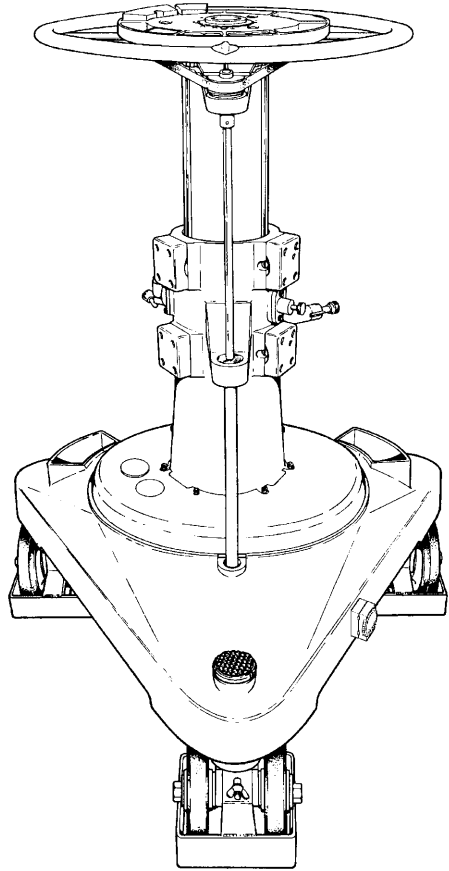


Maintenance Manual

Tern



Pedestal



Tern

Pedestal 3741

MAINTENANCE MANUAL AND ILLUSTRATED PARTS LIST

PUBLICATION PART No. 3741-8

Issue 5

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Foreword

This manual provides full and detailed maintenance and spare parts information for the Vinten® Tern Pedestal. The Tern Pedestal is an obsolete product and this Maintenance Manual is provide for the final production version.



WARNING!: Read the Safety Section on [page 5](#) before using this head or attempting any adjustment or repair.

It is recommended that this manual is read carefully and the illustrations studied prior to operating or servicing the pedestal. Attention to the details contained herein will ensure that the pedestal will operate efficiently with the minimum of attention over a long service life. Particular attention must be paid to cleaning, especially after use in adverse conditions.

To order spare parts or to obtain further information, application should be made to Vinten Broadcast Limited or to your local distributor, or visit our website at www.vinten.com.





Notes to readers

This is an on-line version of 'Tern Pedestal Maintenance Manual' (3741-8). The Tern pedestal is an obsolete product and this Maintenance Manual is provide for the final production version.

Navigation

Clicking the mouse on any [blue text](#) will move you around the document. For example, if you click on one of the blue call-outs on an exploded drawing, you will be taken to the appropriate line in the relevant parts list.

[Contents](#) Clicking here will take you to the Contents Page.

-  Clicking here will take you to the first page.
-  Clicking here will take you to the previous page.
-  Clicking here will take you to the next page.
-  Click here to go back to the previous view.

Alternatively, you may use the Acrobat Reader navigation buttons.

Safety - Read This First!

Warning symbols in this maintenance manual



Where there is a risk of personal injury, injury to others, or damage to the pedestal or associated equipment, comments appear, highlighted by the word **WARNING!** and supported by the warning triangle symbol.

Critical data

Mass

Mass 250 lb (113.5 kg)

Load

Minimum Payload 22 lb (10 kg)

Maximum Payload 290 lb (131 kg)

Pressure

Maximum Pressure 230 psi (15.86 bar)

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Abbreviations

The following abbreviations are used in this publication:

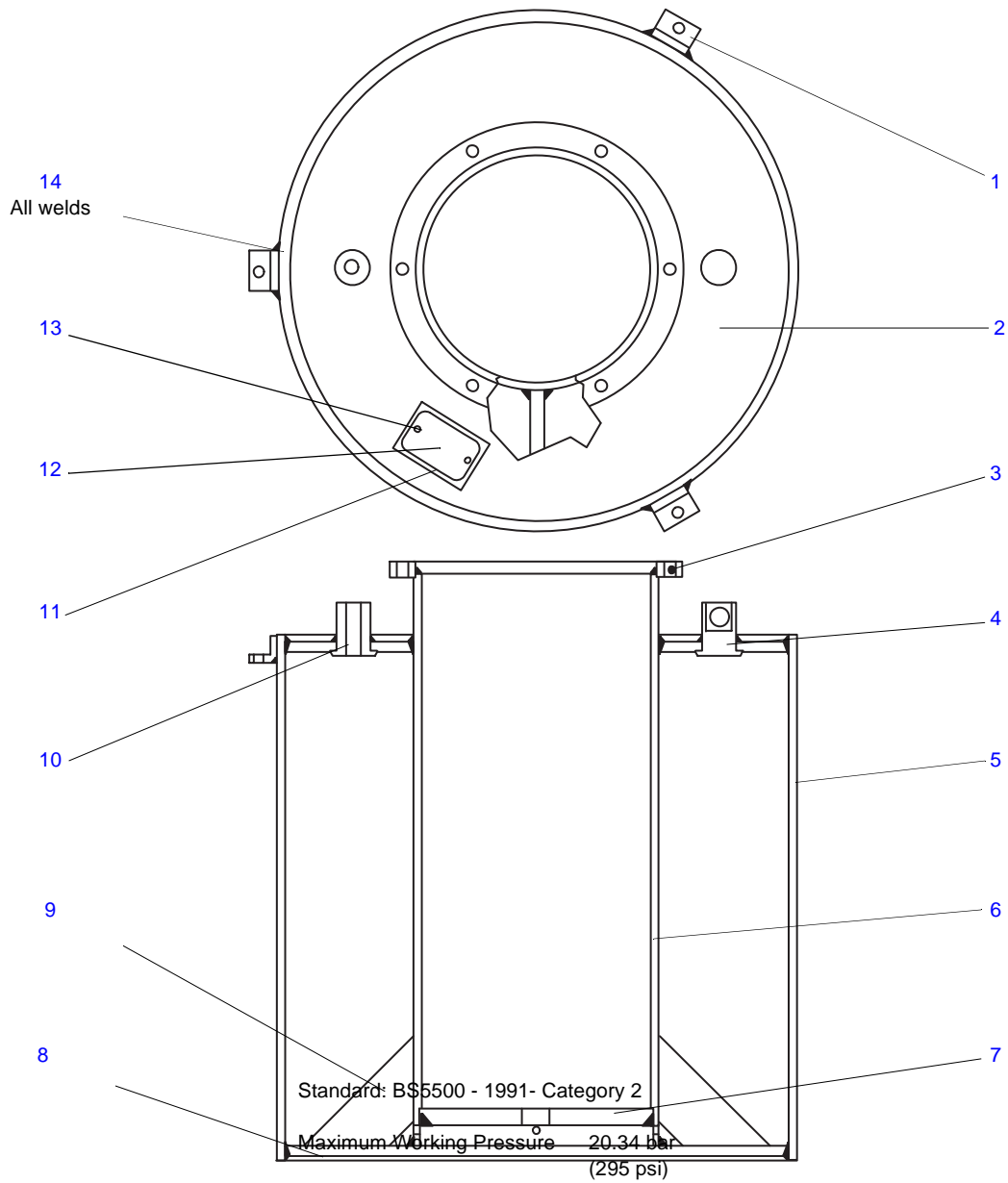
ac	alternating current	lb	pound (weight)
A	Amps	LF	Lubricated Friction
AF	across flats	LH	left hand
A/R	as required	MISO	metric thread
ASME	American Society of Mech Engineers	m	metre
assy	assembly	mm	millimetre
BS	British Standard	N	Newton
BA	British Association thread	NPT	National Pipe thread
BSF	British Standard Fine thread	NI	not illustrated
BSP	British Standard Parallel Pipe thread	No.	number
BSW	British Standard Whitworth thread	OD	outside diameter
btn	button	PCB	printed circuit board
chs	cheese	PCD	pitch circle diameter
C of G	centre of gravity	pozi	Pozidriv
comp	compression	psi	pounds per square inch
csk	countersunk	pt	point
cu	cubic	PTFE	Polytetrafluoroethylene
c/w	complete with	PVC	Polyvinyl chloride
dc	direct current	RH	right hand
dia	diameter	sect	section
ft	foot	skt	socket
hd	head	SWG	standard wire gauge
hex	hexagon	thk	thick
Hz	Hertz (frequency)	UNC	Unified Coarse thread
IC	integrated circuit	UNF	Unified Fine thread
ID	inside diameter	V	Volts
in.	inch	W	Watts
kg	kilogram		

Technical Specification

NOTE: The drawings in this section are provided only as a guide to construction and material in the pressurized parts of the pedestal. They should NOT be used for dismantling and assembly or the ordering of spare parts. Please refer to [Section 5 - Repair](#) or [Section 6 - Illustrated Parts List](#).

Weight	250lb (113.5kg)
Overall Dimensions:	
Maximum Height	54in.(1372mm)
Height Range	21.25in. (540mm)
Doorway Width	
Minimum	29.5in.(750mm)
Maximum	36in.(915mm)
Payload	
Minimum	22lb (10kg)
Maximum	290lb (131kg)
Pneumatic System	
Design Pressure	253psi (17.44bar)
Maximum Working Pressure	230psi (15.86bar)
Operating Temperature Range	-10°C to +45°C

Pressure Tank Assembly (Part No. 3741-42)



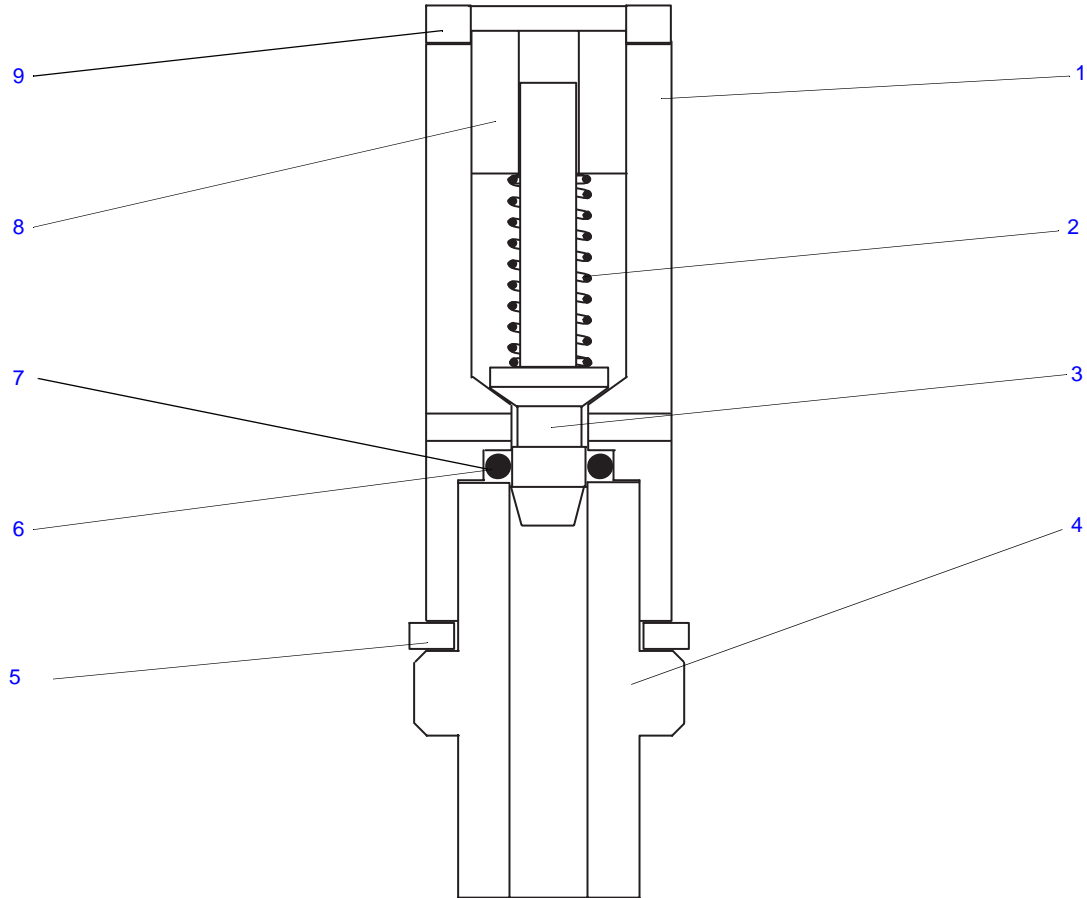
Design Pressure	22.4 bar (325 psi)
Test Pressure	27.99 bar (406 psi)
Volume	0.0318 m ³ (1940 in ³)
Design Temperature	50°C

Pressure Tank Assembly (Part No. 3741-42)

Item	Name	Qty	Material
1	Support lug	3	7/8in. x 7/8in. BMS non lead-bearing *
2	Top end plate	1	15 3/16in. OD x 10mm thk mild steel to BS1501-151/161-430A *
3	Top fixing plate	1	9in. OD x 7 9/16in. ID x 1/2in. thk mild steel to BS1501-151/161-430A *
4	Relief valve insert	1	1 1/4in dia x 1 5/8in. lg mild steel to BS970 220M07 non lead-bearing *
5	Outer shell	1	16in. OD x 3/8in. wall mild steel tube to BS 3601-430 *
6	Inner shell	1	7 5/8in. OD x 1/4in. wall mild steel tube to BS3601-HFS S360 *
7	Ram connecting plate	1	7 1/4in. dia x 1/2in. thk mild steel to BS1501-151/161-430A *
8	Bottom end plate	1	15 3/16in. OD x 10mm thk mild steel to BS1501-151/161-430A *
9	Supporting webs	4	cut from 8mm thk steel boiler plate to BS1501-161-430A *
10	Valve insert	1	1 1/4in. dia mild steel to BS970 220M07 non lead-bearing *
11	Mounting block	1	2 1/2in x 1 5/8in. x 3/16in. BMS to BS970 220M07 non lead-bearing
12	Nameplate	1	Aluminium sheet 22SWG or 0.7mm thick
13	Hammer drive screw	2	1/8in. lg x 00 Type 'U' hardened
14	Welding wire	A/R	1.0mm dia mild steel BS2901: Part1: 1983: A18 *

*Material fully certified and covered by mechanical and chemical certificates

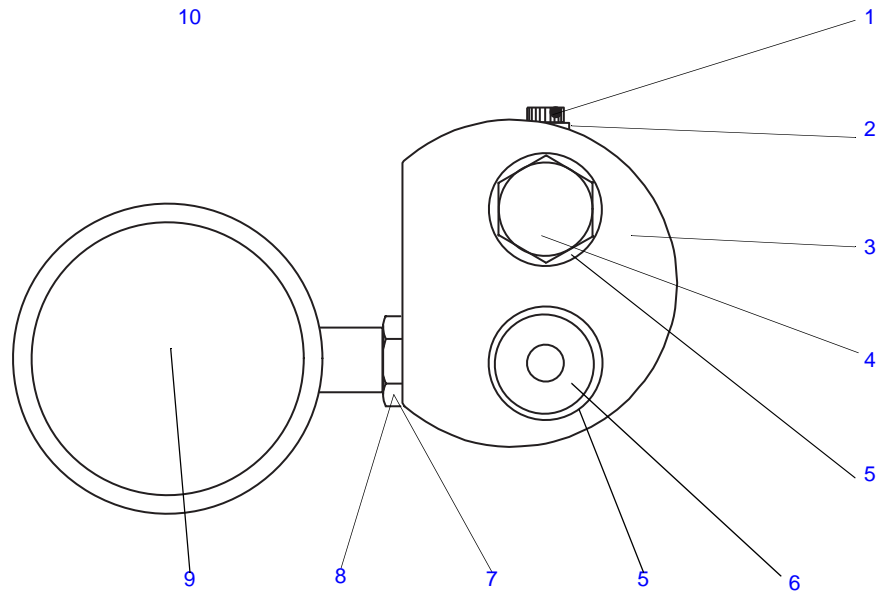
Safety Valve Assembly (Part No. 3741-19)



Relief Valve Assembly (Part No. 3741-19)

Item	Name	Qty	Material
1	Body	1	Brass, BS2874 CZ121 Pb4
2	Spring	1	Flexo Ref 143306
3	Spool	1	Stainless steel EN58AM
4	Spigot	1	Stainless steel EN58AM
5	Bonded seal	1	1/4 in. BSP, Dowty Ref PP-45-B
6	'O' ring	1	Gaco Ref R2025
7	Silicone grease	A/R	MS4
8	Adjuster	1	Stainless steel EN58
9	Locking nut	1	Brass, BS2874 CZ121 Pb4

Pressure Gauge and Filler Valve



Pressure Gauge and Filler Valve

Item	Name	Qty	Material
1	Socket cap screw	1	10-32 x 5/8 in. long
2	Bonded seal	1	2BA, Dowty Ref PP-45-3
3	Adaptor	1	Al alloy HE 30 TF
4	Banjo bolt	1	Mild steel BS970 EN1A
5	Bonded seal	2	1/4 in. BSP, Dowty Ref PP-45-B
6	Filler valve (all countries except USA)	1	Schrader valve No. 9886
	Filler valve (USA only)	1	Schrader tank valve No. 8911
7	Adaptor nut	A/R	Brass
8	'O' ring	1	7/16 in. OD x 5/16 in. ID x 1/16 in. sect
9	Pressure gauge	1	Wika 0-300 psi 2 in. dia
10	Hydraulic sealant	A/R	Loctite 542

Design Improvements

Details	Serial No. Information

Section 1

Introduction and Description

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Introduction

- 1 The Vinten Type 3741 'TERN' Pneumatic Pedestal (Fig 1.1) has been designed for studio use with a wide range of portable and intermediate colour television cameras.
2 The pedestal comprises two major assemblies, namely the single-stage column and the base.
3 The single-stage column assembly consists of a telescopic column and a weight-tray assembly.
4 The base assembly incorporates the pressure tank, the pneumatic ram and the steering mechanism.
5 The pressure gauge, safety valve and filler valve for the pneumatic system are mounted on the top face of the tank.
6 The base is carried on three pairs of steerable rubber tyred wheels.

