The Side Arm Charger in chain and sprocket design has haulage capacity of 15T. For 58T and above haulage design Side Arm Charger is supplied. Our data given above is for Rack and pinion design. Haulage capacity of Side Arm Charger is dependent on track layout of RAKE side of Wagon Tippler.

**Salient Features:**

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Hullage Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Type</td>
<td>15T (for rack &amp; sprocket design)</td>
</tr>
<tr>
<td>2.0</td>
<td>Gross weight of equipment (approx)</td>
<td>58T</td>
</tr>
<tr>
<td>3.0</td>
<td>Dimension (L x B x H) (main body)</td>
<td>10.15 m x 3.0 x 5.40 m (approx)</td>
</tr>
<tr>
<td>4.0</td>
<td>Operating Speed</td>
<td>0.5 m /sec</td>
</tr>
<tr>
<td>5.0</td>
<td>Power</td>
<td>0.5 m /sec</td>
</tr>
<tr>
<td>6.0</td>
<td>Mode of Power Supply</td>
<td>Hydraulic Drive</td>
</tr>
<tr>
<td>7.0</td>
<td>Drive arrangement envisaged</td>
<td>Planetary Gearbox</td>
</tr>
<tr>
<td>8.0</td>
<td>Panting of wheels</td>
<td>No</td>
</tr>
<tr>
<td>9.0</td>
<td>Type of lubrication arrangement provided</td>
<td>Centralised Manual Grease lubrication</td>
</tr>
<tr>
<td>10.0</td>
<td>No. of carriage, wheels &amp; Guide wheel</td>
<td>6</td>
</tr>
<tr>
<td>11.0</td>
<td>Track Gauge</td>
<td>1460 mm (CO)</td>
</tr>
<tr>
<td>12.0</td>
<td>Travel Length</td>
<td>30 m</td>
</tr>
</tbody>
</table>
Salient Features :-

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Hydraulic</td>
</tr>
<tr>
<td>Capacity of wagons that can be handled at a time</td>
<td>140 tonnes gross weight of each wagon (Max)</td>
</tr>
<tr>
<td>No of tippling per hour</td>
<td>25 tips per hour</td>
</tr>
<tr>
<td>Weight of empty wagon</td>
<td>3 SECONDS</td>
</tr>
<tr>
<td>Weight of loaded wagon</td>
<td>39 SECONDS</td>
</tr>
<tr>
<td>Time taken for discharge</td>
<td>35 SECONDS</td>
</tr>
<tr>
<td>Time taken for Return</td>
<td>35 SECONDS</td>
</tr>
<tr>
<td>Time taken for empty wagon to be ready to receive next loaded wagon</td>
<td>144 SECONDS</td>
</tr>
<tr>
<td>Total</td>
<td>3 SECONDS</td>
</tr>
</tbody>
</table>

Tipping time cycle:

(1) Placement of loaded wagon & ejection of empty wagon | 58 SECONDS |
(2) Weighting of loaded wagon | 3 SECONDS |
(3) Tip | 39 SECONDS |
(4) Pause | 39 SECONDS |
(5) Return | 35 SECONDS |
(6) Weight of empty wagon | 3 SECONDS |

SIDES ARM CHARGER

Side Arm Charger is a Marshalling device to position the loaded wagon centrally on tippler platform one by one for unloading operation by wagon tippler. Side Arm Charger is a rail mounted / crane type equipment used to pull the loaded wagon along with the rake & push out the empty wagon from the tippler platform after tipping.

Operation:

The full rake of 50 wagons shall be brought in by locomotive and stopped with the first wagon within range of the Side Arm Charger. The locomotive is then taken away. The charger shall be driven towards the first wagon, its arm is lowered and it is coupled to the first wagon of the rake. The charger then turns the rake forward by one wagon length and stopped. Here the first wagon is decoupled from the rake manually. The charger then propels the first wagon on to the tippler table centrally and then automatically decouples and closes off the tippler. Now the tippler is ready for operation. In the meanwhile, the side arm charger is moves back to rake position for next cycle. In next cycle, the rake is drawn up by the one wagon length, and the previously tipped wagon is ejected simultaneously. At the end of rotation of the end ring the rail platform with loaded wagon lifts from its supports and as a result of the offset joint, the wagon adjusted slightly and rests against the longitudinal movable side beam. The rotation continues and the wagon is swung towards the top copings of wagon.

The tippler is driven by a hydraulic motor and the top-clamping device is actuated by four hydraulic cylinders mounted on the End Ring. Cylinders are operated by a hydraulic power pack which gives necessary fluid flow, and pressure to operate the cylinders.

