



# Instruction Manual

Track Link Pin Pusher & Installer  
Model – TTP Series



**Maximum Operating Pressure – 700 bar**



This is a safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid injury or death

## 1.0 Product Information

DURAPAC – Track Link Pin Pusher & Installers are engineered to meet Industrial Standards for Performance and Safety. The TTP Series is specially designed for tracked machines, tractors, loaders, shovels, excavators, etc. The Track Link Pin Pusher is suitable to use with most modern machines including JCB, Caterpillar, Komatsu and Poclain make track machines. It is safe and simple to use. Hydraulic force ensures smooth operation, thereby avoiding damage to the components of the track assembly.

The Track Link Pin Pusher & Installer includes:

- 1 x cast steel `C` frame
- 1 x double acting hydraulic cylinder – see specification table for details
- 2 x tie rod and 2 x nuts for connecting `C` frame and cylinder
- 1 x chain lever hoist
- 2 x lifting slings and eyebolts for handling
- Tooling sets
- 20T flat jack
- Storage case

The `C` frame is of cast steel construction and has a `U` cut out at the front end where the **aligning adaptor** is fitted. The **frame** has a through bore, through which the **forcing pin and master pin pusher** passes out. The frame has eyebolts for fixing the 'Chain pulley block hook', for handling.

The **double acting hydraulic cylinder** is made in alloy steel and has long stroke with which the **master pin** can be **pushed** or **installed** in one stroke. The cylinder has a threaded flange to which the tie rods are fitted and connected to the `C` frame. The tie rods and nuts are machined from an alloy steel material. The tools provided are also of alloy steel, heat treated for strength.

Note - Durapac also offer a range of hydraulic pumps as an optional extra; hand, electric, petrol, battery operated, etc.

Special skill, knowledge and training may be required for a specific task and the product may not be suitable for all jobs. The user must ultimately make the decision regarding suitability of the product for any given task and assume the responsibility of safety for all in the work area. Contact a Durapac representative if you are unsure of your pin pusher's suitability for a particular application.

## 2.0 Receiving Instructions

It is recommended prior to use that an inspection be done by qualified personnel and that any missing or damaged parts, decals, warning/safety labels or signs are replaced with Durapac authorised replacement parts only. Any pin pusher that appears to be damaged in any way, is worn, leaking or operates abnormally should be removed from service immediately until such time as repairs can be made. Any pin pusher that has been or suspected to have been subject to a shock load should be removed from service immediately until inspected by a Durapac authorised service

centre. Owners and operators of this equipment should be aware that the use and subsequent repair of this equipment may require specialised training and knowledge.

### 3.0 Safety

Save these instructions. For your safety, read and understand the information contained within. The owner and operator should understand this product and safe operating procedures before attempting to use this product. Instructions and safety information should be conveyed in the operator's native language before use of this product is authorised. Make certain that the operator thoroughly understands the inherent dangers associated with the use and misuse of the product. If any doubt exists as to the safe and proper use of this product as outlined in this factory authorised manual, remove from service immediately.



#### **DANGER:**

- To avoid personal injury, keep hands and feet away from work area during operation
- **Do NOT** handle pressurised hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately
- Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be supported mechanically



#### **WARNING:**

- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install a pressure gauge in the system to monitor operating pressure. It is your window to what is happening in the system
- Always wear appropriate personal protective equipment (PPE) when operating hydraulic equipment. The operator must take precaution against injury due to failure of the tool or work piece(s)
- **Do NOT** hold or stand directly in line with any hydraulic connections while pressurising
- **Do NOT** attempt to disconnect hydraulic connections under pressure. Release all line pressure before disconnecting hoses
- All personnel must be clear before lowering load or depressurising the system



#### **IMPORTANT:**

- If at any stage, the safety related decals become hard to read, these must be replaced
- Minimum age of the operator must be 18 years. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the equipment. The operator is responsible for this activity towards other persons
- **Do NOT** lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport
- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Durapac authorised service centre in your area. To protect your warranty, use only high-quality hydraulic oil

**CAUTION:**

- **KEEP HYDRAULIC EQUIPMENT AWAY FROM FLAMES AND HEAT.** Hydraulic fluid can ignite and burn. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C (150°F) or higher. Protect all equipment from weld spatter
- No alteration should be made to this device

### 3.1 Hydraulic Pin Pushers

- **Do NOT** exceed the rated capacity of the cylinder or any equipment in the system
- The pin pusher is designed to be used in temperatures ranging from -40°C to +54°C (-40°F to +130°F)
- **Do NOT** tamper with the adjustment of the cylinders' internal relief valve screw. To do so may cause the hydraulics to fail
- **Do NOT** use in an unstable or hazardous position
- Centre the load on the cylinder. Off centre loads can damage seals and cause hydraulic failure
- Keep non-essential personnel at a safe distance when using the pin pusher
- Ensure that the pin pusher is undamaged and in good working order. Do not use the pin pusher if it is damaged
- **Do NOT** use the pin pusher for any purpose other than that for which it is intended
- **Do NOT** operate the system with bent or damaged couplers or damaged threads
- Use only Durapac approved accessories and components

### 3.2 Hydraulic Hoses & Fluid Transmission Lines

- Avoid short runs of straight-line tubing. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes
- Reduce stress in tube lines. Long tubing runs should be supported by brackets or clips. Before operating the power unit, connections should be hand tightened securely and leak-free. Over tightening can cause premature thread failure or high-pressure fittings to burst
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the power unit and release all pressure. Never attempt to grasp a leaking pressurised hose with your hands. The force of escaping hydraulic fluid can inflict injury
- **Do NOT** subject the hose to potential hazard such as fire, sharp objects, extreme heat or cold or heavy impact
- **Do NOT** allow the hose to kink, twist, curl, crush, cut or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear

- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as battery acid, creosote-impregnated objects and wet paint. Never paint a coupler or hose
- Use only Durapac or equivalent hoses

**FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL INJURY AS WELL AS PROPERTY DAMAGE.**

## 4.0 Installation

### 4.1 System Inspection

All bolts and nuts must be securely attached. Check for missing, altered, or substituted bolts, nuts and other parts.

### 4.2 System Setup

The entire Pin Pusher Assembly, and its subsystems, must be inspected prior to each use

### 4.3 System Specifications

Familiarise yourself with the specifications and illustrations in this owner’s manual. Know your pin pusher, its limitations and how it operates before attempting to use. Refer to the specification chart below or if in doubt, contact a Durapac representative.

Model No.	Capacity (ton)	Stroke (mm)	Pressure Rating (bar)	Effective Area (cm <sup>2</sup> )	Oil Capacity (cc)	Assembly Length (mm)	Approx. Weight (kg)*
TTP-50	50	250	700	70.88	1,772	1,400	85
TTP-100	100	350	700	132.7	4,645	1,750	205
TTP-150	150	350	700	213.8	7,484	2,103	372
TTP-200	200	350	700	283.5	9,923	2,245	630

\*Frame & Cylinder Assembly

### 4.4 Pump Requirements

Refer to the instruction sheet included with each pump for complete installation and operation details.

