



**M.M.E. TROLLEYS**  
**T - SERIES**  
**PLAIN, GEARED & MOTORISED**  
**1, 3, 6 & 10 TONNE**

**INSTRUCTION, MAINTENANCE**  
**AND PARTS MANUAL**



SERIAL NO :-.....

DATE :-.....

ISSUED BY :-.....

**MANUFACTURED BY**  
**M.M.E. MANUFACTURING CO. (PTY) LTD**  
**CARLETONVILLE, SOUTH AFRICA**



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**THIS MANUAL MUST BE READ BEFORE USING OR REPAIRING THESE PRODUCTS.** This manual contains important safety, installation, operation, maintenance and repair information. Make this manual available to all persons responsible for the operation, installation, maintenance and repair of these products.



Do not use this trolley for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this hoist in accordance with South African Bureau of Standards Specification number SANS 1824 Beam trolleys (crawls) and any other safety codes or procedures relevant to the industry in which the trolley is being used.

## FOREWORD

MME Manufacturing Co (Pty) Ltd warrants to the user its trolleys, and other products to be free from defects in material and workmanship for a period of six months from the date of purchase.

MME will repair, without cost to the user, any product found to be defective, including parts and labour charges, or at MME's option, will replace such products or refund the purchase price less a reasonable allowance for handling in exchange for the product. Repairs and replacements are warranted for the remainder of the original warranty period.

If any product proves defective within its original six months warranty period, it shall be returned to MME Manufacturing Co (Pty) Ltd with proof of purchase and the original test certificate.

This warranty does not apply to products which MME has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine MME parts.

MME Manufacturing Co (Pty) Ltd makes no other warranty and its maximum liability is limited to the purchase price of the product and in no event will MME Manufacturing Co (Pty) Ltd be liable for any consequential, indirect, incidental or special damages of any nature arising from the sale or use of the product whether based on contract or otherwise.

It is MME Manufacturing Co (Pty) Ltd policy to promote safety of all persons and equipment in the workplace. All equipment manufactured is thoroughly checked, packed and inspected before dispatch. Any loss or damage which occurs during shipment while en-route must be reported to MME immediately. Should any item be delivered to you in apparent good condition, but upon opening the container, loss or damage has taken place while in transit, notify MME Manufacturing Co (Pty) Ltd immediately. Should any items be delivered back to MME Manufacturing Co (Pty) Ltd all transport costs will be for the account of the user.

These instructions are prepared by MME Manufacturing Co (Pty) Ltd for the purpose of maintenance, repair and the use of its trolleys.

No responsibility for failure of equipment due to manufacturing procedure will be assumed if these instructions are not carried out. Only original MME Manufacturing supplied spares are to be used in all repairs.

## **SAFETY INFORMATION**

This manual will refer to existing legal requirements and engineering practices as known when this document was written. Should any such legislation or practices change or be “enlarged” upon then due consideration must be taken. Various standards have been used to assist in compiling this document and will be listed where applicable.

The use of powerful lifting equipment is subject to certain hazards that cannot be overcome by mechanical means but only by the exercise of intelligence, care and common sense. It is therefore essential that personnel involved in the use and operation of equipment must be competent, careful, physically and mentally qualified, and trained in the safe operation of the equipment and the handling of the loads. Serious hazards are overloading, dropping or slipping of the load caused by improper hitching or slinging, obstructing the free passage of the load and using equipment for a purpose for which it was not intended or designed. The above can lead to fatal consequences.

MME Manufacturing Co (Pty) Ltd fully realises the importance of proper design factors, minimum and maximum sizes and other limiting dimensions of the chain and its fastenings, sprockets and similar equipment all of which are designed with safety in mind.

The various conditions of the equipment or material can vary depending on the environment they are used in which may cause corrosion or wear and any other variables that may arise in each individual application. It is in the light of this that the trolley be maintained and repaired under the supervision of a competent person:

1. who is qualified by virtue of his knowledge, training, skills and experience to organise the work and its performance.
2. who is familiar with the legal requirements which apply to the work to be performed.
3. who has been trained to recognise any potential or actual danger to health and safety in the performance of the work.

The instructions given in this manual must be interpreted accordingly and sound judgement used in determining their application.

This manual provides important information for all personnel involved with the safe installation, operation and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you should read and understand this manual before operating the product.

## Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in an injury. The following signal words are used to identify the level of potential hazard.



Danger is used to indicate the presence of a hazard which *will* cause *severe* injury, death, or substantial property damage if the warning is ignored.



Warning is used to indicate the presence of a hazard which *can* cause *severe* injury, death, or substantial property damage if the warning is ignored.



Caution is used to indicate the presence of a hazard which *will* or *can* cause minor injury or property damage if the warning is ignored.



Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

## Safety Summary



- **Do not use this trolley or any equipment attached to it for lifting, supporting, or transporting people or lifting or supporting loads over people.**
- **MME T-series trolleys are designed to provide a 5 to 1 factor of safety. It is the responsibility of the customer to ensure that the structure to which the hoist is attached and any load attaching devices are capable of handling the static and dynamic loads imposed on the structure by the trolley (and hoist) and its attachments when lifting the rated load. If in doubt, consult a registered professional structural engineer.**



- **Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.**
- **Whenever a conflict arises between the contents of this manual and any other applicable legislation, standard or procedure, the more stringent of the two must be applied.**

The Occupational Health and Safety Act, Mine Health and Safety Act and other recognized safety sources make a common point: Only trained personnel must operate lifting equipment. Employees who work near cranes or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount: conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the intended path of any load.

**MME Manufacturing** monorail trolley air trolleys are manufactured in accordance with the latest ISO9001 standards.

MME Manufacturing's responsibility with regards the design, manufacture, repair and supply of equipment (specifically in South Africa) is specified in:

- For mines - **The Mine Health and Safety Act, 1996 (Act No. 29 of 1996), Chapter 2 : Health and Safety at Mines, 21. Manufacturer's and supplier's duty for health and safety.**
- For general industry - **Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), Section 10. General duties of manufacturers and others regarding articles and substances for use at work.**

It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association and legislation be checked. Read all operation instructions and warnings before operation.

**Rigging:** It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques.

This manual has been produced by **MME Manufacturing** to provide agents, fitters, riggers, operators and company personnel with the information required to install, operate, maintain and repair the products described herein.

It is extremely important that fitters, riggers and operators be familiar with the servicing procedures of these products, or similar products, and are physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of fitters common hand tools as well as special or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

**MME Manufacturing** cannot know of, nor provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

## SAFE OPERATING PROCEDURES

The following warnings and operating instructions are recommended and are intended to avoid unsafe operating practices which might lead to personal injury or property damage.

**MME Manufacturing** recognizes that most companies who use trolleys and hoists have a safety program in force in their plants. In the event you are aware that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Read the manufacturer's operating instructions before operating the trolley.
2. Never lift a load greater than the rated capacity of the trolley (unless for test purposes).
3. **Never apply an external load or subject any trolley to a load in excess of its rated capacity.**
4. Never use the load chain as a sling.
5. Never operate the hoist with twisted, kinked or damaged chain.
6. Be certain the load is properly seated in the saddle of the hook.
7. Do not use load chains as an earth for welding. Do not attach a welding electrode to a hoist or sling chain.
8. Do not use the up and down stops as a means of stopping a hoist. The up and down stops are emergency devices only.
9. Keep hands and clothing free from moving parts.
10. Never use the hand chain for any other purpose but for control of the hoist.
11. Never operate the hoist if the hand chain is entangled with the load chain, hooks or any other object that will prevent proper control of the hoist.
12. Keep hands free from the load chain where it enters the chain guides.
13. Do not leave a load suspended for extended periods.
14. Always stand clear of the load path.
15. Never use the hoist for lifting or lowering people, and never stand on a suspended load.
16. Never lift, move or suspend loads over people.
17. Before each shift, check the hoist/trolley for wear or damage. Check brakes, limit stops, etc.
18. Periodically, inspect the hoist/trolley thoroughly and replace worn or damaged parts.
19. Follow the lubrication instructions.
20. Do not attempt to repair load chain or hooks. Replace them when they become worn or damaged.
21. Never operate a hoist/trolley when the load chain is not centred under the hook. Do not pull the load sideways.
22. Always rig the hoist/trolley properly and carefully.
23. Do not apply shock loads to the hoist. Take up the slack chain slowly when commencing with lifting operations.
24. Keep the load chain clean and well lubricated. Do not drag the load chain or hook on the floor.
25. Be certain there are no objects in the way of a moving load.
26. Be certain the air supply is shut off before performing maintenance on the hoist/trolley.
27. Do not swing a suspended load.
28. Keep the undercarriage/cradle overhead when not in use.
29. Properly secure the hoist/trolley before leaving it unattended.
30. Only allow personnel trained in safety and operation of this product to operate the hoist/trolley.
31. Avoid collision or bumping of trolleys.
32. Do not operate a hoist/trolley if you are not physically fit to do so.
33. Pay attention to the load at all times when operating a hoist/trolley.
34. Never splice a hoist chain by inserting a bolt between links or by any other means.
35. Do not force a chain or hook into place by hammering.
36. Do not allow the chain to be exposed to extremely cold weather. Do not apply loads to a cold chain.
37. Ensure ends of beam have trolley stoppers fitted to prevent trolley driving off the end of the beam.
38. Prevent the air supply hose from kinking.



39. Trolley wheel spacing to suite beam width.
40. Beam curve radius to be large enough to allow trolley to negotiate bend.

## **LEGAL REQUIREMENTS**

South African legal requirements pertaining to lifting equipment are detailed in the following Acts:

- For mines - **Mine Health and Safety Act (Act 29 of 1996)**  
**8.5 Lifting Equipment Regulations.**
- For general industry - **Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)**  
**Driven Machinery Regulations, 2015**  
**18. Lifting machines, hand-powered lifting devices and lifting tackle**

For all other countries, please consult relevant local legislation relating to the use of lifting equipment.

