



Caterpillar G3516 (SITA)/ Ariel JGT-4 (3 Stage)

-Packager: Hanover

-Year Built: 1998

-Engine: Caterpillar G3516 (SITA)

-HP Rating: 1,265 HP @ 1400 RPM

-Frame: Ariel JGT-4

-Stages: 3

-Cylinder Configuration:

- (2) 17.875" T (500 psi)
- 13.625" T (635 psi)
- 7.875" T (1,800 psi)

-Cooler: Air X-Changers 144EH

- MAWP- IC1: 200 psi
- MAWP- IC 2: 400 psi
- MAWP- AC: 1,100 psi

-Current Condition:

- Engine: Only 3 months run time on top end overhaul; unsure of total engine hours.
- Compressor: Needed overhaul; mechanics tore down for OH and found 1st stage cylinders needed to be sprayed. Sent cylinders to machine shop; had all parts machined and cylinders sprayed. Management stopped the job and relocated one of their idle ULB units to this site; left this unit down. Has been idle since summer of 2019. Still needs 1st stage cylinders reinstalled and compressor overhauled prior to being ready to work.
- Package: Well-built package; needs sandblasting and painting for cosmetic purposes.

-Price: \$150k (as-is, where is)



Company: Ariel Corporation
 Quote:
 Case 1:

Ariel Performance

Customer:
 Inquiry:
 Project:



Compressor Data:

Elevation, ft:	500.00	Barmtr, psia:	14.429	Ambient, F:	100.00
Frame: (ELP)	JGT/4	Stroke, in:	4.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1500	Rated BHP:	2600.0	Rated PS FPM:	1125.0
Calc RPM:	1200.0	BHP:	901	Calc PS FPM:	900.0

Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516 LE
BHP:	976 (10.00%)
Avail:	976

Services

Gas Model

Stage Data:

	1 (SG)	2	3
Target Flow, MMSCFD	3.500	3.500	3.500
Flow Calc, MMSCFD	3.973	3.966	3.881
BHP per Stage	311.8	290.2	283.4
Specific Gravity	0.6500	0.6486	0.6253
Ratio of Sp Ht (N)	1.2452	1.2431	1.2620
Comp Suct (Zs)	0.9952	0.9864	0.9608
Comp Disch (Zd)	0.9930	0.9825	0.9604
Pres Suct Line, psig	10.00	N/A	N/A
Pres Suct Flg, psig	9.76	73.46	267.26
Pres Disch Flg, psig	75.90	272.71	910.00
Pres Disch Line, psig	N/A	N/A	900.00
Pres Ratio F/F	3.735	3.267	3.282
Temp Suct, F	80.00	120.00	120.00
Temp Clr Disch, F	120.00	120.00	120.00

Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	17-7/8T	17-7/8T	14-1/8T	8-3/8T
Cyl Bore, in	17.875	17.875	13.625	7.875
Cyl RDP (API), psig	454.5	454.5	577.3	1636.4
Cyl MAWP, psig	500.0	500.0	635.0	1800.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1558.6	1558.6	901.4	294.6
Pres Suct Intl, psig	8.62	8.62	70.13	256.14
Temp Suct Intl, F	90	90	128	127
Pres Disch Intl, psig	79.72	79.72	281.88	947.69
Temp Disch Intl, F	266	266	291	303
HE Suct Gas Vel, FPM	7106	7106	6605	6914
HE Disch Gas Vel, FPM	6451	6451	5701	6677
HE Spcrs Used/Max	0/6	0/6	0/4	0/4
HE Vol Pkt Avail	1.08+69.01	1.08+69.01	No Pkt	No Pkt
Vol Pkt Used	0.00 (V) %	0.00 (V) %	No Pkt	No Pkt
HE Min Clr, %	18.94	18.94	22.67	24.71
HE Total Clr, %	20.02	20.02	22.67	24.71
CE Suct Gas Vel, FPM	7017	7017	6463	6468
CE Disch Gas Vel, FPM	6370	6370	5578	6247
CE Spcrs Used/Max	0/6	0/6	0/4	0/4
CE Min Clr, %	19.53	19.53	23.68	27.45
CE Total Clr, %	19.53	19.53	23.68	27.45
Suct Vol Eff HE/CE, %	55.2/56.1	55.2/56.1	57.0/55.4	53.3/48.8
Disch Event HE/CE, ms	6.7/7.8	6.7/7.8	7.2/8.2	7.1/7.8
Suct Pseudo-Q HE/CE	4.8/4.7	4.8/4.7	3.4/3.3	4.6/4.0
Gas Rod Ld Comp, %	44.7 C	44.7 C	77.8 C	86.4 C
Gas Rod Ld Tens, %	47.5 T	47.5 T	81.0 T	82.8 T
Gas Rod Ld Total, %	47.9	47.9	82.5	88.1
Xhd Pin Deg/%RvrsI lbf	159/80.7	159/79.0	139/91.9	143/72.5
Flow Calc, MMSCFD	1.987	1.987	3.966	3.881

