OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT							CONTRACTOR	
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)								
	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No :	
Owner Document Number :	BU	20	VD	303	ME	DSH	0075	rev 00	Page: 1 OF 20

All comments in this document are general. Document will be technically checked in next revision

MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)

BUSHEHR PETROCHEMICAL COMPANY MEG PLANT
Document Review
Issue Purpose: — IFA
Result Code: AP,AN,CM,RE,NC — CM
Next Status : IFC,IFA,IFI,AFC,AB — IFA
Responsible Department — MECHANICAL
Commented Date — Aug/22/2021
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.

Rev.	Date	Description	Prepared By	Checked By	Approved	AC code.
00	12/08/2021	for approval	KP	KP	JR	

Class: 1 Phase: p

commented

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	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No :
Owner Document Number :	BU	20	VD	303	ME	DSH	0075	rev 00 / Page: 2 OF 20

LIST OF REVISED PAGES

REV PAGES								REV PAGES								REV PAGES							
1	X							46								91							
2	X							47								92							
3	X							48								93							
4	X							49								94							
5	X							50								95							
6	X							51								96							
7	X							52								97							
8	X							53								98							
9	X							54								99							
10	X							55								100							
11	X							56								101							
12	X							57								102							
13	X							58								103							
14	X							59								104							
15	X							60								105							
16	X							61								106							
17	X							62								107							
18	X							63								108							
19	X							64								109							
20	X							65								110							
21								66								111							
22								67								112							
23								68								113							
24								69								114							
25								70								115							
26								71								116							
27								72								117							
28								73								118							
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36								81								126							
37								82								127							
38								83								128							
39								84								129							
40								85								130							
41								86								131							
42								87								132							
43								88								133							
44								89								134							
45								90								135							

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No :	
Owner Document Number : BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 3 OF 20

APPLICABLE TO: ● PROPOSALS ○ PURCHASE ○ AS BUILT

FOR/USER BUPC SITE/LOCATION ASSALUYEH SERVICE EMERGENCY INSTRUMENT AIR COMP NO. REQ'D ONE SET 1(STAGE)

NOTE: ○ INDICATES INFO. TO BE COMPLETED BY PURCH. ☐ BY MANUFACTURER WITH PROPOSAL ◇ BY MANUFACTURER AFTER ORDER ◎ BY MANUFACTURER OR PURCHASER AS APPLICABLE

COMPR. MFGR Airpack TYPE MODEL NO(S) SERIAL NO(S) TBD

COMPR.THROWS: TOTAL NO. 1 NO. WITH CYLS. 1 NOMINAL FRAME RATING 15 BkW @ RATED RPM OF 400

☐ MAX/MIN ALLOWABLE SPEED 690 / 400 RPM

DRIVER MFGR. WEG DRIVER NAMEPLATE kW/OPERATING RPM 15 kW / 3000

DRIVE SYSTEM: ○ DIRECT COUPLED ○ GEARED & COUPLED ● V-BELT

TYPE OF DRIVER: ● IND. MOTOR ○ SYN. MOTOR ○ STEAM TURBINE ○ GAS TURBINE ○ ENGINE ○ OTHER

NO NEGATIVE TOLERANCE APPLIES: ○ YES - PURCHASER TO FILL IN "REQUIRED CAPACITY" LINES. CYLINDERS: ○ LUBE

(NNT) ○ NO - PURCHASER TO FILL IN "MFGR.'S RATED CAP." LINES ● NON-LUBE

● MAX ACCEPTABLE AVG PISTON SPEED 3.5 m/s

OPERATING CONDITIONS (EACH MACHINE)

● OPERATING CASE	1								
● STAGE	1								
○ SIMULATION BASIS									
● NORM. OR ALT. CONDITION	Norm								
● CERTIFIED PT. (X) MARK ONE									
● MOLECULAR WEIGHT	29								
● Cp/Cv (K) @ 65°C OR °C	1.4								

INLET CONDITIONS: AT INLET TO: ● PULSE DEVICES ○ COMPRESSOR CYLINDER FLANGES

NOTE: ○ SIDE STREAM TO _____ STAGE(S), THESE INLET PRESS. ARE FIXED

● PRESSURE @ PUL. SUPP. INLET (bara)	8 (Min.:7, Max:8.5)							
◎ PRESSURE (Bara) @ CYL. FLANGE	8 (Min.:7, Max:8.5)							
● TEMPERATURE (°C)	AMB.(Min.:10 , Max.:45)							
○ INLET	1.4							
■ COMPRESSIBILITY	1							

INTERCOOLING: ● PULSE DEVICES ● PIPING ● COOLERS ● SEPARATORS ○ OTHER

◎ Δ P	/	/	/					/

DISCHARGE FROM: ● PULSE DEVICE ○ COMP. CYL. FLANGES

◎ PRESSURE (Bara)	8 (Min.:7, Max:8.5)							
● PRESSURE (Bara)	21							
☐ TEMP., ADIABATIC, °C	164							
☐ TEMP., PREDICTED, °C	180							
☐ COMPRESSIBILITY (Z_2) OR (Z_{AVG})	0,04							

*** REQUIRED CAPACITY,** RATED FOR PROCESS, AT INLET TO COMPRESSOR, NO NEGATIVE TOLERANCE (-0%)

● kg/h CAPACITY SPECIFIED	55							
○ WET ● DRY								
○ m³ /h (760 mm HG & 0°C)	43							

*** MFGR.'S RATED CAPACITY** (AT INLET TO COMPRESSSOR) & kW ±3% FOR kW

◎ kg/h CAPACITY SPECIFIED	223							
○ WET ● DRY								
◎ INLET m³/h	173							
◎ Nm³/h	173							
☐ kW/STAGE	11							
◎ ABSORBED POWER ESTIMATED, kW	12							
☐ TOTAL kW INCLUDING	13							
V-BELT & GEAR LOSSES								

*** CAPACITY FOR NNT**

MANUFACTURER'S = REQUIRED ÷ 0.97

THEREFORE REQUIRED = MFR'S x 0.97

With reference to following termodynamic formula $T_2/T_1 = (P_2/P_1)^{(K-1/K)}$, Discharge temperature is 148 C in adiabatic condition.

adiabatic temperature is less than predicted temperature!!!!???? Please be noted that predicted temperature shall be less than adiabatic temperature.

Mass flow rate does not match with compressor gas power.
Gas power= $H_2 - H_1$

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Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 4 OF 20

Owner Document Number :

GAS ANALYSIS AT OPERATING CONDITIONS
MOLE PERCENT

	M.W.	NORMAL
● SERVICE/ITEM NO.		
● STAGE		
○ NORMAL OR ALT		
AIR	28.966	100
NITROGEN	28.016	
WATER H_2O	18.016	
CARBON MONOXIDE CO	28.010	
CARBON DIOXIDE CO2	44.010	
HYDROGEN H_2	2.016	
METHANE CH_4	16.042	
ETHANE	30.068	
PROPANE	44.094	
i-BUTANE	58,12	
n-BUTANE	58,12	
i-PENTANE	72,146	
OXYGEN O2	32.00	
HYDRO.SULFIDE	34,076	
ETHYLENE	28,052	
PROPYLENE	42,078	
n-PENTANE	72,146	
HEXANE PLUS		
AMMONIA	17,031	
HYDRO. CHLORIDE	36,461	
CHLORINE	70,914	
TOTAL:		
☐ CALCULATED MOL WT.		28,97
☐ Cp/Cv (K) @ 65° OR Suction temperature °C		45

NOTE: IF WATER VAPOR AND/OR CHLORIDES ARE PRESENT, EVEN MINU
TRACES, IN THE GAS BEING COMPRESSED, IT MUST BE INCLUED ABOVE.

REMARKS

APPLICABLE SPECIFICATIONS

● API-618-RECIPROCATING COMPRESSORS FOR PETROLEUM, CHEMICAL AND GAS INDUSTRY SERVICES

● Doc. No. 1216-DE-00-RE-MSS-302

Shall be specified as per site condition.

SITE CONDITION (SEE PROJECT SITE CONDITION FOR MORE DETAIL)

ELEVATION 8,5 m BAROMETER (BARA) AMBIENT TEMPS: MAX 55 °C MIN 5 °C

○ MIN DESIGN METAL TEMP 5 °C (2.14.8) RELATIVE HUMIDITY: MAX NA MIN NA %

COMPRESSOR LOCATION: ○ INDOOR HEATED ● UNHEATED ● AT GRADE LEVEL ○ ELEVATED: M

● OUTDOOR NO ROOF ● UNDER ROOF ○ PARTIAL SIDES ○ PLATFORM: ● ON-SHORE

○ OFF-SHORE ● WEATHER PROTECTION REQ. ● TROPICALIZATION REQ.

○ WINTERIZATION REQUIRED

UNUSUAL CONDITIONS: ○ CORROSIVES ● DUST ● FUMES ● OTHER Sand storm , Thunder & Lightening, Sea Breeze

ELECTRICAL CLASSIFICATIONS

	HAZARDOUS						NON-HAZRDOUS
MAIN UNIT	● ZONE	2	GROUP	IIB	TEMP CLASS	T3	○
L.O. CONSOLE	● ZONE	2	GROUP	IIB	TEMP CLASS	T3	○
CW CONSOLE	○ ZONE		GROUP		TEMP CLASS		○

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	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 5 OF 20

PART LOAD OPERATING CONDITIONS

CAPACITY CONTROL BY: ● MFG'S CAP. CONTROL ○ PURCHASERS BY-PASS ○ BOTH ○ OTHER _____

FOR: ○ PART LOAD COND. ○ START-UP ONLY ○ BOTH

WITH: ● AUTO LOADING DELAY INTERLOCK ● AUTO IMMEDIATE UNLOADING

USING: ○ FIXED VOLUME POCK. ● SUCTION VALVE UNLOADERS: ○ FINGER ○ PLUG ○ OTHER

ACTION: ○ DIRECT (AIR-TO-UNLOAD) ● REVERSE (AIR-TO-LOAD/FAIL SAFE)

NUMBER OF STEPS: ● ONE ○ THREE ○ FIVE ○ OTHER _____

○ RAIN COVER REQUIRED OVER UNLOADERS

ALL UNLOADING STEPS BASIS MANUFACTURERS CAPACITY SHOWN ON PAGE 1.