Description

Single-stage column

General

- 7 The single-stage column assembly comprises two major assemblies - the column assembly and the weight-tray assembly.

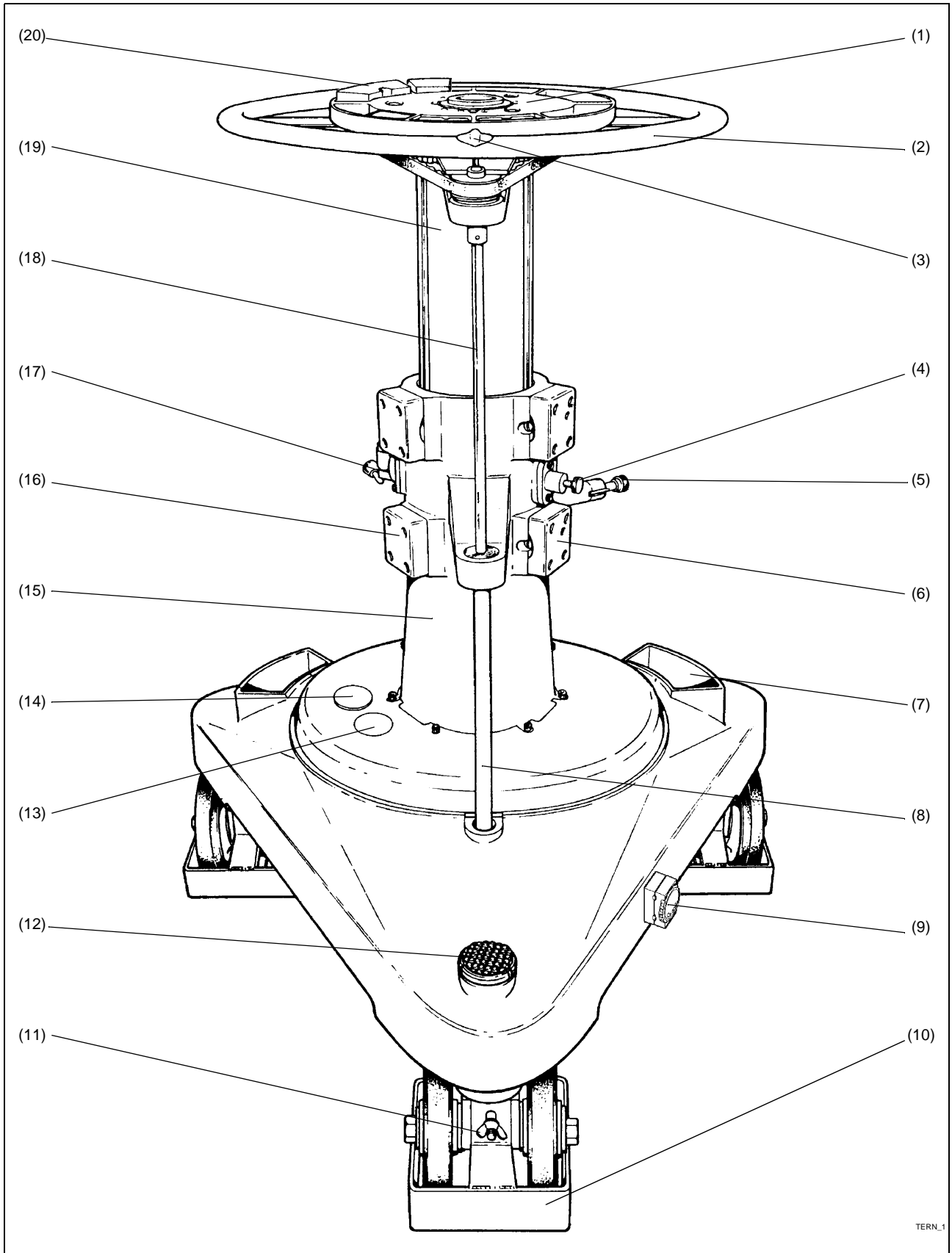


Fig 1.1 Tern Pedestal

TERN_1

Column Assembly

8 The column assembly has two main components - a fixed tube (15) and a moving tube (19). The fixed tube carries the three pairs of ball bearings which act as rollers to guide the column. The spindles of two pairs of rollers (16) are fixed rigidly in brackets fastened to the main casting and are non-adjustable. The third pair of rollers (6) have eccentric spindles which enable them to be adjusted in their mountings to eliminate all free play in the column. Also mounted on the fixed tube are a locking pin assembly (5), a column brake assembly (17), a friction control (4) and two brackets which carry mushroom buffers.

9 The locking pin (5) is used to secure the column in the down position whenever the pneumatic system is to be charged or when equipment is to be fitted to or to be removed from the weight-tray platform.

10 The column brake (17) is applied by a small lever and bears on the moving tube enabling it to be held in any position providing it is correctly counter-balanced.

11 The friction control (4) allows a varying amount of friction, or drag, to be applied to the moving tube of the column to suit the requirements of the operator. The setting is made by turning the friction control knob, clockwise to increase drag and counter-clockwise to decrease drag.

12 The moving column (19) is of cylindrical form having three tracks for the guide rollers. Each track has a steel facing strip retained by a clamp at each end. Two holes are provided for the locking pin. Each hole is elongated to allow a column movement of about 3/4 in. (20mm) without disengaging the locking pin. Lugs secured to the column engage with mushroom buffers in the fixed tube to provide cushioning when the column is fully extended.

13 At the top of the moving column the column top casting supports the weight tray (1), locates the end of the piston rod of the pneumatic ram and carries two mushroom buffers which engage with the brackets in the fixed tube to provide cushioning when the column is in its lowest position.

14 The weight of the moving part of the column assembly and the payload is counterbalanced by the pneumatic ram mounted in the centre of the pressure tank in the base. The upper end of the ram piston rod engages in the column top casting and is located radially by a recess in the casting.

Weight tray assembly

15 The weight tray assembly is fitted to the top of the column. It carries the steering ring (2) and the steering shaft top bearing assembly. The top of the weight-tray (1) is recessed to accept counterbalance trim weights and is drilled for the head attachment fasteners.

16 The steering ring is fixed to a gear ring which is supported by, and is free to turn on, three rollers fixed to the underside of the weight tray. A toothed belt takes the drive from the gear ring to a small pulley on the steering top bearing assembly.

Base

17 The base consists of a three-sided aluminium alloy casting which houses a pressure tank, a steering mechanism and three wheel assemblies.

Pressure tank

18 The pressure tank assembly forms the base upon which the column assembly is built. The pressure tank itself is a welded steel fabrication consisting of an inner and outer shell closed by a top and bottom plate. The central well is closed by the ram connecting plate. Radial drillings through the inner shell connect the main volume of the tank to the space between the tank bottom plate and the ram plate. The top plate of the

tank carries inserts for the safety valve and the filler valve/pressure gauge assembly. A flange welded to the extended top of the inner shell of the tank supports the fixed tube for the column.

Pneumatic system

19 Fig 1.2 is a schematic diagram of the pneumatic system. The ram is housed in the central well of the tank and is secured to the ram connecting plate by a threaded spigot on the ram end plug. An 'O' ring forms a gas tight seal between the tank and the ram. The safety valve and the filler valve/pressure gauge assemblies are mounted on the top face of the tank. Pedestals having serial numbers below 297 may not be fitted with a pressure gauge.

Steering mechanism

20 The vertical steering shaft on the column is driven by the steering ring (2) and comprises two main parts - the drive shaft (18) and the drive tube (8). The drive shaft is attached to the top bearing assembly by a Spirol pin and moves vertically with the weight tray assembly. The lower end of the drive shaft carries a square section Delrin plug which engages in the corresponding square section of the drive tube. The drive tube carries the sprocket for the first stage in the steering drive reduction and turns in two bearings. The upper bearing is mounted in a bracket fitted to the fixed tube of the column assembly. The lower bearing is fitted in the plate which carries the steering sprocket assembly. This plate is fixed to the pedestal base casting.

21 The first stage in the steering drive within the base is a roller chain which transfers the drive from the sprocket on the steering tube to a sprocket secured to a shaft which forms the steering reduction assembly. This shaft turns in ball bearings housed in a bearing bracket mounted on the plate. At the lower end of the reduction shaft an adjusting sprocket is secured to the shaft by a sprocket clamp and cap screw. A second short roller chain connects the adjusting sprocket to the fixed sprocket in the steer/crab mechanism. The position of the bearing bracket carrying the reduction shaft may be adjusted to tension the short roller chains.

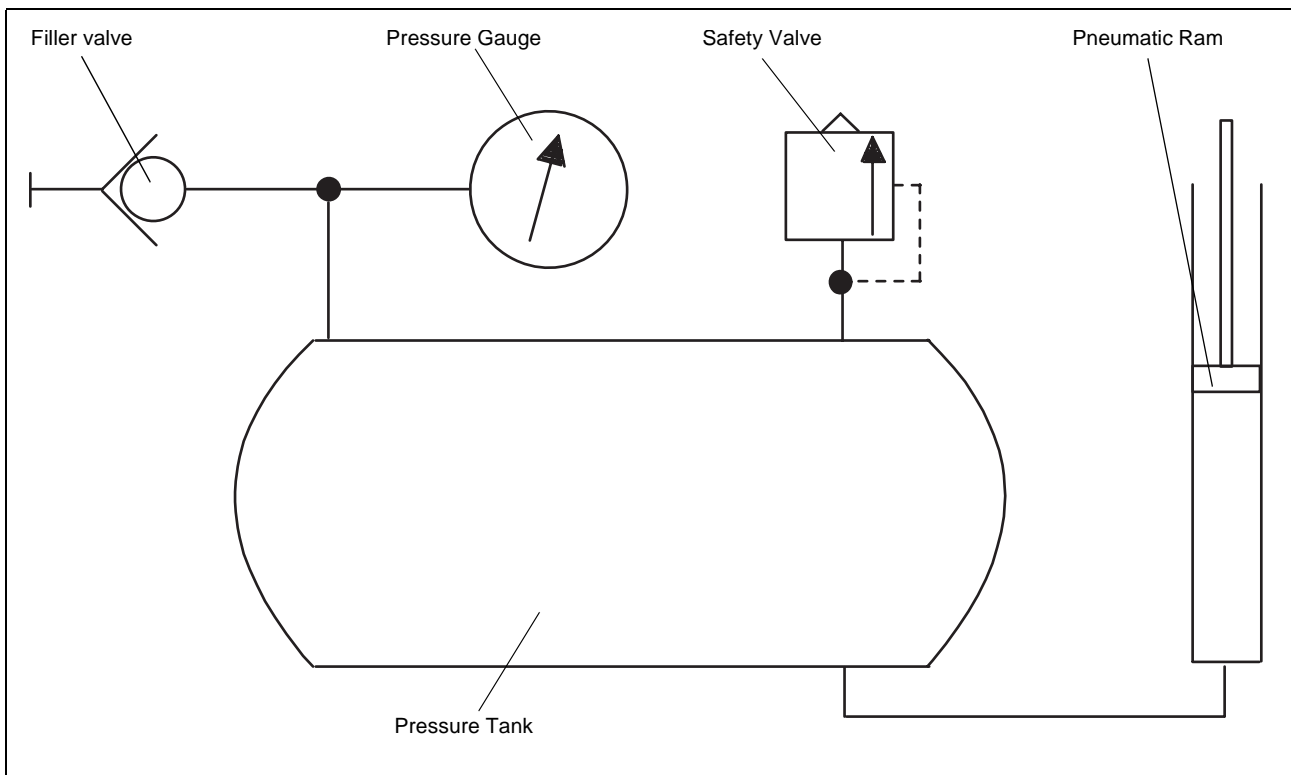


Fig 1.2 Pneumatic System - Schematic Diagram

Steer/crab mechanism

22 The steer/crab mechanism allows the operator to select the steering mode of the pedestal. In crab mode all three wheels turn simultaneously under the influence of the steering ring. In steer mode the two wheels remote from the steering shaft are locked in the straight-ahead position and only the wheel nearest to the steering shaft turns in response to movements of the steering ring.

23 The steer/crab mechanism comprises two roller chain sprockets mounted on the shaft of the steer wheel and a clutch assembly. The upper sprocket is secured to the steer wheel shaft by a clamp and carries the roller chain from the steer reduction assembly. The lower sprocket - the steer/crab sprocket - is free to turn on the steer wheel shaft.

24 A roller chain passes round the steer/crab sprocket on the steer wheel shaft and around similar sprockets secured to the wheel shafts of the other two wheels.

25 A clutch assembly comprising a boss and two hardened pins is mounted on the steer wheel shaft between the fixed sprocket and the steer/crab sprocket. The clutch assembly is free to turn on and to move axially on the steer wheel shaft. The pins in the clutch assembly lie parallel to the axis of the steer wheel shaft and pass through holes in the steer/crab sprocket. Axial movement of the clutch assembly is controlled by a dowel pin which passes through a hole in the push rod, through slots in the steer wheel shaft and engages in a circular groove machined in the bore of the clutch assembly.

26 A mode selector pedal (12) is mounted on an extension of the steer wheel shaft and controls the axial location of a push rod which fits in the hollow centre of the steer wheel shaft through a short compression spring. The push rod is supported by a long compression spring in the lower part of the steer wheel shaft. The mode selector pedal is a sliding fit on the extension to the steer shaft and is retained by a special screw with a cylindrical point which engages in an L-shaped slot in the steer shaft. To select STEER mode the pedal is depressed as far as it will go and turned clockwise. To select CRAB mode the pedal is turned counter-clockwise as far as it will go and released.

27 When the steer/crab pedal is set to STEER mode the short (upper) compression spring tries to propel the push rod down the bore of the steer wheel shaft and carry the clutch assembly with it. When the pins in the clutch assembly align with corresponding slots in the wheel shaft housing the clutch assembly moves down. This disengages the steer/crab sprocket from the steer drive and locks it to the base. In this condition two wheels of the pedestal are locked in the straight-ahead position and the steer drive is transmitted only to the fixed sprocket on the steer wheel shaft. This enables the pedestal to be steered in any direction using the wheel assembly located below the steer/crab pedal, with the remaining two wheels locked in the straight-ahead position. When the steer/crab pedal is set to CRAB the long (lower) compression spring tries to propel the push rod up the bore of the steer wheel shaft and carry the clutch assembly with it. When the pins in the clutch assembly align with corresponding holes in the fixed (upper) sprocket the clutch assembly moves up. This locks the steer/crab sprocket to the fixed sprocket on the steer wheel so that all three wheel shafts turn together, linked by the long roller chain. This enables the pedestal to be moved in a crabbing motion.

28 Each wheel shaft is carried in two ball bearings in a pivot bearing housing fixed to the pedestal base. The steer wheel shaft carries the steer/crab mechanism described above.

29 The wheel shafts for the other two wheels each carry a roller chain sprocket secured to the shaft by an adjustment clamp. This allows the wheel alignment to be re-set after adjustment of the tension in the long chain.

Wheels

30 All three wheel assemblies are identical. Each comprises two rubber-tyred wheels fitted with ball bearings and secured to the axle by countersunk screws and washers. The axle is carried in an axle fork pinned to the lower end of the wheel shaft.

31 The cable guards (10) are held in position by wing nuts (11) and washers on long cap screws driven into the axle fork. The upstands of the cable guards have slotted holes to allow adjustment of the ground clearance to suit local conditions.

Cable clamp

32 A cable clamp (9) is fixed to the pedestal base.

Trim weight stowage

33 Pockets (7) are cast into the top surface of the pedestal base for trim weights which are not in use.

Section 2

Operation

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General

1 To identify components, please refer to [Fig 1.1](#). For further operating instructions, please refer to Tern Pedestal Operators Guide, Publication Part No. 3741-8.

Putting into service

Unpacking

2 Unpack the pedestal, ensuring that all transport and retaining fixings are removed.



WARNING!: Do not lift the pedestal by the steering wheel. Do not attempt to unlock the column until the pedestal load has been fitted. Do not turn the steering ring until the pedestal has been removed from the packing case.

3 Ensure that the column lock (5) is retaining the column in its lowest position.

4 Ensure that the cable guards (10) are fully raised and are secured by the wing nuts (11).

Steering mechanism check

5 Check the steer/crab mechanism as follows:

5.1 Identify the steer/crab select pedal (12) on the corner of the pedestal nearest to the vertical steering shaft (8).

5.2 Turn the steering wheel (2) until one of the red indicators (3) aligns with the mark on the edge of the weight tray(1).

5.3 Depress the pedal slightly, turn it as far as it will go in a counter-clockwise direction and allow it to rise. The pedestal steering is now set to steer in CRAB mode.

5.4 Check that all three wheel pairs turn as the steering wheel is turned and that the pedestal moves in a straight line across the studio floor. The red indicators (3) on the steering wheel should align with the direction of travel.

5.5 Turn the steering wheel until one of the red indicators aligns with the mark on the edge of the weight tray.

5.6 Depress the steer/crab pedal as far as it will go and turn it clockwise about quarter of a turn to lock it. The pedestal steering is now set to steer in STEER mode.

5.7 Check that only the wheel pair under the steer/crab select pedal turns as the steering wheel is turned and that other two wheel pairs are locked in the straight-ahead position. The red indicators on the steering wheel show the direction of the steer wheel pair.

Attachment of pan and tilt heads.

6 The following paragraphs provide the necessary information for mounting Vinten and other pan and tilt heads. The head should not be fitted to the pedestal until the appropriate point in the charging procedure (Para 14).

Vinten pan and tilt heads

7 Any type of Vinten flat-base pan and tilt head may be fitted to the pedestal by placing it in position on the weight tray (1), aligning the four holes in the pan and tilt head base with the corresponding holes in the weight tray and securing with the four bolts provided.

