



**Delivering  
Optimal  
Engineering  
Solutions**



**Hydraulics  
Capability  
Statement**

[www.gradient.net.au](http://www.gradient.net.au)

# ABOUT US

## Let us tell you something **About Us**

Gradient Services and our parent company Y&J Industries have over 20 years of experience supplying hydraulic cylinders and components to some of the world's largest suppliers and manufacturers.

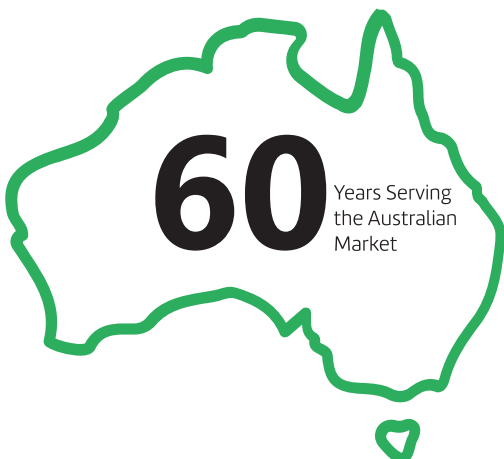
With two dedicated state of the art offshore hydraulic manufacturing facilities and more than 15 long term strategic partners we offer full process control capabilities in casting, forging, machining, cold drawing, welding, assembly, painting and quality testing.



Established in 2001, Y&J is dedicated to high-quality mechanical parts and components with factories in China and Thailand.



As the Australian arm of Y&J we offer the benefits of offshore manufacturing with local engineering, logistics, and customer support.



# ISO9001

Certified

# 300,000

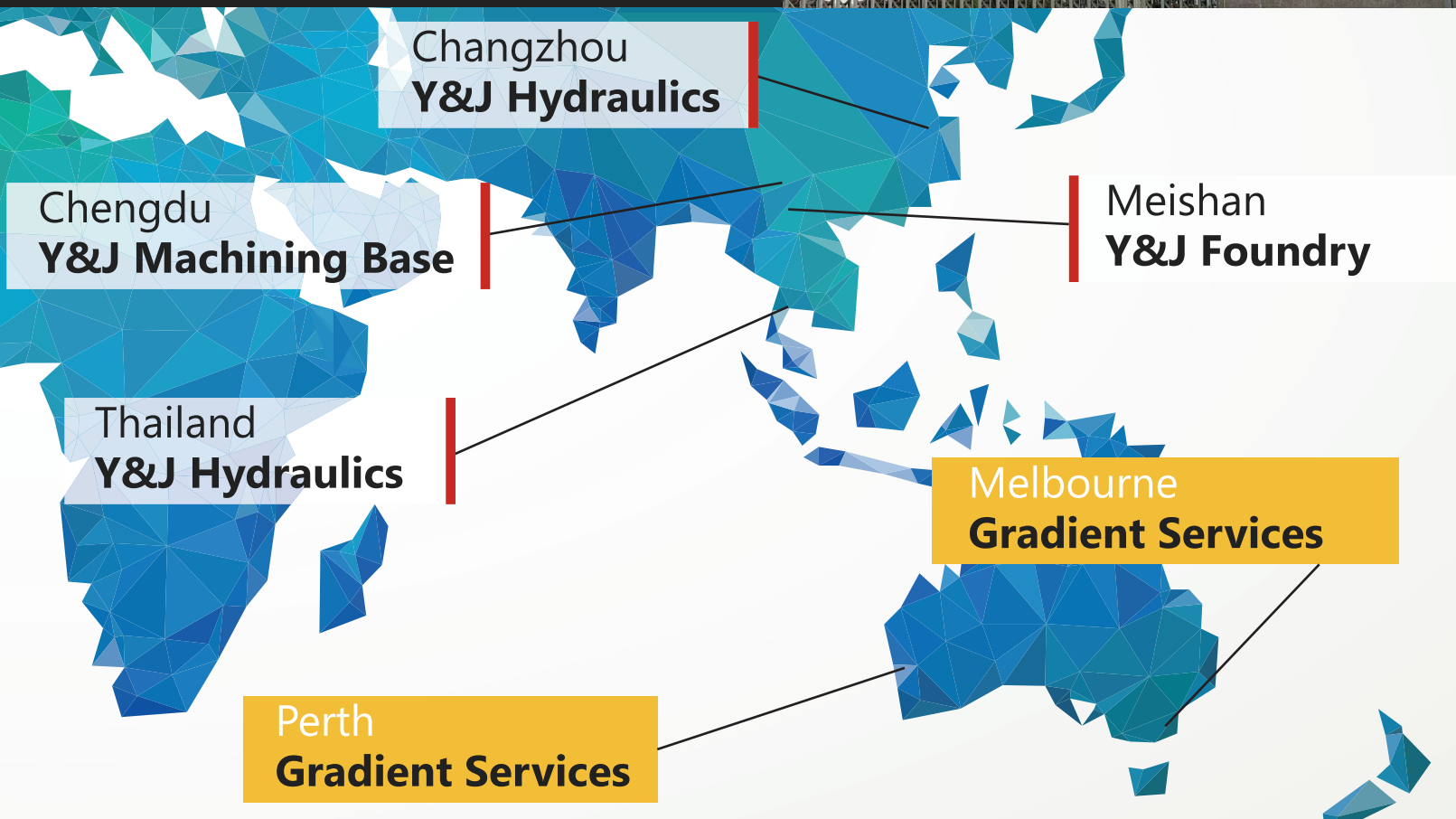
Unit Capacity  
for Complete  
Hydraulic  
Cylinders

