

1/17/05

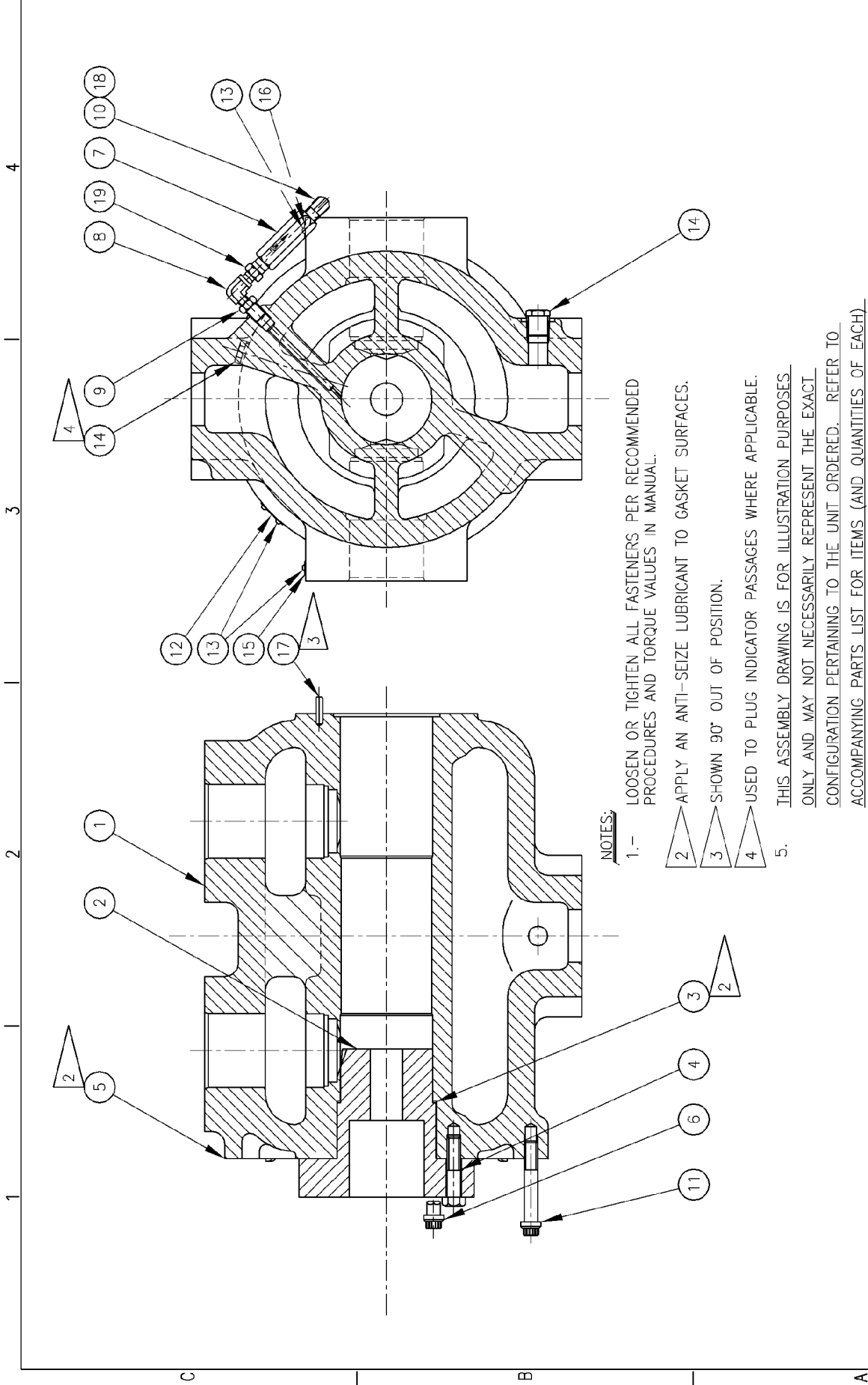
ARIEL CORP. - BLACKJACK DIV. C/N: 001
SALES ORDER COVER SHEET

RHCOVP02

SERIAL NUMBER: C-65737

PART: 3JG CLASS DESCRIPTION: 3" JG CYLINDER CLASS

PART NUMBER	QUANTITY	DESCRIPTION	DRAWING NO.
G-3272	1	CYL ASSY, 3 JG:A,STD 2550	A-8547
G-4114	1	SHIP LOOSE CYL.STD LUBE,STL	N.A.
G-8900	2	SUC VLV ASSY, 3JG,JG-CE	A-6267
G-8901	2	DIS VLV ASSY, 3JG,JG-CE	A-6267
G-6723	1	PIST. 3 JGA,STD	D-0519
B-2930-CC	2	SUC VLV, 52RX ,THK MT	A-9202
B-2929-P	2	DIS VLV, 52RX ,THK PK	A-9208



