



RenQuip

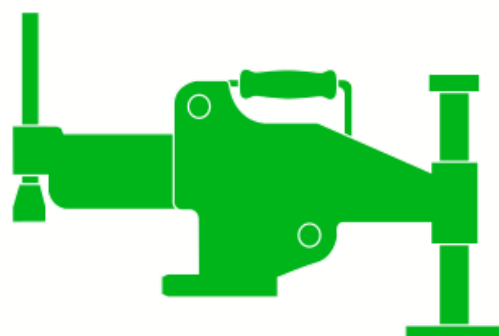


Rhino-24

OPERATION MANUAL

RHINO - 24P

Flange Alignment
Tool



Engineered Energy Equipment

www.renquip.com



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1.0 Introduction

The RenQuip RHINO –24P Hydraulic Flange Alignment Tools are designed to resolve misalignment in bolted flange joints typically used in the construction of Wind Turbine Towers.

The RHINO-24P uses a hydraulic cylinder to apply a force to the diameter of one flange and creates a reaction force on the bolt hole of the opposite flange. These forces push and pull the flanges into Alignment.

A maximum reaction force of 240kN is produced when 10,000psi (700Bar) of pressure is generated in the hydraulic system through the integrated hand pump.

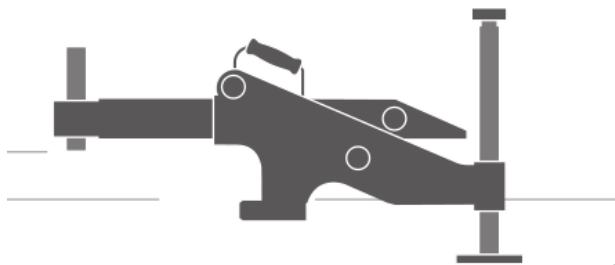
2.0 Safety Information

User Safety



1. The User must be competent in Operating High Pressure Hydraulic Equipment.
2. The User must read and understand the relevant Instruction Manual for the Equipment.
3. The User must wear the correct Personal Protective Equipment.
4. Do not lift or hold pressurised equipment.

Equipment Safety

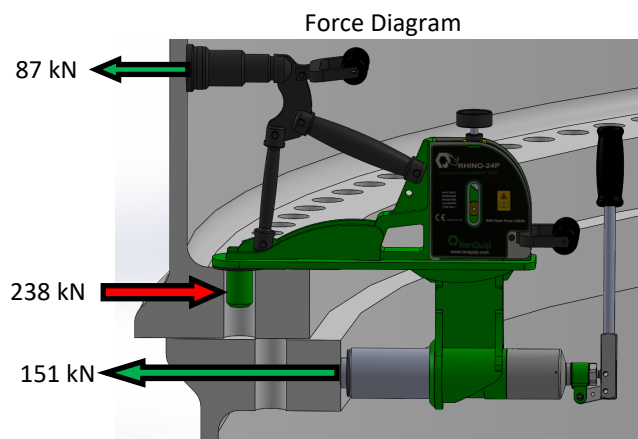


1. Inspect all equipment prior to use for any signs of damage or wear.
2. Ensure all components have a safe working pressure of 10,000psi (700Bar).
3. Do not pressurise equipment over its safe working pressure.
4. Ensure all couplers are fully connected before pressurising the system.
5. Ensure system is fully depressurised before disconnecting couplers.
6. Ensure the working area is free from hazards to the equipment such as sharp objects, heat sources, moving machinery or vehicles.
7. Carry / transport equipment by the handles / cases provided.
8. Store Equipment in a cool dry environment.
9. Ensure the correct oil is used in the hydraulic system and maintenance procedures are followed.