# FACILITIES

## Asian supply chain for **Hydraulic Parts**

**6,000**

m<sup>2</sup>  
Manufacturing  
Facility in  
China



**3,250**

m<sup>2</sup>  
Manufacturing  
Facility in  
Thailand



# QUALITY

## Precision, Reliability, Excellence

# Quality Control

### Rigorous Inspection Process

- Every cylinder and part undergoes strict inspection before shipping.  
Our quality assurance team, staffed with professional engineers, plays a crucial role in quality planning and control.

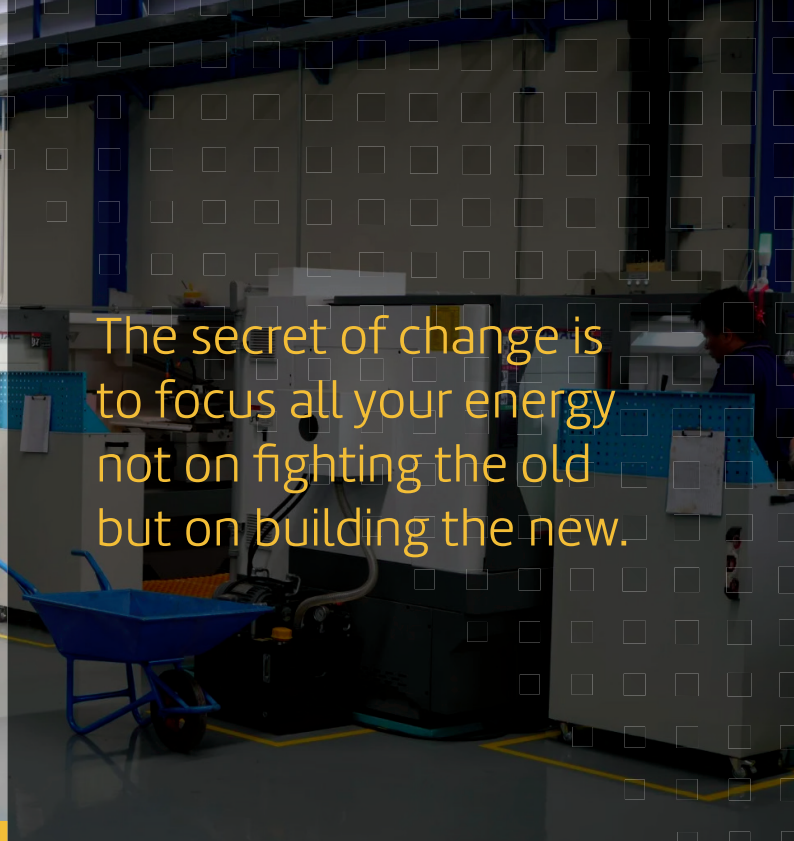
### Comprehensive Quality Control

- Quality control engineers are involved from raw material selection to final delivery.
- Material, dimension, and NDT testing are conducted according to international standards.
- Traceability of each cylinder and part is ensured via material certificates and inspection reports.

