

Snamprogetti	CLIENTE - Customer NAGARIUNA FERTILIZERS & CHEM. Ltd.	COMMESSA - Job 808200	IMPIANTO - Unit 01
	LOCALITA' Plant location KAKINADA - INDIA	SPC. No MA-E 30311 6142	
	IMPIANTO - Unit KAKINADA FERTILIZERS COMPLEX	FG - Sh - DI - of 1 / 11	Rev 0 1 2 3 4 5

FOGLIO DATI PER POMPE CENTRIFUGHE ORIZZONTALI
HORIZONTAL CENTRIFUGAL PUMP DATA SHEET

1	SERVIZIO Service H.P. CARBONATE SOLUTION PUMP	SIGLA Item No 01 - P-102 A/B
2	FUNZIONAMENTO Operation CONT. class CONT. class	N. UNITA' PRINC./RISERVA No of units main/spare 1/1
3	COSTRUTTORE Pump Mfr SUNDSTRAND	MODELLO Type HMP 3512
4	ORDINE N° Purchase order No 808200/92/00026	TIPO MOTRICE PRINC./RISERVA Drvr type: main/spare elec. motor
API 610 6TH ED (WITH EXCEPTIONS ATTACHED)		

5	LIQUIDO POMPATO Liquid handled CARBONATE SOLUTION	PROG Rated 65 (1)
6	PORTATA Capacity m ³ /h 15	
7	COMP CORROSI/VEROSIVI Corrosive/Erosive compounds <input checked="" type="checkbox"/> SI Yes <input type="checkbox"/> NO No	% SOLIDI % Solids NO
8	TEMPER POMP MIN./ESERCIZIO Suction temperature min./oper 60/72	
9	PESO SPECIFICO A TEMP. MIN./ESERCIZIO Specific gravity at min./oper temperature 0.93 ÷ 1	
10	VISCOSITA' CINEM A TEMP. MIN./ESERCIZIO Viscosity at min./oper temperature cps < 3	
11	PRESSIONE ALL'ASPIRAZIONE Suction pressure Kg/cm² abs. MIN 15 NORM 18 MAX 24 (2)	
12	PRESSIONE ALLA MANDATA Discharge pressure Kg/cm² abs. NORM 15.5 (4)	
13	TENSIONE VAPORE ALLA TEMP. ESERCIZIO Vap pressure at operating temperature Kg/cm² abs.	
14	PRESSIONE DIFFERENZIALE Differential pressure Kg/cm² abs. 13.7	PREVALENZA m. 14.75
15	POTENZA ASSORBITA ALL'ASSE STIMATA Estimated BHP 450 (η = 0.53)	N.P.S.H. DISP N.P.S.H. avail m. 10
16	REGOLAZIONE PORTATA Flow control CONT. class	MONTE/DESCENTE AUTOMATICA Mount/automatic
17	SISTEMA DI REGOLAZIONE Flow control type by throttling on discharge and by-pass	CAMPO Range 25 ÷ 100
18	TIPO TENUTA ESERC. Seal type operation mechanical (JOHN CRANE)	TIPO TENUTA AVVIAM Start-up mechanical
19	FLUIDO RISCALDANTE TIPO Heating fluid type L.P. steam	PRESS. NORM./PROG Press. norm./des Kg/cm² abs. 4.5
20	FLUIDO REFRIGERANTE TIPO Cooling fluid type C.W.	TEMP. Temp °C 35/45
21	FLUIDO FLUSSAGGIO TIPO Flushing fluid type D.W.	AP max Kg/cm²
22	RIACCELERAZIONE Reacceleration <input type="checkbox"/> SI Yes <input checked="" type="checkbox"/> NO No	AVV. AUTOMATICO Automatic start-up <input type="checkbox"/> SI Yes <input checked="" type="checkbox"/> NO No
23	MATERIALE LINEE MONTE/VALLE POMPA Piping material upstream/downstream ALSI 316 #	SUPPORTO Bracket <input type="checkbox"/> IN LINE <input type="checkbox"/>

