



# RenQuip

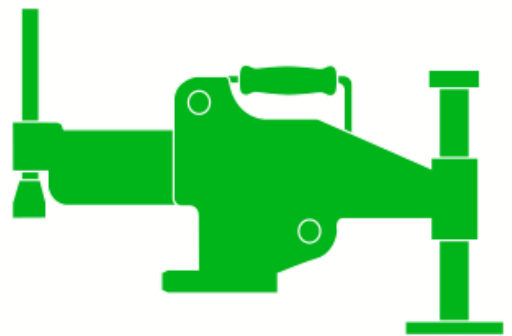


## Rhino-24

### OPERATION MANUAL

RHINO - 24PLR

Flange Alignment  
Tool



Engineered Energy Equipment

[www.renquip.com](http://www.renquip.com)



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## 1.0 Introduction

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

The RHINO-24PLR 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.

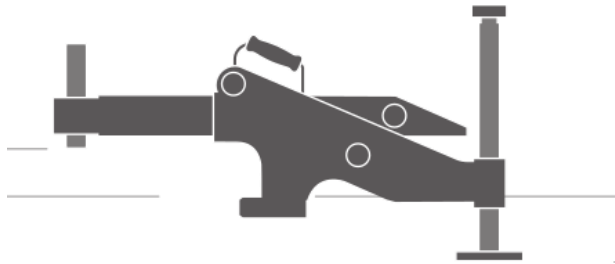
## 2.0 Safety Information

### 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

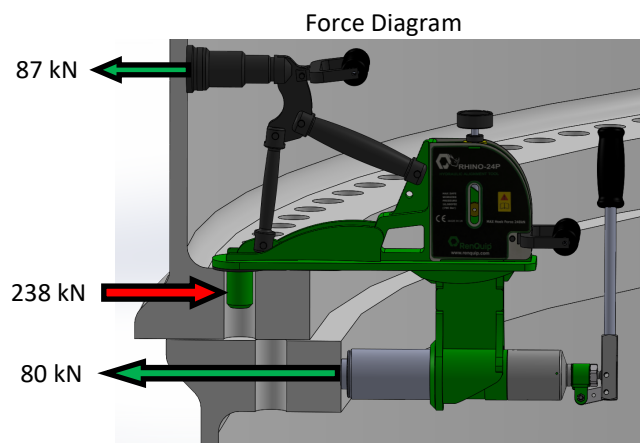


1. Inspect all equipment prior to use for any signs of damage or wear.
2. Ensure all components have a safe working pressure of 5,000psi (350Bar).
3. Do not pressurise equipment over its safe working pressure.
4. Ensure all couplers are fully connected before pressurising the system.
5. Ensure system 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.

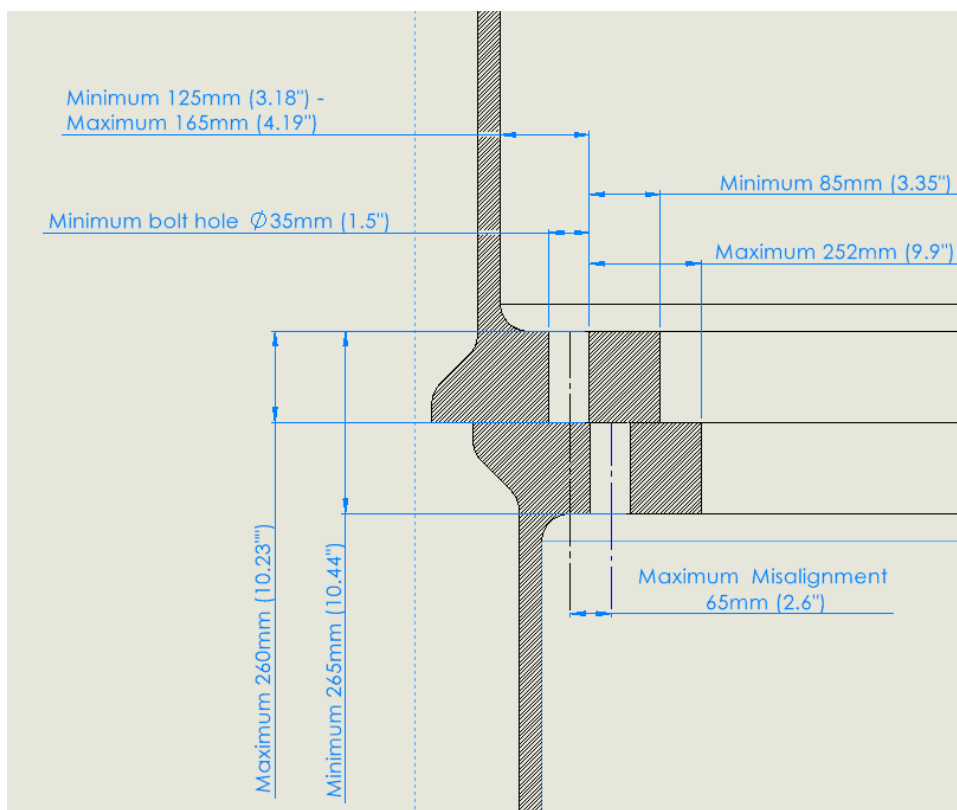
### 3.0 Technical Specification RHINO-24PLR