### Advanced Testing Methods

- CMM Inspection: Utilises Coordinate Measuring Machine for precise dimensional inspection.
- Elongation Test: Assesses mechanical performance of cylinder parts.
- Surface Finish Test: Measures surface finish using Ra method.
- Salt Spray Test: Checks corrosion resistance of coatings and parts.
- Leakage Test: Internal and external leakage test on every cylinder to verify seal integrity under pressure.
- Endurance Test: Evaluates static seal performance and provides fatigue testing of components.





The secret of change is to focus all your energy not on fighting the old but on building the new.

# MANUFACTURING

significant capability in  
**Asia**



## **Dedicated Design and Development Team**

- Specialised in designing, researching, and developing hydraulic cylinders and parts.
- Experienced in American, European and APAC technical standards.
- Skilled in product design and reverse engineering.

## **Client-Centric Approach**

- We work with clients to determine customer requirements and develop solutions.
- Accurately design, analyse, and verify custom solutions.
- Utilises state-of-the-art software and methods for precise results.

## **Rapid Prototyping**

- Develops and produces prototypes quickly.
- Ensures a perfect fit for customer needs.

# APPLICATIONS

we make hydraulics for  
**All Industries**



**Lifting**



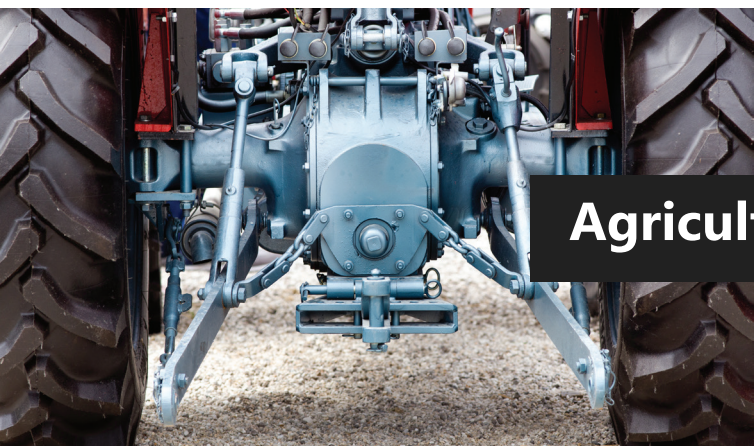
**Mining**



**Construction**



**Marine**



**Agriculture**



**Waste Management**

# WE SUPPLY

our offering is different  
**Because We Can Supply**

## Cylinder Manufactures

- **Proven Track Record:** Successfully supplying components to major OEMs.
- **Supply Chain Diversification:** Ensuring reliability and flexibility
- **Competitive Pricing:** Offering cost-effective solutions without compromising quality.



## Refurb Shops

- **Repeat Orders:** Able to fulfill repeat orders for standard cylinders.
- **Any Size and Any Material:** We can supply from small to large in a very wide variety of materials to suit your refurbishment needs.



## Machinery Manufacturers

- **One-Stop Shop:** Providing a comprehensive range of castings, forgings, and hydraulic products.
- **Single Vendor Solution:** Simplifying procurement with multiple product offerings from one reliable vendor.



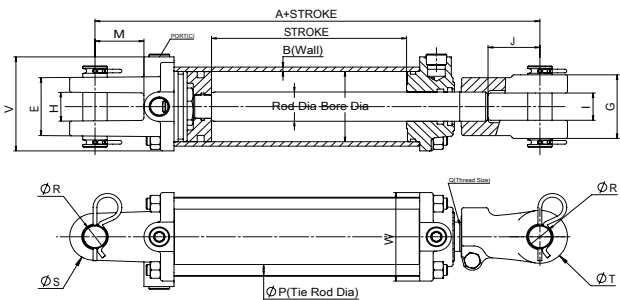
# SPECIFIC

for our range of  
**Standard Hydraulic Cylinders**

## Tie-Rod Hydraulic Cylinder TR2-2500PSI

### Features

- **Type:** Clevis Double-acting application
- **Standard Colour:** Black
- **Seals:** Imported seals for enhanced durability and performance
- **Ports:** NPT (SAE or other types available)
- **Tube:** Precision honed for optimal performance
- **Rod:** Hard chrome plated, NSS 72h for excellent corrosion resistance
- **Components:**
  - Gland, Piston, Rod End Clevis, End Clevis
  - All made from high-grade ductile iron for superior strength and longevity