# SPECIFICATIONS

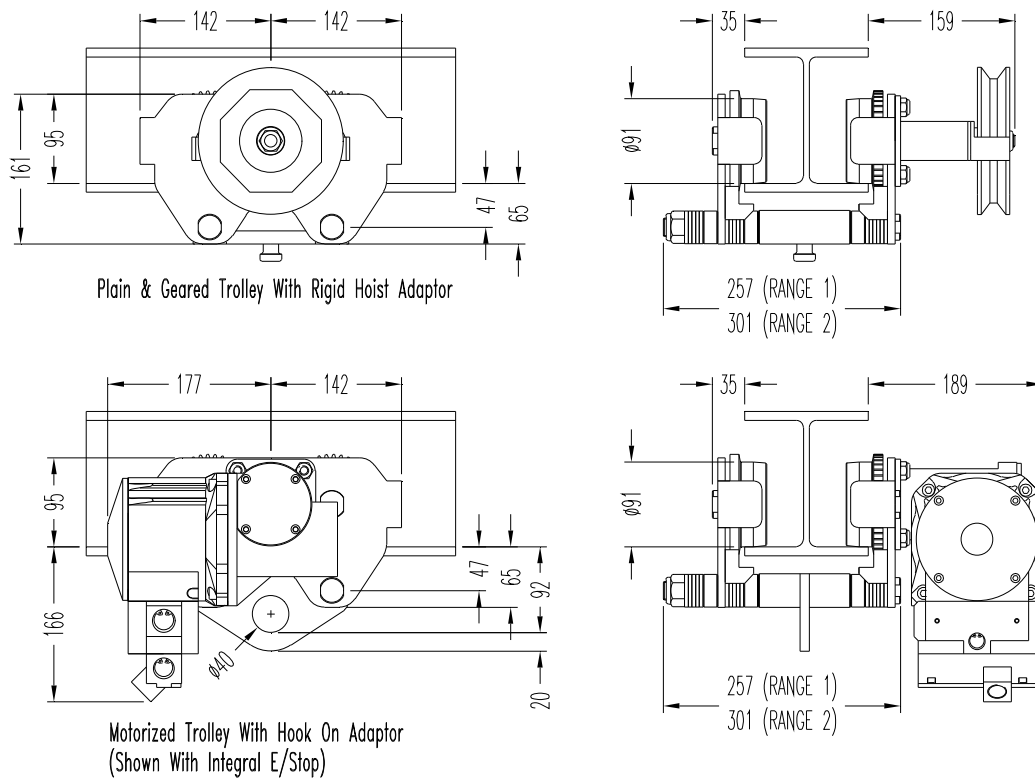


Figure 1. Overall Dimensions of 1T Trolleys

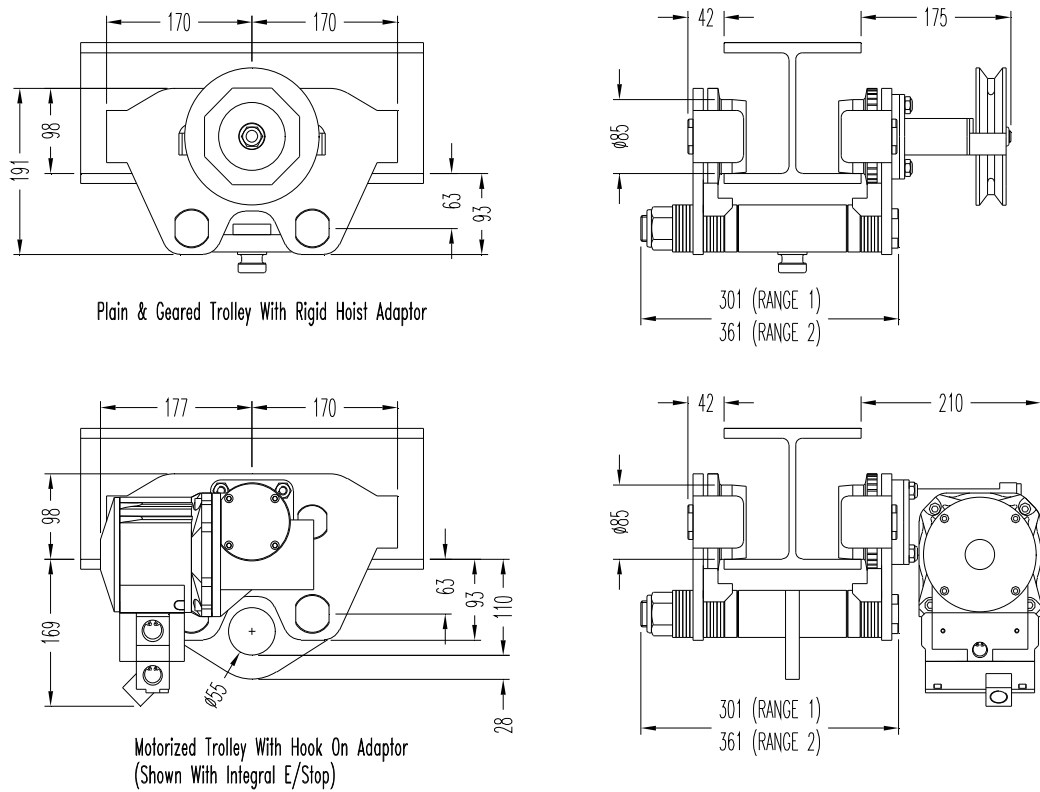


Figure 2. Overall Dimensions of 3T Trolleys

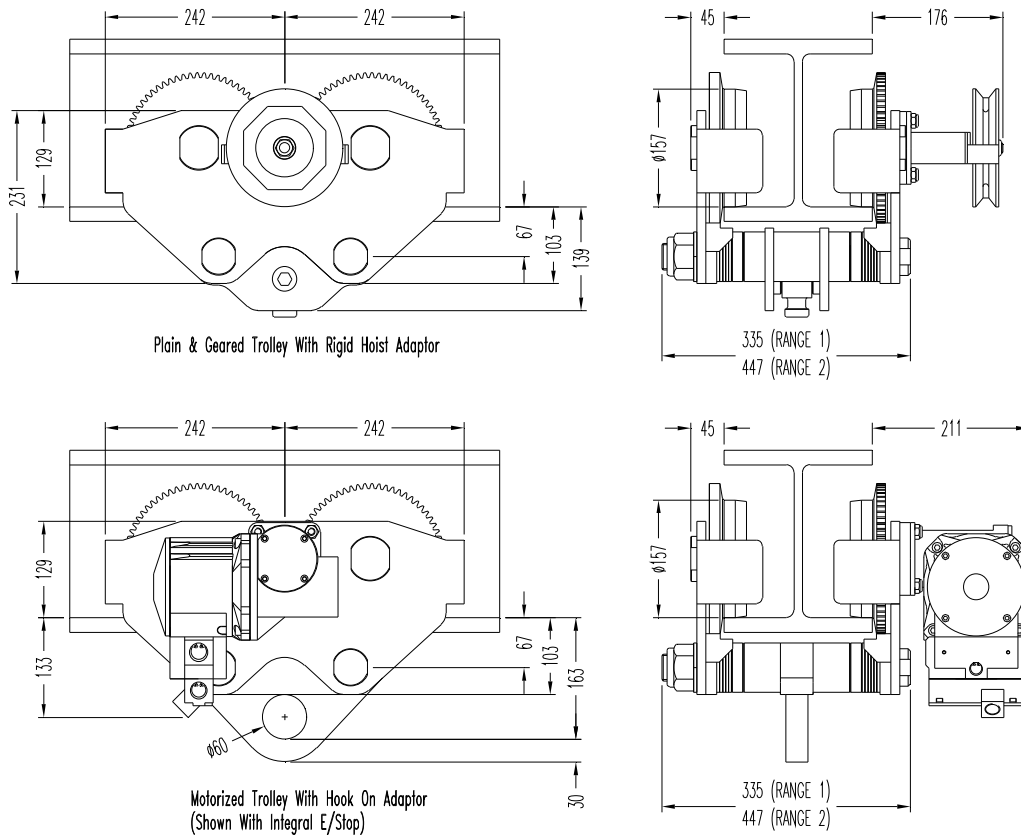


Figure 3. Overall Dimensions of 6T Trolleys

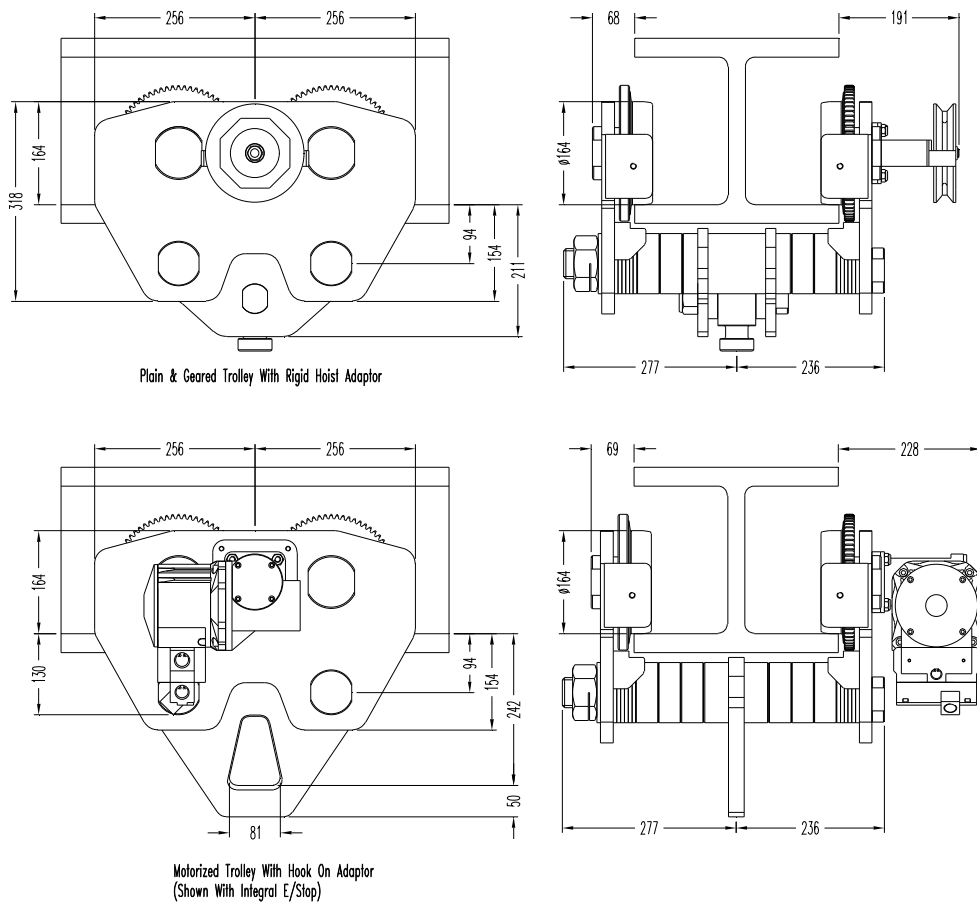


Figure 4. Overall Dimensions of 10T Trolleys

**Table 1. TECHNICAL SPECIFICATIONS**

Model	Capacity (kg)	Track Width Range		Max Flange Thickness (mm) †	Min. Curve Radius (mm)	Weight (kg)	Max Traverse Speed (m/min @ 6 bar)
		Range 1 (mm)	Range 2 (mm)				
TA1000	1000	73-166	73-203	20	900	30.5	22.0*
TG1000	1000	73-166	73-203	20	900	21.2	-
TP1000	1000	73-166	73-203	20	900	18.2	-
TA3000	3000	89-184	89-230	25	950	44.0	28.0*
TG3000	3000	89-184	89-230	25	950	34.7	-
TP3000	3000	89-184	89-230	25	950	31.7	-
TA6000	6000	128-200	128-305	25	1600	80.0	27.0*
TG6000	6000	128-200	128-305	25	1600	72.0	-
TP6000	6000	128-200	128-305	25	1600	69.0	-
TA10200	10000	150-320	-	30	2800	153	23.0*
TG10200	10000	150-320	-	30	2800	145	-
TP10200	10000	150-320	-	30	2800	142	-

\* Variable traverse speed is standard on the TA series trolley.

† Other flange thicknesses available on request.

## INSTALLATION

### Pre Use Check

1. Check that the trolley has been delivered free of damage. Damage may occur during shipping.
2. The trolley is supplied with a test certificate and an instruction, maintenance and parts manual. When initially receiving the trolley check that the serial number on the trolley and certificate correspond.
3. Ensure that the trolley’s serial number and working load limit (rated load) are clearly marked on the trolley.
4. Check that the trolley that has been delivered is capable of performing the required task.
5. Record the trolley’s serial number in a log book especially for the recording of trolley inspections.

All the trolley’s internal components are lubricated internally in the factory



- **Before installing the trolley, the owner and user of the trolley should consult any safety information or regulations pertaining to the particular type of installation in which the trolley will be used.**

## **WARNING**

- **The raising and lowering of loads is a potentially hazardous task by virtue of the fact that raised objects store large amounts of potential energy. Safety is therefore of prime importance. Read the section on “SAFETY INFORMATION” before installing the trolley.**

### **Mounting of the Trolley**

Proper initial installation of the trolley will ensure long trouble free service and will also limit the possibility of accidents occurring.

The trolley must be attached safely to a standard section beam or a welded plate girder which is in turn attached to a secure structure of sufficient strength, both of which are designed by a structural engineer. The structure should be able to hold at least 5 times the trolley and its rated load. The trolley can be adjusted for different beam widths. The anchorage, fittings and framework must not show any signs of distortion when the trolley/hoist is lifting or supporting its rated load. The beam must be horizontal and any joints in the beam must be ground smooth.

## **NOTICE**

- **The trolley rides on the upper surface of the lower beam flange. This surface must be clean and free of obstructions.**

Ensure that the mechanism used to attach the beam to the main support structure does not hinder the trolley from traversing. Install stoppers at the ends of the beam to prevent the trolley from running off the beam.

## **WARNING**

- **End stops must be provided at the ends of the beam. Failure to provide adequate end stops could result in the trolley driving off the end of the beam. The falling load could cause injury or death.**

When adjusting the width of the trolley according to the beam width, ensure that the distance between the flanges of the wheels is between 4 – 8mm wider than the actual measured beam width. The hoist support cradle (hook on and rigid) must be positioned centrally between the two trolley side plates. This will ensure balanced loading of the trolley and prevent bending of the side plates. Remove and add washers and spacers as required to achieve the correct distance between wheel flanges. Excess spacer washers and spacers must be placed between the trolley side plate and the nyloc nut. Always place at least one spacer washer between the nyloc nut and the trolley side plate. The threaded section of the hoist support shafts must protrude through the nylon of the nyloc nuts. The nuts must be securely fastened. Check that the trolley side plates are parallel after fastening the nuts.

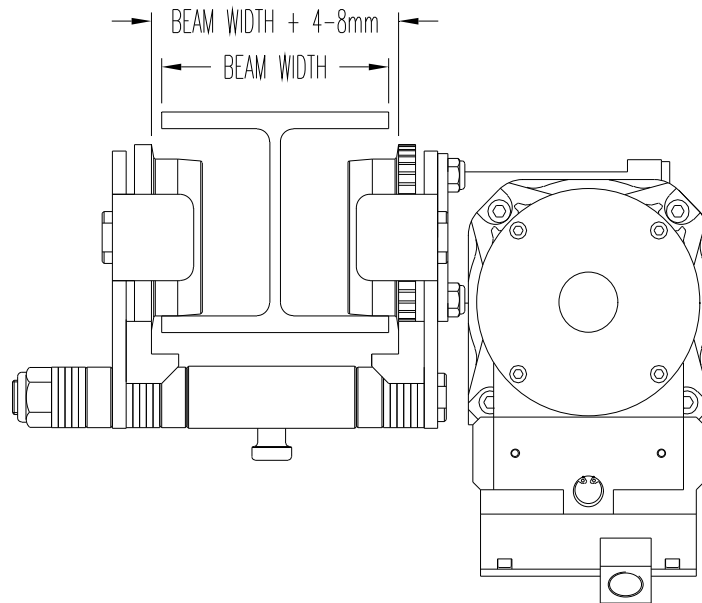


Figure 5. Trolley Wheel Spacing

The trolley must be installed on the beam so that the operator controls for the trolley (TA and TG series) are positioned that the operator does not have to pass under the load to reach them. Trolley orientation will also affect the layout of the air reticulation system (TA series).

After installation, attach a load equal to the trolleys rated load and lift it about 200mm off the ground and allow the trolley to traverse along the entire length of the beam to ensure correct operation before usage.

## ⚠ CAUTION

- **The trolley must be vertically above the load when lifting. The load must be shared equally by the four trolley wheels with the support cradle mounted centrally between the trolley side plates. This will prevent dangerous side loading on the trolley.**

### Air Supply

The TA series trolleys are rated at 6 bar. This pressure must be maintained at entry to the trolley motor to enable the trolley to operate at rated speed as specified under the section “SPECIFICATIONS”. The trolley will however operate at pressures of as low as 4 bar but performance will be affected. The air supply to the trolley must be clean, free from water and contain lubrication.

### *Air Lines*

It is recommended that the minimum inner diameter of the supply hose to the trolley be 16.0mm. For supply hose lengths to the trolley in excess of 15m use a larger diameter hose. If the trolley supports an air hoist and the user intends to perform lifting and traversing operations at the same time we recommend a hose with an inner diameter of 25.0mm. Before connecting the hose to the trolley, remove

any dirt from the hose by blowing compressed air through the hose into atmosphere. Do not point the hose at anyone while doing this. In order to reduce pressure drops in the supply hose which affect trolley performance, the supply hose should be kept as short and straight as possible. Keep the number of hose fittings to a minimum as they cause unnecessary restrictions.

For long traverse distances MME recommends the use of MME hose support trolleys or hose support brackets to support the main air supply hose. The hose support trolleys run on the same beam as the main trolley and each hose support trolley supports one coil of the hose. The hose support brackets run on a straining wire installed parallel to the beam. Each hose support bracket supports one coil of the hose. When using the above methods to support the main air supply hose, the length of the hose should be 1.5 times the traverse length. A hose support trolley or hose support bracket should be provided for every 3 metres of hose. When installing the hose, ensure that the hose hangs according to its natural coil so as to prevent twisting or kinking.

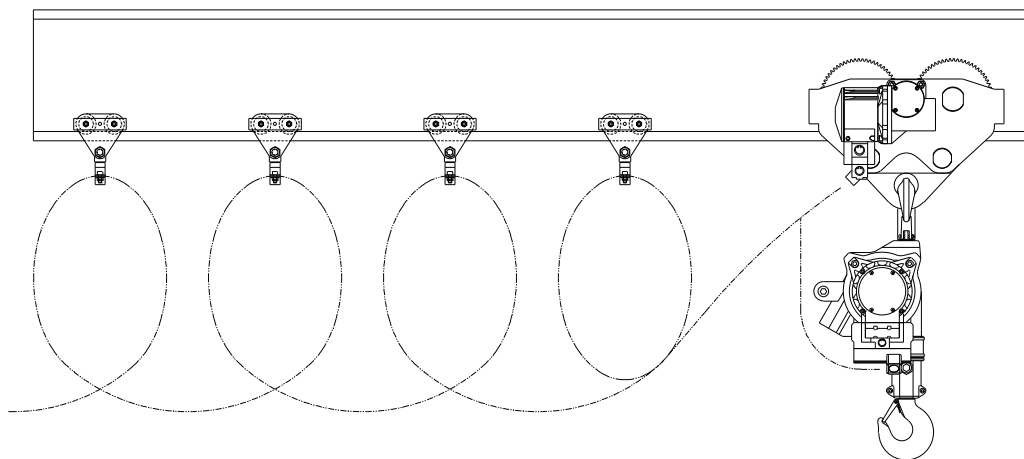


Figure 6. Recommended Trolley Air Supply Layout

## NOTICE

- **Always use an air line filter-lubricator unit with a MME TA series air trolley.**

### *Air Line Lubricator*

The lubricator must have inlet and outlet ports at least as large as the inlet on the trolley motor. If an air hoist is used in conjunction with the TA series air trolley we recommend a lubricator with a  $\frac{3}{4}$ " inlet and outlet for the TA1000 and TA3000 units and a 1" inlet and outlet for the TA6000 and TA10200 units. Install the air line lubricator as close to the air inlet on the trolley/hoist motor as possible. Refer to "Accessories" in the "PARTS" section for the recommended Filter-Lubricator. The use of a pressure regulator is also recommended since it allows for constant pendant control sensitivity and trolley performance.

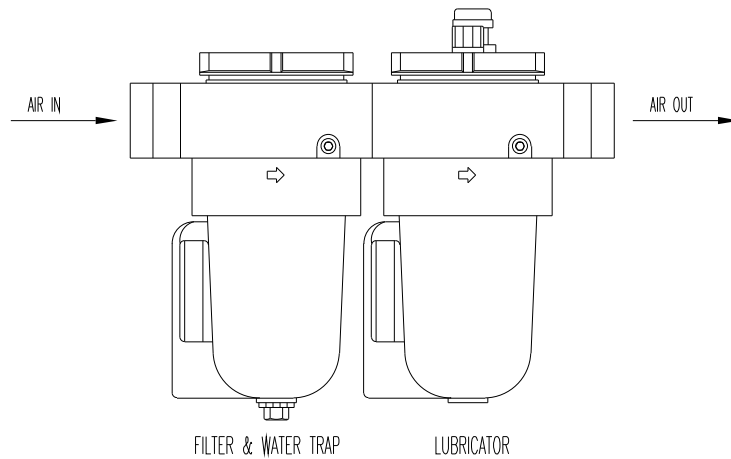


Figure 7. Filter / Lubricator Assembly

## ⚠ CAUTION

- **The lubricator must be installed no more than 3 m from the hoist.**

The air line lubricator must be set to deliver a minimum of 1 to 3 drops per minute when the hoist is running at full speed. The recommended lubricant is a light oil ie. ISO VG10.

## ⚠ CAUTION

- **Do not use automotive type detergent oil. These oils will delaminate the motor vanes and cause motor failure.**
- **Shut off air supply before filling air line lubricator.**

### *Air Line Filter*

Dirt or grit entering the traverse motor will cause severe damage to the internal components. We recommend the installation of a 10 micron air line filter as close as possible to the trolley. The filter should be cleaned weekly to prevent excessive pressure drops due to constriction of the filter element. Filters incorporating a water trap are recommended. Moisture entering the hoist motor reduces the efficient operating life of the hoist and should be removed.

### **Storing the Trolley**

1. If the trolley is to be stored for a long time, spray anti corrosion spray or ISO VG10 oil into the air inlet port and run the trolley traverse motor slowly for a few seconds.
2. Plug air inlet port.
3. Always store the trolley in a no load condition.
4. Wipe off all dirt and water.
5. Store the trolley in a clean dry environment.
6. Before returning the trolley to service, follow instructions for trolleys not in regular service in the “INSPECTION” section.



## OPERATION

The four most important aspects of trolley operation are:

1. Follow all safety instructions when operating trolley.
2. Allow only people trained in safety and operation of this product to operate trolley.
3. Subject each trolley to a regular inspection and maintenance as outlined in this manual under the section "INSPECTION".
4. Be aware of the trolley capacity and weight of load at all times.

Operators must be physically competent. Operators must have no health condition which might affect their ability to act, and they must have good hearing, vision and depth perception. The trolley operator must be carefully instructed in his duties and must understand the operation of the trolley, including a study of the manufacturer's literature. The operator must thoroughly understand proper methods of hitching loads and should have a good attitude regarding safety. It is the operator's responsibility to refuse to operate the trolley under unsafe conditions.

### Initial Operating Checks

Trolleys are tested for proper operation prior to leaving the factory. Before the trolley is placed into service after repair, the following initial operating checks should be performed.

1. After installation of trolley, check to ensure the trolley is lying level on the beam and that all four wheels are in contact with the beam.
2. Ensure that end stops have been installed on the beam to prevent the trolley from running off the end of the beam.
3. Check for air leaks in the supply hose and fittings to the pendant, and from the pendant to the control valve block.
4. When first running the trolley motor, some light oil (ISO VG10) should be injected into the inlet connection to allow good lubrication.
5. When first operating the trolley, it is recommended that the motors be driven slowly in both directions for a few minutes.
6. Operate the trolley along the entire length of the beam.
7. Test trolley and hoist (if installed) performance when raising, moving and lowering test load(s). Hoist and trolley must operate smoothly and at rated specifications prior to being entered into service.
8. Check that trolley traverse movement is in the same direction as arrows on the pendant control.
9. Check to see that the hoist/trolley is directly over the load for vertical lifting operations. Do not lift the load at an angle.
10. Check to see that the trolley is securely attached to the beam, and that all bolts are securely fastened.
11. Check to see that the load is securely attached to the hoist.

### **WARNING**

- **Only allow personnel trained in safety and operation of this product to operate the monorail hoist.**
- **The trolley is not designed or suitable for lifting, lowering or moving persons. Never lift loads over people**

## Trolley Controls

### *Pilot Pendant Control (Paddle Lever Type)*

The trolley and hoist are operated via a four-lever pilot pendant control. The two centre levers control the lifting and lowering of the hoist and the outer levers control the traversing of the trolley. The pilot pendant control allows for precise spotting and variable speed control and has arrows indicating the direction of movement of the lower hook and the trolley. The harder the pendant levers are pressed the faster the hoist or trolley will operate. When the levers are released, the control valve shuts off the air supply to the hoist and trolley thereby applying the brake (hoist) and stopping the trolley.