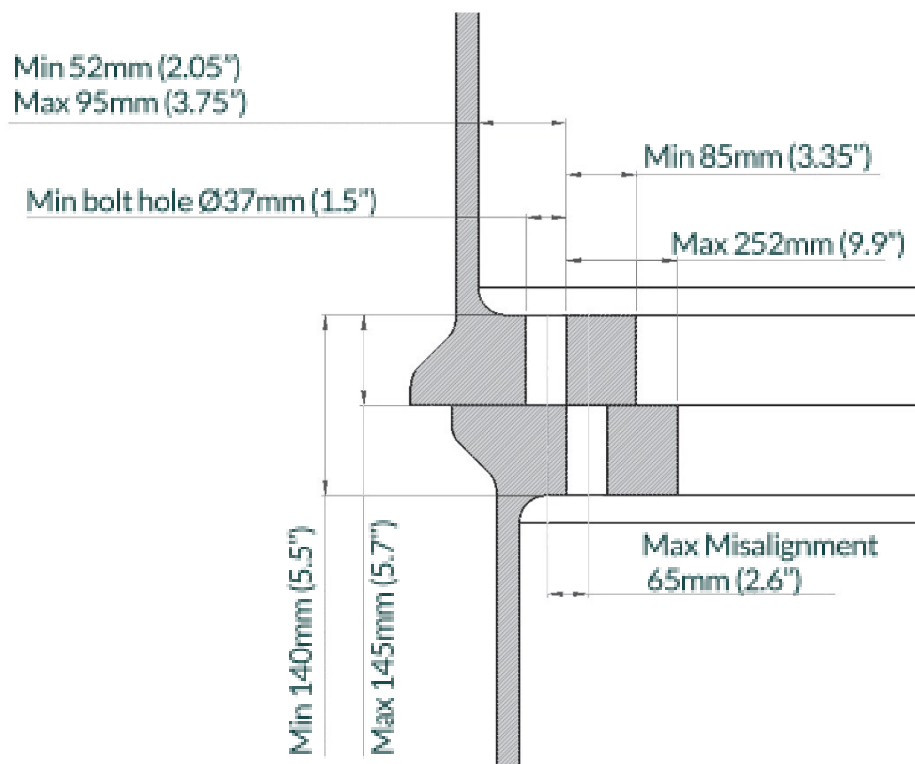
3.0 Technical Specification RHINO-24P

Max Hook Force: 238 Kn

Max working Pressure :10,000psi / 700 Bar



Application Diagram



Kit Weight : 34Kg

Kit Dimensions: 770mm x 570mm x 210mm

Tool Weight : 21Kg

Tool Dimensions: 478mm x 615mm x 124mm

Kit Contents:

1 x RHINO-24P tool

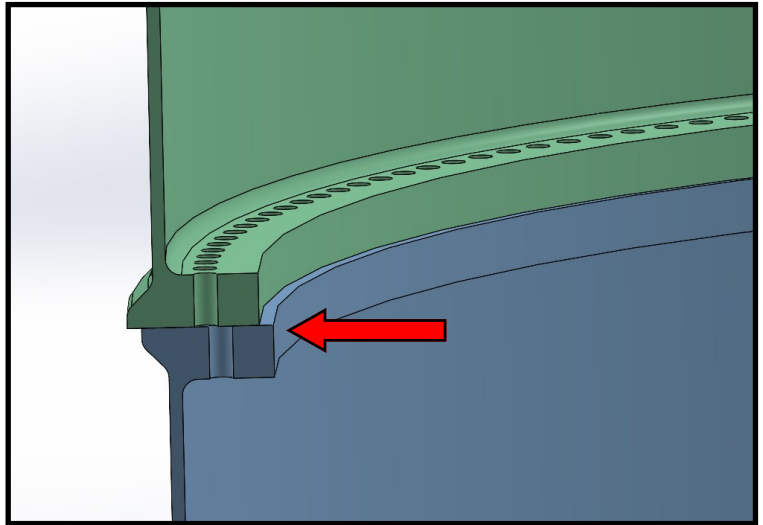
1 x Safety Lanyard

1 x Instruction Manual

1 x Storage and Transport Case

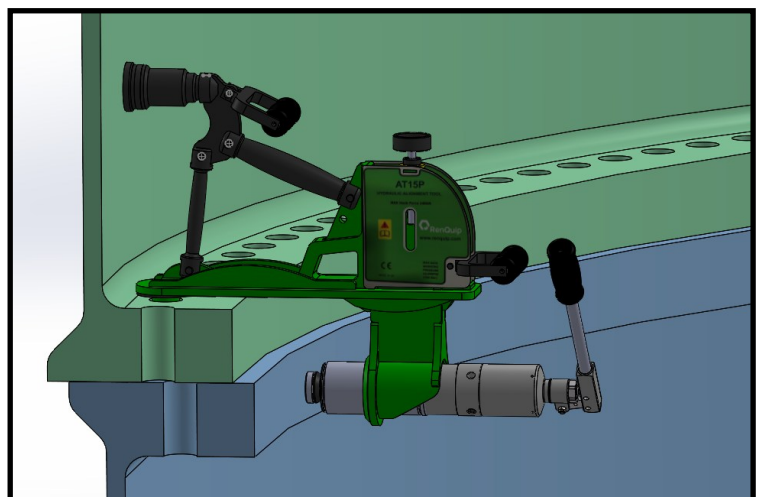
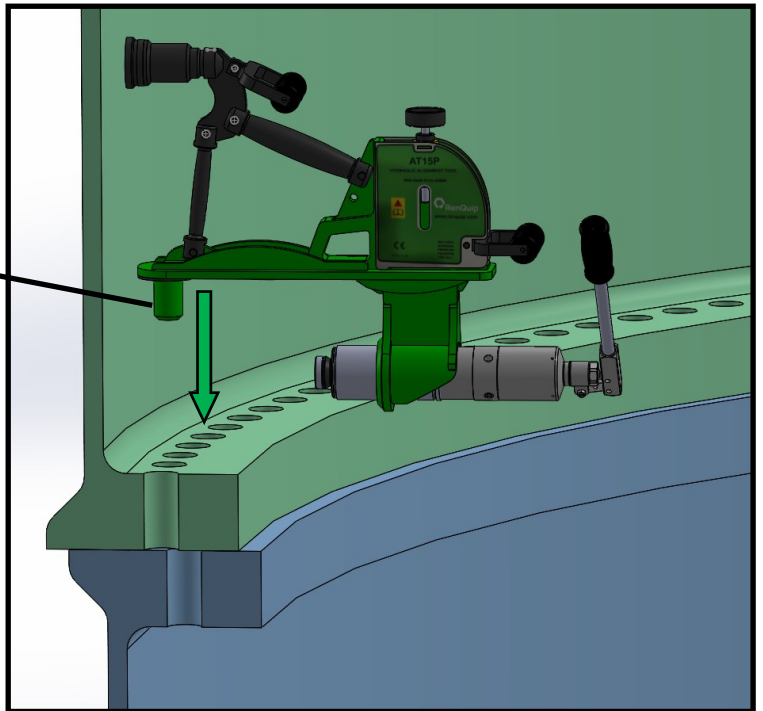
4.0 Operation of the RHINO-24P Alignment Tool