NOTES:

- 1.- LOOSEN OR TIGHTEN ALL FASTENERS PER RECOMMENDED PROCEDURES AND TORQUE VALUES IN MANUAL.
- 2 APPLY AN ANTI-SEIZE LUBRICANT TO GASKET SURFACES.
- 3 SHOWN 90° OUT OF POSITION.
- 4 USED TO PLUG INDICATOR PASSAGES WHERE APPLICABLE.
5. THIS ASSEMBLY DRAWING IS FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT NECESSARILY REPRESENT THE EXACT CONFIGURATION PERTAINING TO THE UNIT ORDERED. REFER TO ACCOMPANYING PARTS LIST FOR ITEMS (AND QUANTITIES OF EACH) REQUIRED FOR THIS PARTICULAR ASSEMBLY.

②	AT #2 - ADDED NOTE #5. UPDATED TO CURRENT ARIEL DRAFTING STANDARDS.	ALH 04/30/02
REV	DESCRIPTION	INIT/DATE

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2	10717	ECN
1	7704	REV
0	7576	REV

APPROVED:	SCALE:	NONE
DRAWN:	CHECKED:	
RLW	2/16/99	

ARIEL CORPORATION
 35 BLACKJACK ROAD
 MOUNT VERNON, OHIO 43050
 ASSEMBLY DWG. NO. **A-8547**



4 3 2 1 1 2 3 4

C B A

1/17/05

PARTS LIST

GROUP NO. G-3272

3" JG CYLINDER BODY
(SCALLOPED NOZ.FLANGE)
RDP 2318#, MAWP 2550#
REF. DRWG. A-8547

ITEM

NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	D-1674	0	CYL, 3 JG:A 2550
002	C-0130	0	CE HEAD, 3 JG:A
003	A-0092	1	STL GASKET, 3.425 X 3.105 X 60
004	FC0100GL	10	HEX HD CAP, 1/2-13 X 2-1/4 G9
005	A-0065	1	GASKET, RND, 12, X 1/64
006	FC0120GO	4	12 PT, 1/2-13 X 3 G8
007	A-3780	1	CHK.VLV, DOU.BALL SOFT SEAT SS
008	A-0804	1	STREET ELBOW, STL, 1/8P, 90
009	A-0811	1	HEX RED BUSH, STL, 1/4M X 1/8F
010	PT0200CB	24.	" SS TUBING, 1/4 OD X .035 WALL
011	FC0120GP	8	12 PT, 1/2-13 X 3-1/4 G8
012	A-0576	1	DATA PLATE, CYLINDER SPEC, SMALL
013	FR0570CC	12	DRIVE SCREW, #6 X 1/4 U-TYPE
014	PP0810GB	1	PIPE PLUG, 1/2NPT, HEX HD, STL
015	A-0640-A	2	INFO PLATE, SUCTION
016	A-0640-B	2	INFO PLATE, DISCHARGE
017	FP0505FG	1	ROLL PIN, 1/4 X 1"
018	A-0800	1	MALE ELBOW, STL, 1/4T X 1/4P
019	A-2114	1	HEX PIPE NIPPLE, STL, 1/4 X 1/8
100	HD-1674	1	CYL ASSY, 3 JG

WHEN A ZERO APPEARS IN THE QUANTITY COLUMN IT
DOES NOT REPRESENT THE QUANTITY REQUIRED.