23	CASSA TIPO SUPPORTAZIONE Casing Mounting <input type="checkbox"/> MEZZERIA Centerline <input type="checkbox"/> PIEDI Foot <input type="checkbox"/> TIPO DIVIS Split <input type="checkbox"/> ASSIALE Axial <input checked="" type="checkbox"/> RADIALE Radial	TIPO VOLUTA Volute <input type="checkbox"/> SINGOLA Single <input type="checkbox"/> DOPPIA Double <input checked="" type="checkbox"/> DIFFUSORE Diffuser	ASPIRAZIONE Suction <input checked="" type="checkbox"/> SINGOLA Single <input type="checkbox"/> DOPPIA Double
24	ATTACCHI PER CONNECTIONS for <input type="checkbox"/> DRENAGGIO Drain <input type="checkbox"/> SFIATI Vents <input type="checkbox"/> MANOMETRI Press gauges	GIUCHI API API Clearance <input type="checkbox"/> SI Yes <input type="checkbox"/> NO No	AUTOADESCANTE Selfpriming <input type="checkbox"/> SI Yes <input type="checkbox"/> NO No
25	ANELLI USURA Wear rings <input type="checkbox"/> LATO INGRESSO Suction side <input type="checkbox"/> LATO CASSA STOPPA Stuffing box side	SOVRASP CORROS Corros allowance mm 3	SOLO CASSA Casing only <input type="checkbox"/> CASSA E GIRANTE Casing & impeller <input type="checkbox"/>
26	ASPIRAZIONE LINEA DIAM. Suction line dia 8"	RATING ANSI ANSI rating 300 RF	BOCCHELLI Nozzle size 3"
27	MANDATA LINEA DIAM. Discharge line dia 6"	RATING ANSI ANSI rating NOTE (3)	BOCCHELLI Nozzle size 3"
28	GIRANTI TIPO Impellers type OPEN	DIAM. PROG. MIN/MAX Dia des./min./max. MM 101.6/151.45/175.26	MONTATE Mounting <input type="checkbox"/> TRA CUSCINETTI Between bearings <input checked="" type="checkbox"/> A SBALZO Overhung
29	CUSCINETTI RADIALI TIPO Bearings radial 4 RAIN JOURNALS	REGGIA TIPO Thrust 3 FLAT RATE TYPE #1 TILTING PAD TYPE	SEPARATO Separate <input type="checkbox"/> COMUNE A MOTRICE Common with drvr <input checked="" type="checkbox"/>
30	GIUNTO TIPO/COSTR. Coupling type/Mfr 35 JTNS/METASTREAM	TENUTA MECC Mech seal type/Mfr SIG 1: SINGLE JOHN CRANE CODE: CRANE 8AB	ROTTING FACE - TUNGSTEN CARBIDE STATIC FACE - CARBON GRAPHITE PLAN 32, 61 PLAN 52, 32, 61
31	VALV. AUTOM SFIORO Automatic relief valve	TIPO LUBRIFICAZIONE Lubrication type <input type="checkbox"/> A SBATTIM. Oil splash <input checked="" type="checkbox"/> FORZATA Forc'd	AD ANELLO Ring oil <input type="checkbox"/>

30	MATERIALE Material (*) CODICE API 610 API 610 Code ASTM code 316 SS CONTAINS LESS THAN 0.04% C	31 MOTORE ELETTRICO Electric motor COSTR. Mfr POTENZA NOM. kW 450	32 TURBINA VAPORE Steam turbine ITEM COSTR. Mfr GIRI/1' r.p.m. 2
31	INTERNAL PARTS CASSA Case GIRANTI Impellers	FORMA Frame TIPO ALIM Power lead VOLTS/FASI/CICLI Volts/Phases/Cycles 3300/3/50	VAPORE INGR Inlet steam VAPORE USC Exhaust ste
32	DIFFUSER SLEEVE ALBERO Shaft SEAL PARTS	ESECUZIONE Execution B3	TIPO CUSCINETTI Bearings TIPO OLIO Lube
33	BASAMENTO Baseplate / STUDS C.S. / A193-B7	FORNIT DA Supplied by OTHERS	FORNIT DA Supplied by

4	REVISED WHERE MARKED	G.T.	RWC	RWC	29-7-88
3	REVISED WHERE MARKED	C.S.B.	RWC	RWC	12-8-88
2	CLIENT COMMENTS ADDED	fwk	9/3/88		
5	GENERAL REV - ISSUED FOR ORDER ON SUNDSTRAND	John Thomas			10-10-89
0	EMISSIONE - Issue				9/12/86

