Annex N
(informative)

Pump datasheets and electronic data exchange

N.1 Pump data sheets

This annex contains typical datasheets for use by the purchaser and the vendor as shown in Figure N.1 and Figure N.2. The datasheets, in both SI and USC units, are copies of the electronic form of the datasheets (Microsoft Excel Spreadsheets). In the electronic form, selection of the units on the datasheet will automatically change all the units on the datasheet to the units selected. Note however, that this electronic datasheet does not contain in-built calculations, therefore changing the units will not impact any data entered onto the datasheet.

The datasheet is intended to be used in its electronic format and as such, there are numerous cells that contain dropdown selections. As these selections are not presented to the user until the cell is selected, the copies in this document indicate which cells contain a drop-down selection in the shaded areas. Another feature of the electronic datasheet is that when the user selects a data entry cell, if there is a cross reference back to the standard a pop-up box will appear indicating the reference paragraph and some or all of the content of the referenced paragraph.

To assist the reader a document map (See Figure N.3), which is basically the datasheet less all content, has been prepared which lists the content of the drop-down selection at each line as applicable. In addition to the drop-down list, there are some lines with numbers listed on the left-hand side of the area. These numbers are the numbers of the crossed referenced paragraphs, which pop-up as mentioned above.

In all instances the document map lists the information on the same line as the electronic datasheet.

N.2 Electronic data exchange (EDE)

The information contained in pump data sheets may also be transmitted digitally rather than via a conventional data sheet format. This is suitable when pump purchaser and supplier have systems that can process digital information rather than paper-based data sheets. Direct electronic transfer can be achieved with a transfer protocol that is adopted by both purchaser and supplier. It is necessary that this transfer protocol also be commercially neutral for it to be accepted by all parties. Such a method improves the operating efficiencies of both parties if their internal data systems can import/export via this neutral protocol. Examples of these systems include

a) for the purchaser:

   1) pump specifications database,

   2) bid tab program,

   3) system analysis program,

   4) as-built asset management program;

b) for the supplier:

   1) pump selection system,

   2) pump configuration and quotation development system,

   3) order management system and bill-of-material management system.

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Those interested in adopting electronic data exchange (EDE) are encouraged to reference the EDE technology and implementation standard, BSR/HI 50.7, for the digital transfer of centrifugal pump data. This standard provides implementation details and examples towards adopting EDE that is suitable for ANSI/API Std 610/ISO 13709 centrifugal pump data. Additional interpretive information is also available at http://www.pumps.org/ede.

BSR/HI 50.7 was developed and supported by the Hydraulic Institute and the FIATECH automating equipment information exchange (AEX) project, in cooperation with the API. Information on the EDE technology and the AEX XML schemas is available on line at www.fiatech.org/aex.html.

A complete listing of all data fields in the electronic data sheets N.3.1 through N.3.3 and their corresponding XML structures are found in BSR/HI 50.7 www.pumps.org/ede or via FIATECH at www.fiatech.org/aex.html.

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PROJECT UNITS SI

CLIENT:

PROJECT TITLE:

JOB NUMBER:

EQUIPMENT NUMBER:

EQUIPMENT SERVICE:

SERIAL NUMBER:

REQ / SPEC NO. : /

PURCH ORDER NO.

Cells coloured thus contain drop-down options

contain calculated values based on input data do not change.

identifies a cross referenced paraghaph in the document
note may also contain a drop down list

When you have completed the DS highlight the whole page format cells pattern none
Delete these notes on completion

COMMENTS:

	DATA SHEETS					
	ITEM No.	ATT	ITEM No.	ATT	ITEM No.	ATT
PUMP						
MOTOR						
GEAR						
TURBINE						

APPLICABLE OVERLAY STANDARDS

Rev	Date	Description	By	Checked				

API Std 610 CENTRIFUGAL PUMP DATA SHEET

Figure N.1

DATA SHEET No.

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Figure N.1—API Std 610 CENTRIFUGAL PUMP DATA SHEET (SI Units) (continued)

Note				Rev
APPLICABLE TO:		APPLICABLE NTL/INTNTL STANDARD:		
FOR		UNIT		
SITE		SERVICE		
NO. REQ	PUMP SIZE	TYPE	No. STAGES	
MANUFACTURER		MODEL	SERIAL NO.	

