# JANUS PUMPS

## HIGH PRESSURE DESALINATION PUMP AXIAL PISTON

P300 PUMP

The Water Hydraulics Co. Ltd.



bsi ISO 9001 Quality Management Systems CERTIFIED

FM 87247

# JANUS PUMPS

## HIGH PRESSURE DESALINATION PUMP
## AXIAL PISTON

The Water Hydraulics Co. Ltd.

| SPECIFICATION | |
|---|---|
| Shaft Material | Duplex |
| Piston Material | Duplex |
| Housing Material | Duplex or 316L |
| Max. Operating Pressure | 80 Bar |
| Max. RPM | 1750 |
| Min. Inlet Pressure at Inlet Pressure Switch Port | 3.5 Bar |
| Max. Operating Temp. | 50°C |
| Mounting Direction | Horizontal |
| Operating Medium | Sea/Salt Water |
| Pump Output Flow | Up to 30m³/hour |
| Power Rating | See graphs |

### Design

Our Janus desalination axial piston pumps are totally oil free, clean and completely safe to use. As a result of employing advanced materials, high velocity and loaded sliding surfaces, the range of pumps can operate effectively with seawater as their only coolant/ lubricant therefore, this removes the potential for cross contamination of the system fluid or lubricating oil. Each pump employs technology that minimises vibration and ensures a low noise yet high efficiency operation. The result is an exceptionally small, light-weight product ideally suited for the RO market.

ATEX approved to comply with regulations of EC Directive 2014/34/EU for equipment or protection systems intended for use in potentially explosive atmospheres. Product group, category, zones: Ex h 11B T6 Gb T85°C +1°C≤TA≤+40°C

Minimal pulsation is experienced with these units due to the multiple piston design and the high operational speeds. Accurate flow metering is simply achieved with the control of the output shaft speed. For integral energy recovery version please see our Janus Power Centre catalogues or consult TWHC.

### Optimum Engineering Design

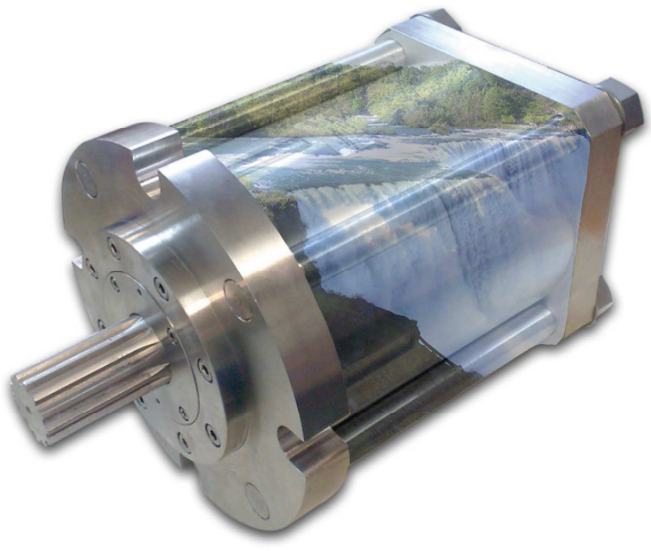
The pump is constructed from duplex which is a highly corrosion resistant material to sea water in comparison to other stainless steels. It employs SAE flanged connections, allowing the installer to rotate the hose connections to the unit which reduces noise, vibration and any axial strain on the connecting hoses that might otherwise be present.

### Low Maintenance Costs

The simple compact design of the pump has ensured parts requiring maintenance are easily accessible therefore, reducing maintenance costs. The pump utilises our well proven axial piston technology leading to long service intervals without the need for expensive oil changes. No special tools are required, but for extra assurance service exchange units are available.

### High Reliability with Low Risk

Our in-house designed axial piston pumps are 100% tested at the working pressure ensuring the reliability of the axial piston pump. The pump utilises salt water to lubricate bearing surfaces so there is absolutely no risk of oil contamination to the environment or the working area.



# JANUS PUMPS

The Water Hydraulics Co. Ltd.

