

C Series – Chemical pumps (long coupled) (ISO5199 : 2002)

| ▼ Documentation packs | | |
|---------------------------------------|---|----------|
| Documentation pack | Inclusive documents | Standard |
| Bronze pack | Order acknowledgement (electronic) | ● |
| | Installation, Operating & Maintenance manual | |
| | Declaration of conformity | |
| | ATEX Declaration of conformity - only if contracted | |
| | Standard pump GA drawing | |
| Silver Pack (Includes bronze pack) | Hydrostatic test certificate | |
| | Pump HQ performance test certificate | |
| | Spare parts list – commissioning | |
| | Type 2.2 certificates (* pressure containing parts only) - only if contracted | |
| | Type 3.1 certificates (* pressure containing + process wetted parts only) -only if contracted | |
| Gold pack (Includes silver pack) | Quality plan | |
| | Progress reports (monthly) | |
| | Spare parts list – operating | |
| | Customer specific pump GA drawing | |
| | Pump SA & parts list | |
| | Pump HQ performance test curve | |
| | Certification databook | |
| | Pump datasheet | |
| | Motor type test certificate | |
| | Motor GA drawing | |
| | Motor datasheet | |
| | Motor Declaration of conformity | |
| | Motor ATEX Declaration of conformity - only if contracted | |
| Documentation format | Hard copy | ● |
| | Electronic CD - Adobe (.pdf), ms office (.xls .doc) | |

| ▼ Testing | | | |
|--|--|----------------------------------|----------|
| Pump test | Test standard | Acceptance criteria | Standard |
| Hydrostatic | BSEN25199 / ISO5199 | BSEN25199 / ISO5199 (1.5 x MAWP) | ● |
| | BSEN25199 / ISO5199 | ISO9906 Grade 2 | |
| Head & flow | BSEN25199 / ISO5199 | ISO9906 Grade 1 | |
| | Amarinth procedure | Amarinth procedure | |
| Mechanical run - 1 hour at rated duty | Amarinth procedure | Amarinth procedure | |
| Mechanical run - 4 hours at rated duty | Amarinth procedure | Amarinth procedure | |
| NPSH – single point | BSEN25199 / ISO5199 | ISO9906 Grade 2 | |
| | BSEN25199 / ISO5199 | ISO9906 Grade 1 | |
| NPSH – 4 points | BSEN25199 / ISO5199 | ISO9906 Grade 2 | |
| | BSEN25199 / ISO5199 | ISO9906 Grade 1 | |
| Noise – single point at 1m | BSEN12639 : 2000 | Mutual agreement | |
| Vibration – single point | BSEN25199 / ISO5199 | BSEN25199 / ISO5199 | |
| ▼ NDT | | | |
| Dyepenetrant of machined surfaces | Pressure containing castings only | | |
| Dyepenetrant of cast surfaces | Pressure containing castings only | | |
| Dyepenetrant of welds | Drain & seal pipework (if fitted) | | |
| Positive Material Identification | Excludes minor components (nuts & bolts etc) | | |
| Radiography | Shot plan – critical areas | | |
| Hardness report | NACE (certain materials only – please ask for details) | | |
| Various motor tests | | | |

* Pressure containing parts include: volute casing, seal housing & mechanical seal. Process wetted parts include additional shaft & impeller. A full range of testing and documentation can be tailored to suit your exact requirements. Amarinth reserves the right to alter any information within this document without prior notification. © Copyright 2005, Amarinth Limited, E&OE.