### 4.5 Remove air from the system

Remove air from the system – Position the cylinder so that the piston rod is pointed down and the cylinder is lower than the pump. Advance and retract the cylinder several times, avoiding pressure build-up. Air removal is complete when the cylinder motion is smooth.

**5.0 Operation**

**⚠ CAUTION** - For safety, the maximum load applied to a given pin diameter must be followed as per the tables below:

Load Chart			
Model	Track Pin Diameter (mm)	Max. Load on Pins (tons)	Pressure at Max. Load (bar)
TTP-50	φ19.3 - φ23.7	12.8	181
	φ23.7 - φ30.1	19.5	275
	φ30.1 - φ33.2	29	409
	φ33.2 - φ36.4	36	508
TTP-100	φ19.3 - φ23.7	12.8	96
	φ23.7 - φ30.1	19.5	147
	φ30.1 - φ33.2	29	219
	φ33.2 - φ36.4	36	271
	φ36.4 - φ39.6	40	301
	φ39.6 - φ42.8	51	384
	φ42.8 - φ45.9	60	452
	φ45.9 - φ52.3	70	528
	φ52.3 - φ58.6	90	678
	φ58.6 - φ60.2	93	700
TTP-150	φ23.7 - φ30.1	19.5	91
	φ30.1 - φ33.2	29	136
	φ33.2 - φ36.4	36	168
	φ36.4 - φ39.6	40	187
	φ39.6 - φ42.8	51	239
	φ42.8 - φ45.9	60	281
	φ45.9 - φ52.3	70	327
	φ52.3 - φ58.6	90	421
	φ58.6 - φ60.2	93	435
	φ60.2 - φ63.3	128	599
TTP-200	φ36.4 - φ39.6	40	141
	φ39.6 - φ42.8	51	180
	φ42.8 - φ45.9	60	212
	φ45.9 - φ52.3	70	247
	φ52.3 - φ58.6	90	317
	φ58.6 - φ60.2	93	328
	φ60.2 - φ63.3	128	451
	φ63.3 - φ66.6	140	494
	φ66.6 - φ70.0	148	522
φ70.0 - φ73.9	185	652	

Pressure / Load Chart				
Pressure (bar)	50T Load (tons)	100T Load (tons)	150T Load (tons)	200T Load (tons)
25	1.8	3.3	5.3	-
50	3.5	6.6	10.6	14.2
75	5.3	9.9	16.0	28.4
100	7.1	13.3	21.3	42.5
150	10.6	19.9	32.0	56.7
200	14.2	26.5	42.7	70.9
250	17.7	33.2	53.4	85.1
300	21.2	39.8	64.1	99.2
350	24.7	46.4	74.8	113.4
400	28.3	53.1	85.5	127.6
450	31.8	59.7	96.2	141.8
500	35.4	66.4	106.9	144.3
550	38.9	73.0	117.5	155.9
600	42.5	79.6	128.2	170.1
650	46.0	86.2	138.9	183.1
700	49.6	92.9	149.6	198.5

**5.1 Tool Selection**

Select the tooling according to the appropriate TTP-Series model and the model of track machine using the following guides and tables:

**TTP-50 – Tool Selection Guide**

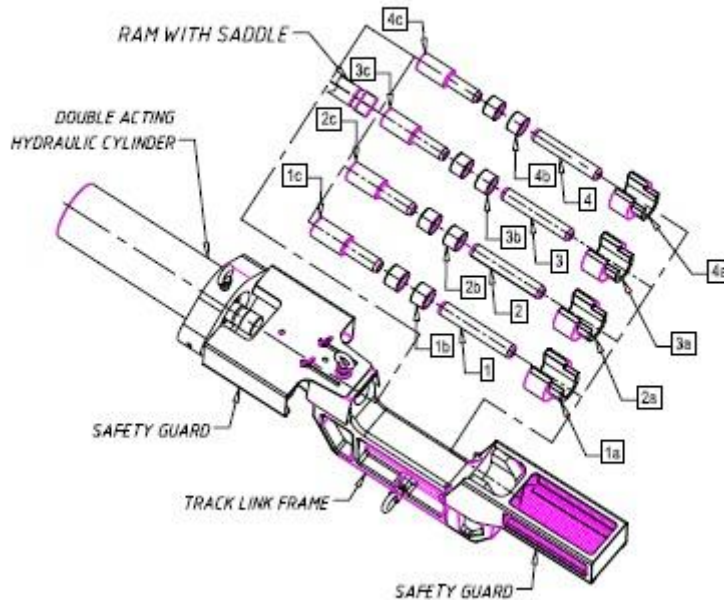


Figure 1 – TTP-50 Tool Selection Guide

Application Guide				
Track Pin Diameter (mm)	Forcing Pin (item)	Aligning Bushes (item)	Master Pin Pusher (item)	Aligning Adaptor (item)
19.3 - 23.7	1c	1b	1	1a
23.7 - 30.1	2c	2b	2	2a
30.1 - 33.2	3c	3b	3	3a
33.2 - 36.4	4c	4b	4	4a

< End TTP-50 – Tool Selection Guide >

**Note** - Your Durapac Distributor can supply, upon request, a Tooling Chart that will itemise different brands of machines, model numbers and track pin diameter.



