

# CUP-BB5V

HEAVY DUTY, RADIALY SPLIT, MULTI-STAGE, VOLUTE PUMPS API 610 / ISO 13709





## SPX - An introduction

SPX is a Fortune 500 multi-industry manufacturing leader, headquartered in Charlotte, North Carolina. SPX manufactures and markets products, components, services and technologies that are integral to meeting today's challenges and tomorrow's needs. We are a place where innovation is fostered, and the real needs of business are understood. We transform ideas into powerful solutions to help our customers meet their goals, overcome business challenges and thrive in a complex, always changing marketplace.

SPX's Flow Technology segment designs, manufactures and markets engineering solutions and products used to process, blend, meter and transport fluids. We also offer equipment for air and gas filtration and dehydration. Our leading brands have global operations which service the food + beverage, power + energy, and industrial processes.



### CLYDEUNION PUMPS, AN SPX BRAND - GENERATIONS OF EXPERIENCE

Whilst the name is relatively new, the ClydeUnion Pumps brand is known worldwide for supplying reliable and robust engineered pumping solutions stemming from over 140 years of industry expertise. Our experience spans across several complex industries including oil and gas, nuclear and conventional power generation, desalination and other key markets relevant to our product portfolio.

### › ClydeUnion Pumps



Weir Pumps - Clyde Pumps - Mather & Platt -  
Drysdale - WH Allen - Girdlestone -  
Allen Gwynnes - Harland



Union Pump - David Brown Pumps  
DB Guinard Pumps - American Pump - Pumpline



## High technology pumps for the most demanding services

ClydeUnion Pumps, an SPX Brand, specialises in the design and manufacture of API 610 centrifugal pumps and pumping packages. At ClydeUnion Pumps you will find a commitment to quality throughout the company. Our Quality Management System is fully approved to ISO 9001:2008 and independently verified to comply with the latest quality standards. ClydeUnion Pumps has a worldwide reputation for providing optimised reliability in the most severe duty applications.

ClydeUnion Pumps also understands the challenges faced to acquire or maintain the high standards required to design and build nuclear coded pumps, and the company has three coded facilities with a long history of excellence.

### REFINERIES

Today's complex refinery processes demand specialised pumping solutions. Extremes of temperature, high-pressure and the ability to handle volatile fluids, calls for highly engineered pumps that can perform reliably in such arduous conditions.

ClydeUnion Pumps has many years of worldwide experience in supplying process pumps to the refinery industry and is committed in providing its customers with solutions for the most complex of pumping requirements.

### PETROCHEMICALS

The process and transferring of petrochemicals demands a high level of pumping reliability. ClydeUnion Pumps has a reputation for supplying reliable pumps which can be found working throughout the world in the most aggressive applications.



### OIL + GAS EXPLORATION + PRODUCTION

High efficiency and reliability are major benefits of ClydeUnion Pumps equipment - both of which are vital considerations in the oil and gas industry. Pumps have been supplied to satisfy a wide range of pumping services including crude oil transfer and pumps for handling all types of industry related fluids.

### POWER

ClydeUnion Pumps has supplied boiler feed pumps, safety related pumps and auxiliary pumps for a wide range of power generation plants over many years. The experience gained in this field enables us to offer our customers engineered products, tailored to their specific requirements.

## CUP-BB5V - Heavy duty, radially split, multi-stage, volute pumps

The ClydeUnion Pumps CUP-BB5V is a horizontal, double casing, radially split, multi-stage pump with opposed impellers and between bearings design suitable for high pressure, high speed and high temperature applications. All units comply with API 610.

There are hundreds of ClydeUnion Pumps CUP-BB5V units operating worldwide on services as diverse as:

- Hot hydrocarbon refinery services with temperatures in excess of 425°C (800° F)
- High suction pressure applications up to 100 Bar (1,450 psi) as standard with 300 Bar (4,350 psi) discharge capability
- Ethylene, propylene, LPG and all gas stripping products such as amine and lean solution