1/17/05

PARTS LIST

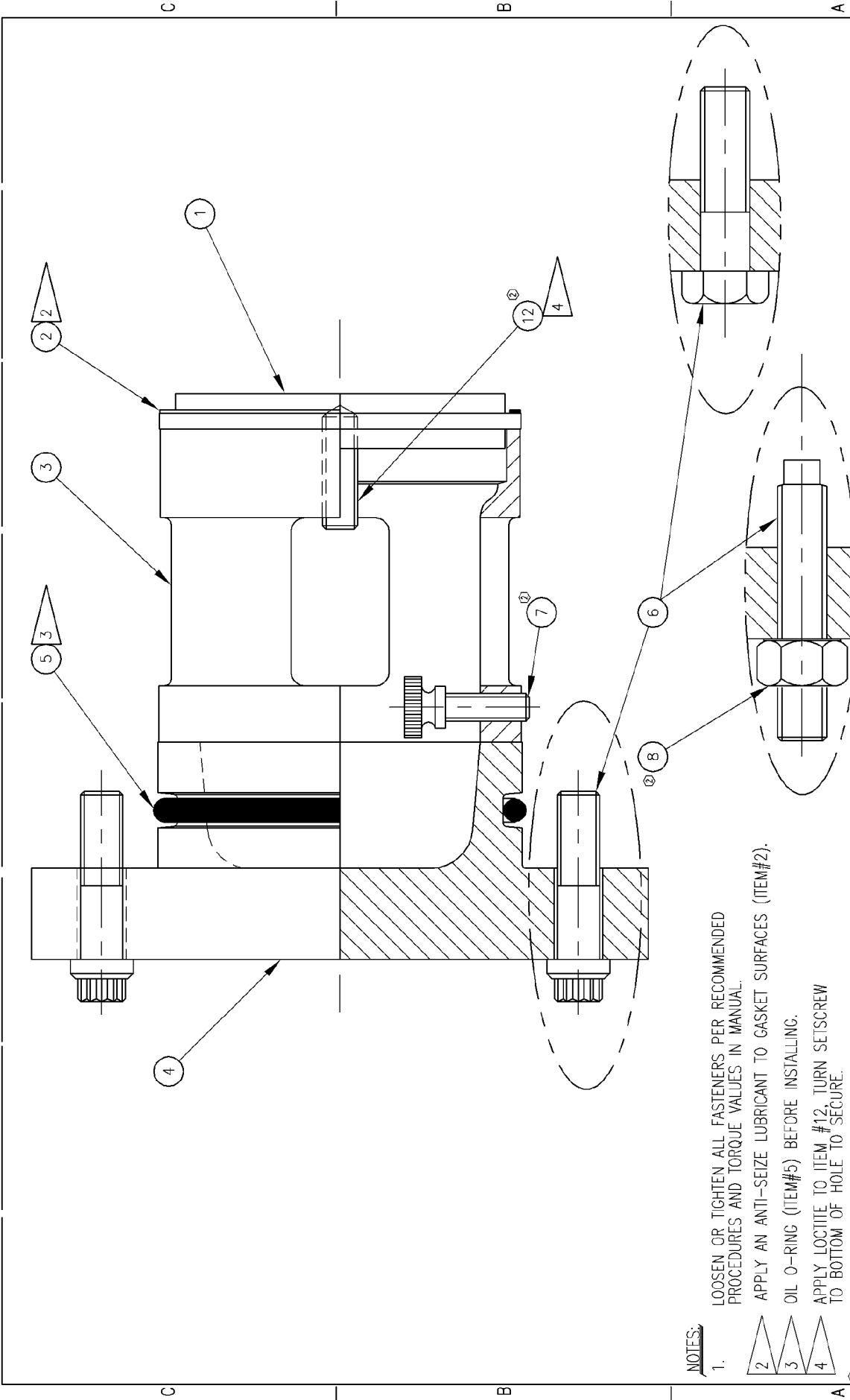
GROUP NO. G-4114

CYLINDER TO BE SHIPPED LOOSE
WITH STANDARD LUBE
AND STANDARD TUBING AND FITTINGS
REF. DRWG. N.A.

ITEM

NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	A-0886	1	BULK.UNION,STL, 1/4T X 1/4T
002	A-0815	2	MALE ELBOW,STL, 1/4T X 1/8P

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NOTES:

1. LOOSEN OR TIGHTEN ALL FASTENERS PER RECOMMENDED PROCEDURES AND TORQUE VALUES IN MANUAL.
 2. APPLY AN ANTI-SEIZE LUBRICANT TO GASKET SURFACES (ITEM#2).
 3. OIL O-RING (ITEM#5) BEFORE INSTALLING.
 4. APPLY LOCTITE TO ITEM #12, TURN SETSCREW TO BOTTOM OF HOLE TO SECURE.
- THIS ASSEMBLY DRAWING IS FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT NECESSARILY REPRESENT THE EXACT CONFIGURATION PERTAINING TO THE UNIT ORDERED. REFER TO THE ACCOMPANYING PARTS LIST FOR ITEMS (AND QUANTITIES OF EACH) REQUIRED FOR THIS ASSEMBLY.

