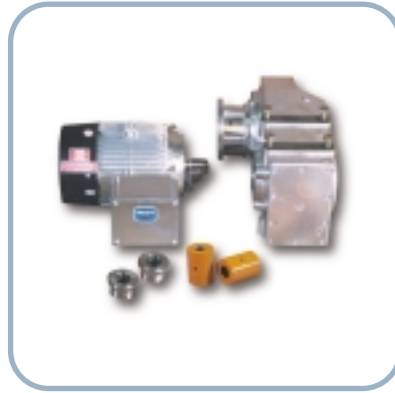




**Positioning Solutions  
for the Aluminium Industry**



Anode Jack



System Components



Anode Jacks

## ANODE JACKS

Using Power Jacks high expertise in screw jack design this range of anode jacks are proven as an ideal heavy duty design for arduous anode environments.

### Features include:

- Upright or inverted screw designs are available
- Translating or rotating screw design
- The jacks can accommodate large overload capacities to cope with side load stresses and frozen pot over loads
- Extended protection pipe top and bottom
- High temperature grease
- Hexagonal drive ends
- Double bearing arrangement for worm shaft
- One piece forged rod end and lifting screw
- High accuracy machined screw thread
- The anode jacks are self-locking for safety
- High temperature bright aluminium paint work
- Available as single motorised jacks or as multiple units in a jacking system

### Optional Items:

- Optional high temperature bellows boot protection for translating rod
- Position feedback device
- Wear monitor with or without feedback device
- Preparation for the connection to an auto-lubrication system
- Customised base mount and/or rod designs are available



Three types of Anode Jack are available:

### ANODE JACKS - STANDARD TYPE

The standard models are available in 110kN (11 Te) and 150kN (15Te) capacities with other ratings up to 2000kN (200Te) available as special designs.

### ANODE JACKS - SWIVEL TYPE

Available in translating and rotating screw format the swivel anode jacks allow for up to 3° movement in the lifting screw or nut in any direction.

### ANODE JACKS - PERFORMANCE

Working closely with the customer Power Jacks can supply special high performance screw jacks, which can improve the yield from Aluminium Smelters. For details consult Power Jacks.



Machine Screw Jacks



Ball Screw Jacks



High Duty Screw Jacks

**SCREW JACKS**

The standard range of screw jacks from Power Jacks are suitable for a wide range of positioning applications. The units are available in machine screw, ball screw and roller screw designs in capacities up to 1000kN as standard and 3500kN as special design.

**Machine Screw Jacks**

Metric range 5kN to 1000kN capacities  
Imperial range 0.25Ton to 100Ton capacities  
Translating and Rotating Screw in Upright and Inverted types  
2 gear ratios and 1 screw lead as standard  
Anti-backlash and anti-rotation (keyed) options  
6 mounting options including trunnion and double clevis  
Stainless steel designs available as standard products

**Ball Screw Jacks**

Metric range 10kN to 500kN capacities  
Imperial range 0.5Ton to 50Ton capacities  
Translating and Rotating Screw in Upright and Inverted types  
2 gear ratios and 2 screw leads as standard  
Low to zero backlash and anti-rotation (keyed) options  
5 mounting options including trunnion and double clevis  
Metric versions include integral safety device as standard

**High Duty Screw Jacks**

50% higher duty than conventional worm gear screw jacks

Metric range 25kN to 200kN capacities  
Translating and Rotating Screw  
3 gear ratios and 2 screw leads as standard  
Anti-backlash and anti-rotation (keyed) options  
6 mounting options including trunnion and double clevis  
Machine Screw, Ball Screw or Roller Screw designs

**LINEAR ACTUATORS**

Power Jacks range of electro-mechanical linear actuators are designed for high precision high duty applications with capacities ratings up to 400kN as standard and 1000kN as special designs. The actuators are industry proven for use in arduous environments that can be required to operate continuously.

**EMA Linear Actuators**

Machine Screw and Ball Screw  
Low load, Medium Duty, High Speed  
Dynamic load ratings up to 10kN  
Linear speeds up to 5500 mm/min  
3 phase AC, 1 phase AC and DC types

**Rolaram Linear Actuators**

Roller Screw for High load, High Duty, High Speed, High Accuracy  
Ball Screw for Medium load, High Duty, High Speed, Medium Accuracy  
Dynamic load ratings up to 400kN  
Linear speeds up to 7000 mm/min  
3 phase AC, 1 phase AC and DC types

EMA Linear Actuators



Rolaram Linear Actuators





Heavy Duty Bevel Gearboxes



Bevel Gearboxes



Motors

#### HEAVY DUTY BEVEL GEARBOXES

For anode jacking systems Power Jacks supply a range of heavy duty bevel gearboxes. Based on the Neeter Drive ISK unit these gearboxes have solid bearings, increased strength drive shafts, high temperature seals, high temperature lubricant.

#### BEVEL GEARBOXES

Power Jacks gearbox division Neeter Drive have over 30 years experience in the gearbox manufacturing business and are the UK's largest spiral bevel gearbox manufacturer. Within the portfolio are 4 gearbox ranges:

- Range-P, Compact monobloc design, Torque ratings up to 40Nm
- Range-N, Ultra compact design, Torque ratings up to 3000Nm
- Range-BA, Universal cubic design, Torque ratings up to 9000Nm
- Range-PowerGear, High performance cubic design, Torque ratings up to 5200Nm

As well as the standard models Neeter Drive has a long history of being able to provide special variants for customer applications.

#### MOTORS

A range of air motors and electric motors can be supplied suitably rated for the primary aluminium industry.