At the start of rotation of the end ring the rail platform with loaded wagon lifts from its supports and as a result of the offset joint, the wagon adjusted slightly and rests against the longitudinal movable side beam. The rotation continues and the wagon is swung towards the top copings of wagon.

The tippler is driven by a hydraulic motor and the top-clamping device is actuated by four hydraulic cylinders mounted on the End Ring. Cylinders are operated by a hydraulic power pack which gives necessary fluid flow, and pressure to operate the cylinders.

Wagon Tippler:

The skilled craftsmanship of the state-of-the-art wagon tipplers manufactured by TRF are in accordance with the Indian standards and the prescribed norms laid down by the statutory bodies.

The wagon tippler is designed to unload materials like Coal, Coke, Lignite, Iron Ore, Limestone, dolomite etc. from the open type railway wagons viz; BOY, BOX, BOXB, BOXON, BOXONU, RDM, DFCJ, DFCCLZ, MAO-11 (25 T) etc. It is also capable of performing the function of weighing the gross & tare weight of wagons by incorporating an integral weighbridge. TRF’s wagon tipplers are of sturdy construction and require negligible maintenance.

The tippler is of latest design having incorporated all the main features mentioned in the RDSO-G 33 (Rev.-1) guidelines. The Wagon Tippler With End Rings and reinforced shafts is supported on bearing beams. Movable side support fitted with side beam so designed that it has a facility of forward/backward movement, such that it should be able to move & touch the different width of wagon without applying any pressure on the wagon side wall. The top clamping arrangement will facilitate proper clamping of different height and width of wagons. The wagon is clamped automatically on the table during tipping and no hand adjustments are necessary. A side range of wagons can be accommodated and the clamping arrangements are such that it is held firmly without damage or undue pressure on any part of the wagon.

The machine is capable of automatically clamping (by hydraulic clamping) and tipping specified 8-wheeler bogie type broad gauge open wagons. The tippler employs wagon above rail level and inverts them through a maximum angle of 160 degrees so as to discharge the material into the hopper.

The tippler is a positive gear operated hydraulic driven machine of massive & robust construction and designed for continuous and arduous duty. It is counter balanced at each stage of its operation. It carries the wagon with pin jointed connections between the component, thus giving an articulated construction. The sector gear is mounted on the periphery of end rings and driven by a pinion mounted shaft powered by gear box and motor by direct hydraulic drive. The Wheel Gripper and Wheel Choker ensure that during wagon tipping no inadvertent motion of the wagons occur and no accidental rolling of the wagons is possible on the tippler table.

Working Description:

The loaded wagon to be discharged is placed in the central position on the tippler cradle and is weighed with weigh bridge (If installed).

At rest position of the Wagon Tippler the movable side support moves forward and touches the side wall of the wagon gently and gets locked.

At the start of rotation of the end ring the rail platform with loaded wagon lifts from its supports and as a result of the offset joint, the wagon adjusted slightly and rests against the longitudinal movable side beam. The rotation continues and the wagon is swung towards the top copings of wagon.

The tippler is driven by a hydraulic motor and the top-clamping device is actuated by four hydraulic cylinders mounted on the End Ring. Cylinders are operated by a hydraulic power pack which gives necessary fluid flow, and pressure to operate the cylinders.

The tipping operation, Top clamping device starts moving to clamp the wagon from top. As 40 (approx) of the wagon rotation, top clamp comes in contact with the wagon’s top coping. At the condition cylinders get locked, in turn wagon is securely held between cradle platform and top clamp pads. Rotation continues up to 160hand material starts to discharge at 40 (approx) and continues up to 160 in the process of discharge, the cylinder force is so adjusted hydraulically that no extra force is applied on the wagon walks. After a pause of 35sec., return cycle starts. The release of the top clamp device takes place at 40 (approx) from the next position.

The cradle platform with empty wagon comes to rest position. The empty wagon is pushed out and the platform becomes ready to receive next loaded wagon.

The weight of the empty wagon (if weighbridge is installed) is recorded. The empty wagon is then pushed away from the cradle table and next loaded wagon of the rake is placed on the table for tipping operation.

The tippler is electro-mechanically operated hydraulic driven machine of massive and robust construction and designed for continuous and arduous duty. It is counter balanced at each stage of its operation. It carries the wagon with pin jointed connections between the component, thus giving an articulated construction. The sector gear is mounted on the periphery of end rings and driven by a pinion mounted shaft powered by gear box and motor by direct hydraulic drive.