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C Series – Chemical pumps (long coupled)

(ISO5199 : 2002)

technical specification



| ▼ General Specification | | |
|-----------------------------------|--|--|
| General description | A range of single stage centrifugal end suction pumps with centreline discharge manufactured in a variety of alloys and interchangeable with Girdlestone 900 series pumps. | |
| Construction | Back pullout design with metal to metal fits | |
| Design methodology | Advanced computer techniques including 3D modelling, FEA & CFD | |
| Design standards | ISO5199 : 2002 ATEX EC-Directive 94/9/EC | |
| Design pressure rating | 20 bar g @ 20°C | |
| Suction pressure rating | 16 bar g | |
| Temperature rating | -40°C to 200°C (standard construction) -40°C to 250°C (with cooling) | |
| Performance envelope | | |
| Flowrate | Up to 1100m ³ /h | |
| Differential head | Up to 225m | |
| Speed | Up to 3600 rpm | |
| Configurations | Long coupled pump Bareshaft pump Rotating assembly | |
| Frame sizes | 040x025x145 to 250x0200x510 | |
| Design life | 20 years (2 years uninterrupted operation) | |
| ▼ Material Options | | |
| Materials | Casing | Impeller |
| SS 316 / SS 316 | ASTM A744 CF-8M | ASTM A744 CF-8M |
| Cast Iron / Cast Iron | BS EN 1561 Gr EN-GJL-250 | BS EN 1561 Gr EN-GJL-250 |
| Cast Iron / SS 316 | BS EN 1561 Gr EN-GJL- 250 | ASTM A744 CF-8M |
| SG Iron / SS 316 | BS EN 1563 Gr EN-GJS-400-18-LT | ASTM A744 CF-8M |
| Carbon Steel / SS 316 | ASTM A216 WCB | ASTM A744 CF-8M |
| Carbon steel / 12% Cr SS | ASTM A216 WCB | ASTM A217 Gr CA 15 |
| Duplex SS / Duplex SS | ASTM A890 Gr 1B CD-4MCuN | ASTM A890 Gr 1B CD-4MCuN |
| Super Duplex SS / Super Duplex SS | ASTM A890 Gr 5A (UNS J93404) | ASTM A890 Gr 5A (UNS J93404) |
| Hastelloy B / Hastelloy B | ASTM A949 Gr N-7M | ASTM A949 Gr N-7M |
| Hastelloy C / Hastelloy C | ASTM A494 GrCW-12MW | ASTM A494 GrCW-12MW |
| Monel / Monel | ASTM A494 GrM35-1 | ASTM A494 GrM35-1 |
| Customer specified | Other alloys available on request including NACE compliant materials | Other alloys available on request including NACE compliant materials |

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MP-050-CL REV A (Jun 05)

| Features | Technical Notes | Benefits | Standard |
|-----------------------------------|--|--|----------|
| ▼ Casing | | | |
| Construction | One piece casting with integral suction cover and 3mm corrosion allowance | Minimal leakage path, prolonged pump life | ● |
| Flange standard | ISO PN16 ISO PN20 / ANSI 150 / ANSI 125 | Matched to site standard | ● |
| Fasteners | High tensile SS 316 | Strength & corrosion resistance | ● |
| Gasket | Reinforced graphite Expanded PTFE Customer specified | Covers most fluids Covers certain acid duties Matched to site standard | ● |
| Wear ring | Suction side | Prolonged pump life | |
| Pressure tapping | 3/8" plugged (not 25mm pumps) | Aids trouble shooting | ● |
| Drain | 1/2" plugged 1/2" butt weld flange | Matched to casing | ● |
| Jacking screws | Stainless steel 316 | Ease of maintenance | ● |
| Orifice plate | Loose tang type | Matched to customer requirement | |
| ▼ Impeller | | | |
| Construction | One piece casting | Strength & integrity | ● |
| Vanes | Francis type – 4 / 5 off | Low NPSHr & stable H/Q curve | ● |
| Style | Shrouded Semi open | Optimum efficiency Handles solids content in fluid | ● |
| Fixing | Keyed with retention nut | Easy maintenance | ● |
| Wear ring | Suction side | Prolonged pump life | |
| Hydraulic balancing | Backvanes | Low NPSHr | ● |
| Dynamic balancing | Static balance ISO 1940 G 6.3 ISO 1940 G 2.5 | Prolonged pump life | ● |
| ▼ Seals & seal housing | | | |
| Shaft diameters | 25mm, 35mm, 45mm, 60mm | | ● |
| Seal types | Single component Single cartridge Double cartridge | Lowest cost Ease of maintenance Environmentally safer | ● |
| Seal housing | Bell type with anti vortex device & metal to metal fits Parallel box type | Optimum seal environment | ● |
| Seal piping arrangements | Code 01 Code 02, 04, 07, 09,10,11 Customer specified | Optimum seal environment Matched to customers requirement | ● |
| Manufacturers | AES, Burgmann, John Crane or customer specified | Matched to site standard | |
| ▼ Bearing bracket | | | |
| Style | One piece casting | Better concentricity, less run out | ● |
| Construction | Heavy duty casting with machined abutments | Superior bearing alignment | ● |
| Bearings | Dual angular contact (axial) plus deep groove ball (radial) | Long life | ● |
| Design bearing life | 25,000 hours (L10) @ standard duties | | ● |
| Bearing seals | Lip seals Non contacting bearing isolators Bearing protectors (Magtecta) | Lowest cost Minimal wear, long life, ATEX Hermetically sealed, ATEX | ● |
| Lubrication | Grease (fluid -20°C to 120°C) Oil (fluid -40°C to 250°C) | Lowest cost Higher operating temperatures | ● |