HIGH PRESSURE DESALINATION PUMP
AXIAL PISTON

**Installation**

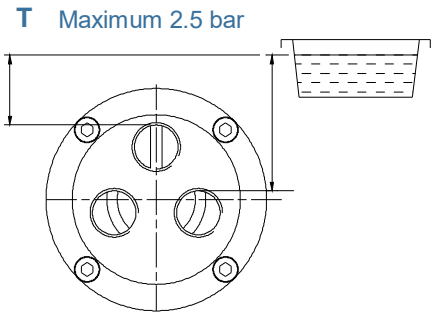
The unit is designed for mounting horizontally using a flexible gear coupling to an electric motor for up to 1250 rpm rotational speed.

**Inlet Conditions**

The pump is designed for presurised feed water supply at a minimum of 3.5 bar measured at the inlet pressure switch port. The design separates the feed water from the pump internal leakage water which must be piped away to a low pressure sump or drain. The advantages of this design are;

- The pump must only produce the differential pressure i.e. for a system with 5 bar feed pressure, 60 bar system pressure the pump drive is only required to produce the equivalent of 55 bar.
- As the feed pressure and internal leakage are separated, the mechanical seal will not see the full feed pressure therefore reducing required maintenance as low casing pressure will prolong the mechanical seals life and prevent low pressure cavitation issues; this minimum casing pressure and maximum inlet pressure is desired.

A minimum positive inlet pressure of 3.5 bar above casing 'T' pressure is required at all times. The desalination pumps can rotate anti-clockwise viewed on pump shaft.




Minimum 3.5 bar measured at inlet pressure switch port

**Construction**

Materials of construction can be modified to suit use, environment and duty thereby, ultimately offering the most cost effective solution. The two basic forms are;

1. Duplex Build, bar stock Duplex 2205 material (no cast components) used throughout all water contacting parts, giving the highest possible corrosion resistance for extreme salt concentrations.
2. Hybrid Build, components are manufactured in 316 L stainless steel with strategic internal parts i.e. bearing surfaces, in bar stock Duplex 2205.

We would advise all desalination pumps are flushed prior to any period of non operation (short or long) the system must run on permeate to ensure the sea water is flushed from the system. Even with the adoption of such high grade corrosion material,

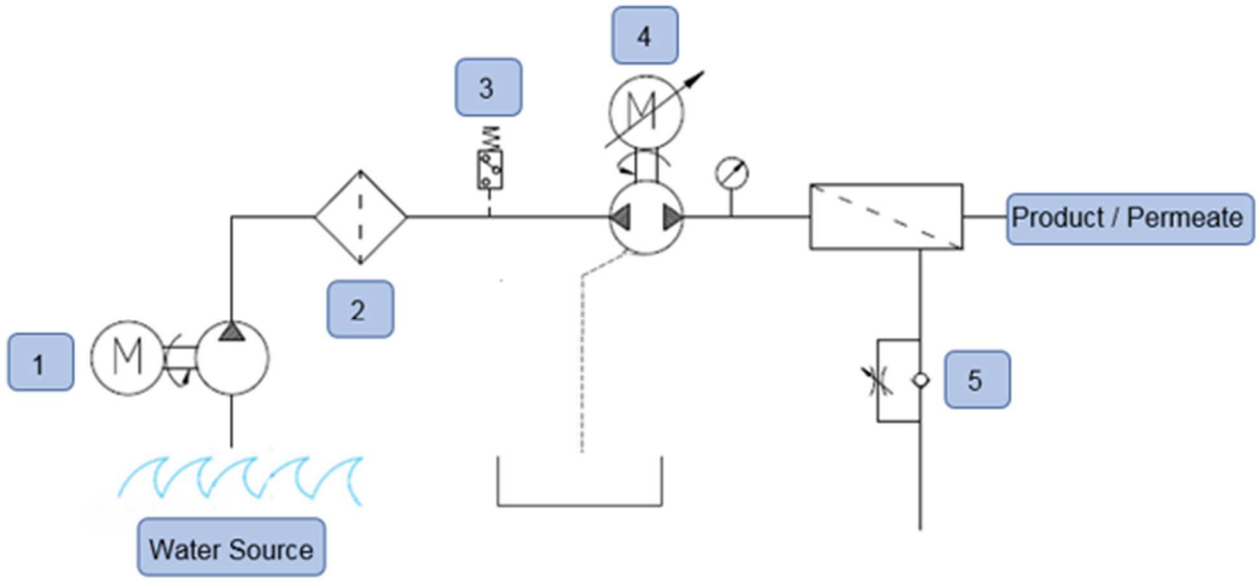
| Ordering Codes | |
|---|---|
| | **Displacements (cc/rev)** |
| | **286 cc/rev** |
| **Duplex Build** | PB80-286DMS |
| **Hybrid Build** | PB80-286HMS |

# JANUS PUMPS

The Water Hydraulics Co. Ltd.