REV	DESCRIPTION	DATE
1	ISSUED DRAWING (UPDATED ITEM #5 TO CURRENT ITEM # ROTATION ADDED VIEWS OF CAPSCREW AND STUD AND NUT)	9/25/02
2	REVISED NOTE #5, WAS "MAY NOT APPLY TO ALL ASSEMBLIES."	
3	ADDED ITEM #6 (NUT)	

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REV	ECN
0	6157
1	110217
2	10873

APPROVED: CAH 3/28/96
 CHECKED: 4/11/96
 SCALE: NONE

ARIEL CORPORATION
 35 BLACKJACK ROAD
 MOUNT VERNON, OHIO 43050

ASSEMBLY DWG. NO. **A-6267**

1/17/05

PARTS LIST

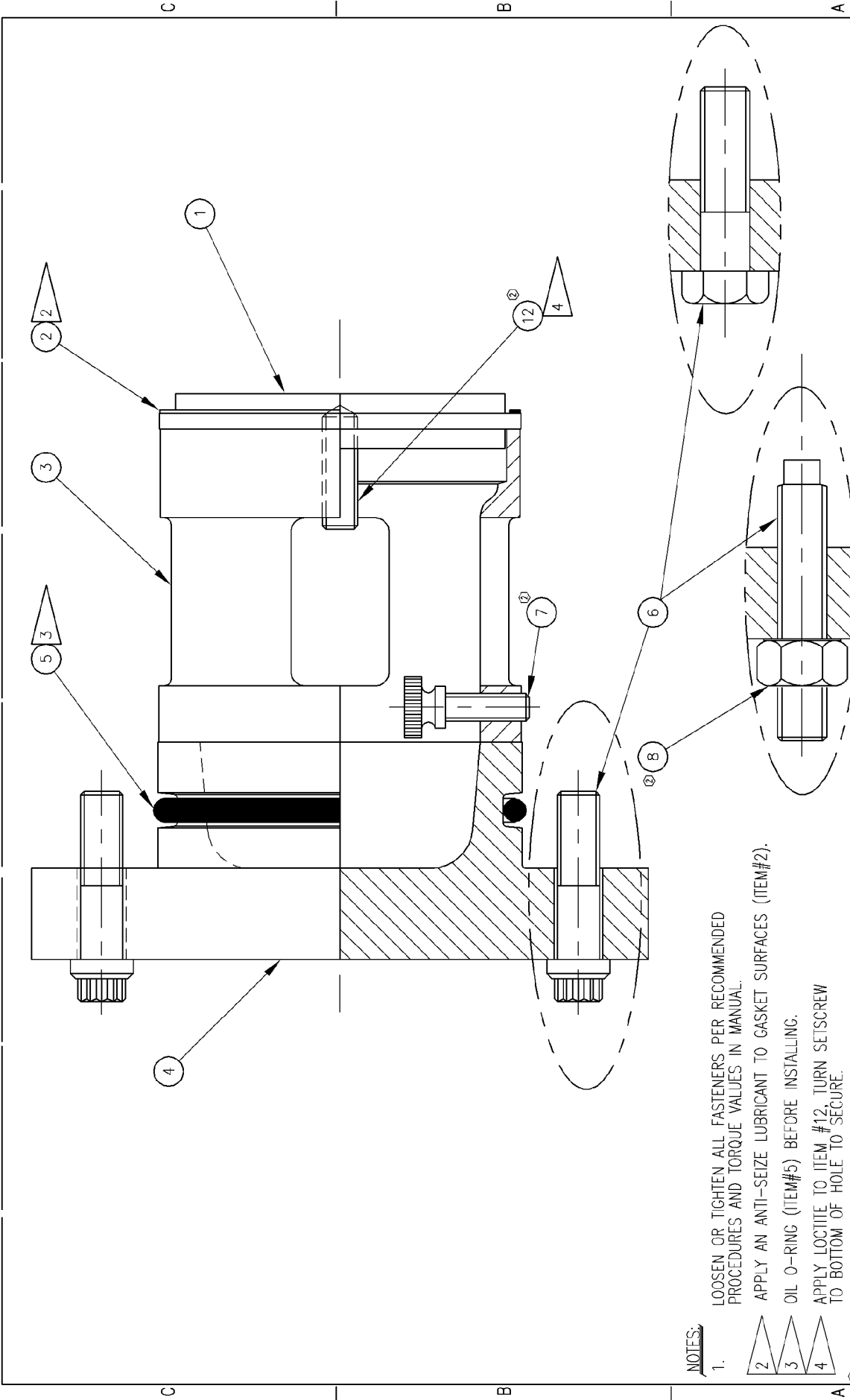
GROUP NO. G-8900

SUCTION VALVE, RETAINER AND CAP
3" JG:A CYLINDER CLASS (52 RX CUT-DOWN)
WITH SCALLOPED NOZZLE
REF. DRWG. A-6267

ITEM

NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	SUCTION VALVE	0	FOR PART NO. SEE COVER SHEET
002	A-0257	1	STL GASKET, 2.438 X 2.250 X 30
003	B-2943	1	VLV RET,S&D, 3 JG
004	B-0701	0	VLV CAP, 3JG CL
005	A-0027	1	O-RING,VT, 2.520 O.D. X .210
006	FC0171EGG	3	12 PT,5/8-11 X 2-1/2 X 3/4 G8