Bore	A	B	Port	E	G	H	I	J	M	P	Q	R	S	T	V&W
2	10.25	0.189	3/8" NPT	2.5	2.5	1.17	1.17	2.13	2	0.4	1.125-12UNF	1	2	2	3
2.5	10.25	0.189	3/8" NPT	2.5	2.5	1.17	1.17	2.13	2	0.4	1.125-12UNF	1	2	2	3.3
3	10.25	0.189	1/2" NPT	2.6	2.75	1.17	1.17	2.13	2	0.47	1.250-12UNF	1	2	2.25	3.8
3.5	10.25	0.218	1/2" NPT	2.6	2.75	1.17	1.17	2.13	2	0.55	1.250-12UNF	1	2.3	2.25	4.3
4	10.25	0.244	1/2" NPT	2.8	2.75	1.17	1.17	2.13	2	0.63	1.250-12UNF	1	2.5	2.25	5.15

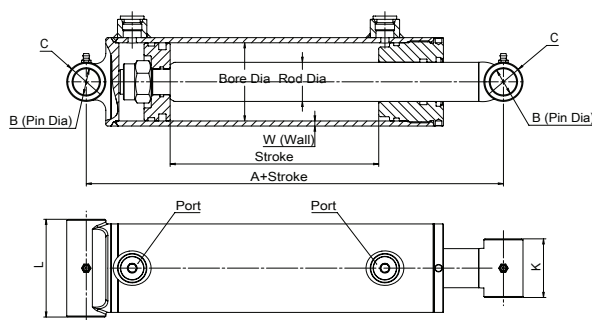
\* Stroke: According to customer requirements.  
\*A: 12.25 inch for 8 inch stroke ASAE cylinders and 15. 50 inch for 16 inch ASAE cylinders.  
\*R: 1.25 inch for 16 inch stroke ASAE cylinders from 3~4 inch bore.  
We also have TR3-3000PSI series available.  
Up to two year warranty on all standard tie rod and welded cylinders  
Typical lead time of less than 60 days ex-works for standard cylinders

# CYLINDERS

## Welded Hydraulic Cylinders HBW Series

### Features

- **Type:** Cross tube Double-acting application
- **Standard Colour:** Black
- **Seals:** Imported seals for enhanced durability and performance
- **Ports:** SAE (NPT or other types available)
- **Tube:** Precision honed for optimal performance
- **Rod:** Hard chrome plated, NSS 72h for excellent corrosion resistance
- **Gland & Piston:** Made from high-grade ductile iron for superior strength and longevity



Bore	Rod	*A	B	Port	C	K	L	W
1.5	1	8	0.75	SAE 4# (7/16"-20UNF)	1.25	2	2.25	0.189
2	1.25	8	1	SAE 6# (9/16"-18UNF)	1.5	2.25	2.75	0.189
2.5	1.5	8	1	SAE 8# (3/4"-16UNF)	1.5	2.25	3.25	0.189
3	1.5	8	1	SAE 8# (3/4"-16UNF)	1.5	2.25	3.75	0.2
3.5	1.75	10	1.25	SAE 8# (3/4"-16UNF)	2	2.25	4.25	0.22
4	2	10	1.5	SAE 8# (3/4"-16UNF)	2.25	2.5	4.75	0.25

\* Stroke: According to customer requirements.  
Up to two year warranty on all standard tie rod and welded cylinders  
Typical lead time of less than 60 days ex-works for standard cylinders

# SPECIFIC

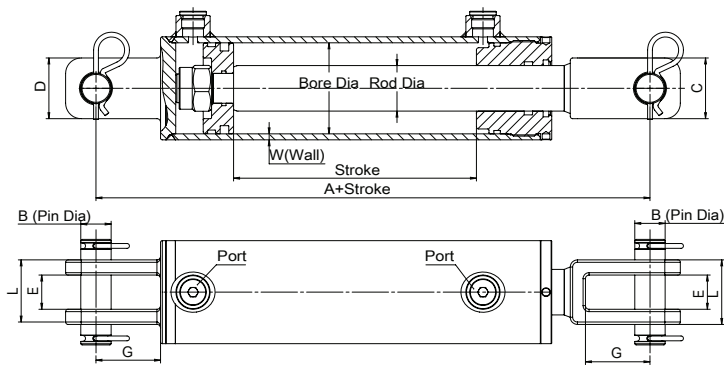
for our range of  
**Standard Hydraulic Cylinders**