Max Hook Force: 238 Kn

Max working Pressure :5,000psi / 350 Bar



### Application Diagram



Kit Weight : 38Kg

Kit Dimensions: 700mm x 620mm x 220mm

Tool Weight : 26Kg

Tool Dimensions: 600mm x 690mm x 124mm

#### Kit Contents:

1 x RHINO-24PLR tool

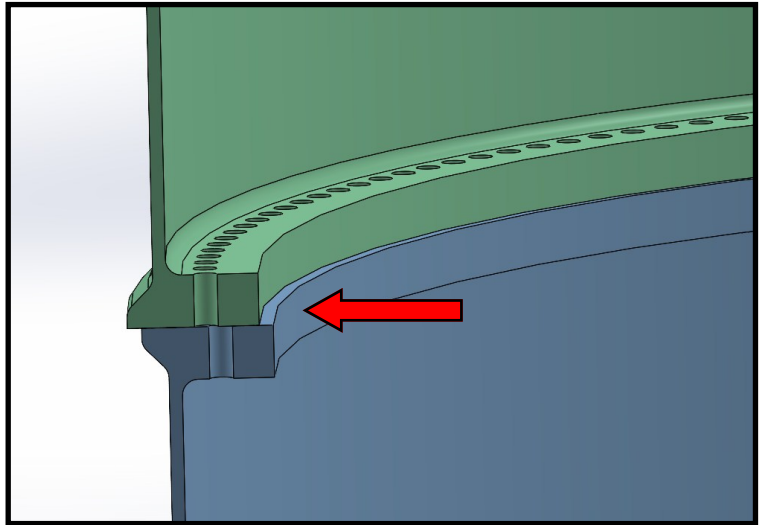
1 x Safety Lanyard

1 x Instruction Manual

1 x Storage and Transport Case

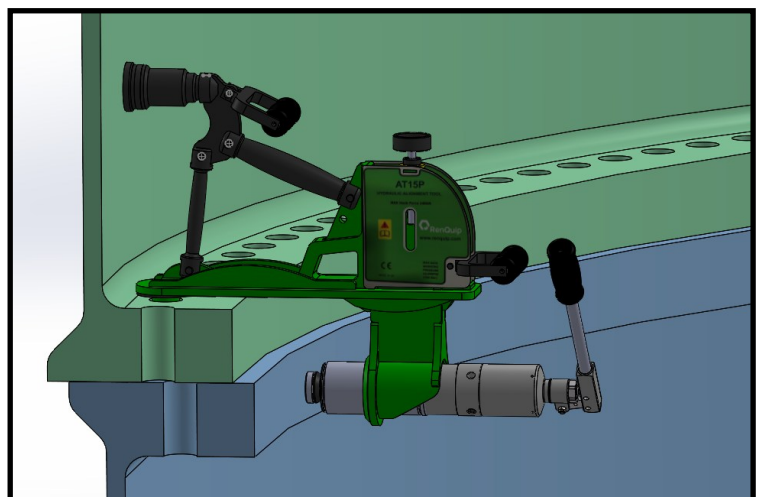
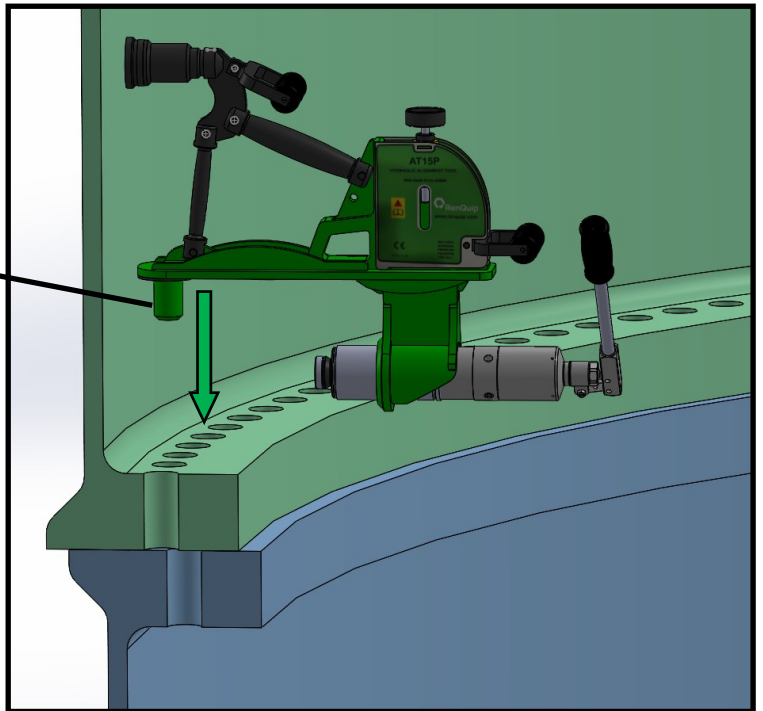
## 4.0 Operation of the RHINO-24PLR Alignment