TTP-100 – Tool Selection Guide

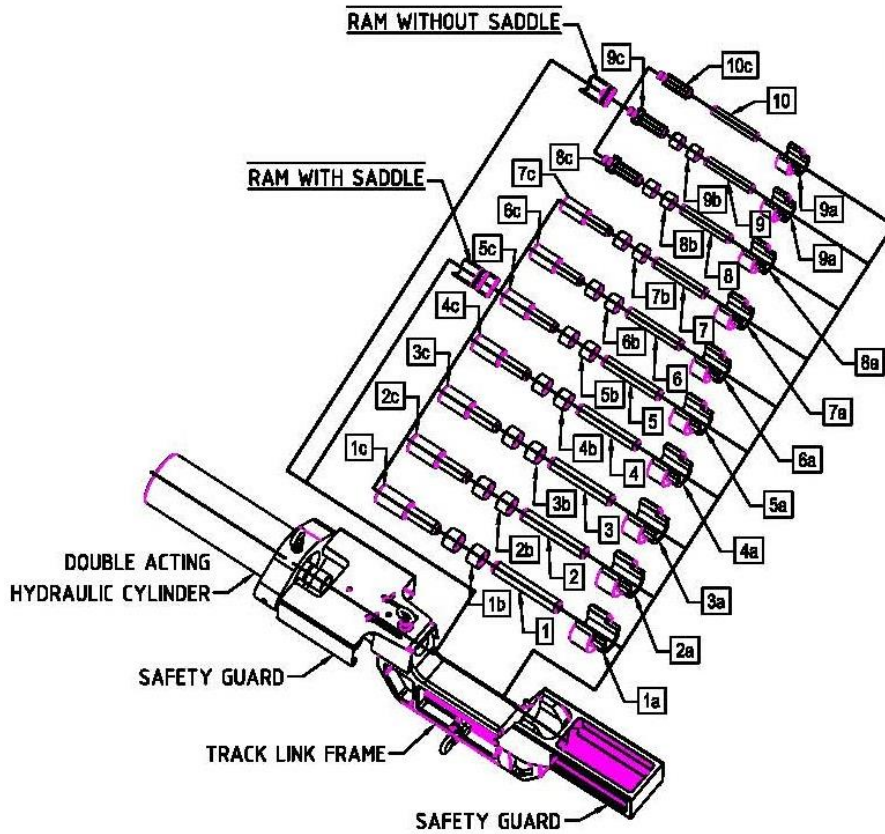


Figure 2 – TTP-100 Tool Selection Guide

Basic Pin Groups			
Track Pin Diameter (mm)	Description		Items
19.3 - 33.2	Small Pin Group	3 Sets	(1c,2c,3c)(1b,2b,3b)(1,2,3)(1a,2a,3a)
33.2 - 45.9	Medium Pin Group	4 Sets	(4c,5c,6c,7c)(4b,5b,6b,7b)(4,5,6,7)(4a,5a,6a,7a)
45.9 - 60.2	Large Pin Group	3 Sets	(8c,9c,10c)(8b,9b)(8,9,10)(8a,9a,9a)

Application Guide				
Track Pin Diameter (mm)	Forcing Pin (item)	Aligning Bushes (item)	Master Pin Pusher (item)	Aligning adaptor (item)
19.3 - 23.7	1c	1b	1	1a
23.7 - 30.1	2c	2b	2	2a
30.1 - 33.2	3c	3b	3	3a
33.2 - 36.4	4c	4b	4	4a
36.4 - 39.6	5c	5b	5	5a
39.6 - 42.8	6c	6b	6	6a
42.8 - 45.9	7c	7b	7	7a
45.9 - 52.3	8c (saddle)	8b	8	8a
52.3 - 58.6	9c (saddle)	9b	9	9a
58.6 - 60.2	10c (saddle)	-	10	9a

< End TTP-100 – Tool Selection Guide >



TTP-150 – Tool Selection Guide

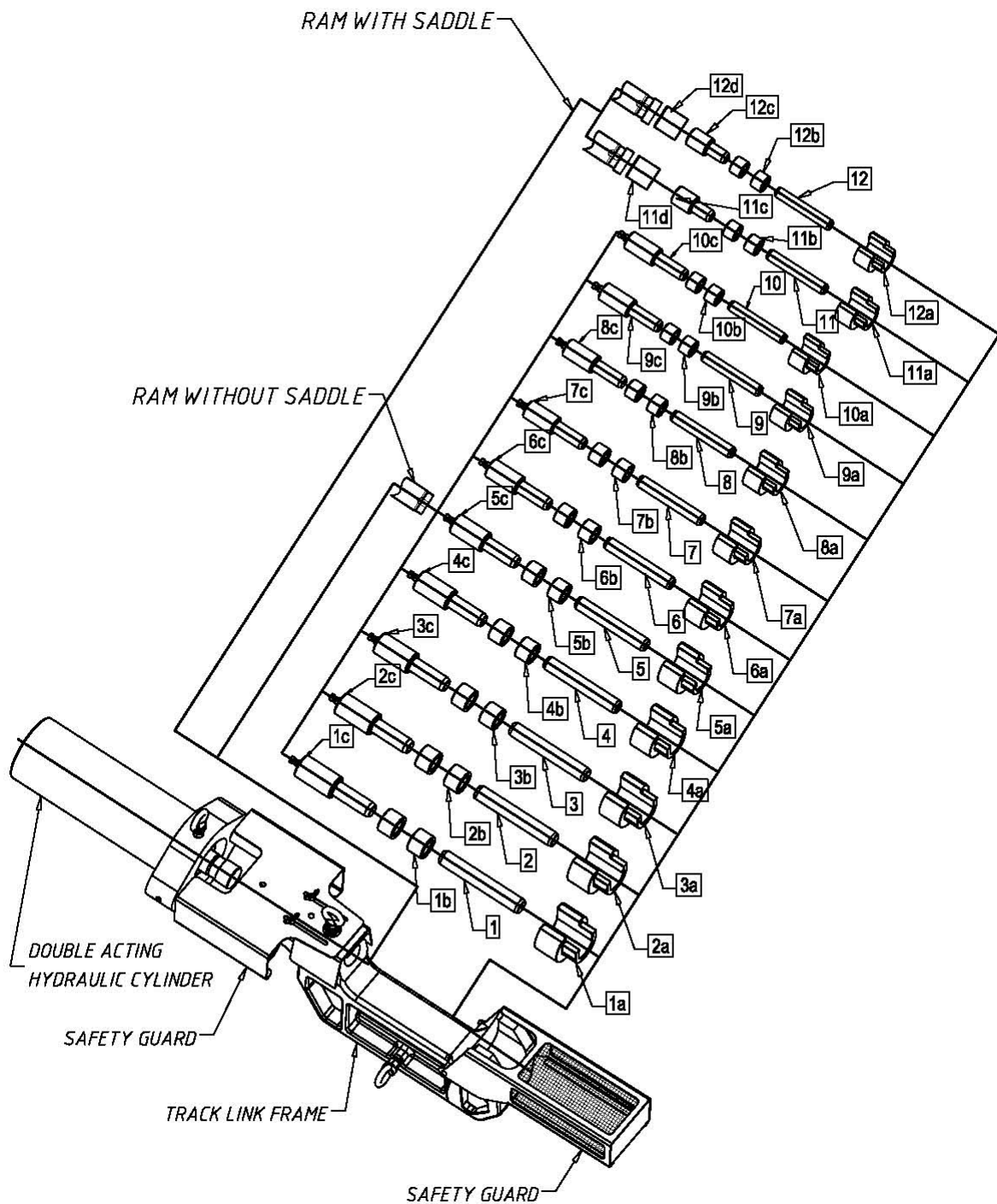


Figure 3 – TTP-150 Tool Selection Guide

Basic Pin Groups			
Track Pin Diameter (mm)	Description		Items
22.0 - 41.9	Small Pin Group	4 Sets	(1c,2c,3c,4c)(1b,2b,3b,4b)(1,2,3,4)(1a,2a,3a,4a)
41.9 - 57.1	Medium Pin Group	4 Sets	(5c,6c,7c,8c)(5b,6b,7b,8b)(5,6,7,8)(5a,6a,7a,8a)
57.1 - 70.0	Large Pin Group	4 Sets	(9c,10c,11c,12c)(9b,10b,11b,12b)(9,10,11,12)(9a,10a,11a,12a)(11d,12d)