CARATTERISTICHE COSTRUTTIVE E MATERIALI
CONSTRUCTION FEATURES AND MATERIALS

FG	Sh	DI	of	Rev
2	1	11		5
				0 1 2 3 4

33 CURVA CARATTERISTICA DI OFFERTA N Offer characteristic curve No **H88047-BE** HEAD SALT ON PUMP 50/50 BETWEEN STAGES

34 NPSH RICHIESTO (ACQUA) NPSH required (water) **8-4 RATED / 6-4 AT MIN FLOW** INDICE CAVITAZIONE Suction specific speed **18302 IN US UNITS**

35 N DI STADI No of stages **TWO** GIRI r.p.m. **13010** RENDIM. Efficiency **59.3** POTENZA ASSORBITA Absorbed power **408.4** kW

36 PORTATA MAX CON GIRANTE PROGETTO Max BHP with design impeller **447.6** kW PREVAL MAX CON GIRANTE PROGETTO Max head with design impeller **1603.40 13010** m

37 PORTATA MIN CONTINUA Min continuous capacity **34.7 PROCESS MIN FLOW** SEE NOTE 8 ROTATION VIEWED FROM COUPLING END CW

38 ACQUA RAFFREDDAMENTO Cooling water **PER PUMP 16.6 M³/H** MATERIALE TUBAZIONI Piping material **304SS**

CUSCINETTI Bearings **5.7 M³** CAMERA TENUTA Stuffing box BASAMENTO Pedestal PREMISTOPPA Gland SCAMB FLUIDO FLUSSAGGIO Flushing fluid exchanger **10.9 M³/H**

39 TENUTA MECCANICA Mechanical seal SINGOLA Single DOPPIA Double TANDEM Tandem **2ND STAGE** TENUTA AUSILIARIA Auxiliary seal SI NO

40 FLUSSAGGIO TENUTA INTERNA Flushing int seal DALLA MANDATA From discharge nozzle ESTERNO External **m/h** SI NO **Kg/cm²**

FLUSSAGGIO TENUTA ESTERNA Flushing ext seal CON BARILOTTO From reservoir ESTERNO External **m/h** SI NO **Kg/cm²**

41 CARICHI AMMISS SU FLANGE Allow loads on flanges PARALL ALBERO Parallel to shaft VERTICALE Vertical ORIZZ 90 ALBERO Horiz 90 to shaft

ASPIRAZIONE FORZA/MOMENTO Suction force/torque **1892** N Nm **1432** 946 **18 ACCORDATA WITH API 610**

MANDATA FORZA/MOMENTO Discharge force/torque **1892** N Nm **1432** 946

42 SPINTA ASSIALE SULL ALBERO Axial thrust on shaft **DIRECTION STG1 UNTIL RIMP DESIGN STG2** DIREZIONE Direction **STG2 AWAY FROM INLET**

43 AREA OCCHIO GIRANTE Eye area **cm²** DIAMETRO Diameter **mm** VELOCITA SPECIFICA Specific speed **mm** COPPIA ALL AVVIAM Starting torque NORM Norm **N.m**

V ASSOLUTA Inlet Outlet abs vel **m/sec** INGRESSO USCITA **INLET OUTLET**

V RELATIVA Inlet Outlet rel vel **m/sec** INGRESSO USCITA **INLET OUTLET**

44 COLLAUDI Shop tests **ACCORDING TO SPC QN-E-13415 REV 1** RILIEVO CURVA Performance curve **YES** NPSH **AT 4 POINTS MINIMUM YES** PROVA IDRAULICA Hydrostatic test **YES** SMONTAGGIO Sino-down

PRESENZIATI Witnessed **YES** NON PRESENZIATI Non witnessed **NO**

PRESSIONE DI PROVA IDRAULICA Hydrostatic test pressure **Kg/cm² abs. 180** TEMP MAX AMMISS Max admitt temp **110**