### PROVEN PRODUCT INTEGRITY

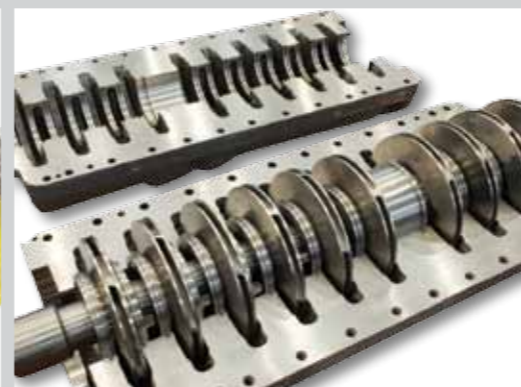
The ClydeUnion Pumps CUP-BB5V encompasses proven design history. The 'David Brown DB36' and 'Guinard HMBS' both have an enviable history of sound engineering, designed to exceed the rigorous requirements of API 610. The CUP-BB5V pumps are among the most robust in the industry with superior design features providing long and trouble free operation.

### INDUSTRY LEADING RELIABILITY

The simple construction of the CUP-BB5V pump offers ease of maintenance and reliability. The rotating element is housed within a horizontal, axially split inner case, subsequently contained in an outer barrel case. This can be easily removed without disturbance to main pipework.

