

**B Series – OHI Petrochemical pumps (API610 12th: 2021)**

▼ Documentation packs		
Documentation pack	Inclusive documents	Standard
Bronze pack	Order acknowledgement (electronic) Installation, Operating & Maintenance manual Declaration of conformity ATEXDeclaration of conformity – only if contracted Hydrostatic test certificate Pump HQ performance test certificate Spareparts list – commissioning	●
Silver Pack (includes bronze pack)	Documentation schedule Quality plan Production programme Spareparts 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 ATEXDeclaration of conformity	
Gold pack (includes silver pack)	Manufacturing databook Material traceability Progressreports (monthly) Paint certificate Nameplate drawing Spareparts interchangeability report Spareparts list – insurance & commissioning	
Documentation format	Electronic CD - Adobe (.pdf), ms office (.xls .doc) Hard copy	●

▼ NDT			
Pump test	Test standard	Acceptance criteria	Standard
Hydrostatic	API 610	API 610(1.5 x MAWP)	●
Head & flow	API 610	API 610	●
Mechanical run - 1 hour at rated duty	API 610	API 610	
Mechanical run - 4 hours at rated duty	API 610	API 610	
NPSH- 4 point	API 610	API 610	
Noise – single point at 1m	API 610	Customer datasheet	●
Vibration – FFT spectrum at each test point	API 610	API 610	●
Bearing bracket resonance	API610/ ISO13709	Mutual Agreement	

▼ NDE		
Visual examination of cast surfaces	ASMEV Article 9 / MSSSP55 (pressure containing castings only)	●
Dyepenetrant of machined surfaces	ASMEV Article 6 and 24 (Pressure containing castings only)	
Dyepenetrant of cast surfaces	ASMEV Article 6 and 24 (Pressure containing castings only)	
Dyepenetrant of welds	ASMEV Article 6 and 24 Drain & seal pipework (if fitted)	
Positive Material Identification	Excludes minor components (nuts & bolts etc)	
Radiography	ASMEV Article 2 and 22 - Welds (pressure pipework) ASMEV Article 2 and 22 - Castings - shot plan (critical areas)	
Hardness report	NACE(certain materials only – please ask for details)	
Various motor tests	IEC 60034	

\* 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. Amarith reserves the right to alter any information within this document without prior notification. © Copyright 2017, Amarith Limited, E&OE.

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technical specification



▼ General Specification	
General description	A range of OHI single stage, foot mounted centrifugal end suction pumps with centreline discharge manufactured in a variety of alloys.
Construction	Backpullout design with metal to metal fits
Design methodology	Advanced computer techniques including 3D modelling, FEA & CFD
Design standards	API 610 12th : 2021 ATEX EC-Directive 2014/34/EU / IECEx: ISO 80079-36/7
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 1500m <sup>3</sup> /h
Differential head	Up to 300m
Speed	Up to 3600 rpm
Configurations	Long coupled pump Bare shaft pump Rotating assembly
Frame sizes	040x025x145 to 300x200x510
Design life	30 years (3 years uninterrupted operation)