#### ELECTRIC MOTORS

- 3 & 1 phase, 2, 4, 6 & 8 Pole, up to IP66, with or without brake, arduous environment ratings, up to 200kW.

#### AIR MOTORS (Geared)

- High torque reversible motor equipped with a closed exhaust capable of operating under severe environmental conditions.
- Five gear ratios are available from 1:1 to 62.87:1

#### GEARED REDUCERS

Power Jacks offers a wide range of reduction gearboxes for actuator system building whether it is a single motorised actuator or several actuators mechanically linked. The gearboxes are available as motorised units as standard, however the gearbox unit itself can be supplied. Units available include:

- Helical Worm Gearboxes up to 45kW
- Helical Bevel Gearboxes up to 90kW
- In-line Helical Gearboxes up to 90kW
- Parallel Helical Gearboxes up to 45kW
- Worm Gearboxes up to 140kW

#### COUPLINGS AND DRIVE SHAFTS

To complement the system offerings Power Jacks supply an extensive range of couplings and drive shafts, which includes:

- Flexible Jaw Couplings and Drive Shafts
- Steel Geared Couplings and Drive Shafts
- Universal Joint Drive Shafts
- Special Couplings

Gear Reducers



Couplings and Drive Shafts





Below is a list of some of the applications for the aluminium industry where Power Jacks have supplied linear actuator or screw jack based solutions.

- Adjust die loading table
- Adjustment on lifting tongues (Grabs)
- Angle tilt adjustments with double clevis models
- Anode positioning**
- Bundle turnover machine-actuate sheet metal
- Clamping on metal casting machine
- Coil carriage lift
- Die set tables
- Door open / close (horizontal, vertical or angled)
- Extrusion machine - die adjustment.
- Feed rate movement
- Foundry
  - Angle / Tilt with double clevis models
  - Door open / close
  - Manipulators
  - Mould open / close
  - Tilting molten metal vat
- Friction welding - back stop adjustment
- Furnace
  - Charging
  - Angle / Tilt with double clevis models
- Combustion gun adjustment
- Door locks on rolling mills
- Door open / close
- Latch operation
- Lid lifter / positioner
- Lift table
- Vacuum furnace lid lifters
- Grinder - head adjustment
- Guard lifting
- Hood lift
- Latch operation
- Lid lifter / positioner
- Lift tables
- Lifting tongues - Billets and Slabs
- Machine head adjustment
- Manipulators
- Mould open / close
- Oven lifters
- Palletizer adjustment
- Raise / lower coil carriage
- Raise / lower in walking beam
- Raise/lower top frame on scalper machine
- Roll lifts
- Saw blade tension
- Side guide adjustment
- Skewing roll adjustment
- Slitting and shearing
- Special purpose machinery
- Speciality handling equipment
- Stacking devices / machinery
- Strip metal processing - bar / rail centring
- Strip metal processing
  - Flatteners
  - Guide adjusters
  - Levellers
  - Roll forming lines
  - Sheet stackers
  - Slitters
  - Straightening
- Tension adjustment of cables / wire / sheet
- Tilting - molten metal vat
- Unwind stands

## powerjacks solutions in motion



### DESIGN

Power Jacks provide a full design consultancy service for selecting, customising, or designing new products in order to meet application requirements.



### MANUFACTURING

Power Jacks are a screw jack and actuator company first and foremost - linear motion is not just a sideline of our business. This is particularly important for aluminium smelters as we can dedicate all of our resources into the design and manufacturing of systems that will give a lifetime of trouble-free operation.



### QUALITY

Quality is one of the cornerstones of Power Jacks working philosophy demonstrated in our commitment to ISO 9001:2000.



### AVAILABILITY

For existing product designs Power Jacks can offer an optional stocking schedule so that units are available whenever needed.



### SERVICE AND SUPPORT

Power Jacks have a dedicated team of engineers available to help solve each customers' unique application requirements and if required on site assistance can be arranged. Quick 24-hour access to technical documentation, stock profiles, and order progress relating to individual projects is available via a secure area of Power Jacks web site. Consult Power Jacks for details.



The Power Jacks Group is an engineering group focused on providing customers with the best solution for precision linear actuation, power transmission and mechanical jacking. The group brings together Power Jacks, Neeter Drive, Precision Actuation Systems, Youngs Lifting, Duff-Norton and Fortune Engineering Ltd. The engineering history of the group dates from 1883 and the products and services are supplied to customers world-wide. Power Jacks Ltd has been involved in a wide range of positioning ever since the very first commercial primary aluminium smelters were established in the 1940's.

Supplying its products mostly to OEM's around the world in primary metal processing, paper machinery, nuclear engineering, stage lifting and a whole host of other industries the company is one of the most experienced manufacturers of screw jack systems moving loads of anything from a few kilos to 1500 tonnes.

The company has supplied numerous jacking systems (including jacks, bevel gearboxes, speed reducers, shafts, couplings, electric and air motors) to smelters around the world including the UK, US, New Zealand, South Africa and most notably Dubai where 5 of the pot-lines utilise Power Jacks products on the reduction cells.

SCREW JACKS • ACTUATOR SYSTEMS • ELECTRO-MECHANICAL LINEAR ACTUATORS • ROLLERSCREWS • BEVEL GEARBOXES  
MECHANICAL JACKS • RAIL JACKS • HYDRAULIC JACKS • WINCHES • POWER TRANSMISSIONS • ROTARY UNIONS®



CNC Manufacturing

### Power Jacks Limited

Extensive Manufacturing Resources



Precision Design Facilities



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