Application Guide					
Track Pin Diameter (mm)	Forcing Pin (item)	Aligning Bushes (item)	Master Pin Pusher (item)	Aligning adaptor (item)	Forcing Pin Pusher (item)
22.0 - 30.1	1c	1b	1	1a	-
30.1 - 33.4	2c	2b	2	2a	-
33.4 - 38.1	3c	3b	3	3a	-
38.1 - 41.9	4c	4b	4	4a	-
41.9 - 45.7	5c	5b	5	5a	-
45.7 - 50.8	6c	6b	6	6a	-
50.8 - 53.8	7c	7b	7	7a	-
53.8 - 57.1	8c	8b	8	8a	-
57.1 - 60.3	9c	9b	9	9a	-
60.3 - 63.3	10c	10b	10	10a	-
63.3 - 66.6	11c	11b	11	11a	11d
66.6 - 70.0	12c	12b	12	12a	12d

< End TTP-150 – Tool Selection Guide >

TTP-200 – Tool Selection Guide

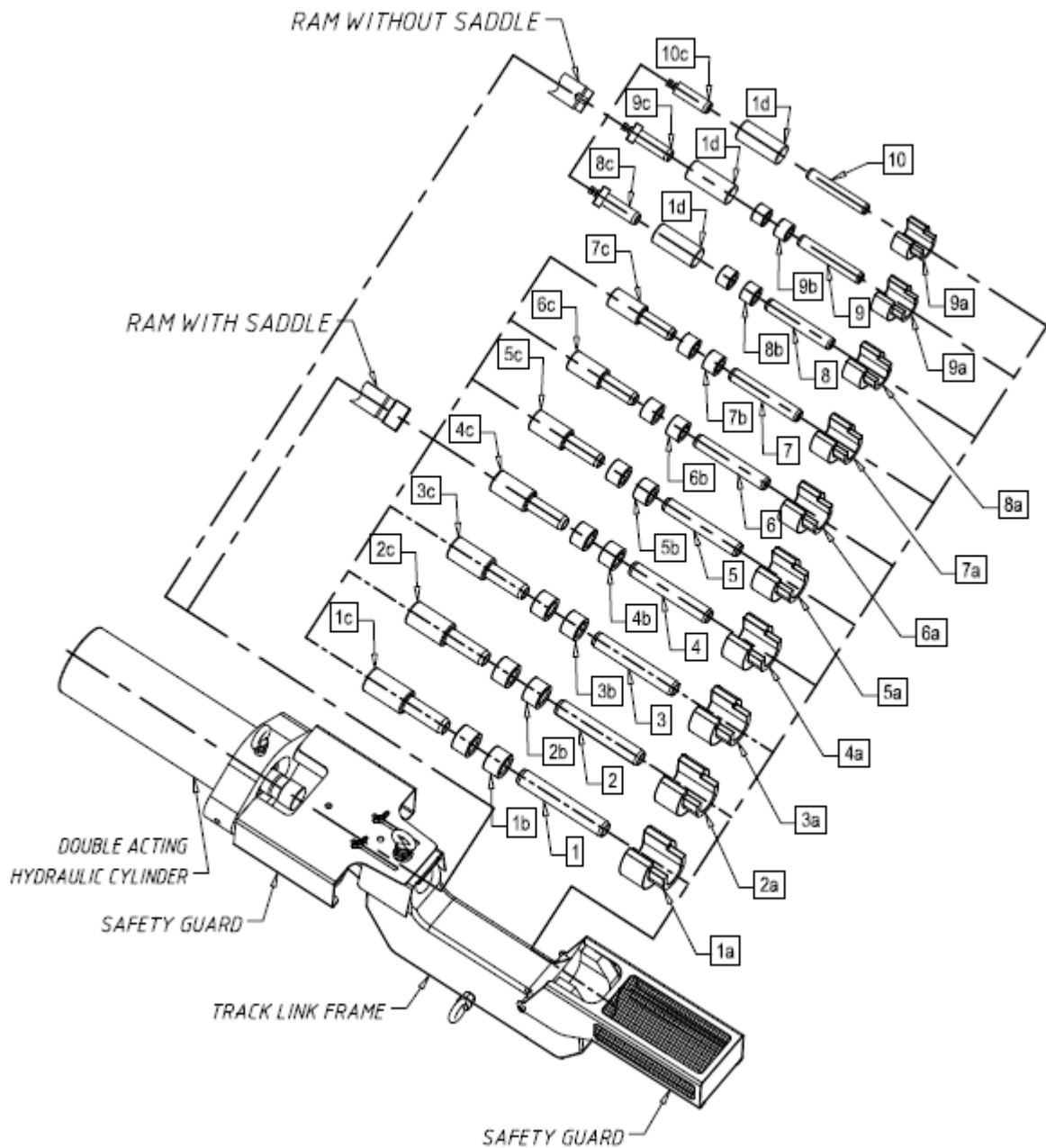


Figure 4 – TTP-200 Tool Selection Guide

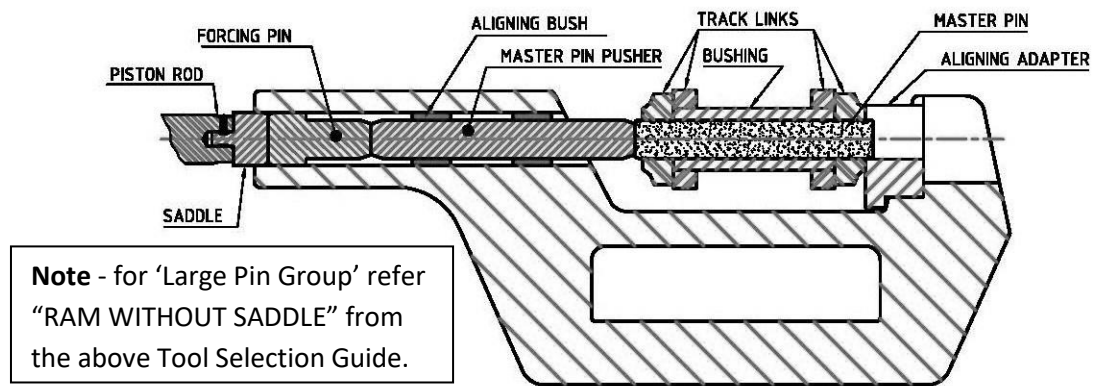
Basic Pin Groups			
Track Pin Diameter (mm)	Description		Items
36.4 - 45.9	Small Pin Group	3 Sets	(1c,2c,3c)(1b,2b,3b)(1,2,3)(1a,2a,3a)
45.9 - 63.3	Medium Pin Group	4 Sets	(4c,5c,6c,7c)(4b,5b,6b,7b)(4,5,6,7)(4a,5a,6a,7a)
63.3 - 73.9	Large Pin Group	3 Sets	(8c,9c,10c)(8b,9b)(8,9,10)(8a,9a,9a)(1d)

< End TTP-200 – Tool Selection Guide >

Application Guide					
Track Pin Diameter (mm)	Forcing Pin (item)	Aligning Bushes (item)	Master Pin Pusher (item)	Aligning adaptor (item)	Distance Piece (item)
36.4 - 39.6	1c	1b	1	1a	-
39.6 - 42.8	2c	2b	2	2a	-
42.8 - 45.9	3c	3b	3	3a	-
45.9 - 52.3	4c	4b	4	4a	-
52.3 - 58.6	5c	5b	5	5a	-
58.6 - 60.2	6c	6b	6	6a	-
60.2 - 63.3	7c	7b	7	7a	-
63.3 - 66.6	8c (saddle)	8b	8	8a	1d
66.6 - 70.0	9c (saddle)	9b	9	9a	1d
70.0 - 73.9	10c (saddle)	-	10	9a	1d