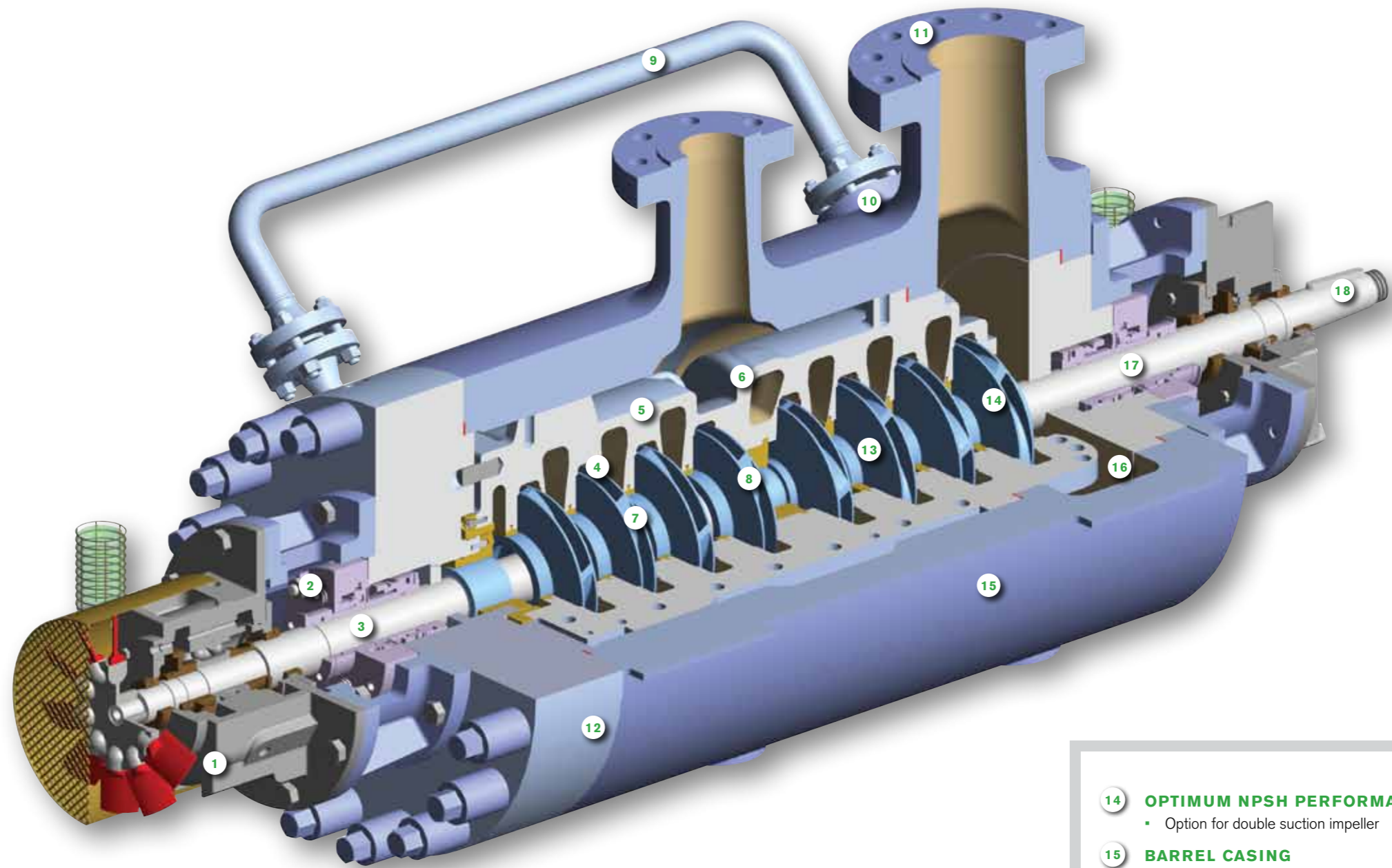
### PUMPSETS + PACKAGES

ClydeUnion Pumps has extensive experience in providing complex pumpsets including electric motors, gearboxes, lube oil systems, steam turbines, diesel engines, control panels and instrumentation.



# CUP-BB5V - Features

- 1 BEARING ASSEMBLY**
  - 360° mounting gives class leading vibration levels
  - High capacity fan as standard
  - Flinger design improves lubrication and prevents 'black oil'
  - Pure or purge mist options
- 2 SEAL CHAMBER**
  - API 682 compliant
  - Space for dual seals
  - Easy access for maintenance
  - Locking collar arrangement as standard
- 3 SINGLE PIECE THROTTLE BUSHING**
  - Designed for pressure breakdown
  - Sized to balance axial thrust
- 4 CASE WEAR RING + BUSHES**
  - Positive location
  - Pinned for anti-rotation at split line
- 5 DOUBLE VOLUTE DESIGN**
  - Minimises radial thrust loads for optimised bearing and seal life
- 6 AXIALLY SPLIT INNER CASE**
  - Hydraulic re-rates available within existing casing
  - Minimises rotor change-out time (once removed from barrel)
- 7 INTEGRAL WEAR RINGS**
  - Reduced risk of failure due to wear part displacement
  - Retrofit with conventional rings when necessary
  - Conventional options available
- 8 SPLIT CENTRE BUSHING**
  - Facilitates inspection, removal and replacement
  - Maximises rotor support and dampening
- 9 INTEGRAL BALANCE LINE**
  - Equalises pressure in seal chambers
- 10 INTEGRALLY FLANGED AUXILIARY CONNECTIONS**
  - Eliminates weld connection
  - Eliminates need for bracing
  - Conventional options available
- 11 FLANGE FINISHES + RATINGS**
  - Heavy duty class 900 as standard
  - Higher pressure options available
  - Raised face and ring type joint options available
- 12 BOLTED END COVER DESIGN**
  - Integral mechanical seal chamber complying to API 610 and API 682
  - Suited to high temperature applications
- 13 IMPELLERS**
  - Back-to-back design to minimise axial thrust
  - Individually secured
  - Precision cast



- 14 OPTIMUM NPSH PERFORMANCE**
  - Option for double suction impeller
- 15 BARREL CASING**
  - Forged or cast construction
  - Options for main casing connections: Flanged, stubbed or hub connectors
  - Pump feet located on horizontal centreline
  - Alignment features cater for thermal expansion on hot applications
  - Main nozzle orientation to suit customer requirements
  - Lightweight suction end cover
- 16 LIGHTWEIGHT SUCTION END COVER**
  - Offers effective sealing whilst eliminating heavy bolting
  - Integral mechanical seal chamber complying to API 610 and API 682
- 17 ROBUST ROTOR DESIGN**
  - Stepped shaft for ease of assembly
  - Optimised rotor dynamics and power transmission capability
- 18 API SHAFT TAPER**
  - For easy coupling removal
- 19 MATERIAL OPTIONS**
  - All API 610 material options
  - Other material options available
  - NACE compatible
  - Non-metallic wear parts



Standard ball/ball bearing assembly



Optional sleeve /tilting pad bearing assembly



Optional sleeve/ball bearing assembly



Shear ring design

## Optional arrangements + features

### STANDARD BALL/BALL BEARING ASSEMBLY

- Designed for minimum 40,000 hour L10 life
- Surpasses the API limits for oil sump temperature and bearing temperature rise
- Angular contact bearings with machined brass cages
- Rapid bearing stabilisation achieves operating temperatures well within API limits
- INPRO™ bearing isolators throughout, give reduced contamination for improved bearing life
- Proven reliability in a wide range of applications, speeds and environments