▼ Material Options		
Materials	Casing	Impeller
A8 - SS316 / SS316	ASTMA351 CF3M (UNS J92800)	ASTMA351 CF3M (UNS J92800)
S8 - Carbon Steel / SS316	ASTMA216 WCB (UNS J03002)	ASTMA351 CF3M (UNS J92800)
S6 - Carbon steel / 12% Cr SS	ASTMA216 WCB (UNS J03002)	ASTMA217 Gr CA 15 (UNS J91150)
D1 - Duplex SS / Duplex SS	ASTMA995 Gr 4A (UNS J92205)	ASTMA890 Gr 4A (UNS J92205)
D2 - Super Duplex SS / Super Duplex SS	ASTMA995 Gr 6A (UNS J93380)	ASTMA890 Gr 6A (UNS J93380)
Hastelloy B / Hastelloy B	ASTMA494 Gr N 7M (UNS N30007)	ASTMA494 Gr N 7M (UNS N30007)
Hastelloy C / Hastelloy C	ASTMA494 Gr CW 12MW (UNS N30007)	ASTMA494 Gr CW 12MW (UNS N30002)
Monel / Monel	ASTMA494 Gr M35-1 (UNS N24135)	ASTMA494 Gr M35-1 (UNS N24135)
Titanium / Titanium	ASTM B367 Gr C2 (UNS R52550)	ASTM B367 Gr C2 (UNS R52550)
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
<b>▼ Casing</b>			
Construction	One piece casting with integral suction cover and 3mm corrosion allowance	Minimal leakage path, prolonged pump life	●
Flange standard	ASME / ANSI 150		●
Nozzle loading	API 610	Rugged construction	●
Fasteners	ASTM 320 Grade B8MX	Strength & corrosion resistance	●
Gasket	Reinforced graphite	Covers most fluids	●
	Expanded PTFE	Covers certain acid duties	
	Customer specified	Matched to site standard	
Wear rings	Suction side (shrouded impeller only)	Prolonged pump life	●
Drain	½ / ¾" butt weld flange		●
	No drain	Minimal leakage path	
Jacking screws	SS316	Ease of maintenance	●
Orifice plate	Loose tang type	Matched to customer requirement	
<b>▼ Impeller</b>			
Construction	One piece casting	Strength & integrity	●
Vanes	Francis type – 4 / 5 off	Low NPSHr & stable H/ Q curve	●
Style	Shrouded	Optimum efficiency	●
	Semi open	Handles solids content in fluid	
Fixing	Keyed with retention screw & lock washer	Easy maintenance	●
Wear rings	Suction side (shrouded only)	Prolonged pump life	●
Hydraulic balancing	Back vanes		●
Dynamic balancing	ISO 21940-II G 2.5	Prolonged pump life	●
	ISO 21940-II G 1.0	Matched to customer requirement	
<b>▼ Seals &amp; seal plans</b>			
Shaft diameters	30mm, 40mm, 50mm, 60mm, 70mm		●
Seal types	API 682 single cartridge	Ease of maintenance	●
	API 682 double cartridge	Environmentally safer	
Seal plans	Plan 11/61	Optimum seal environment	●
	Plans 11/62, 13, 21, 31, 32, 52, 53, 54, 62, 65, 72, 74, 75, 76	Matched to customer requirement	
	Customer specified		
Manufacturers	AES, Burgmann, Jo	Matched to site standard	
	Customer specified		
<b>▼ Bearing bracket</b>			
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	Minimal wear, long life, ATEX	●
	Customer specified	Matched to site standard	
Lubrication	Oil (fluid -40°C to 250°C)	Higher operating temperatures	●
	Grease (fluid -20°C to 120°C)	Lowest cost	
Cooling	Cast fins	Dissipates heat	●
	Fan	Extended temperature range	
	Water cooled heat exchanger	Constant cooling	

Features	Technical Notes	Benefits	Standard
Running temperature (oil)	Less than 40°C above ambient	Long life	●
Monitoring	Vibration monitoring points	Assist planned maintenance	●
	Temperature sensor location points		
Bearing bracket materials	Carbon steel		●
	Stainless steel 316	Matched to customer requirement	
Shaft materials	Duplex stainless steel		●
	Customer specified	Material to match casing/ fluid	
<b>▼ Coupling &amp; guard</b>			
Coupling style	Spacer type with metal membranes. DBSE100 / 140 / 180	Easy maintenance	●
Construction	Bored & keywayed		●
	Extraction holes	Easy removal	
	Inconel membranes	Minimal corrosion in saline atmospheres	
Balancing	Inherent by design	Low vibration	●
	Dynamic to ISO 21940-II G 2.5	Prolonged pump life	
Manufacturers	John Crane / BIBBY		●
	Customer specified	Matched to site standard	
Standards	ATEX		
Guard	Two piece wrap around in brass	Non sparking/ATEX compliant	●
<b>▼ Baseplate</b>			
Style	Drain pan without grout holes	Lowest cost	●
	Drain pan with grout holes	Matched to customer requirement	
	Drain pan with grout holes, extended	Pump and motor contained	
Construction	Fabricated from rolled steel sections with 4 lifting eye bolts	Rugged construction	●
Standards	ISO 3661, API 610		●
Earthing point	2 off M10 studs/nuts/ washers		●
	Earth bonding	Matched to customer requirement	
Alignment screws (Up to 132 frame)	Transverse & axial	Easier alignment	
Alignment screws (160 frame and above)	Transverse & axial		●
Material	Carbon steel	Lowest cost	●
	SS304L	Resistant to low temperature	
<b>▼ Driver</b>			
Motor type	Safe area, Ex ec, Ex eb, Ex db, Ex db	Matched to area requirements	
Standards	ISO frames	Matched to site standard	●
	NEMA frames		
	ATEX / IECEx	Hazardous area requirement	
Supply	380 – 440 / 3 / 50, 440 – 460 / 3 / 60	Matched to site standard	
Manufacturers	WEG, ABB, Brook Motors, Innomatics or customer specified	Matched to site standard	
<b>▼ Paint</b>			
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>			
Flange blanking	Metal closures with rubber gaskets		●
Road	Palletised & cling wrap		●
Seafreight	Wooden box paper lined	Long term storage	
	Wooden box with vacuum sealed bag	Moisture free	
Airfreight	Wooden box paper lined	Long term storage	
	Wooden box with vacuum sealed bag	Moisture free	