### *Operation of the Emergency Stop Function*

The hoist and traverse motors can be fitted with an emergency stop valve that interrupts the main air supply to the control valve and not the pilot signals to the control valve. This covers the emergency condition where the control valve spool is stuck and interrupting the pilot signals to the control valve will not stop the hoist or traverse motors. It is activated by pressing the red E/Stop button on the pendant control handle. Once the red emergency stop button has been pressed, the main air supply to the hoist and trolley are shut off and both units will stop. The button has a detent mechanism locking it in position once pressed. The emergency stop button can be reset by twisting the button until it pops up into the reset position. This will allow hoisting and traverse operations to start once the emergency condition has been rectified.

### *Geared Traverse*

The traverse operation of the trolley can also be achieved by a geared pinion connected to a closed loop hand chain. By pulling one side of the hand chain loop, the pinion turns the geared wheel and the trolley moves horizontally.



- **Avoid shock loads on the trolley.**
- **Do not leave the trolley unattended while any loads are suspended if it is not necessary.**
- **Prevent the load from swinging due to rapid acceleration or deceleration of the traverse motor.**

# INSPECTION

MME recommends two types of inspection:

- a) The frequent inspection performed by the operator.
- b) The periodic inspections performed by personnel trained in the operation and repair of this trolley.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective actions to be taken before the condition becomes dangerous.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

## Records and Reports

An inspection record should be maintained for each trolley, listing all points requiring periodic inspection. A written report should be made monthly on the condition of the critical parts of each trolley. These reports should be dated, signed by each person who performed the inspection, and kept on file where they are readily available to authorized personnel.

## Frequent Inspection

On trolleys in continuous service, frequent inspection should be made at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

1. **OPERATION.** Check for visual signs or abnormal noises (grinding etc.) which could indicate a potential problem. Make sure all controls function properly and return to neutral when released. The trolley must traverse smoothly. Do not operate the hoist until all problems have been corrected.
2. **AIR SYSTEM.** Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks found.
3. **CONTROLS.** During operation of the trolley, check that the response of the trolley to the pendant is smooth and not sticky. Ensure that the controls switch to their maximum position in both directions. The control must return to neutral when released. If trolley responds slowly or movement is unsatisfactory, do not operate trolley until all deficiencies have been corrected.
4. **SILENCER.** Check that the trolley performance is not restricted due to the silencer element clogging. Trolley performance with silencer fitted should be at least 80% of the trolley performance with the silencer removed. If not, clean or replace the filter element.

## Periodic Inspection

Frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SEVERE
yearly	biannually	quarterly

## NOTICE

- **Please note the requirements of the Occupational Health and Safety Act of South Africa (Act 85 of 1993), Driven Machinery (Regulation 18), Lifting Machines and Lifting Tackle regarding the examination, inspection and testing of lifting machines and lifting tackle.**

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in “Frequent Inspection”. Also inspect the following:

1. **FASTENERS.** Check capscrews, bolts, countersunk screws and nuts. Replace if missing or tighten if loose.
1. **ALL COMPONENTS.** Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check wheels, side plates, hook on and rigid cradles, gears, shafts, bearings, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.
2. **HOOK ON AND RIGID CRADLE.** Inspect cradles for excessive wear and distortion. Check hoist support shafts and attachment pin for wear and bending.
3. **TROLLEY SIDE PLATES.** Inspect the side plates for opening up due to bending. The bumper plates must not be bent or missing.
5. **MOTOR.** If performance is poor, disassemble the motor and check for wear or damage to bearings and other parts. The parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts.
6. **SUPPORTING STRUCTURE.** Check for distortion, wear and continued ability to support the load.
7. **TROLLEY WHEELS.** Check that the trolley wheels run properly on the beam and that the angle of the wheels matches the angle of the beam. Check that wheels and rail are not excessively worn. Do not operate the trolley until any problems have been identified and corrected.
8. **NAMEPLATE.** Check for presence and legibility. Replace if necessary.

### *Trolleys Not in Regular Use*

1. A trolley which has been idle for a period of one month or more, but less than one year, should be given an inspection conforming with the requirements of “Frequent Inspection” prior to being placed into service.
2. A trolley which has been idle for a period of more than one year should be given an inspection conforming with the requirements of “Periodic Inspection” prior to being placed into service.
3. Standby trolleys should be inspected at least biannually in accordance with the requirements of “Frequent Inspection”. In abnormal operating conditions trolleys should be inspected at shorter intervals.

## LUBRICATION

To ensure continued satisfactory operation of the trolley, all points requiring lubrication must be serviced with the correct lubricant at the proper time interval. Correct lubrication is one of the most important factors in maintaining efficient operation.

The lubrication intervals recommended in this manual are based on intermittent operation of the trolley, eight hours each day, five days per week. If the trolley is operated almost continuously or more than the eight hours each day, more frequent lubrication will be required. Also, the lubricant types and change intervals are based on operation in an environment relatively free of dust, moisture, and corrosive fumes. Use only those lubricants recommended. Failure to observe this precaution may result in damage to the hoist and/or its associated components.

Whenever a MME trolley is disassembled for overhaul or replacement of parts, lubricate as follows:

### *Traverse Motor*

Coat all motor parts with a light film of ISO VG10 or a good quality hydraulic oil before assembling.



- **Do not use automotive type detergent oil. Detergents will delaminate the motor vanes and cause motor failure.**

### *Traverse Gearbox*

Apply a coating of grease to all gearing before assembly. Neglect of proper lubrication will lead to bearing failure. The recommended grease is as follows: Fuchs Renolit TOG. If this specific grease is not available use an equivalent grease.

## TROUBLESHOOTING

This section provides the information necessary for troubleshooting the T-series trolleys. The troubleshooting guide provides a general outline of problems which could be experienced with normal use of these trolleys. It lists the symptom, the possible cause, and the possible remedy for the trouble being experienced.

<b>SYMPTOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Traverse will not operate	<p>No air supply to traverse motor, or too little quantity of air or pressure.</p> <p>Blocked air supply.</p> <p>E/Stop valve malfunction.</p> <p>Spool valve sticking.</p> <p>Pendant malfunction.</p> <p>Motor is damaged.</p> <p>Lubricator is low on oil.</p> <p>Traverse gearbox or geared wheels are damaged.</p> <p>Obstructions on beam.</p> <p>Trolley wheels wedging or riding on wheel corner radius.</p> <p>Trolley tilting off geared wheels due to side loading.</p> <p>Hand chain has come off the chain wheel</p>	<p>Check pressure at control valve inlet. Refer to “SPECIFICATIONS” section for correct quantity (m<sup>3</sup>/min.) and pressure (bar).</p> <p>Check for closed valve of kinked air hose.</p> <p>Check seals and return spring.</p> <p>Check spool valve for free movement.</p> <p>Check pressure at pendant. Minimum operating pressure in pendant line is 4 bar. Check pendant hoses for leaks.</p> <p>Repair or replace. See “MAINTENANCE” section.</p> <p>Fill lubricator.</p> <p>Repair or replace. See “MAINTENANCE” section.</p> <p>Remove obstacles from beam track.</p> <p>Check side plate spacing and that side plates are parallel.</p> <p>Trolley to be vertically above load when supporting load.</p> <p>Replace hand chain and check guide assembly.</p>
Hoist continues to move horizontally when traverse motor is stopped.	<p>Spool valve sticking.</p> <p>Pendant lever sticking.</p> <p>Faulty spool valve springs.</p>	<p>Check spool valve for free movement.</p> <p>Check lever and restore free movement.</p> <p>Check springs.</p>
Traverse motor operation is sluggish.	<p>Trolley is overloaded.</p> <p>No air supply to hoist, or too little quantity of air or pressure.</p> <p>Spool valve travel is restricted.</p> <p>Exhaust restricted.</p>	<p>Reduce load to within rated capacity.</p> <p>Check pressure at control valve inlet. Refer to “SPECIFICATIONS” section for correct quantity (m<sup>3</sup>/min.) and pressure (bar).</p> <p>Check spool valve for free movement.</p> <p>Inspect, clean and replace silencer disc.</p>

	Traverse motor is damaged.	Check for worn motor bearings, vanes or vane springs.
	Poor beam condition.	Check condition of beam track.

## MAINTENANCE

### **WARNING**

- **Never perform maintenance on the trolley while it is supporting a load.**
- **Shut off air system and depressurise air lines before performing any maintenance.**
- **Before performing maintenance, tag controls:  
DANGER - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.**
- **Only allow personnel trained in the operation and service of this trolley to perform maintenance.**
- **After performing any maintenance on the trolley, conduct a proof load test (125% of its rated capacity) as well as a functional test before returning the trolley to service.**

### Trolley Disassembly

### **WARNING**

- **Disconnect the air supply hose before performing any maintenance or repairs on this trolley.**
1. Do not disassemble the trolley any further than necessary to replace or repair damaged parts.
  2. Whenever grasping a component in a vice, always use leather covered or copper covered vice jaws to protect the surface of the component and help prevent distortion. This is particularly true of threaded members and housings.
  3. Do not remove any component which is a press fit in or on a sub-assembly unless the removal of that component is necessary to complete the repair or replacement of the component.
  4. Do not disassemble this trolley unless you have a complete set of new gaskets, o-rings and seals on hand for replacement. These are available in the Overhaul Seal and Gasket Kit.
  5. Do not attempt to wash sealed bearings. We recommend that bearings be replaced when the trolley is disassembled.

### *Disassembly of the Traverse Emergency Stop Valve*

1. Remove the pendant control hoses.
2. Unscrew the four bolts attaching the emergency stop valve to the control valve housing. Remove the emergency stop valve from the hoist. Remove the gasket.
3. Remove the two circlips holding the covers in position.
4. Apply air pressure to the air supply port of the valve to pop the covers out. The valve must be orientated in a safe orientation when this is performed and covered with a cloth.
5. Remove the covers, buffer and spring.
6. Using a 3mm pin punch hold the piston through the air delivery port. Unscrew the cap screw to split the piston. Remove both sections of the piston and the buffer seal.
7. Remove all o-rings and piston seals.
8. Examine all components for wear, replacing damaged or worn components. Replace all gaskets, seals and o-rings before re-assembly.
9. Remove all sharp edges and burrs from components. Wipe all components with ISO VG10 oil before re-assembling in the reverse order to stripping.

### *Disassembly of the Traverse Control Valve.*

1. Remove the two pendant control hoses.
2. Unscrew the four bolts attaching the control valve to the rotor housing. Remove the control valve from the hoist. This will enable the control valve to be disassembled in a more convenient area.
3. Remove both circlips securing the valve covers in position. Remove the two covers. Remove the springs.
4. Remove the spool valve from the sleeve.
5. Using a soft copper punch, gently tap the control valve sleeve out of the housing. Care should be taken not to burr the inner surfaces of the sleeve.
6. Examine all components for wear, replacing damaged or worn components. Replace all gaskets, seals and o-rings before re-assembly.
7. Remove all sharp edges and burrs from components. Wipe all components with ISO VG10 oil before re-assembling in the reverse order to stripping.

## **NOTICE**

- **The spool valve and the control valve sleeve are lapped as a set. If they are worn or defective both components must be replaced.**

### *Disassembly of the Traverse Motor*

1. Remove the emergency stop valve and the control valve. Refer to “DISASSEMBLY OF THE TRAVERSE EMERGENCY STOP VALVE” and “DISASSEMBLY OF THE TRAVERSE CONTROL VALVE”. Remove the four main housing screws and pull the motor off the traverse gearbox.
2. Remove the rotor housing end cover.



3. Remove the rotor housing cover screws. Using a copper punch knock the rotor shaft at the brake end. This action will remove the rotor, vanes, vane springs, rotor ring (drive end), end shield and its bearing, rotor ring (brake end) and rotor housing cover. Using a copper punch knock the rotor out of the end shield bearing. Remove the bearing from the rotor housing cover.
4. Remove the bearing retainer plate including the rotor seal and the brake chamber seal around the rotor air shield bearing.
5. Tap the air shield lightly with a plastic hammer to remove the cylinder and air shield from the rotor housing. Remove the air shield seal and the air shield bearing from the air shield.
6. Remove the cylinder pin from the rotor housing if it has not fallen out with the air shield and cylinder.
7. Clean and inspect all components for wear and damage. Check for excessive scouring of the rotor, cylinder, air shield and end shield. If deep grooves are present replace the components and check the in line filter for correct operation. Check the faces of the vanes for excessive wear.
8. Replace both the rotor bearings and any other worn or damaged components.
9. Wipe all components with ISO VG10 oil before re-assembly in the reverse order to stripping.
10. Ensure the rotor rings are installed with the inner chamfer facing the rotor.
11. Install the cylinder pin in the motor housing before inserting the air shield and cylinder.
12. The motor must turn freely by hand when assembled.

#### *Disassembly of the Trolley Body*

1. Remove the traverse motor as described in “DISASSEMBLY OF THE TRAVERSE MOTOR”.
2. Remove the two Nyloc nuts on the two hoist support shafts and remove all the spacer washers.
3. Remove the one side plate, spacer washers, hook-on or rigid adaptor and hoist support shafts.
4. Unlock the lock washer on each wheel and remove the locknuts. Extract the bearing covers. Using a copper punch tap the wheel shafts through the bearings and free from the side plates.
5. Remove the spacer sleeves from the wheels as well as the circlips. Press the bearings and seals out of the wheels.
6. Remove the four gearbox mounting bolts and pull the gearbox (or geared trolley housing) and gearbox spacer free from the side plate.
7. Clean and inspect all components for wear or damage. Check the side plates for bending. The hoist support shafts and cradles must not be deformed or worn. The wheel shafts must fit snugly through the side plates.
8. Replace wheel bearings and seals as well as any worn components.
9. Reassemble in the reverse order to stripping.

#### *Disassembly of Traverse Gearbox*

1. Remove the traverse motor as described in “DISASSEMBLY OF TRAVERSE MOTOR”.
2. Remove the traverse gearbox as described in “DISASSEMBLY OF THE TROLLEY BODY”.
3. Remove the silencer element locking ring, perforated cover and the silencer element.
4. Remove the output shaft cover screws and remove the cover.
5. Remove the bearing, withdrawal washer and o-ring from the cover. The washer has a tapped hole to enable the bearing to be jacket out of the cover.
6. Remove the circlip from the output shaft. Press the output shaft out through the worm gear towards the gearbox mounting flange until the worm gear is loose. Remove the worm gear and output shaft key and output shaft sleeve. Extract the output shaft from the gearbox flange end.

7. Remove the circlip, output shaft bearing and seal from the gearbox housing.
8. Remove the worm shaft cover and o-ring.
9. Remove the worm shaft seal, circlip and spacer from the drive end. Using a copper punch tap the worm shaft out of the housing towards the drive end. Remove both worm shaft bearings and bearing locating circlip.
10. Remove the filler plug.
11. Clean and inspect all components for wear and damage. Each gear tooth must be checked for excessive wear and cracking. Replace all damaged and excessively worn components. Renew all gearbox bearings, seals and o-rings before re-assembly.
12. When re assembling, install output shaft seal, bearing and circlip first, followed by the output shaft, output shaft sleeve, key, worm gear and circlip.
13. Install second output shaft bearing, withdrawal washer, o-ring, cover and cover screws. Ensure the output shaft turns smoothly.
14. Install the worm shaft bearing, cover, o-ring and screws on the exhaust end.
15. Feed the worm shaft through the worm gear and tap into the bearing. Install the second worm shaft bearing, spacer, and circlip.
16. Fill the gearbox with Renolit TOG grease until it seeps through the drive end worm shaft bearing. Wipe away excess grease and install the worm shaft seal and replace the filler plug.

#### *Disassembly of the Geared Trolley Housing*

1. Remove the geared trolley housing as described in “DISASSEMBLY OF THE TROLLEY BODY”.
2. Remove the Nyloc nut from the driveshaft. Pull the hand chain wheel off the driveshaft, remove the key and pull the chain guide assembly off the shaft.
3. Remove the circlip and extract the drive shaft cover and seal.
4. Press the driveshaft out through the bearings and remove the circlips, bearings and seal.
5. Clean and inspect all components for wear and damage. Inspect the gear teeth for wear. Replace all damaged and excessively worn components. Renew all bearings and seals before re-assembly.
6. Re-assemble in the reverse order to stripping

#### *Disassembly of the E/Stop Pilot Pendant Control Handle*

1. Ensure that the main air supply to the hoist is shut off. Remove the six pendant hoses from the pendant control.
2. Unscrew the two shaft locking screws and remove the pivot shafts and the pendant levers.
3. Unscrew the five guide locking screws.
4. Unscrew the E/Stop button locking screw and unscrew the button. Remove the spacer washer.
5. Remove the five plugs at the back of the housing. Use a copper punch to lightly tap out the pistons and piston guides.
6. Remove the pendant springs from the pendant control housing.
7. Extract the piston from the piston guide and remove the stopper seal and piston guide seals.
8. Clean and inspect all components for wear and damage. If there is excessive air leakage between the piston and the piston guide, both components must be replaced.
9. Replace all seals.
10. Wipe all components with ISO VG10 oil before re-assembling in the reverse order to disassembly.