1. Identify the point of maximum axial misalignment.



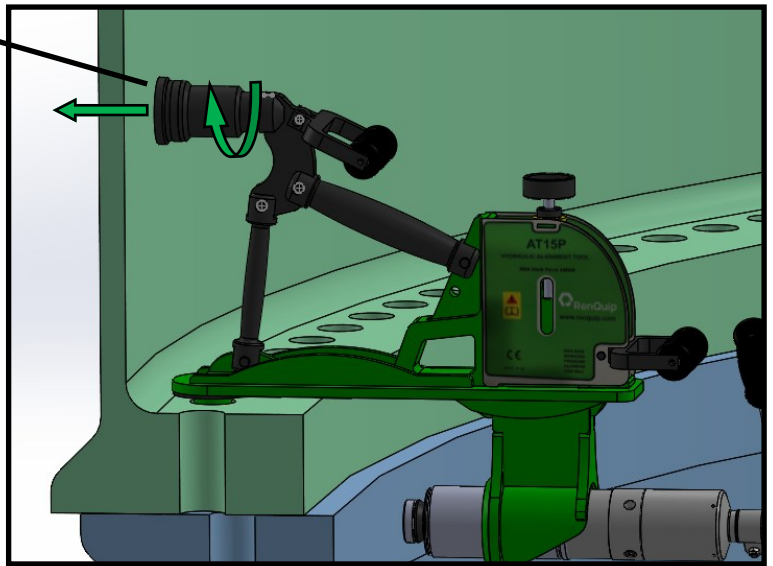
Hook

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



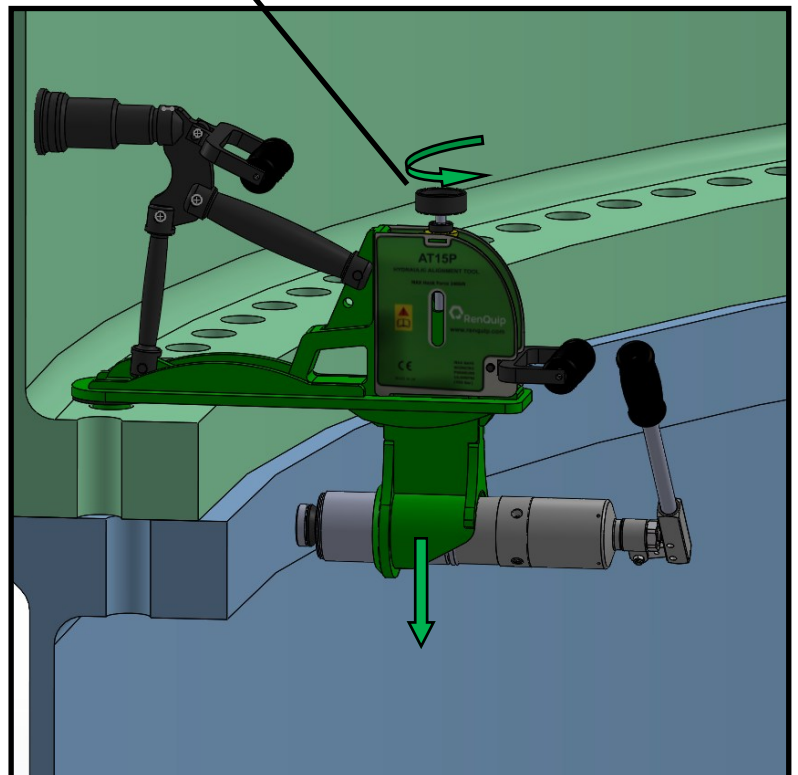
Drop Leg

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

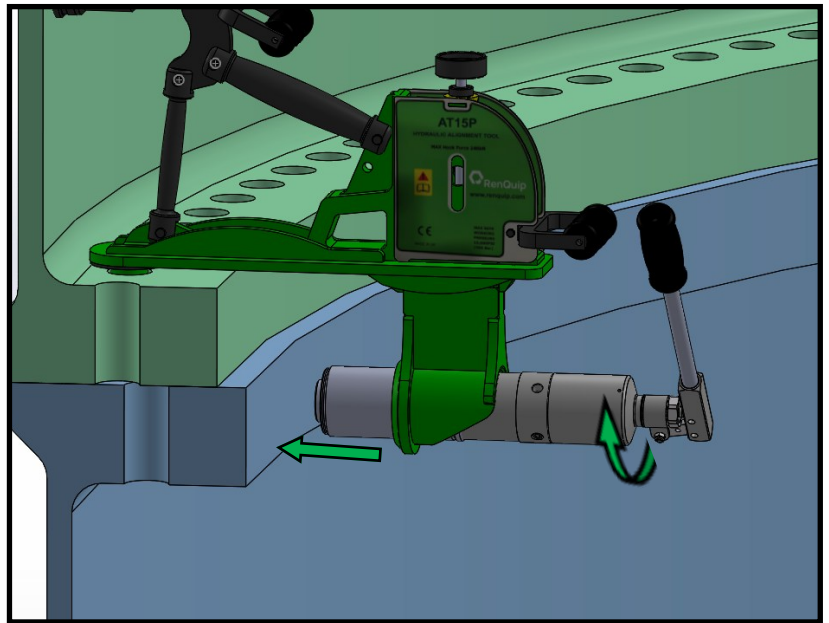


Wing Adjustment Knob

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

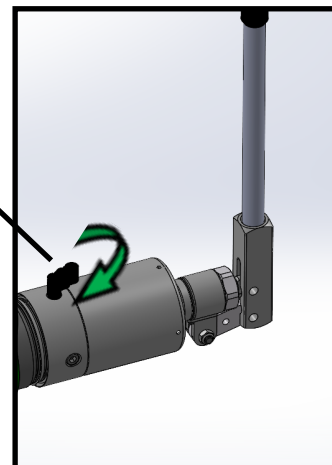