The Wheel Gripper and Wheel Choker ensure that during wagon tipping no inadvertent motion of the wagons occurs and no accidental rolling of the wagons is possible on the tippler table.

Main Components:

- Tippler drive Unit (Hydraulic Drive & Power Pack)
- Electric mechanism
- End Pier with Sector Gear
- Movable Side Support
- Top clamping arrangement
- Tippler platform
- Brakes
- Countersweight
- Hydraulic Clamping
- Main bearing and main shaft

Special features:

- Hydraulic clamping system
- Maintenance free operation
- Robust & reliable

Service Features:

- Operation of side arm charger
- Maintenance free operation
- Robust & reliable

Technical Specifications:

- Drive: Electro-Mechanical/Hydro-Mechanical/Hydraulic
- Duty: Continuous
- Design: Incorporates all features provided in RDSO33 (Revision-1) guidelines.
- Power pack details:
  - Angle of rotation(Approx)-degree
  - Speed of rotation in RPM
  - Power rating in KW
  - No of tips per hour
  - Power pack details
  - Width of wagon handled
  - Length of wagon handled
  - Tipping time cycle:
    - Placement of loaded wagon & ejection of empty wagon: 58 seconds
    - Weighting of loaded wagon: 3 SECONDS
    - Tip: 39 SECONDS
    - Pause: 39 SECONDS
    - Return: 35 SECONDS
    - Weight of empty wagon: 3 SECONDS
    - Total: 144 SECONDS

Wagon Length:

- Travel Length
- Track Gauge
- Type of lubrication arrangement provided

Gross weight of equipment (approx)
Salient Features :-

1. Type: Hydraulic
2. Capacity of wagons that can be handled at a time: 140 tonnes gross weight of each wagon (Max)
3. Rail track gauge: 1435 mm
4. Lifted capacity: 140 ton
5. No. of tipping per hour: 25 tips per hour
6. Angle of rotation/approach degree: 160
7. Height of wagon handled: 3130 to 3660 mm.
8. Width of wagon handled: 3130 x 3600 mm.
10. Type of lubrication arrangement provided: FESTOONING
11. No of clamping arranged (Hydraulic): 6

Tipping time cycle:

(i) Placement of loaded wagon & ejection of empty wagon: 58 seconds
(ii) Weighting of loaded wagon: 3 SECONDS
(iii) Tip: 30 SECONDS
(iv) Pause: 35 SECONDS
(v) Return: 35 SECONDS
(vi) Weight of empty wagon: 3 SECONDS
(vii) Total: 144 SECONDS

SIDE ARM CHARGER

Side Arm Charger is a marshalling device to position the loaded wagon centrally on toppler platform. It is used for unloading operation by wagon tippler. Side Arm Charger is a rail mounted machine used to pull the loaded wagon along with the rakes and push the empty wagon from the tippler platform after tipping.

Operation:

The full rake of 50 wagons shall be brought in by locomotive and stopped with the first wagon within range of the Side Arm Charger. The locomotive is then taken away. The charger shall be driven towards the first wagon, its arm is lowered and it is coupled to the first wagon of the rake. The charger then pushes the rake forward by one wagon length and stops. Here the first wagon is decoupled from the rake manually. The charger then propels the first wagon on to the tippler table, tippler platform and top clamp pads. Rotation continues up to 160 degrees and stops after the discharge, the cylinder force is so adjusted hydraulically that no extra force is applied on the wagon wheels. The empty wagon is pushed out and the platform becomes ready to receive next loaded wagon.

Salient Features:

- Hydraulic driven
- Electric motor
- End ring with sector gear
- Tippler platform
- Brakes
- Countershoots
- Hydraulic clamping
- Maintenance free operation
- Robust & reliable

Wagon Tippler

The state-of-the-art wagon tippler manufactured by TRF is in accordance with the Indian standards and the prescribed norms laid down by the statutory bodies.

The wagon tippler is designed to unload materials like Coal, Coke, Lignite, Iron Ore, Limestone, dolomite etc. from the open type railway wagons viz., BOX, BOXN, BOXNM, BOXNH, BOXNH2, DFC25, DFC32.5, MKD-11 (OZ/0 etc.). It is also capable of performing the function of weighing the gross & tare weight of wagons by incorporating an integral weighbridge. TRF’s wagon tippler are of sturdy construction and require negligible maintenance.