WHEN A ZERO APPEARS IN THE QUANTITY COLUMN IT
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NOTES:

1. LOOSEN OR TIGHTEN ALL FASTENERS PER RECOMMENDED PROCEDURES AND TORQUE VALUES IN MANUAL.
 2. APPLY AN ANTI-SEIZE LUBRICANT TO GASKET SURFACES (ITEM#2).
 3. OIL O-RING (ITEM#5) BEFORE INSTALLING.
 4. APPLY LOCTITE TO ITEM #12, TURN SETSCREW TO BOTTOM OF HOLE TO SECURE.
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REV	DESCRIPTION	DATE
1	ISSUED DRAWING (UPDATED ITEM #S TO CURRENT ITEM # ROTATION ADDED VIEWS OF CAPSCREW AND STUD AND NUT)	9/30/02
2	REVISED NOTE #5 WAS "MAY NOT APPLY TO ALL ASSEMBLIES."	
3	ADDED ITEM #6 (NUT)	

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REV	ECN
0	6157
1	110217
2	10873

APPROVED: CAH 3/28/96
 CHECKED: 4/11/96
 SCALE: NONE

ARIEL CORPORATION
 35 BLACKJACK ROAD
 MOUNT VERNON, OHIO 43050



ASSEMBLY DWG. NO. **A-6267**

1/17/05

PARTS LIST

GROUP NO. G-8901

DISCHARGE VALVE, RETAINER AND CAP
3" JG CLASS CYLINDER W/SCALLOPED NOZZLE
(52 RX CUT-DOWN)
REF. DRWG. A-6267

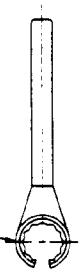
ITEM

NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	DISCHARGE VALV	0	FOR PART NO. SEE COVER SHEET
002	A-0257	1	STL GASKET, 2.438 X 2.250 X 30
003	B-2943	1	VLV RET,S&D, 3 JG
004	B-0701	0	VLV CAP, 3JG CL
005	A-0027	1	O-RING,VT, 2.520 O.D. X .210
006	FC0171EGG	3	12 PT,5/8-11 X 2-1/2 X 3/4 G8

WHEN A ZERO APPEARS IN THE QUANTITY COLUMN IT
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- G-373
- G-375
- G-412
- G-780
- G-2871
- G-2881
- G-3731
- G-3732

AN OFFSET $\frac{9}{16}$ " BOX END WRENCH SHORTENED AND WITH A $\frac{5}{16}$ " WIDE CUT IN THE EYE AND A STANDARD $\frac{9}{16}$ " OPEN END WRENCH SHORTENED ARE USEFUL TOOLS FOR THE TUBE FITTINGS