1. Identify the point of maximum axial misalignment.



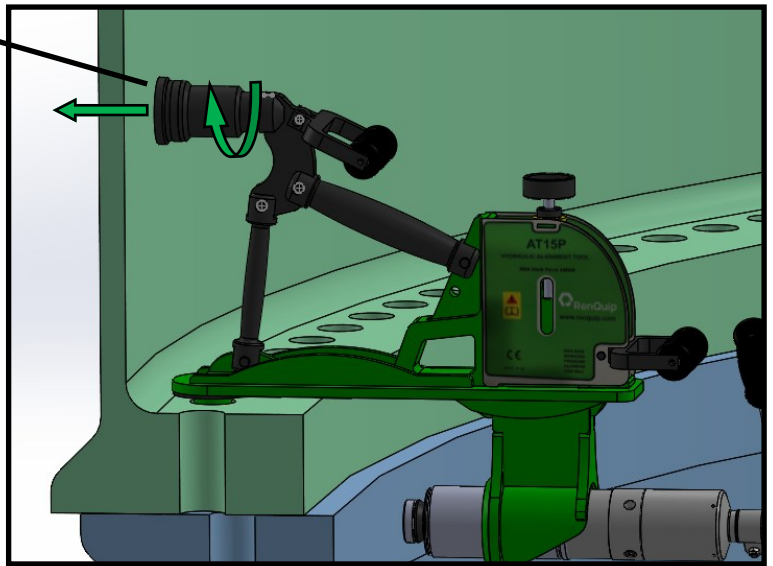
Hook

2. Insert the tool hook into the flange bolt hole at the point of maximum misalignment.



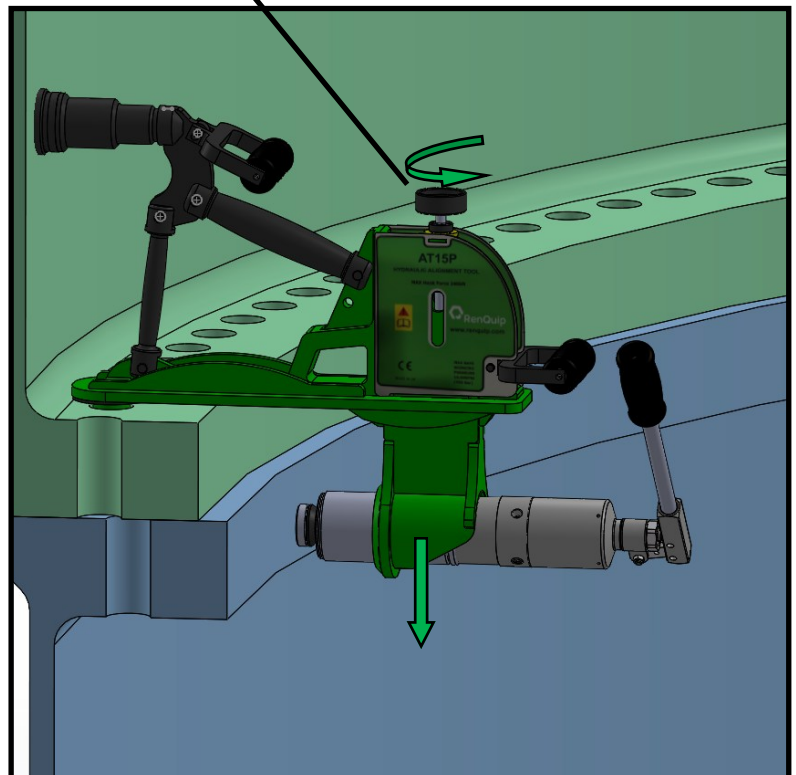
Drop Leg

3. Rotate the drop leg to extend it into contact with the Tower wall.

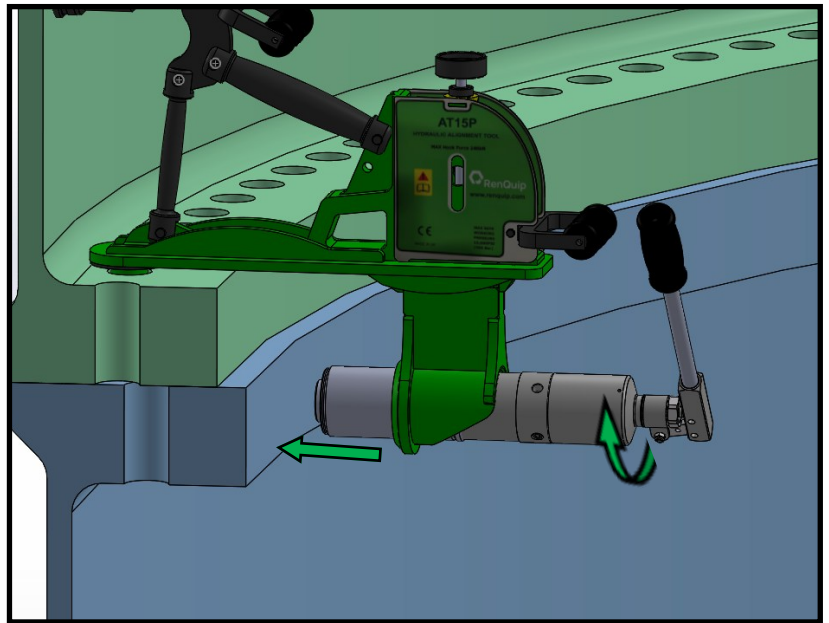


Wing Adjustment Knob

4. . Rotate the wing adjustment knob to lower the wing to ensure the alignment cylinder will make full contact on the lower flange .