5. Rotate the alignment cylinder to adjust it close to the lower flange.

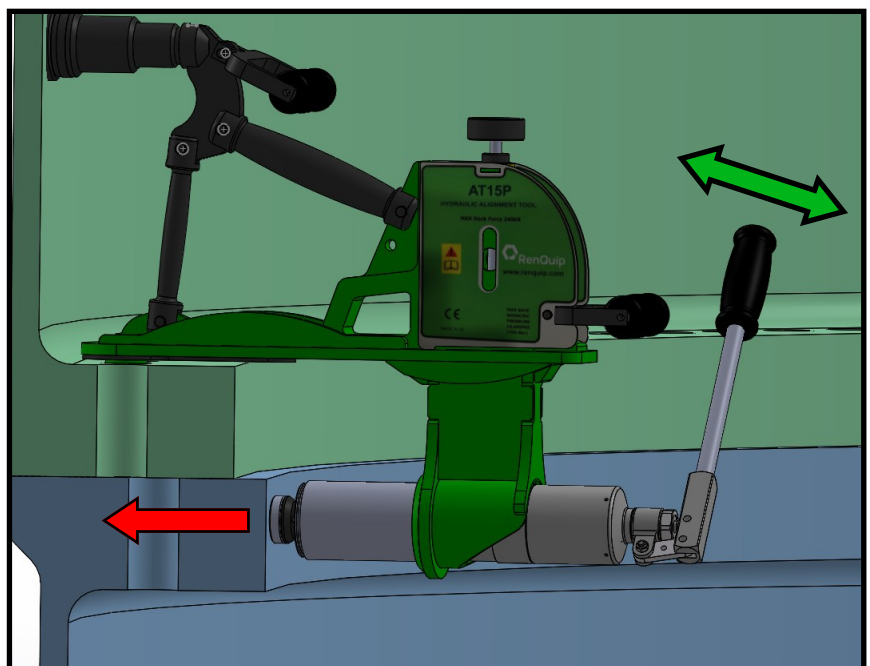


6. Close the pressure release valve on the hydraulic pump .

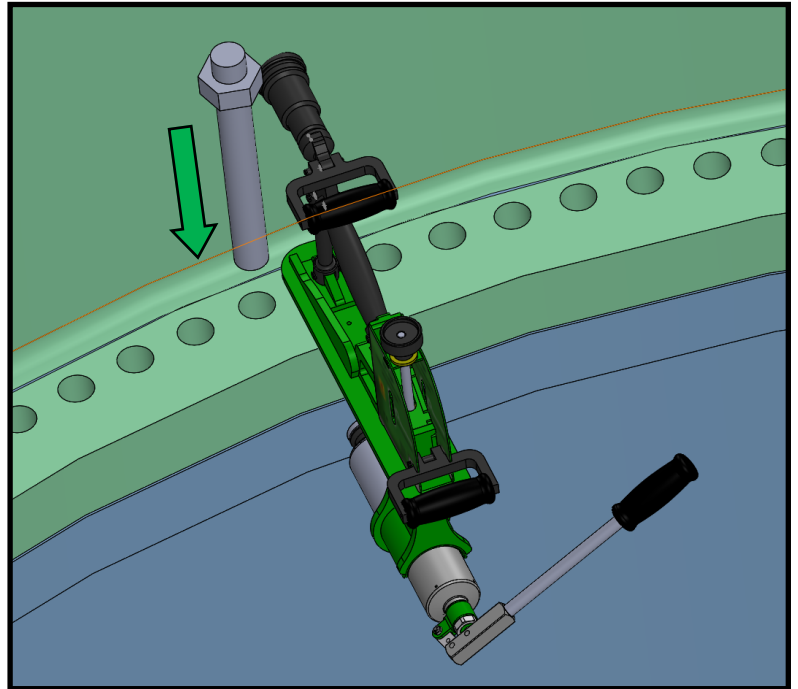
**Pressure Release Valve**



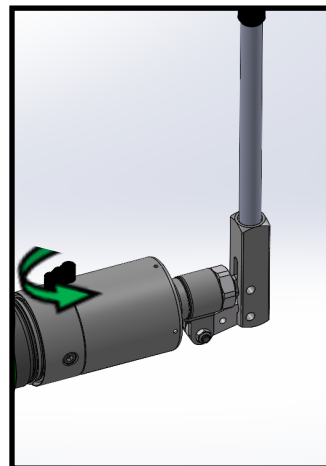
7. Operate the pump handle to actuate the alignment cylinder - This will apply a force to push and pull the flanges into alignment .