LIQUID CHARACTERISTICS

	Units	Maximum	Minimum
LIQUID TYPE OR NAME :			
VAPOR PRESSURE :	kPa		
RELATIVE DENSITY :			
SPECIFIC HEAT :	kJ/(kg-K)		
VISCOSITY :	Pa s		

Note Max & min values refer only to the property listed

SERVICE :
- IF INTERMITTENT NO. OF STARTS :

PUMPS OPERATE IN:
CORROSION DUE TO : (6.12.1.9)
EROSION DUE TO : (6.12.1.9)
H2S CONCENTRATION (ppm) : (6.12.1.12)
CHLORIDE CONCENTRATION (ppm) :
PARTICULATE SIZE (DIA IN MICRONS)
PARTICULATE CONCENTRATION (PPM)

OPERATING CONDITIONS (6.1.2)

	Units	Maximum	Rated	Normal	Minimum
NPSHa Datum:		C.L. Impeller			
PUMPING TEMPERATURE :	°K				
FLOW :	m³/s				
DISCHARGE PRESSURE : (6.3.2)	kPa				
SUCTION PRESSURE :	kPa				
DIFFERENTIAL PRESSURE :	kPa				
DIFFERENTIAL HEAD :	m				
$NPSH_A$:	m				
HYDRAULIC POWER :	kW				

SITE AND UTILITY DATA

LOCATION:

MOUNTED AT : ○ TROPICALISATION REQD

ELECTRIC AREA CLASSIFICATION: 6.1.22 ZONE
GROUP TEMP CLASS

SITE DATA :

ELEVATION (MSL) : m **BAROMETER :** mmHg
RANGE OF AMBIENT TEMPS:MIN / MAX / °K
RELATIVE HUMIDITY: MIN / MAX / %
UNUSUAL CONDITIONS:

UTILITY CONDITIONS :

ELECTRICITY :	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE				
PHASE				
HERTZ				

COOLING WATER :

	INLET	RETURN	DESIGN
TEMP °K		MAX	
PRESS. kPa		MIN	
SOURCE			

COOLING WATER CHLORIDE CONCENTRATION: ppm

INSTRUMENT AIR : MAX kPa MIN kPa

STEAM

		DRIVERS	HEATING
TEMP °K	Max		
	Min		
PRESS. kPa	Max		
	Min		

PERFORMANCE

PROPOSAL CURVE NO. RPM
As Tested Curve No.
IMPELLER DIA.: RATED MAX. MIN. mm
RATED POWER kW EFFICIENCY (%)
RATED CURVE BEP FLOW (at rated impeller dia) m³/s
MIN FLOW : THERMAL m³/s STABLE m³/s
PREFERRED OPERATING REGION (6.1.11) to m³/s
ALLOWABLE OPERATING REGION to m³/s
MAX HEAD @ RATED IMPELLER m
MAX POWER @ RATED IMPELLER (6.8.9) kW
NPSH3 AT RATED FLOW : m
CL PUMP TO U/S BASEPLATE m
NPSH MARGIN AT RATED FLOW : m
SPECIFIC SPEED (6.1.9) m3/s, rpm, m
SUCTION SPECIFIC SPEED LIMIT
SUCTION SPECIFIC SPEED m3/s, rpm, m
MAX. ALLOW. SOUND PRESS. LEVEL REQD (6.1.14) (dBA)
EST MAX SOUND PRESS. LEVEL (dBA)
MAX. SOUND POWER LEVEL REQ'D (6.1.14)
EST MAX SOUND POWER LEVEL

DRIVER (7.1.5)

Driver Type
GEAR
VARIABLE SPEED REQUIRED
SOURCE OF VARIABLE SPEED
OTHER
MANUFACTURER
NAMEPLATE POWER kW
Nominal RPM
RATED LOAD RPM
FRAME OR MODEL
ORIENTATION
LUBE
BEARING TYPE:
RADIAL /
THRUST /
STARTING METHOD
SEE DRIVER DATA SHEET

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Figure N.1—API Std 610 CENTRIFUGAL PUMP DATA SHEET (SI Units) (continued)