45 PESI Weights **kg** POMPA Pump **953** BASAMENTO Baseplate **1542** MOTORE Motor **BY OTHERS** TURBINA Turbine **//**

46 DATI CON ACQUA (IN CASO DI LIQUIDO VISCOSO) Data with water (for viscous fluid)

CURVA OFFERTA N Offer curve No **H 88047-BE** VISCOSITA Viscosity **cs** FATTORI CORRET Correct factors **CO CH CE**

PORTATA Capacity **m/h** PREVALENZA Head **m** RENDIMENTO Efficiency **%** PESO SPECIFICO Spec gravity **%**

POTENZA ASS Absorbed power **kW** POTENZA MOTORE Motor power **kW**

47 ESTENSIONE FORNITURA Supply limits (INCLUSIONI INCLUDED)

BASAM COM A POMPA MOT VARIATORE Common baseplate for pump driver & gear

GIUNTI Couplings WITH SPACER

SPECIAL TOOLS LISTED IN QUOTE

SUCTION SPOOL PIPES AND CROSSOVER RING

AVVIAM AUTOM POMPE RISERVA E EMERGENZA Automatic starting for spare emergency pumps

SEPARATORI SU FLUSSAGGIO Flushing separator system **REFER TO P 8 OF THIS SPEC AND SUNDSTRAND P4 ID PROIFA26**

PREFABB TUBAZIONI OLIO Shop-fabrication of lube oil piping

ATTREZZI E CHIAVI SPECIALI Special tools and wrenches

LIBRETTO ISTRUZ No. **COPIE IN LINGUA english**

ACCOPP POMPA MOTORE Assem pump-driver IN OFFIC In factory IN CANT In field

TENUTE MECCANICHE Mechanical seals

AUSILIARI TENUTE MECCANICHE Auxiliaries for mechanical seals BARILOTTO Ext. reservoir TERMOMETRO Temperature indicator

MANOMETRO Pressure indicator VALV SICUREZZA Safety valve VALV DI SFIORO Relief valve

PRESSOSTATO Pressure switch INTER DI LIVELLO Level switch INDICATORE DI LIVELLO Level indicator

REFER TO SUNDSTRAND DRG PROIFA26

MOTICI Driver **(IN FIELD) (SEE NOTE 5)**

BULLONI DI FONDAZIONE SECONDO Foundation bolts in accordance **STD SP 8500-84 + RUGMENT DEVICES**

PROT GIUNTI Coupling guards **ANTISC Non-sparking** SI NO

FILTRI TEMPOR ASPIRAZIONE Temporary suction filters

SISTEMA DI LUBRIFICAZIONE Lube oil system **REFER TO P 8 OF THIS SPEC AND SUNDSTRAND P4 ID PROIFA26**

ACCUSTIC ENCLOSURE 0.75 KW MOTOR WITH BLOWER

TUBAZIONE COLLEGAMENTO CENTRALINA LUBRIF E POMPA Connect piping between lube console and pump

COLLAUDI OFFICINA (ACCORDING TO QN-E-13415) Shop tests

PARTI RICAMBIO PER N Spare parts for **COMMISSIONING / 2 YEARS**

ALL RELEVANT PIPE SUPPORTS WITHIN THE PACKAGE CONFINES

SS CONDENSATE RESERVOIR WITH ASSOCIATED SS PIPING

48 NOTE 1. Capacity is based on suction conditions 2. This figure is only for mechanical reason. The max value for process condit. is 19 Kg/cm² abs.