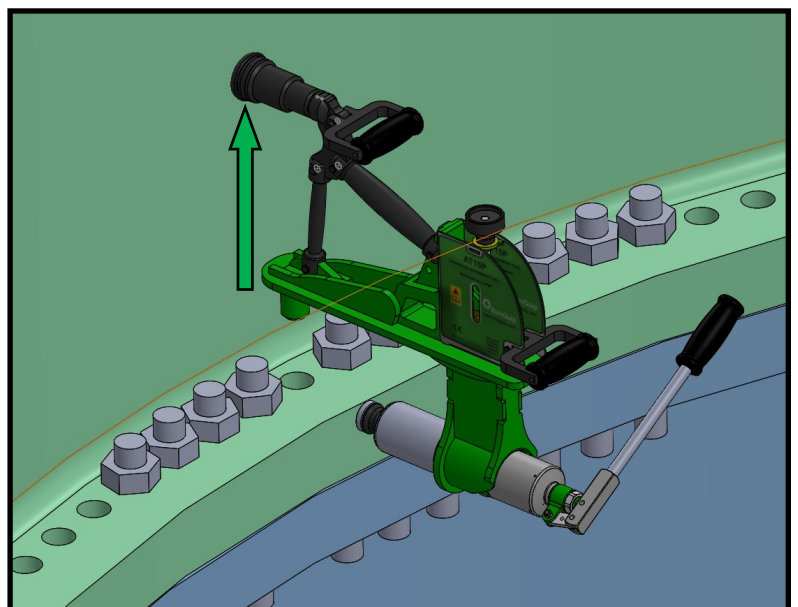
8. When the flanges are aligned the bolts can be inserted into the bolt holes.