HIGH PRESSURE DESALINATION PUMP
AXIAL PISTON

## Circuit Diagram Example




| Item | Component | Function |
|---|---|---|
| 1 | Feed / Boost Pump | Ensures the inlet pressure supply to the pump's Low Pressure In connection at a minimum of 3.5 bar. |
| 2 | Filter | Ensure pumps minimum filtration requirements are met. |
| 3 | Inlet Protection Pressure Switch Set 3.5 bar | Ensures a continuous minimum 3.5 bar pressure at the pumps inlet. If the minimum of 3.5 bar is not achieved system shutdown to avoid pump damage. |
| 4 | Axial Piston Pump | The Water Hydraulics Axial Piston Pump and variable frequency speed driven electric motor 500-1750 RPM, 80 bar maximum working pressure. |
| 5 | Back Pressure Valve | Setting the system pressure. |

# JANUS PUMPS

The Water Hydraulics Co. Ltd.

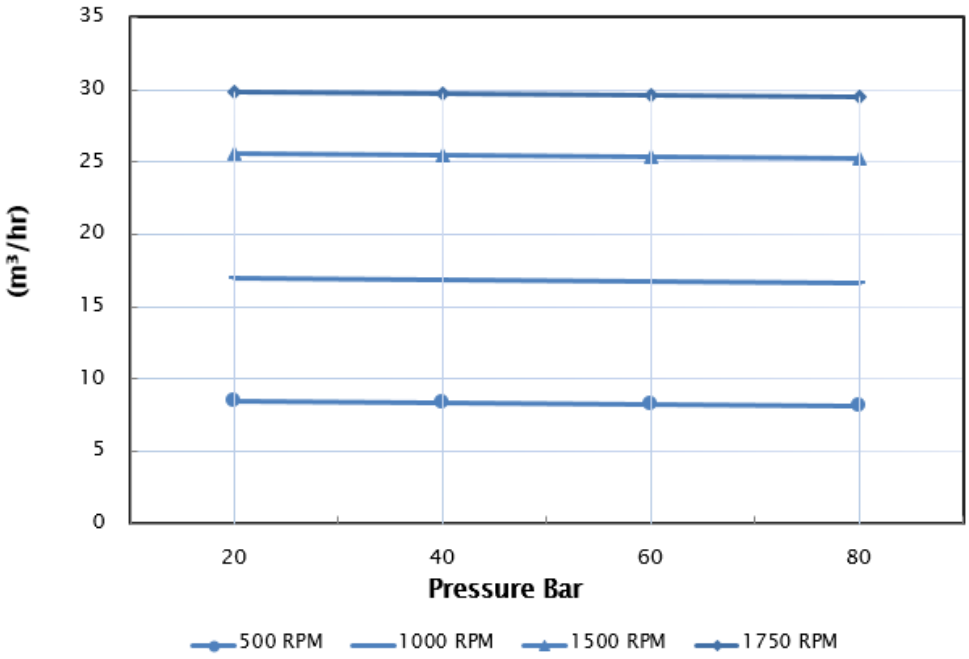
HIGH PRESSURE DESALINATION PUMP
AXIAL PISTON