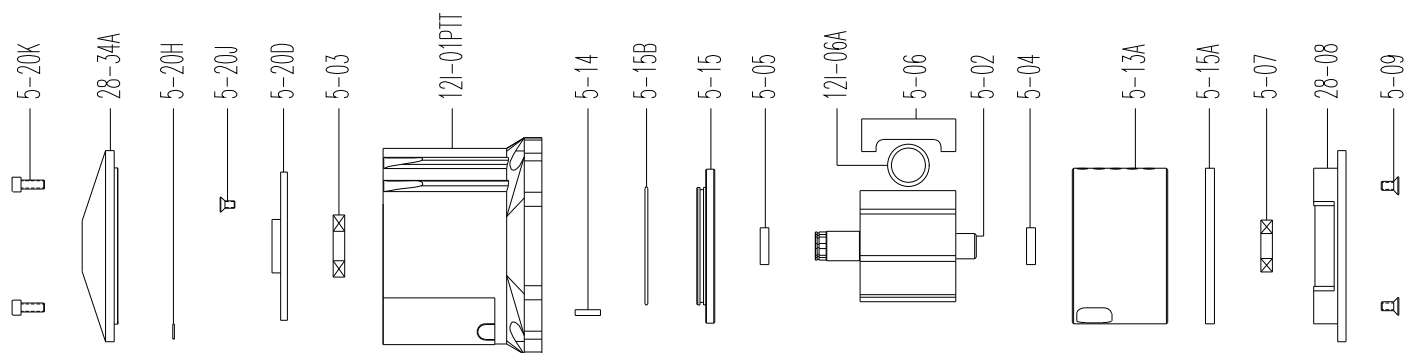
# PARTS

## Accessories

**Table 2. Trolley Accessories**

<b>Accessory</b>	<b>Part No.</b>
Trolley Motor Repair Kit	12I-01(MRKIT)
4 Paddle Lever Pilot Pendent Handle Repair Kit	12I-112J(PRKIT)
Emergency Stop Valve Repair Kit	12I-116(ERKIT)
Pendent Control Valve Repair Kit	12I-118(PRKIT)
In Line Filter Lubricator (1/2")	5-100
In Line Filter Lubricator (1")	28-145

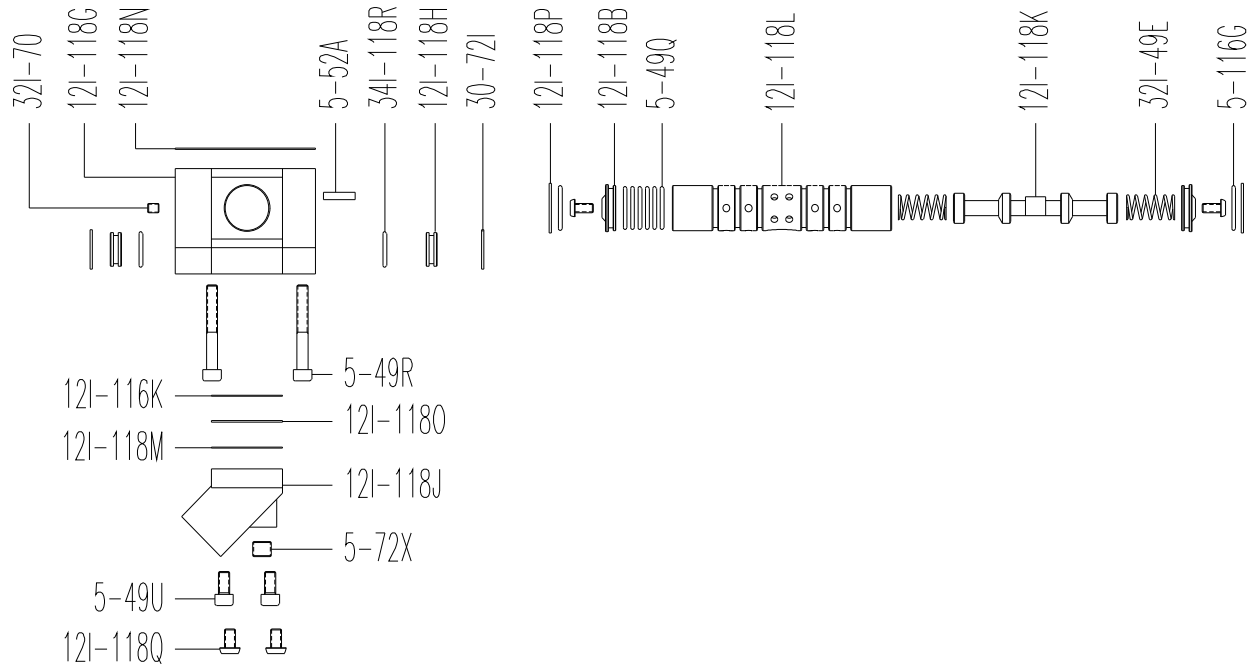
**Figure 8. Components of Traverse Motor**



**Table 3. Components of Traverse Motor**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
<b>28-TAM(PT)</b>	<b>Traverse Motor</b>				
12I-01PTT	Rotor Housing	1	5-13A	Cylinder	1
5-02	Rotor	1	5-14	Cylinder Pin	1
5-03	Rotor Air Shield Bearing	1	5-15	Rotor Air Shield	1
5-04	Rotor Ring (Drive End)	1	5-15A	Rotor End Shield	1
5-05	Rotor Ring (Brake End)	1	5-15B	Air Shield Seal	1
5-06	Rotor Vane	7	5-20D	Bearing Retainer Plate	1
12I-06A	Vane Lifter	7	5-20H	Brake Port Seal	1
5-07	Rotor End Shield Bearing	1	5-20J	Retainer Plate Screw	3
28-08	Rotor Housing Cover	1	5-20K	Brake Housing Screw	4
5-09	Rotor Housing Cover Screw	4	28-34A	Rotor Housing End Cover	1

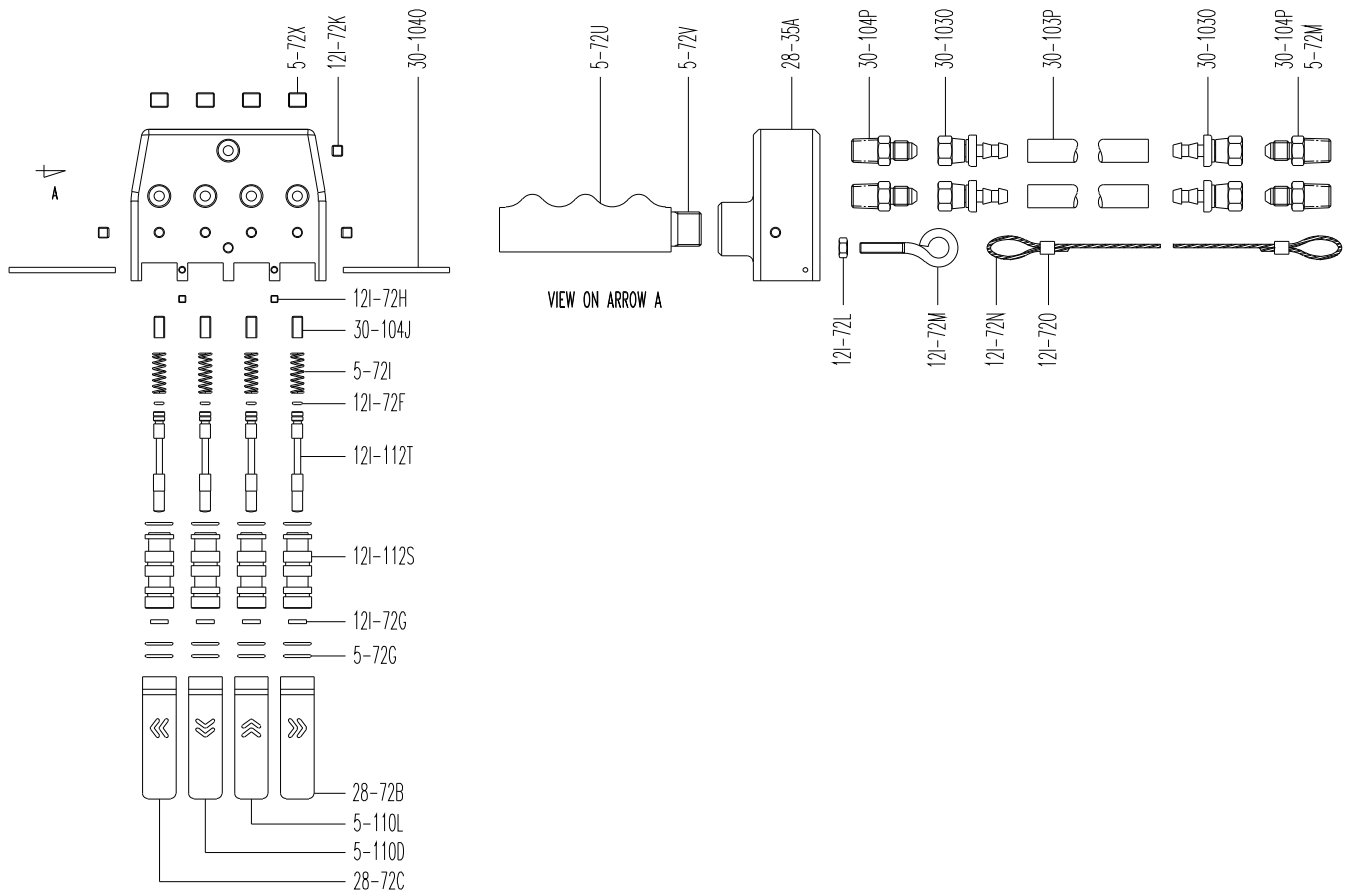
**Figure 9. Components of Pilot Pendent Control**



**Table 4. Components of Pilot Pendent Control**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
<b>12I-118(PEN)</b>	<b>Pilot Pendent Control Valve Assembly</b>				
32I-49E	Spring	2	12I-118G	Control Valve Housing	1
5-49Q	Sleeve Seal	6	12I-118H	Pendent Housing Cover	2
5-49R	Control Housing Screw	4	12I-118J	Air Inlet	1
5-49U	Mounting Screw	4	12I-118K	Spool Valve	1
5-52A	Spring Pin	1	12I-118L	Control Valve Sleeve	1
32I-70	Plug	2	12I-118M	Air Inlet Gasket	1
30-72I	Circlip	2	12I-118N	Gasket	1
5-72X	Plug	1	12I-118O	Spacer Plate	1
5-116G	Valve Cover Seal	2	12I-118P	Circlip	2
12I-116K	Gasket	1	12I-118Q	Screw	4
12I-118B	Valve Cover	2	34I-118R	Cover Seal	2

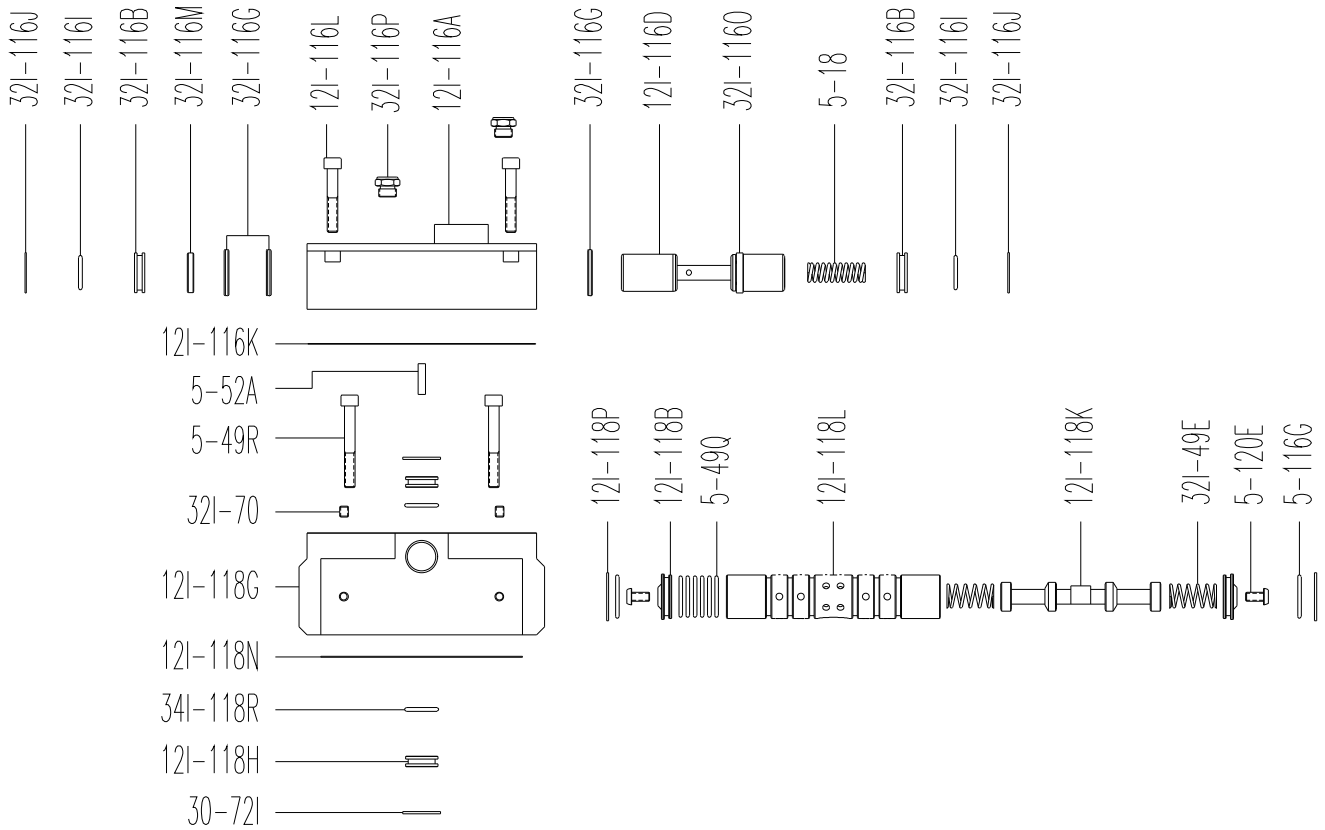
**Figure 10. Components of 4 Paddle Lever Pilot Pendant Control**



**Table 5. Components of 4 Paddle Lever Pilot Pendant Control**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
<b>28-35</b>	<b>Pilot Pendant Handle Assembly</b>				
28-35A	Pilot Pendant Control Housing	1	12I-72O	Copper Ferrule	1
28-72B	Pendent Lever (Reverse)	1	5-72U	Handle Grip	1
28-72C	Pendent Lever (Forward)	1	5-72V	Handle	1
12I-72F	Seal	4	5-72X	Plug	4
5-72G	Piston Guide Seal	4	30-103O	Female Hose Fitting	10
12I-72G	Seal	4	30-103P	Hose	/m
12I-72H	Shaft Locking Screw	2	30-104J	Guide Locking Screw	4
5-72I	Pendent Handle Spring	4	30-104O	Pivot Shaft	2
12I-72K	Plug	3	30-104P	Hose Fitting	5
12I-72L	Lock Nut	1	5-110D	Pendent Lever (Down)	1
5-72M	Hose Fitting	5	5-110L	Pendent Lever (Up)	1
12I-72M	Eye Bolt	1	12I-112S	Piston Guide	4
12I-72N	Straining Wire	/m	12I-112T	Piston	4

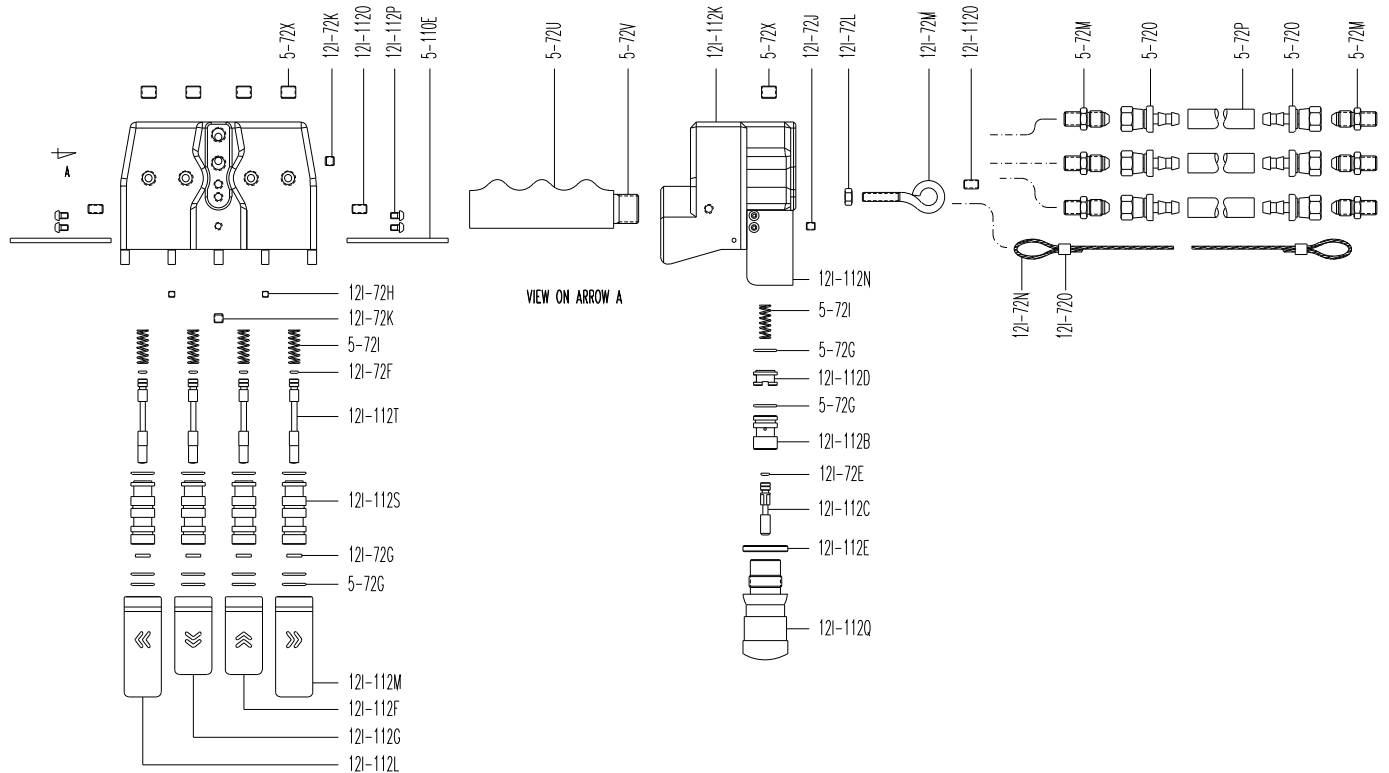
**Figure 11. Components of Emergency Stop Valve & Control Valve Assembly**



