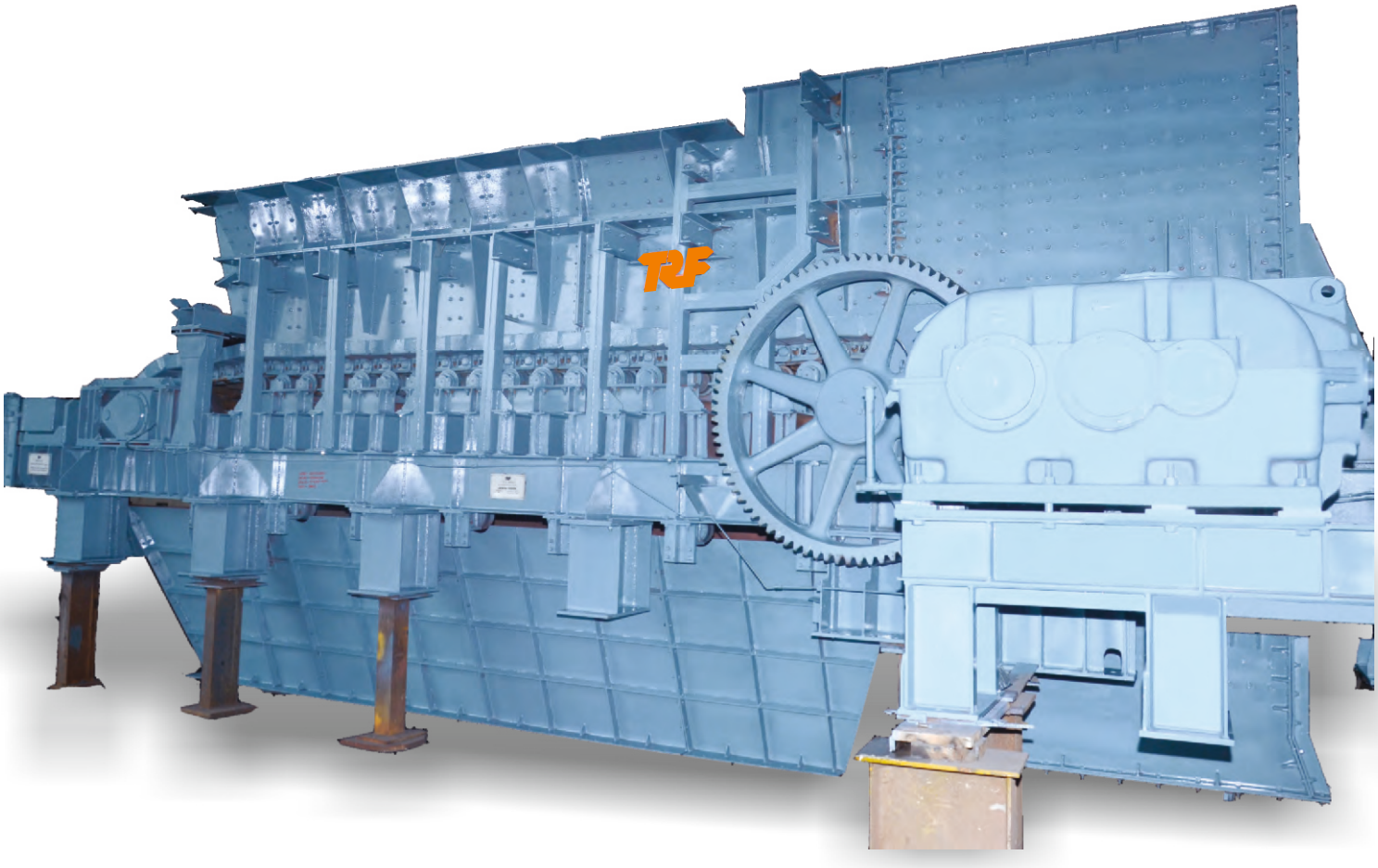
TRF LIMITED
A TATA Enterprise

Apron Feeders



TECHNICAL SPECIFICATIONS

- 3000 mm wide Pan
- Drive : Hydraulic Electro-Mechanical & Hydro Mechanical
- 2640 tph capacity for coal and 3000 tph (Iron ore)
- Can be installed below wagon tippler hopper, stockpile and primary or secondary crushers
- Capacity and speed adjustment features
- Horizontal as well as inclined installation
- High wear resistant material for apron pan, chain, sprockets, rollers and liners.
- Sealed bearings for Feed Rollers and Returned Rollers to avoid frequent lubrication
- Safety Device :- Mechanical/Electrical
- Chain Scrapper Conveyor or Dribble Belt Feeder for spillage material

Apron Feeders

Introduction

Apron Feeder is a mechanical equipment widely used in Bulk material Handling. Its application is found in almost all sectors like power, steel, cement plant, etc.