OIL FACES TO PREVENT ABRASION OF STATO SEAL

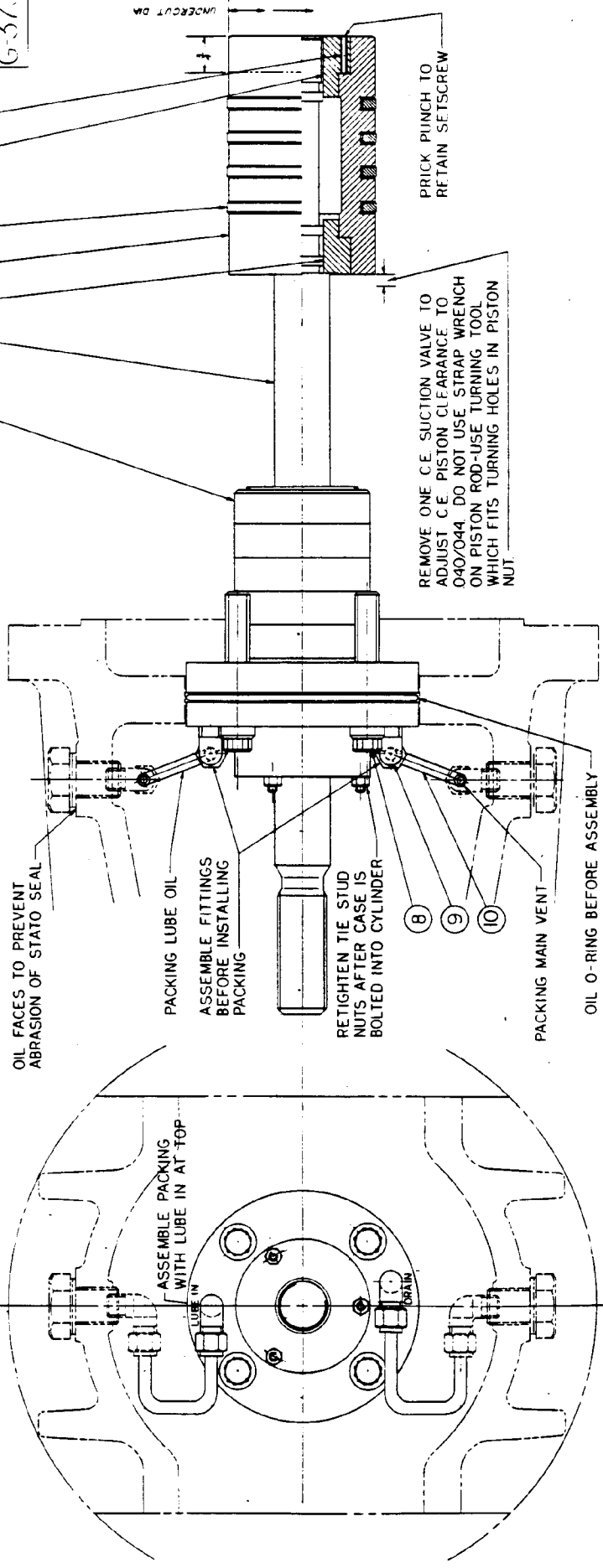
PACKING LUBE OIL
ASSEMBLE FITTINGS BEFORE INSTALLING PACKING

RETIGHTEN TIE STUD NUTS AFTER CASE IS BOLTED INTO CYLINDER

PACKING MAIN VENT

OIL O-RING BEFORE ASSEMBLY

- 7
- 3
- 4
- 1
- 2
- 5
- 6



REMOVE ONE C.E. SUCTION VALVE TO ADJUST C.E. PISTON CLEARANCE TO 040/044. DO NOT USE STRAP WRENCH ON PISTON ROD-USE TURNING TOOL WHICH FITS TURNING HOLES IN PISTON NUT.

PRICK PUNCH TO RETAIN SETSCREW

UNDERCUT DIA

NOTE: LOOSEN OR TIGHTEN ALL BOLTS PER RECOMMENDED PROCEDURES AND TORQUE VALUES

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ASSY DWG NO
D-519

PISTON, ROD & PACKING 3-16

1/17/05

PARTS LIST

GROUP NO. G-6723

3" JGA PISTON, TFE RINGS, TFE/CI PACKING.
REF. DRWG. D-0519

ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	B-0195	1	PIST, 3 JGA
002	A-0278	4	PISTON RING, 3 JG:A, HEK-CE
003	C-0028	1	P ROD, 3.00STK/20.305LG
004	A-0057	1	PISTON COLLAR, 2-1/2=8JG:MP
005	B-0019	1	PISTON NUT, 2-1/4"THRU 8"JG:MP
006	FS0405BE	2	CUP PT.SET-SCREW, #10-32 X 3/4
007	B-2648	1	PKG, 1.125, 2550, STD
008	FC0120GN	4	12 PT, 1/2-13 X 2-3/4 G8
009	A-0815	0	MALE ELBOW, STL, 1/4T X 1/8P
010	PT0200CB	12.	" SS TUBING, 1/4 OD X .035 WALL
099	B-2647-K	0	RBLD KIT, PIST ROD PKG, 1.125

WHEN A ZERO APPEARS IN THE QUANTITY COLUMN IT
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1/17/05

PARTS LIST

B-2930-CC

0.2990=A
0.6540=B
2.4410=C
0.0550=LFT
REF DRWG. A-9202
ITEM

NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	A-10352	1	SUC VLV SEAT, 52RX THK
002	A-1173-C	1	SUC VLV GUARD ASSY,52RX
003	A-10358	1	CNTR STUD,5/16-24
004	A-9147	1	VLV PLT, 52RX.118THK,MT
005	A-10354	1	GUIDE RING,52RX,.240 THK
006	A-1002	3	SPRING PLATE,52RX,.020 THK
007	A-1162	1	SPIROL PIN,.078D X .438L
008	A-1366	1	LOCKNUT, DRAKE,5/16-24
012	A-1267	1	VLV WASHER,5/16 SS
099	KB-2930-CC	0	KIT,VLV, 52RX ,THK MT