INLET AND DISCHARGE PRESSURE ARE ○ **AT CYLINDER FLANGES** ● **PULSATION SUPPRESSOR FLANGES**

○	SERVICE OR ITEM NO.						
◎	STAGE	1					
◎	NORMAL OR ALTERNATE CONDITION	Normal					
○	PERCENT CAPACITY	100					
○	WEIGHT FLOW, kg/h	223					
◎	m^3 /h (760 mm HG & 0°C)	173					
□	POCKETS/VALVES O...						
□	POCKET CLEARANCE ADDED %						
□	TYPE UNLOADERS, PLUG/FINGER						
◎	INLET TEMPERATURE, °C	45					
◎	INLET PRESSURE, (BARA)	8 (Min.:7, Max:8.5)					
◎	DISCHARGE PRESSURE, (BARA)	21.5					
□	DISCHARGE TEMP., ADIABATIC °C	164					
□	DISCHARGE TEMP., PREDICTED °C	180					
□	VOLUMETRIC EFF.,%HE/%CE(AVER)	/	/	/	/	/	/
□	CALC. GAS ROD LOAD, kN, C **						
□	CALC. GAS ROD LOAD, kN, T **						
◇	COMB. ROD LOAD, kN C (GAS & INERTIA)						
◇	COMB. ROD LOAD, kN T (GAS & INERTIA)						
◇	ROD REV., DEGREES MIN @ X-HD PIN ***						
□	BkW/STAGE						
□	TOTAL kW @ COMPRESSOR SHAFT	12					
□	TOTAL kW INCL. V-BELT & GEAR LOSSES	13					

Please refer to page 4.

All remaining data shall be completed.

* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

HEAD END = HE
OR
CRANK END = CE
} PLUS {
SUCTION VALVE(S) UNLOADED = S
OR
FIXED POCKET OPEN = F
OR
VARIABLE POCKET OPEN = V

* * C = COMPRESSION T = TENSION *** X - HD = CROSSHEAD

□ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, _____ (BARG)

CYLINDER UNLOADING MEDIUM: ● AIR ○ NITROGEN ○ OTHER _____

● PRESSURE AVAILABLE FOR CYLINDER UNLOADING DEVICES, MAX/MIN _____ / _____ (BARG)

SPECIAL REMARK:

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MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 6 OF 20

● SCOPE OF BASIC SUPPLY

PURCHASER TO FILL IN (□ ○ ⬡) AFTER COMMODITY TO INDICATE: □ BY COMPR. MFR. ○ BY PURCH. ⬡ BY OTHERS

● DRIVER (■ ○ ⬡): VARIABLE SPEED SPEED RANGE NOT APPLICABLE RPM TO NOT APPLICABLE RPM

● INDUCTION MOTOR ○ SYNCHRONOUS MOTOR ○ STEAM TURBINE ○ ENGINE ○ OTHER _____

○ API-541 ○ API-546 ○ API-611 ○ API-612

○ OUTBOARD BEARING ○ PROVISION FOR DRY AIR PURGE FOR OUTBOARD BEARING.

● SLIDE BASE FOR DRIVER (■ ○ ⬡) SOLE PLATE FOR DRIVER (■ ○ ⬡)

● MOTOR STARTING EQUIPMENT (■ ○ ⬡); DEFINE MSP

○ GEAR (□ ○ ⬡): ○ BASEPLATE FOR GEAR ○ API-613 ○ API-677

● COUPLING(S) (□ ○ ⬡): ○ QUILL SHAFT ○ KEY-LESS ○ OTHER #1

○ API 671

Shall be supplied by air pack.

Please clarify, what does MSP mean?

Pulsation dampener shall be equipped with moisture removal.

(■ ○ ⬢): ○ SHEAVES & V-BELTS (□ ○ ⬡) ○ STATIC CONDUCTING V-BELTS ○ BANDED V-BELTS

RD(S) (■ ○ ⬡): ● MANUFACTURER'S STD. ● NON-SPARKING ○ CALIF CODE ○ API-671 APPENDIX C

○ OTHER _____

SUPPRESSORS WITH INTERNALS (■ ○ ⬡): ● INITIAL INLET & FINAL DISCHARGE ● SUPPORTS (■ ○ ⬡)

○ INTERSTAGE ○ SUPPORTS (□ ○ ⬡)

○ PULSATION SUPPRESSORS WITHOUT INTRNL (■ ○ ⬡): ○ INITIAL INLET & FINAL DISCHARGE ○ SUPPORTS (□ ○ ⬡)

○ INTERSTAGE ○ SUPPORTS (□ ○ ⬡)

○ SUPPRESSOR(S) TO HAVE MOISTURE REMOVAL SECTION: ○ INITIAL INLET ONLY ○ ALL INLET SUPPRESSORS

● ACOUSTICAL SIMUL. STUDY (■ ○ ⬡): DESIGN APPROACH ● 1, EMPRICAL PULSATION SUPPRESSION DEVICE SIZING

■ DIGITAL ▣ ANALOG ○ 2, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS

○ 3, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS PLUS MECHANICAL ANALYSIS

STUDY TO CONSIDER: ALL SPECIFIED LOAD COND., INCL. ● SINGLE ACT., PLUS

○ COMP.OPER.IN PARALLEL ○ ALTERNATE GASES

○ WITH EXISTING COMP. AND PIPING SYSTEMS

○ STUDY TO BE WITNESSED ○ COMPRESSOR VALVE DYNAMIC RESPONSE

● VENDOR REVIEW OF PURCHASER'S PIPING ARRANGEMENT ○ PULSATION SUPPRESSEN DEVICE LOW CYCLE FATIGUE ANALYSIS

NOTE: SEE APPENDIX N FOR INFORMATION REQUIRED FOR STUDY ○ PIPING SYSTEM FLEXIBILITY

PACKAGED: ○ NO ● YES (■ ○ ⬡) DEFINE BASIC SCOPE OF PACKAGING IN REMARKS SECTION .

● SKID ● SOLEPLT. ● BASEPLT. ● BOLTS OR STUDS FOR SOLEPLT. TO FRAME ○ RAILS ○ CHOKE BLOCKS ● SHIMS

○ SUITABLE FOR COLUMN MOUNTING (UNDER SKID AND/OR BASEPLATE)

● LEVELING SCREWS ○ NON-SKID DECKING ○ SUB SOLEPLATES

● DIRECT GROUTED ● CEMENTED/MORTAR GROUT ○ EPOXY GROUT; MFG/TYPE _____ / _____

● INTERCOOLER(S) (□ ○ ⬡) ○ SEPARATOR(S) (□ ○ ⬡) ○ AFTERCOOLER(S) (■ ○ ⬡)

INTERCOOLERS:

○ INTERSTAGE PIPE (□ ○ ⬡) ○ PIPING MATCHMARKED ○ SHOP FITTED ○ MACHINE MTD.

○ CONDENSATE SEPARATION & COLLECTION FACILITY SYSTEM PER 3.8.12 ○ OFF MOUNTED

● INLET STRAINER(S) (■ ○ ⬡): ● INITIAL INLET ○ SIDESTREAM INLET ○ SPOOL PIECE FOR INLET STRAINERS

● MANIFOLD PIPING; ○ DRAINS ○ VENTS ● RELIEF VALVES ● AIR/GAS SUPPLY ○ FLANGE FINISH

● RELIEF VALVE(S) (■ ○ ⬡): ○ INITIAL INLET ○ I INAL DISCHARGE ○ API-618 FLANGE FINISH

○ RUPTURE DISC(S) (□ ○ ⬡) ○ THRU STUDS IN PIPING FL

Insulation wherever is required, shall be done by AIRPACK.

○ CRANKCASE RAPID PRESSURE RELIEF DEVICE(S) (□ ○ ⬡) ● FLANGE FINISH PER ANSI 16.5

○ SPECIAL PIPING REQUIREMENTS ○ SPECIAL FINISH _____

○ INITIAL INLET, ○ INTERSTAGE SUCTION PIPING ARR'D FOR: INSULATION (□ ○ ⬡) HEAT TRACING (■ ○ ⬡)

○ FOR ATMOSPHERIC INLET AIR COMPR. ONLY: ○ INLET AIR FILTER (□ ○ ⬡) ○ INLET FILTER -SILENCER (□ ○ ⬡)

● PREFERRED TYPE OF CYLINDER COOLING (■ ○ ⬡): ● FORCED ○ THERMOSYPHON _____ STAGE CYL'(S)

○ STATIC (STAND-PIPE) _____ STAGE CYL'(S)

NOTE: MANUFACTURER SHALL RECOMMENDBEST TYPE OF COOLING AFTERFINAL ENGINEERING REVIEW OF ALLOPERATING CONDITIONS

● CYL. COOLING WATER PIPING (■ ○ ⬡) ○ MATCH M'RKED

● SINGLE INLET/OUTLET MANIFOLD & VALVES ● SIGHT GL'SS(S)

● INDIVIDUAL INLET/ OUTLET PER CYL. ● VALVE(S)