### OPTIONAL SLEEVE/BALL BEARING ASSEMBLY

- Energy density applications beyond ball/ball bearing limits
- Available for applications up to and beyond API limits
- Hydrodynamic radial bearing and optimally sized angular contact thrust bearings designed for 100,000 hour L10 life, under stable operating conditions
- Proven reliability on unattended pipeline pumping stations

### OPTIONAL SLEEVE/TILTING PAD BEARING ASSEMBLY

- High speed pumps up to 6,500 rpm
- High power pumps up to 6.75 MW
- Designed for infinite life
- Standard designs are capable of withstanding transient process conditions
- Optimised designs available to withstand extreme transients in high energy applications
- Proven reliability in the most demanding service conditions

### SHEAR RING DESIGN

- Proven design offering reduced assembly/disassembly times of internal pump cartridge
- Minimises pump downtime
- Weight reduction of pump cartridge compared to heavy bolted end cover design
- Lighter maintenance lifts
- Eliminates need for heavy duty bolt tensioning equipment

### FULL PUMP CARTRIDGE DESIGN

- Provides true cartridge withdrawal without the need for removal of drive end bearings, mechanical seal and coupling
- Suitable for both bolted and shear ring end cover designs
- Supports quick and easy maintenance

### CARTRIDGE BEARING DESIGN

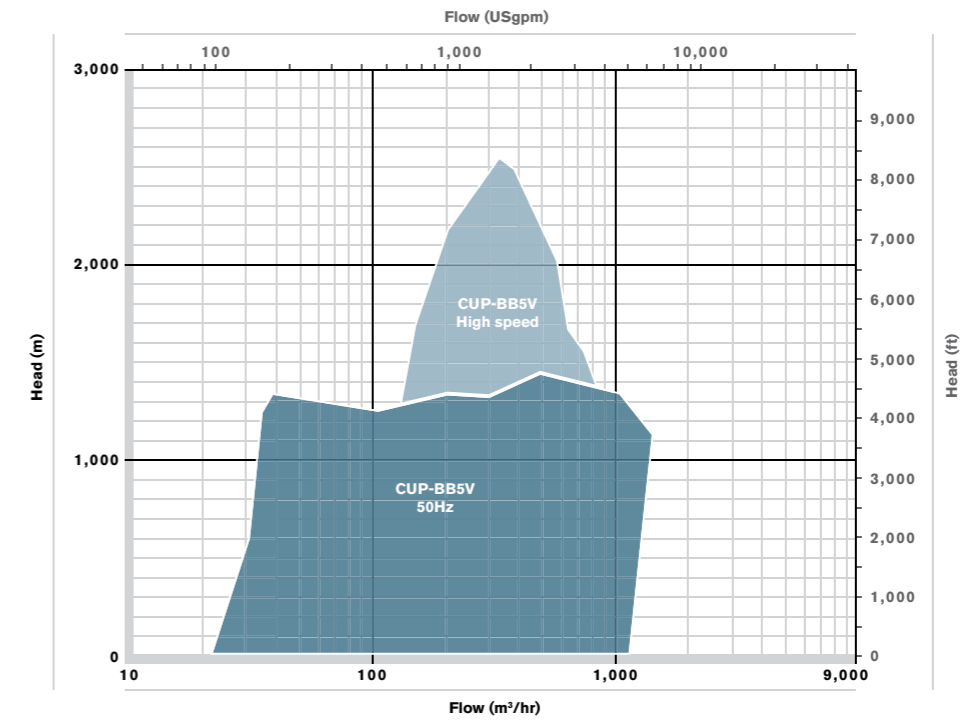
- "Maintenance Friendly" design alternative, requiring a concession when used on an API pump
- Allows bearing removal and refit within an hour
- Cartridge can be pre-assembled in clean environment prior to transportation to the site
- Contains all the advanced features of the standard design

