

▼ 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 Hydrostatic test certificate Pump HQ performance test certificate Spare parts list – commissioning	●
Silver Pack (includes bronze pack)	Documentation schedule Quality plan Production programme 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	
Gold pack (includes silver pack)	Manufacturing databook Material traceability Progress reports (monthly) Paint certificate Nameplate drawing Spare parts interchangeability report Spare parts list – insurance & commissioning	
Documentation format	Hard copy Electronic CD - Adobe (.pdf), ms office (.xls .doc)	●

▼ Testing			
Pump test	Test standard	Acceptance criteria	Standard
Hydrostatic	API610 / ISO13709	API610 / ISO13709 (1.5 x MAWP)	●
Head & flow	API610 / ISO13709	ISO9906 Grade 1	●
Mechanical run - 1 hour at rated duty	API610 / ISO13709	API610 / ISO13709	
Mechanical run - 4 hours at rated duty	API610 / ISO13709	API610 / ISO13709	
NPSH at each test point	API610 / ISO13709	API610 / ISO13709	
Noise – single point at 1m	API610 / ISO13709	Customer datasheet	●
Vibration – FFT spectrum at each test point	API610 / ISO13709	API610 / ISO13709	●
Bearing bracket resonance	API610 / ISO13709	Mutual Agreement	

▼ NDT		
Visual examination of cast surfaces	ASME V Article 9 / MSS SP55 (pressure containing castings only)	●
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	Welds (pressure pipework) Castings - shot plan (critical areas)	
Hardness report	NACE (certain materials only – please ask for details)	
Various motor tests		

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



B Series – OH1 Petrochemical pumps

(API 610 10th: 2004)

technical specification



▼ General Specification	
General description	A range of OH1 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	API 610 10th : 2004 / ISO13709 : 2003 ATEX EC-Directive 94/9/EC
Design pressure rating	20 bar g @ 38°C
Suction pressure rating	16 bar g (standard construction)
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 250x200x510
Design life	20 years (3 years uninterrupted operation)

▼ Material Options		
Materials	Casing	Impeller
A8 - SS 316 / SS 316	ASTM A351 CF-3M	ASTM A744 CF-8M
I1 - Cast Iron / Cast Iron	ASTM A278 Class30	ASTM A278 Class30
S8 - Carbon Steel / SS 316	ASTM A216 WCB	ASTM A744 CF-8M
S6 - Carbon steel / 12% Cr SS	ASTM A216 WCB	ASTM A217 Gr CA 15
D1 - Duplex SS / Duplex SS	ASTM A890 Gr 4A (UNS J92205)	ASTM A890 Gr 4A (UNS J92205)
D2 - 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

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 PN20 / ANSI 150 / ANSI 125		●
Nozzle loading	API610	Rugged construction	●
Fasteners	ASTM 320 Grade B8MX	Strength & corrosion resistance	●
Gasket	Reinforced graphite Expanded PTFE Customer specified	Covers most fluids Covers certain acid duties Matched to site standard	●
Wear rings	Suction side (shrouded impeller only)	Prolonged pump life	●
Drain	1/2 / 3/4" butt weld flange No drain	Minimal leakage path	●
Jacking screws	SS 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 & lock washer	Easy maintenance	●
Wear rings	Suction side (shrouded only)	Prolonged pump life	●
Hydraulic balancing	Backvanes		●
Dynamic balancing	ISO 1940 G 2.5 ISO 1940 G 1.0	Prolonged pump life Matched to customer requirement	●
▼ Seals & seal plans			
Shaft diameters	30mm, 40mm, 50mm, 60mm, 70mm		●
Seal types	API 682 single cartridge API 682 double cartridge	Ease of maintenance Environmentally safer	●
Seal plans	Plan 11/61 Plans 11/62, 13, 21, 31, 52, 53, 54 Customer specified	Optimum seal environment Matched to customer 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	Non contacting bearing isolators Bearing protectors (Magtecta)	Minimal wear, long life, ATEX Hermetically sealed, ATEX	●
Lubrication	Oil (fluid -40°C to 250°C) Grease (fluid -20°C to 120°C)	Higher operating temperatures Lowest cost	●
Cooling	Cast fins Fan Water cooled heat exchanger	Dissipates heat Extended temperature range Constant cooling	●
Running temperature	Less than 40°C above ambient	Long life	●

Features	Technical Notes	Benefits	Standard
Monitoring	Vibration monitoring points Temperature sensor location points	Assist planned maintenance	●
Bearing bracket materials	Carbon steel Stainless steel 316	Matched to customer requirement	●
Shaft materials	Duplex stainless steel Customer specified	Material to match casing / fluid	●
▼ Coupling & guard			
Coupling style	Spacer type with metal membranes. DBSE 100 / 180	Easy maintenance	●
Construction	Bored & keywayed Extraction holes Inconel membranes	Easy removal Minimal corrosion in saline atmospheres	●
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	Drain pan without grout holes Drain pan with grout holes Drain pan with grout holes, extended	Lowest cost Matched to customer requirement Pump and motor contained	●
Construction	Fabricated from rolled steel sections with 4 lifting points	Rugged construction	●
Standards	ANSI/HI 3-2000, ISO3661		●
Earthing bosses	2 off tapped M12 stud / nut / washers Earth bonding	Matched to customer requirement	●
Alignment screws (Up to 160 frame)	Transverse only	Easier alignment	
Alignment screws (180 frame and above)	Transverse & axial		●
Material	Carbon steel SS 304L	Lowest cost Resistance to low temperature	●
▼ Driver			
Motor type	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, F&G, Loher, Seimens, WEG, Customer specified	Matched to site standard	
▼ Paint			
Refinery specification	3 pack epoxy (Min DFT 225µm) - off grey		●
Offshore specification	3 pack epoxy (Min DFT 300µm) - off grey		
Customer specification		Matched to site standard	
▼ Packing			
Flange blanking	Metal closures with rubber gaskets		●
Road	Palletised & cling wrap		●
Seafreight	Wooden box suitable for sea Wooden box with vacuum sealing		
Airfreight	Wooden box suitable for air		