○ CLOSED SYS. WITH WATER PUMP, COOLER, SURGE TANK, & PIPING

#1: Flexible/ all-metal/spacer type/non-sparking couplings. ○ SHOP RUN ○ ARR'D FOR HEATING JACKET AS WELL AS COOLING

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Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 7 OF 20

○ SCOPE OF BASIC SUPPLY (Con't)

○ SEPARATE COOLING CONSOLE (□ ○ ⬡): ○ ONE FOR EA. UNIT ○ ONE CMMN TO ALL UNITS ○ DUAL PUMPS (AUX .& MAIN)
○ ARRANGED FOR HEATING JACKET WATER AS WELL AS COOLING
○ ROD PRESS. PACKING COOLING SYSTEM □ ○ ⬡) ○ SEPARATE CONSOLE ○ COMBINE WITH JKT SYSTEM ○ FILTERS
● FRAME LUBE OIL SYSTEM (■ ○ ⬡): ○ AUX. PUMP ○ DUAL FILTERS WITH TRANSFER VALVE ○ SHOP RUN
○ CONTINUOUS FLOW IN SENSING LINE TO PRESSURE SWITCHES
○ SEPARATE LUBE OIL CONSOLE (□ ○ ⬡): ○ EXTENDED TO MOTOR OUTBOARD BEARING ○ SHOP RUN
API 614 APPLIES ○ NO ○ YES
NOTE: PIPING BETWEEN ALL CONSOLES AND COMPRESSOR UNIT BY PURCHASER

● CAPACITY CONTROL (■ ○ ⬡): ○ SEE DATA SHEET PAGE 5 FOR DETAILS ● INSTRUMENT & CONTROL PANEL
○ SEPARATE MACHINE MOUNTED PANEL ● SEPARATE FREE STANDING PANEL
● PNEUMATIC ○ ELECTRIC ● ELECTRONIC ○ HYDRAULIC
○ PROGRAMMABLE CONTROLLER
● INSTRUMENT & CONTROL PANEL (■ ○ ⬡): ● ONE FOR EACH UNIT ○ ONE COMMON TO ALL UNITS
○ MACHINE MOUNTED ● FREE STANDING (OFF UNIT)
○ BUFFER GAS CONTROL PANEL (□ ○ ⬡)= ○ ONE FOR EACH UNIT ○ ONE COMMON TO ALL UNITS
○ MACHINE MOUNTED ○ FREE STANDING (OFF UNIT)
SEE INSTRUMENTATION DATA SHEETS FOR DETAILS OF PANEL, ADDITIONAL REMARKS, AND INSTRUMENTATION
NOTE: ALL TUBING, WIRING, & CONNECTIONS BETWEEN OFF-UNIT FREE STANDING PANELS AND COMPRESSOR UNIT BY PURCHASER

● HEATERS (■ ○ ⬡): ● FRAME LUBE OIL ○ CYL. LUBRICATORS ○ COOLING WATER ● DRIVER(S) ○ GEAR OIL
● ELECTRIC ○ STEAM

● BARRING DEVICE (■ ○ ⬡): ● MANUAL ○ PNEUMATIC ○ FLYWHEEL LOCKING DEVICE (■ ○ ⬡)
○ ROD PRESSURE PACKING COOLING SYSTEM (□ ○ ⬡): ○ SEPA ○ FILTERS
○ SPECIAL CORROSION PROTECTION: ● NO ○ YES ○ MFR'S STANDARD ○ OTHER _____
○ HYDRAULIC TENSIONING TOOLS ○ NO ○
● MECHANICAL RUN TEST: ○ NO ● YE ○ OTHER _____
○ COMPLETE SHOP RUN TEST OF ALL MACHINE MOUNTED EQUIPMENT, PIPING & APPURT.'(S)

PAINTING: ● MANUFACTURER'S STANDARD ○ SPECIAL _____
NAMEPLATES: ○ U.S. CUSTOMARY UNITS ● SI UNITS
SHIPMENT: ○ DOMESTIC ○ EXPORT ● EXPORT BOXING REQUIRED (■ ○ ⬡)
○ STANDARD 6 MONTH STORAGE PREPARATION (□ ○ ⬡), PER SPEC _____
● OUTDOOR STORAGE FOR OVER 12 MONTHS (■ ○ ⬡), PER SPEC _____
○ INITIAL INSTALLATION AND OPERATING TEMP ALIGNMENT CHECK AT JOBSITE BY VENDOR REPRESENTATIVE

○ COMPRESSOR MANUFACTURER'S USER'S LIST FOR SIMILAR SERVICE
● PERFORMANCE DATA REQUIRED PER 9.3.3:
● BkW VS. SUCTION PRESSURE CURVES
● ROD LOAD/GAS LOAD CHARTS
● VALVE FAILURE DATA CHARTED
● SPEED/TORQUE CURVE DATA
● BkW VS. CAPACITY PERFORMANCE CURVES OR TABLES REQUIRED FOR UNLOADING STEPS AND/OR VARIABLE SUCTION/DISCHARGE PRESSURES

Approved test procedure

As well as project painting specification.

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MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 8 OF 20

UTILITY CONDITIONS

ELECTRICAL POWER:	AC VOLTS	/ PHASE	/ HERTZ	DC VOLTS		AC VOLTS	/ PHASE	/ HERTZ	DC VOLTS
● MAIN DRIVER	400	/ 3	/ 50		INSTRUMENT	110	/ 1	/ 50	/ 24
● AUXILIARY MOTORS	400	/ 3	/ 50		ALARM & SHTDWN		/	/ 50	/ 24
● HEATERS	Below 0.2 Kw : 230	1	50		SOLENOID VALVES			50	24

Shall be completed by vendor

INSTRUMENT AIR: NORMAL PRESSURE barg MAX/MIN / barg

STEAM FOR: DRIVERS

INLET:	PRESS (BARG) (kPa)	MAX/MIN	/	(BARG) (kPa)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	
EXH'ST:	PRESS (BARG) (kPa)	MAX/MIN	/	(BARG) (kPa)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	

HEATERS

INLET:	PRESS (BARG) (kPa)	MAX/MIN	/	(BARG) (kPa)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	
EXH'ST:	PRESS (BARG) (kPa)	MAX/MIN	/	(BARG) (kPa)	
	TEMP °C	MAX/MIN	/	°C	

Cooling data shall be completed as per site condition.

Cooling data shall be completed as per site condition.

COOLING WATER FOR: **COMPRESSOR CYLINDERS**

	TYPE WATER				
SUPPLY	PRESS (BARG)	MAX/MIN	/	(BARG)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	
RETURN:	PRESS (BARG)	MAX/MIN	/	(BARG)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	

COOLERS

	TYPE WATER				
SUPP.:	PRESS (BARG)	MAX/MIN	/	(BARG)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	
R'T'RN:	PRESS (BARG)	MAX/MIN	/	(BARG)	
(NORM.)	TEMP °C	MAX/MIN	/	°C	

COOLING FOR ROD PACKING:

TYPE FLUID _____ SUPPLY PRESS _____ (BARG) @ _____ °C RETURN _____ @ _____ °C

FUEL GAS: NORMAL PRESSURE _____ (BARG) (kPa) MAX/MIN _____ / _____ (BARG) (kPa) LHV _____ MJ/m³

COMPOSITION _____

REMARKS/SPECIAL REQUIREMENTS:

OWNER: BUPC

CONTRACTOR: CES Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT; Airpack

MC: NIOEC; SSTI

BUSHEHR PETROCHEMICAL COMPANY
MEG PLANT

MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 9 OF 20

Owner Document Number

○ CYLINDER DATA AT FULL LOAD CONDITION

SERVICE/ITEM NO.	Air						
STAGE	1						
INLET PRESSURE, (BARA) } @ CYLINDER	8,0						
DISCHARGE PRESSURE, (BARA } FLANGES	21,0						
CYLINDERS PER STAGE	2						
SINGLE OR DOUBLE ACTING (SA OR DA)	SA						
BORE, mm	170						
STROKE, mm							
RPM: RATED / MAX ALLOW	400/690						
PISTON SPEED, m/s: RATED / MAX ALLOW							
CYLINDER LINER, YES/NO							
LINER NOMINAL THICKNESS, mm							
PISTON DISPLACEMENT, m³/h							
CYLINDER DESIGN CLEARANCE, % AVERAGE							
VOLUMETRIC EFFICIENCY, % AVERAGE							
VALVES, INLET/DISCHARGE, QTY PER CYL.			/	/	/	/	
TYPE OF VALVES							
VALVE LIFT, INLET/DISCHARGE, mm	/	/	/	/	/	/	
VALVE VELOCITY, API 4TH EDITION, m/s							
SUCTION VALVE(S)							
DISCHARGE VALVE(S)							
ROD DIAMETER, (mm)							
MAX ALLOW. COMBINED ROD LOADING, kN, C *							
MAX ALLOW. COMBINED ROD LOADING, kN, T *							
CALCULATED GAS ROD LOAD, kN, C *							
CALCULATED GAS ROD LOAD, kN, T *							
COMBINED ROD LOAD (GAS + INERTIA), kN, C *							
COMBINED ROD LOAD (GAS + INERTIA), kN, T *							
ROD REV., DEGREES MIN @ X-HD PIN**							
RECIP WT. (PISTON, ROD, X-HD & NUTS), kg**							
MAX ALLOW. WORKING PRESSURE, (BARG)							
MAX ALLOW. WORKING TEMPERATURE, °C							
HYDROSTATIC TEST PRESSURE, (BARG)							
HELIUM TEST PRESSURE, (BARG)							
INLET FLANGE SIZE/RATING at CYLINDER	/	/	/	/	/	/	
FACING at CYLINDER							
DISCHARGE FLANGE SIZE/RATING at CYLINDER	/	/	/	/	/	/	
FACING at CYLINDER							
DISCHARGE RELIEF VALVE SETTING DATA AT INLET PRESSURES GIVEN ABOVE:							
RECOMMENDED SETTING, (BARG)							
GAS ROD LOAD, kN, C *							
GAS ROD LOAD, kN, T *							
COMBINED ROD LOAD, kN, C *							
COMBINED ROD LOAD, kN, T *							
ROD REVERSAL, °MIN @ X-HD PIN**							
NOTE: CALCULATED AT INLET PRESSURES							
GIVEN ABOVE & RECOMMENDED SETTING.							
○ SETTLE-OUT GAS PRESSURE							
(DATA REQUIRED FOR STARTING)							

Shall be completed by vendor.