This run shows how our low pressure 3516/JGT-4/3 is capable of moving 3.881 MMCFD with only 10 psi suction and 900 psi discharge while running at only 1200 RPM (1400 RPM max) and using only 901 HP of the available 976 HP at 1200 RPM with a 10% derate. This unit isn't working hard AT ALL with these conditions. If this is still too much gas, the pockets can be moved out or other adjustments can be made. Additionally, a recirculation gas setup would probably be necessary with this unit since it moves so much gas.



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Compressor Data:

Elevation, ft:	500.00	Barmtr, psia:	14.429	Ambient, F:	100.00
Frame: (ELP)	JGT/4	Stroke, in:	4.50	Rod Dia, in:	2.000
Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1500	Rated BHP:	2600.0	Rated PS FPM:	1125.0
Calc RPM:	1400.0	BHP:	1082	Calc PS FPM:	1050.0

Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516 LE
BHP:	1139 (10.00%)
Avail:	1139

Services

Gas Model

Stage Data:

	1 (SG)	2	3
Target Flow, MMSCFD	3.500	3.500	3.500
Flow Calc, MMSCFD	4.657	4.648	4.548
BHP per Stage	374.8	347.5	341.3
Specific Gravity	0.6500	0.6487	0.6253
Ratio of Sp Ht (N)	1.2452	1.2431	1.2620
Comp Suct (Zs)	0.9952	0.9864	0.9609
Comp Disch (Zd)	0.9930	0.9825	0.9604
Pres Suct Line, psig	10.00	N/A	N/A
Pres Suct Flg, psig	9.76	73.39	266.73
Pres Disch Flg, psig	75.82	272.18	910.00
Pres Disch Line, psig	N/A	N/A	900.00
Pres Ratio F/F	3.732	3.264	3.288
Temp Suct, F	80.00	120.00	120.00
Temp Clr Disch, F	120.00	120.00	120.00

Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	17-7/8T	17-7/8T	14-1/8T	8-3/8T
Cyl Bore, in	17.875	17.875	13.625	7.875
Cyl RDP (API), psig	454.5	454.5	577.3	1636.4
Cyl MAWP, psig	500.0	500.0	635.0	1800.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1818.4	1818.4	1051.7	343.7
Pres Suct Intl, psig	8.21	8.21	68.86	251.62
Temp Suct Intl, F	91	91	128	127
Pres Disch Intl, psig	80.99	80.99	284.58	960.96
Temp Disch Intl, F	271	271	295	308
HE Suct Gas Vel, FPM	8290	8290	7706	8066
HE Disch Gas Vel, FPM	7526	7526	6651	7790
HE Spcrs Used/Max	0/6	0/6	0/4	0/4
HE Vol Pkt Avail	1.08+69.01	1.08+69.01	No Pkt	No Pkt
Vol Pkt Used	0.00 (V) %	0.00 (V) %	No Pkt	No Pkt
HE Min Clr, %	18.94	18.94	22.67	24.71
HE Total Clr, %	20.02	20.02	22.67	24.71
CE Suct Gas Vel, FPM	8186	8186	7540	7546
CE Disch Gas Vel, FPM	7431	7431	6507	7288
CE Spcrs Used/Max	0/6	0/6	0/4	0/4
CE Min Clr, %	19.53	19.53	23.68	27.45
CE Total Clr, %	19.53	19.53	23.68	27.45
Suct Vol Eff HE/CE, %	55.4/56.3	55.4/56.3	57.3/55.7	53.7/49.2
Disch Event HE/CE, ms	5.8/6.8	5.8/6.8	6.2/7.0	6.1/6.7
Suct Pseudo-Q HE/CE	6.5/6.4	6.5/6.4	4.7/4.5	6.2/5.4
Gas Rod Ld Comp, %	45.8 C	45.8 C	79.2 C	88.6 C
Gas Rod Ld Tens, %	48.6 T	48.6 T	82.5 T	84.9 T
Gas Rod Ld Total, %	49.1	49.1	84.1	90.4
Xhd Pin Deg/%RvrsI lbf	160/73.6	160/72.5	178/88.9	177/99.8
Flow Calc, MMSCFD	2.328	2.328	4.648	4.548

This run shows how our low pressure 3516/JGT-4/3 package is capable of moving 4.548 MMCFD with only 10 psi suction and 900 psi discharge while using only 1082 of 1139 available HP after a 10% derate is factored in.