CONSTRUCTION

API PUMP TYPE: [Based on API 610 definitions]

NOZZLE CONNECTIONS: (6.5.5)

	Size	Facing	Rating	Position
SUCTION				
DISCHARGE				

PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2)

	No.	Size	Type	Facing	Rating	Posn.
BALANCE/LEAK OFF						
DRAIN						
VENT						
PRESSURE GAGE						
TEMP GAGE						
WARM-UP LINE						

Drain Valve Supplied By
DRAINS MANIFOLDED
VENT Valve Supplied By
VENTS MANIFOLDED
THREADED CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)
SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)
CYLINDRICAL THREADS REQUIRED (6.4.3.8)
GUSSET SUPPORT REQUIRED
MACHINED AND STUDDED CONNECTIONS (6.4.3.12)
VS 6 DRAIN
DRAIN TO SKID EDGE

MATERIAL (6.12.1.1)

APPENDIX H CLASS
MIN DESIGN METAL TEMP (6.12.4.1) °K
REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1)
Applicable Hardness Standard (6.12.1.12.3)
BARREL :
CASE :
DIFFUSERS
IMPELLER :
IMPELLER WEAR RING :
CASE WEAR RING :
SHAFT:
Bowl (if VS-type)
Inspection Class

BEARINGS AND LUBRICATION (6.10.1.1)

BEARING (TYPE / NUMBER): (6.11.4)
RADIAL /
THRUST /
REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)

LUBRICATION : (6.10.2.2) (6.11.3) (9.6.1)
PRESSURE LUBE SYSTEM TO ISO 10438- (9.2.6.5)
ISO 10438 DATA SHEETS ATTACHED
Pressurized Lube Oil System mtd on pump baseplate
Location of Pressurized Lube Oil System mounted on baseplate :
INTERCONNECTING PIPING PROVIDED BY
OIL VISC. ISO GRADE VG
CONSTANT LEVEL OILER :

CASING MOUNTING:
CASING TYPE: (6.3.10)
OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)

CASE PRESSURE RATING:
MAWP : (6.3.6) kPa @ °K
HYDROTEST : kPa @ °K

HYDROTEST OH PUMP AS ASSEMBLY
SUCT'N PRESS. REGIONS DESIGNED FOR MAWP
ROTATION: (VIEWED FROM COUPLING END)
- IMPELLERS INDIVIDUALLY SECURED :
- BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :
- PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS

ROTOR:
SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)
First Critical Speed Wet (Multi stage pumps only)
COMPONENT BALANCE TO ISO 1940 G1.0
SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3)

COUPLING:(7.2.3) (7.2.13.f)
MANUFACTURER
MODEL
RATING (POWER/100 RPM)
SPACER LENGTH mm
SERVICE FACTOR
RIGID
COUPLING WITH HYDRAULIC FIT (7.2.10)
COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3)
COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11)
COUPLING IN COMPLIANCE WITH (7.2.4)
COUPLING GUARD STANDARD PER (7.2.13.a)
Window on Coupling Guard

BASEPLATE

API BASEPLATE NUMBER :
BASEPLATE CONSTRUCTION (7.3.14)
BASEPLATE DRAINAGE (7.3.1)
MOUNTING :
NON-GROUT CONSTRUCTION : (7.3.13)
VERTICAL LEVELING SCREWS :
LONGITUDINAL DRIVER POSITIONING SCREWS :
SUPPLIED WITH :
- GROUT AND VENT HOLES
- DRAIN CONNECTION

MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.3.5)
MOUNTING PADS TO BE MACHINED (7.3.6)
PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET
OTHER

REMARKS :

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Figure N.1—API Std 610 CENTRIFUGAL PUMP DATA SHEET (SI Units) (continued)