8 A location spigot is provided to centre the head on the weight tray.

9 All Vinten pan and tilt heads have a recess in the base which will engage with the spigot.

10 The bolts are passed upwards through the holes in the weight tray to secure the head.

Pan and tilt heads using Mitchell-type centre screw fixing

11 To adapt the pedestal for pan and tilt heads with this type of fixing it is necessary to remove the Vinten head location spigot from the weight tray and install a Mitchell-type wing nut (if not already installed) in the recess in the centre of the column top casting. Pedestals for USA are supplied with the wing nut already installed. Proceed as follows:

11.1 Referring to Fig 6.4, remove two screws (29) and location spigot (30).

11.2 Lock column in lowered position.

11.3 Remove four screws (27) to release weight tray assembly from column top casting.

11.4 Taking care to avoid straining the vertical steering shaft, lift the weight tray assembly vertically to allow an assistant to place the Mitchell-type wing nut (Vinten Part 3432-2) in the recess at centre of column top casting (Fig 6.3 Item 1). Ensure that wings of the nut point downwards.

11.5 Refit weight tray assembly and secure with four screws (27). Ensure that alignment of vertical steering shaft is maintained.

12 Locate the centre screw of the pan and tilt head in the weight tray, turn it to align the key with the location plate in the weight tray and turn the Mitchell-type wing nut in a counter-clockwise direction to secure the head to the weight tray.

13 If required, the location spigot for Vinten heads may be refitted to the weight tray without removing the Mitchell-type wing nut. (Fig 6.4 items 29 and 30).

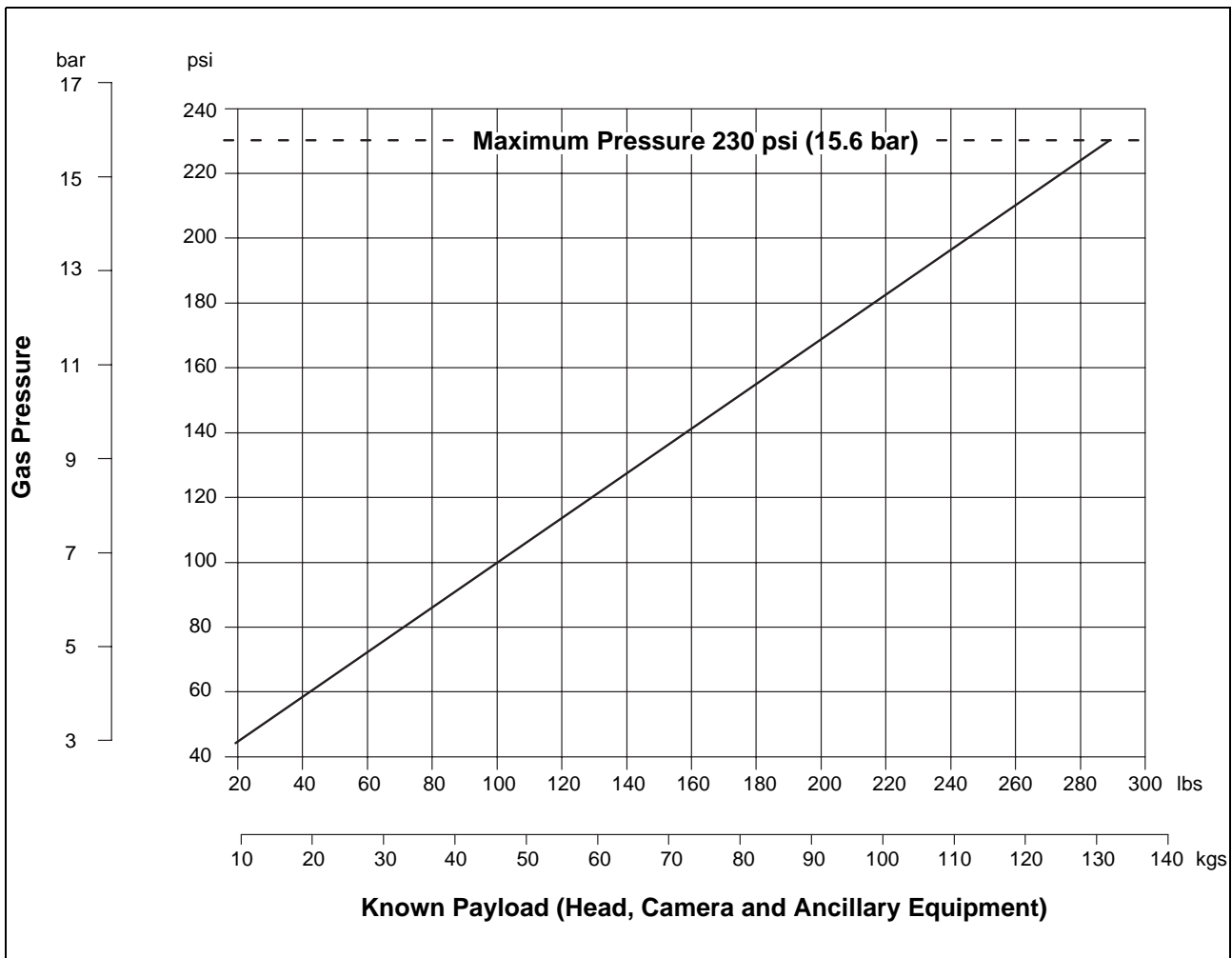


Fig 2.1 Pressurization Graph

Nitrogen charging procedure



WARNING!: This pedestal must be charged only with clean dry air or nitrogen. A pressure reducing valve must be fitted to the pressure line between the nitrogen cylinder and the outlet connection of the hose. The reducing valve must be screwed into the nitrogen cylinder outlet. The maximum pressure on the outlet side of the reducing valve when charging this pedestal must not exceed 230psi (15.86bar)

14 Charge the pedestal with nitrogen as follows:

14.1 Fully retract the column and ensure the locking pin (5) is engaged.

14.2 Remove the screw cap from the filler valve (14) and connect the charging line to the filler valve on the pedestal, ensuring that the conditions of the above warning are observed. A recommended charging kit for this pedestal is the charging valve assembly, Vinten Part No. 3702-32. Note that this equipment DOES NOT include a pressure reducing valve.

14.3 Ascertain the payload to be fitted to the pedestal. (payload = pan and tilt head, camera, lens and ancillary equipment). Referring to the graph (Fig 2.1) mark the payload on the horizontal axis then strike a vertical line from the load figure to the balance line. At the intersecting point strike a horizontal line to the vertical axis of the graph and read off the required gas pressure.

14.4 Charge the pedestal pressure tank with dry nitrogen to this pressure. The tank is fitted with a safety valve, set to operate at 280 psi (19.31 bar).

14.5 Fit the pan and tilt head to the pedestal and then fit the camera and accessories. Place two medium trim weights (20) in the recesses on the weight tray (1). Allow about two minutes for the gas temperature to stabilize.

14.6 Ensure that the column brake (17) is released and the friction control (4) is set to minimum, then check the condition of balance by applying light hand pressure to move the column up and down against the locking pin (5). The column is designed to have a free movement of about 3/4 in. (20 mm) with the locking pin engaged.

14.7 Apply sufficient downward pressure on the steering ring to enable the locking pin (5) to be retracted and set in the unlocked position. Using hand control exercise the column over its full range of travel at least twice but do not allow it to strike hard against the end stops.

14.8 Set the column to the mid-travel position and remove hand restraint. If the column tends to rise add trim weights or decrease pressure, if the column tends to sink remove trim weights or increase pressure.

14.9 When the column remains stationary at mid-travel, disconnect the charging line from the filler valve and refit the valve cap.

Column locking

15 The column is locked at its lowest position and at ten inches extension by a pin (5) which engages in corresponding holes in the column. The locking pin is spring loaded towards the engaged position and will hold the column whether it is counterbalanced or not. The pin may be secured in the retracted position by withdrawing it to its maximum extent then turning it through a quarter of a turn. The holes in the column are shaped so that the locking pin cannot be withdrawn until the column has been depressed slightly. The locking pin must always be engaged before attempting to fit or remove equipment from the pedestal or to charge the pressure tank. The column must be locked in the lower position for charging the pressure tank.

Operation

Balancing

16 Temperature changes may affect the balance of the pedestal column. These effects can be neutralized by adding, or removing, trim weights (20).

Manoeuvring the pedestal and operating the column

17 The steering ring (2) is used to steer the pedestal and also to raise and lower the column using light hand pressure. The steering ring always maintains the same position in relation to the head mounting platform irrespective of height.

18 With CRAB selected all three wheel mechanisms are linked to the steering ring and the direction of track is shown by the red indicators on the steering ring. With STEER selected only one wheel mechanism is controlled by the steering ring providing conventional steering.

19 To change from CRAB to STEER:

19.1 Turn the steering wheel until one of the red indicators (3) aligns with the mark on the edge of the weight tray (1).

19.2 Press the steer/crab pedal (12) as far as it will go and turn it clockwise about quarter of a turn to lock it.

19.3 The pedestal steering is now set to steer in STEER mode.

20 To change from STEER to CRAB:

20.1 Turn the steering wheel until one of the red indicators (3) aligns with the mark on the edge of the weight tray (1).

20.2 Depress the steer/crab pedal (12) slightly, turn it as far as it will go in a counter-clockwise direction and allow it to rise.

20.3 The pedestal steering is now set to steer in CRAB mode.

Column brake

21 The column brake (17) is located on the fixed tube and operated by a small lever. Providing the column is correctly counterbalanced the brake may be used to secure it at any position. The brake will not support an out-of-balance load greater than 20 lb (9.0 kg). DO NOT use the brake to hold the column when fitting or removing equipment ALWAYS engage the locking pin (5).

Column drag

22 The friction control (4) is located on the side of the fixed tube. Friction, or drag, may be applied to the movement of the column to suit the requirements of the operator. Adjustment is by turning the friction control knob, clockwise to increase friction, counter-clockwise to decrease friction.

Cable guards

23 Adjustable cable guards (10) are fitted around each wheel assembly. The ground clearance may be adjusted by slackening the wing nuts (11) on both sides of the axle fork and sliding the cable guard up or down. The guards should be set as close as possible to the studio floor.

Section 3

Tools and Materials

Special tools

1 The following special tools are required for certain procedures detailed in [Section 4](#) and [Section 5](#)

Item	Part No.	Use
Charging valve assembly	3702-32	Nitrogen charging

Consumable materials

2 The following consumable materials are required for certain procedures detailed in [Section 4](#) and [Section 5](#).

Item	Part No.	Use
Oil Nycolube 11B	Z150-031	Bearing and general lubrication
Lubricant chain	Z150-050	Steering chains
Compound Molykote 111	Z150-105	Steer/crab mechanism
Chesterton grease	Z150-105	Ram assembly
Adhesive Loctite 241	Z002-022	Steer/crab clutch
Adhesive Loctite 270	Z002-034	Wheel shaft bearings
Adhesive Loctite 542	Z002-025	Pressure system joints
Adhesive Evostik	Z002-005	Steer/crab pedal rubber
Soap solution		Leak testing

Section 4

Servicing

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General



WARNING!: This pedestal is pressurized to a maximum of 230psi (15.86bar). Do not disassemble or interfere with any component in the pressure system without proper authority. Ensure all pressure is vented before disassembling any component of the pressure system.

1 The design of the pedestal and its robust construction ensure that the amount of maintenance required is minimal. Attention to the following points will ensure a long and useful life with minimum need for repair. Should servicing or repair involving disassembly be required refer to Section 5.

Cleaning

2 During normal studio use the only cleaning required should be a regular wipe over with a lint-free cloth. Dirt accumulated during storage or periods of disuse may be removed with a semi-stiff brush. Particular attention should be paid to the bearing tracks on the telescopic column.

NOTE: Do NOT use oil or grease on any exposed part of the telescopic column. This is unnecessary and traps dirt which acts as an abrasive.

3 Use out-of-doors will require special attention, particularly in adverse conditions. Salt spray must be washed off with fresh water at the earliest opportunity. Do not allow water to enter the telescopic column. Sand and dirt act as abrasives and should be removed with a semi-stiff brush or vacuum cleaner.

NOTE: Use only detergent-based cleaners. DO NOT use solvent- or oil-based cleaners, abrasives or wire brushes to remove accumulations of dirt, as these damage the protective surfaces.

Servicing

Nitrogen charging

4 The pneumatic system of the pedestal is a closed circuit and normally retains a given pressure for a long period. However, the charge pressure may need to be varied for load changes. Refer to [Section 2](#) for details of the nitrogen charging procedure.



WARNING!: This pedestal must be charged only with clean dry air or nitrogen. A pressure reducing valve must be fitted to the pressure line between the nitrogen cylinder and the outlet connection of the hose. The reducing valve must be screwed into the nitrogen cylinder outlet. The maximum pressure on the outlet side of the reducing valve when charging this pedestal must not exceed 230psi (15.86bar).

Leak check

NOTE: It is recommended that this check is only carried out when it is apparent that a pressure loss has taken place. To carry out the check it is necessary that the column be at full extension.

5 Carry out the leak check as follows:

5.1 Depressurize the pedestal to 35 psi (2.4 bar) ([Section 2](#)).

5.2 Disengage the column lock and allow the column to rise to full extent under hand control. Do not allow the column to strike hard against the end stops.

5.3 Remove trim weights and lay pedestal on its side with steer/crab mechanism uppermost. Support the corners of the base casting to avoid damage to the cable clamp ([Fig 6.1](#) item 7). Place a support under the upper part of the fixed tube.

- 5.4 Referring to [Fig 6.1](#), remove the two screws and washers (5, 6) which retain the cover ([Fig 6.3](#) item 5). Do not remove the remaining four screws and washers which pass through slots in the cover as these secure the column assembly to the base. Move the cover along the fixed tube sufficiently to gain access to the filler valve and pressure gauge assembly and to the safety valve.
- 5.5 Apply soap and water solution to all accessible connections on the pressure tank, to the filler valve, the pressure gauge/filler assembly and to the safety valve. Bubbles indicate leaks.
- 5.6 If leaks are apparent, refer to [Section 5](#) for the appropriate remedial action.
- 5.7 If leakage is suspected from the ram assembly contact Vinten Broadcast Limited or your local distributor for advice.

Safety valve check

- 6 It is suggested that this check be carried out at yearly intervals. Proceed as follows:
- 6.1 Fit nitrogen charging equipment (Part No. 3702-32) or similar to filler valve and depressurize pedestal completely.
- 6.2 Referring to [Fig 6.2](#), remove safety valve (6) from the pressure tank (7). Disconnect nitrogen charging equipment from the filler valve.
- 6.3 Connect nitrogen charging equipment to nitrogen supply ensuring that a suitable pressure reduction valve is fitted between the gas cylinder and the supply point ([Para 4](#)).
- 6.4 Connect safety valve to outlet side of charging equipment.
- 6.5 Set pressure reduction valve to 260 psi (17.93 bar) and pressurize line, increasing pressure in steps of 5 psi (0.34 bar) until relief valve opens. The safety valve should operate at 253psi (19.31bar). A tolerance of ± 7 psi (0.48 bar) is permitted and provided the valve opens within this range it may be considered to be operating correctly.



WARNING!: If valve setting is not satisfactory renew the complete valve assembly. DO NOT, under any circumstances, attempt to adjust the valve.

- 6.6 Refit the safety valve (6) to the pressure tank using a new bonded seal (5).
- 6.7 Charge the pedestal ([Section 2](#)).

Access to steering mechanism

- 7 Access to the steering mechanism is obtained by laying the pedestal on its side. Proceed as follows:
- 7.1 Lock the column in its lowest position
- 7.2 Remove the payload and trim weights.
- 7.3 Lay the pedestal on its side with steer/crab mechanism uppermost. Support the corners of the base casting to avoid damage to the cable clamp ([Fig 6.2](#) item 7). Place a support under the upper part of the fixed tube.

Chain tension

8 Check the chain tensions as follows:

8.1 Lay the pedestal on its side ([Para 7](#)).

8.2 The short roller chains between the drive tube and the intermediate shaft and between the intermediate shaft and the steer/crab assembly should have no perceptible slack. If unsatisfactory adjust ([Para 12](#)).

8.3 The longest span of the chain which links the three wheel shafts is on the opposite side of the pedestal base to the steer/crab mechanism. This span should not have more than 3/4in. (20mm) total movement at the mid-point. If unsatisfactory adjust ([Para 13](#)).

Timing belt tension

9 The timing belt connects the steering ring gear to the small pulley at the top of the vertical steering shaft. The belt tension is most easily checked when the pedestal is laid on its side ([Para 7](#)). There should be no perceptible slack in the belt. If unsatisfactory adjust ([Para 14](#)).

Wheel tracking

10 Adjustment of wheel tracking is usually necessary only if a chain has stretched or the chain tension has been adjusted. Check the wheel tracking as follows:

10.1 Mark a straight line 20 ft (6 m) long on the studio floor or use an existing line.

10.2 Set the pedestal steering to Crab mode and position the pedestal near one end of the floor line with two of the wheels just touching the line and aligned parallel with it.

10.3 Without turning the steering wheel, push the pedestal the whole length of the line and note the distance the wheels have run away from or onto the line.

10.4 If the wheels run more than 2 in. (50 mm) off the line, the tracking requires adjustment ([Para 17](#)).

10.5 Repeat the test for the two remaining pairs of wheels.

Lubrication

11 Lubricate the steering chains and bearings as follows:

11.1 Lay the pedestal on its side ([Para 7](#)).

11.2 Clean the chains

11.3 Using a cloth impregnated with chain lubricant, wipe over complete run of each chain.

11.4 Apply Nycolube 11B oil directly to the following bearings:

11.4.1 Chain tension sprocket

11.4.2 Intermediate shaft bearings

11.4.3 Timing belt pulley bearings

- 11.4.4 Wheel shaft bearings
- 11.4.5 Wheel bearings

NOTE: The column bearings do not require any lubricant.