**Table 6. Components of Emergency Stop Valve & Control Valve Assembly**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
<b>12I-118(PEN)</b>	<b>E/Stop Control Valve Assembly</b>		<b>12I-116</b>	<b>E/Stop Valve Assembly</b>	
32I-49E	Spring	2	5-18	Spring	1
5-49Q	Sleeve Seal	6	12I-116A	E/Stop Valve Housing	1
5-49R	Control Housing Screw	4	32I-116B	E/Stop Valve Cover	2
32I-70	Plug	2	12I-116D	Spool Valve	1
30-72I	Circlip	2	32I-116G	Spool Seal	3
5-116G	Cover Seal	2	32I-116I	E/Stop Valve Cover Seal	2
12I-118B	Valve Cover	2	32I-116J	Circlip	2
12I-118G	Control Valve Housing	1	12I-116K	Gasket	1
12I-118H	Pendent Housing Cover	2	12I-116L	Mounting Screw	4
12I-118K	Spool Valve	1	32I-116M	Stopper Buffer	1
12I-118L	Control Valve Sleeve	1	32I-116O	Buffer Seal	1
12I-118N	Gasket	1	32I-11P	Button Sintered Exhaust Silencer	2
12I-118P	Circlip	2			
34I-118R	Cover Seal	2			
5-120E	Screw	2			

**Figure 12. Components of 4 Paddle Lever E/Stop Pilot Pendent Control**

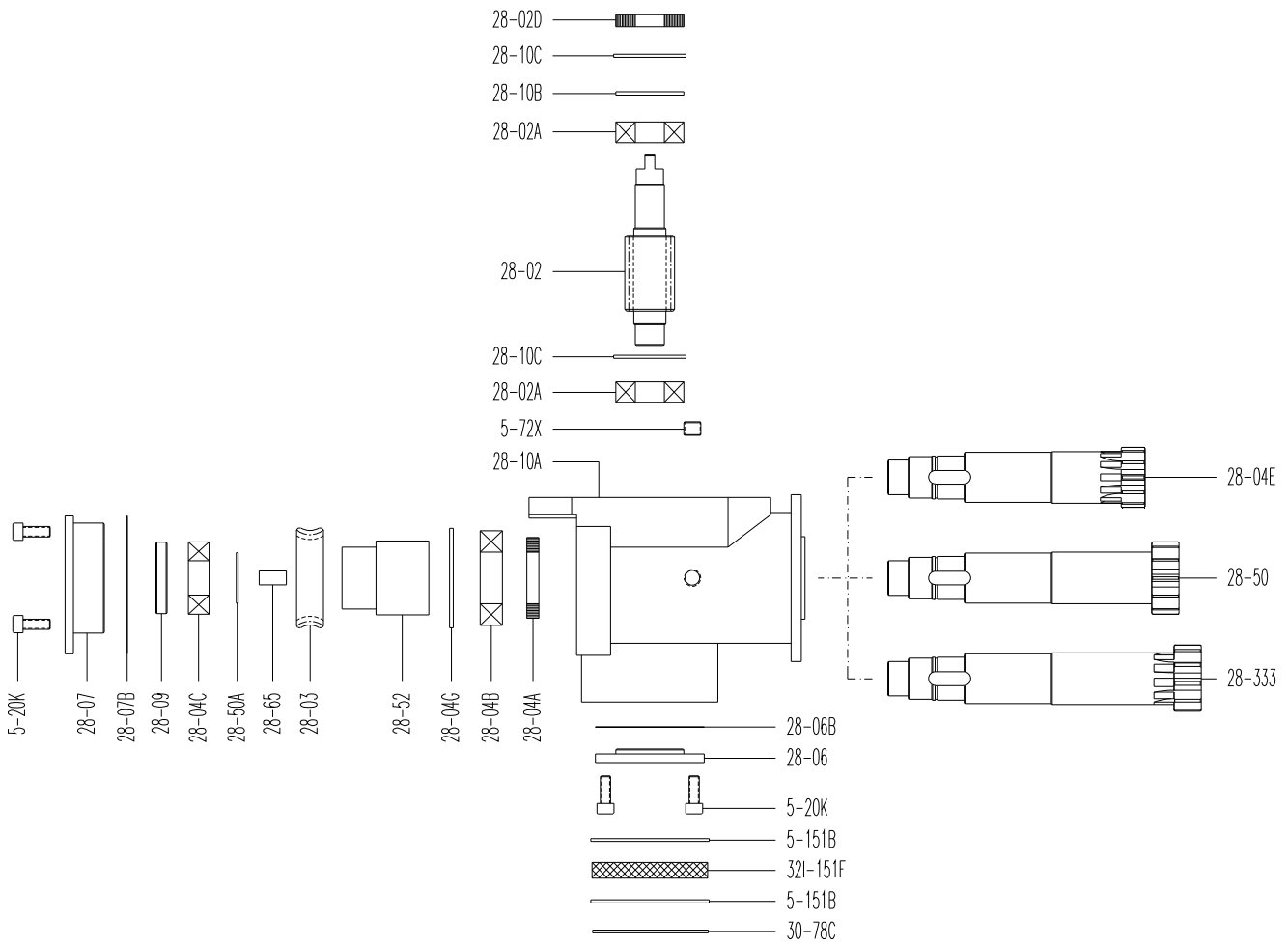


**Table 7. Components of 4 Paddle Lever E/Stop Pilot Pendent Control**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
<b>12I-112J</b>	<b>4 Paddle Lever E/Stop Pilot Pendent Handle Assembly</b>				
12I-72E	Seal	1	12I-112E	Spacer	1
12I-72F	Seal	2	12I-112F	Pendent Lever (Up)	1
5-72G	Piston Guide Seal	14	12I-112G	Pendent Lever (Down)	1
12I-72G	Seal	2	12I-112L	Pendent Lever (Reverse)	1
12I-72H	Shaft Locking Screw	1	12I-112M	Pendent Lever (Forward)	1
5-72I	Pendent Handle Spring	5	12I-112N	E/Stop Shroud	1
12I-72J	Plug	1	12I-112O	Plug	3
12I-72K	Plug	2	12I-112P	Mounting Screw	4
5-72U	Handle Grip	1	12I-112Q	E/Stop Button – Twist To Release	1
5-72V	Handle	1			
5-72X	Plug	5		<b>Hoses and Fittings</b>	
5-110E	Pivot Shaft	2	5-72M	Hose Fitting	12
12I-112B	Piston Guide	1	5-72O	Female Hose Fitting	12
12I-112K	E/Stop Pendent Control Housing	1	5-72P	Hose	/m
12I-112S	Piston Guide	4	12I-72L	Lock Nut	1
12I-112T	Piston	4	12I-72M	Eye bolt	1
12I-112C	Piston	1	12I-72N	Straining Wire	/m
12I-112D	Stopper Sleeve	1	12I-72O	Copper Ferrule	1



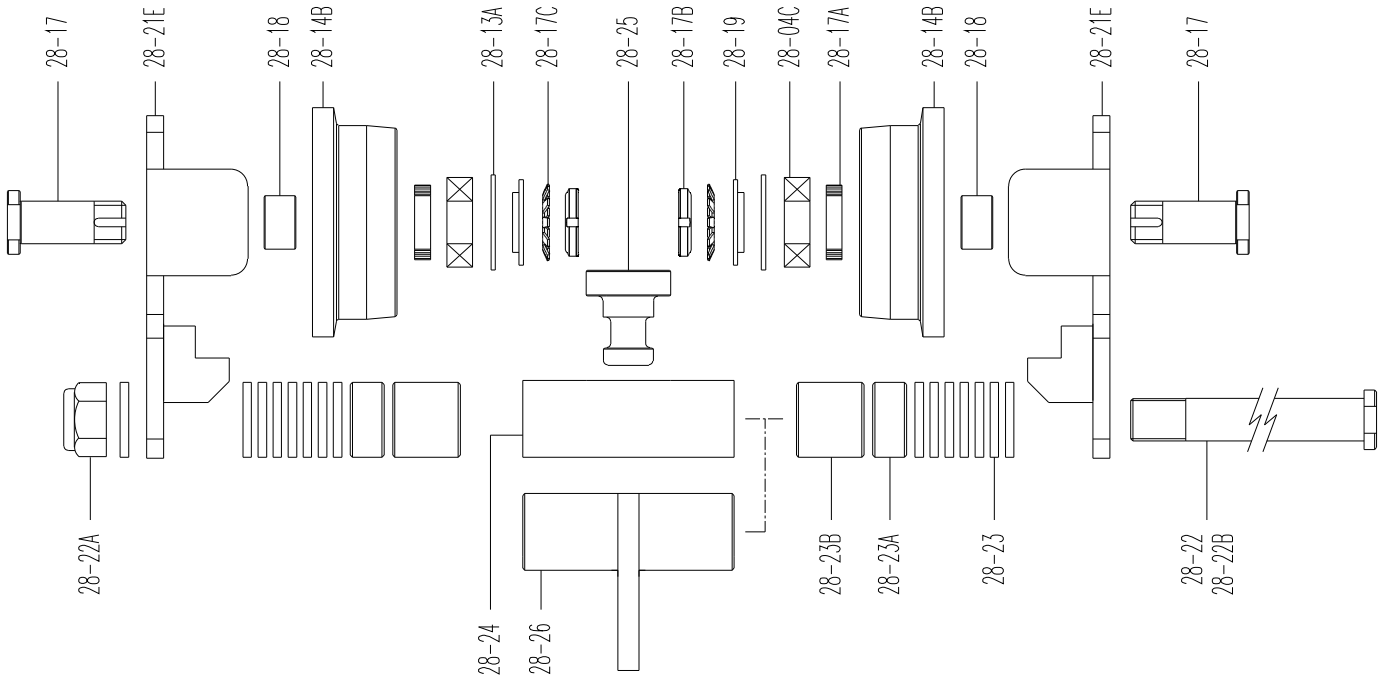
**Figure 13. Components of Traverse Gearbox**



**Table 8. Components of Traverse Gearbox**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-02	Worm Shaft	1	28-10A	Gearbox Housing	1
28-02A	Input Shaft Bearing	2	28-10B	Spacer	1
28-02D	Seal	1	28-10C	Circlip	2
28-03	Worm Gear	1	5-20K	Cover Screw	8
28-04A	Output Shaft Seal	1	28-50	Output Shaft (3T & 6T Gearbox)	1
28-04B	Output Shaft Bearing	1	28-50A	Circlip	1
28-04C	Output Shaft Bearing	1	28-52	Output Shaft Sleeve	1
28-04E	Output Shaft (1T Gearbox)	1	28-65	Output Shaft Key	1
28-04G	Circlip	1	5-72X	Plug	1
28-06	Worm Shaft Cover	1	30-78C	Perforated Cover	1
28-06B	Cover Seal	1	5-151B	Locking Ring	2
28-07	Output Shaft Cover	1	32I-151F	Silencer Element	1
28-07B	Cover Seal	1	28-333	Output Shaft (10T Gearbox)	1
28-09	Withdrawal Washer	1			

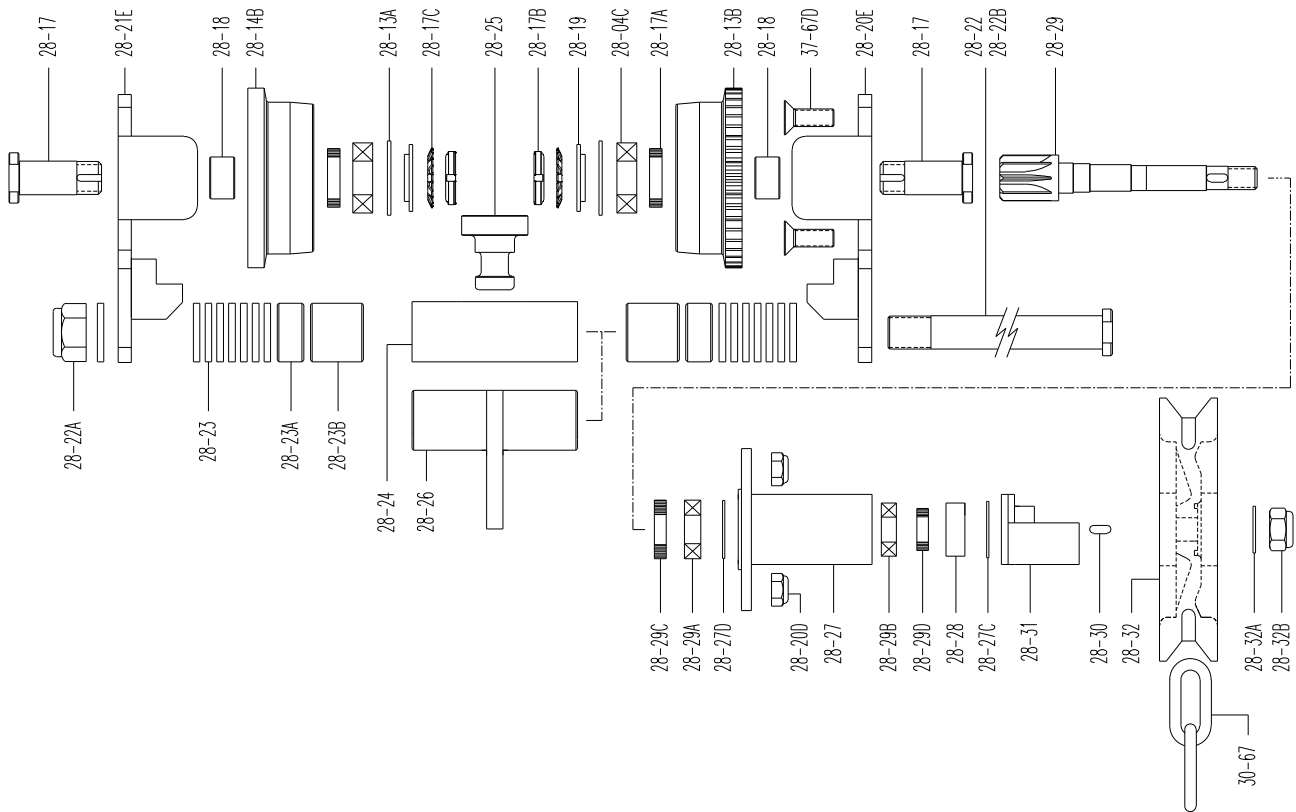
**Figure 14. Components of 1T Plain Trolley**



**Table 9. Components of 1T Plain Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-04C	Wheel Bearing	4	28-26	Hook On Adaptor	1
28-13A	Circlip	4			
28-14B	Wheel	4		<b>Range 1 (73mm – 166mm)</b>	
28-17	Wheel Shaft	4	28-22	Hoist Support Shaft	2
28-17A	Seal	4	28-23	Width Adjusting Washer	32
28-17B	Lock Nut	4	28-23A	Width Adjusting Boss	6
28-17C	Lock Washer	4			
28-18	Spacer Sleeve	4		<b>Range 1 (73mm – 203mm)</b>	
28-19	Bearing Cover	4	28-22B	Hoist Support Shaft	2
28-21E	Side Plate Assembly	2	28-23	Width Adjusting Washer	30
28-22A	Nut	2	28-23A	Width Adjusting Boss	4
28-24	Support Cradle	1	28-23B	Width Adjusting Boss	4
28-25	Hoist Attachment Pin	1			

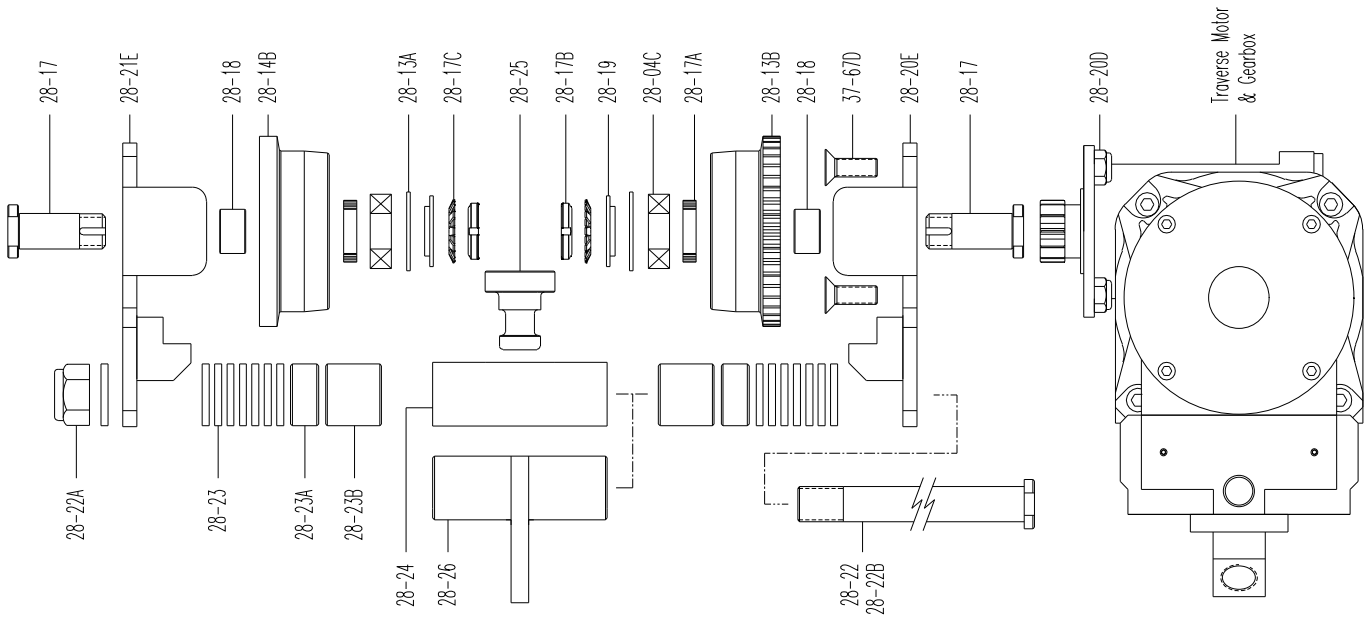
**Figure 15. Components of 1T Geared Trolley**