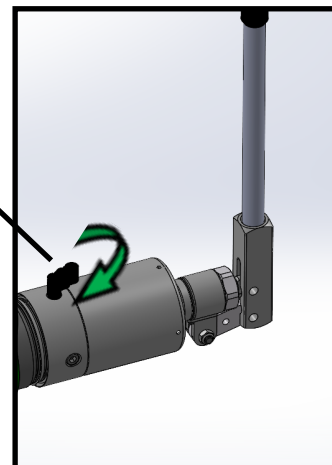


5. Rotate the alignment cylinder to adjust it close to the lower flange.

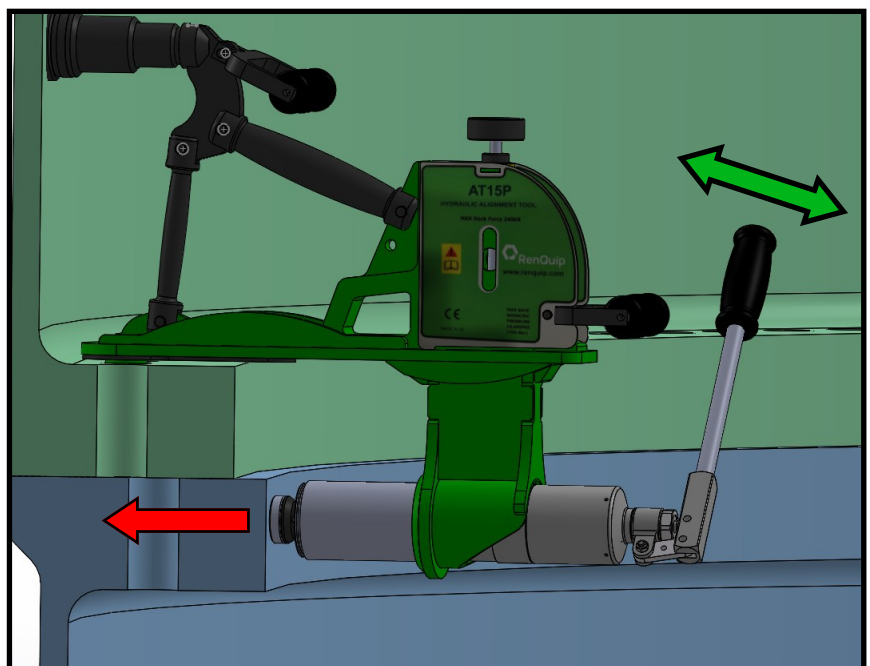


6. Close the pressure release valve on the hydraulic pump .

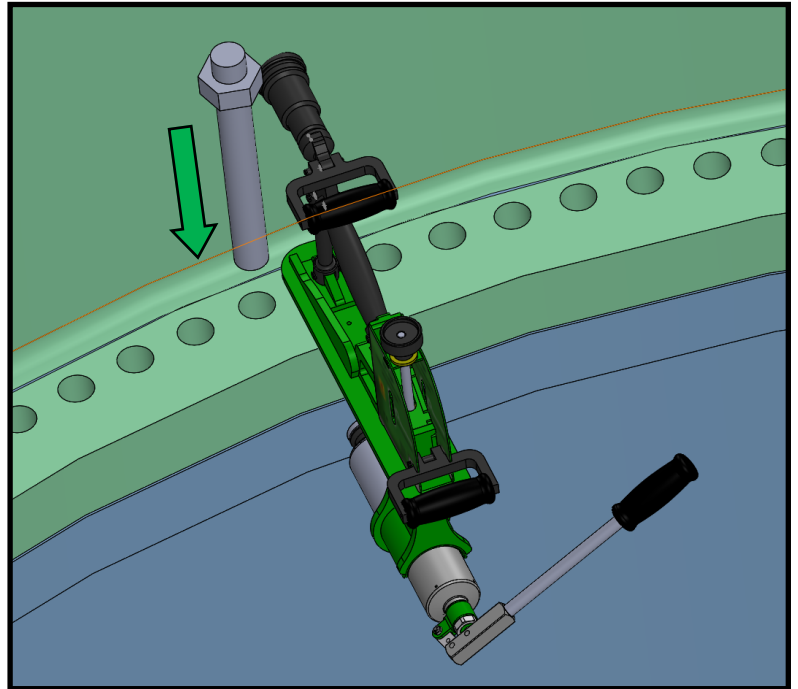
Pressure Release Valve



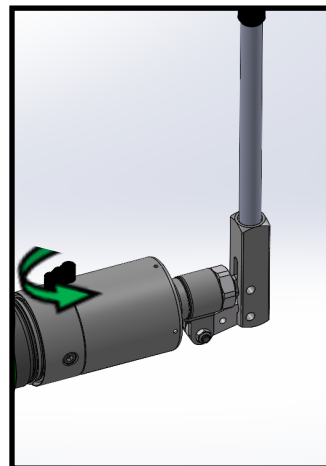
7. Operate the pump handle to actuate the alignment cylinder - This will apply a force to push and pull the flanges into alignment .