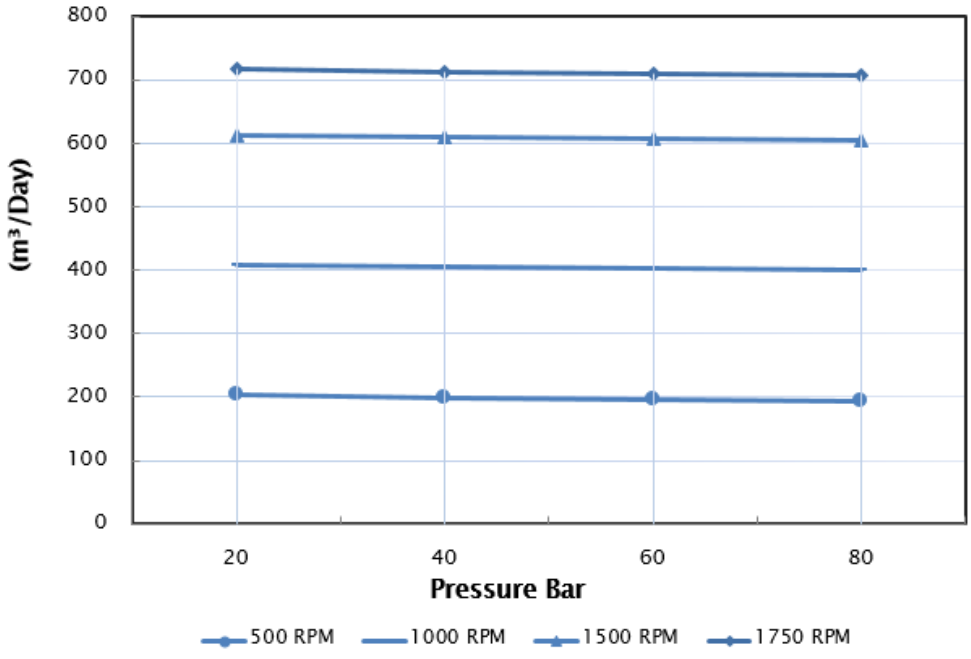
## Performance Data

### Pump output Flow

The Janus axial piston pump will produce the same output flow when operated under the same conditions. Simply change the shaft speed to produce a metered flow to the system demand.

### P300 286cc/rev



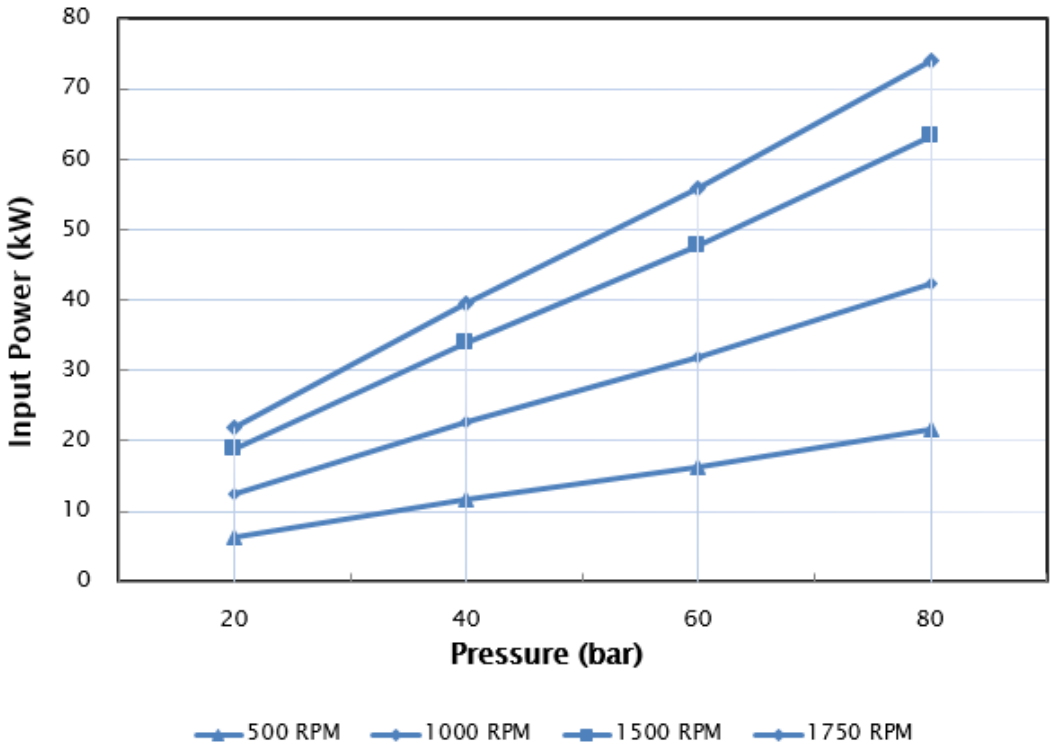
# JANUS PUMPS

The Water Hydraulics Co. Ltd.