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

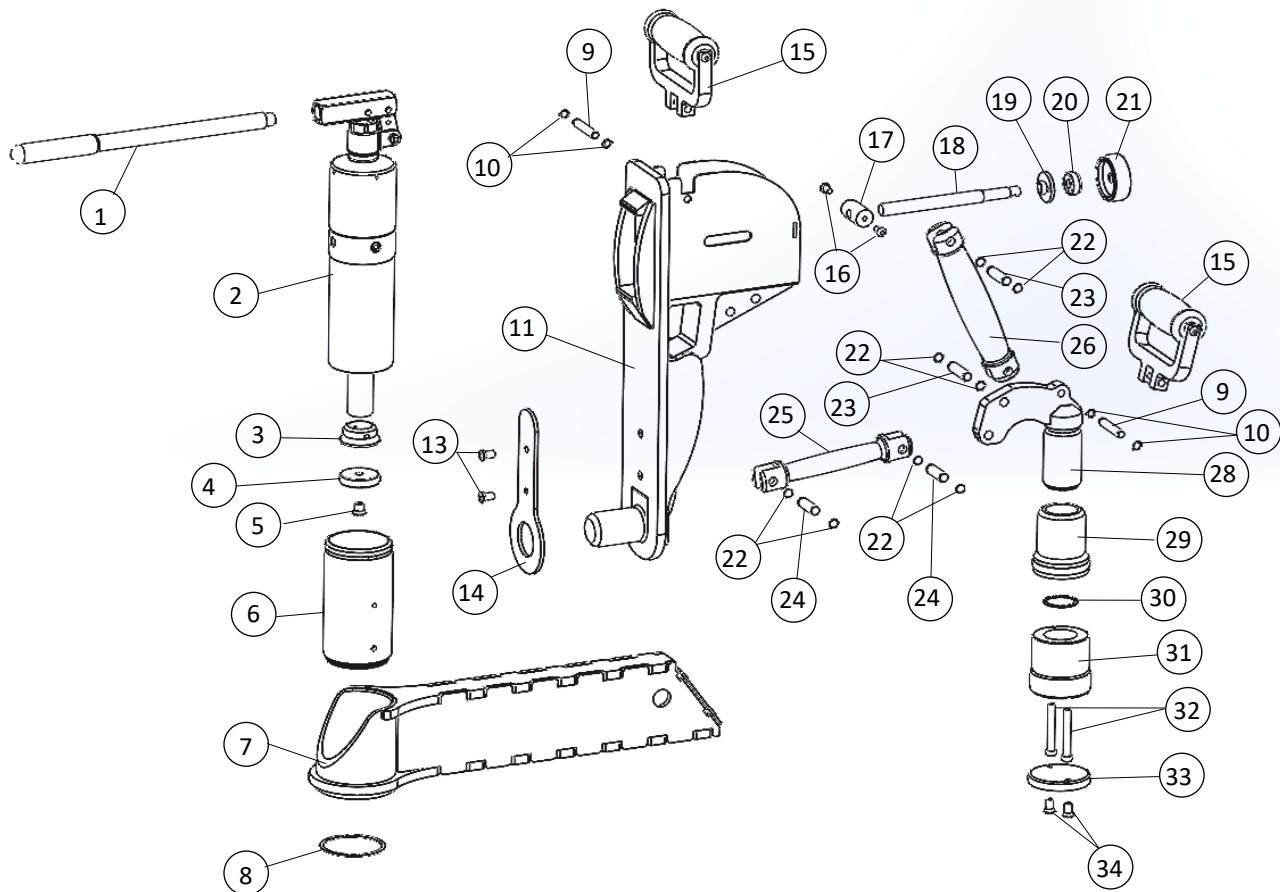


10. The Alignment tool can now be removed and repositioned as necessary