* C = COMPRESSION * T = TENSION **X-HD = CROSSHEAD

NOTES/REMARKS:

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 10 OF 20

1	○ CONSTRUCTION FEATURES					
2	SERVICE ITEM NO.					
3	STAGE					
4	CYLINDER SIZE (BORE DIA), mm					
5	ROD RUN-OUT: NORMAL COLD VERTICAL					
6	(per appendix C)					
7	MATERIALS OF CONSTRUCTION					
8	CYLINDER(S)					
9	CYLINDER LINER(S)					
10	PISTON(S)					
11	PISTON RINGS					
12	WEAR BANDS ○ REQUIRED					
13	PISTON ROD(S): MATERIAL/YIELD, N/mm²					
14	THREAD ROOT STRESS @ MACRL * @ X-HD END					
15	PISTON ROD HARDNESS, BASE MATERIAL, Rc					
16	PISTON ROD COATING ○ REQUIRED					
17	COATING HARDNESS, Rc					
18	VALVE SEATS / SEAT PLATE					
19	VALVE SEAT MIN HARDNESS, Rc					
20	VALVE GUARDS (STOPS)					
21	VALVE DISCS					
22	VALVE SPRINGS					
23	ROD PRESSURE PACKING RINGS					
24	ROD PRESSURE PACKING CASE					
25	ROD PRESSURE PACKING SPRINGS					
26	SEAL / BUFFER PACKING, DISTANCE PIECE					
27	SEAL / BUFFER PACKING, INTERMEDIATE					
28	WIPER PACKING RINGS					
29	MAIN JOURNAL BEARINGS, CRANKSHAFT					
30	CONNECTING ROD BEARING, CRANKPIN					
31	CONNECTING ROD BUSHING, X-HD END					
32	CROSSHEAD (X-HD) PIN BUSHING					
33	CROSSHEAD PIN					
34	CROSSHEAD					
35	CROSSHEAD SHOES					
36	CYLINDER INDICATOR VALVES (X)					
37	INDICATOR CONNECTIONS ABOVE 5000 PSI					
38	FLUOROCARBON SPRAYED CYLINDER (X)					
39	INSTRUMENTATION IN (X) COLD SIDE					
40	CONTACT W/PROCESS GAS (X) HOT SIDE					
41	* MAXIMUM ALLOWABLE COMBINED ROD LOAD					

Shall be completed by vendor.

USE (X) IN APPROPRIATE COLUMN WHERE APPLICABLE

42 ● COMPRESSOR CYLINDER ROD PACKING
43 ● FULL FLOATING PACKING
44 ● VENTED TO: ○ FLARE @ _____ ● ATM
45 ○ SUCTION PRESSURE @ _____ (BARG)
46 ○ FORCED LUBRICATED ● NON-LUBE ○ TFE
47 ● WATER COOLED, _____ STAGE(S), _____ m³/h REQ'D
48 ○ OIL COOLED, _____ STAGE(S), _____ m³/h REQ'D
49 ○ WATER FILTER PROV.FUTURE WATER/OIL COOLING
50 ○ VENT/BUFFER GAS SEAL PACKING ARR. (Ref: Appndx I FIG I-1)
51 ○ CONSTANT OR ○ VARIABLE DISPOSAL SYSTEM
52 ○ BUFFER GAS PRESSURE, _____ (BARG)
53 ○ SPLASH GUARDS FOR WIPER PACKING

Remaining data shall be completed.

DISTANCE PIECE(S): ○ TYPE A ● TYPE B ○ TYPE C ○ TYPE D
Ref: Appendix G, Fig. G-3

COVERS: ● SOLID METAL ○ SCREEN ○ LOUVERED

CYLINDER COMPARTMENT: (Outboard Distance Piece)
○ VENTED TO _____ (BARG)
○ PURGED AT _____ (BARG)
○ PRESSURIZED TO _____ (BARG)
○ WITH RELIEF VALVE

FRAME COMPARTMENT: (Inboard Distance Piece)
○ VENTED TO _____ (BARG)
○ PURGED AT _____ (BARG)
○ PRESSURIZED TO _____ (BARG)
○ WITH RELIEF VALVE

☐ DISTANCE PIECE MAWP _____ (BARG)

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
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Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 11 OF 20

CONSTRUCTION FEATURES (CONTINUED)

○ FABRICATED CYLINDER, HEADS, & CONNECTION SKETCHES FOR DESIGN REVIEW BY PURCHASER.

○ BUFFER GAS PACKING ARR. Ref: Appendix I
- ○ OIL WIPER PACKING PURGE Figures I-1, I-2 &I-3
- ○ INTERMEDIATE PARTITION PURGE
- INERT BUFFER PURGE GAS: ● N_2 ○ OTHER

● VENT, DRAIN, PURGE PIPING BY MFG'R ○ NO ● YES

COUPLING(S) ○ LOW-SPEED Between Compressor & Driver or Gear ○ HI-SPEED Between Driver & Gear

- ◆ BY MANUFACTURER
- ◆ MODEL
- ◆ TYPE

API-671 APPLIES ● YES ○ NO

V-BELT DRIVE

	DRIVEN SHEAVE (Compressor Shaft)	DRIVE SHEAVE (Driver Shaft)
RPM (EXPECTED)	400	1475
PITCH DIA. (Inches)		
◆ QTY & GROOVE X-SEC.	4	
POWER TRANSMITT'D	13	15 Incl. Belt Losses

- DRIVER NAMEPLATE HP RATING
- ◇ CENTER DISTANCE (INCHES)
- ◇ QTY, TYPE, X-SEC., & LENGTH BELTS
- ◇ BELT SERVICE FACTOR (RELATIVE TO DRIVER NAMEPLATE HP RATING)

○ **INSPECTION AND SHOP TESTS**

	REQ'D	WITN.	OBSER.
*SHOP INSPECTION	●	○	○
ACTUAL RUNNING CLEARANCES AND RECORDS	○	○	○
MFG			○
CYLI			○
CYLI			○
CYLI			○
CYL			○
*ME			●
BAR			○
*LUB			●
*CO			●
RAD			○
○			
MAG			○
QC			
(2.14			
SHO			○
*CLE			○
*HARDNESS OF PARTS, WELDS & HEAT AFFECTED ZONES	○	○	○
*NOTIFICATION TO PURCHASER OF ANY REPAIRS TO MAJOR COMPONENTS	●	●	
SOUND LEVEL TEST	●	○	○
DISMANTLING INSPECTION	○	○	○

Shall be finalized as per approved ITP.

*SPECIFIC REQUIREMENTS TO BE DEFINED, FOR EXAMPLE, DISMANTLING, AUX EQUIPMENT OPERATIONAL & RUN TESTS.

APPENDIX K COMPLIANCE: ○ VENDOR ○ PURCHASER

NOTE: - INSPECTION AND TESTING SHALL BE AS PER SCOPE OF INSPECTION SHEETS ATTACHED TO MATERIAL REQUISITION.

CYLINDER LUBRICATION

- ● NON-LUBE STAGE(S)/SERVICE
- ○ LUBRICATED STAGE(S)/SERVICE

TYPE OF LUBE OIL: ○ SYNTHETIC ○ HYDROCARBON

LUBRICATOR DRIVE BY: ☐ COMP. CRANKSHAFT, DIRECT ☐ CHAIN, FROM CRANKSHAFT ◉ ELECTRIC MOTOR ◉ OTHER

- ◇ LUBRICATOR MFR
- ◇ MODEL

TYPE LUBRICATOR: (2.13) ○ SINGLE PLUNGER PER POINT ○ DIVIDER BLOCKS

- ◈ COMPARTM'T, TOTAL QTY.
- ◈ PLUNGERS (PUMPS), TOTAL
- ◈ SPARE PLUNGERS, QTY.
- ◈ SPARE COMPARTM'T W/OUT PLUNGERS

Shall be completed in next revision.

○ HEATERS: ○ ELECTRIC W/THERM.(S) ○ STEAM

☐ **ESTIMATED WEIGHTS AND NOMINAL DIMENSIONS**

☐ TOTAL COMPR. WT, LESS DRIVER & GEAR		kg
◆ WT, OF COMPLETE UNIT, (LESS CONSOLES)	3000	kg
◇ MAXIMUM ERECTION WEIGHT		kg
◆ MAXIMUM MAINTENANCE WEIGHT	211	kg
◆ DRIVER WEIGHT/GEAR WEIGHT	/ 211	kg
◇ LUBE OIL/COOLING H_2O CONS.	/	kg
◇ FREE STANDING PANEL		

SPACE REQUIREMENTS-mm:	LENGTH	WIDTH	HEIGHT
◇ COMPLETE UNIT			
◇ LUBE OIL CONSOLE			
◇ COOLING H_2O CONSOLE			
◇ FREE STANDING PANEL			
☐ PISTON ROD REMOVAL DIST.			