HIGH PRESSURE DESALINATION PUMP
AXIAL PISTON

**Input Power (kW)**

**P600 286cc/rev**

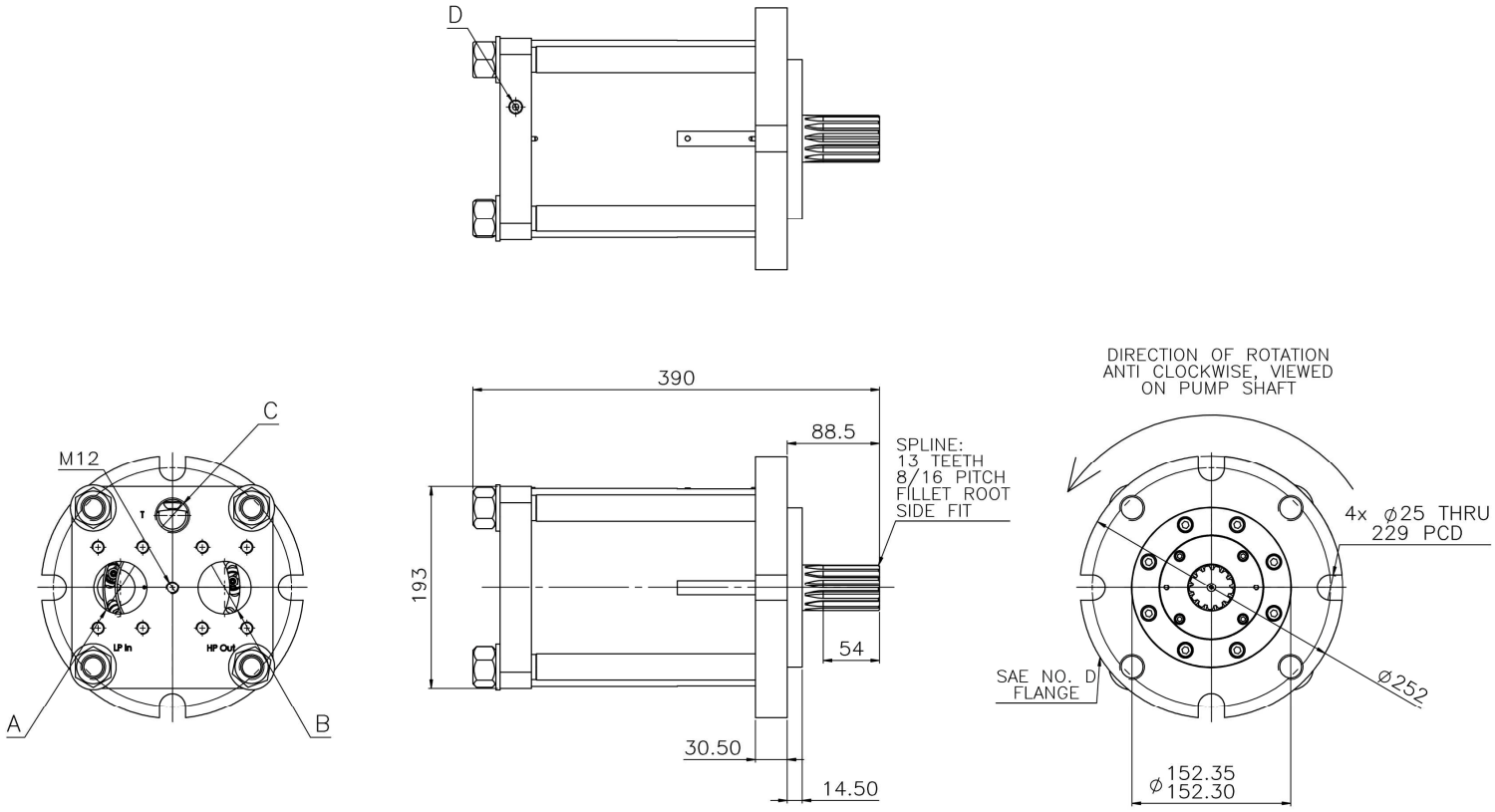


# JANUS PUMPS

HIGH PRESSURE DESALINATION PUMP
AXIAL PISTON

The Water Hydraulics Co. Ltd.