The tippler is of latest design having incorporated all the main features mentioned in the RDSO-C 33 Rev. 1 guidelines. The Wagon Tippler with End Rings and reinforced shafts is supported on turntable bearings. Moveable side support fitted with side levers is so designed that it has a facility of forward/ backward movement, such that it should be able to move & touch the different width of wagon without applying any pressure on the wagon side wall. The top clamping arrangement will facilitate proper clamping of different height and width of wagons. The wagon is clamped automatically on the table during tipping and no hand adjustments are necessary. A side range of wagons can be accommodated and the clamping arrangements are such that it is firmly held without damage or undue pressure on any part of the wagon.

The wagon tippler is capable of automatic clamping (by hydraulic clamping) and tipping specified 8-wheeler bogie type broad gauge open wagons. The tippler employs wagons above rail level and inserts them through a maximum angle of 160 degrees so as to discharge the material into the hopper.

The tippler is a positive gear operated hydraulic driven machine of massive and robust construction and designed for continuous and sturdy uses. It is counter balanced at each stage of its operation. It carries the wagon with per jointed connections between the component, thus giving an articulated construction. The sector gear is mounted on the periphery of end rings and driven by pinion mounted on shaft powered by gear box and motor by direct hydraulic drive.

The Wheel Gripper and Wheel Choker ensure that during wagon tipping no inadvertent motion of the wagons occurs and accidental rolling of the wagons is possible on the tippler table.

Working Description:

The loaded wagon to be discharged is placed in the central position on the tippler table and is weighted with Weigh Bridge (if fitted).

At the start of rotation of the end rings the rail platform with loaded wagon lifts from its supports and as a result of the offset joint, the wagon adjusted slightly and rests against the longitudinal moveable side levers. The rotation continues and the wagon is swung towards the top copings of wagon.

The tippler is driven by a hydraulic motor and the top-clamping device is actuated by four hydraulic cylinders mounted on the End Ring. Cylinders are operated by a hydraulic power pack which gives necessary fluid flow, and pressure to operate the cylinders.

During the tipping operation, Top clamping device starts moving to clamp the wagon from top. At 40 (approx) of the wagon rotation, top clamp comes in contact with the wagon’s top coping. At this condition cylinders get locked, in turn wagon is securely held between cradle platform and top clamp pads. Rotation continues up to 160 degrees and stops after the discharge, the cylinder force is so adjusted hydraulically that no extra force is applied on the wagon wheels. After a pause of 3 sec., return cycle starts. The release of the top clamp device takes place at 40 (approx) from the rest position.

The empty wagon is pushed out and the platform becomes ready to receive next loaded wagon.

The weight of the empty wagon (if weight bridge is installed) is recorded. The empty wagon is then pushed away from the cradle table and latest loaded wagon of the rake is placed on the table for tipping operation.

The tippler is interlocked electrically with Side Arm Charger and succeeding equipment (headers, lifters, hopper) with respect to operational & safety requirement.

Main Components:

- Tippler drive Unit (Hydraulic Drive with Power Pack)
- Electro-mechanical
- End Ring with Sector Gear
- Moveable Side Support
- Top clamping arrangement
- Tippler platform
- Brakes
- Countershoots
- Hydraulic Clamping
- Maintenance free operation
- Robust & reliable
The Side Arm Charger with chain and sprocket design has haulage capacity of 1ST. For 2ST and above haulage design Side Arm Charger is supplied. Our data given above is for Rack and pinion design. Haulage capacity of Side Arm Charger is dependent on track layout. 

Salient Features:

- Type: Hydraulic
- Gross weight of equipment (approx.): 50 t (for rack & pinion design)
- Dimensions (L x B x H) (main body): 10.15 x 3.0 x 5.40 (m approx)
- Operating Speed: 200 rpm
- Power: 1500 rpm
- Brake: Failsafe EM Brake
- Maintenance: Maintenance free operation.

Wagon Tippler with Side Arm Charger

Tracie effort for pushing & pulling:
- Forward: 0.5 m
- Reverse: 0.5 m

TECHNICAL SPECIFICATIONS

- Capacity: Gross weight of loaded wagon 140 T (Max)
- No. of Tips: 25 Tips per hour
- Clamping: Hydraulic
- Drive: Electro-Mechanical

Design:

Incorporates all features provided in RDSO guidelines.

- Head Office & Works:
- Marketing Offices:
- Regional Offices:

Business Development Department

Bulk Material Handling Equipment

Bulk Material Handling Systems

Hydraulic

Incorporates all features provided in RDSO guidelines.