**Table 10. Components of 1T Geared Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-04C	Wheel Bearing	4	28-29A	Bearing	1
28-13A	Circlip	4	28-29B	Bearing	1
28-13B	Gear Wheel	2	28-29C	Seal	1
28-14B	Wheel	2	28-29D	Seal	1
28-17	Wheel Shaft	4	28-30	Drive Shaft Key	1
28-17A	Seal	4	28-31	Chain Guide Assembly	1
28-17B	Lock Nut	4	28-32	Hand Chain Wheel	1
28-17C	Lock Washer	4	28-32A	Washer	1
28-18	Spacer Sleeve	4	28-32B	Nut	1
28-19	Bearing Cover	4	28-67	Hand Chain	/m
28-20D	Nut	4	37-67D	Gearbox Mounting Screw	4
28-20E	Side Plate Assembly	1			
28-21E	Side Plate Assembly	1		<b>Range 1 (73mm – 166mm)</b>	
28-22A	Nut	2	28-22	Hoist Support Shaft	2
28-24	Support Cradle	1	28-23	Width Adjusting Washer	32
28-25	Hoist Attachment Pin	1	28-23A	Width Adjusting Boss	6
28-26	Hook On Adaptor	1			
28-27	Bearing Housing Assembly	1		<b>Range 1 (73mm – 203mm)</b>	
28-27C	Circlip	1	28-22B	Hoist Support Shaft	2
28-27D	Circlip	1	28-23	Width Adjusting Washer	30
28-28	Drive Shaft Cover	1	28-23A	Width Adjusting Boss	4
28-29	Drive Shaft	1	28-23B	Width Adjusting Boss	4

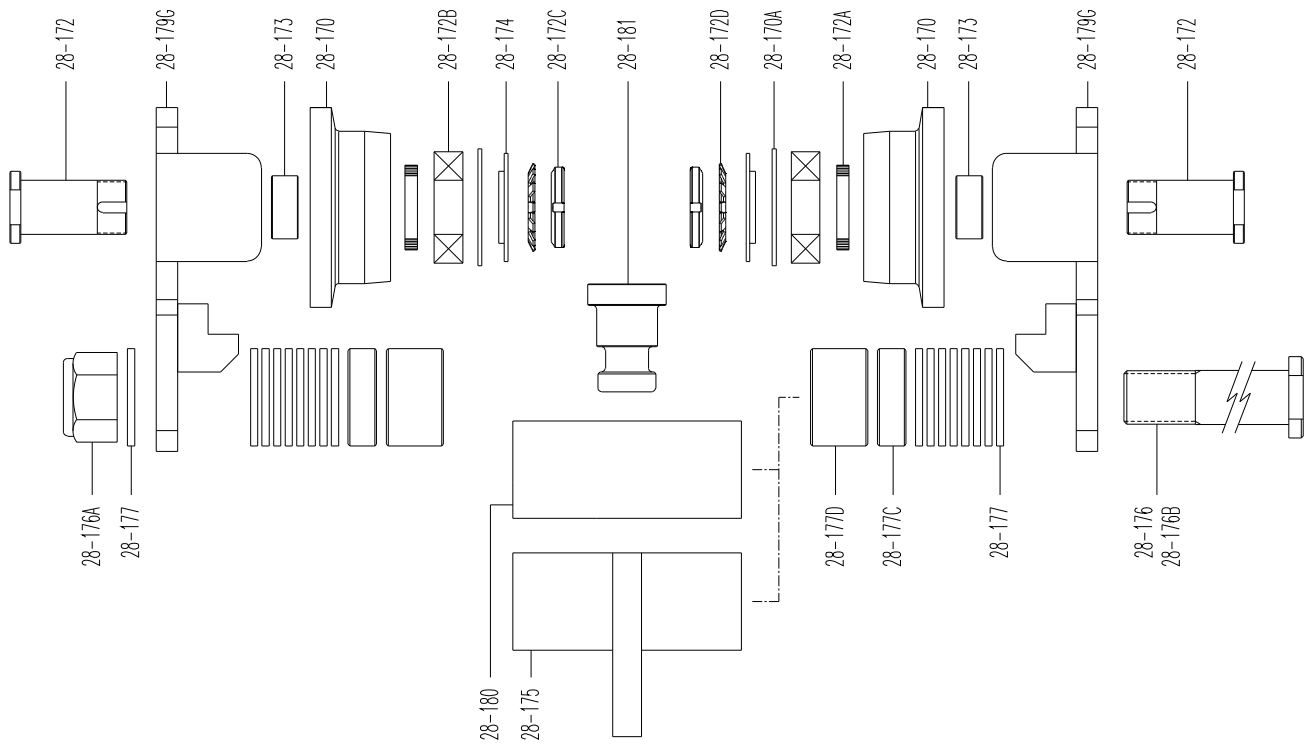
**Figure 16. Components of 1T Trolley with Traverse Motor & Gearbox**



**Table 11. Components of 1T Trolley with Traverse Motor & Gearbox**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-04C	Wheel Bearing	4	28-26	Hook On Adaptor	1
28-13A	Circlip	4			
28-13B	Gear Wheel	2	<b>28-38</b>	<b>Traverse Gearbox</b>	<b>1</b>
28-14B	Wheel	2	<b>28-TAM(PT)</b>	<b>Traverse Motor</b>	<b>1</b>
28-17	Wheel Shaft	4		<b>Add Traverse Motor Control</b>	<b>1</b>
28-17A	Seal	4			
28-17B	Lock Nut	4		<b>Range 1 (73mm – 166mm)</b>	
28-17C	Lock Washer	4	28-22	Hoist Support Shaft	2
28-18	Spacer Sleeve	4	28-23	Width Adjusting Washer	32
28-19	Bearing Cover	4	28-23A	Width Adjusting Boss	6
28-20D	Nut	4			
28-20E	Side Plate Assembly	1		<b>Range 1 (73mm – 203mm)</b>	
28-21E	Side Plate Assembly	1	28-22B	Hoist Support Shaft	2
28-22A	Nut	2	28-23	Width Adjusting Washer	30
28-24	Support Cradle	1	28-23A	Width Adjusting Boss	4
28-25	Hoist Attachment Pin	1	28-23B	Width Adjusting Boss	4

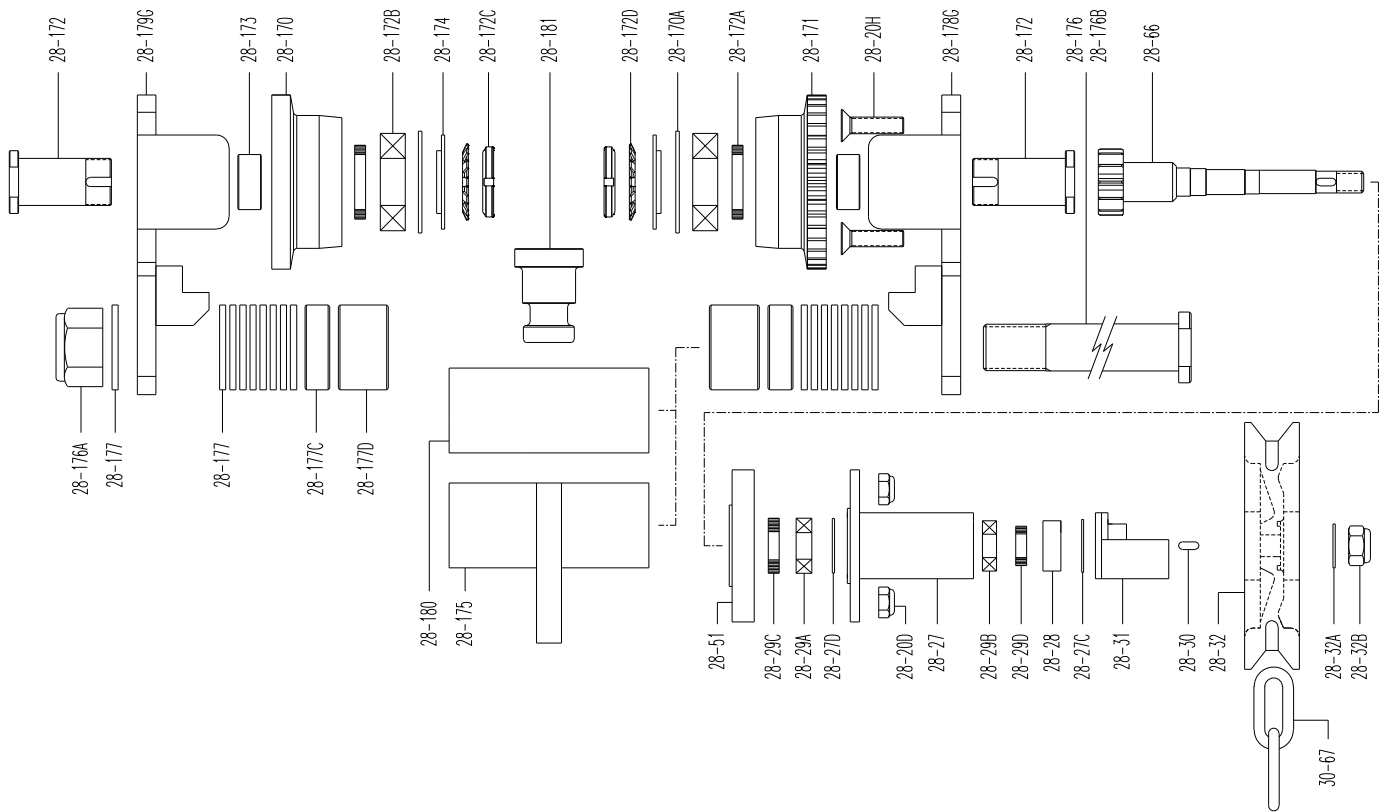
**Figure 17. Components of 3T Plain Trolley**



**Table 12. Components of 3T Plain Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-170	Wheel	4	28-181	Hoist Attachment Pin	1
28-170A	Circlip	4			
28-172	Wheel Shaft	4		<b>Range 1 (89mm – 184mm)</b>	
28-172A	Seal	4	28-176	Hoist Support Shaft	2
28-172B	Wheel Bearing	4	28-177	Width Adjusting Washer	36
28-172C	Lock Nut	4	28-177C	Width Adjusting Boss	4
28-172D	Lock Washer	4			
28-173	Spacer Sleeve	4		<b>Range 1 (89mm – 230mm)</b>	
28-174	Bearing Cover	4	28-176B	Hoist Support Shaft	2
28-175	Hook On Adaptor	1	28-177	Width Adjusting Washer	34
28-176A	Nut	2	28-177C	Width Adjusting Boss	4
28-179G	Side Plate Assembly	2	28-177D	Width Adjusting Boss	4
28-180	Support Cradle	1			

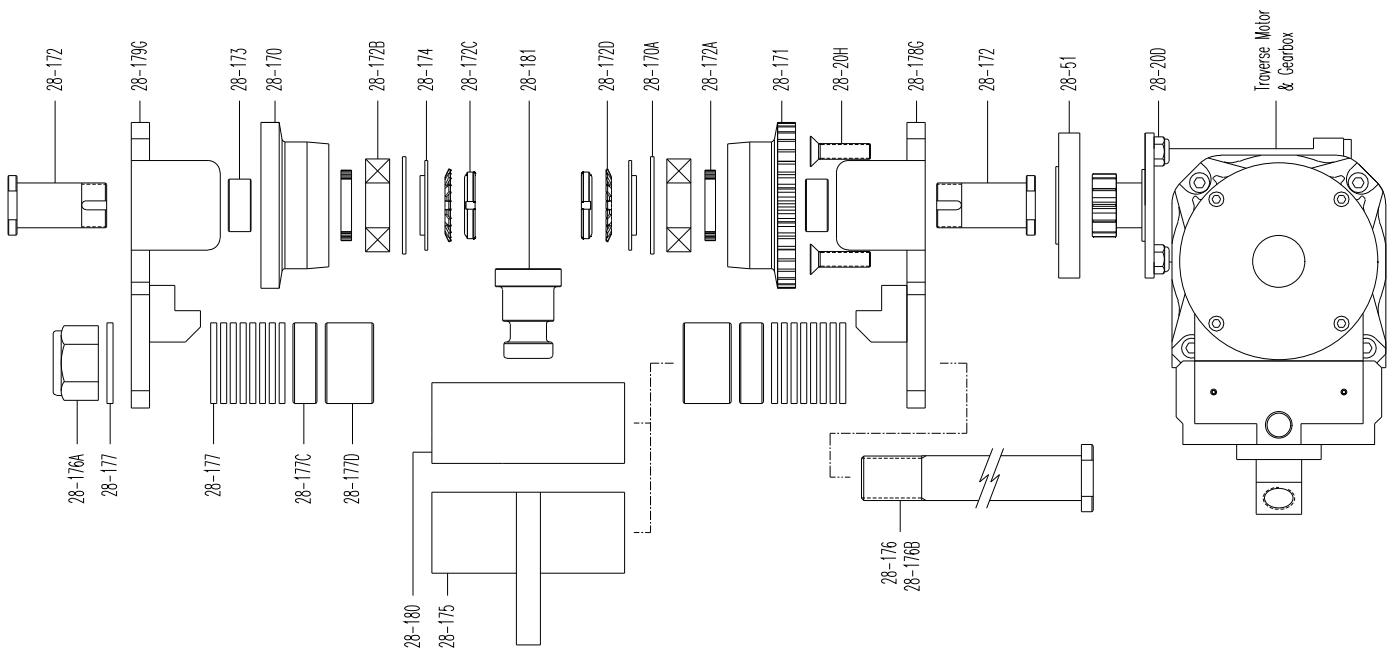
**Figure 18. Components of 3T Geared Trolley**



**Table 13. Components of 3T Geared Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-20D	Nut	4	28-172B	Wheel Bearing	4
28-20H	Gearbox Mounting Screw	4	28-172C	Lock Nut	4
28-27	Bearing Housing Assembly	1	28-172D	Lock Washer	4
28-27C	Circlip	1	28-173	Spacer Sleeve	4
28-27D	Circlip	1	28-174	Bearing Cover	4
28-28	Drive Shaft Cover	1	28-175	Hook On Adaptor	1
28-29A	Bearing	1	28-176A	Nut	2
28-29B	Bearing	1	28-178G	Side Plate Assembly	1
28-29C	Seal	1	28-179G	Side Plate Assembly	1
28-29D	Seal	1	28-180	Support Cradle	1
28-30	Drive Shaft Key	1	28-181	Hoist Attachment Pin	1
28-31	Chain Guide Assembly	1			
28-32	Hand Chain Wheel	1		<b>Range 1 (89mm – 184mm)</b>	
28-32A	Washer	1	28-176	Hoist Support Shaft	2
28-32B	Nut	1	28-177	Width Adjusting Washer	36
28-51	Gearbox Spacer	1	28-177C	Width Adjusting Boss	4
28-66	Drive Shaft	1			
28-67	Hand Chain	/m		<b>Range 1 (89mm – 230mm)</b>	
28-170	Wheel	2	28-176B	Hoist Support Shaft	2
28-170A	Circlip	4	28-177	Width Adjusting Washer	34
28-171	Gear Wheel	2	28-177C	Width Adjusting Boss	4
28-172	Wheel Shaft	4	28-177D	Width Adjusting Boss	4
28-172A	Seal	4			