3. DISCHARGE FLANGES SHALL BE OF SPECIAL LENS DESIGN TO SP STD TB 5002.84

4. Safety valve setting: Kg/cm²g 180 SHALL NOT BE EXCEEDED

5. Pump baseplate to be undrilled

6. MINIMUM FLOW AT WHICH THE PUMP CAN OPERATE IS 34.7 M³/H

7. Seal flushing D.W. flow shall not exceed 70l Kg/hr. CONFIRMED BY SUNDSTRAND

8. CONTROL VALVE, FV-06 SHALL BE SUPPLIED BY SP AND POSITIONED NOT MORE THAN 2.13M FROM THE PUMP

COMMESSA No.	808200	IMP. No. / U.	01
SPC. N° MA-E-30311			
FG	3	11	
Rev.	0	1	2
	5	3	4

REFER TO SUNDSTRAND DRG-PROIFA21 FOR TOTAL SCOPE

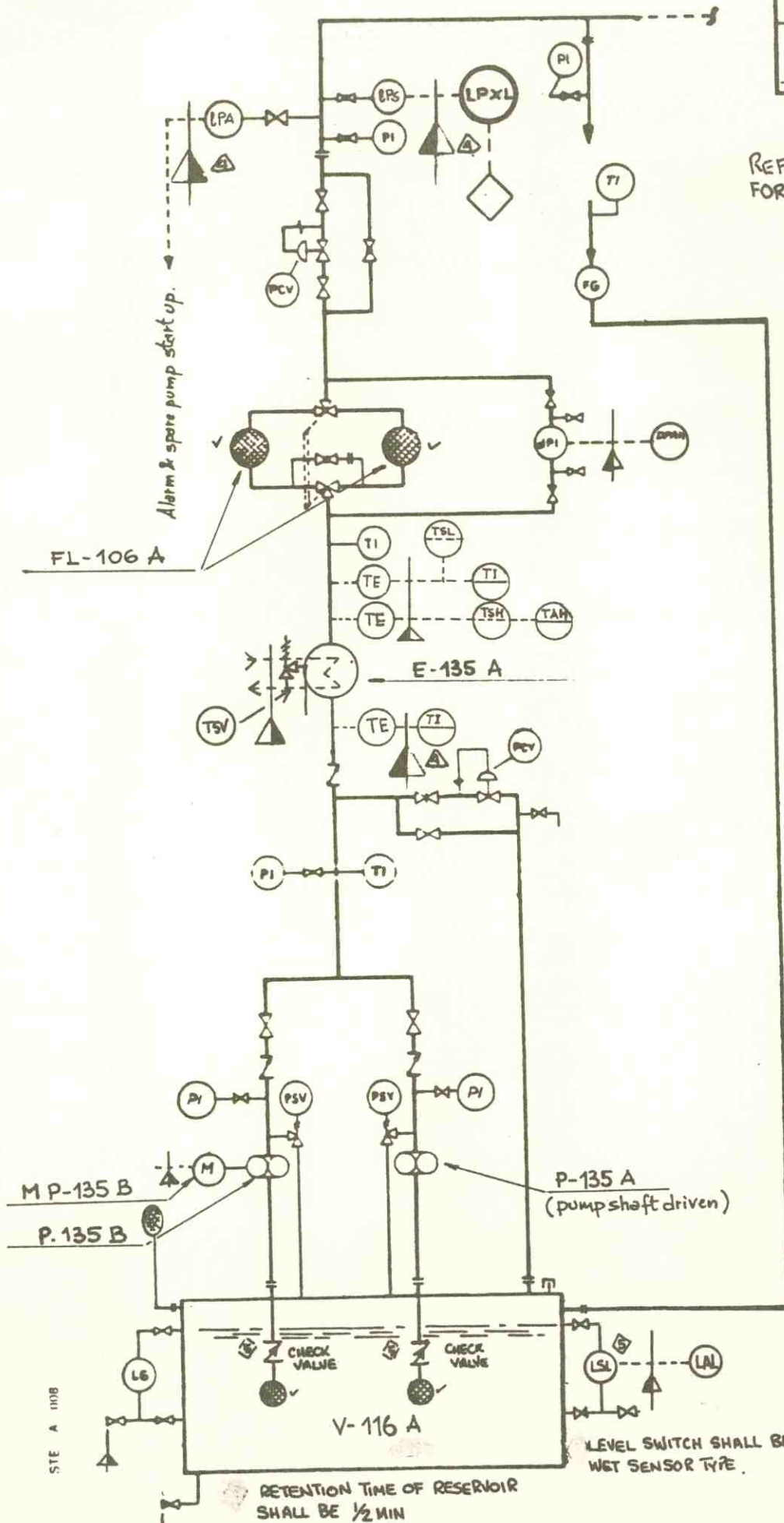
VALID FOR ONE PUMP

THE LUBE OIL SYSTEM SHALL BE TESTED DURING THE PUMP PERFORMANCE TEST

SUMP HEATER NOT REQUIRED

ALL WIRING OF SWITCHES SHALL TERMINATE AT JUNCTION BOXES

VENDOR / OTHERS



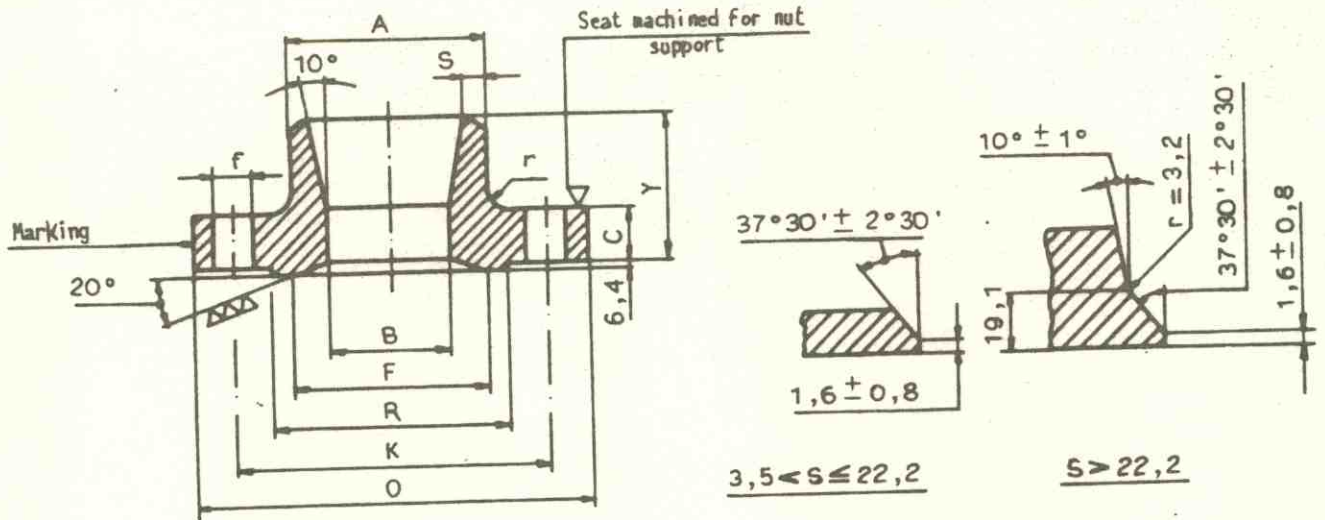
STE A 1108

MATERIALS FOR UREA
STAINLESS STEEL WELDING NECK FLANGES

Fg. - Ed. / di - of