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Max RL Tot, lbf:	74000	Max RL Tens, lbf:	37000	Max RL Comp, lbf:	40000
Rated RPM:	1500	Rated BHP:	2600.0	Rated PS FPM:	1125.0
Calc RPM:	1400.0	BHP:	1120	Calc PS FPM:	1050.0

Driver Data:

Type:	Nat. Gas
Mfg:	Caterpillar
Model:	G3516 LE
BHP:	1139 (10.00%)
Avail:	1139

Services

Gas Model

Stage Data:

	1 (SG)	2	3
Target Flow, MMSCFD	3.500	3.500	3.500
Flow Calc, MMSCFD	4.873	4.867	4.778
BHP per Stage	390.4	360.1	350.6
Specific Gravity	0.6500	0.6500	0.6338
Ratio of Sp Ht (N)	1.2452	1.2429	1.2596
Comp Suct (Zs)	0.9950	0.9859	0.9587
Comp Disch (Zd)	0.9927	0.9818	0.9575
Pres Suct Line, psig	11.00	N/A	N/A
Pres Suct Flg, psig	10.75	76.49	273.36
Pres Disch Flg, psig	78.99	278.88	910.00
Pres Disch Line, psig	N/A	N/A	900.00
Pres Ratio F/F	3.711	3.226	3.212
Temp Suct, F	80.00	120.00	120.00
Temp Clr Disch, F	120.00	120.00	120.00

Cylinder Data:

	Throw 1	Throw 3	Throw 4	Throw 2
Cyl Model	17-7/8T	17-7/8T	14-1/8T	8-3/8T
Cyl Bore, in	17.875	17.875	13.625	7.875
Cyl RDP (API), psig	454.5	454.5	577.3	1636.4
Cyl MAWP, psig	500.0	500.0	635.0	1800.0
Cyl Action	DBL	DBL	DBL	DBL
Cyl Disp, CFM	1818.4	1818.4	1051.7	343.7
Pres Suct Intl, psig	9.13	9.13	71.79	257.64
Temp Suct Intl, F	91	91	128	127
Pres Disch Intl, psig	84.35	84.35	291.64	962.16
Temp Disch Intl, F	270	270	293	303
HE Suct Gas Vel, FPM	8290	8290	7706	8066
HE Disch Gas Vel, FPM	7526	7526	6651	7790
HE Spcrs Used/Max	0/6	0/6	0/4	0/4
HE Vol Pkt Avail	1.08+69.01	1.08+69.01	No Pkt	No Pkt
Vol Pkt Used	0.00 (V) %	0.00 (V) %	No Pkt	No Pkt
HE Min Clr, %	18.94	18.94	22.67	24.71
HE Total Clr, %	20.02	20.02	22.67	24.71
CE Suct Gas Vel, FPM	8186	8186	7540	7546
CE Disch Gas Vel, FPM	7431	7431	6507	7288
CE Spcrs Used/Max	0/6	0/6	0/4	0/4
CE Min Clr, %	19.53	19.53	23.68	27.45
CE Total Clr, %	19.53	19.53	23.68	27.45
Suct Vol Eff HE/CE, %	55.7/56.6	55.7/56.6	57.9/56.3	54.8/50.5
Disch Event HE/CE, ms	5.8/6.8	5.8/6.8	6.3/7.1	6.2/6.8
Suct Pseudo-Q HE/CE	6.5/6.4	6.5/6.4	4.7/4.5	6.3/5.5
Gas Rod Ld Comp, %	47.3 C	47.3 C	80.8 C	88.1 C
Gas Rod Ld Tens, %	50.3 T	50.3 T	84.1 T	84.3 T
Gas Rod Ld Total, %	50.7	50.7	85.7	89.8
Xhd Pin Deg/%RvrsI lbf	161/74.3	161/73.2	178/90.2	177/99.4
Flow Calc, MMSCFD	2.437	2.437	4.867	4.778

This run shows how our low pressure 3516/JGT-4/3 is capable of moving 4.778 MMSCFD using only 11 psi suction and 900 psi discharge while using only 1120 of the 1139 available HP after factoring in a 10% derate. This unit moves a LOT with very little suction pressure.