WHEN A ZERO APPEARS IN THE QUANTITY COLUMN IT
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1/17/05

PARTS LIST

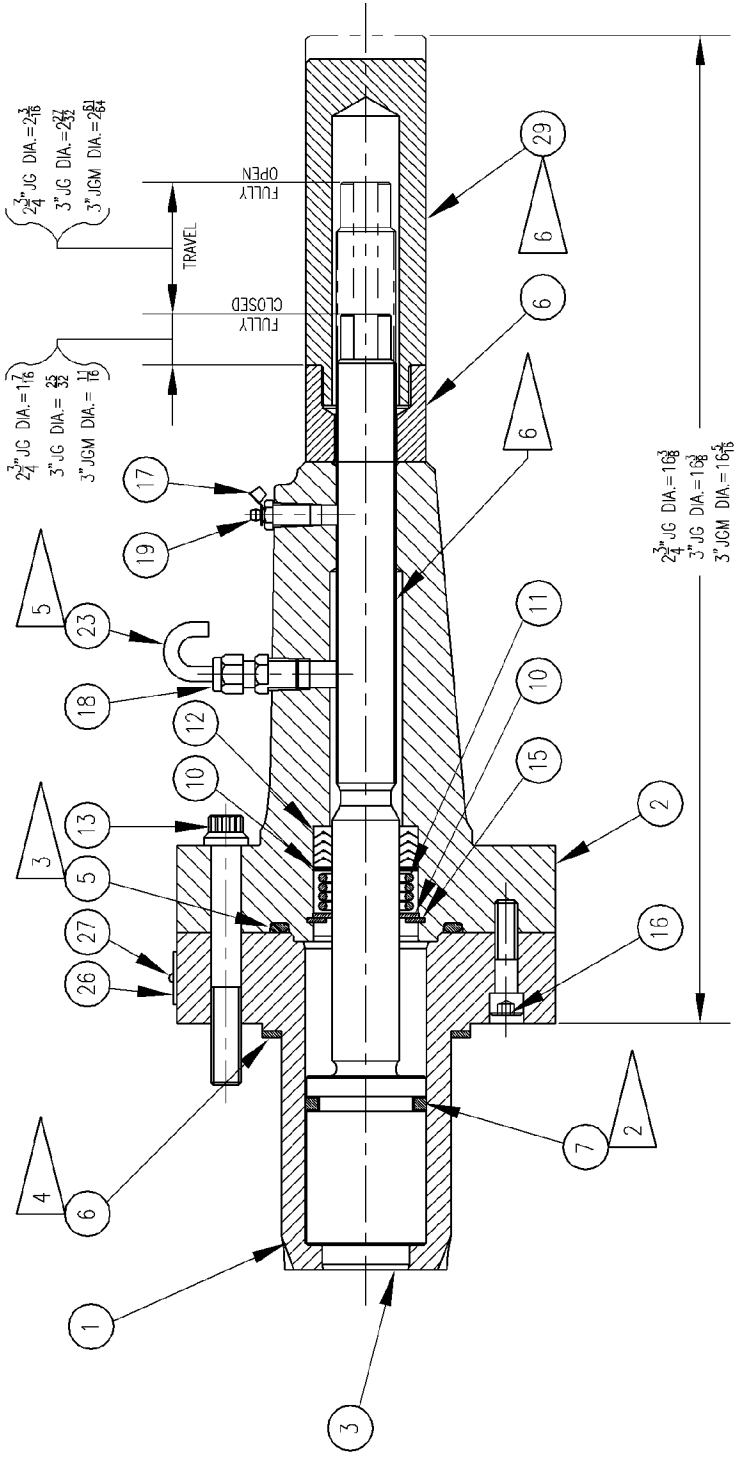
B-2929-P

0.4370=A
0.6540=B
2.4410=C
0.0550=LFT
REF DRWG. A-9208
ITEM

NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	A-10348-A	1	DIS VLV SEAT ASSY, 52RX ,THK
002	A-10349-A	1	DIS VLV GUARD ASSY, 52RX
003	A-10356	1	CNTR STUD,5/16-24
004	A-10350	1	VLV PLT, 52RX.118THK,PK
005	A-10357	1	GUIDE RING,52RX,.279 THK
006	A-1002	5	SPRING PLATE,52RX,.020 THK
007	A-1314	1	SPIROL PIN,.078D X .563L
008	A-1366	1	LOCKNUT, DRAKE,5/16-24
009	A-2066	1	DOWEL PIN,.094D X .125L
012	A-1267	1	VLV WASHER,5/16 SS
099	KB-2929-P	0	KIT,VLV, 52RX ,THK PK

WHEN A ZERO APPEARS IN THE QUANTITY COLUMN IT
DOES NOT REPRESENT THE QUANTITY REQUIRED.

1 2 3 4



NOTES:

1. LOOSEN OR TIGHTEN ALL FASTENERS PER RECOMMENDED PROCEDURES AND TORQUE VALUES IN MANUAL.
2. LIGHTLY OIL BORE AND RING BEFORE INSTALLING.
3. OIL O-RING BEFORE INSTALLING.
4. APPLY AN ANTI-SIEZE LUBRICANT TO GASKET SURFACES.
5. VENT TUBE ALWAYS POINTED DOWN.



