

## C Series – Chemical pumps (close coupled) (ISO 5199 : 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	● ● ●
Silver pack (includes bronze pack)	Standard pump GA drawing Hydrostatic test certificate Pump HQ performance test certificate Spare parts list – commissioning Type 2.2 certificates (* pressure containing 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 Type 3.1 certificates (* pressure containing + process wetted parts only) – only if contracted 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	Electronic CD – Adobe (.pdf), ms office (.xls.doc) Hard copy	●

NDT			
Pump test	Test standard	Acceptance criteria	Standard
Hydrostatic	BSEN25199 / ISO 5199	BSEN25199 / ISO 5199 (1.5 x MAWP)	●
Head & flow	BSEN25199 / ISO 5199	ISO 9906 Grade 2	●
	BSEN25199 / ISO 5199	ISO 9906 Grade 1	
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 / ISO 5199	ISO 9906 Grade 2	
	BSEN25199 / ISO 5199	ISO 9906 Grade 1	
NPSH – 4 points	BSEN25199 / ISO 5199	ISO 9906 Grade 2	
	BSEN25199 / ISO 5199	ISO 9906 Grade 1	
Noise – single point at 1m	BSEN12639 : 2000	Mutual agreement	●
Vibration – single point	BSEN25199 / ISO 5199	BSEN25199 / ISO 5199	

NDE	
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	Process wetted (excludes minor components e.g. fasteners)
Radiography	Shot plan – critical areas
Hardness report	NACE (compliant material only) MR0175 / ISO 15156
Various motor tests	

\*Pressure containing parts include; volute casing, casing cover, & mechanical seal. Process wetted parts include shaft and impeller. A full range of documentation can be tailored to suit your exact requirements. Amarith reserves the right to alter any information within this document without prior notification. © Copyright 2005-2017. Amarith Limited. E&OE.



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(ISO 5199 : 2002)



### General Specification

General description	A range of single stage centrifugal end suction pumps with centreline discharge manufactured in a variety of alloys
Construction	Back pullout design with metal to metal fits
Design methodology	Advanced computer techniques including 3D modelling, FEA & CFD
Design standards	ISO 5199 : 2002 ATEX EC-Directive 94/9/EC
Design pressure rating	20 bar g @ 20°C
Suction pressure rating	3.5 bar g
Temperature rating	-5°C to 120°C
Performance envelope	
Flowrate	Up to 1100m <sup>3</sup> /h
Differential head	Up to 225m
Speed	Up to 3600 rpm
Configurations	Close coupled
Frame sizes	040x025x145 to 250x0200x510
Design life	20 years (2 years uninterrupted operation)

Material Options	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 6A (UNS J93380)	ASTM A890 Gr 6A (UNS J93380)
Hastelloy B / Hastelloy B	ASTM A494 Gr N 7M	ASTM A494 Gr N 7M
Hastelloy C / Hastelloy C	ASTM A494 Gr CW 12MW	ASTM A494 Gr CW 12MW
Monel / Monel	ASTM A494 Gr M35 1	ASTM A494 Gr M35 1
Titanium / Titanium	ASTM B367 Gr C2	ASTM B367 Gr C2
Customer specified	Other alloys available on request including NACE compliant materials	Other alloys available on request including NACE compliant materials

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MP2510-315 REV E (Nov 17)

Features	Technical notes	Benefits	Standard
<b>▼ Casing</b>			
Construction	One piece casting with integral suction cover and 3mm corrosion allowance	Minimal leakage path, prolonged pump life	●
Flange standard	EN1092 PN16 ASME class 150 / 125	Matched to site standard	●
Fasteners	High tensile SS 316	Strength & corrosion resistance	●
Gasket	Reinforced graphite Expanded PTFE Customer specified	Covers most fluids Matched to application 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 customer requirement	
Jacking screws	Stainless steel 316	Ease of maintenance	●
Orifice plate	Loose tang type	Matched to customer requirement	
<b>▼ Impeller</b>			
Construction	One piece casting	Strength & integrity	●
Vanes	Francis type	Low NPSHr & stable H/Q curve	●
Style	Shrouded Semi open	Optimum efficiency Handles solids content in fluid	●
Fixing	Keyed with retention nut	Easy of maintenance	●
Wear ring	Suction side (shrouded only)	Prolonged pump life	
Hydraulic balancing	Backvanes	Low NPSHr	●
Dynamic balancing	Static balance		●
<b>▼ Seals &amp; seal housing</b>			
Shaft diameters	25mm, 35mm, 45mm, 60mm		●
Seal types	Single component Single cartridge Compact double cartridge	Cost benefit ☒ Ease of maintenance Reduced emissions	●
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, Eagle Burgmann, John Crane or customer specified	Matched to site standard	

Features	Technical notes	Benefits	Standard
<b>▼ Motor adaptor</b>			
Style	One piece casting / satisfaction	Better concentricity, less run out ☒	●
Construction	Heavy duty casting with machined abutments	Superior motor alignment ☒	●
Materials	SG Iron / carbon steel Stainless steel 316		●
<b>▼ Shaft &amp; bearings</b>			
Bearings	Uses motor bearings (deep groove ball)	Cost benefit ☒	●
Design bearing life	17,500 – 40,000 hrs dependant upon motor fitted		●
Shaft material	Duplex stainless steel ☒ Customer specified	Material to match application	●
<b>▼ Baseframe</b>			
Style	Pump support foot Motor support foot Pump & motor support feet Baseplate – open Baseplate – drain pan	Ease of installation Environmentally friendly	
Construction	Fabricated from formed steel plate	Rugged construction	
Earthing connection	2 off M10 tapped holes (baseplate only)		
Material	Carbon steel SS 304L	Cost benefit ☒ Resistance to low temperature	
<b>▼ Drive</b>			
Motor type	Safe area, Exna, Exe, Exde, Exd	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 Crompton, Loher, Seimens, WEG, or Customer specified	Matched to site standard	
<b>▼ Paint</b>			
Industrial specification	Air drying alkyd – Green Black 233		●
Refinery specification	3 coat system (Min DFT 225µm) – off grey		
Offshore specification	4 coat system (Min DFT 300µm) – off grey		
Customer specification		Matched to site standard	
<b>▼ Packing</b>			
Road	Palletised & cling wrap		●
Seafreight / airfreight	Wooden box paper lined Wooden box with vacuum sealed bag	Long term storage Moisture free	