

# STAR

HYDRAULICS LTD  
SERVO TECHNOLOGY

British manufacturer of accurate and reliable  
Electro-Hydraulic Servo Valves



Incorporating Sapphire  
Technology for the 21st Century



# Company History

Founded in 1983 to provide a cost effective, fast turnaround Service/Repair of Electro-Hydraulic Servovalves.

- Introduced “Sapphire Technology” in 1988 to eliminate “ball glitch” and increase Servovalve life.
- Production of new Servovalves in 1990 with all the benefits of modern materials and machining technology.
- 1992 Originally awarded BSI Quality Management System ISO 9001:2008.
- Appointment of first distributor - Hydraustar France in 1995.
- A further 19 world-wide distributors added in 15 years.
- In 2010 Star’s quality and performance resulted in our valves being used on the SpaceX rocket travelling to the International Space Station.
- 2012 moved to new premises including “State of the Art” machining facilities, Clean Air Assembly and Test, Dedicated Development facilities.
- 2013 Development of 3 Stage Valves.
- 2015 Development of 850 Servovalve.
- 2017 Atex / IS approval for hazardous environments.
- 2018 Upgrade of our BSI Quality Management System to ISO 9001:2015





## Servo valve – Service/Repair Upgrade

With over 30 years' experience Star has built an impressive reputation for a cost effective, fast turnaround service/repair of the following manufacturers servo valves:

- |                 |           |           |             |
|-----------------|-----------|-----------|-------------|
| ▪ Abex          | ▪ E.M.G.  | ▪ M.T.S.  | ▪ Schneider |
| ▪ Atchley       | ▪ Herion  | ▪ Oilgear | ▪ Sopenem   |
| ▪ Bosch Rexroth | ▪ Instron | ▪ Parker  | ▪ T.S.S.    |
| ▪ Dowty         | ▪ Matisa  | ▪ Pegasus | ▪ Ultra     |
| ▪ Dynamic/Dyval | ▪ Moog    | ▪ Plasser | ▪ Vickers   |

... and many more!

## Service - Repair Schedule

- Valve completely dismantled.
- Magnets fully demagnetised.
- Ultrasonically clean and microscopically inspect all components.
- Valve reassembled in clean air conditions.
- Valves tested in accordance with International Standard: ISO 10770-1.
- Flow Plot and Technical data supplied with every valve.
- Full warranty on all repairs.

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### Take it from our customers...

*"I approached Star because I needed some servo valves reconditioned quickly. Star made the process easy, the great customer service, price and delivery time made the experience of dealing with Star a pleasure. I would certainly recommend Star to anyone who needs their servo valves serviced or repaired."*

**Scania, Anders Brunnstrom**

# Products

## Benefits and Features

### “Sapphire Technology” ball in slot design

- Incorporated into Star designs since 1988
- Many billions of cycles per service life
- Increased spool life due to spool rotation
- Ultra low coefficient of friction sapphire to steel
- Feedback mechanism unhindered by spool rotation.
- Extended warranties available

### Sapphire flow

- Ensuring first stage stability
- Precisely matched flow properties
- Long life in extreme environments

### Custom spool lap & bushing port geometries

- Zero overlap
- Overlap (closed centre)
- Underlap (open centre)
- Dual gain
- Asymmetric gain

### Special connectors

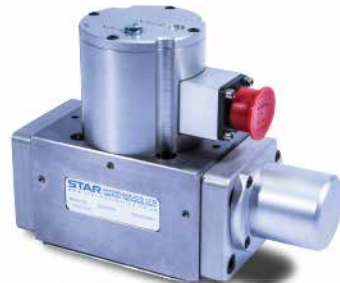
- MIL-C-5015
- MIL-DTL-38999
- Conduit style male/female
- Hermetic

### Safety

- Intrinsic safety
- Class, Div & Zone coverage
- Mechanical failsafe
- Double & triple coil redundancy

### Sealing materials

- Nitrile
- Fluorocarbon (Viton)
- Ethylene-Propylene
- Fluorosilicone



# Facilities

## Valve Assembly

This is a key function where very experienced staff assemble both new and repaired valves in a clean environment.