to enable all the bolts to be inserted.



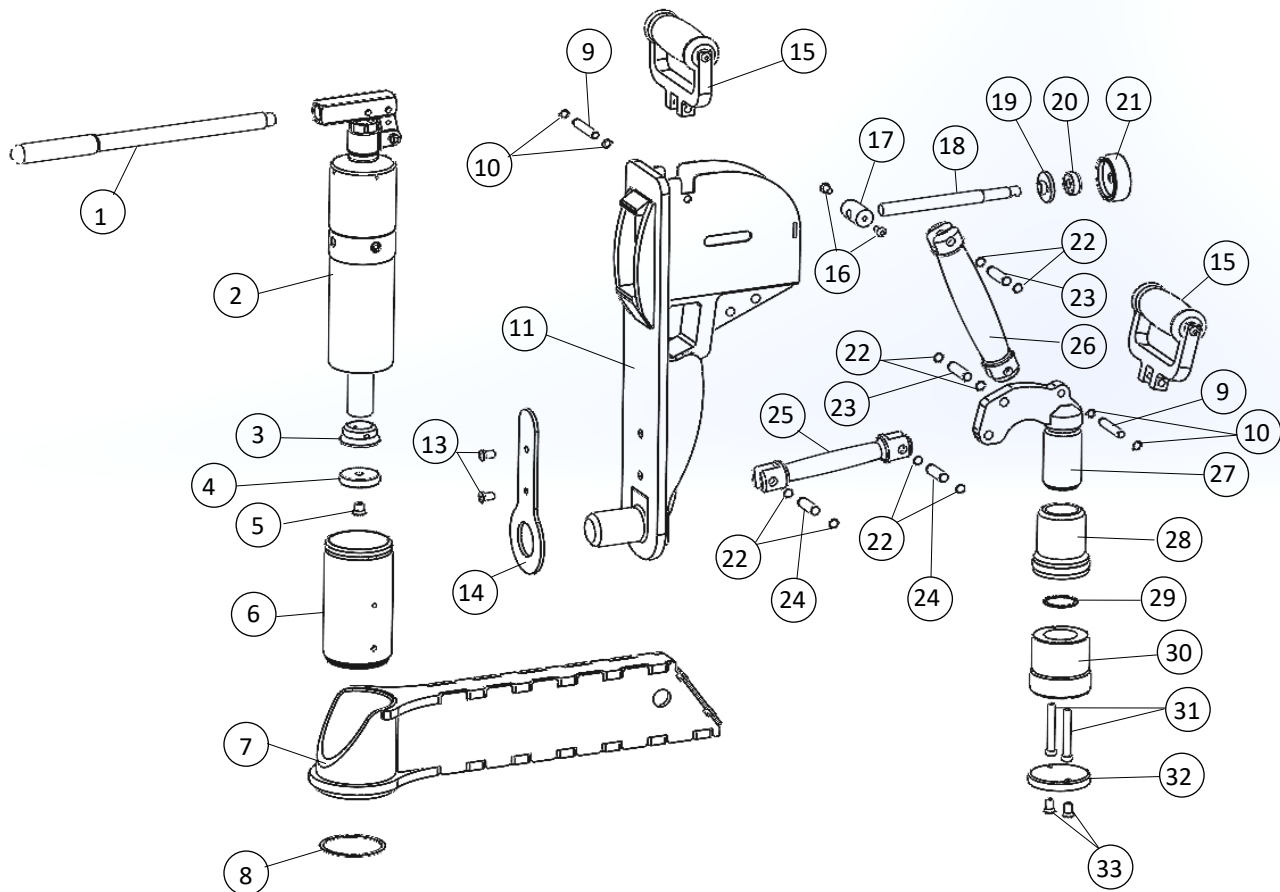
11. The Alignment tool can now be cleaned and returned to its storage case.