The Apron Feeders are broadly classified as

a) Extra heavy duty Apron Feeder with crawler chain-sprocket assembly.
b) Extra heavy duty Apron Feeder with link-chain assembly.
c) Heavy duty Apron Feeder with link-chain assembly.

The Apron Feeder consists of one or more endless chains to which overlapping pans are attached to form a continuous moving bed particularly suited for conveying heavy duty raw materials such as coal, coke , ore, slag, rock, stone, gravel, clay, etc. They are frequently used as feeders located under crushers and hoppers. Apron Feeders can be installed in horizontal and inclined condition depending on the feeding zone of system layout.

It is recommended that for higher conveying efficiency, the feeder's inclination should be within 10 degrees.

It's use lends itself to situation where a belt conveyor is not suitable i.e., for hot materials and large material lumps. Pan width is normally selected in between 700 mm. to 3000 mm. depending on material, feed size and capacity.
Apron Pan, chain, rollers and other components are of robust as they have to take direct feed and withstand free dropping materials from an appreciable height on to the Apron Pan.

It is recommended that Apron Feeders operate at lowest possible speed to avoid early wear of machine parts. The speed normally depends on bulk-density of material and lump size. The Extra Heavy-Duty Apron Feeder can be installed at the discharge section of dump truck or storage bin which receives strong falling impact load, raw material pressure and lumps upto 2000 mm.

TRF extra heavy-duty type Apron Feeder is so rationally and strongly designed and manufactured that it can be operated in a stable manner even under severe conditions.

Specification of each part

(1) Apron Pan and Conveyor Chain
The Apron Pan is made of steel plate and has sufficiently high strength to falling impact load of large lumps. The material of apron may be wear-resistant steel plate or high manganese cast steel.

The Conveyor Chain is a high precision link chain or crawler chain with special shape having enough strength and life. It is fitted with Apron Pan, either at bottom or side.

(2) Feed
The Feed Roller can withstand falling impact load through Apron and is arranged at regular intervals to ensure smooth running of the Apron. Roller surface has wear resistibility, and sealed bearing is used for bearing part.

(3) Driving machine
The driving machine is composed of sprocket wheel and tail wheel for conveyor chain, head shaft, tail shaft, take-up device, plummer blocks with bearing and safety covers. Driving method is to drive head shaft by variable speed motor through reducing speed by reducer. Cast steel plummer block with self-aligning roller bearing is used. Hydraulic drive is also used in some cases.

(4) Frame, Hopper, Skirt, Chute
Each part is made by welding of shape steel and steel plate and so strongly constructed that it can sufficiently withstand falling impact load of feed material or hopper pressure.
Exchangeable liner of wear resistant steel is provided inside hopper and skirt. Liners like Arco, Hardox, Hadfield, Sailhard, etc. are used.

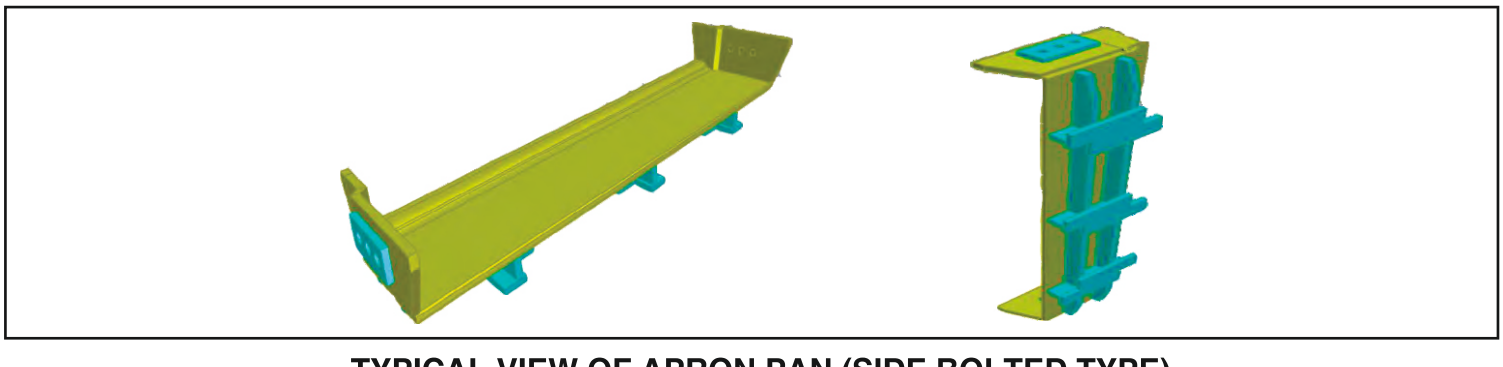
(5) Lubricating device
Lubricating of each bearing of Plummer block is effected by the hand pump from one place or by the centralized forced lubricating system consisting of many distributing valves.

