

N 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	●
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	
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)	●
Head & flow	BSEN25199 / ISO5199 BSEN25199 / ISO5199	ISO9906 Grade 2 ISO9906 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 / ISO5199 BSEN25199 / ISO5199	ISO9906 Grade 2 ISO9906 Grade 1	
NPSH – 4 points	BSEN25199 / ISO5199 BSEN25199 / ISO5199		
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.
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N 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. All pumps and individual components are fully interchangeable with the equivalent Girdlestone 900 series units.
Construction	Front and 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	16 bar g @ 20°C
Suction pressure rating	16 bar g
Temperature rating	-40°C to 200°C -40°C to 250°C (with heat sink & fan)
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 250x200x510
Design life	20 years (2 years uninterrupted operation)

▼ Materials		
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 Dup SS / Super Dup 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

Features	Technical Notes	Benefits	Standard
▼ Casing			
Construction	Two piece casting with removable suction cover and 3mm corrosion allowance	Ease of maintenance, 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 CSF 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	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	Match customers requirements	●
▼ 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 Match customers requirements	●
Manufacturers	AES, Burgmann, John Crane or customer specified	Matched to site standard	●
▼ Bearing bracket / Lantern			
Style	Two piece casting / fabrication	Maximised modularity & interchangeability	●
Construction	Heavy duty casting	Long life	●
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	●

Features	Technical Notes	Benefits	Standard
Lubrication	Grease (fluid -20°C to 120°C) Oil (fluid -40°C to 250°C)	Lowest cost Higher operating temperatures	●
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 Customer specified	Easy maintenance Matched to site standard	●
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	Single piece in brass	Non sparking/ATEX compliant	●
▼ Baseplate			
Style	Open Drain pan Customer specified	Lowest cost, ease of grouting Environmentally friendly Replacing existing	●
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		●