### CP SEAL SYSTEM

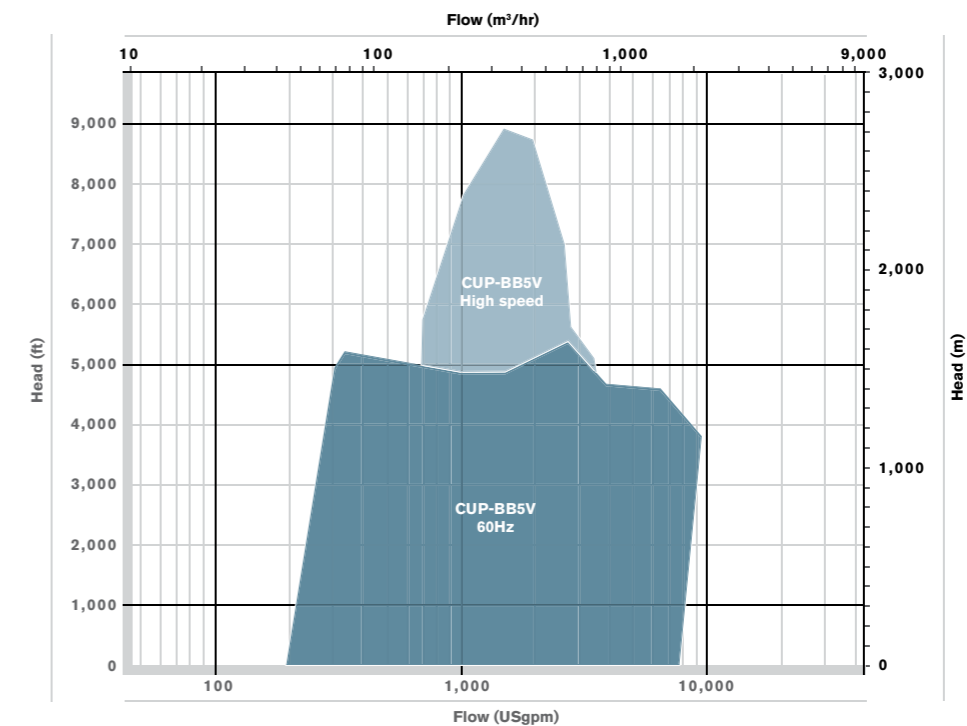
- All CUP-BB5V pumps are designed for use with our patented CP System (Plan 53C)
- CP System technology offers a proven history in improving seal life, particularly under varying suction pressures
- The unique CP System design provides an excellent mechanical sealing environment in the most demanding process conditions

## Standard hydraulic range - coverage charts

### 50HZ RANGE COVERAGE CHART



### 60HZ RANGE COVERAGE CHART



These charts cover the CUP-BB5V standard pump range. Other engineering designs exist for extreme applications



## Global aftermarket capability best in service + response

Our customer focused aftermarket organisation is positioned to provide comprehensive care for our varied and diverse product lines. Heritage and obsolete products benefit from the same level of attention and expertise ensuring that reliability and availability is maximised irrespective of a pump's length of service.

### GENUINE HIGH QUALITY

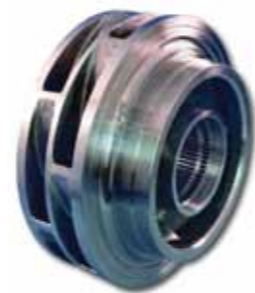
Original or upgraded specification spare parts, coupled with full engineering design capability, enables longevity of reliable operation. Highly skilled and experienced service engineers ensure accuracy in build and optimised performance. The worldwide presence of ClydeUnion Pumps offers local service facilities in over 40 countries.

### SERVICE SOLUTIONS

ClydeUnion Pumps is committed to supporting our installed base wherever it may be. Depending on your location we will provide either direct service support or support via our local authorised service partners. Whichever option is provided, you can be assured of the best attention from fully qualified and experienced engineers.

- Upgrades + re-rates
- Service + overhaul
- Installation + commissioning
- Technical support
- Inventory management
- 3rd party equipment

**Parts + maintenance:**  
Any brand, any material, anytime. Heritage products, upgrades + improvements



## CUP-BB5V

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MULTI-STAGE, VOLUTE PUMPS  
API 610 / ISO 13709



## Global locations

### EUROPE

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