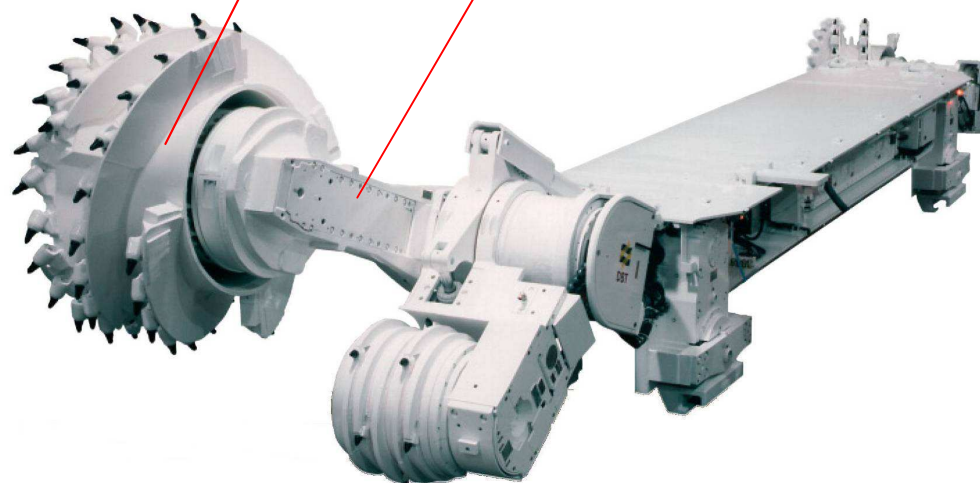


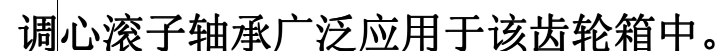
Cutter head: TDI, SRB, CRB

切割头: TDI, SRB, CRB

Ranging arm : CRB,SRB

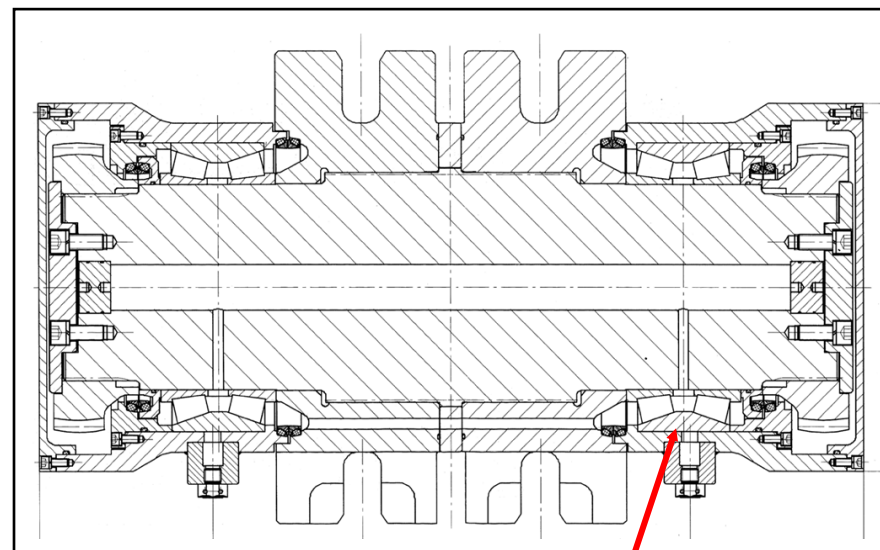
摇臂: CRB,SRB





Equipment: Armored face conveyor

设备：刮板输送机

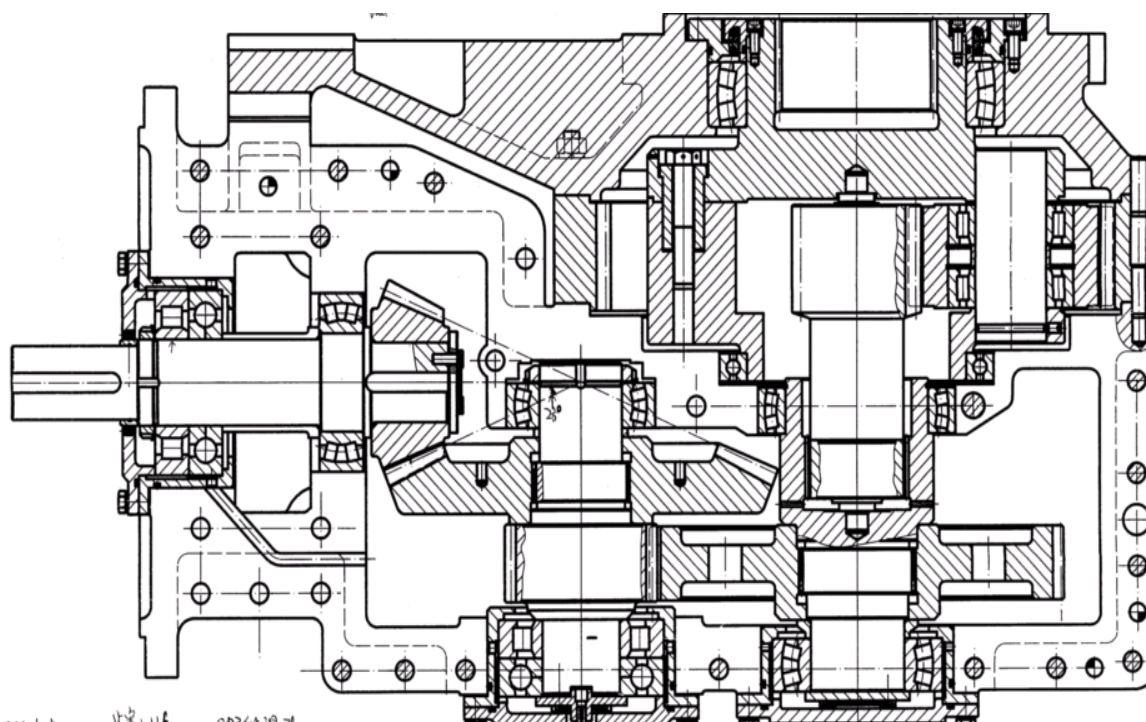


Equipment: Armored face conveyor

设备: 刮板输送机

Item# 序号	Timken part # 产品型号
序号	型号
1	23130CJW33
2	22328CJW33
3	22322CJW33
4	22230CJW33
5	23938YMW33
6	22326CJW33
7	22324CJW33C3
8	22324CJW33
9	22232CJW33
10	22319CJW33
11	23038CJW33
12	23222CJW33
13	23230CJW33
14	23132CJW33
15	22234CJW33
16	22314CJW33
17	23224CJW33C3

刮板输送机：齿轮箱



Questions???

■ Question 1:

Which mining OEM in the world has the longest business relationship with Timken?

世界上哪个采矿设备生产商和铁姆肯合作最长?

Answer 1

- Caterpillar
- 卡特比勒

■ Question 2:

If a TS bearing is selected for the wheel end position of a mining truck, what heat treatment should be applied to this bearing, Why?

如果矿山卡车轮端选用了单列圆锥滚子轴承, 应该对这个轴承采用什么样的热处理?

Answer 2

- Case Carburization.