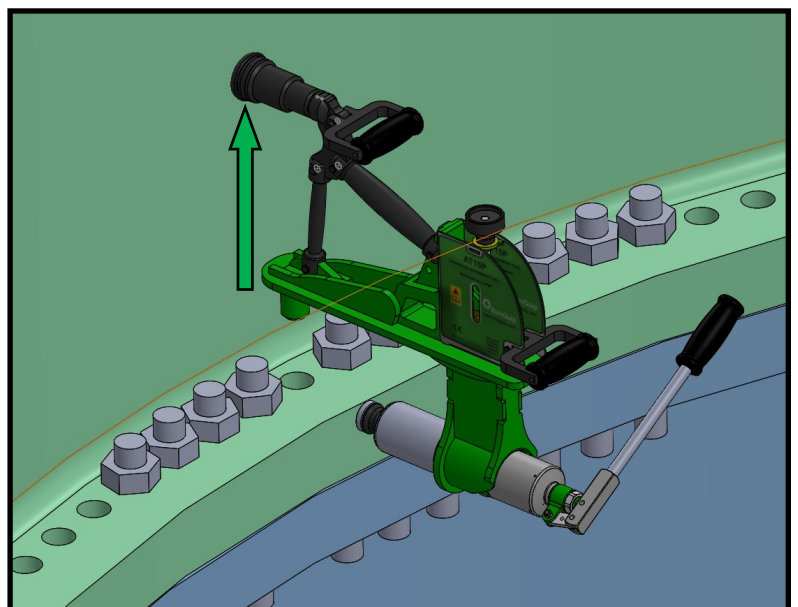
8. When the flanges are aligned the bolts can be inserted into the bolt holes.