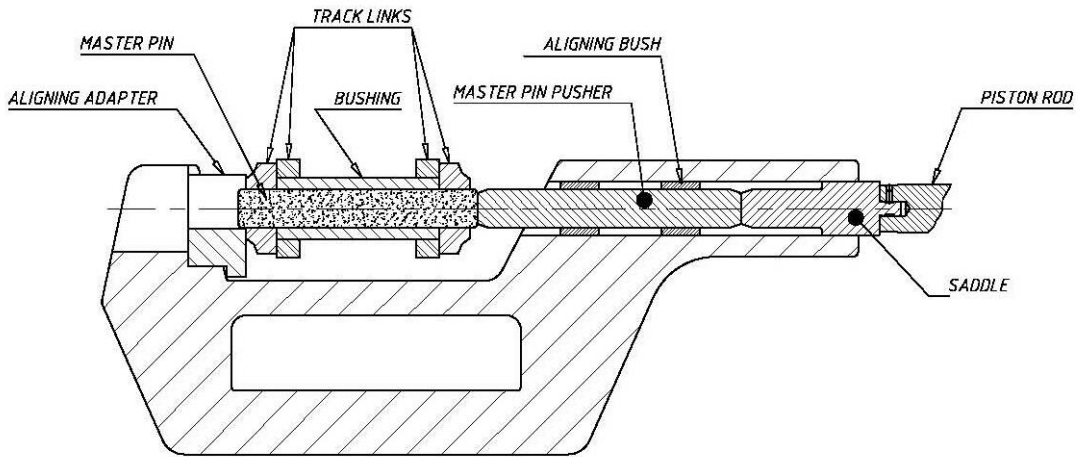
## 5.2 Pin Removal

- 5.2.1 To push master pin for track separation, the master link should be positioned on the upper section of track, halfway between the sprocket and idler. The 'C' frame is then positioned in place and aligned after which master pin can be pushed out hydraulically.
- 5.2.2 After use, the pin pusher should be stored with the piston fully retracted.



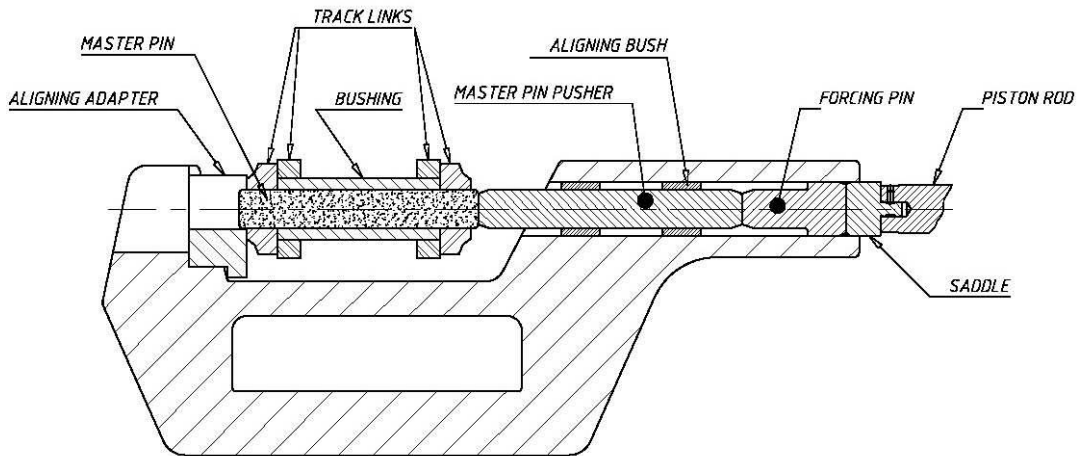
**TOOLING SET-UP FOR TRACK LINK PIN PUSHER (MASTER PIN REMOVAL)**

*Figure 5 – TTP-50, TTP-100 & TTP-200 Pin Removal*



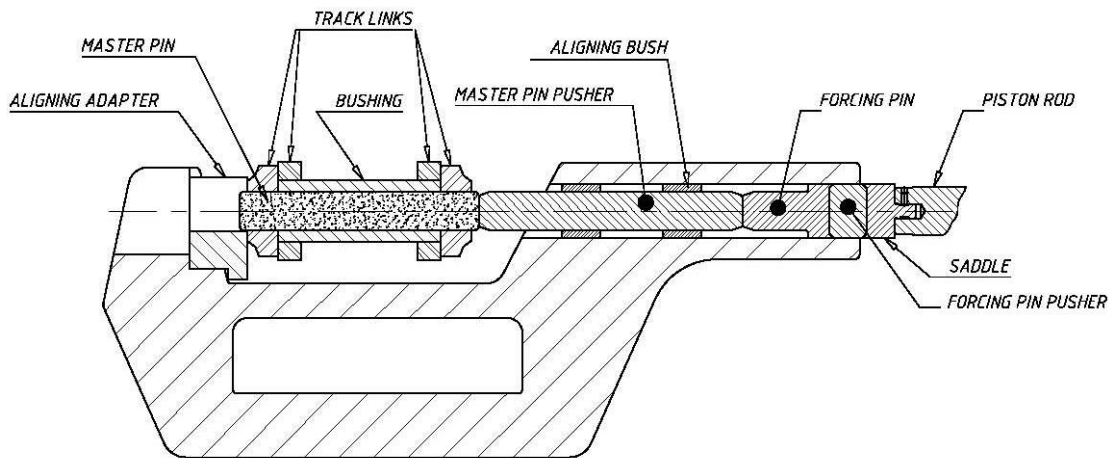
**TOOLING SET-UP FOR TRACK LINK PIN PUSHER (MASTER PIN REMOVAL)**

Figure 6 – TTP-150 Pin Removal Example A



**TOOLING SET-UP FOR TRACK LINK PIN PUSHER (MASTER PIN REMOVAL)**

Figure 7 – TTP-150 Pin Removal Example B



**TOOLING SET-UP FOR TRACK LINK PIN PUSHER (MASTER PIN REMOVAL)**

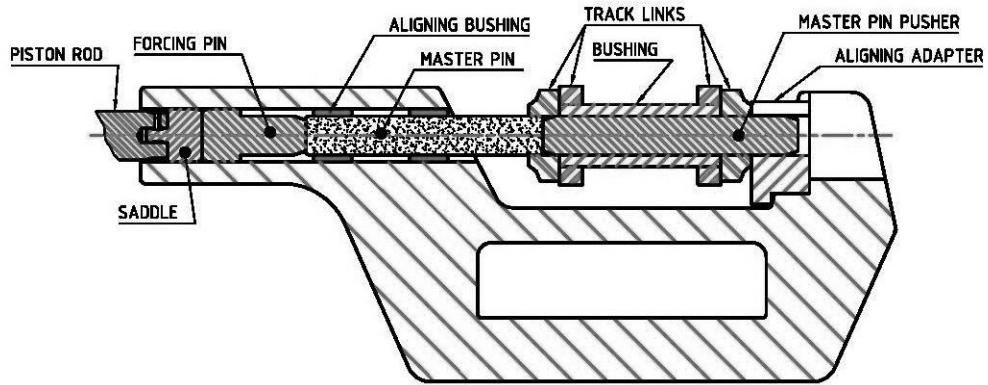
Figure 8 – TTP-150 Pin Removal Example C