Adjustments

Chain tension

12 Adjust the tension of the short chain from the drive tube (Fig 6.2 item 8) to intermediate shaft sprocket (Fig 6.11 item 7) and the short chain from the intermediate shaft sprocket (Fig 6.2 item 23) to steer/crab changeover mechanism (Fig 6.5 item 17) as follows:

12.1 Lay the pedestal on its side (Para 7).

12.2 Referring to Fig 6.2 slacken screws (21) and move bearing bracket (Fig 6.11 item 5) until there is no perceptible slack in either chain.

12.3 Tighten screws (21).

13 Adjust the tension of the long chain (Fig 6.2 item 9) linking wheel sprockets as follows:

13.1 Lay the pedestal on its side (Para 7).

13.2 Referring to Fig 6.7 slacken nut (10) and turn adjuster sprocket shaft (12) until the slack in chain is less than 3/4 in. (20 mm) at mid-span between two wheel sprockets.

13.3 Tighten nut (10).

13.4 Check and adjust the wheel tracking.

Timing belt tension

14 Adjustment of the timing belt tension is by altering the positions of the rollers which carry the steering ring and large gear. The three rollers are carried on support pillars with the lower section eccentric to the main part. Each pillar is secured to the weight tray by a nut and washer. Proceed as follows (Fig 6.4):

14.1 Lay the pedestal on its side (Para 7) and support the column so that the steering ring is free to turn.

14.2 Slacken three nuts (3) in recesses on the upper face of the weight tray which secure the wheel support roller pillars (9).

14.3 Using a 5/32 in. (4 mm) diameter tommy bar turn the pillars of the two rollers nearest to the small pulley so that the rollers move towards the column.

14.4 Turn the support pillar of the roller furthest from the small pulley to adjust the tension in the timing belt. Tighten the nut (118) on this pillar and check the belt tension.

14.5 When the belt tension is satisfactory adjust the remaining wheel support rollers.

Steering ring adjustment

15 To eliminate backlash in the steering ring proceed as follows (Fig 6.4):

15.1 Lay the pedestal on its side (Para 7) and support the column so that the steering ring is free to turn.

15.2 Slacken two nuts (3) in recesses on the upper face of the weight tray which secure the wheel support roller pillars (9) nearest to the small pulley.

15.3 Using a 5/32 in. (4 mm) diameter tommy bar turn the support pillars of the two rollers nearest to the small pulley until the roller is in contact with the large gear and can just be turned by hand.

15.4 Tighten the nuts (3) and check operation of the steering ring.

15.5 Repeat this procedure until all rollers have been adjusted and there is no play in the steering.

Steering ring alignment

16 After a considerable period of use it may be necessary to re-align the steering ring. The procedure is as follows (Fig 6.2):

16.1 Set the pedestal steering to STEER mode.

16.2 Lay the pedestal on its side (Para 7) supporting the column so that the steering ring is free to rotate.

16.3 Turn the steer wheel assembly so that its wheels align with the two wheel assemblies locked in the straight-ahead position.

16.4 Slacken cap screw (20).

16.5 Turn the steering ring until the indicators on the steering ring align with the wheels.

16.6 Tighten cap screw (20).

Wheel alignment

17 Adjust alignment of the wheels as follows:

17.1 Set the pedestal steering to CRAB mode.

17.2 Lay the pedestal on its side (Para 7) and support the column so that the steering ring is free to turn.

17.3 Use a straight edge to align the outside face of a wheel on the steer assembly with the outside face of a wheel on one of the fixed wheel assemblies.

17.4 The straight edge should contact the faces of both the wheel assemblies and be parallel with the red indicators on the steering ring.

17.5 If necessary, slacken the screw (Fig 6.6 item 11, or Fig 6.7 item 17) on the clamp of the wheel sprocket and turn the wheel assembly into alignment. Tighten screw (11 or 17).

- 17.6 Repeat the procedure for the other wheel assembly.
- 17.7 Check the wheel tracking ([Para 10](#)).

Column guide roller adjustment

- 18 To adjust the column guide rollers proceed as follows ([Fig 6.4](#)):
 - 18.1 Remove payload from column.
 - 18.2 Use nitrogen charging equipment to depressurize pedestal to 35 psi (2.41 bar).
 - 18.3 Referring to [Fig 6.3](#), identify the adjustable guide roller assemblies (19) fitted in the fixed tube to the right of the vertical steering shaft. They may be distinguished from the fixed guide roller assemblies by the fifth hole in the outer face.
 - 18.4 Slacken the hexagon socket grub screw (20) on the lower guide roller assembly.
 - 18.5 Engage a screwdriver in the slot in the bearing spindle (23) which is accessible through the hole at the left-hand side of the assembly. Turn the bearing spindle to set the guide roller (22) into firm contact with the bearing track on the column.
 - 18.6 Tighten grub screw (20).
 - 18.7 Repeat the procedure on the upper guide roller assembly.
 - 18.8 After adjustment the column should move freely but without any free play.
 - 18.9 Lock the column in the lowered position.
 - 18.10 Charge the pedestal ([Section 2](#)).

Column brake

- 19 To compensate for wear on the brake pad ([Fig 6.9](#) item 7) turn the brake adjuster (2) counter-clockwise until the correct operation is obtained.

Section 5

Repair

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General

- 1 Removal and assembly of the various components of the Hawk are performed in conjunction with figures in **Section 6 - Illustrated Parts List**.
- 2 It is advisable to examine all screws, washers and nuts etc for damage and to replace all circlips, Spirol pins, 'O' rings and seals as a matter of course.



WARNING!: This pedestal is pressurized to a maximum of 15.86 bar (230 psi). Do not disassemble or interfere with any component in the pressure system without proper authority. Ensure all pressure is vented before disassembling any component in the pressure system.

Pneumatic system depressurization

- 3 Where partial or complete depressurization of the pneumatic system is called for in the dismantling instructions the method is as follows:
 - 3.1 Fully depress the column and engage the column locking pin.
 - 3.2 Remove payload and trim weights from the head mounting platform
 - 3.3 Remove the blanking cap from the filler valve and connect the nitrogen charging equipment (Part No. 3702-32). Discharge the pressure via the charging equipment to 35 psi (2.41bar) for partial depressurization. For complete depressurization discharge the pneumatic system until zero pressure is indicated and, as a safety precaution, remove the filler valve completely.
- 4 When partially depressurized the locking pin may be withdrawn to allow the column to extend under hand control.

Disassembly

Single-stage column

- 5 It is not necessary to remove or dismantle the column assembly to obtain access to some components. These are:
 - 5.1 Column bearings
 - 5.2 Column brake
 - 5.3 Column lock
 - 5.4 Column friction control
 - 5.5 Weight tray assembly

Column bearings

6 Column bearings are of two types, fixed and adjustable. The method of removal is the same for each type, as follows ([Fig 6.3](#)):

6.1 Partially depressurize the pedestal pneumatic system ([Para 3](#)).

6.2 Remove four screws (9) securing each column bearing to the fixed tube (14) and remove the bearing assembly complete.

7 Dismantling is self-explanatory by reference to the illustration. Any defective part of the assembly should be replaced, in particular the grub screws (20) in the adjustable bearing.

Column brake

8 The column brake may be removed and dismantled as follows:

8.1 Referring to [Fig 6.3](#), remove four screws (9) and separate brake assembly (8) from fixed tube (14).

8.2 Referring to [Fig 6.9](#), set the brake handle (10) to ON and tap out Spirol pin (9) now exposed at brake disc end of brake body (5). Remove brake disc (6) complete with brake pad (7).

8.3 Set brake to OFF, tap out dowel pin (8) and remove brake handle (10) complete with knob (1).

8.4 Withdraw brake plunger (3) together with brake adjuster (2) and spring (4).

8.5 Remove spring (4) from brake plunger (3) and unscrew brake adjuster (2).

Column lock

9 The column lock assembly may be removed and dismantled as follows:

9.1 Disengage locking pin and allow column assembly to extend under hand control.

9.2 Referring to [Fig 6.3](#), remove two screws (10) and separate locking pin body (11) from fixed tube (14).

9.3 Referring to [Fig 6.10](#), tap out Spirol pin (6) and remove knob (5). Tap out Spirol pin (7) and withdraw locking pin (2) complete with stop buffer (1) from locking pin body (4). Remove compression spring (3).

Column friction control

10 The column friction control is secured to the fixed tube by two screws (13). Dismantling is self-evident from [Fig 6.3](#).

Weight tray assembly

11 Remove weight tray assembly as follows:

11.1 Partially depressurize the pneumatic system ([Para 3](#)).

11.2 Lay pedestal on its side with steer/crab mechanism uppermost. Support the corners of the base casting to avoid damage to the cable clamp. Place a support under the upper part of the fixed tube.

11.3 Mark coupling (Fig 6.4 item 19) and drive shaft (Fig 6.1 item 11) for assembly.

11.4 Tap out Spirol pin (Fig 6.1 item 12) from coupling and withdraw drive shaft from coupling. Remove drive shaft downwards through lower end of drive tube (Fig 6.2 item 8).

11.5 Stand pedestal on its wheels.

11.6 Referring to Fig 6.4, remove four screws (27) and remove weight tray. Retrieve Mitchell-type wing nut, if provided, from column top casting.

12 Dismantle weight tray assembly as follows (Fig 6.4):

12.1 Remove three screws (1) and separate support bracket and associated parts from weight tray (25). This will release timing belt (13).

12.2 For access to bearings (16) tap out Spirol pin (18) from coupling (19) and withdraw pulley (14) with shaft (12). Retain shim washers (15).

12.3 Remove three nuts (3) from recesses in top face of weight tray to release support roller pillars. Steering gear (24) and attached steering ring (6) will be released when the three support roller assemblies are detached from the weight tray.

Column

13 Remove column assembly from pedestal as follows:

13.1 Fully depressurize the pneumatic system (Para 3).

13.2 Remove weight tray assembly (Para 11).

13.3 Referring to Fig 6.3, remove three screws (10) and lift fixed support bracket (30) vertically off drive tube (Fig 6.2 item 8).

13.4 Lock column in lowest position.

13.5 Referring to Fig 6.1, remove six screws and washers (5 and 6).

13.6 Lift complete column assembly vertically until column tube is clear of ram assembly.

14 Withdraw column tube from fixed tube as follows (Fig 6.3):

14.1 Remove four screws (102) and remove column brake assembly (101). Remove two screws (80) and remove column friction control assembly (81). Remove two screws (103) and remove column lock assembly (105).

14.2 Lift off cover (99).

14.3 Remove three screws (16) and bearing strip clamps (15) from lower end of column tube (36).

14.4 Remove two screws (17) and buffer lugs (18) from column tube.

14.5 Withdraw column tube (36) from top of fixed tube (14).

14.6 Secure free ends of bearing strips to column tube.

NOTE: Do not attempt to separate column top casting (1) from column tube (36).

Ram

- 15 Remove ram from tank as follows:
- 15.1 Fully depressurize pneumatic system (Para 3).
 - 15.2 Remove column assembly from pedestal (Para 13).
 - 15.3 Referring to Fig 6.2 use a strap wrench on outside diameter of ram tube (1) to unscrew ram assembly from tank. Retrieve and discard 'O' ring (2) which formed the seal between ram assembly and tank.
- 16 Dismantle ram as follows (Fig 6.8):
- 16.1 Remove circlip (1) and ram stop (2).
 - 16.2 Withdraw piston and rod (6, 3) from ram tube (4).
 - 16.3 If required, ram tube plug (8) may be released by driving out two Spirol pins (10). Mark orientation of ram tube plug relative to ram tube to assist assembly.

Base

- 17 Before carrying out work on the base remove any payload from the pedestal and remove trim weights from weight tray and stowage pockets on top surface of base casting.

Steering shaft mechanism

- 18 Remove components forming steering shaft mechanism as follows (Fig 6.2):
- 18.1 Lay base on its side with steer/crab mechanism uppermost. Support the corners of the base casting to avoid damage to the cable clamp. Place a support under the upper part of the fixed tube.
 - 18.2 Remove connecting link (10) from roller chain (9) and withdraw the chain.
 - 18.3 Remove connecting link (10) from roller chain (17) which connects the lower sprocket on the intermediate shaft to the sprocket on the steer/crab assembly and withdraw the chain.
 - 18.4 Remove three screws (15) and washers (14).
 - 18.5 Remove sub-plate (12) complete with drive tube assembly, intermediate shaft and other attaching parts. Note that if weight tray has not been removed, the drive tube assembly must be drawn off the drive shaft (Fig 6.2 item 11).
- 19 Access to bearings on intermediate shaft (Fig 6.11 item 3) may be obtained as follows:
- 19.1 Remove sub-plate (Fig 6.2 item 12) (Para 18).
 - 19.2 Referring to Fig 6.11, remove connecting link (9) in roller chain (8) and remove chain.

- 19.3 Referring to [Fig 6.2](#), slacken screw (20) in sprocket clamp (18) and remove sprocket (23) from intermediate shaft ([Fig 6.11](#) item 3).
- 19.4 Remove two screws (21) and clamp washers (22) to separate bearing housing ([Fig 6.11](#) item 5) from sub-plate (12).
- 19.5 Referring to [Fig 6.11](#), mark boss of sprocket (7) and end of intermediate shaft (3) for re-assembly. Tap out Spirol pin (6) in boss of sprocket and remove sprocket from intermediate shaft. Withdraw intermediate shaft from bearings (4).
- 20 Access to needle roller bearing at top of drive tube ([Fig 6.3](#) item 31) may be obtained as follows:
- 20.1 Remove weight tray ([Para 13](#)).
- 20.2 Referring to [Fig 6.3](#), remove three screws (10).
- 20.3 Lift fixed support bracket (30) vertically off drive tube ([Fig 6.2](#) item 8).
- 20.4 Using a suitable drift through the bore of the bearing tap the cover washer ([Fig 6.1](#) item 10) out of the top of the bracket.
- 20.5 Remove circlip (32) to release needle roller bearing (31).

Steer/crab mechanism

- 21 Remove steer/crab mechanism follows ([Fig 6.5](#)):
- 21.1 Lay base on its side with steer/crab mechanism uppermost. Support the corners of the base casting to avoid damage to the cable clamp. Place a support under the upper part of the fixed tube.
- 21.2 To reduce weight of assembly, remove wheels and axle as follows:
- 21.2.1 Referring to [Fig 6.2](#), back off two wing nuts (40) and remove screws (41), washers (39) and wing nuts to release cable guard welded assembly (27). Remove cable guard assembly.
- 21.2.2 Slacken grub screw (37) in wheel hub ([Fig 6.5](#) item 7) and tap out pin (42).
- 21.2.3 Remove wheel and axle assembly.
- 21.3 Remove connecting link (10) from roller chain (9) and withdraw the chain.
- 21.4 Remove connecting link (10) from roller chain (17) which connects the lower sprocket on the intermediate shaft to the sprocket on the steer/crab assembly and withdraw the chain.
- 21.5 Referring to [Fig 6.5](#), peel off rubber tread (29) on face of steer/crab pedal cap (27).
- 21.6 Remove three screws (28) and pedal cap (27).
- 21.7 Remove three screws and washers (6 and 5) to release complete steer/crab assembly from base.

- 22 Access to wheel steer shaft bearings (3) may be obtained as follows:
- 22.1 Remove wheel and axle assembly ([Para 21.2](#))
 - 22.2 Referring to [Fig 6.5](#), mark wheel steer shaft (10) and wheel hub (7) for assembly.
 - 22.3 Drive out Spirol pin (8) and remove wheel hub (7).
 - 22.4 Withdraw wheel steer shaft (10) upwards from wheel housing (4).
 - 22.5 Wheel steer shaft bearings (3) and wheel housing bush (2) are secured to wheel housing (4) with Loctite.
- 23 Disassembly of the steer/crab mechanism is self-evident from [Fig 6.5](#), noting the following:
- 23.1 Axial movement of the push rod (23) is transferred to the clutch body (16) by the dowel pin (22). The ends of dowel pin (22) are free to turn in a groove machined in the bore of clutch body (16). The dowel pin is installed through holes in the outside diameter of the clutch body which are subsequently closed by special screws (15), secured in position by Loctite.

Wheel housings

- 24 Removal and dismantling of the wheel housing assembly associated with steer/crab mechanism is detailed in [Para 21](#) above. Remove the other two wheel housings as follows ([Figs 6.6](#) and [6.7](#)):
- 24.1 Lay base on its side with wheel shaft to be removed uppermost.
 - 24.2 Referring to [Fig 6.2](#), remove connecting link (10) from roller chain (9) and remove chain.
 - 24.3 To reduce weight of assembly remove wheels and axle as follows:
 - 24.3.1 Referring to [Fig 6.2](#), back off two wing nuts (40) and remove screws (41), washers (39) and wing nuts to release cable guard welded assembly (27). Remove cable guard assembly.
 - 24.3.2 Slacken grub screw (37) in wheel hub ([Fig 6.5](#) item 7) and tap out pin (42).
 - 24.3.3 Remove wheel and axle assembly.
 - 24.4 Referring to [Fig 6.6](#), remove three screws and washers (8 and 9) to release fixed wheel housing assembly from base.
 - 24.5 Referring to [Fig 6.7](#), remove three screws and washers (7 and 7) to release adjustable wheel housing assembly from base.
 - 24.6 Dismantling procedure for the wheel housing assemblies is self-evident from [Fig 6.6](#) and [Fig 6.7](#), noting that bearings (4) are secured in the wheel housings (5) with Loctite.