## P300 Axial Piston Pump Drawing



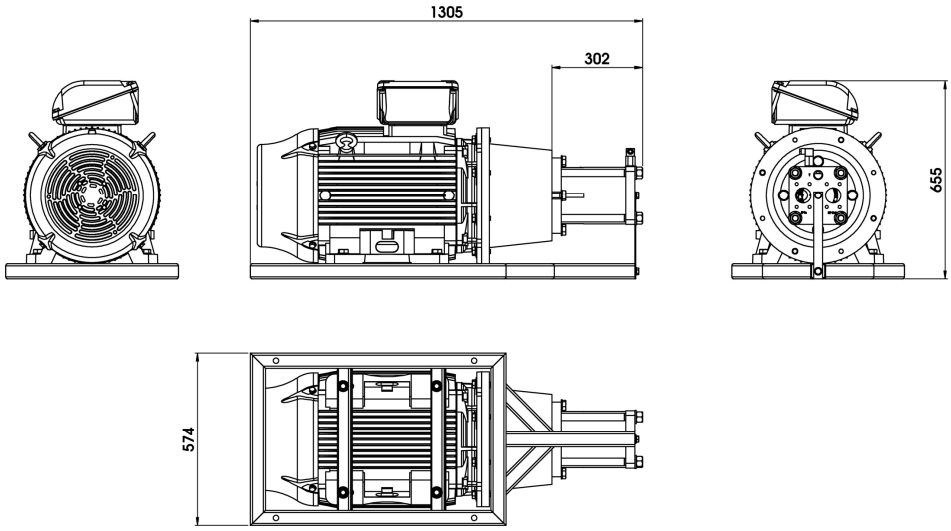

| Position | Connection | Port Dimension |
|---|---|---|
| A | Low Pressure In | 2" 3000 PSI CLASS SAE 4-BOLT FLANGE |
| B | High Pressure Out | 2" 3000 PSI CLASS SAE 4-BOLT FLANGE |
| C | Case Drain | G1" BSPP FEMALE |
| D | Inlet Pressure Switch Port | G1/4" BSPP FEMALE |

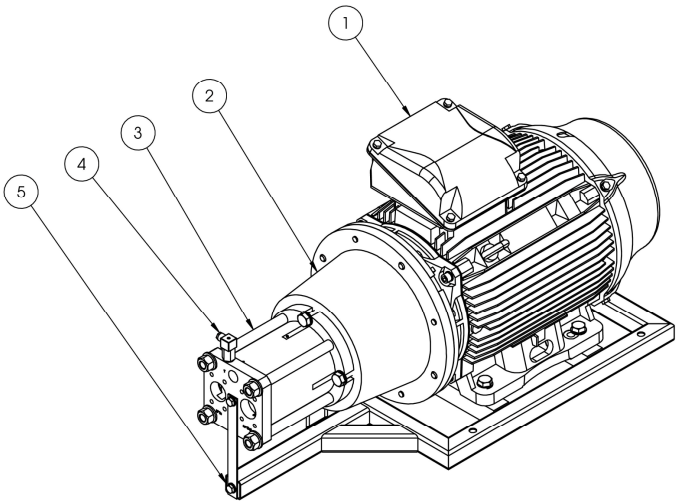
# JANUS PUMPS

The Water Hydraulics Co. Ltd.

HIGH PRESSURE DESALINATION PUMP
AXIAL PISTON

## P600 Pump Assembly




| Item Number | Description | Quantity |
|---|---|---|
| 1 | Electric Motor | 1 |
| 2 | Bellhousing & Flexible Gear Coupling | 1 |
| 3 | Axial Piston Pump | 1 |
| 4 | Inlet Protection Pressure Switch Set 3.5 bar | 1 |
| 5 | Mounting Frame | 1 |

# JANUS PUMPS

## HIGH PRESSURE DESALINATION PUMP
## AXIAL PISTON

### APPLICATIONS

The axial piston pump may be used effectively within any industry where fresh, clean water is required. The benefits of the high energy efficiency from the pump can have large scale benefits in running costs, profitability and reduced environmental impact.

### INDUSTRIAL





### MARINE





### AGRICULTURE





### OFFSHORE



### HOTELS & LEISURE




The Water Hydraulics Co. Ltd.

Alexandra House, English Street, Hull, East Yorkshire, HU3 2DJ, United Kingdom.

Tel: +44 (0)1482 595000, E-Mail: sales@waterhydraulics.co.uk.

England Website: www.waterhydraulics.co.uk



Whilst every endeavour has been made to ensure accuracy, this publication cannot be considered to represent

ISO 9001 Quality Management Systems CERTIFIED

FM 87247