## Valve Testing Centre

Dedicated Test Room with Performance Qualification Test Rigs. Fluid cleanliness is better than ISO4406-1999 Code 12/10/8 – SAE AS4059 class 2



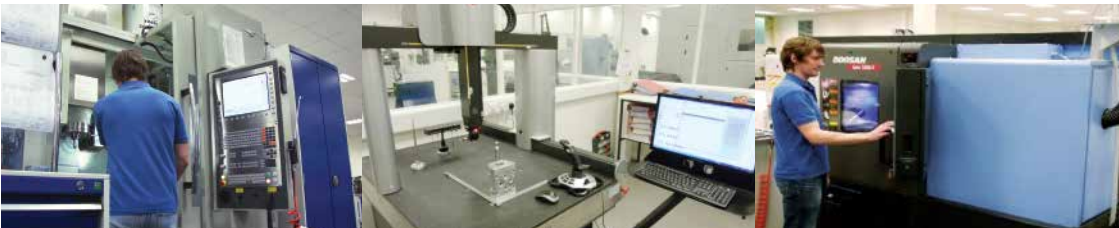
## Total Manufacturing Facility



Studer Grinding

Charmilles Technologies  
Roboform EDM

Sunnen Honing and Lapping



4 Axis Bridgeport CNC  
Machining Centre

CMM Machine

4 Axis Doosan CNC Lathe

With "State of the Art" Machining Facility Star Hydraulics are pleased to offer close tolerance machining services.

# International Distribution & Service Partner Network\*

Star Hydraulics Ltd have official distributors in the following countries; countries marked with an asterisk\* are Star Hydraulics approved service, repair and upgrade providers.

Australia \*

Brazil \*

Canada \*

China

Egypt

France \*

Germany \*

India \*

Italy

Japan \*

Malaysia

Mexico \*

Norway

Poland

Russia

Scandinavia

Serbia

South Africa

South Korea \*

Spain / Portugal \*

Sweden

Switzerland

Turkey

USA \*



For the complete list of our global distributors  
and their contact details please visit  
[www.star-hydraulics.co.uk](http://www.star-hydraulics.co.uk)



# Industries

## Aerospace Testing

Fatigue, Structure, Turbine Blade, Undercarriage, Propeller, Helicopter Body & Blade.

## Automotive Testing

Fatigue, Springs, Steering components, Shock absorbers, Tow-bar, Tyres, Seats, Engine.

## Flight Simulators

Civil, Military, Leisure.

## Motorsport

F1, Fatigue testing, Engine Dynamometers, Carbon fibre testing.

## Plastics

Injection moulding, Parison control in Blow Moulding, Tensile testing.

## Power Generation

Fossil, Gas, Nuclear, Turbine speed control, Steam control valves.

## Rail

Ballast Tamper, Stone Blowers.

## Rolling Mills

Steel, Aluminium, Copper, Paper.

## ROV's

(Remotely Operated Vehicles) Subsea Trenching, Submerged Mining and Marine Renewables.

## Sawmills

Timber sizing, Production of Composite Timbers.

## Seismic

Vibration control of Seismic Waves for Oil/Gas Exploration



# Success Stories

## Drax Power Station

Drax Power Station located near Selby in North Yorkshire is the largest coal fired power station in Western Europe producing 4,000 MW of power from 6 turbines. The power output equates to 9% of the total UK usage.

Originally built next to the selby coal field to take advantage of a plentiful coal supply.

The turbines are now slowly being changed to run on more environmentally friendly wood pellets imported from the USA.

In 2004 Drax were encountering a problem getting the older Pegasus Valves repaired, which are crucial to control the steam generator.

Consequently these valves have all been changed to Star 456-0011 units.

Even though the valves are running on Castrol anvol PE46 HR fire resistant fluid in a hostile environment, they have never had a Star servo valve fail.

- **Star 456-0011 units replacing obsolete Pegasus valves**







## Steel Mill

The largest manufacturer of steel products in North America had been using a Rexroth 4WSE3EE16-13/200B8315Z9EMV 3-stage servo valve on its wrapping roll process, a part of the hot mill coiler.

They had been sending them in for repair and this turned out to be a rather expensive option. Our Star Hydraulics Ltd authorized distributor in the USA, K+S Services Inc. approached them about giving a Star valve a try and the Star 897E0003 valve was proposed.

This Star valve was built to be a drop-in replacement for the Rexroth valve they had previously been using. K+S engineered a conversion manifold as the Star port and bolt patterns needed to match up with the Rexroth. The valve has performed flawlessly since its installation in August 2015 and the customer has since purchased many more Star valves, as the Star valves not only provided a significant initial cost saving, but have also reduced down time to zero.