Note	INSTRUMENTATION		Rev
	SEE ATTACHED API-670 DATA SHEET		
	ACCELEROMETER (7.4.2.1)		
	Number of Accelerometers		
	Mounting Location of Accelerometers		
	PROVISION FOR MTG ONLY (6.10.2.10)		
	Number of Accelerometers		
	Mounting Location of Accelerometers		
	FLAT SURFACE REQUIRED (6.10.2.11)		
	Number of Accelerometers		
	Mounting Location of Accelerometers		
	VIBRATION PROBES (7.4.2.2)		
	PROVISIONS FOR VIB. PROBES		
	NUMBER PER RADIAL BEARING		
	NUMBER PER AXIAL BEARING		
	MONITORS AND CABLES SUPPLIED BY (7.4.2.4)		
	TEMPERATURE (7.4.2.3)		
	PROVISIONS FOR TEMP PROBES		
	RADIAL BEARING TEMP.		
	NUMBER PER RADIAL BEARING		
	THRUST BEARING TEMP.		
	NUMBER PER THRUST BEARING ACTIVE SIDE		
	NUMBER PER THRUST BEARING INACTIVE SIDE		
	TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)		
	PRESSURE GAUGE TYPE		
	Remarks		

SEAL SUPPORT SYSTEM MOUNTING	
SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE (7.5.1.4)	
IDENTIFY LOCATION ON BASEPLATE	
INTERCONNECTING PIPING BY	

MECHANICAL SEAL (6.8.1)	
SEE ATTACHED ISO 21049/API 682 DATA SHEET	
ADDITIONAL CENTRAL FLUSH PORT (6.8.9)	
HEATING JACKET REQ'D. (6.8.11)	

HEATING AND COOLING (6.1.17)		
COOLING REQ'D		
COOLING WATER PIPING PLAN		
COOLING WATER PIPING FITTINGS		
COOLING WATER PIPING MATERIALS		
COOLING WATER REQUIREMENTS:		
BEARING HOUSING		m^3/s
HEAT EXCHANGER		m^3/s
TOTAL COOLING WATER		m^3/s
HEATING MEDIUM		
OTHER		
HEATING PIPING		

PIPING & APPURTENANCES	
MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6)	
VENT	
DRAIN	
COOLING WATER	
TAG ALL ORIFICES (7.5.2.4)	
SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)	

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Figure N.1—API Std 610 CENTRIFUGAL PUMP DATA SHEET (SI Units) (continued)

Note	SURFACE PREPARATION AND PAINT
	MANUFACTURER'S STANDARD
	OTHER (SEE BELOW)
	SPECIFICATION NO.
	PUMP:
	PUMP SURFACE PREPARATION
	PRIMER
	FINISH COAT
	BASEPLATE:
	BASEPLATE SURFACE PREPARATION
	PRIMER:
	FINISH COAT
	DETAILS OF LIFTING DEVICES
	SHIPMENT: (8.4.1)
	EXPORT BOXING REQUIRED
	OUTDOOR STORAGE MORE THAN 6 MONTHS
	SPARE ROTOR ASSEMBLY PACKAGED FOR:
	ROTOR STORAGE ORIENTATION (9.2.8.2)
	SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3)
	N2 PURGE (9.2.8.4)
	SPARE PARTS
	START-UP
	NORMAL MAINTENANCE

WEIGHTS kg

ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL

OTHER PURCHASER REQUIREMENTS

Note	
	COORDINATION MEETING REQUIRED (10.1.3)
	MAXIMUM DISCHARGE PRESSURE TO INCLUDE
	MAX RELATIVE DENSITY
	OPERATION TO TRIP SPEED
	MAX DIA. IMPELLERS AND/OR NO OF STAGES
	CONNECTION DESIGN APPROVAL (9.2.1.4)
	TORSIONAL ANALYSIS / REPORT (6.9.2.10)
	PROGRESS REPORTS
	OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5)
	ADDITIONNAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)
	LATERAL ANALYSIS REQUIRED (9.1.3.4) (9.2.4.1.3)
	MODAL ANALYSIS REQUIRED (9.3.9.2)
	DYNAMIC BALANCE ROTOR (6.9.4.4)
	INSTALLATION LIST IN PROPOSAL (10.2.3.l)
	VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3)
	TRANSIENT TORSIONAL RESPONSE (6.9.2.4)
	BEARING LIFE CALCULATIONS REQUIRED (6.10.1.6)
	IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e)
	CASING RETIREMENT THICKNESS DRAWING (10.3.2.3)
	FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8)
	INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3)
	CONNECTION BOLTING (7.5.1.7)
	CADMIUM PLATED BOLTS PROHIBITED
	VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c)
	VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)
	SUBMIT INSPECTION CHECK LIST (8.1.5)