**5.3 Pin Installation**

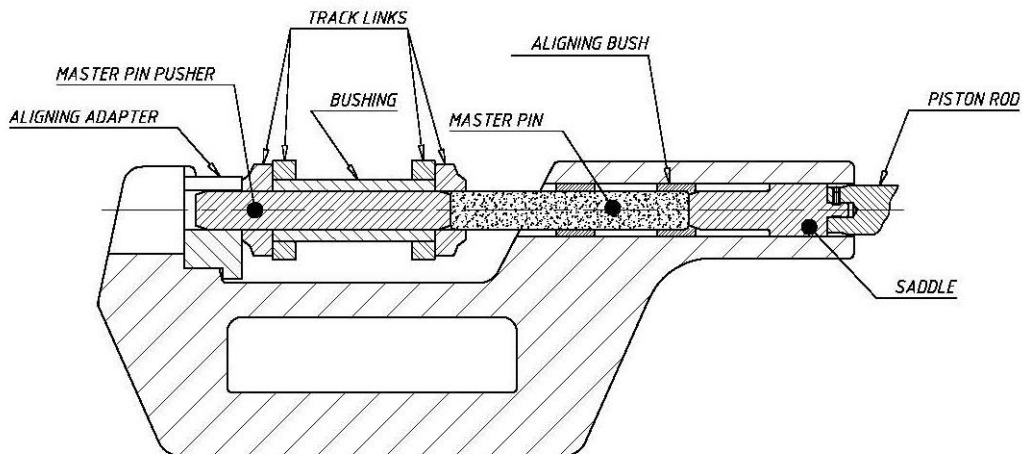
5.3.1 To install the master pin, the master link should be positioned on the upper section of track, halfway between the sprocket and idler. The `C` frame is then positioned in place and aligned after which master pin can be pushed in hydraulically.