OTHER EQUIPMENT SHIPPED LOOSE (DEFINE)

◇ PULSATION SUPP., WEIGHT	70	kg
◇ PIPING	50	kg
◇ INTERSTAGE EQUIPMENT		kg

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
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Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 12 OF 20

Owner Document Number :

UTILITY CONSUMPTION

ELECTRIC MOTORS

	NAMEPLATE HP (kW)	LOCKED ROTOR AMPS	FULL LOAD AMPS	
◆ MAIN DRIVER	15	239	28,5	
◇ MAIN LUBE OIL PUMP				
◇ AUX LUBE OIL PUMP				
◇ MAIN COOLING WATER PUMP				
◇ AUX COOLING WATER PUMP				
◇ ROD PACKING COOLING PUMP				
◇ CYLINDER LUBRICATOR				

ELECTRIC HEATERS

	WATTS	VOLTS	HERTZ
◆ FRAME OIL HEATER(S)	TBC	110	50
◇ COOLING WATER HEATER(S)			
◇ CYL. LUBRICATOR HEATER(S)			
◇ MAIN DRIVER SPACE HEATER(S)			

STEAM-NOT APPLICABLE

	FLOW		PRESSURE		TEMPERATURE		BACK PRESSURE	
◇ MAIN DRIVER		kg/h @		(BARG) (kPa)		°CTT TO		(BARG) (kPa)
◇ FRAME OIL HEATER(S)		kg/h @		(BARG) (kPa)		°CTT TO		(BARG) (kPa)
◇ CYL. LUB. HEATER(S)		kg/h @		(BARG) (kPa)		°CTT TO		(BARG) (kPa)
		kg/h @		(BARG) (kPa)		°CTT TO		(BARG) (kPa)
		kg/h @		(BARG) (kPa)		°CTT TO		(BARG) (kPa)

COOLING WATER REQUIREMENTS-(NOTE 9)

	FLOW m³/h	INLET TEMP °C	OUTLET TEMP °C	INLET PRESS (BARG)	OUTLET PRESS (BARG)	MAX PRESS (BARG)
☐ CYLINDER JACKETS						
◆ INTERCOOLER(S)	1,7	35	45	4,5	3,5	6
◇ AFTERCOOLER						
◇ FRAME LUBE OIL COOLER						
◇ ROD PRESSURE PACKING*						
◆ CYLINDER COOLANT CONSOLE	0,90	35	45	4,5	3,5	6
◆ TOTAL QUANTITY, m³/h	2,6					

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT							CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)							Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT
	Project	Area	Phase	Unit	Disc	Doc	Seq	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00 Page: 13 OF 20

Splash or forced?

○ FRAME LUBE OIL SYSTEM

● BASIC LUBE OIL SYSTEM FOR FRAME: ■ SPLASH (TBA) ● PRESSURE (FORCED) ● HEATERS REQUIRED:
☐ REF: TYPE MAIN BEARINGS: ○ TAPERD ROLLER ○ PRECISION SLEEVE ● ELEC. W/THERMOSTAT(S) ○ STEAM
● PRESSURE SYSTEM: ● MAIN OIL PUMP DRIVEN BY: ● COMP. CRANKSHAFT ○ ELEC. MOTOR ○ OTHER ______
☐ PSV FOR MAIN PUMP EXTERNAL TO CRANKCASE ______
○ AUX OIL PUMP DRIVEN BY: ○ ELEC. MOTOR ○ OTHER ______
☐ HAND OPERATED PRE-LUBE PUMP FOR STARTING ● OPERATIONAL TEST & 4 HOUR MECH RUN TEST
○ API-614 LUBE SYSTEM: ○ NO ○ YES ○ CHECK VALVE ON MAIN PUMP
○ CONTINUOUS FLOW THROUGH OIL (7.7.2.5)
○ SEP. CONSOLE FOR PRESS. LUBE SYS: ○ ONE CONSOLE FOR EA. COMP. ○ ONE CONSOLE FOR ______ COMPRESSORS
○ CONSOLE TO BE OF DECK PLATE TYPE CONSTRUCTION SUITABLE FOR MULTI-POINT SUPPORT AND GROUTING WITH GROUT & VENT HOLES.
○ ELECTRICAL CLASSIFICATION : ZONE 2 , GROUP IIB CLASS ______ T3 ○ NON-HAZARDOUS

■ BASIC SYS. REQ'MTS (NORM. OIL FLOWS & VOLUMES)

■ LUBE OIL	FLOW m³/h	PRESSURE (BARG)	VISCOSITY cst @ 40°C	cst @ 100°C	SUMP VOLUME m³
☐ COMPRESSOR FRAME					
◇ DRIVER					
◇ GEAR					

☐ SYSTEM PRESSURES: ☐ DESIGN ______ (BARG) ☐ HYDROTEST ______ (BARG)
☐ PRESSURE CONTROL VALVE SETTING VTS (BARG) ☐ PUMP RELIEF VALVE(S) SET ______ (BARG

● PIPING MATERIALS:	CARBON STEEL	STAINLESS STEEL WITH SS FLANGES	STAINLESS STEEL [CARB]ON STEEL FLANGES
● UPSTREAM OF PUMPS & FILTERS	● (crossed out)	○	○
● DOWNSTREAM OF FILTERS	● (crossed out)	○	○
○ ______	○	○	
○ ______	○	○	

Shall be stainless steel.

AUX oil pump shall be shown in P&ID?

☐ PUMPS	◆ RATED FLOW	◆ PRESSURE (BARG)	◆ COLD START REQ'D kW	◆ DRIVER kW	◆ SPEED RPM	COUPLING REQ'D	MECH. SEAL REQ'D
MAIN	NA	2,0	NA	SHAFT DRIVEN	NA	○	○
AUXILIARY						●	●

■ PUMP CASING MATERIAL MAIN PUMP STEEL AUX PUMP STEEL
○ GUARD(S) REQ. FOR COUPLING(S): ○ MAIN PUMP ○ AUX PUMP ○ GUARD TYPE OR CODE NON-SPARKING
○ AUXILIARY PUMP CONTROL: ○ MANUAL ○ AUTOMATIC ○ ON-OFF-AUTO SEL. SWITCH: ○ BY PURCH. ● BY MFR.
○ WIRING TO TERMINAL BOX: ○ BY PURCH. ● BY MFR.
○ SWITCHES ○ RTD'S/THERMOCOUPLES

Oil cooler shall be shown in P&Id.

● COOLERS: ● SHELL & TUBE ● SINGLE ○ DUAL W/TRANSFER VALVE ○ MFG'S STD. ● TEMA C ○ TEMA R
○ REMOVABLE BUNDLE ● WATER COOLED ○ AIR COOLED W/AUTO TEMP CONTROL
○ W/BYPASS & TEMP CONTROL VALVE: ○ MANUAL ○ AUTO ○ SEE SEPARAT[E DATA SH]EET

Since oil pump is shaft driven, using wiring is not reasonable.

○ FILTER(S) ○ SINGLE ● DUAL W/TRANSFER VALVE ● ASME CODE DESIGN ○ ASME CODE STAMPED
☐ DESIGN PRESSURE, ______ (BARG) ☐ △ P CLEAN, ______ (BARG) ☐ △ P COLLAPSE, ______ (BARG)
☐ MICRON RATING, ______ ☐ CARTRIDGE MATERIAL, ______ ◇ CARTRIDGE P/N ______
☐ BONNET MATERIAL, ______ ☐ CASING MATERIAL, ______ ● FURN.SPARE CARTR.,QTY ______

☐ SYS. COMPONENT SUPP.	MANUFACTURER	MODEL		MANUFACTURER	MODEL
◆ MAIN PUMP	Airpack		◇ OIL COOLER(S)		
◇ AUXILIARY PUMP			◇ TRANSFER VALVE(S)		
◆ MECHANICAL SEALS	Airpack		◇ PUMP COUPLING(S)		
◆ ELECTRIC MOTORS	WEG		◆ SUCTION STRAINER(S)	TBC	
◇ STEAM TURBINES			◆ CHECK VALVE(S)	TBC	
◆ OIL FILTER(S)	Airpack		◇		

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445
BU	20	VD	303	ME	DSH	75	Rev : 00 Page: 14 OF 20

Owner Document Number :

COOLING WATER SYSTEM

BASIC COOLING SYS. FOR: ● COMPRESSOR CYL.(S) ○ INTERCOOLER(S) ● AFTERCOOLER ○ OIL COOLER(S)
○ HEATERS REQ.'D FOR PRE-HEATING: ● ELEC.,W/ THERMOSTAT(S) ○ STEAM

PRESSURE FORCED CIRCULATING SYS: ● OPEN, PIPING BY: ○ PURCH ● MFR ○ CLOSED, PIPING BY MFR.
MAIN WATER PUMP DRIVEN BY: ○ ELEC. MOTOR ○ STEAM TURBINE ○ OTHER _____
AUX WATER PUMP DRIVEN BY: ○ ELEC. MOTOR ○ STEAM TURBINE ○ OTHER _____

SEP. CONSOLE FOR COOLING WATER SYS.: ○ ONE CONSOLE FOR EA. COMP. ○ ONE CONSOLE FOR _____ COMP'RS
○ CONSOLE TO BE OF DECK PLATE TYPE CONSTRUCTION SUITABLE FOR MULTI-POINT SUPPORT AND GROUTING WITH GROUT & VENT HOLES.

○ ELECTRICAL CLASSIFICATION ZONE 2 IIB T3 _____ _____ ○ NON-HAZARDOUS

BASIC SYS. REQ'MTS (NORM. COOLING WATER FLOW DATA) ○ COOL'G WATER TO BE _____ % ETHYL'NE GLYC'L

PLAN D ?????????