(6) Overload safety device
In case excessive load or overload is placed, motor and machine are protected by overcurrent relay.
Setting of overload time and detection point can be adjusted arbitrarily.

List of Apron Feeders supplied to various customers

Sl. No.	Size		Apron Chain		Capacity	Apron	Inclination	Material	Lump	Motor	Remarks
	Ap. Width	Length	Pitch (mm)	Stren. (ton)	(t.p.h.)	Speed(m/min.)	(degree)		(Max.)	Power	
1	1800	17825	300	120	1320	13.5	0	Coal	400	110 kw	
2	2000	17200	300	120	300-1700	12.3	0	Coal	300	132 kw	
3	1200	13500	175.5	84	1000	14.44	0	Clinker, Gypsum	100	75 kw	
4	2000	16160	228.6	164	1430	11.07	0	Coal	350	110 kw	
5	2000	17200	300	120	1500	12.02	0	Coal	300	132 kw	
6	2000	13700	228.6	164	750	6.4	10	Coal	1000	110 kw	
7	1600	4350	300	100	150-900	17.86	0	Coal	300	30 kw	
8	1800	14100	300	100	1100	5.14-12.84	0	Coal	250	90 kw	
9	2000	16650	300	120	1500	12.2	0	Coal	250	132 kw	
10	1800	18150	300	120	350-1320	13.5	0	Coal	400	132 kw	
11	1800	17825	300	120	350-1320	13.5	0	Coal	400	132 kw	
12	1800	7870	300	120	1320	8.34	0	Iron ore	250	55 kw	
13	1800	17825	300	120	1320	13.5	0	Coal	400	132 kw	
14	2200	6635	203.2	124	2000	7.2	0	Iron ore	350	55 kw	
15	1800	16100	400	160	2000	15.35	0	Coal	300	110 kw	Hydraulic Drive
16	2000	15300	400	160	1800	14.65	0	Coal	300	110 kw	Hydraulic Drive
17	2000	4350	300	100	1500	14	0	Coal	100	55 kw	
18	2400	18100	400	200	2420	13.87	0	Coal	250	180 kw	
19	2000	15300	400	160	1800	13.35	0	Coal	300	132 kw	
20	2200	6735	203.2	124	800	2.3	0	Iron Ore	150	22 kw	
21	2400	18100	400	200	2420	15	0	Coal	250	160kw	Hydraulic Drive
22	2400	16100	400	160	2200	15.3	0	Coal	250	160kw	
23	2400	18100	400	200	2420	14.5	0	Coal	250	180kw	
24	2400	9000	203.2	124	2400	12	0	Iron Ore	340	132kw	
25	1700	6000	171.1	59	1320	10.5	0	Iron ore	340	37kw	
26	2150	17000	203.2	124	470	3	0	Iron Ore	340	55kw	
27	3000	18100	400	250	2640	11	0	Coal	250	180kw	
28	2000	17000	300	120	1320	12.5	0	Coal	400	110kw	
29	2000	2000	300	120	1320	12.5	0	Coal	400	110kw	
30	2000	4725	203.2	120	1320	7.8	0	Coal	80	45kw	

TYPICAL DETAIL OF APRON PAN



TYPICAL VIEW OF APRON PAN (SIDE BOLTED TYPE)