4 / 11

Rev.				
0	1	2	3	4
5				



EXAMPLE OF DESIGNATION : Flange. DNP 4" x (1), per Snamprogetti Std. TB.5002, Sheet 11.
ASTM A 182 F 316L, per SPC. G510.
EXAMPLE OF MARKING : 4 - (1) / 316L - G510 / TB.5002-11.

DNP	A	B ^{+0,5} ₋₀	O	K	R	F	C	Y	f	r	S	N° of holes	Stud Bolts		Mass Kg
													DN"	Length	
3/4	26,7	14,7	100	64	44	22,0	25	93,6	15,9	2	to suit pipe wall thickness	4	1/2	100	1,8
1	33,4	19,2	105	68	46	29,5	30		19,1				5/8	120	2,4
1 1/2	48,3	30,5	135	95	70	43,5	35		22,2	3/4			130	4,4	
2	60,3	39,3	155	110	82	53,0	45	25,4	5	7/8			160	6,9	
3	88,9	58,4	200	145	115	79,0	60		6	190		15,4			
4	114,3	77,2	250	185	150	103,0	75	143,6	31,8	7		8	1 1/8	235	26,5
6	168,3	116,4	330	255	210	152,0	100		41,3				1 1/2	325	55,5
8	219,1	153,1	410	320	265	196,0	120	173,6	50,8				1 7/8	370	109,0
10	273,0	190,0	480	380	321	241,0	140	203,6	55,0		2		430	161,0	

Dimensions in mm.

DNP, DN" = Nominal Size, Inches.