Note	TEST		Rev
	SHOP INSPECTION (8.1.1)		
	PERFORMANCE CURVE		
	& DATA APPROVAL PRIOR TO SHIPMENT.		
	TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)		
	MATERIAL CERTIFICATION REQUIRED	CASING	
	(6.12.1.8)	IMPELLER	
		SHAFT	
		OTHER	
	CASTING REPAIR WELD PROCEDURE APPR REQD		
	(6.12.2.5) (6.12.3.1)		
	INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d)		
	(6.12.3.4.e)	MAG PARTICLE	
		RADIOGRAPHY	
		LIQUID PENETRANT	
		ULTRASONIC	
	INSPECTION REQUIRED FOR CASTINGS		
		MAG PARTICLE	
		RADIOGRAPHY	
		LIQUID PENETRANT	
		ULTRASONIC	
	HARDNESS TEST REQUIRED (8.2.2.7)		
	ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3)		
		FOR	
		METHOD	
	PMI TESTING REQUIRED (8.2.2.8)		
	COMPONENTS TO BE TESTED		
	RESIDUAL UNBALANCE TEST (J.4.1.2)		
	NOTIFICATION OF SUCCESSFUL SHOP		
	PERFORMANCE TEST (8.1.1.c) (8.3.3.5)		
	BASEPLATE TEST (7.3.21)		
	HYDROSTATIC		
	HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2)		
	PERFORMANCE TEST		
	TEST IN COMPLIANCE WITH (8.3.3.2)		
	TEST DATA POINTS TO (8.3.3.3)		
	TEST TOLERANCES TO (8.3.3.4)		
	NPSH (8.3.4.3.1) (8.3.4.3.4)		
	NPSH-1ST STG ONLY (8.3.4.3.2)		
	NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3)		
	TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6)		
	RETEST ON SEAL LEAKAGE (8.3.3.2.d)		
	RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b)		
	COMPLETE UNIT TEST (8.3.4.4.1)		
	SOUND LEVEL TEST (8.3.4.5)		
	CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)		
	LOCATION OF CLEANLINESS INSPECTION		
	NOZZLE LOAD TEST		
	CHECK FOR CO-PLANAR MOUNTING PAD SURFACES		
	MECHANICAL RUN TEST UNTIL OIL TEMP STABLE		
	4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1)		
	4 HR. MECH RUN TEST (8.3.4.2.2)		
	BRG HSG RESONANCE TEST (8.3.4.7)		
	STRUCTURAL RESONANCE TEST (9.3.9.2)		
	REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST		
	(9.2.7.5)		
	AUXILIARY EQUIPMENT TEST (8.3.4.6)		
	EQUIPMENT TO BE INCLUDED IN AUXILLIARY TESTS		
	LOCATION OF AUXILIARY EQUIPENT TEST		
	IMPACT TEST (6.12.4.3)	PER EN 13445	
		PER ASME SECTION VIII	
	REMOVE CASING AFTER TEST		

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Figure N.1—API Std 610 VERTICAL PUMP SUPPLEMENTAL DATA SHEET (SI Units) (continued)

VERTICAL TYPE (FIG 1.1) _____ Rev

REMARKS _____

VERTICAL PUMPS

	(+) UP	(-) DOWN
PUMP THRUST:		
STATIC THRUST	____ N	____ N
AT MIN FLOW	____ N	____ N
AT RATED FLOW	____ N	____ N
AT MAX FLOW	____ N	____ N
MAX THRUST	____ N	____ N
SOLEPLATE REQUIRED		
SOLEPLATE Length x Width	____ m	X ____ m
SOLEPLATE THICKNESS		____ mm
MOUNTING FLANGE REQUIRED		
COLUMN PIPE:		
DIAMETER		____ mm
LENGTH		____ m
NUMBER		
SPACING		____ m
GUIDE BUSHINGS:		
NUMBER		
LINE SHAFT BEARING SPACING		____ mm
GUIDE BUSHING LUBE:		