mining trucks run along the rough path at the mine site, making it subject to the frequent and inconstant shock loading. Due to excellent shock load resistant ability, Case carburized bearings perform much better than through hardened ones at wheel position.

表面渗碳

矿山卡车在矿上沿着崎岖不平的道路行进,不时受到变化无定的冲击载荷. 由于渗碳轴承相比全淬透轴承有着优异的抗冲击性,因此是轮端应用中会有更好的性能表现

■ Question 3:

Looking at Page 12, why are CRBs instead of TRBs used on the shafts of the drag and hoist mechanism?

为什么12页中的索斗铲表示的牵引和提升机构中使用了CRB而不是TRB?

Answer 3

- Because the gears mounted on shafts are herringbone which generates no axial load.
- 因为轴上安装的是人字形齿轮,不会产生轴向力.

■ Question 4:

What kind of bearings are mostly used in the ranging arm of a long wall shearer?

长壁采煤机的摇臂位置通常用什么轴承？

Answer 4

- CRB, SRB
- 圆柱滚子轴承, 调心滚子轴承

■ Question 5:

What kind of bearings are mostly used in the sprocket and gearbox of a AFC?

刮板输送机链轮和齿轮箱位置通常用什么轴承？

Answer 5

- TRB in sprocket, SRB&CRB in gearbox
- 链轮：圆锥滚子轴承；齿轮箱：调心滚子轴承&圆柱滚子轴承

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Thanks!