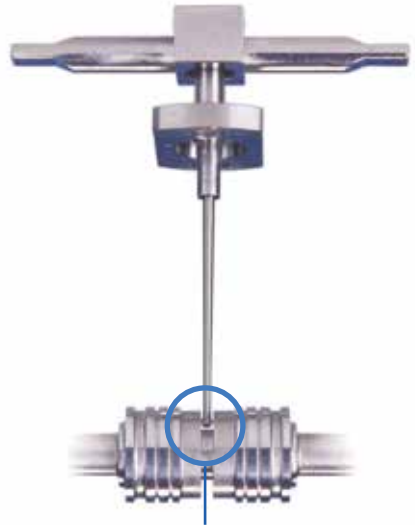
- **Zero down time**
- **Cost savings**
- **Repeat purchases**
- **Customised conversion manifold**

**Visit our website  
for a success story  
in your sector!**

# Have a Moog? Replace it with a STAR!

Star Hydraulics design and manufacture high quality electro-hydraulic servo valves and associated equipment, which are used in a wide variety of market sectors. The key to the success of the company is the many years of servo engineering development which enable our customers to gain consistent operational life capacity. With Star's Sapphire Technology we are undertaking upgrades of simulator, industrial, aerospace and military applications around the world. We see this as a key development for the improvement of operational life for this type of equipment and provide many drop-in replacements in these key sectors.

| MOOG | STAR         | MOOG | STAR  |
|------|--------------|------|-------|
| E030 | 200          | G761 | 558   |
| 776  | 454          | 62   | 650   |
| 77-1 |              | 631  | 1650  |
| 77-2 | 455          | 72   | 890   |
| 772  |              |      | 892   |
| 77-5 | 456          | 728  | 897   |
| 773  |              |      | 990-1 |
| E061 | 500HP<br>550 | D661 | 990-3 |
| 62   |              |      | 1100  |
| 73   |              | D664 |       |
| 76   |              |      |       |
| 760  |              |      |       |
| 769  |              |      |       |



**Star Hydraulics Sapphire  
Technology**

## Take it from our customers...

*"We approached Star Hydraulics for the valve for our dynamic bench top test machine as their products are always of a very high standard matched only by their expertise and customer service. The service and quality from Star Hydraulics enables us to support our customers in the first instance with supplying high quality bespoke goods, and also for ongoing service and support throughout the life of the equipment. We would always recommend Star Hydraulics to any customer with a servo valve requirement."*

**Phoenix Materials Testing Ltd, Vicki Wilkes, Managing Director**

Many of our servo valves are manufactured with inlet orifices and feedback wire that includes Star’s Sapphire Technology. The benefit to the operator is that the traditional inlet and ball wear erosion problems that have been seen in the past are now just that, a thing of the past. These features enable Star servo valves to deliver and maintain higher performance for extended periods without failure. This extended operational life results in reduced costs for the end user.

## Star Electro-Hydraulic Servo Valves V’s the Competition

| STAR Electro-Hydraulic Servo Valves                                    | Competitor Electro-Hydraulic Servo Valves  |
|--|--|
| High quality sapphire ball in rotating spool eliminates ball glitch.   | Tungsten carbide or steel ball in hole/non-rotating spool erodes the spool and deforms the ball causing ball-glitch. |
| Star Torque Motor is multi-component which is economical to repair.    | Competitor torque motor design and solid construction means it is very often uneconomical to repair.                 |
| Flexibility to meet specific customer requirements.                    | Standard product range, often unwilling to adapt or offer small volume specials.                                     |
| Undertakes repair of competitors valves at very reasonable rates.      | Unwilling to repair competitors valves, would prefer to supply their own new valves.                                 |
| Short delivery standard lead times and priority service when required. |  |
| Consistent world-wide pricing structure.                               |  |
| Quality - our warranty rate currently stands at 0.03%.                 |  |

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### Take it from our customers...

*“I think Star Servo Valves are high quality products. Much nicer to deal with than their bigger competitor; better prices, better delivery and reliable.*

*What more can we ask for from a quality manufacturer? – not much!”*

**Lansmont USA, Kevin Gilman, Vice President of Engineering**

# Solutions for every sector...

Star Hydraulics have an excellent in house training facility and we welcome you and your colleagues to attend our free training seminars available on the following subjects:

Servo Valve Operation.  
Filtration – Cleanliness Codes.  
Flushing and Commissioning of Hydraulic Servo Systems.



## Take it from our customers...

*"I approached Star Hydraulics because we were experiencing high levels of servo valve failures. Star Hydraulics helped me by not only explaining why the servo valves were failing but making recommendations on how to improve the fluid cleanliness of our system. The result was a reduction in Servo valve failures of around 90% reducing related Mill delays. One thing I liked was that they are always there at the end of the phone if I ever need them. I found I learnt a great deal working with the Star Hydraulic Team, I would totally recommend Star Hydraulics."*

**British Steel, Kevin Stobbs**



ISO9001:2015

Manufactured in  
the UK and  
Quality Assured



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