5.3.2 After use, the pin pusher should be stored with the piston fully retracted.



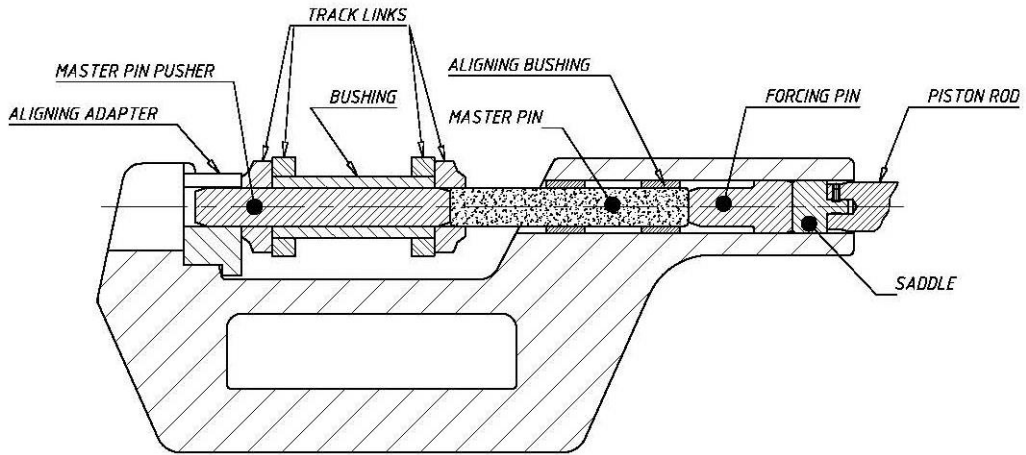
**TOOLING SET-UP FOR TRACK LINK PIN INSTALLATION (MASTER PIN INSTALLATION)**

*Figure 9 – TTP-50, TTP-100 & TTP-200 Pin Installation*



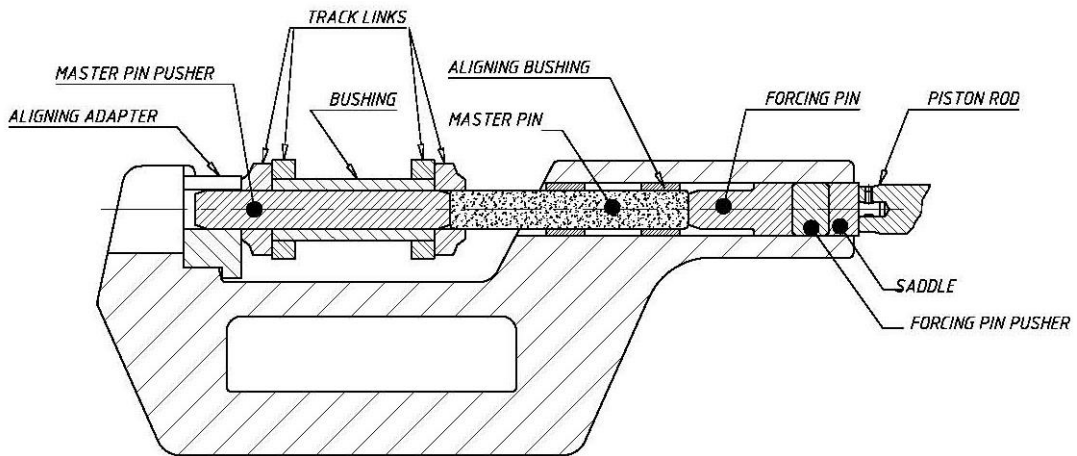
**TOOLING SET-UP FOR TRACK LINK PIN INSTALLATION (MASTER PIN INSTALLATION)**

*Figure 10 – TTP-150 Pin Installation Example A*



**TOOLING SET-UP FOR TRACK LINK PIN INSTALLATION  
(MASTER PIN INSTALLATION)**

*Figure 11 – TTP-150 Pin Installation Example B*

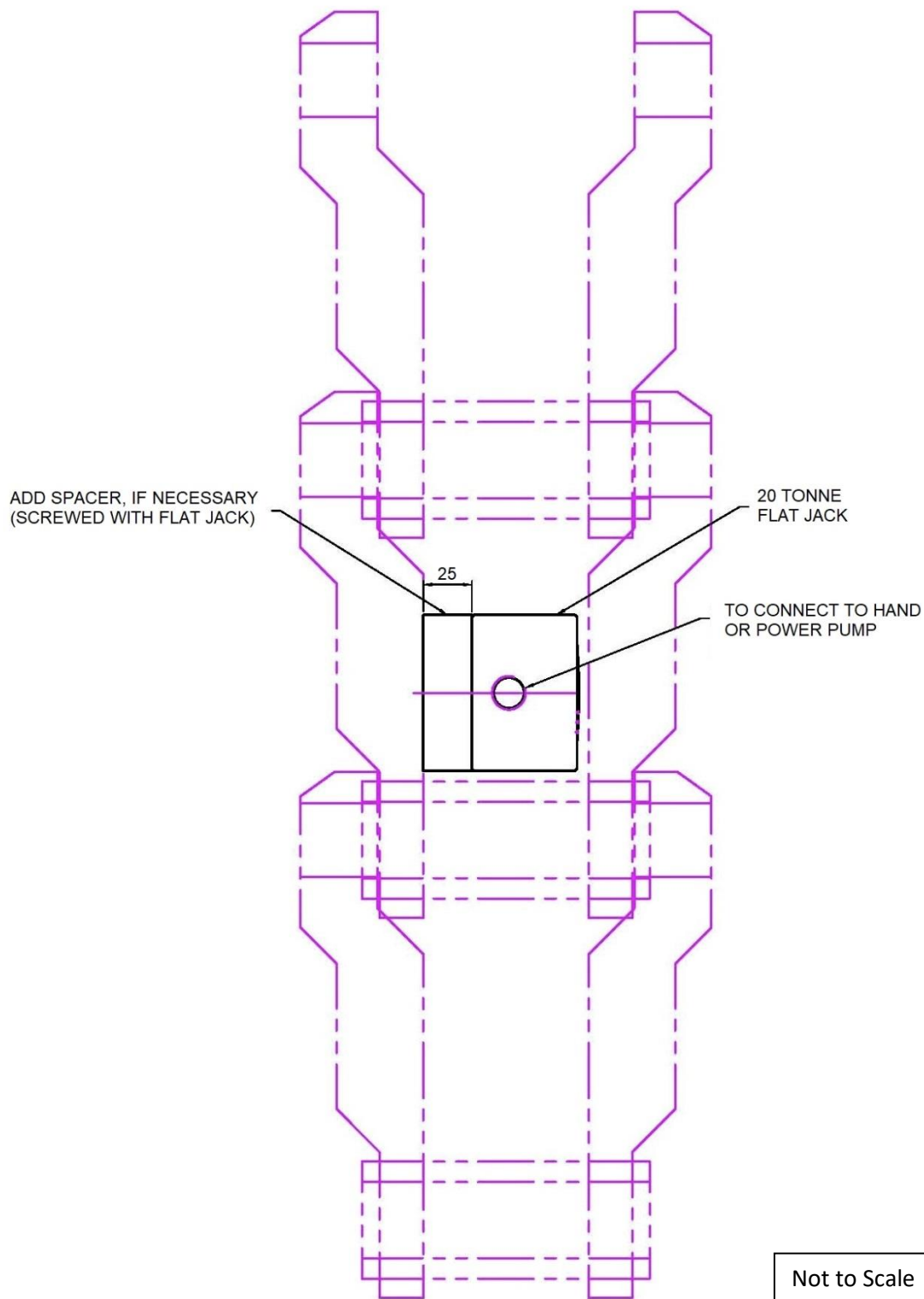


**TOOLING SET-UP FOR TRACK LINK PIN INSTALLATION  
(MASTER PIN INSTALLATION)**

*Figure 12 – TTP-150 Pin Installation Example C*



**5.4 Flat Jack Setup for Bushing Removal**



*Figure 13 – Bushing Removal*

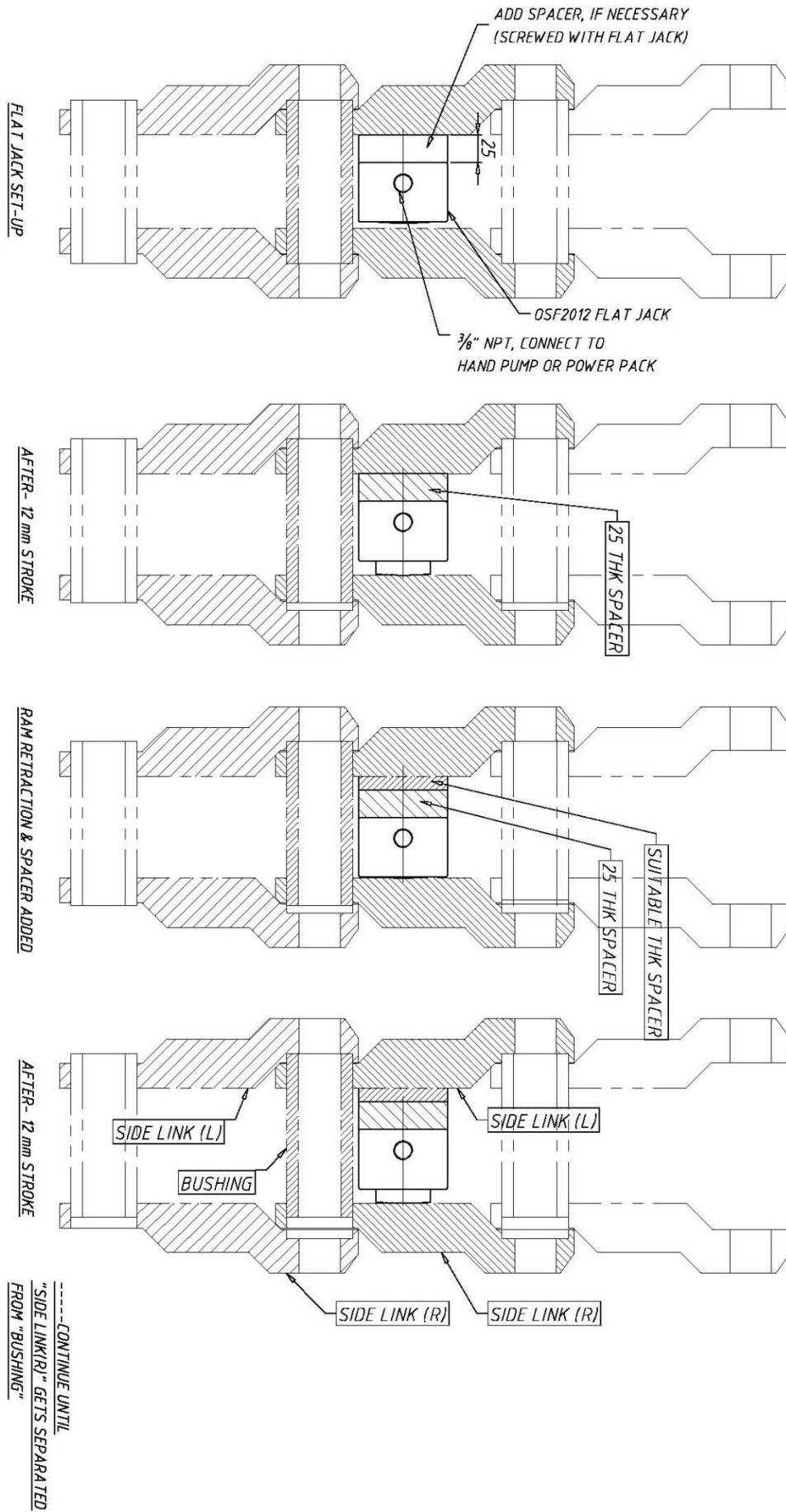


Figure 14 – "Side Link" Bushing Removal

## 6.0 Maintenance



### IMPORTANT:

- Use only good quality hydraulic fluid. **Do NOT** use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerine etc. Use of anything other than good quality hydraulic oil will void warranty and damage the cylinder and application. We recommend Durapac Hydraulic Oil or equivalent
- Equipment must only be serviced by a qualified hydraulic technician. For repair service, contact your local Durapac authorised service centre
- Damage to hydraulic hoses may not be detected during visual inspections. For this reason, Durapac recommends that hydraulic hoses be replaced on a regular basis
- Tighten connections as needed. Use non-hardening pipe thread compound when servicing connections

Dirt, sand, etc. will quickly ruin any hydraulic system. Ensure that couplings are clean and free of foreign matter. After each use, clean couplings and attach dust caps.