| Features | Technical Notes | Benefits | Standard |
|-------------------------------|---|---|----------|
| Cooling | Stainless steel 304 fan | Extended temperature range | |
| Running temperature | Less than 40°C above ambient | Long life | ● |
| Monitoring | Vibration monitoring points Temperature sensor location points | Assist planned maintenance | |
| Bearing bracket materials | SG Iron Stainless steel 316 | | ● |
| Shaft materials | Duplex stainless steel Customer specified | Material to match casing / fluid | ● |
| ▼ Coupling & guard | | | |
| Coupling style | Spacer type with metal membranes | Easy maintenance | ● |
| Construction | Bored & keywayed | Easy removal | ● |
| Balancing | Inherent by design | Low vibration | ● |
| Dynamic | Hubs up to ISO 1940 G 2.5 | Prolonged pump life | |
| Manufacturers | Autoguard Customer specified | Matched to site standard | ● |
| Standards | ATEX | | |
| Guard | Two piece wrap around in SS 304L | Non sparking/ATEX compliant | ● |
| ▼ Baseplate | | | |
| Style | Open Drain pan Extended | Lowest cost, ease of grouting Environmentally friendly Pump & motor contained | ● |
| Construction | Fabricated from rolled steel sections with 4 lifting points | Rugged construction | ● |
| Standards | ANSI/Hi 3-2000, ISO 3661 | | ● |
| Earthing points | 2 off M10 screws | | ● |
| Motor alignment screws | Transverse Transverse & axial | Easier alignment | |
| Material | Carbon steel SS 304L | Lowest cost Resistance to low temperature | ● |
| ▼ Driver | | | |
| Motor type | Safe area, EExN, EExd, EExde, Exe, | Matched to area requirements | |
| Standards | ISO frames NEMA frames ATEX | Matched to site standard Hazardous area requirement | ● |
| Supply | 380 – 440 / 3 / 50, 440 – 460 / 3 / 60 | Matched to site standard | |
| Manufacturers | ABB, Brook Hansen, Loher, Seimens, TECO, WEG, Customer specified | Matched to site standard | |
| ▼ Paint | | | |
| Industrial specification | Air drying alkyd - Green Black 233 | | ● |
| Refinery specification | 3 pack epoxy (Min DFT 225µm) - topcoat off grey | | |
| Offshore specification | 3 pack epoxy (Min DFT 300µm) - topcoat off grey | | |
| Customer specification | | Matched to site standard | |
| ▼ Packing | | | |
| Road | Palletised & cling wrap | | ● |
| Seafreight | Wooden box suitable for sea Wooden box with vacuum sealing | | |
| Airfreight | Wooden box suitable for air | | |