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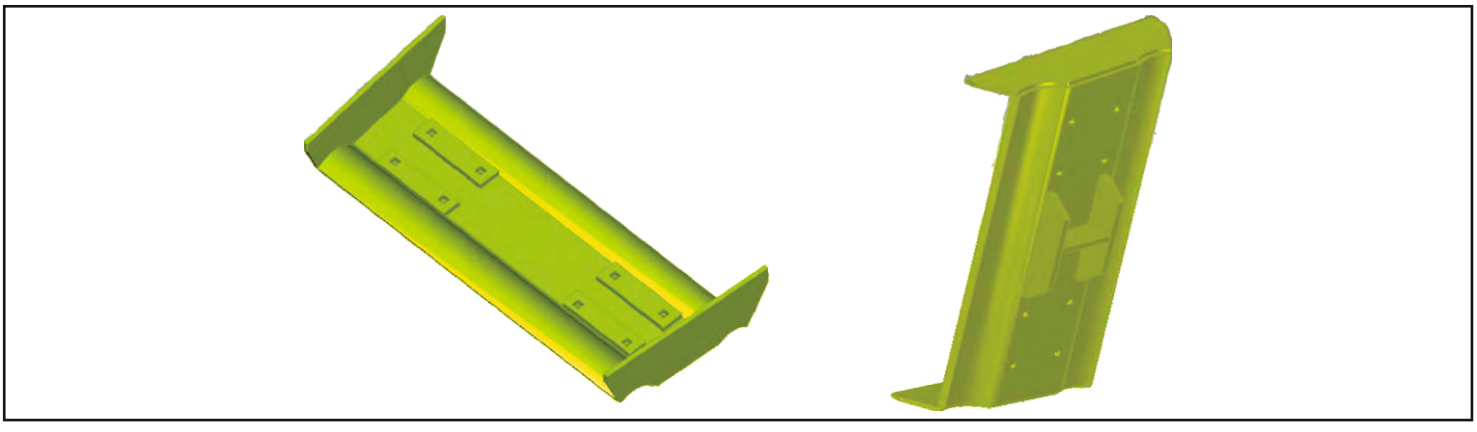
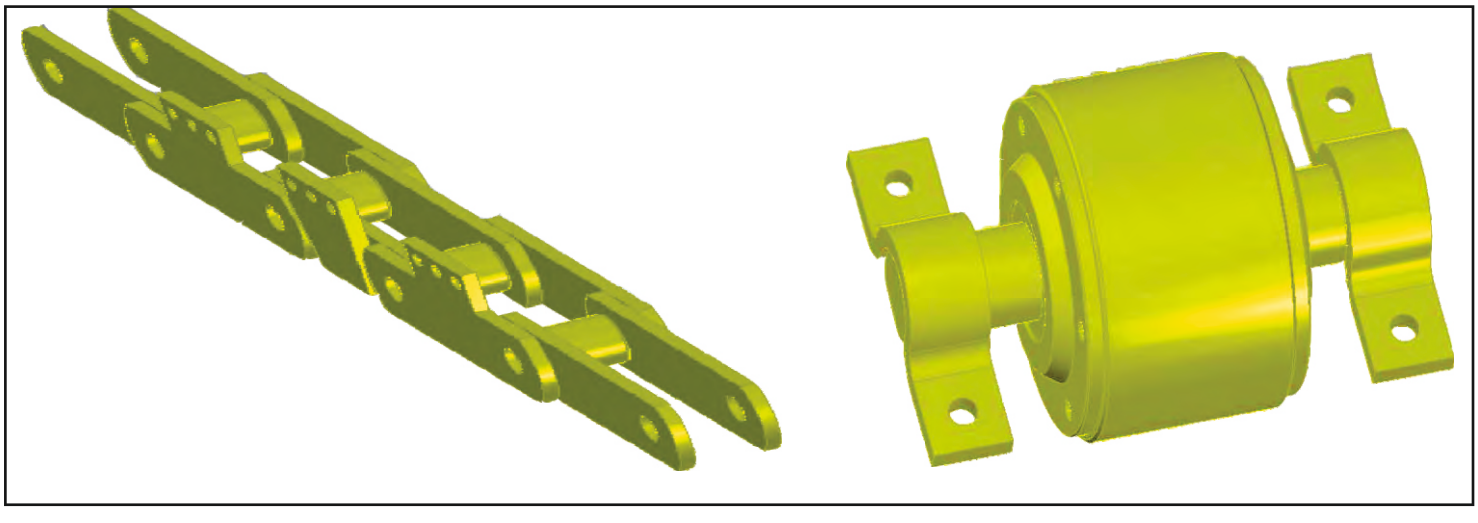
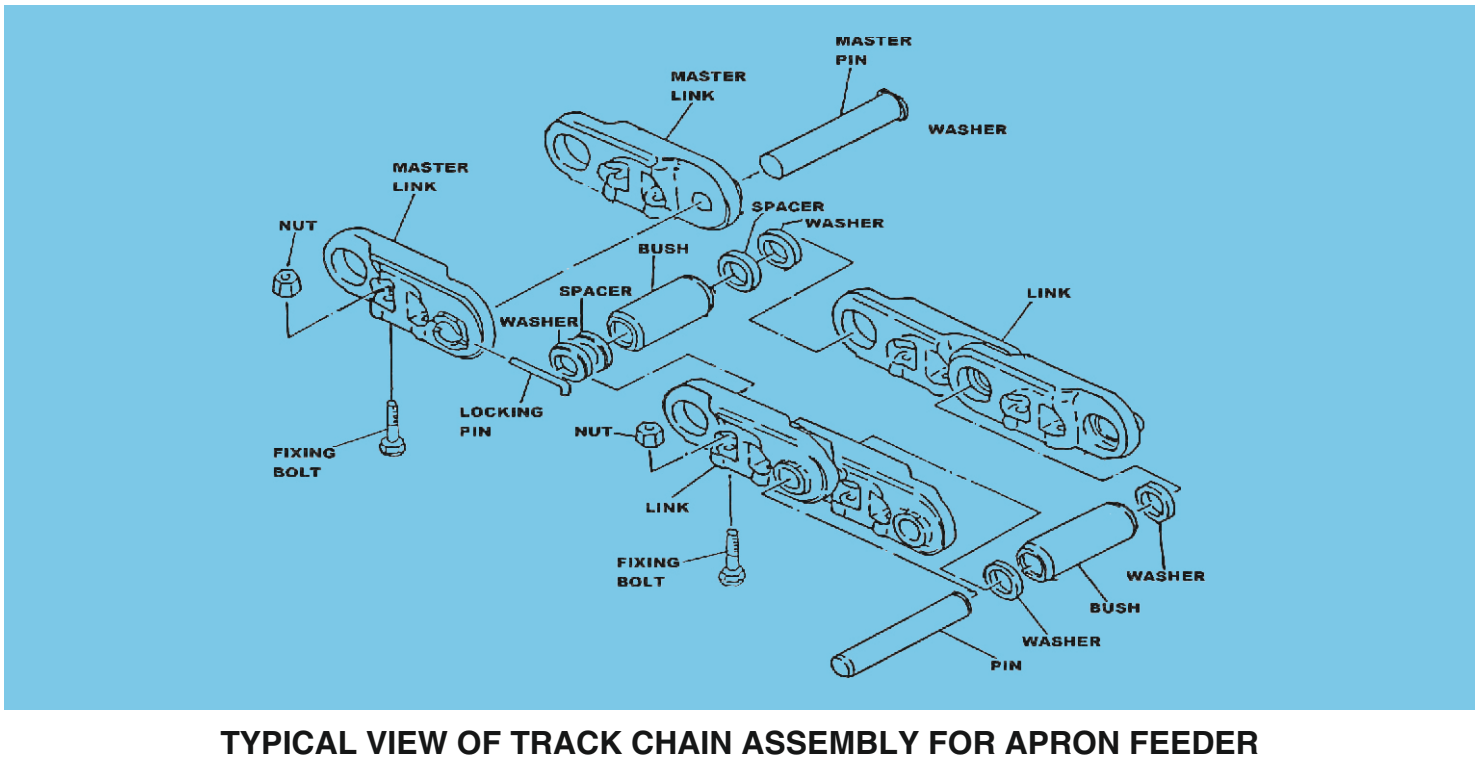


TYPICAL VIEW OF APRON PAN (BOTTOM BOLTED TYPE)



TYPICAL VIEW OF LINK CHAIN FOR APRON FEEDER

TYPICAL VIEW OF FEED ROLLER FOR APRON FEEDER



TYPICAL VIEW OF TRACK CHAIN ASSEMBLY FOR APRON FEEDER

HEAD OFFICE & WORKS

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