9. The release valve can now be opened to release the load from the tool.

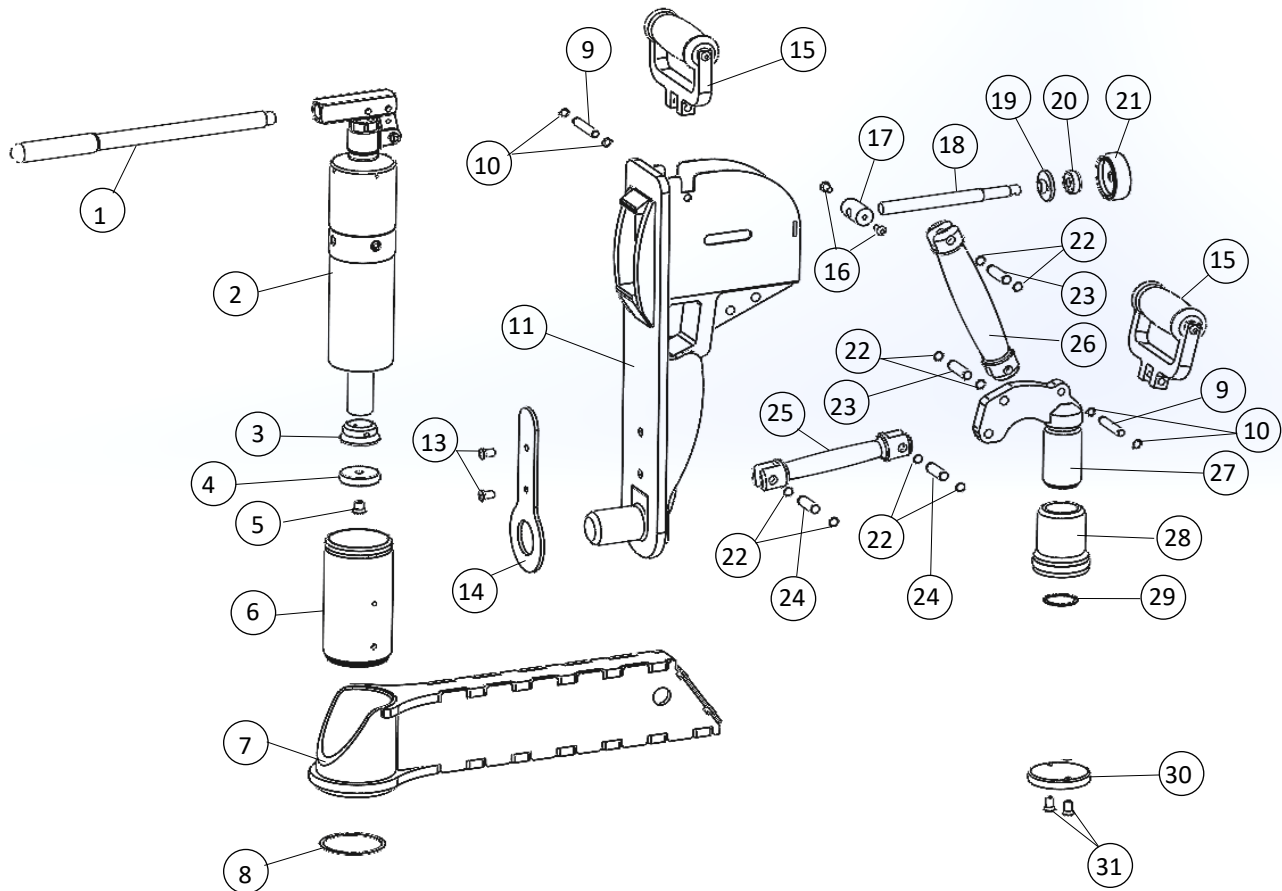


10. The Alignment tool can now be removed and repositioned as necessary to enable all the bolts to be inserted.



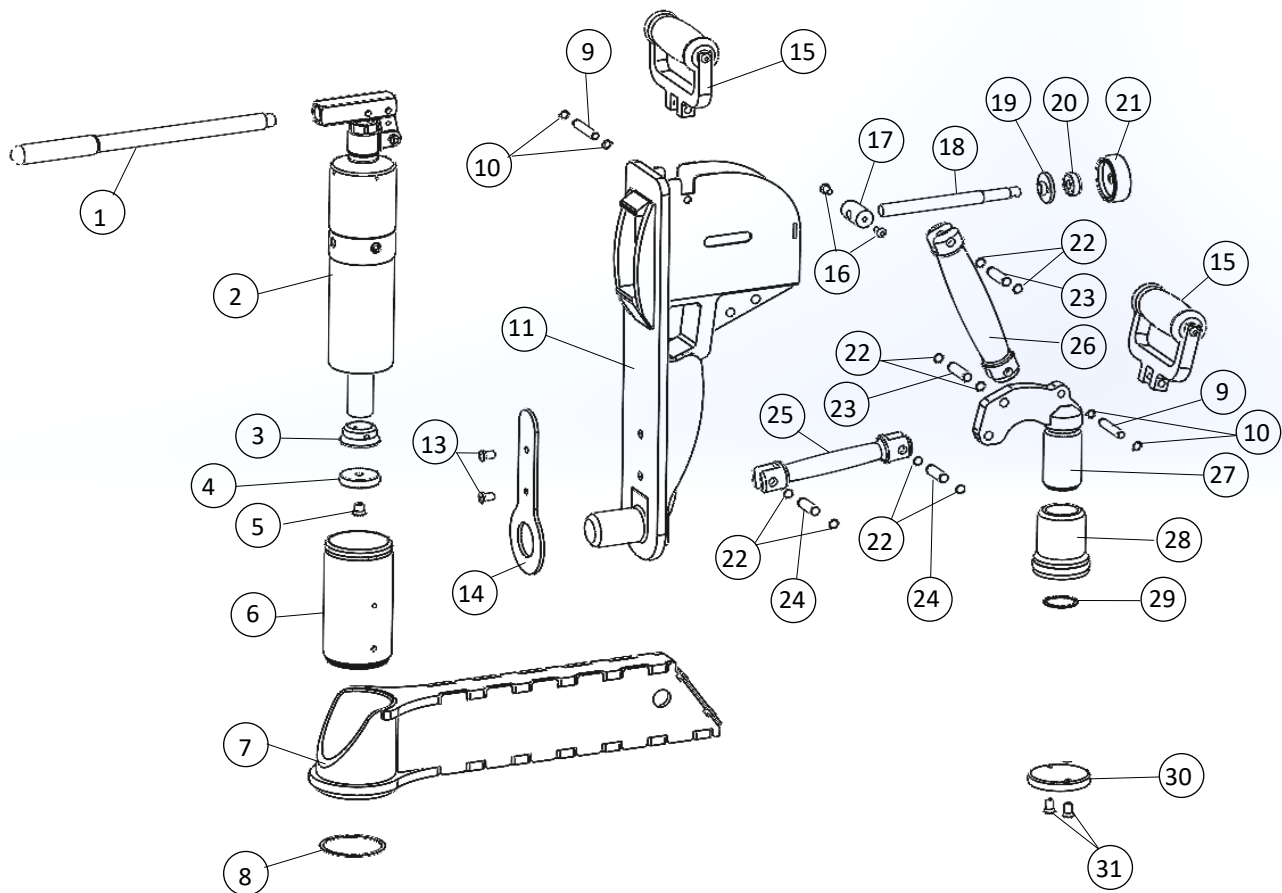
11. The Alignment tool can now be cleaned and returned to its storage case.