## Welded Hydraulic Cylinders

### HCW Series

#### Features

- **Type:** Clevis Double-acting application
- **Standard Colour:** Black
- **Seals:** Imported seals for enhanced durability and performance
- **Ports:** SAE (NPT or other types available)
- **Tube:** Precision honed for optimal performance
- **Rod:** Hard chrome plated, NSS 72h for excellent corrosion resistance
- **Gland & Piston:** Made from high-grade ductile iron for superior strength and longevity



Bore	Rod	*A	B	Port	C	D	E	L	G	W
2	1.25	10.25	1	SAE 6# (9/16"-18UNF)	2	2	1.125	2.125	2.125	0.189
2.5	1.5	10.25	1	SAE 8# (3/4"-16UNF)	2	2	1.125	2.125	2.125	0.189
3	1.5	10.25	1	SAE 8# (3/4"-16UNF)	2	2	1.125	2.125	2.125	0.2
3.5	1.75	10.25	1	SAE 8# (3/4"-16UNF)	2	2	1.125	2.385	2.125	0.22
4	2	10.25	1	SAE 8# (3/4"-16UNF)	2	2	1.125	2.385	2.125	0.25

\* Stroke: According to customer requirements.  
Up to two year warranty on all standard tie rod and welded cylinders  
Typical lead time of less than 60 days ex-works for standard cylinders

# CYLINDERS

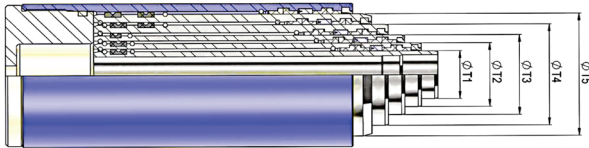
for our range of

## Custom Hydraulic Cylinders

### Telescopic Cylinders

#### Single Acting

	Tube Bore Diameter (mm)	Thrust at 170 bar
<b>T1</b>	45	2,700 kg
<b>T2</b>	60	4,800 kg
<b>T3</b>	75	7,500 kg
<b>T4</b>	95	12,000 kg
<b>T5</b>	115	17,600 kg

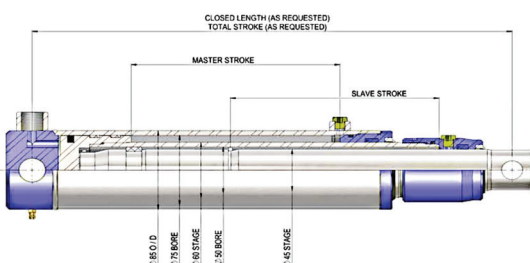


- **2-4 Stages Options:** Versatile configuration to meet various application needs.
- **Space-Efficient:** Ideal for tight mounting spaces with short retracted lengths and long strokes.
- **Versatile Applications:** Widely used in construction machinery and agricultural machinery.



#### Double Acting

We can produce double acting telescopic cylinders to suit a variety of custom applications



# SPECIFIC

for our range of  
**Custom Hydraulic Cylinders**

## Welded Hydraulic Cylinders Stainless Steel Cylinder

### Features

- **High Corrosion Resistance:** Chrome-plated piston rods endure up to 1000 hours in salt spray tests.
- **Standard Specifications:**
  - Diameter: 1.5" - 6"
  - Stroke: 4" - 48"
- **Customisation Available:** Other specifications and strokes can be tailored to specific requirements.

Item	Part	Common Materials
1	Rod End	SUS304/SUS316/SUS630
2	Gland	SUS304/SUS316/SUS630
3	Tube	SUS304/SUS316
4	Rod	SUS304/SUS316/SUS630
5	Piston	SUS304/SUS316/SUS630
6	Base End	SUS304/SUS316/SUS630



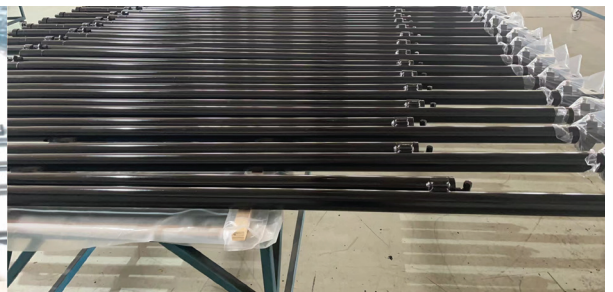
Typical lead time of less than 100 days ex-works for custom cylinders.