	FORCED COOL'G	THERMO SYPHON	STAND PIPE	FLOW	PRESSURE (BARG)	INLET TEMP °C	OUTLET TEMP °C	SITE FLOW IND'TR
CYLINDER(S), ___ STAGE	●	○	○	0,9	4,5	35	45	●
CYLINDER(S), ___ STAGE	○	○	○					○
CYLINDER(S), ___ STAGE	○	○	○					○
CYLINDER(S), ___ STAGE	○	○	○					○
CYLINDER(S), ___ STAGE	○	○	○					○
CYLINDER(S), ___ STAGE	○	○	○					○
PISTON ROD PACK'G TOTAL	○							○
INTERCOOLER(S) TOTAL	○							○
AFTERCOOLER	○							○
OIL COOLER(S)	○							○
JACKET COOLER	○							○
TOTAL FLOW								

☐ **SYS. PRESSURES:** ☐ DESIGN, _____ (BARG) (kPa) ☐ HYDROTEST, _____ (BARG) (kPa) ◎ **RELIEF VALVE(S), SETTING** _____ PSIG

◎ **WATER RESERVOIR:** ◇ SIZE, _____ mm DIA X _____ mm HT. ◇ CAPACITY _____ m @ Normal Operating Level

◇ RESERVOIR MATERI, c.s ◇ INTERNAL COATING, TYPE _____
○ LEVEL GAUGE ○ LEVEL SWITCH ○ DRAIN VALVE ○ INSPECTION & CLEAN-OUT OPENINGS

☐ **PUMPS: (Centrifugal Only)**

	◇ RAT'D FL'W m³/h	◇ PRESS. (BARG)	◇ REQ'D kW	◇ DRIVER kW	◇ SPEED RPM	COUPLING REQ'D	MECH.SEAL REQ'D
MAIN						○	○
AUXILIARY						○	○

☐ PUMP CASING MATERIAL (Ref 6.14.2.1.5): MAIN PUMP _____ AUX PUMP _____
○ GUARD(S) REQ.'D FOR COUP'G(S) ○ MAIN PUMP ○ AUX PUMP ○ GUARD TYPE OR CODE _____
○ AUX.PUMP CONTROL: ○ MANUAL ○ AUTO ○ ON-OFF-AUTO SEL. SWITCH: ○ BY PURCH. ○ BY MANUFACTURER
○ WIRING TO TERMINAL BOX: ○ BY PURCH. ○ BY MANUFACTURER

○ **COOLING WATER HEAT EXCH.:** ○ SHELL & TUBE ○ SINGLE ○ DUAL W/TRANSFER VALVE ○ TEMA C ○ TEMA R(API-660)

○ AIR COOLED EXCHANGER W/AUTO TEMP CONTROL (API-661 Data Sheets Attached)
○ W/BYPASS & TEM. CONTROL VALVE ○ MANUAL ○ AUTO ○ LOUVERS FOR AIR EXCH.
○ SEE SEPARATE COOLER DATA SHEET FOR DETAILS; SPECIFY % GLYCOL ON BOTH SIDES OF SHELL & TUBE

SYS. COMPONENT SUPP.	MANUFACTURER	MODEL		MANUFACTURER	MODEL
◇ MAIN PUMP			◇ TEMP CONTROL VALVE(S)		
◇ AUXILIARY PUMP			◇ TRANSFER VALVE(S)		
◇ MECHANICAL SEALS			◇ PUMP COUPLING(S)		
◇ ELECTRIC MOTORS			◇		
◇ STEAM TURBINES			◇		

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 15 OF 20

Owner Document Number :

PULSATION SUPPRESSION DEVICES FOR RECIPROCATING COMPRESSORS

THESE SHEETS TO BE FILLED OUT FOR EACH SERVICE AND/OR STAGE OF COMPRESSION

APPLICABLE TO: ● PROPOSALS ○ PURCHASE ○ AS BUILT

FOR/USER BUSHEHR PETROCHEMICAL COMPANY (BUPC)

SITE/LOCATION ASSALUYE — AMBIENT TEMPERATURE MIN/MAX 5 / 55 °C

COMPRESSOR SERVICE EMERGENCY INSTRUMENT AIR COMP — NUMBER OF COMPRESSORS 1 SET

COMPRESSOR MFG. — MODEL/TYPE

SUPPRESSOR MFG.

NOTE: ○ Ind.Data Comp.'d Purch. ☐ By Compr/Supp.Mfg.w/Proposal ◇ By Mfg(s) after order ◎ By Mfg(s)/Purchaser as Applicable

GENERAL INFORMATION APPLICABLE TO ALL SUPPRESSORS

TOTAL NUMBER OF SERVICES AND/OR STAGES

TOTAL NUMBER OF COMPRESSOR CYL. 2 TOTAL NUMBER OF CRANKTHROWS 1 STROKE mm RPM

● ASME CODE DESIGN ○ GOVERNMENTAL CODES OF ULATIONS APPLY

○ OTHER APPLICABLE PRESSURE VESSEL SPEC. OR CODE

○ LUBE SERVICE ● NON-LUBE SERV. ○ NO OIL ALLOWED INTERNALLY DRY TYPE INTER.CORR.COATING ○ YES ○ NO

○ RADIOGRAPHY (X-RAY OF WELDS): ● NONE ○ SPOT ○ 100% ○ IMPACT TEST ○ SPECIAL WELDING REQUIREMENTS

○ SHOP INSPECTION ○ WITNESS HYDROTEST ● OUTDOOR STORAGE OVER 12 MONTHS ○ SPECIAL PAINT SPEC: BU-20-D-000-PI-SPC-409

○ WITNESSED ○ OBSERVED

AS per ITP.

Shop inspection is required

OPERATING, AND SUPPRESSOR DESIGN DATA

SERVICE EMERGENCY INSTRUMENT AIR COMP STAGE NO. 2

☐ COMPRESSOR MANUFACTURER'S RATED CAPACITY — LBS/HR SCFM MMSCFD

	INLET SUPPRESSOR	DISCHARGE SUPPRESSOR
☐ LINE SIDE OPERATING PRESSURE	INLET, (BARA)	DISCHARGE, (BARA)
☐ OPERATING TEMP. WITHIN SUPPRESSORS	INLET, °C	DISCHARGE, °C
○ ALLOWABLE PRESSURE DROP THROUGH SUPPRESSORS	Δ P (BAR) / %	Δ P (BAR) / %
	INLET SUPPRESSOR	DISCHARGE SUPPRESSOR
● SUPRESSOR TAG NUMBER	20-DC-7080-1	20-DC-7080-2
● COMBINATION INLET SUPP SEPARATOR/INTERNALS	○ YES ● NO / ○ YES ● NO	○ YES ● NO / ○ YES ● NO
◎ NO. (QTY) OF INLET & DISCH. SUPP. PER STAGE	1	1
○ ALLOWABLE PEAK-PEAK PULSE @ LINE SIDE NOZZLE	(BAR) / %	(BAR) / %
○ ALLOWABLE PEAK-PEAK PULSE @ CYL FLANGE NOZZLE	(BAR) / %	(BAR) / %
● DESIGN FOR FULL VACUUM CAPABILITY	● YES ○ NO	● YES ○ NO
● MIN. REQ'D WORKING PRESSURE & TEMPERATURE NOTE: AFTER DESIGN, THE ACTUAL MAWP & TEMP ARE TO BE DETERMINED BASED ONTHE WEAKEST COMPONENT AND STAMPED ON THE VESSEL, THE ACTUAL MAWP IS TO BE SHOWN ON PG. 14 LINE 12 AND ON THE U1A FORMS	(BARA) 13,5 @ 80 °C	(BARA) 25 @ 210 °C
● INITIAL SIZING VOL. PER FORMULA OF 7.9.3.2 NOTE: This is a Reference	0,3 m³	0,3 m³
◆ AS BUILT VOLUME (m³)	m³	m³

#2 : PULSATION DAMPING FOR INLET AND OUTLET OF EACH CYLINDER, BY VOLUME BOTTLES.

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Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Num			303	ME	DSH	75	Rev : 00	Page: 16 OF 20

As per clause 7.9.5.1.3 of API 618, All materials in contact with process gases shall be compatible with the gases being handled. The corrosion allowance for shells and internals of carbon-steel pulsation suppression equipment shall be a minimum of 3 mm

PULSATION SUPPRES (CONT'D) SERVICE

THESE SHEETS TO BE OMPRESSION STAGE NO.

CONSTRUCTION REQUIRE	INLET SUPPRESSOR	DISCHARGE SUPPRESSOR
● SUPRESSOR TAG NUM		
● BASIC MATERIAL REQ	Carbon Steel	Carbon Steel
◇ ACTUAL MATERIAL DESIGNATION SHELL/HEAD	/	/
○ SPECIAL HARDNESS LIMITATIONS, Rc ○ YES ● NO	SHELL & HEADS WELDS	SHELL & HEADS WELDS
● CORROSION ALLOWANCE., mm ● REQUIRED	1.5 mm	1.5 mm
◆ WALL THICKNESS, mm SHELL/HEAD	mm/ mm	mm/ mm
□ NOM. SHELL DIA X OVERALL LGTH. (mm/m³)	mm/ mm³	mm/ mm³
□ PIPE OR ROLLED PLATE CONSTRUCTION	□ PIPE □ ROLLED PLATE	□ PIPE □ ROLLED PLATE
◆ ACT. MAX ALLOW. WORKING PRESS. AND TEMPERATURE	(BAR) @ °C	(BAR) @ °C
● MINIMUM DESIGN METAL TEMP (2.14.8)	°C	°C
○ INLET SUPRESS. TO BE SAME MAWP AS DISCH'RGE SUPPRESS.	○ YES ○ NO	
◇ MAX EXPECTED PRESSURE DROP(Δ P, %) LINE PRESS	Δ P (BAR) / %	Δ P (BAR)/ %
◇ WEIGHT (EACH)	kg	kg
○ INSUL CLIP	VTS	VTS
◇ EXPECTED P-P PULSE @ LINE SIDE/CYL FLG, % LINE PRESS BASED ON FINAL SUPPRESSOR DESIGN	%/ %	%/ %
◎ SUPPORTS, TYPE/QUANTITY		