5.0 RHINO-24P Parts List



Item No:	Part Number	Description	Qty in tool
1	150410021	Integral Cylinder Pump Handle	1
2	152910001	Integral Cylinder and Pump Unit	1
3	156850011	Cylinder Foot	1
4	156850021	Cylinder Base Pad	1
5	156800061	Cylinder Pad Screw —Part of RHINO-24P Fastner kit	1
6	156800011	Cylinder Sleeve	1
7	156820001	Wing Assembly	1
8	156800061	Sleeve retaining ring —Part of RHINO-24P Fastner kit	1
9	156840021	Handle Pin	2
10	156800061	Handle circlip —Part of RHINO-24P Fastner kit	4
11	N/A	Main Body Assembly	1
13	156800061	Base Pad Screws —Part of RHINO-24P Fastner kit	2
14	156810081	Body Skid Pad	1
15	156840001	Lifting Handle Assembly	2
16	156800061	Retaining Screws —Part of RHINO-24P Fastner kit	2
17	156880011	Wing Union	1

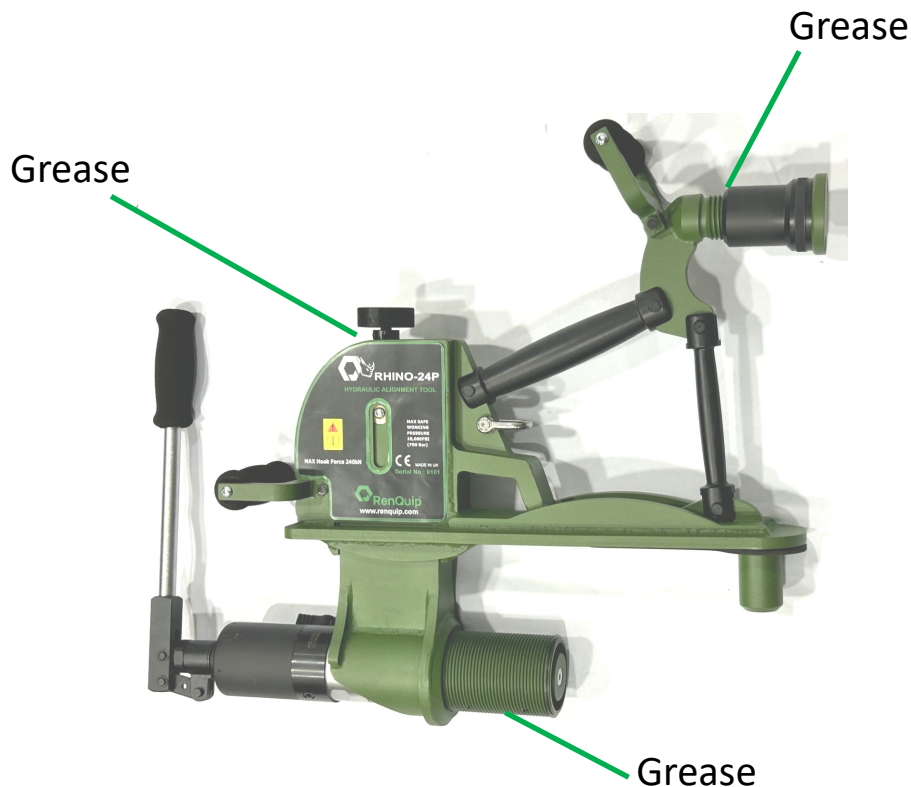
5.0 RHINO-24P Parts List



Item No:	Part Number	Description	Qty in tool
18	156880021	Adjustment Screw	1
19	156880031	Adjustment Bush	1
20	156880041	Adjustment Collar	1
21	180410041	Control Knob	1
22	156800061	Retaining ring—Part of RHINO-24P Fastner kit	8
23	156800031	Compression Pin	2
24	156800021	Tie Pin	2
25	156870011	Tension Strut	1
26	156860011	Compression Strut	1
27	156830001	Reaction Assembly	1
28	156830031	Drop Leg Nut	1
29	156800061	Retaining ring—Part of RHINO-24P Fastner kit	1
30	156830041	Drop Leg Base Pad	1
31	156800061	Pad Screws —Part of RHINO-24P Fastner kit	2

6.0 Maintenance

- Visually Inspect the Tool and pump unit for any damage.
- Replace any worn or damaged parts.
- Clean and degrease surfaces and screw threads.
- Grease tools with a quality High load bearing grease as indicated below.



- Top up hydraulic oil in the pump as required with a high quality 32cSt hydraulic oil.
- Store tools in a cool, dry, and low humidity location.

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