① APPLY AN ANTI-SIEZE LUBRICANT TO STEM THREADS AND STEM GUARD THREADS BEFORE ASSEMBLING.

C B A

1	RENUMBERED ITEMS TO STANDARD ITEM ROTATION. APPLIED TO CURRENT ARIEL DRAFTING STANDARDS. ALSO REDRAWN TO CAD. ADDED STEM GUARD THREADS TO NOTE# 6.	ALI 3/4/2002
REV	DESCRIPTION	INIT/DATE

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1	110035	ECN	REV
0	5956	WSH	1/9/96
		CHECKED:	6/12/96
		SCALE:	NONE

ARIEL CORPORATION
 35 BLACKJACK ROAD
 MOUNT VERNON, OHIO 43050

ASSEMBLY
 DWG. NO. **A-6021**

3 2 1 4

1/17/05

ARIEL CORP. - BLACKJACK DIV. C/N: 001
SALES ORDER COVER SHEET

RHCOVP02

SERIAL NUMBER: U-40333

PART: G-11385 DESCRIPTION: VVCP, 3 JG:JG-HE

GROUP NO. G-11385
3" JG:JG-HE UNLOADER ASSEMBLY.
WITH STAINLESS STEEL TUBING AND FITTINGS
REF. DRWG. A-6021

ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
001	C-0548	1	UNL.HEAD, 3 JGU
002	C-0540	1	HE UNL ADPTR, 3 JG CL
003	C-3749	1	UNL.STEM & PISTON,3JGU
005	A-0012	1	O-RING,VT, 3.125 O.D. X .210
006	A-0092	1	STL GASKET, 3.425 X 3.105 X 60
007	A-3406	1	UNL.PISTON RING, 2 O.D.
008	B-0754	1	UNL HEX NUT,1"-12UNF
010	A-0519	2	BACK-UP RING, PACKING
011	A-0499	1	COMPRESSION SPRING, UNL.
012	A-0501	1	V PACKING, UNL
013	FC0120HS	8	12 PT,5/8-11 X 4 G8
015	A-0766#165	1	SNAP RING
016	FC0110DI	2	SOC HD CAP,5/16-18 X 1-1/2 G8
017	A-0500	1	GREASE FITTING CAP, PLASTIC
018	A-0938	1	MALE CONN,SS, 1/4T X 1/4P
019	PZ0230BA	1	STRAIGHT GREASE FITTING,1/4-18
023	PT0201CD	5.	" TUBING,316 SS 1/4 OD X .065
026	A-0755	1	DATA PLATE,UNLOADER SPEC
027	FR0570CC	2	DRIVE SCREW, #6 X 1/4 U-TYPE
029	B-0753	1	STEM GUARD CAP

VARIABLE VOLUME CLEARANCE POCKET (Headend Unloader) DATA SHEET

3JG Class Cylinder

Stroke: 3.00 in 76 mm
 Bore: 3.000 in 76 mm
 MAWP: 2550 psi 175.8 barg 17582 kPa(g)

General Data for VVCP (independent of cylinder):

*Note: If VVCP services another cylinder, it may have a higher MAWP than the above cylinder.

MAWP*:	2550	175.8 barg	17582 kPa(g)
VVCP piston diameter:	2 in	51 mm	
Stem thread lead (pitch):	0.083333 in	2 mm	
Total travel:	2.85 in	7.2 cm	
Number of turns from closed to fully open:	34.1		
Minimum added fixed clearance:	0.2 in ³	2 cm ³	
Additional added clearance when fully open:	8.9 in ³	146 cm ³	
Total added clearance when fully open:	9.1 in ³	149 cm ³	
Clearance volume change per turn:	0.3 in ³	4.3 cm ³	
Clearance volume change per change in travel:	3.1 in ³ /in	20.3 cm ³ /cm	

Clearance Data for VVCP alone, in percent of swept volume of above cylinder:

Minimum added fixed clearance:	0.7%
Additional added clearance when fully open:	42.1%
Total added clearance when fully open:	42.9%
Head end clearance change per turn:	1.2%
Head end clearance change per change in travel:	14.8% /in 5.8% /cm

Clearance Data with VVCP installed on above cylinder with standard valves, in percent of swept volume:

Minimum fixed head end clearance:	19.0%
Total head end clearance when fully open:	61.1%

PLEASE NOTE: It is important to understand that the percent clearance figures for the variable volume clearance pocket above include the cylinder headend clearance. However, any valve spacers or other non-standard added clearances on the unit must be accounted for.