

INSTRUCTION MANUAL

AND

PARTS BOOK

C L A R K B R O S . C O .

CENTRIFUGAL COMPRESSORS
(Vertically Split)

M. W. KELLOGG COMPANY

for

COMMERCIAL SOLVENTS CORP.

at

STERLINGTON, LOUISIANA

Customer Order No. 5376-J20-101
Customer Job No. 5376
Customer Item No. 103J
CLARK Contract No. 10016

CLARK Compressor Serial Nos.
Low Stage - 2-9-1383
High Stage - 2-8-1384

Driven By

De Laval Model GJ-MV & GJ-SV

Steam Turbines

Clark Bros. Co.
Turbo Products Division
Olean, New York

INTRODUCTION

INTRODUCTION

CUSTOMER: M. W. KELLOGG COMPANY

USER: COMMERCIAL SOLVENTS CORPORATION

LOCATION: STERLINGTON, LOUISIANA

CUSTOMER ORDER NO: 5376-J20-101

CUSTOMER JOB NO: 5376

CUSTOMER COMP. ITEM NO: 103J

CLARK CONTRACT NO: 10,016

COMPRESSOR SERIAL NOS: Low Stage - 2-9-1383
High Stage - 2-8-1384

COMPRESSORS: LOW STAGE One (1) Model #2BC-9 stage, vertical-
ly split centrifugal compressor;
thru-drive; down-connected intake and
discharge; cast steel casing; floating
ring type inner oil seals; common
lube and seal oil system; continuously
lubricated coupling (serviced by lube
system)

 HIGH STAGE One (1) Model #2BF9-8 stage, vertically
split centrifugal compressor; discharge
with up-connected sidestream inlet at
45° from vertical centerline at 8th
stage position; floating ring type
inner oil seals; common lube and seal
oil system; continuously lubricated
coupling (serviced by lube system)

CLARK BROS. CO.
TURBO PRODUCTS DIVISION

INTRODUCTION

INTRODUCTION

APPLICATION:

Ammonia Synthesis

DRIVEN BY:

De Laval Model GJ-MV & GJ-SV Steam
Turbines

NEAREST CLARK SERVICE OFFICE:

Clark Bros. Co.
Division of Dresser Industries, Inc.
Turbo Products Division
P.O. Box 560
Olean, New York 14760

Attention: Turbo Service Dept.

TELEPHONE NUMBER:

372-2101 Area Code 716

GENERAL DATA

SPECIFICATIONS

DESIGN GUARANTEE OPERATING CONDITIONS

	<u>2BC-9</u> <u>1st Sect.</u>	<u>2nd Sect.</u>	<u>S.S.</u>	<u>2BF-9(8)</u> <u>Recycle Sect.</u>
Inlet Pressure, psia	372	943	1960	1960
Inlet Temperature, °F	100	46	117	133
Capacity in Units Given by Customer, lb./hr.	98,447	97,040	599,385	696,425
Capacity @ Inlet Conditions, cfm	3080	1110	- - -	3700
Weight Flow, lb./min.	1640	1617	- - -	11,609
Molecular Weight	8.70	8.67	11.48	11.02
Isentropic Exponent (Average)	1.40	1.40	- - -	1.45
Average Compressibility Factor	1.021	1.052	- - -	1.080
Discharge Pressure, psia	953	1960	- - -	2240
Discharge Temperature, °F	333	227	- - -	168
Pressure Drop Btwn. Sections, psia		10		
Speed, rpm				
Horsepower, bhp (calc'd.) ± 4%		10,490		
Compressor Horsepower, bhp (calc'd.)	7596	6155	- - -	6126
Maximum Driver Capability Input to Compressor Train, bhp				
Type of Gas Handled				
Operating Speed Range				

Ammonia Synthesis & Recycle Gas
70% to 103.5% Design Speed

CLARK BROS. CO.
TURBO PRODUCTS DIVISION

GENERAL DATA

SPECIFICATIONS

CRITICAL SPEEDS (Calculated)

Compressor Normal, rpm		10,490
Compressor Max. Continuous Operating, rpm		10,850
Compressor Critical, rpm	#2BC-9	5,500
	#2BF-9(8)	5,300

WEIGHTS OF MAJOR COMPONENTS (Approx.)

	<u>#2BC-9</u>	<u>#2BF-9(8)</u>
Compressor Assembly	12,800	17,100
Rotor Assembly	760	710
Bundle Assembly - w/Rotor Installed	5870	5000
Compressor Base	4,000	
Steam Turbine - GJ-SV	15,000	
GJ-MV	25,000	
Turbine Base	1,000	

LUBRICATING & SEALING OIL RECOMMENDATIONS

Type	A Premium Quality Turb. Oil
Specific Gravity @ 60°F	0.87
Viscosity, SSU @ 130°F	80 to 94
Viscosity, SSU @ 100°F	140 to 170
Viscosity, Index (Min.)	95
Kinematic Viscosity, centistokes @ 130°F	15.7 to 19.2
Flash Point, °F (Min.)	330
Operating Temperature, °F	
In to bearings (Minimum)	70 to 90
Out from bearings (Normal)	155 to 165
Out from bearings (Maximum)	180
Supply Pressure to Bearings, psig	20