Assembly

Base

Wheels and steer/crab mechanism

25 Assembly of the steer/crab mechanism, the wheel housings and the wheels is the reverse of the dismantling procedure noting the following:

- 25.1 Wheel shaft bearings item ([Fig 6.5](#) item 3, [Fig 6.6](#) item 4 and [Fig 6.7](#) item 4) are secured in the wheel housings using Loctite 270 ([Section 3](#)).
- 25.2 Wheel housing bush ([Fig 6.5](#) item 2) is secured to the steer wheel housing (4) using Loctite 241 ([Section 3](#)) and two Spirol pins (1).
- 25.3 Springs and other moving parts of the steer/crab mechanism are lubricated with Molykote 111 compound ([Section 3](#)).
- 25.4 Screws ([Fig 6.5](#) item 15) are secured in clutch body (16) using Loctite 241 ([Section 3](#)).
- 25.5 Assemble steer wheel shaft ([Fig 6.5](#) item 10) into wheel housing (4) and refit wheel hub (7) before assembling steer/crab parts (11 to 25) to wheel steer shaft (10).
- 25.6 Ensure that Woodruff key ([Fig 6.5](#) item 18) is installed in shaft and position sprocket (17) to leave a gap of 1/32 in. (0.8 mm) between lower ends of clutch pins and top face of wheel housing bush (2) when clutch is at highest point of travel. Secure sprocket in position with clamp (21).
- 25.7 Use Evo-stick No. 528 ([Section 3](#)) to secure pedal rubber ([Fig 6.5](#) item 29) to pedal cap (27) after steer wheel assembly has been refitted to base of pedestal.
- 25.8 Lubricate all bearings ([Section 4](#)).
- 25.9 Clean and lubricate the long chain ([Section 4](#)).
- 25.10 Set chain tension ([Section 4](#)).
- 25.11 Align wheels ([Section 4](#)).

Steering mechanism

26 Assembly of steering mechanism is the reverse of dismantling procedure noting the following:

- 26.1 Lubricate all bearings ([Section 4](#)).
- 26.2 Clean and lubricate chain ([Section 4](#)).
- 26.3 Set chain tension ([Section 4](#)).
- 26.4 Align steering ring indicators with wheels ([Section 4](#)) after assembly of weight tray.

Single-stage column

Ram

27 Assembly of ram is the reverse of dismantling procedure noting the following (Fig 6.8):

27.1 Replace all bonded seals, 'O' rings and Spirol pins with new items.

27.2 If ram tube plug (8) has been withdrawn from ram tube (4), ensure that all burrs are removed from holes for Spirol pins in bore of ram tube before attempting to assemble plug to tube. Lubricate 'O' ring seal (7) with Chesterton grease (Section 3) and fit new Spirol pins (10). Ensure ram tube plug is correctly oriented relative to ram tube

27.3 Coat 'O' rings (7) with Chesterton grease (Section 3) before installation on piston and lubricate bore of ram tube (4) with Chesterton grease before inserting piston and rod assembly.

27.4 Assemble piston and rod assembly into upper end of ram tube. Refit ram stop (2) and circlip (1) to ram tube.

Pressure tank

28 Assembly of pressure tank and ram is the reverse of dismantling procedure noting the following (Fig 6.2):

28.1 Replace all bonded seals and 'O' rings with new items.

28.2 Use Chesterton grease to retain 'O' ring (2) in recess in lower face of ram tube plug. Ensure that 'O' ring is correctly located before tightening ram plug. Use strap wrench on outside diameter of ram tube (1) to tighten ram into tank.

28.3 Use Loctite 542 (Section 3) on bonded seals in pressure gauge and filler valve assembly.

28.4 Recharge with nitrogen (Section 2) after completion of column assembly.

Column

29 Assemble column as follows (Fig 6.3):

29.1 Secure four fixed roller assemblies (34) to fixed tube (14) using screws (9).

29.2 Secure two adjustable roller assemblies (19) to fixed tube using four screws (9). Set adjustment to minimum.

29.3 Secure buffer brackets (12) to fixed tube using two screws (13).

29.4 Fit bearing strips (4) to column tube (36) using bearing strip clamps (15) and screws (16) at top only.

29.5 Insert column tube (36) into top of fixed tube (14). Ensure that keyhole slots in column tube align with machined facing for column lock (11).

29.6 Adjust column bearings (Section 4).

29.7 Fit three bearing strip clamps (15) to bottom of column tube using screws (16).

29.8 Fit two buffer lugs (18) to bottom of column tube using screws (17).

30 Assemble column to pedestal as follows:

30.1 Assemble ram to pressure tank ([Para 28](#)).



WARNING!: Do NOT attempt to charge nitrogen system at this stage.

30.2 Lower complete column assembly vertically over ram assembly until fixed tube seats on tank flange. Ensure that machined facing for support bracket faces towards drive tube assembly ([Fig 6.2](#) item 8). Ensure that upper end of piston rod ([Fig 6.8](#) item 3) is properly seated in recess in column top casting ([Fig 6.3](#) item 1)(there is a witness hole in the casting for this purpose).

30.3 Place cover ([Fig 6.3](#) item 5) in position. Ensure that pressure gauge and filler valve are accessible through holes in cover.

30.4 Secure column to tank flange using four screws with washers ([Fig 6.1](#) items 5 and 6) in positions where fasteners will pass through slots in cover. Do not install two screws and washers ([Fig 6.1](#) items 5 and 6) which secure cover at this stage.

30.5 Referring to [Fig 6.3](#), slide fixed support bracket (30) vertically onto drive tube([Fig 6.2](#) item 8) and secure to facing on fixed tube using three screws (10).

30.6 Refit column brake assembly (8), secure with four screws (9). Refit column friction control assembly (25), secure with two screws (13). Refit column lock assembly (11), secure with two screws (10).

30.7 Engage column lock with column in lowest position.

30.8 Refit weight tray assembly ([Para 34](#)).

30.9 Pressurize pedestal to 35 psi (2.41 bar) ([Section 2](#)).

30.10 Carry out leak check ([Section 4](#)).

30.11 Secure cover ([Fig 6.3](#) item 5) using two screws and washers ([Fig 6.1](#) items 5 and 6).

30.12 Adjust alignment of steering indicators ([Section 4](#)).

Column bearings

31 Assembly of column bearings is the reverse of dismantling procedure noting the following:

31.1 Ensure the adjustable bearing assemblies are installed in the fixed tube immediately to the right of the vertical steering shaft. Turn eccentric adjuster on each bearing to minimum before assembly.

31.2 Adjust column rollers ([Section 4](#)) upon completion of column assembly.

Weight tray

- 32 Assembly of weight tray is the reverse of dismantling procedure noting the following (Fig 6.8):
- 32.1 Replace any Spirol pins which have been removed with new items.
 - 32.2 Bearings (10) which support steering gear ring (24) are fitted to the eccentric part of support pillars (9).
- 33 Upon completion of assembly:
- 33.0.1 Adjust timing belt tension (Section 4).
 - 33.0.2 Adjust steering ring (Section 4).
- 34 Refit weight tray assembly to column as follows:
- 34.1 If required, install Mitchell-type wing nut in centre of column top casting (Fig 6.3 item 1). Ensure that wings of the nut point downwards.
 - 34.2 Fit weight tray assembly to column top casting (Fig 6.3 item 1) using four screws (Fig 6.4 item 27). Do not tighten screws at this stage.
 - 34.3 Lay pedestal on its side with steer/crab mechanism uppermost. Support the corners of the base casting to avoid damage to the cable clamp. Place a support under the upper part of fixed tube.
 - 34.4 Turn steer wheels to straight-ahead position.
 - 34.5 Set steering ring indicator (Fig 6.4 item 7) to align with mark on edge of weight tray.
 - 34.6 Enter drive shaft (Fig 6.1 item 11) into lower end of drive tube (Fig 6.2 item 8). Turn drive shaft so that assembly marks on drive shaft and coupling (Fig 6.4 item 19) align when drive plug (Fig 6.1 item 3) enters drive tube.
 - 34.7 Ensure drive shaft (Fig 6.1 item 11) is correctly aligned in coupling (Fig 6.4 item 19) and secure with a new Spirol pin (Fig 6.1 item 12).
 - 34.8 Stand pedestal on its wheels.
 - 34.9 Adjust position of weight tray on column top casting to bring drive shaft approximately central in cover washer (Fig 6.1 item 10). Tighten four screws ((Fig 6.4 item 27).
 - 34.10 Adjust alignment of steering ring indicators with steer wheels (Section 4).

Section 6

Illustrated Parts List

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Introduction

1 This parts list is issued for the Tern pedestal, manufactured by VINTEN BROADCAST LIMITED, Western Way, Bury St. Edmunds, Suffolk, IP33 3TB, England.

Ordering spare parts

2 Always quote the pedestal serial number.

3 When ordering a spare part, please quote the part number, NOT the item number.

4 Certain items form part of -900SP series composite spare parts. These are detailed in [Fig 6.12](#) and are indicated in the parts list by an asterisk (*).

5 Due to restrictions placed on the transportation of adhesives and other materials, please obtain supplies of consumable materials from your local distributor.

Main assembly part numbers

6 Ensure that the correct serial and part numbers are quoted when ordering main assemblies.

Assembly	Part No.
Tern pedestal	3741-3
Base assembly	3741-5
Steering assembly	3741-6
Ram assembly	3741-15
Brake assembly	3741-16
Locking Pin assembly	3741-17
Wheel housing assembly (steering)	3741-33
Wheel housing assembly (adjustable sprocket)	3741-32
Wheel housing assembly (fixed)	3741-62

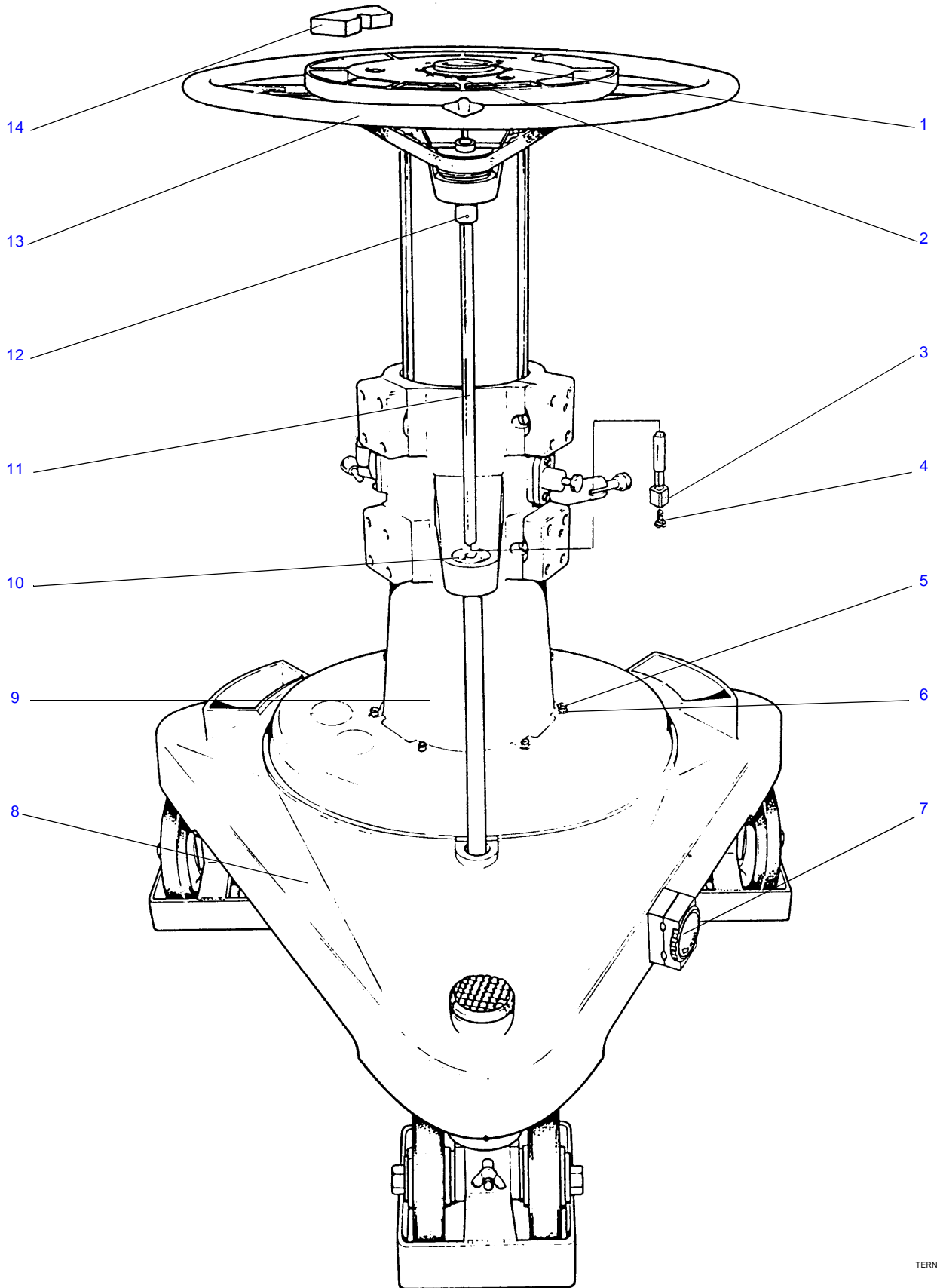
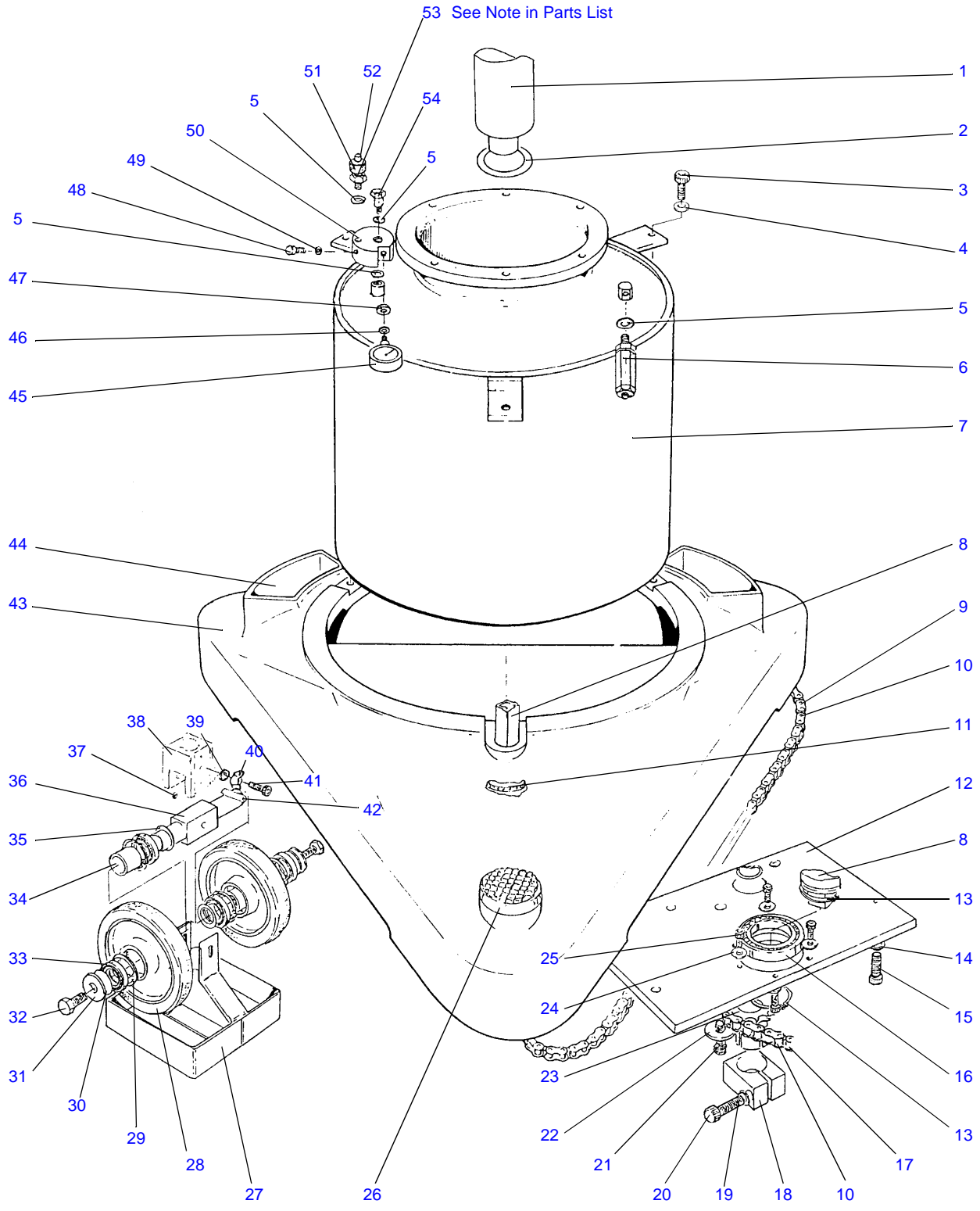


Fig 6.1 Tern Pedestal (3741-3)

TERNIP01

Fig 6.1 Tern Pedestal (3741-3)

Item	Part No.	Nomenclature	Qty
1	3408-29	Tripod head spigot, secured by:	1
NI	L006-009	Screw, countersunk head, slotted, 4BA x 1/2 in. long (Fig 6.4)	2
2	L076-013	Screw, countersunk head, socket, 1/4-28UNF x 1 in. long (Fig 6.4)	6
3	3419-230	Drive plug	1
4	L100-007	Screw, flat head, 4BA x 5/16 in. long	1
5	L077-921	Screw, cap head, socket, 5/16-24UNF x 7/8 in. long	6
6	L602-111	Washer, plain, light, 5/16 in.	8
7	3382-11	Cable clamp, secured by:	1
	M006-503	Screw, button head, socket, M5 x 25 mm long	2
	M501-205	Nut, M5, nyloc, lock	2
	M600-006	Washer, plain, heavy, M5	2
8	3741-4	Base assembly (Fig 6.2)	1
9	3741-5	Column assembly (Fig 6.3)	1
10	3741-258	Cover washer	1
11	3741-254	Drive shaft	1
12	M801-046	Pin, dowel, 3 mm dia. x 16 mm long	1
13	3741-6	Steering assembly (Fig 6.4)	1
14	3741-259	Weight large	4