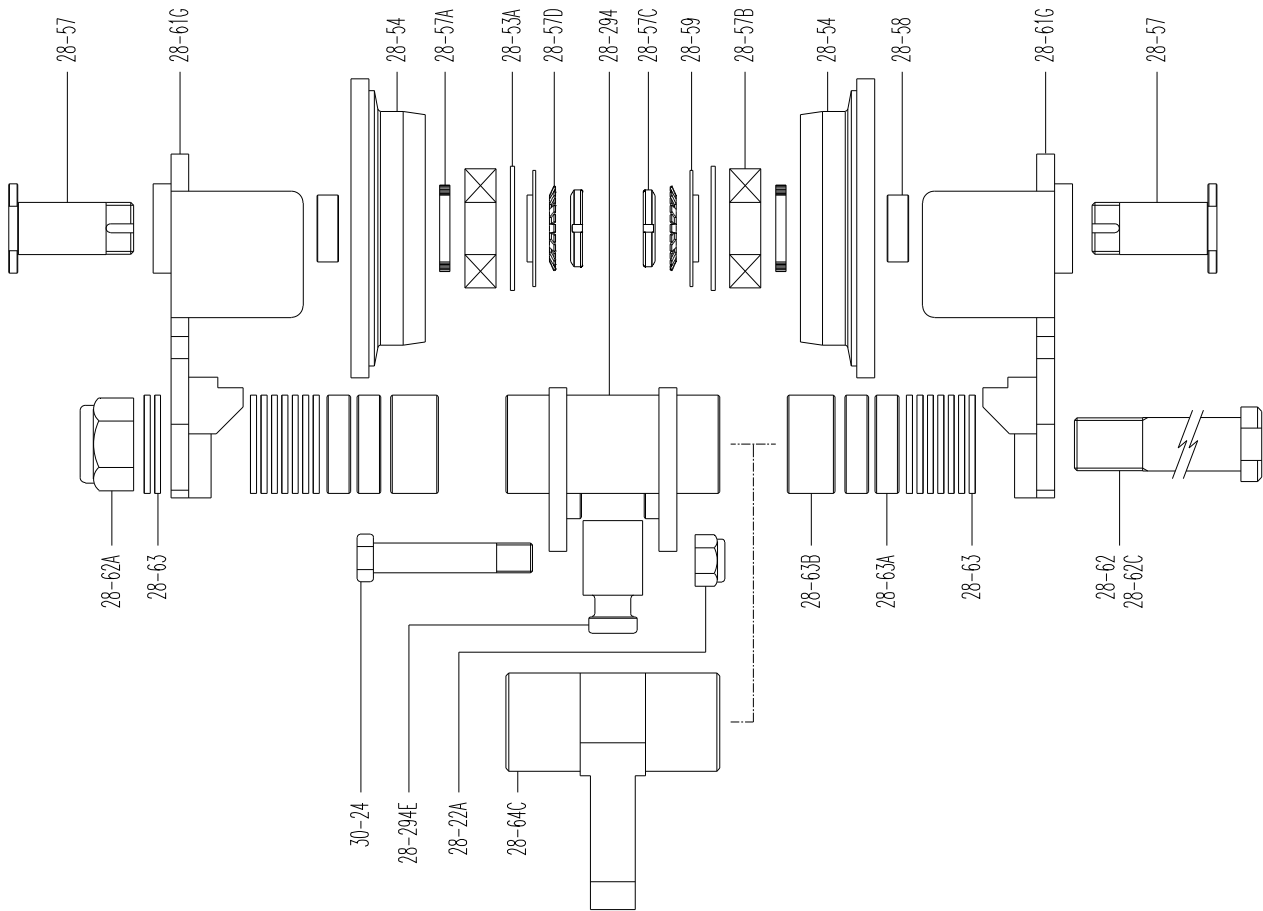
**Figure 19. Components of 3T Trolley with Traverse Motor & Gearbox**



**Table 14. Components of 3T Trolley with Traverse Motor & Gearbox**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-20D	Nut	4	28-180	Support Cradle	1
28-20H	Gearbox Mounting Screw	4	28-181	Hoist Attachment Pin	1
28-51	Gearbox Spacer	1			
28-170	Wheel	2	<b>28-38A</b>	<b>Traverse Gearbox</b>	<b>1</b>
28-170A	Circlip	4	<b>28-TAM(PT)</b>	<b>Traverse Motor</b>	<b>1</b>
28-171	Gear Wheel	2		<b>Add Traverse Motor Control</b>	<b>1</b>
28-172	Wheel Shaft	4			
28-172A	Seal	4		<b>Range 1 (89mm – 184mm)</b>	
28-172B	Wheel Bearing	4	28-176	Hoist Support Shaft	2
28-172C	Lock Nut	4	28-177	Width Adjusting Washer	36
28-172D	Lock Washer	4	28-177C	Width Adjusting Boss	4
28-173	Spacer Sleeve	4			
28-174	Bearing Cover	4		<b>Range 1 (89mm – 230mm)</b>	
28-175	Hook On Adaptor	1	28-176B	Hoist Support Shaft	2
28-176A	Nut	2	28-177	Width Adjusting Washer	34
28-178G	Side Plate Assembly	1	28-177C	Width Adjusting Boss	4
28-179G	Side Plate Assembly	1	28-177D	Width Adjusting Boss	4

**Figure 20. Components of 6T Plain Trolley**

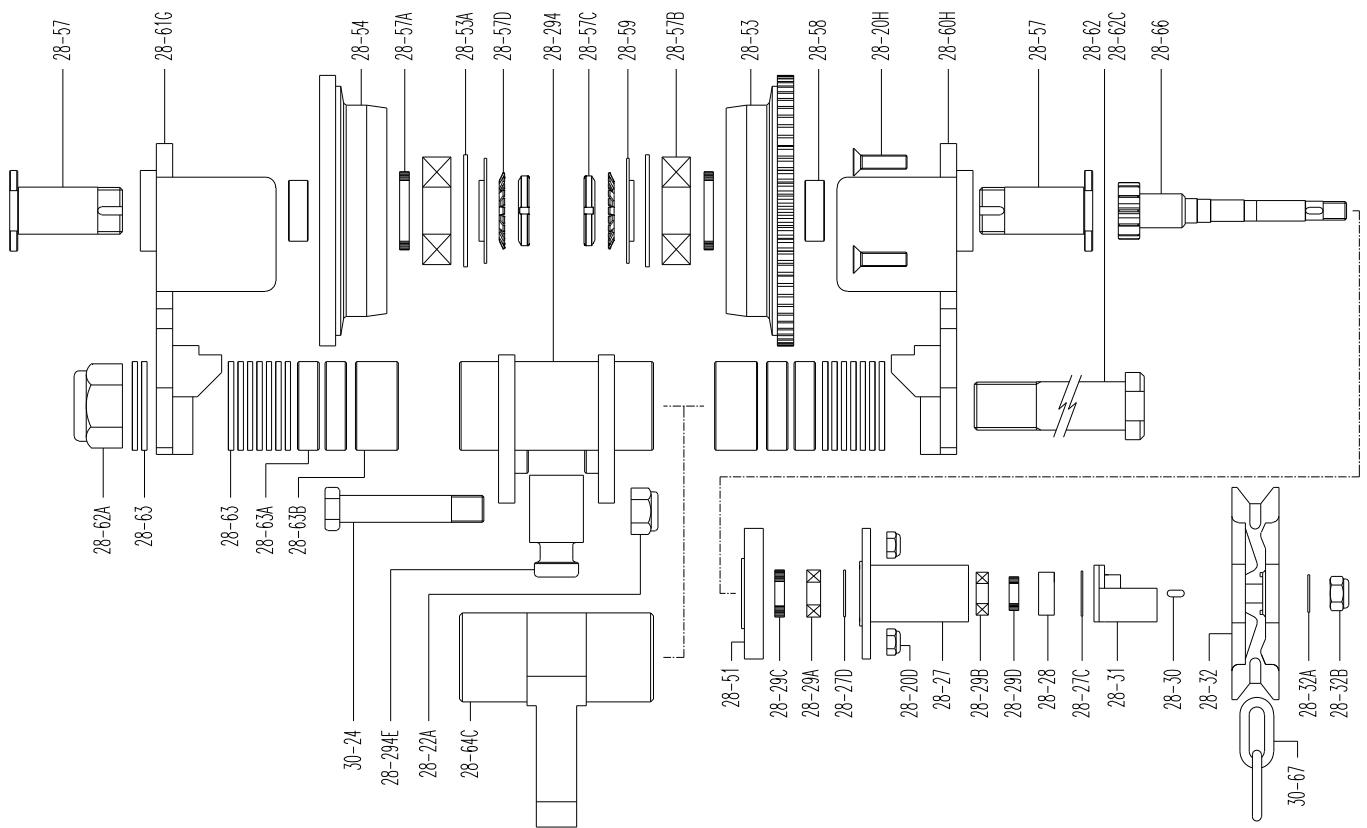


**Table 15. Components of 6T Plain Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-22A	Nut	1	28-294	Rigid Trolley Adaptor	1
30-24	Hoist Attachment Shaft	1	28-294E	Hoist Attachment Pin	1
28-53A	Circlip	4			
28-54	Wheel	4		<b>Range 1 (128mm – 200mm)</b>	
28-57	Wheel Shaft	4	28-62	Hoist Support Shaft	2
28-57A	Seal	4	28-63	Width Adjusting Washer	24
28-57B	Wheel Bearing	4	28-63A	Width Adjusting Boss	4
28-57C	Lock Nut	4			
28-57D	Lock Washer	4		<b>Range 1 (128mm – 305mm)</b>	
28-58	Spacer Sleeve	4	28-62C	Hoist Support Shaft	2
28-59	Bearing Cover	4	28-63	Width Adjusting Washer	32
28-61G	Side Plate Assembly	2	28-63A	Width Adjusting Boss	8
28-62A	Nut	2	28-63B	Width Adjusting Boss	4
28-64C	Hook On Adaptor	1			



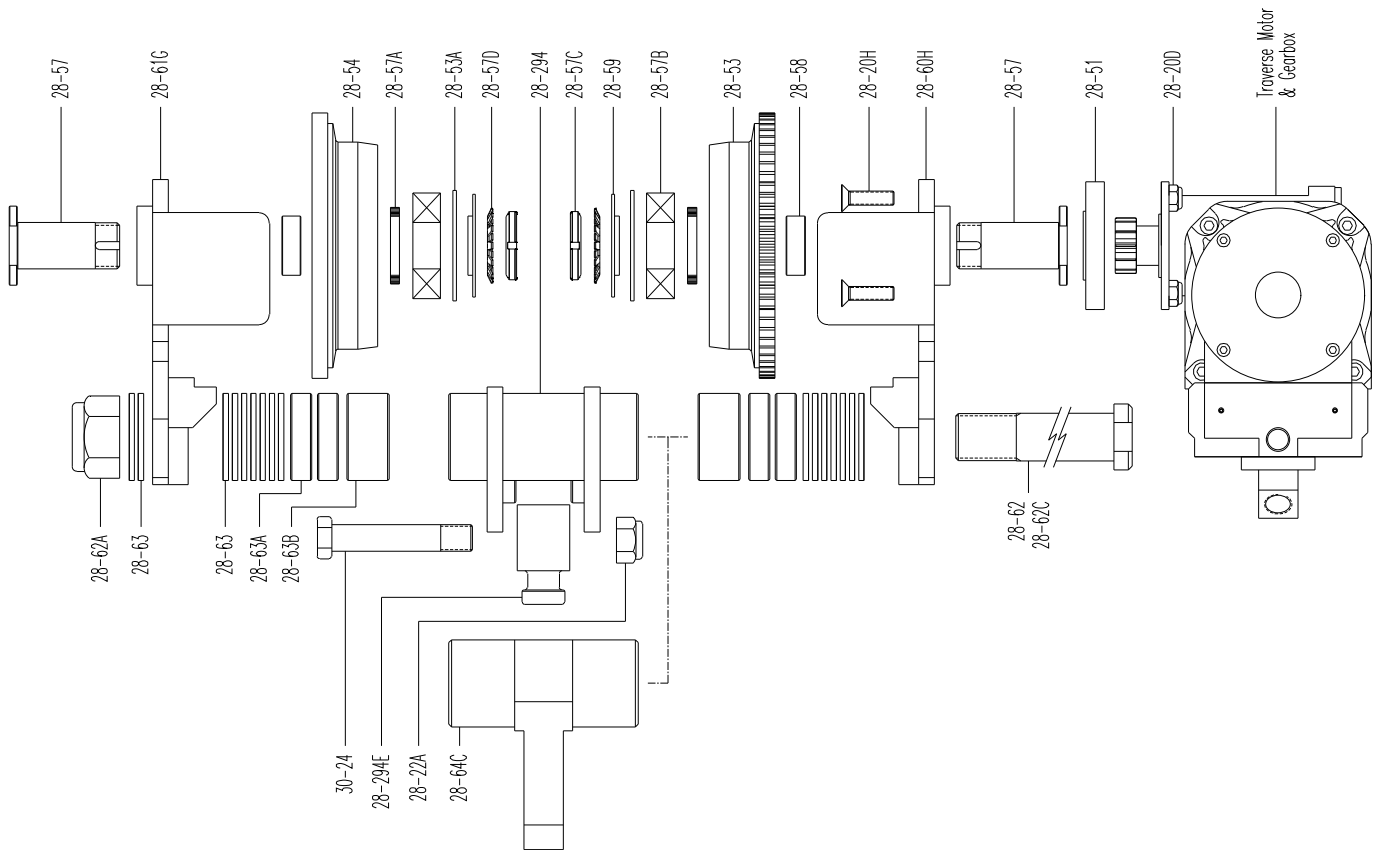
**Figure 21. Components of 6T Geared Trolley**



**Table 16. Components of 6T Geared Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-20D	Nut	4	28-57C	Lock Nut	4
28-20H	Gearbox Mounting Screw	4	28-57D	Lock Washer	4
28-22A	Nut	1	28-58	Spacer Sleeve	4
30-24	Hoist Attachment Shaft	1	28-59	Bearing Cover	4
28-27	Bearing Housing Assembly	1	28-60H	Side Plate Assembly	1
28-27C	Circlip	1	28-61G	Side Plate Assembly	1
28-27D	Circlip	1	28-62A	Nut	2
28-28	Drive Shaft Cover	1	28-64C	Hook On Adaptor	1
28-29A	Bearing	1	28-66	Drive Shaft	1
28-29B	Bearing	1	28-67	Hand Chain	/m
28-29C	Seal	1	28-294	Rigid Trolley Adaptor	1
28-29D	Seal	1	28-294E	Hoist Attachment Pin	1
28-30	Drive Shaft Key	1			
28-31	Chain Guide Assembly	1		<b>Range 1 (128mm – 200mm)</b>	
28-32	Hand Chain Wheel	1	28-62	Hoist Support Shaft	2
28-32A	Washer	1	28-63	Width Adjusting Washer	24
28-32B	Nut	1	28-63A	Width Adjusting Boss	4
28-51	Gearbox Spacer	1			
28-53A	Circlip	4		<b>Range 1 (128mm – 305mm)</b>	
28-53	Gear Wheel	2	28-62C	Hoist Support Shaft	2
28-54	Wheel	2	28-63	Width Adjusting Washer	32
28-57	Wheel Shaft	4	28-63A	Width Adjusting Boss	8
28-57A	Seal	4	28-63B	Width Adjusting Boss	4
28-57B	Wheel Bearing	4			

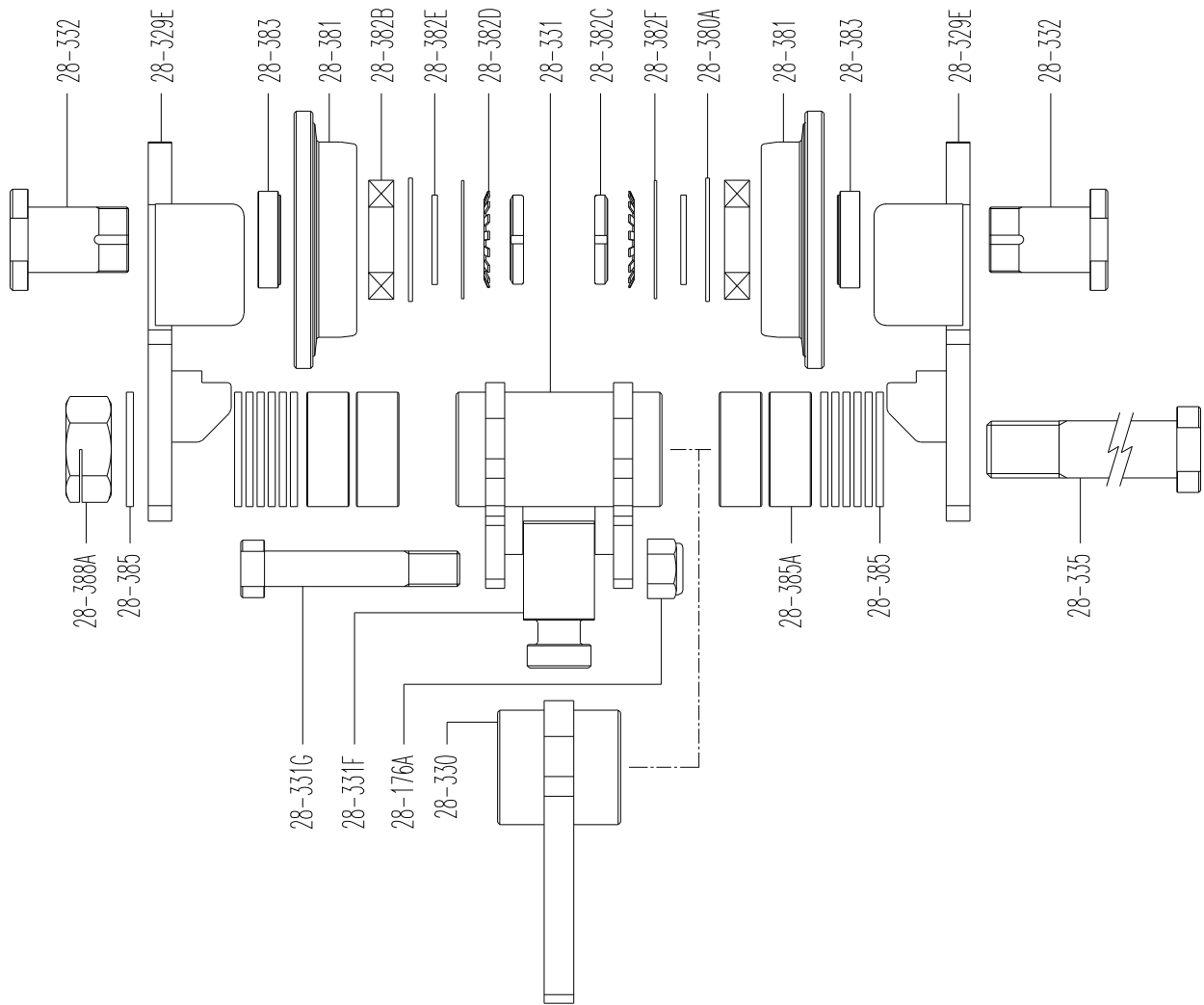
**Figure 22. Components of 6T Trolley with Traverse Motor & Gearbox**