VERTICAL PUMPS (CONT'D)

LINE SHAFT: _____

LINE SHAFT DIAMETER ____ mm

TUBE DIAMETER ____ mm

LINE SHAFT COUPLING:

LINESHAFT CONNECTION _____

- SUCTION STRAINER TYPE _____
- LEVEL CONTROL _____

IMPELLER COLLETS ACCEPTABLE

HARDENED SLEEVES UNDER BEARINGS (9.3.10.5)

RESONANCE TEST

STRUCTURAL ANALYSIS (9.3.5)

DRIVER ALIGNMENT SCREWS

SUCTION CAN

SUCTION CAN THICKNESS ____ mm

LENGTH ____ m

DIAMETER ____ mm

SEPARTATE MOUNTING PLATE (9.3.8.3.1)

PROVIDE SEPARATE SOLEPLATE (9.3.8.3.3)

DRAIN PIPED TO SURFACE (9.3.13.5)

BOWL HEAD CALCULATION REQUIRED

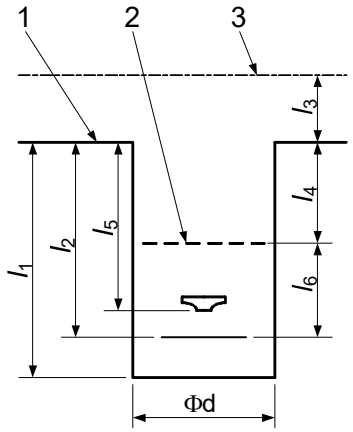
MATERIALS (additional)

SUCTION CAN / BARREL:		LINESHAFT SLEEVES :	
DISCHARGE HEAD •		BEARING RETAINER :	
BOWL SHAFT :		SHAFT ENCLOSING TUBE :	
LINESHAFT :		DISCHARGE COLUMN :	
LINESHAFT HARDFACING :		**PRESSURE RATING:**	**MAWP** / **HYDRO**
BELLMOUTH :		HEAD	
BOWL BEARING :		COLUMN PIPE	
LINESHAFT BEARING :		BOWL	

SUMP ARRANGEMENT

SUMP DIMENSIONS :

GRADE ELEVATION	1 ____	m
LOW LIQUID LEVEL	2 ____	m
C.L. OF DISCHARGE	3 ____	m
SUMP DEPTH	l_1 ____	m
PUMP LENGTH	l_2 ____	m
GRADE TO DISCH.	l_3 ____	m
GRADE TO LOW LIQUID LVL	l_4 ____	m
GRADE TO 1ST STG IMPL'R.	l_5 ____	m
SUBMERGENCE REQ'D	l_6 ____	m
SUMP DIAMETER	Φd ____	m



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Figure N.1—API Std 610 CENTRIFUGAL PUMP DATA SHEET (SI Units) (continued)

Note	PRESSURE VESSEL DESIGN CODE REFERENCES	Rev
	THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER	
	CASTING FACTORS USED IN DESIGN (TABLE 3)	
	SOURCE OF MATERIAL PROPERTIES	
	WELDING AND REPAIRS	
	THESE REFERENCES MUST BE LISTED BY THE PURCHASER. (DEFAULT TO TABLE 10 IF NO PURCHASER PREFERENCE IS STATED)	
	ALTERNATE WELDING CODES AND STANDARDS	
	WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD)	
	WELDER/OPERATOR QUALIFICATION	
	WELDING PROCEDURE QUALIFICATION	
	NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS	
	MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES	
	POSTWELD HEAT TREATMENT	
	POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS	
	MATERIAL INSPECTION	
	THESE REFERENCES MUST BE LISTED BY THE PURCHASER DEFAULT TO TABLE 14	
	ALTERNATIVE MATERIAL INSPECTIONS AND ACCEPTANCE CRITERIA (SEE TABLE 14) (8.2.2.5)	

TYPE OF INSPECTION	METHOD	FOR FABRICATIONS	FOR CASTINGS
RADIOGRAPHY			
ULTRASONIC INSPECTION			
MAGNETIC PARTICLE INSPECTION			
LIQUID PENETRANT INSPECTION			
VISUAL INSPECTION (all surfaces)			

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