TERNIP02

Fig 6.2 Tern Pedestal - Base Assembly (3741-4)

Fig 6.2 Tern Pedestal - Base Assembly (3741-4)

Item	Part No.	Nomenclature	Qty
1	3741-15	Ram assembly (Fig 6.8)	1
2	Q900H016*	'O'-Ring, 1-1/8 in. nominal ID x 0.139 in. section, hardness 70 IRHD	1
3	L077-922	Screw, cap head, socket, 5/16-24UNF x 1 in. long	3
4	L601-109	Washer, spring, single-coil, 5/16 in.	3
5	Q200-001	Seal, bonded, 6ba, 3.05 mm ID x 6.35 mm OD x 1.22 mm thick	4
6	3741-19	Safety valve assembly	1
7	3741-42	Pressure vessel	1
8	3741-14	Drive tube assembly (Fig 6.11)	1
9	J202-007	Chain, roller, simple, 249 links, 3/8 in. pitch, 1/4 in. roller dia.	1
10	J202-061	Chain, link, (connecting), 3/8 in. pitch	3
11	3741-13	Sprocket assembly (Fig 6.11)	1
12	3741-238	Sub plate	1
13	M701-027	Circlip, external, standard, 32 mm shaft dia. x 1.50 mm thick	2
14	M600-007	Washer, plain, heavy, M6	12
15	L076-923	Screw, cap head, socket, 1/4-28UNF x 1 in. long	12
16	N200-009	Bearing, ball, radial, 1-1/4 in. ID x 2-1/4 in. OD x 3/8 in. long	1
17	J202-006	Chain, roller, simple, 41 links, 3/8 in. pitch, 1/4 in. roller dia.	1
18	3741-210	Clamp	1
19	L602-111	Washer, plain, light, 5/16 in.	1
20	L077-903	Screw, cap head, socket, 5/16-24UNF x 1-1/4 in. long	1
21	L077-921	Screw, cap head, socket, 5/16-24UNF x 7/8 in. long	2
22	3741-245	Clamp washer	2
23	3741-212	Intermediate sprocket (small)	1
24	L602-051	Washer, plain, large, 2 BA	6
25	L075-921	Screw, cap head, socket, 10-32UNF x 1/2 in. long	6
26	3741-10	Steer crab assembly (Fig 6.5)	1
27	3741-257	Cable guard	3
	3741-9	Wheel assembly, comprising:	6
28	3741-256	Wheel	1
29	M700-025	Snap ring, internal, standard, 50 mm bore dia. x 1.5 mm thick	2

Fig 6.2 Tern Pedestal - Base Assembly (3741-4) (Cont)

Item	Part No.	Nomenclature	Qty
30	3419-322	Outer wheel shim	6
31	3419-23	Outer wheel washer	6
32	L025-707	Bolt, hex head, 1/2 in. BSF x 3/4 in. long	6
33	N200-007	Bearing, ball, radial, 1 in. ID x 2 in. OD x 3/8 in. long	12
34	3419-321	Wheel bearing spacer	6
35	3419-167	Packing shim (large)	6
36	3702-239	Axle	3
37	L072-802	Screw, grub, cone point, socket head, 4-40UNC x 3/16 in. long	3
38	3741-203	Wheel hub	3
39	M600-108	Washer, plain, light, M10	6
40	L501-193	Nut, 3/8-24 UNF, wing	6
41	L078-915	Screw, cap head, socket, 3/8-24UNC x 1-1/4 in. long	6
42	3741-243	Pin	3
43	3741-231	Base casting	1
44	3741-425	Weight storage lining & base	2
45	3741-46	Pressure gauge assembly	1
46	Q001-012*	'O'-Ring, 5/16 in. nominal ID x 0.070 in. section, hardness 70 IRHD	1
47	3419-227	Adapter nut	1
48	L075-917	Screw, cap head, socket, 10-32UNF x 3/8 in. long	1
49	Q200-004*	Seal, bonded, 2ba, 5.21 mm ID x 8.38 mm OD x 1.22 mm thick	1
50	3741-421	Adapter (valve & gauge)	1
51	3328-303	Modification to Schrader valve, with:	1
52	3328-304	Pressure release button	1
53	J005-021	Valve-assembly, Schrader no. 8911, 0-500 PSI - Note: Replaces items 52 and 52 in USA	1
54	3741-419	Banjo bolt	1
NI	3741-11	Wheel housing assembly (fixed) (Fig 6.6)	1
NI	3741-12	Wheel housing assembly (adjustable) (Fig 6.7)	

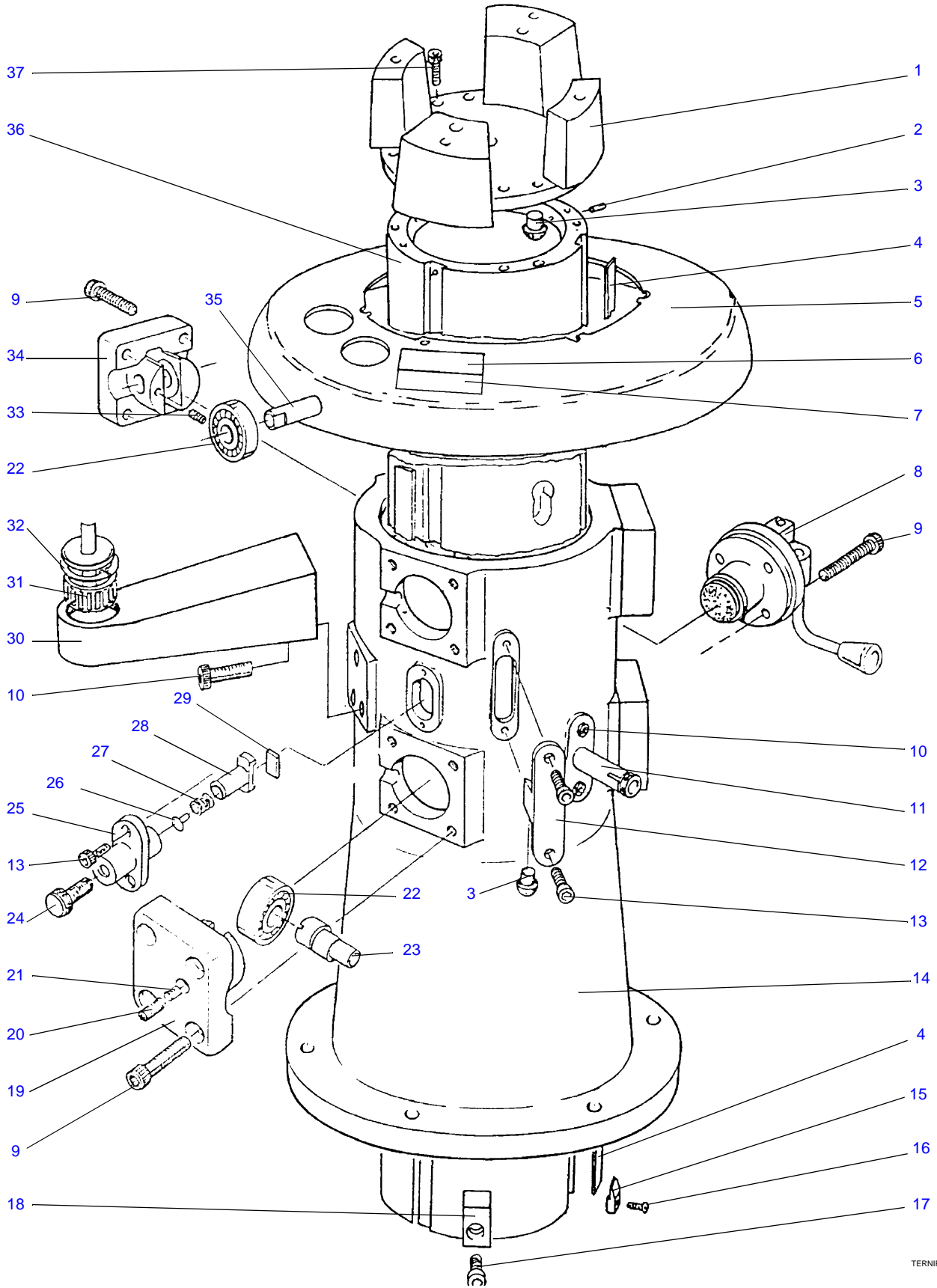


Fig 6.3 Tern Pedestal - Column Assembly (3741-5)

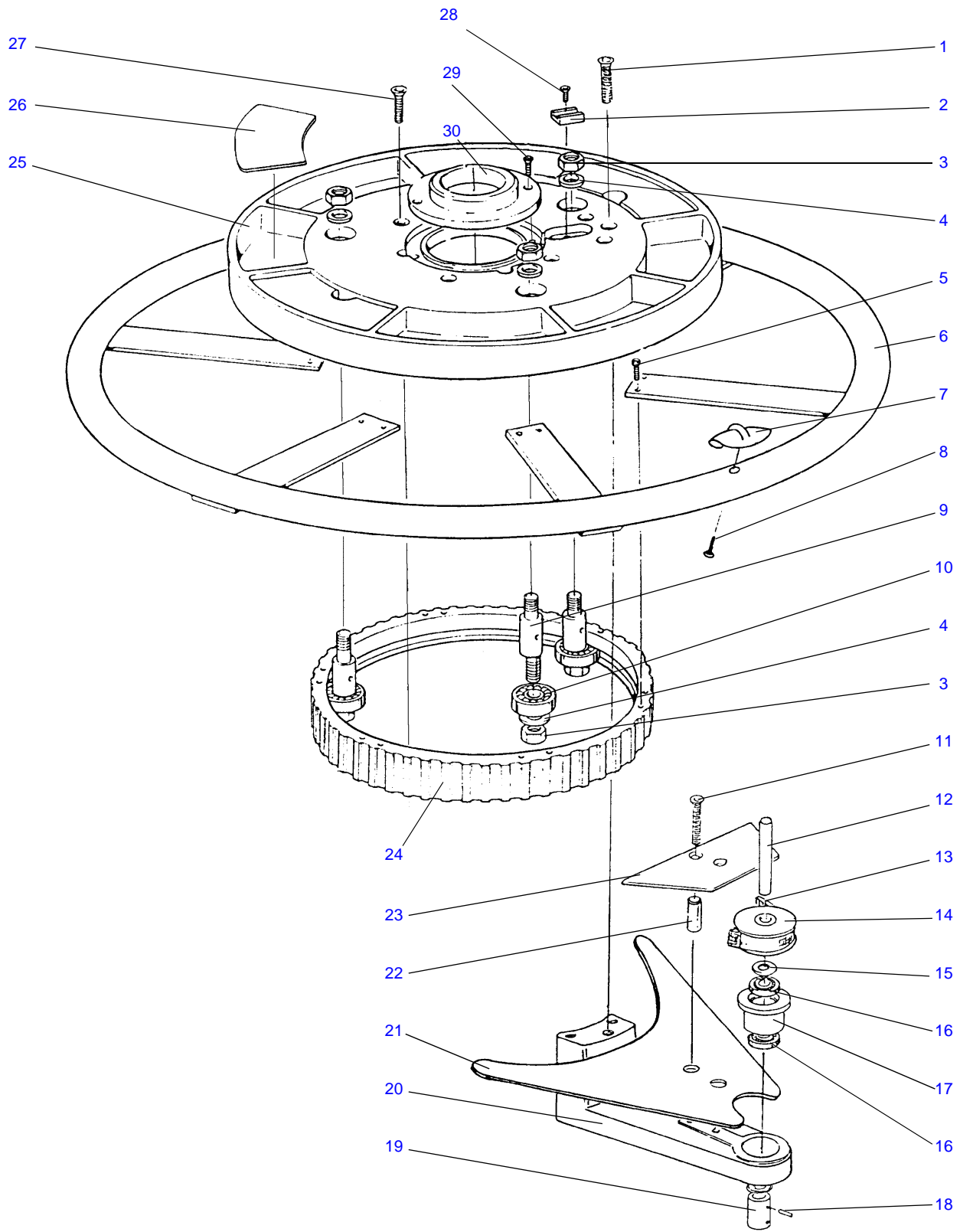
TERNIP03

Fig 6.3 Tern Pedestal - Column Assembly (3741-5)

Item	Part No.	Nomenclature	Qty
1	3741-224	Column casting	1
2	3556-101	Pin	3
3	J550-001	Buffer, mushroom, 3/8 in. stem dia. x 5/8 in. head dia. x 3/4 in. overall depth	4
4	3556-24	Bearing strip	3
5	3741-273	Tank cover	1
6	3741-310	Serial number label	1
7	3423-14	Serial number / pressure warning graphic (Tern)	1
8	3741-16	Brake assembly (Fig 6.9)	1
9	L076-923	Screw, cap head, socket, 1/4-28UNF x 1 in. long	28
10	L076-921	Screw, cap head, socket, 1/4-28UNF x 5/8 in. long	5
11	3741-17	Locking pin assembly (Fig 6.10)	1
12	3512-37	Buffer bracket	2
13	L075-918	Screw, cap head, socket, 10-32UNF x 5/8 in. long	6
14	3741-232	Fixed tube	1
15	3556-25	Bearing strip clamp	6
16	L006-051	Screw, countersunk head, slotted, 4BA x 3/8 in. long	6
17	L021-906	Screw, cap head, socket, 1/4in. BSF x 3/4 in. long	2
18	3556-22	Buffer lug	2
	3556-14A	Ball-race assembly (adjustable), comprising:	4
19	3556-59	Bearing bracket (adjustable)	1
20	L075-802	Screw, grub, socket head, 10-32UNF x 3/8 in. long	1
21	3702-381	Brass slug	1
22	3556-61	Bearing spindle (adjustable)	1
23	P200-209	Bearing, ball, radial, 12 mm ID x 37 mm OD x 12 mm long, two shields	1
24	L100-020	Screw, thumb head, knurled, 1/4-20UNC x 1 in. long	1
25	3741-263	Friction body	1
26	L804-094	Rivet, countersink head, 1/8 in. dia. x 5/16 in. long	1
27	J532-051	Spring, compression, 3/4 in. free length, 5/16 in. hole dia., 84.0 lbf/in. rate	1
28	3741-262*	Friction spigot	1
29	3741-261*	Friction pad	1

Fig 6.3 Tern Pedestal - Column Assembly (3741-5) (Cont)

Item	Part No.	Nomenclature	Qty
30	3741-236	Support bracket (fixed)	1
31	P206-007	Bearing, needle roller, radial, 22 mm ID x 34 mm OD x 16 mm long	1
32	L700-015	Circlip, internal, standard, 1.378 in. bore dia. x 0.059 in. thick	1
	3556-13A	Ball-race assembly, comprising:	2
22	3556-61	Bearing spindle (adjustable)	1
33	L007-811	Screw, grub, cup point, slotted head, 2BA x 1/4 in. long	1
34	3556-60	Bearing bracket	1
35	3556-62	Bearing spindle	1
36	3741-209	Column tube	1
37	L007-916	Screw, cap head, socket, 2BA x 5/8 in. long	8



TERNIP0

Fig 6.4 Tern Pedestal - Steering Assembly (3741-6)

Fig 6.4 Tern Pedestal - Steering Assembly (3741-6)

Item	Part No.	Nomenclature	Qty
1	L076-014	Screw, countersunk head, socket, 1/4-28UNF x 1-1/2 in. long	3
2	3419-208	Pedestal head insert	1
3	L501-191	Nut, 3/8-24 UNF, standard (hex), full	6
4	L602-123	Washer, plain, small, light, 3/8 in.	6
5	L075-921	Screw, cap head, socket, 10-32UNF x 1/2 in. long	12
6	3741-239	Steering wheel	1
7	3419-228	Steering wheel indicator	2
8	L101-022	Screw, self-tapping, countersunk head, pozidrive, M6 x 1 mm long, type ab	2
9	3741-225	Support pillar	3
10	P200-210	Bearing, ball, radial, 10 mm ID x 30 mm OD x 9 mm long, two shields	3
11	L075-010	Screw, countersunk head, slotted, 10-32UNF x 1-1/2 in. long	2
12	3741-253	Pulley shaft	1
13	J201-033	Belt, timing, 39.00 in. long, 3/8 in. pitch, 104 teeth, 1/2 in. wide	1
14	3741-251	Pulley, secured by:	1
NI	L800-030	Pin, coiled-spring, 3/32 in. dia. x 1 in. long, hdp	1
15	3741-268	Shim washer	2
16	N200-002	Bearing, ball, radial, 3/8 in. ID x 7/8 in. OD x 7/32 in. long	2
17	3741-255	Bearing bush	1
18	L800-029	Pin, coiled-spring, 3/32 in. dia. x 5/8 in. long, hdp	1
19	3741-214	Collar	1
20	3741-237	Support bracket	1
21	3741-276	Belt guard	1
22	3741-250	Spacer	2
23	3741-252	Cover	1
24	3741-223	Steering gear ring	1
25	3741-222	Head casting	1
26	3741-424	Weight storage lining & weight tray	8
27	L076-013	Screw, countersunk head, socket, 1/4-28UNF x 1 in. long (Fig 6.1)	6
28	L007-005	Screw, countersunk head, slotted, 2BA x 3/8 in. long	1
29	L006-009	Screw, countersunk head, slotted, 4BA x 1/2 in. long (Fig 6.1)	2
30	3408-29	Tripod head spigot (Fig 6.1)	1