- DIMENSIONS : As shown in Table.
- CONSTRUCTION : Forged.
- TOLERANCES : ANSI B 16.5
- MATERIALS & TESTS : Per SPC. G510 and as specified in P.O.
- DESIGN CONDITIONS : 292 bars at 80°C
258 bars at 150°C
221 bars at 250°C
- STUD-BOLTS : Per ENI STD 0368.00

NOTES FOR PURCHASE ORDER AND MANUFACTURER

- 1) - State "S" thickness as specified each time.
- 2) - Each piece to be marked by its marking.

TUB.1

Comp. *Wacchi*

Verif. *[Signature]*

Appr. *[Signature]*

Il presente standard è proprietà esclusiva
Le società tuttora i propri diritti a termini di

CONMESSA - JOB 808200	IMPIANTO - UNIT 01
SPC N° MA-E-30311	
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LUBE OIL SYSTEM

REFER TO SUNDSTRAND DRAWING PROIFA26

Main Oil Pump	Item No. 01-P-135 A.C
Driven by <input checked="" type="checkbox"/> Main Pump <input type="checkbox"/> Electric Motor <input type="checkbox"/> Turbine	
Pump Manufacturer: <u>VIKING</u> Type: <u> </u>	
Capacity (m ³ /hr): <u>~ 4</u> Disch Pressure (ATA):	
Power (KW) Duty/Max: <u> </u>	
Casing Materials: <u>NOBULLITE</u>	
Main Oil Pump Driver	Item No.
Electric Motor	Turbine
Manufacturer: Type:	Manufacturer: Type:
Rated Power (KW) No Poles:	RPM:
Frame: Execution:	Power:
Power Fd. <input type="checkbox"/> Norm <input type="checkbox"/> Pref <input type="checkbox"/> DC	Inlet Steam (ATA) °C:
Volts/Phases/Cycles:	Exhaust (ATA) °C:
Lube:	Lube:
Bearings:	Bearings:
Supplied by:	Supplied by:
Stand-by Oil Pump	Item No. 01-P-135 B.D
Driven by <input checked="" type="checkbox"/> Electric Motor <input type="checkbox"/> Turbine	
Pump Manufacturer: <u>VIKING</u> Type: <u>GEAR</u>	
Capacity m ³ /hr <u>~ 4.1</u> Disch Pressure (ATA)	
Power KW Duty/Max: <u>~ 2.5</u>	
Casing Materials <u>CAST IRON</u>	
Stand-by Oil Pump Driver	Item No. 01-MP-135 B,D
Electric Motor	Turbine
Manufacturer: <u>LOHER</u> Type:	Manufacturer: Type:
Rated Power (KW): <u>2.5</u> No Poles: <u>4</u>	RPM
Frame Execution:	Power
Power Fd. <input type="checkbox"/> Norm <input checked="" type="checkbox"/> Pref <input type="checkbox"/> DC	Inlet Steam (ATA) °C
Volts/Phases/Cycles <u>415 / 3 / 50</u>	Exhaust (ATA) °C
Lube	Lube
Bearings	Bearings
<u>IP55, TEFV</u>	
Supplied by: <u>PUMP VENDOR</u>	Supplied by:
Oil Cooler	No. off <u>2</u> Item No. 01-E-135 A/B
Design Code <u>TEMA C</u> Type <u>SHELL & TUBE (OIL IN SHELL)</u>	
Materials Tube <u>AISI 304</u> Tube Sheet <u>AISI 304</u>	
Shell <u>C.S.</u>	
Heat Exchanged (K Cal/hr) <u>16002</u> Actual Surface (m ²) <u>1.8</u>	
Cooling Water Flow (m ³ /hr) <u>5.7</u>	
Design Pressure Shellside (ATF) <u>10.5</u> Tube Side (ATF) <u>10.5</u>	
<u>THERMAL RELIEF VALVES FITTED ON COOLING WATER OUTLET</u>	
Oil Filter	No. off <u>2</u> Item No. 01-FL-106A,B
Manufacturer: <u>HILCO</u> Type: <u>CANISTER</u>	
Simplex <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Duplex <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Flow Rate (m ³ /hr) <u>3.6</u> ΔP (ATA) Clean/Dirty	
Degree of Filtration (μ) <u>10</u>	
Materials Casing <u>C.S.</u> Filter Element <u>PAPER</u>	
Design Pressure (ATF) <u>10.5</u>	