CONNECTION REQUIREMENTS & DATA		
● LINE SIDE FLANGE. SIZE/RATING/FACING/TYPE	VTS/VTS/RF/WN	VTS/VTS/RF/WN
● COMP CYL FLANGE(S), QTY/SIZE/RATING/FACING/TYPE	VTS	VTS
○ FLANGE FINISH, ○ PER 3.9.3.1 >3.2 <6.4		
● INSPECTION OPENINGS REQUIRED	○ YES ● NO ○ BLINDED	○ YES ● NO ○ BLINDED
● SPEC. QTY. SIZE, /FLG TYPE & RATING		
◇ * QTY. SIZE, /FLG TYPE & RATING		
● VENT CONNECTIONS REQUIRED	○ YES ● NO	○ YES ● NO
○ SPEC. QTY. SIZE, /FLG TYPE & RATING		
◇ * QTY. SIZE, /FLG TYPE & RATING		
● DRAIN CONNECTIONS REQUIRED	○ YES ● NO	○ YES ● NO
○ SPEC. QTY. SIZE, /FLG TYPE & RATING		
◇ * QTY. SIZE, /FLG TYPE & RATING		
● PRESSURE CONNECTIONS REQUIRED	○ YES ● NO	○ YES ● NO
○ SPEC. QTY. SIZE, /FLG TYPE & RATING		
◇ * QTY. SIZE, /FLG TYPE & RATING		
● TEMPERATURE CONNECTIONS REQUIRED	○ YES ● NO	○ YES ● NO
○ SPEC. QTY. SIZE, /FLG TYPE & RATING		
○ CYL NOZZLE ○ MAIN BODY		
◇ * QTY. SIZE, /FLG TYPE & RATING		

Vent and drain connection shall be considered by vendor.

OTHER DATA AND NOTES		
◆ COMPRESSOR MFG'S SUPP. OUTLINE OR DRAWING NO.		
◇ SUPP. MFG'S OUTLINE OR DRAWING NO.		

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
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Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number :	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 17 OF 20

○ **INSTRUMENTATION**

PURCHASER TO FILL IN (☐ ○ ⬡) AFTER COMMODITY TO INDICATE: ☐ BY COMP. MFR. ○ BY PURCH. ⬡ BY OTHERS

INSTRUMENT & CONTROL PANEL (■ ○ ⬡):
- ● ONE FOR EA. UNIT ○ ONE COMMON TO ALL UNITS
- ○ MACHINE MT'ED ● FREE STANDING (OFF UNIT) / ○ LOCAL ● REMOTE ○ INDOORS
- ○ PNEUMATIC ○ ELEC. ● ELECTRONIC ○ HYDRAULIC ● PROGRAMMABLE CONTL'R
- ○ NEMA 7, CLASS _____ , GROUP IIB , DIVISION _____ ○ INTRINSICALLY SAFE (Exi)
- ● I/S BARRIERS (■ ○ ⬡)
- ○ NEMA 4, WATERTIGHT & DUSTTIGHT ○ PURGED TO NFPA 496 TYPE ○ X ○ Y ○ Z
- ○ OTHER NEMA _____ LOW PURGE PRESS. ○ ALARM ○ SHUTDOWN
- ○ VIB, ISOLATORS ○ STRIP HEATERS ○ PURGE CONN. ○ EXTRA CUTOUTS
- ● ANNUNCIATOR W/FIRST-OUT INDICATION LOCATED ON CONTROL PANEL
- ● PURCHASER'S CONN. BROUGHT OUT TO TERMINAL BOX BY VENDOR
- ● IP PROTECTION : IP 55 FOR LOCAL PANEL , IP 42 FOR CONTROL INDOOR PANEL.

BUFFER GAS CONTROL PANE ○ ONE FOR EA. UNIT ○ ONE COMMON TO ALL UNITS

To be completed.

● INSTRUMENTATION SUITABLE FOR: ○ INDOORS ● OUTDOORS ● IP PROTECTION: IP-65 ○ OTHER _____

● PREFERRED INSTRUMENT SUPPLIERS, (TO BE COMPLETED BY PURCHASER), OTHERWISE MFR'S STANDARD APPLIES

PRESSURE GAUGES	MFR	as per instrument data sheets	SIZE & TYPE		MTL	
TEMPERATURE GAUGES	MFR	as per instrument data sheets	SIZE & TYPE		MTL	
LIQUID LEVEL GAUGES	MFR	as per instrument data sheets	TYPE		MTL	
DIFF. PRESSURE GAUGES	MFR	as per instrument data sheets	SIZE & TYPE		MTL	
PRESS. TRANSMITTERS	MFR	as per instrument data sheets	TYPE		MTL	
LIQUID LEV. TRANSMITTER	MFR	as per instrument data sheets	TYPE		MTL	
PRESSURE SWITCHES	MFR	as per instrument data sheets	TYPE		MTL	
TEMPERATURE SWITCHES	MFR	as per instrument data sheets	TYPE		MTL	
LIQUID LEVEL SWITCHES	MFR	as per instrument data sheets	TYPE		MTL	
DIFF. PRESSURE SWITCHES	MFR	as per instrument data sheets	TYPE		MTL	
CONTROL VALVES	MFR	as per instrument data sheets	TYPE		MTL	
PRESSURE SAFETY VALVES	MFR	as per instrument data sheets	TYPE		MTL	
SIGHT FLOW INDICATORS	MFR	as per instrument data sheets	TYPE		MTL	
VIBRATION MONITORS & EQUIP.	MFR	as per instrument data sheets	TYPE		MTL	
THERMOCOUPLES	MFR	as per instrument data sheets	TYPE		MTL	
RTD'S	MFR	as per instrument data sheets	TYPE		MTL	
SOLENOID VALVES	MFR	as per instrument data sheets	TYPE		MTL	
ANNUNCIATOR	MFR		MODEL & (QTY SPARE POINTS)		( )	
PROGRAMMABLE CONTROLLER	MFR		TYPE		MTL	
	MFR		TYPE		MTL	
	MFR		TYPE		MTL	

To be completed as per approved P&ID.

PRESSURE GAUGE REQUIREMENTS ● LIQUID FILLED PRESSURE GAUGES: ● YES ○ NO

FUNCTION	LOCALLY MOUNTED	PANEL MOUNTED
LUBE OIL MAIN PUMP DISCHAR.	(☐ ○ ⬡)	(☐ ○ ⬡)
LUBE OIL AUX. PUMP DISCHARG.	(☐ ○ ⬡)	(☐ ○ ⬡)
LUBE OIL PRESS. AT FRAME HEADER	(☐ ○ ⬡)	(☐ ○ ⬡)
LUBE OIL FILTER Δ P	(☐ ○ ⬡)	(☐ ○ ⬡)
COOLING H_2O INLET HEADER	(■ ○ ⬡)	(☐ ○ ⬡)
_____	(☐ ○ ⬡)	(☐ ○ ⬡)
_____	(☐ ○ ⬡)	(☐ ○ ⬡)

		LOCALLY MOUNTED	PANEL MOUNTED
PROCESS GAS: INLET PRESS.			
	@ EA. STAGE	(■ ○ ⬡)	(☐ ○ ⬡)
DISCH. PRESS.	@ EA. STAGE	(■ ○ ⬡)	(☐ ○ ⬡)
_____		(☐ ○ ⬡)	(☐ ○ ⬡)
_____		(☐ ○ ⬡)	(☐ ○ ⬡)
_____		(☐ ○ ⬡)	(☐ ○ ⬡)

REMARKS: _____

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445
BU	20	VD	303	ME	DSH	75	Rev : 00 Page: 18 OF 20

Owner Document Number

INSTRUMENTATION (CONT'D)

TEMPERATURE MEASUREMENT REQUIREMENTS

FUNCTION	LOCALLY MOUNTED	PANEL MOUNTED	GAUGE W/ CAPIL'RY	THERMO CPL SYS	RTD SYS	I/S SYS
LUBE OIL ○ INLET TO ○ OUT OF FRAME	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
LUBE OIL ○ INLET TO ○ OUT OF COOLER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
MAIN JRNL BEARINGS (THERMOCOUPLES OR RTD'S ONLY)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
MOTOR BEARING(S) (THERMOCOUPLES OR RTD'S ONLY)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
COOLING WATER HEADER: ● INLET ● OUTLET	(■ ○ ⬡)	(□ ○ ⬡)	●	○	○	○
CYL. COOLING WATER: ○ INLET ● OUTLET ● EA. CYL	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
PROCESS GAS: ● INLET ● DISCH. ○ EACH CYL	(■ ○ ⬡)	(■ ○ ⬡)	●	○	●	●
PROCESS GAS: ○ INLET ○ GAS ○ WATER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
INTERCOOLER(S) ○ INLET ○ GAS ○ WATER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
○ INLET ○ GAS ○ WATER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
AFTERCOOLER: ○ INLET ○ GAS ○ WATER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
○ INLET ○ GAS ○ WATER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
COOLING WATER ○ INLET ○ OUTLET/COOLED PKG CASE(S)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
PRESS. PGK CASE, CYL PIST ROD (THRM'CPLS OR RTD'S ONLY)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
COMPRESSOR VALVES ○ SUCT. ○ DISCH. TC'S OR RTD'S ONLY	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○
_____	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○

ALARM & SHUTDOWN SWITCH REQ'MTS

NOTE: ALARM & SHUTDOWN SWITCHES SHALL BE INDIVIDUALLY SEPARATE

ALARM DEVICES ● TRANSMITTER

SHUTDOWN DEVICES ● TRANSMITTER

To be completed as per approved P&ID.