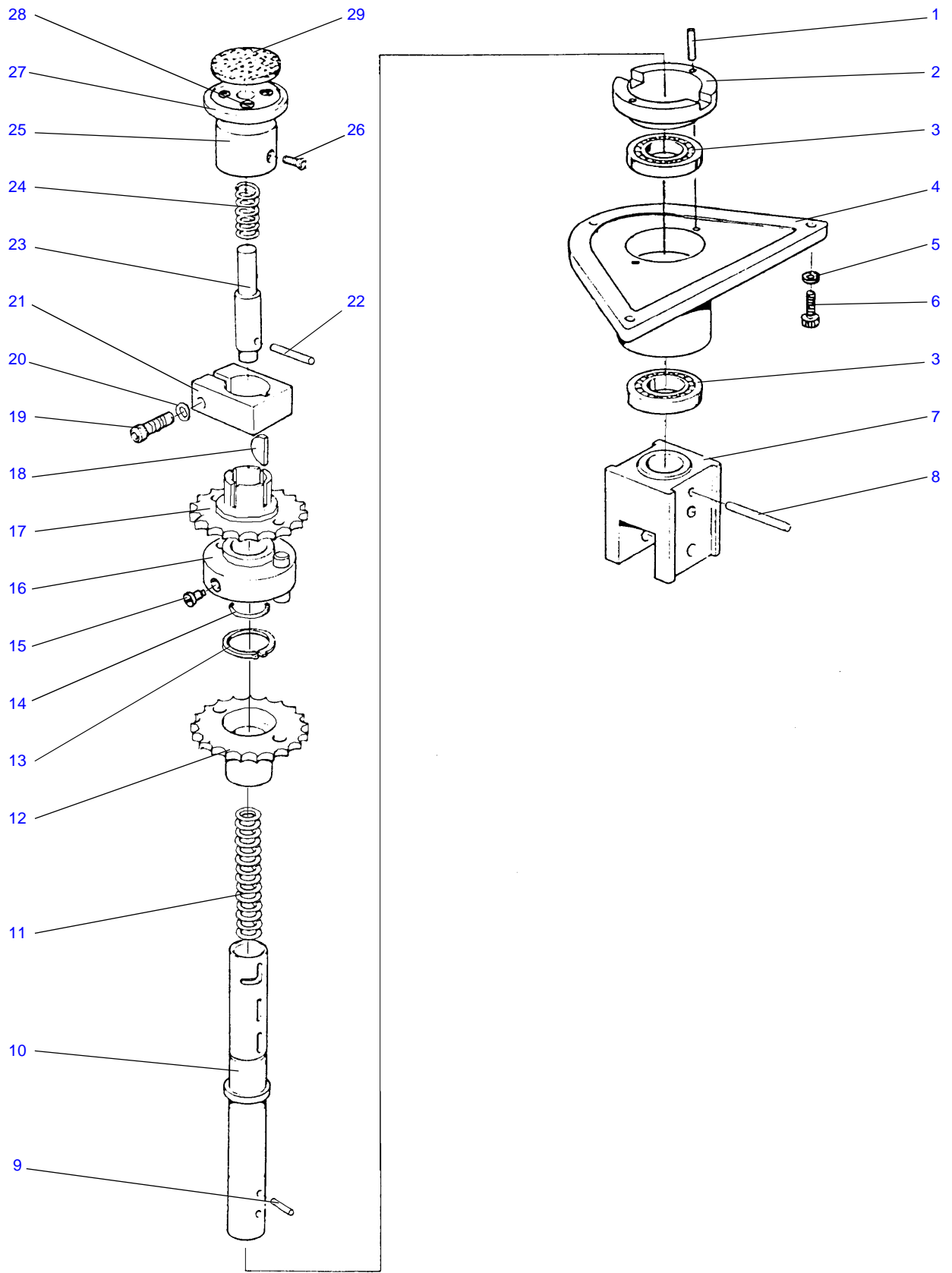


Fig 6.5 Tern Pedestal - Steer/Crab Assembly (3741-10)

TERNIP05

Fig 6.5 Tern Pedestal - Steer/Crab Assembly (3741-10)

Item	Part No.	Nomenclature	Qty
1	L800-034	Pin, coiled-spring, 3/32 in. dia. x 1/2 in. long, mcp	2
2	3741-267	Bush - wheel housing	1
3	N200-007	Bearing, ball, radial, 1 in. ID x 2 in. OD x 3/8 in. long	2
4	3741-234	Wheel housing (steer)	1
5	M600-007	Washer, plain, heavy, M6 (Fig 6.2)	12
6	L076-923	Screw, cap head, socket, 1/4-28UNF x 1 in. long (Fig 6.2)	12
7	3741-203	Wheel hub	1
8	L800-074	Pin, coiled-spring, 3/16 in. dia. x 1-1/2 in. long, mcp	1
9	L800-076	Pin, coiled-spring, 3/16 in. dia. x 7/8 in. long, mcp	1
10	3741-217	Wheel shaft steer	1
11	J532-045	Spring, compression, 5 in. free length, 9/16 in. hole dia., 9.4 lbf/in. rate	1
12	3741-204	Sprocket (change over)	1
13	L701-022	Circlip, external, standard, 1.000 in. shaft dia. x 0.042 in. thick	1
14	Q001-033*	'O'-Ring, 7/8 in. nominal ID x 0.139 in. section, hardness 60 IRHD	1
15	3741-241	Screw	2
16	3741-18	Clutch body assembly	1
17	3741-206	Sprocket fixed	1
18	L805-006	Key, woodruff, no. 405, 5/8 in. wide x 1/8 in. full dia.	1
19	L077-905	Screw, cap head, socket, 5/16-24UNF x 1-1/2 in. long	1
20	L602-111	Washer, plain, light, 5/16 in.	1
21	3741-208	Sprocket clamp	1
22	L801-032	Pin, dowel, 3/16 in. dia. x 1-1/4 in. long	1
23	3741-211	Push rod	1
24	J532-044	Spring, compression, 1-1/2 in. free length, 5/8 in. hole dia., 118.0 lbf/in. rate	1
25	3741-270	Mode pedal body	1
26	3741-272	Mode pedal screw	1
27	3741-271	Mode pedal cap	1
28	L075-022	Screw, countersunk head, socket, 10-32UNF x 5/8 in. long	3
29	3741-246	Pedal washer	1

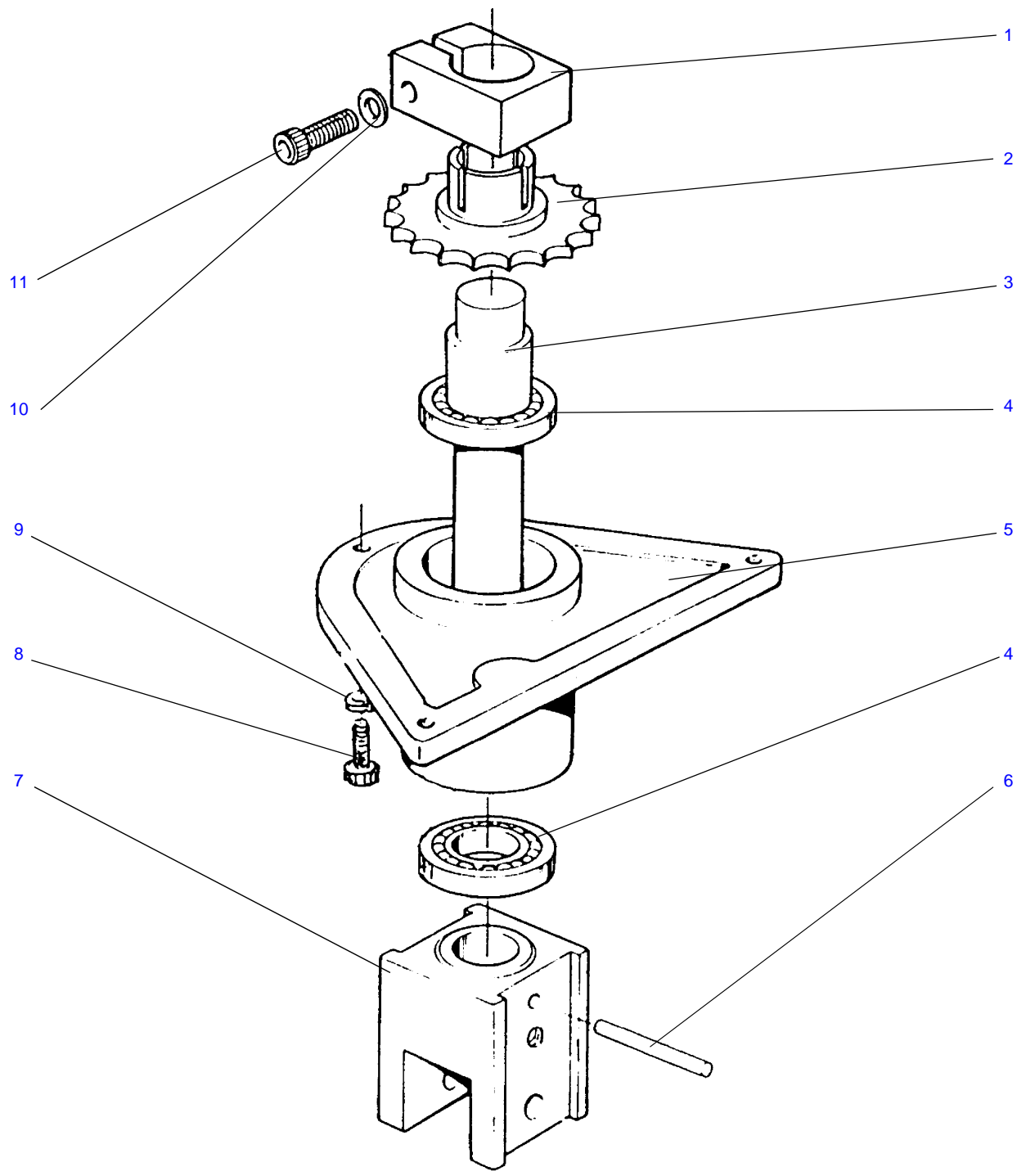
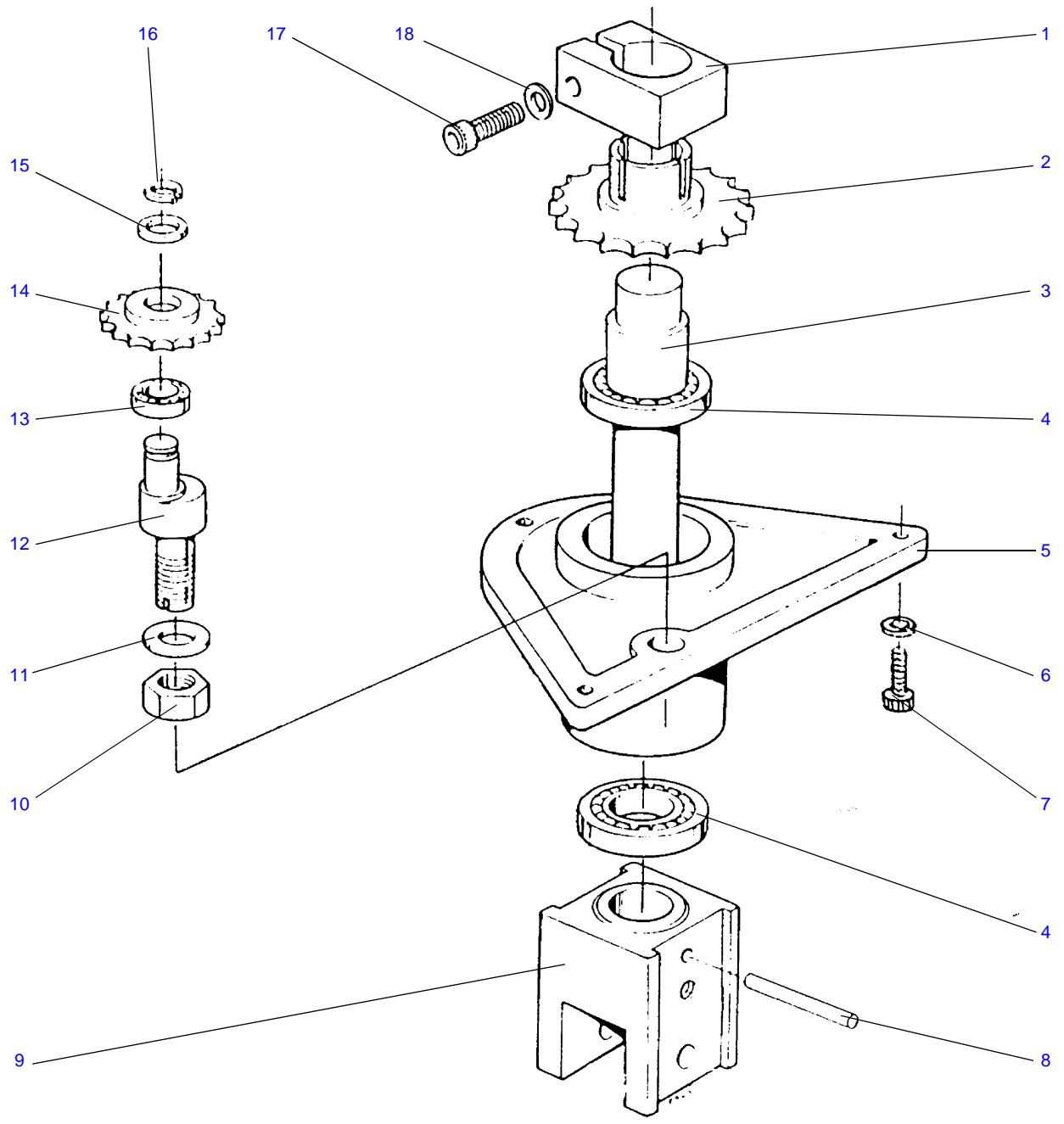


Fig 6.6 Tern Pedestal - Wheel Housing Assembly (Fixed) (3741-11)

TERNIP06

Fig 6.6 Tern Pedestal - Wheel Housing Assembly (Fixed) (3741-11)

Item	Part No.	Nomenclature	Qty
1	3741-208	Sprocket clamp	1
2	3741-216	Wheel sprocket adjuster	1
3	3741-215	Wheel shaft	1
4	N200-007	Bearing, ball, radial, 1 in. ID x 2 in. OD x 3/8 in. long	2
5	3741-235	Wheel housing	1
6	L800-074	Pin, coiled-spring, 3/16 in. dia. x 1-1/2 in. long, mcp	1
7	3741-203	Wheel hub	1
8	L076-923	Screw, cap head, socket, 1/4-28UNF x 1 in. long (Fig 6.2)	12
9	M600-007	Washer, plain, heavy, M6 (Fig 6.2)	12
10	L602-111	Washer, plain, light, 5/16 in.	1
11	L077-905	Screw, cap head, socket, 5/16-24UNF x 1-1/2 in. long	1

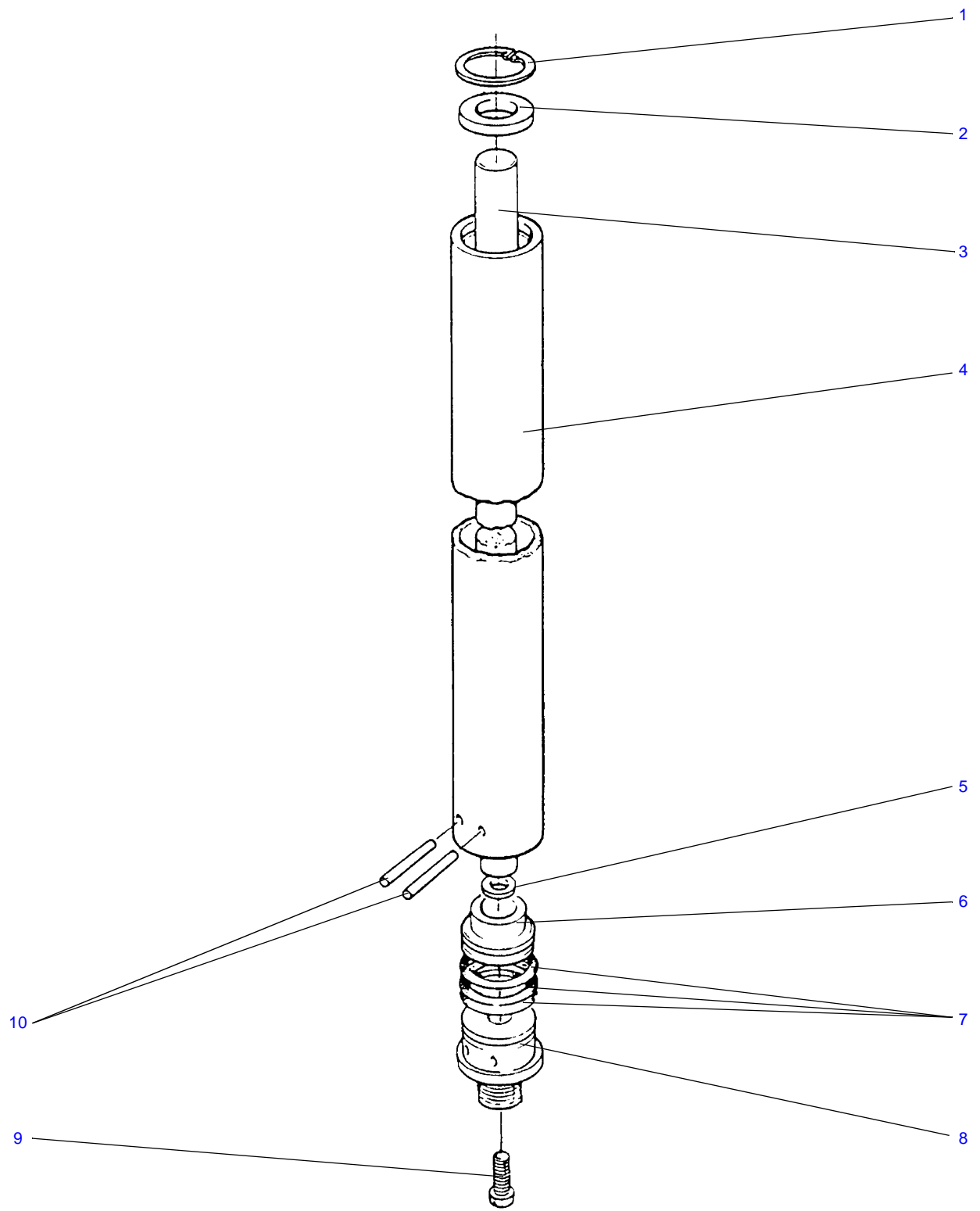


TERNIP07

Fig 6.7 Tern Pedestal - Wheel Housing Assembly (Adjustable) (3741-12)