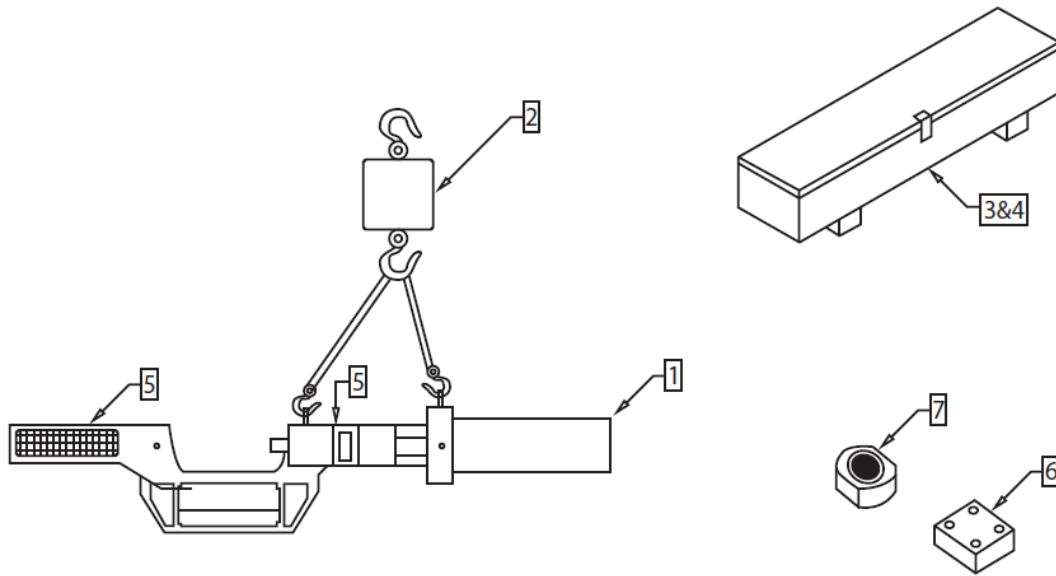
Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem that may require service and maintenance.

- 6.1 Check for loose connections and leaks.
- 6.2 Replace damaged parts immediately.
- 6.3 Do not exceed oil temperature above 60°C.
- 6.4 Keep all hydraulic components clean.
- 6.5 Use dust caps when cylinder is disconnected from the hose. Keep entire cylinder clean to prolong cylinder life.
- 6.6 Wipe thoroughly clean and store cylinders upright (to prevent seal distortion) in a clean, dry environment. Avoid temperature extremes.
- 6.7 Change hydraulic oil in your system as recommended in the pump instruction sheet.
- 6.8 The Pin Pusher should be stored in the box provided. Do not store in areas where damage from environmental factors such as heat, light, excessive moisture, oil, chemicals and their vapours, or other degrading elements may be present.
- 6.9 Do not store damaged equipment or equipment in need of maintenance in the same area as product approved for use

**7.0 Troubleshooting**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>Pin Pusher will not operate</b>	Release valve not fully closed	<ul style="list-style-type: none"> <li>• Close valve firmly</li> </ul>
	No oil or low oil level	<ul style="list-style-type: none"> <li>• Top-up to correct level</li> </ul>
	Air-locked system	<ul style="list-style-type: none"> <li>• Bleed air from system</li> </ul>
	Load is above capacity of system	<ul style="list-style-type: none"> <li>• Use correct equipment</li> </ul>
<b>Erratic Action</b>	Air in system	<ul style="list-style-type: none"> <li>• Bleed air from system</li> </ul>
	Viscosity of oil too high	<ul style="list-style-type: none"> <li>• Change to lower viscosity oil</li> </ul>
	Internal leakage in cylinder	<ul style="list-style-type: none"> <li>• Replace worn seals</li> <li>• Check for excessive contamination or wear</li> </ul>
	Cylinder sticking or binding	<ul style="list-style-type: none"> <li>• Check for dirt, gummy deposits or leaks</li> <li>• Check for misalignment, worn parts or defective seals</li> </ul>
<b>Pin Pusher will not operate smoothly</b>	Oil level low	<ul style="list-style-type: none"> <li>• Top-up to correct level</li> </ul>
	Air in system	<ul style="list-style-type: none"> <li>• Bleed air from system</li> </ul>
	Cylinder sticking or binding	<ul style="list-style-type: none"> <li>• Check for dirt, gummy deposits or leaks</li> <li>• Check for misalignment, worn parts or defective seals</li> </ul>
<b>Pin Pusher advances slowly</b>	Pump not working correctly	<ul style="list-style-type: none"> <li>• Rework pump</li> </ul>
	Leaking seals	<ul style="list-style-type: none"> <li>• Replace seals</li> </ul>
<b>Pin Pusher advances but does not hold load</b>	Pump check valve not working correctly	<ul style="list-style-type: none"> <li>• Clean/replace check valve</li> </ul>
	Cylinder seals are leaking	<ul style="list-style-type: none"> <li>• Replace seals</li> </ul>
	Overload valve leaking or not adjusted correctly	<ul style="list-style-type: none"> <li>• Replace / adjust overload valve</li> </ul>
<b>Pin Pusher leaks oil</b>	Worn or damaged seals	<ul style="list-style-type: none"> <li>• Replace seals</li> </ul>
<b>Pin Pusher will not retract or retracts slowly</b>	Release valve is closed	<ul style="list-style-type: none"> <li>• Open release valve</li> </ul>
	Cylinder damaged internally	<ul style="list-style-type: none"> <li>• Send to a Durapac authorised service centre for repair</li> </ul>
	Reservoir too full	<ul style="list-style-type: none"> <li>• Drain oil to correct level</li> </ul>

**8.0 Parts Breakdown and List**



Item	Description	Qty
1	Pin Pusher Assembly	1
2	Chain Lever Hoist	1
3	Accessories (set)	1
4	Wooden carry case	1
5	Safety guards (set)	1
6	Spacer	2
7	Cylinder 20 Tonne	1
8	Seal kit (not shown)	1

Serial number and model need to be quoted when ordering parts.  
 Repair kits are available on request.