# CYLINDERS

## Piggy Back Cylinders

### Features

- **Space-Efficient Design:** Ideal for applications with limited installation space and longer stroke requirements.
- **Simpler Structure:** Easier to assemble and maintain compared to telescopic cylinders.
- **Higher Pressure Bearing:** Capable of handling higher pressures effectively.
- **Standard Specifications:**
  - Regular Stroke: 50"-200"
  - Regular Bore: 1.5"-4"
- **Customisable:** No limitations on material, stroke, or size—fully customisable to meet specific needs.



Typical lead time of less than 100 days ex-works for custom cylinders.

# CUSTOM C

made to suit  
**Your Toughest Conditions**

## Features

**Need large, high pressure cylinders to handle the toughest conditions**

**Our hydraulics department can manufacture cylinders:**

- **Bore:** up to 12".
- **Piston Rod:** 0.5" to 6".
- **Stroke:** up to 160".
- **Port:** SAE, NPT or other.
- **Working Pressure:** up to 5000 psi.
- **Seal Kits:** Hallite, Parker, Freudenberg, Aston and more.
- **Warranty:** available based on working conditions.
- **Lead time:** less than 100 days Ex Works.

**Need larger still**

- With Y&J's full facilities we can cast up to 400T in a single pour, forge from 50g to 80T and manufacture components for the most rigorous of application. No job is too big or too small.

**Material Selection:**

- **Steel:** any recognised steel standard or tailored blend.
- **Stainless Steel:** to resist corrosive environments.
- **Iron:** ductile iron.
- **Copper:** high purity or alloys including bronze.
- **Surface Treatments include:** chroming, surface quenching (QPQ, quench-polish-quench) and nitriding.

We can manufacture custom cylinders up to:

Bore

12"

Piston Rod

0.5"-6"

Stroke

160"



**Lifting Platform**



**Construction Machinery**



**Mining Machinery**



**Waste Management**



**Agriculture Machinery**



# PARTS

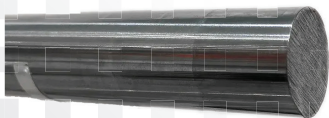
for cylinders made

## Just for you

- **High Export Volume:** Over 2 million cylinder parts exported annually to overseas markets.
- **Product Range:** Includes end cap, rod end, piston, cylinder head, valve block, tube, piston rod, and valve components.
- **Large Casting and Forging Capabilities:** High volume and large scale for all components
- **State of the Art Machining Abilities:** With an array of CNC machining centres we can handle all volumes swiftly and efficiently delivering finish machined components.
- **Access to Large Range of Materials:** Parts are available in cast and forged steel, stainless steel, copper, bronze, and many other materials with the desired surface treatment.