Fig 6.7 Tern Pedestal - Wheel Housing Assembly (Adjustable) (3741-12)

Item	Part No.	Nomenclature	Qty
1	3741-208	Sprocket clamp	1
2	3741-216	Wheel sprocket adjuster	1
3	3741-215	Wheel shaft	1
4	N200-007	Bearing, ball, radial, 1 in. ID x 2 in. OD x 3/8 in. long	2
5	3741-233	Wheel housing (adjustable)	1
6	M600-007	Washer, plain, heavy, M6 (Fig 6.2)	12
7	L076-923	Screw, cap head, socket, 1/4-28UNF x 1 in. long (Fig 6.2)	12
8	L800-074	Pin, coiled-spring, 3/16 in. dia. x 1-1/2 in. long, mcp	1
9	3741-203	Wheel hub	1
10	L501-218	Nut, 1/2-20 UNF, standard (hex), full	1
11	L602-141	Washer, plain, heavy, 1/2 in.	1
12	3741-221	Chain adjuster	1
13	N200-002	Bearing, ball, radial, 3/8 in. ID x 7/8 in. OD x 7/32 in. long	1
14	3741-249	Chain adjuster sprocket	1
15	L602-123	Washer, plain, small, light, 3/8 in.	1
16	L701-007	Circlip, external, standard, 0.375 in. shaft dia. x 0.025 in. thick	1
17	L077-905	Screw, cap head, socket, 5/16-24UNF x 1-1/2 in. long	1
18	L602-111	Washer, plain, light, 5/16 in.	1

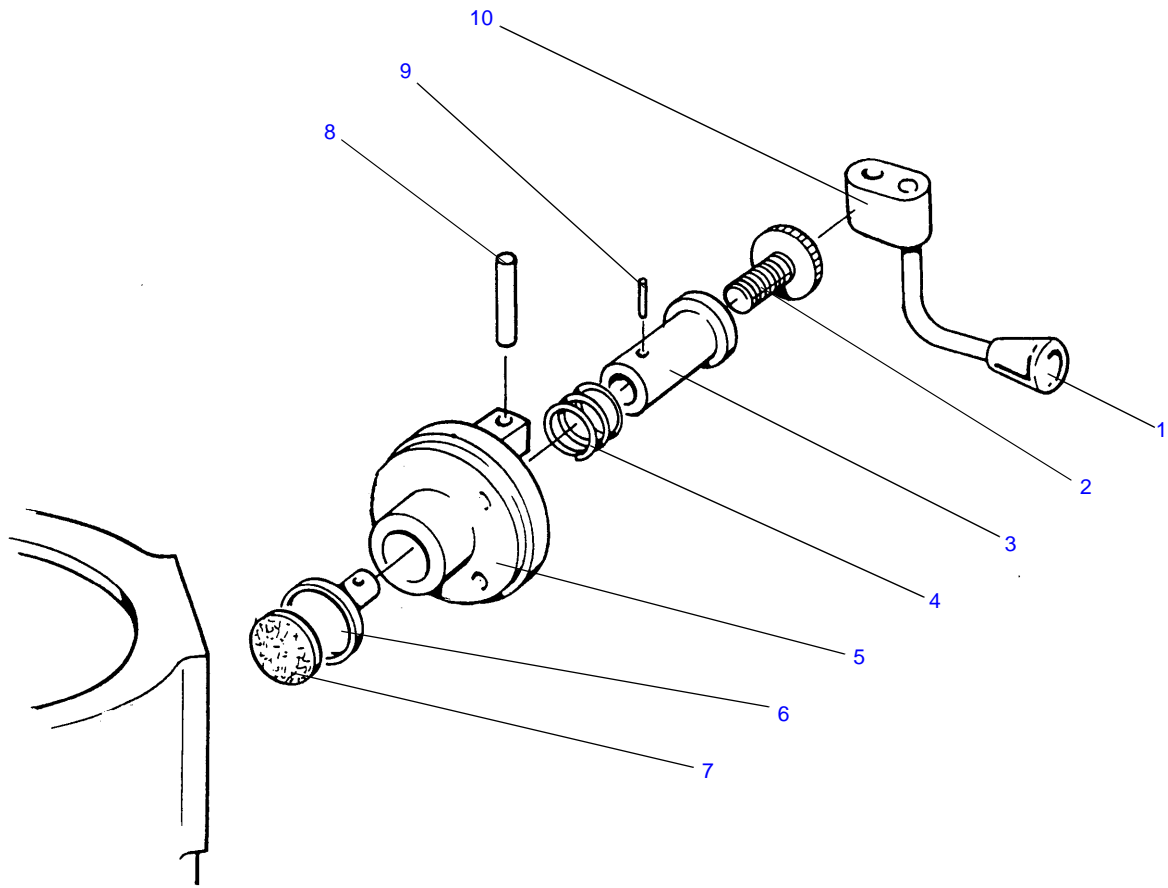


TERNIP08

Fig 6.8 Tern Pedestal - Ram Assembly (3741-15)

Fig 6.8 Tern Pedestal - Ram Assembly (3741-15)

Item	Part No.	Nomenclature	Qty
1	L700-015	Circlip, internal, standard, 1.378 in. bore dia. x 0.059 in. thick	1
2	3741-230	Ram stop	1
3	3741-229	Ram rod	1
4	3741-226	Ram tube	1
5	Q200-006*	Seal, bonded, 1/4 in., 6.86 mm ID x 13.21 mm OD x 1.22 mm thick	1
6	3741-228	Piston	1
7	Q900H016*	'O'-Ring, 1-1/8 in. nominal ID x 0.139 in. section, hardness 70 IRHD	3
8	3741-227	Ram tube plug	1
9	L076-921	Screw, cap head, socket, 1/4-28UNF x 5/8 in. long	1
10	L800-084	Pin, coiled-spring, 3/16 in. dia. x 1-1/2 in. long, hcp	2

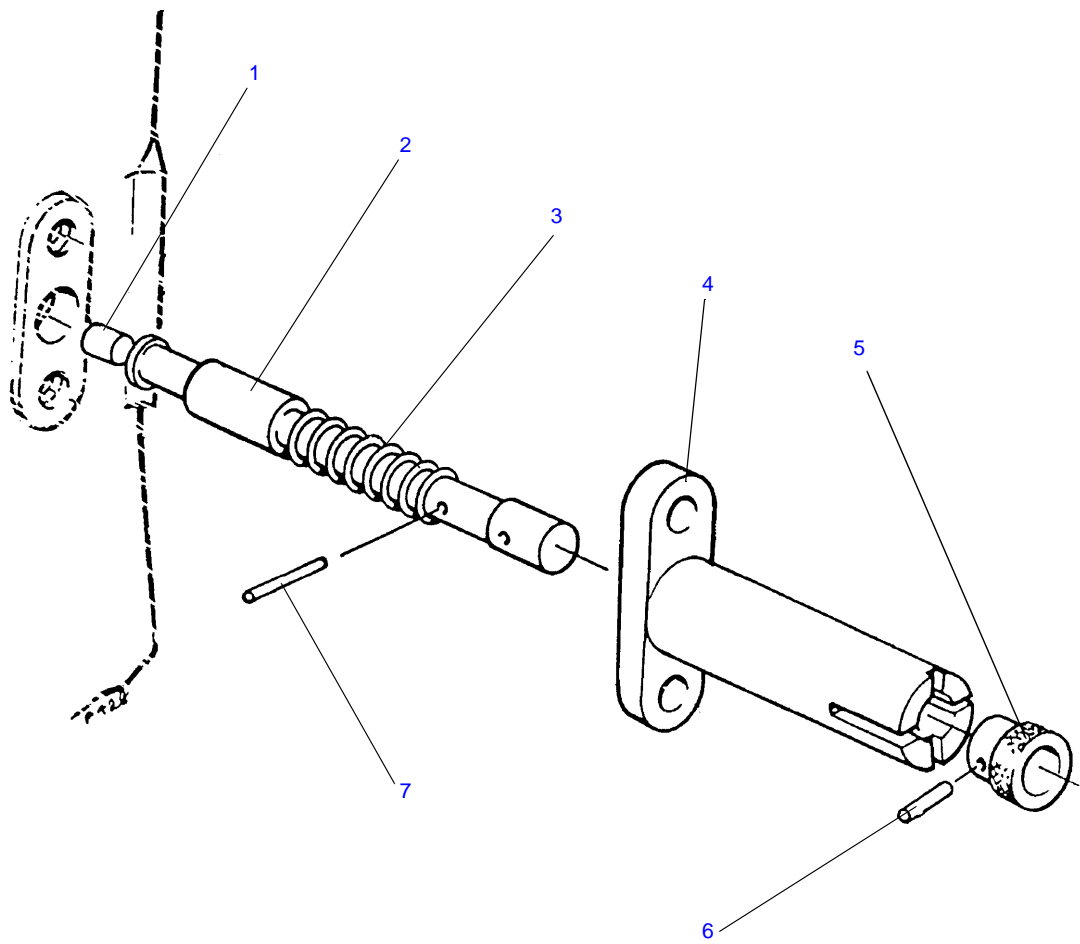


TERNIP09

Fig 6.9 Tern Pedestal - Brake Assembly (3741-16)

Fig 6.9 Tern Pedestal - Brake Assembly (3741-16)

Item	Part No.	Nomenclature	Qty
1	C510-035	Knob, spherical, 23 mm high, 5/16 female thread	1
2	3702-322	Brake adjuster	1
3	3702-321	Brake plunger	1
4	J532-036	Spring, compression, 1 in. free length, 27/32 in. hole dia., 35.0 lbf/in. rate	1
5	3702-320	Brake body	1
6	3702-323	Brake disc	1
7	3702-326	Brake pad	1
8	L801-065	Pin, dowel, 1/4 in. dia. x 1-3/4 in. long	1
9	L800-019	Pin, coiled-spring, 1/16 in. dia. x 1/2 in. long, mcp	1
10	3702-25	Brake handle assembly	1

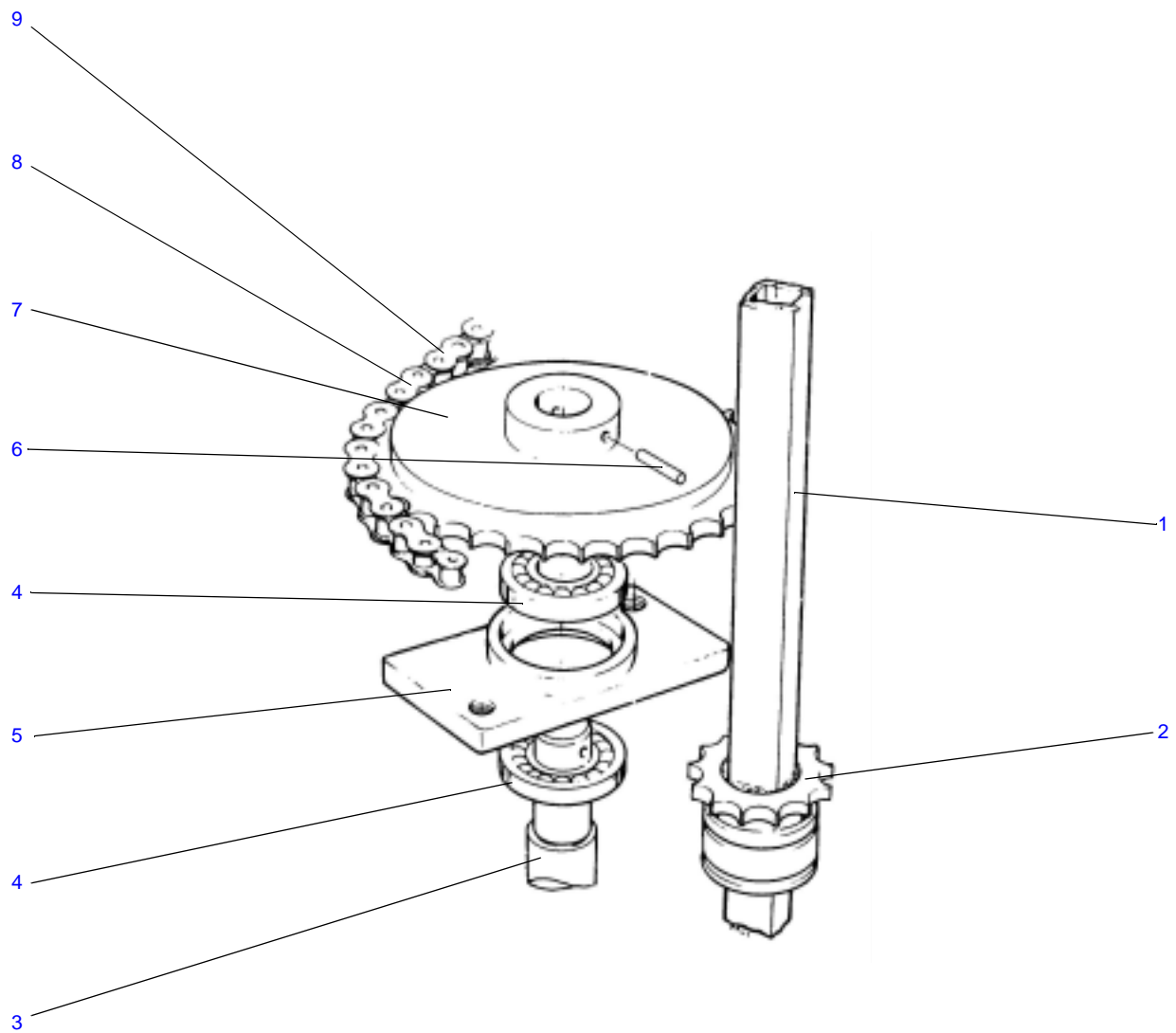


TERNIP10

Fig 6.10 Tern Pedestal - Locking Pin Assembly (3741-17)

Fig 6.10 Tern Pedestal - Locking Pin Assembly (3741-17)

Item	Part No.	Nomenclature	Qty
1	3556-95	Stop buffer	1
2	3556-94	Locking pin	1
3	J532-009	Spring, compression, 2 in. free length, 1/2 in. OD	1
4	3741-248	Locking pin body	1
5	3556-98	Knob	1
6	L800-050	Pin, coiled-spring, 1/8 in. dia. x 5/8 in. long, mcp	1
7	L800-052	Pin, coiled-spring, 1/8 in. dia. x 7/8 in. long, mcp	1



TERNIP11

Fig 6.11 Tern Pedestal - Drive Tube and Sprocket Assemblies

Fig 6.11 Tern Pedestal - Drive Tube and Sprocket Assemblies

Item	Part No.	Nomenclature	Qty
	3741-14	Drive tube assembly, comprising:	1
1	3741-242	Drive tube	1
2	3741-220	Drive tube sprocket	1
	3741-13	Sprocket assembly, comprising:	1
3	3741-213	Intermediate shaft	1
4	N200-004	Bearing, ball, radial, 5/8 in. ID x 1-3/8 in. OD x 9/32 in. long	2
5	3741-218	Bearing housing	1
6	L800-078	Pin, coiled-spring, 3/16 in. dia. x 1-1/4 in. long, mcp	1
7	3741-219	Intermediate sprocket	1
8	J202-006	Chain, roller, simple, 41 links, 3/8 in. pitch, 1/4 in. roller dia.	1
9	J202-061	Chain, link, (connecting), 3/8 in. pitch	1



Fig 6.12 Tern Pedestal - Composite Spare Parts

Part No.	Nomenclature	Qty
3741-900SP	Friction spigot assembly, comprising:	
3741-261	Friction pad	1
3741-262	Friction spigot	1
3741-901SP	Seal kit, comprising:	
Q900H016	'O'-Ring, 1-1/8 in. nominal ID x 0.139 in. section, hardness 70 IRHD	4
Q001-010	'O'-Ring, 1/4 in. nominal ID x 0.070 in. section, hardness 70 IRHD	1
Q001-012	'O'-Ring, 5/16 in. nominal ID x 0.070 in. section, hardness 70 IRHD	1
Q001-033	'O'-Ring, 7/8 in. nominal ID x 0.139 in. section, hardness 60 IRHD	1
Q200-011	Seal, bonded, 1/2 in., 13.74 mm ID x 20.57 mm OD x 2.00 mm thick	11
Q200-004	Seal, bonded, 2ba, 5.21 mm ID x 8.38 mm OD x 1.22 mm thick	3
Q200-006	Seal, bonded, 1/4 in., 6.86 mm ID x 13.21 mm OD x 1.22 mm thick	1
3741-902SP	Bush kit, comprising:	
3741-411	Bush	6
3741-903SP	Lifting handles kit, comprising:	
3702-458	Backing plate	6
J402-047	Handle	6
M006-006	Bolt, pan head, pozidrive, M 5 x 20 mm long	30
M501-008	Nut, M5, nyloc, full	30
M600-006	Washer, plain, heavy, M5	30
3741-904SP	Jack assembly (set of three), comprising:	
3283-25	Jack assembly with mounting plate (tern)	3