## 5.0 RHINO-24PLR 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        | 156920001   | 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           |

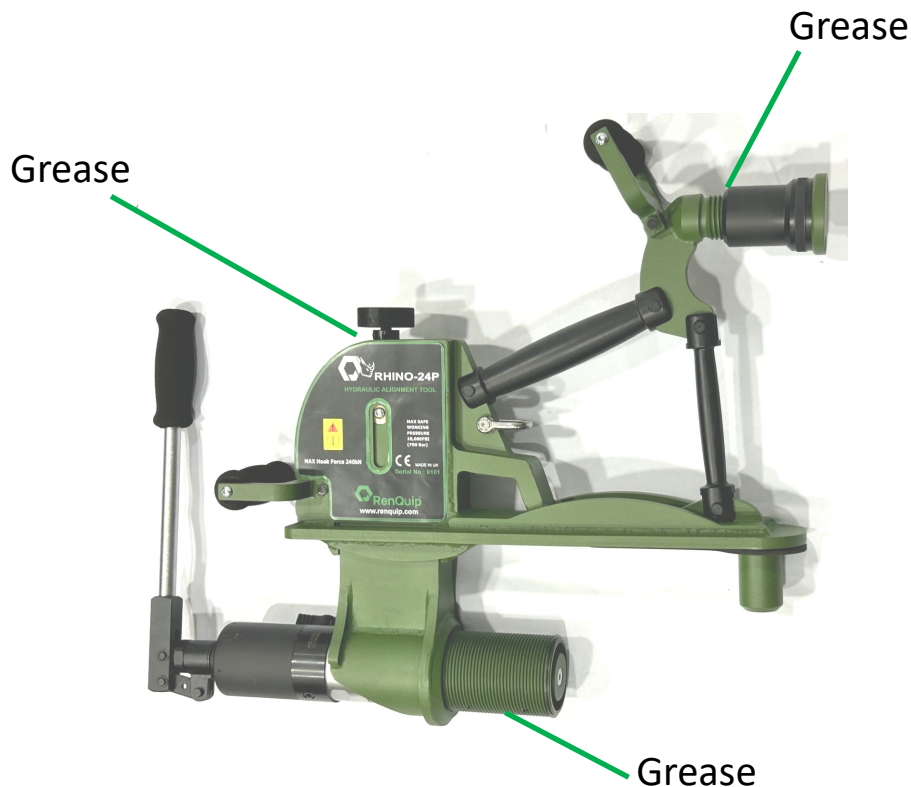
## RHINO-24PLR Parts List



| 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       | 156930051   | Drop Leg Extension                           | 1           |
| 31       | 100200661   | M6 x 55 socket screws                        | 2           |
| 32       | 156830041   | Drop Leg Base Pad                            | 1           |
| 33       | 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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