FUNCTION	ALARM	SHUT DOWN	ANNUNCIATION POINTS: ALARM IN PNL BY MFR	ALARM IN CTL ROOM PANEL OTH'RS	SHUTDOWN IN PNL BY MFR	SHUTDOWN IN CTL ROOM PANEL OTH'RS	TOTAL NO. OF POINTS
LOW LUBE OIL PRESS. @ BEARING HEADER	(□ ○ ⬡)	(■ ○ ⬡)	○	○	●	●	1
HIGH LUBE OIL Δ P ACROSS FILTER	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
LOW LUBE OIL LEVEL, FRAME	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
AUX LUBE OIL PUMP, FAIL TO START	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
CYL LUBE SYSTEM PROTECTION	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
COMPR. VIBRATION, SHUTDOWN ONLY		(■ ○ ⬡)	○	○	●	●	
VIBRATION, W/ CONTINUOUS MONITORING	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
ROD DROP DETECTOR, CONTACT TYPE(1/CYL)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
ROD DROP PROXIMITY PROBE (1/CYL)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
OIL TEMP OUT OF FRAME	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
HIGH GAS DISCH. TEMP EACH CYLINDER	(□ ○ ⬡)	(■ ○ ⬡)	○	○	●	●	
HIGH JACKET WATER TEMP., EA. CYL	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
LOW SUCTION PRESS., FIRST STG INLET	(□ ○ ⬡)	(■ ○ ⬡)	○	○	●	●	
HI DISCH. PRESS. ○ FINAL ● EA STG	(□ ○ ⬡)	(■ ○ ⬡)	○	○	●	●	
HI CYL. GAS Δ P, EACH STAGE	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
HI LIQ. LEV., SEPARATOR	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
LOW PURGE GAS PRESS, DISTANCE PIECE(S)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
HI X-HD PIN TEMP	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
PRESS PKG CASE (PISTON ROD TEMP)	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
LOW PRESSURE COOLING WATER INLET_____	(□ ○ ⬡)	(□ ○ ⬡)	○	○	○	○	
		TOTAL NUMBER OF ANNUNCIATION POINTS					

SWITCH CONTACT OPERATION

NOTE: EACH SWITCH SHALL BE MINIMUM SPDT ARRANGEMENT

ALARM CONTACTS SHALL:
- ● OPEN (DE-ENER.) TO SOUND ALARM & BE ENERGIZED WHEN COMPR. IS IN OPERATION(NORMALLY CLOSE)
- ○ CLOSE (ENERGIZE) TO SOUND ALARM & BE DE-ENERGIZED WHEN COMPR. IS IN OPERATION(NORMALLY OPEN)

SHUTDOWN CONTACTS SHALL:
- ● OPEN (DE-ENERGIZED) TO SHUTDOWN & BE ENERGIZE WHEN COMPR. IS IN OPERATION(NORMALLY CLOSE)
- ○ CLOSE (ENERGIZE) TO SHUTDOWN & BE DE-ENERGIZE WHEN COMPR. IS IN OPERATION(NORMALLY OPEN)

REF: 7.6.6.2 FOR MINIMUM RECOMMENDED PROTECTION REQUIREMENTS

OWNER:	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	CONTRACTOR:
MC:	MECHANICAL DATA SHEET FOR EMERGENCY INSTRUMENT AIR COMPRESSOR (20-C-7080)	

Owner Document Number :	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
	BU	20	VD	303	ME	DSH	75	Rev : 00	Page: 19 OF 20

○ INSTRUMENTATION (CONT'D)

● MISCELLANEOUS INSTRUMENTATION — ○ INTERCLR(S) ○ AFTERCLR ○ OIL CLR ○ H_2O CLR

SIGHT FLOW IND. (COOLING H_2O ONLY)	(□ ○ ⬡)	FOR: ○ CYL JACKET WATER ○ ROD PRESS. PKG CASES	
PNEUMATIC PRESSURE TRANSMITTERS	(□ ○ ⬡)	FOR:	
PRESSURE TRANSMITTERS (ELEC. OUTP.)	(□ ○ ⬡)	FOR:	
PNEUMATIC LEVEL TRANSMITTERS	(□ ○ ⬡)		
ALARM HORN & ACKN'LMT TEST BUTTON	(□ ○ ⬡)		
CONDUIT & WIRING W/JUNCT. BOXES (CON-SOLES)	(□ ○ ⬡)		
TEST VALVES	(□ ○ ⬡)	FOR:	
DRAIN VALVES	(□ ○ ⬡)	FOR: Coolers	
GAUGE GLASS(ES)	(■ ○ ⬡)	FOR: Recirculating Oil,	
TACHOMETER	(□ ○ ⬡)	SPEED RANGE ____ TO ____ RPM	
CRANKSHAFT KEY PHASER	(□ ○ ⬡)	FOR:	
AND TRANSDUCER			
LEVEL GAUGE ON SUCTION SUPPRESSOR	(□ ○ ⬡)		
OIL LEVEL SWITCH ON CRAKCASE	(□ ○ ⬡)		

○ SEPARATE LUBE OIL CONSOLE INSTRUMENTATION: — PURCH. TO LIST REQ'MTS IN ADDITION TO ANY ABOVE REQ'MTS

	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	

○ SEPARATE COOLING WATER CONSOLE INSTRUMENT: — PURCH. TO LIST REQ'MTS IN ADDITION TO ANY ABOVE REQ'MTS

	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	
	(□ ○ ⬡)	

● RELIEF VALVES

LOCATION	BY	MANUFACTURER	TYPE	◇ SIZE	◇ SETTING
EACH STAGE DISCHARGE	(■ ○ ⬡)	TBC		1" / 11/2"	26 barg
COOLING WATER OUTLET	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				
	(□ ○ ⬡)				

NOTES:
#1 SEE MOTOR DATA SHEET FOR ADDITIONAL MOTOR INSTRUMENTATION REQUIREMENTS

OWNER:	BUSHEHR PETROCHEMICAL COMPANY	CONTRACTOR:
MC:	OMPRESSOR (20-C-	Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT

Owner Document Number :	Dis.	Doc.	Seq.	Contract No : 52-98/445	
	ME	DSH	75	Rev : 00	Page: 20 OF 20

Since in API618, Mechanical data sheet and TCL clause M29 (Temperature before cooling to be less than 150 deg C . AIRPACK shall provide aftercooler(Water cooled) .Aftercooler outlet gas temperature to be 40 deg C) stated that discharge temperature of cylinder shall be less than 150 C, Deviation from this item is not accepted.

GENERAL NOTES

(1) COMPRESSOR STARTS BY MEANS OF A LOW-PRESSURE SWITCH ON DELIVERY PIPE AND STOPS WHEN HIGH PRESSURE IS REACHED .
THE REQUIRED LOW AIN THE REQUIRED DELIVERY PRESSURE SHALL BE SUPPLIED BY VENDOR .
THE OPERATION IS I

Vendor shall clarify why AIRPACK delete clause (3).

(2) DELETED, VENDOR SHALL PROVIDE AFTER-COOLER .AFTERCOOLER OUTLET GAS TEMPERATURE TO BE 40 DEG C.
(3) DELETED
(4) DELETED
(5) FOR UTILITIES SUPPLY CONDITION AND CLIMATE CONDITION REFER TO "AMBIENT ,SITE CONDITION & UTILITY DATA" , (1216-DE-00-PR-ESS-101)
(6) MINIMUM METAL TEMPRATURE = 0 DEG C
(7) DELETED
(8) DEW POINT AT INLET -170 DEG C, DEW POINT AT ATM. -194.6 DEG C
9) TYPE OF COMPRESSOR : VERTICAL
(10) VENDOR ALSO SHALL PROVIDE BEL
SPARE PARTS

Temporary strainer shall be added.

(11)GENERAL NOTES :
A. PROVIDE CONTACTS OPEN FOR CUMULATIVE ALARM AND CUMULAT
B. PROVIDE SAFETY VALVE ON COMPRESSOR DISCHARGE ,WITH LOCK ALVE .
C. PROVIDE SEPARATE INSTRUMENT FOR ALARM AND SHUTDOWN.
D. THE VENDOR TOGETHER WITH THE INSTRUMENT DOCUMENTATION PLETE LIST OF ALL THE ALARMS AND INTERLOCKS WITH ALL SET VALUES.
E. PROVIDE A VISUAL FLOWMETER ON COOLING WATER RETURN LINE.
F. NOISE PRESSURE LEVEL AT 1 M. SHALL BE LESS THAN 85 DB(A)

As per clause S1 of TCL 80db is approved by AIRPACK

(12)VENDOR SHOULD FOLLOW DOC NO.: 1216-DE-00-IN-ESS-603 FOR SPECIFICATION OF APPLICABLE INSTRUMENT.
(13)PLC PACKAGE SYSTEM (UCP) WILL BE INSTALLED IN CONTROL/AUXILIARY ROOM.
LOCAL PANEL INCLUDING START/STOP PUSH BUTTONS ,LAMPS AND INDICATORS, TRIP RESET PUSH BUTTON ,AMMETER AND ETC
(AS PER PROJECT REQUIREMENTS) WILL BE INSTALLED IN FIELD.
INSTRUMENT WILL BE INSTALLED ON MACHINE OR FREE STANDING.
(14) DELETED
(15) THE CAPACITY TO BE SUPPLIED CONSIDERING NO NEGATIVE TOLERANCE. THE REQUIRED CAPACITY (NNT) IS 1.1*50=55 KG/H.