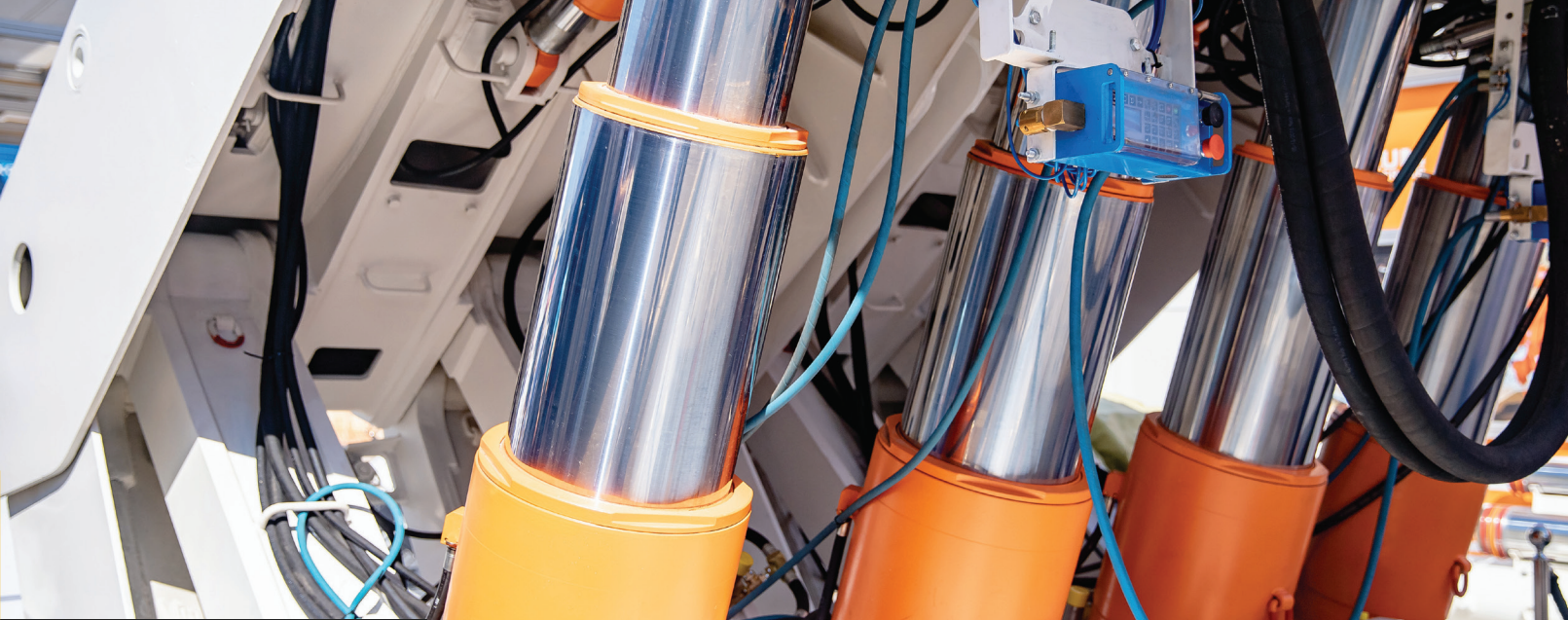
Product	Common Material	Process
Cylinder head	1045, 4140, Qt450-12	Machining
Piston	QT450-12,1045	Machining
End cap	WCB, WCC, Ductile Iron, 8620	Investment/Sand Casting or Forging + Machining
Rod end	8620, A148 90-60,8630	Investment/Sand Casting or Forging + Machining
Valve body	1045, 4140,8620	Forging + Machining
Piston rod	1045, 4140, 5140	Machining + Grinding + Surface treatment
Tube	St52, 1020, 1045	Cold-drawn + Boring + Machining
Other parts	1045, 1035, 1025, 1020	Machining

Piston Rod



Valve Blocks





Valve blocks  
 Piston rod  
 Piston  
 Gland  
 Caps  
 Hose  
 Power units  
 Tube

**Piston Parts**



**Glands**



**Caps**



# GRADIENT

## Why Gradient



### Design and Innovation

- Local Engineers & Metallurgists
- Design & Material Improvement
- Reverse Engineering



### Processes

- Casting
- Forging
- Machining
- Fabrication
- Finishing Services



### Supply Chain

- Key Partner:
- Y&J Industries (Chengdu)
- 200+ Suppliers
- Complete Logistics
- Weekly Updates



### Quality

- Dedicated QC team
- Local & International staff
- Comprehensive NDT
- Reporting & Traceability

**Address:**

33 Glenferrie Road,  
Malvern VIC 3144, Australia

**Phone:** +61 3 9571 1566

**E-mail:** [enquiries@gradient.net.au](mailto:enquiries@gradient.net.au)

**www.gradient.net.au**

# Y&J

## China's leading suppliers of **Customised Metal Parts**

Y&J is a major shareholder in Gradient Services as well as a major supplier.

Established in 2001, Y&J is dedicated to high-quality mechanical parts and components with factories in China and Thailand.



### **Quality Certifications**

- ISO 9001:2015
- AS9100
- ISO 45001:2018
- PED 97/23E
- ADW0
- API 6D
- Accredited by BV, TUV, and DNV



### **In-house Capabilities**

- Castings
- Forgings
- Machining
- Hydraulics
- Inspection



## Contact US:

Gradient Services Pty Ltd  
33 Glenferrie Road  
Malvern Vic 3144, Australia  
enquiries@gradient.net.au  
+61 3 9571 1566



Casting  
Forging  
Machining  
Fabrication  
Finishing Services

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