**Table 17. Components of 6T Trolley with Traverse Motor & Gearbox**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-20D	Nut	4	28-66	Drive Shaft	1
28-20H	Gearbox Mounting Screw	4	28-67	Hand Chain	/m
28-22A	Nut	1	28-294	Rigid Trolley Adaptor	1
30-24	Hoist Attachment Shaft	1	28-294E	Hoist Attachment Pin	1
28-51	Gearbox Spacer	1			
28-53A	Circlip	4	<b>28-38A</b>	<b>Traverse Gearbox</b>	<b>1</b>
28-53	Gear Wheel	2	<b>28-TAM(PT)</b>	<b>Traverse Motor</b>	<b>1</b>
28-54	Wheel	2		<b>Add Traverse Motor Control</b>	<b>1</b>
28-57	Wheel Shaft	4			
28-57A	Seal	4		<b>Range 1 (128mm – 200mm)</b>	
28-57B	Wheel Bearing	4	28-62	Hoist Support Shaft	2
28-57C	Lock Nut	4	28-63	Width Adjusting Washer	24
28-57D	Lock Washer	4	28-63A	Width Adjusting Boss	4
28-58	Spacer Sleeve	4			
28-59	Bearing Cover	4		<b>Range 1 (128mm – 305mm)</b>	
28-60H	Side Plate Assembly	1	28-62C	Hoist Support Shaft	2
28-61G	Side Plate Assembly	1	28-63	Width Adjusting Washer	32
28-62A	Nut	2	28-63A	Width Adjusting Boss	8
28-64C	Hook On Adaptor	1	28-63B	Width Adjusting Boss	4

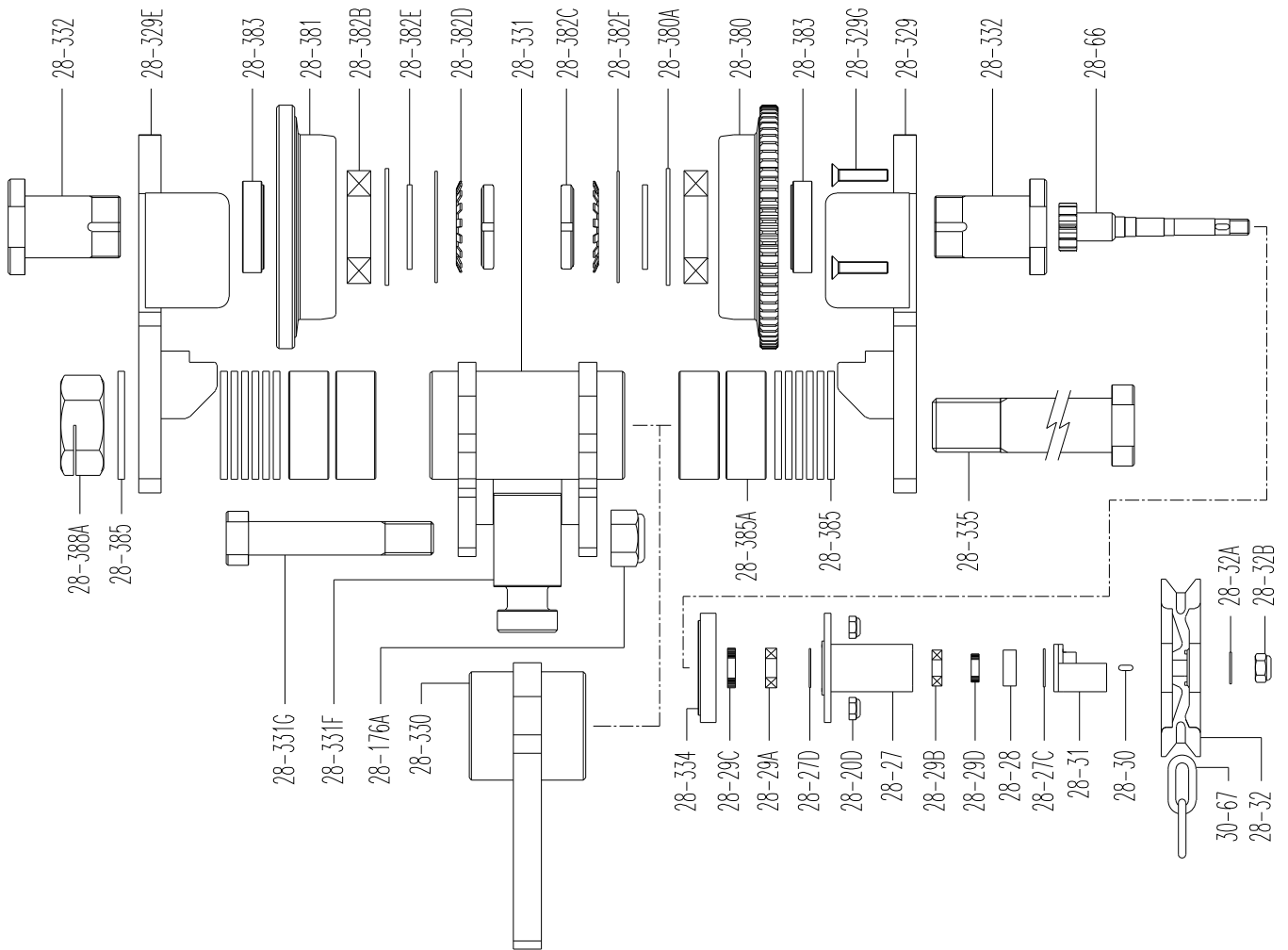
**Figure 23. Components of 10T Plain Trolley**



**Table 18. Components of 10T Plain Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-176A	Nut	1	28-382E	Dust Cover Spacer	4
28-329E	Side Plate Assembly	2	28-382F	Dust Cover	4
28-330	Hook On Adaptor	1	28-383	Spacer Sleeve	4
28-331	Rigid Trolley Adaptor	1	28-388A	Nut	2
28-331F	Hoist Attachment Pin	1			
28-331G	Hoist Attachment Shaft	1		<b>Rigid Adaptor</b>	
28-332	Wheel Shaft	4	28-385	Width Adjusting Washer	26
28-335	Hoist Support Shaft	2	28-385A	Width Adjusting Boss	8
28-380A	Circlip	4		<b>Hook On Adaptor</b>	
28-381	Wheel	4			
28-382B	Wheel Bearing	4	28-385	Width Adjusting Washer	26
28-382C	Lock Nut	4	28-385A	Width Adjusting Boss	12
28-382D	Lock Washer	4			

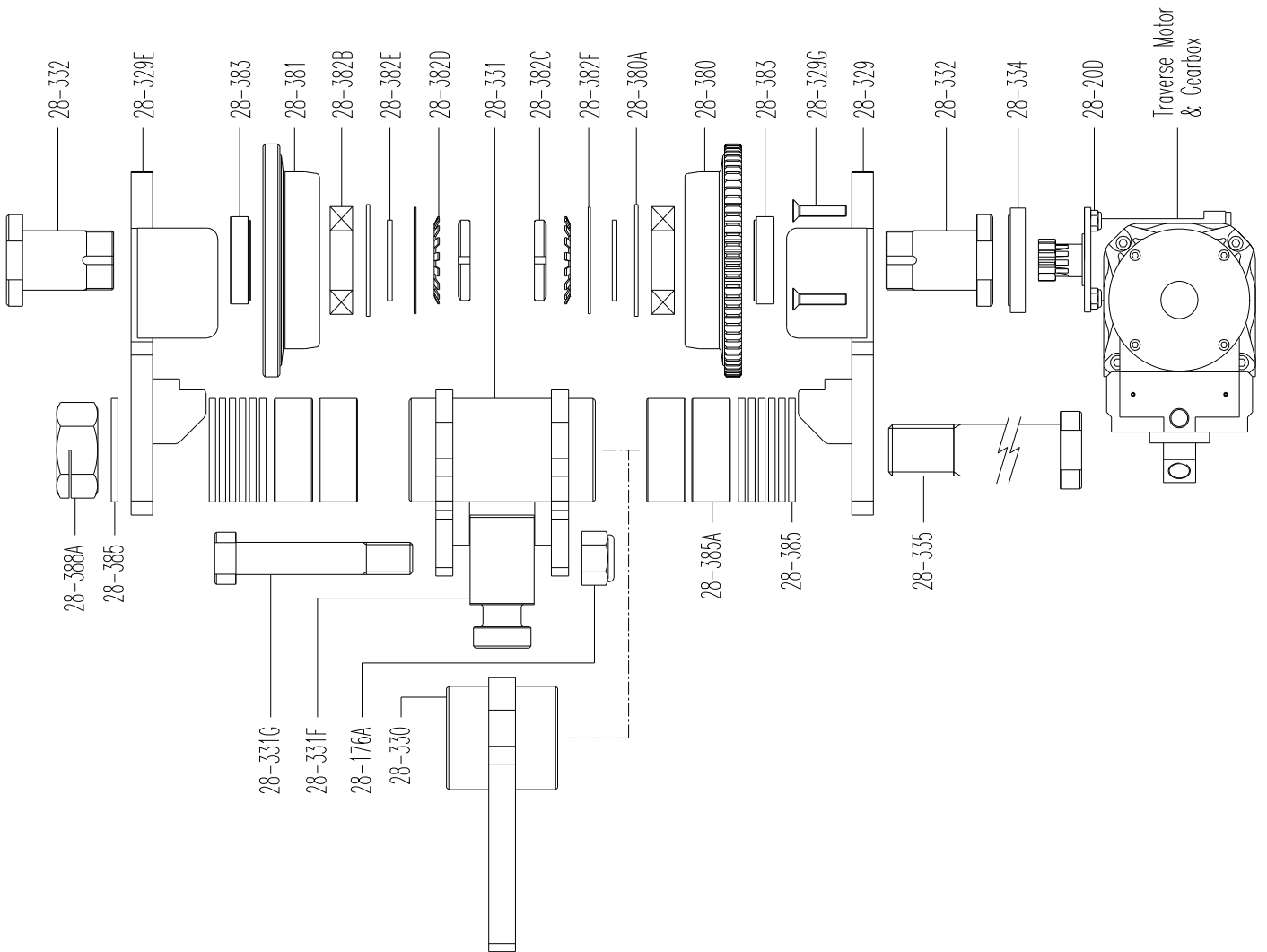
**Figure 24. Components of 10T Geared Trolley**



**Table 19. Components of 10T Geared Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-20D	Nut	4	28-332	Wheel Shaft	4
28-27	Bearing Housing Assembly	1	28-334	Gearbox Spacer	1
28-27C	Circlip	1	28-335	Hoist Support Shaft	2
28-27D	Circlip	1	28-380A	Circlip	4
28-28	Drive Shaft Cover	1	28-381	Wheel	4
28-29A	Bearing	1	28-382B	Wheel Bearing	4
28-29B	Bearing	1	28-382C	Lock Nut	4
28-29C	Seal	1	28-382D	Lock Washer	4
28-29D	Seal	1	28-382E	Dust Cover Spacer	4
28-30	Drive Shaft Key	1	28-382F	Dust Cover	4
28-31	Chain Guide Assembly	1	28-383	Spacer Sleeve	4
28-32	Hand Chain Wheel	1	28-388A	Nut	2
28-32A	Washer	1			
28-32B	Nut	1		<b>Rigid Adaptor</b>	
28-176A	Nut	1	28-385	Width Adjusting Washer	26
28-329E	Side Plate Assembly	2	28-385A	Width Adjusting Boss	8
28-329G	Gearbox Mounting Screw	4			
28-330	Hook On Adaptor	1		<b>Hook On Adaptor</b>	
28-331	Rigid Trolley Adaptor	1	28-385	Width Adjusting Washer	26
28-331F	Hoist Attachment Pin	1	28-385A	Width Adjusting Boss	12
28-331G	Hoist Attachment Shaft	1			

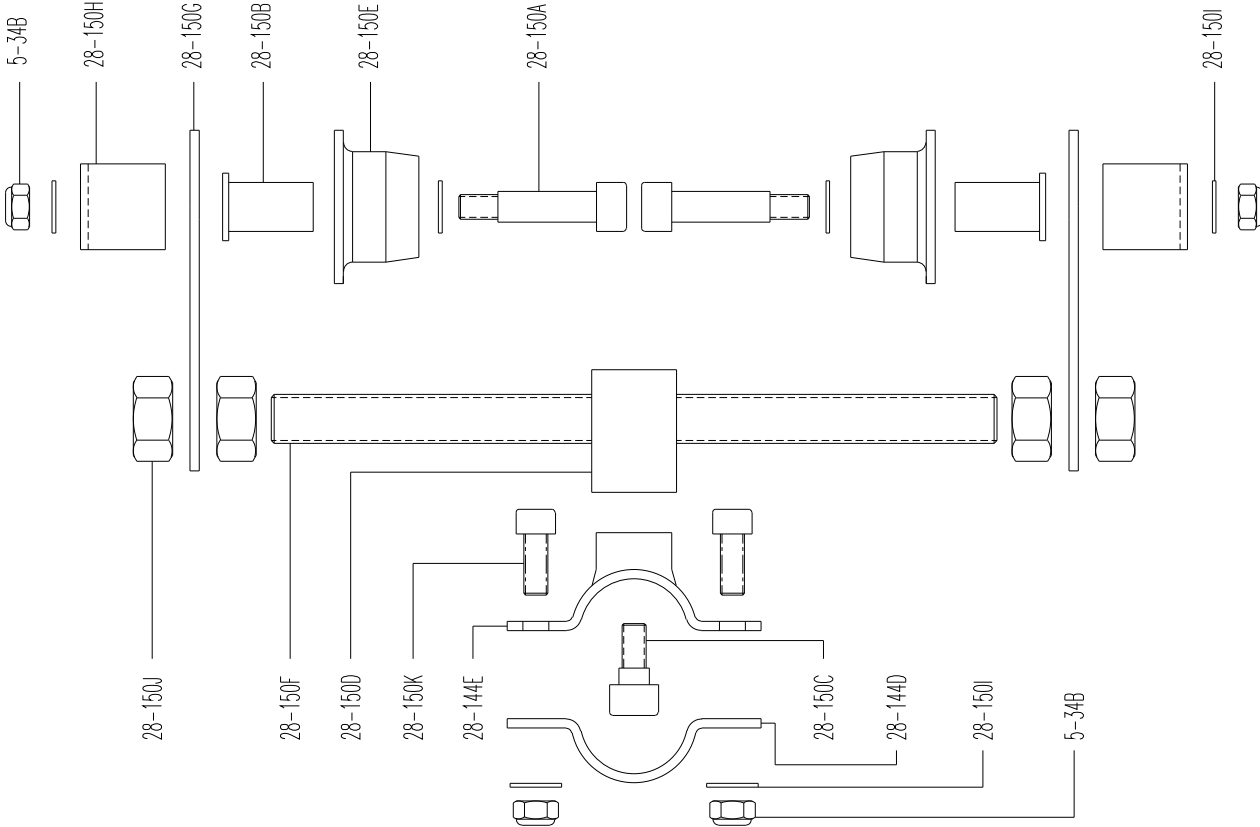
**Figure 25. Components of 10T Trolley with Traverse Motor & Gearbox**



**Table 20. Components of 10T Trolley with Traverse Motor & Gearbox**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-20D	Nut	4	28-382E	Dust Cover Spacer	4
28-176A	Nut	1	28-382F	Dust Cover	4
28-329E	Side Plate Assembly	2	28-383	Spacer Sleeve	4
28-329G	Gearbox Mounting Screw	4	28-388A	Nut	2
28-330	Hook On Adaptor	1			
28-331	Rigid Trolley Adaptor	1	<b>28-38C</b>	<b>Traverse Gearbox</b>	<b>1</b>
28-331F	Hoist Attachment Pin	1	<b>28-TAM(PT)</b>	<b>Traverse Motor</b>	<b>1</b>
28-331G	Hoist Attachment Shaft	1		<b>Add Traverse Motor Control</b>	<b>1</b>
28-332	Wheel Shaft	4			
28-334	Gearbox Spacer	1		<b>Rigid Adaptor</b>	
28-335	Hoist Support Shaft	2	28-385	Width Adjusting Washer	26
28-380A	Circlip	4	28-385A	Width Adjusting Boss	8
28-381	Wheel	4			
28-382B	Wheel Bearing	4		<b>Hook On Adaptor</b>	
28-382C	Lock Nut	4	28-385	Width Adjusting Washer	26
28-382D	Lock Washer	4	28-385A	Width Adjusting Boss	12

**Figure 26. Components of Hose Support Trolley**



**Table 21. Components of Hose Support Trolley**

PART No.	DESCRIPTION	QTY	PART No.	DESCRIPTION	QTY
28-150	Hose Support Trolley				
5-34B	Nut	6	28-150E	Taper Wheel	4
28-144D	Pipe Bracket	1	28-150F	Threaded Rod	1
28-144E	Pipe Bracket (Swivel)	1	28-150G	Side Plate	2
28-150A	Wheel Bolt	4	28-150H	Bumper Plate	2
28-150B	Bush	4	28-150I	Washer	10
28-150C	Swivel Bolt	1	28-150J	Side Plate Adjusting Nut	4
28-150D	Swivel Plate	1	28-150K	Pipe Bracket Bolt	2