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Oil Reservoir	Item No. V-116A/B
Materials CS	
Capacity (m ³) 2.3	
Retention Time (Mins) 0.5	
Piping Materials ACCORDING TO SPEC GA-E-60802	
* NOTE Pipe <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Tubing <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Piping Specification	
Materials	Downstream Filters to Bearings: SS
	From Bearings to Reservoir to Filter: SS ▲
	Valve Bodies/Internals + Trim: SS/SS ▲
PIPING (ACCORDING TO SCHEME PAGE 3 THIS SPECN)	
Oil Reservoir Heater	NONE
Rated Power (KW)	Power Feed Volts/Phases/Cycles
Manufacturer:	Type:
Surface Temp (°C)	
Temperature Control Provided	<input type="checkbox"/> Yes <input type="checkbox"/> No
Temperature Trip High Provided	<input type="checkbox"/> Yes <input type="checkbox"/> No
Instrumentation	
Instrument Specification: ACCORDING TO SPECN SA-E-50050	
INSTRUMENTATION TO PAGE 3 OF THIS SPECIFICATION.	
Electrical	
Electrical Specification	EA-E-40903 & EA-E-40004
Hazard Classification	} SEE ABOVE.
Degree of Protection	
* SUNDSTRAND USES BOTH PIPING AND TUBING IN THE LUBE SYSTEM.	
LUBE OIL PRESSURE SHALL BE GREATER THAN THE WATER PRESSURE	
ALL TERMINAL CONNECTIONS 1/2" AND BELOW SHALL BE RATED AT 600 # RF 16.5 RATING PERMITTING EXCEPTION PUMP DISCHARGE WHERE SPECIAL LENS IS MANDATORY	

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PUMP FLUSHING SYSTEM

REFER TO SUNDSTRAND DRAWING PRO1FA26

49	Main Seal Flushing Pump (Item 01-P-130A/C)
	- Driven by : Electric Motor
	- Pump Mfr/Type : FMC (THREE PLUNGER)
	- Capacity m ³ /hr : 0.9
	- Discharge Pressure Kg/cm ² g : } DETERMINED AT FINAL ENGINEERING
	- Absorbed Power Duty/Max KW : } REVIEW
	- Installed Power KW : 5
	- Casing Materials : CS
	Motors for 01-P-130A/B/C/D (Items 01-MP-130A/B/C/D) ALL ON PREFERENTIAL ELECTRICAL SUPPLY
	- Mfr/Type :
	- Frame : AT FINAL ENGINEERING REVIEW
	- Rated Power KW : 5
	- Rated Speed rpm : 700
	- Volts/Phases/Cycles : 415/3/50
	- Supplied by : Pump Vendor
	Seal Flushing Cooler (Item 01-E-130A/B)
	- Design according to : TEMA 'C'
	- Type : Shell & Tube (Oil in Shell)
	- Tube Materials : AISI 304
	- Tube Sheet Materials : AISI 304
	- Shell : AISI 316
	- Heat Exchanged K Cal/hr : 54356
	- Actual Surface m ² : 1.04
	- Cooling Water Flow m ³ /hr : 10.9
	- Design Pressure Oil Side Kg/cm ² g : 10.5
	- " " Water Side Kg/cm ² g : 10.5
	- THERMAL RELIEF VALVE TO BE FITTED ON COOLING WATER OUTLET
	Piping
	- According to SPC GA-E-60802 PWS SUNDSTRAND COMMENTS
	- Flushing Piping to Seal shall include Needle Valve Check Valve and Strainer
	- Piping Materials : AISI 316
	Instruments
	- Orifice on Flushing Line
	- Flow Meter with Alarm and Shutdown Switches for Low Flushing Flow
	- Seal Leakage Detection Kit for Driver Shutdown
	- Pressure Indicators
	- CONDENSATE RESERVOIR WITH 5 MINS RETENTION TIME TO PROVIDE FLUSH WATER BACK-UP
	- MATERIALS - SS.
	WITH THE INCLUSION OF THIS TANK WHICH IS AT ATMOSPHERIC PRESSURE SPECIAL ATTENTION MUST BE PAID TO THE NPSHA AT FLUSH PUMPS

SPC-4-000

