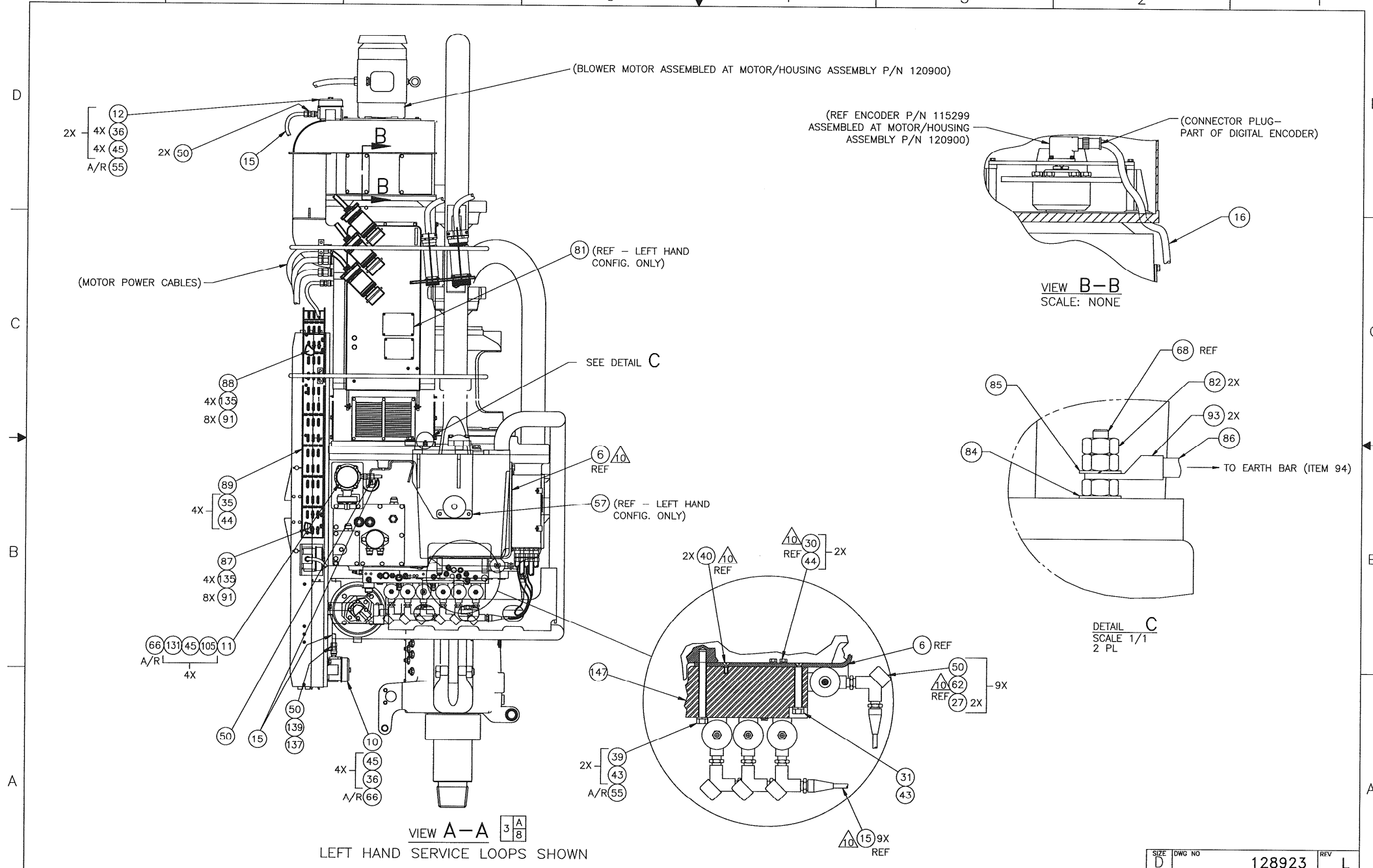


- 80 FOR RIGHT HAND CONFIG. ONLY REF
- 81 FOR LEFT HAND CONFIG. ONLY REF (OPPOSITE SIDE)
- 46 - 4X
- 32 - 4X
- 55 A/R
- 68 - ONE PER MOTOR
- 73
- 56 FOR RIGHT HAND CONFIG. ONLY REF
- 57 FOR LEFT HAND CONFIG. ONLY REF (OPPOSITE SIDE)
- 41
- 42
- 34
- 46
- 5
- 4X
- 35
- 8X
- 44
- 55 A/R
- 13
- 28
- 51
- 140 2X
- 141 6X
- 142 3X
- 131 4X
- 130 4X
- 63 A/R
- 102 (BLK)
- 131 4X
- 130 4X
- 63 A/R
- 103 (WHT)
- 131 4X
- 130 4X
- 63 A/R
- 104 (RED)

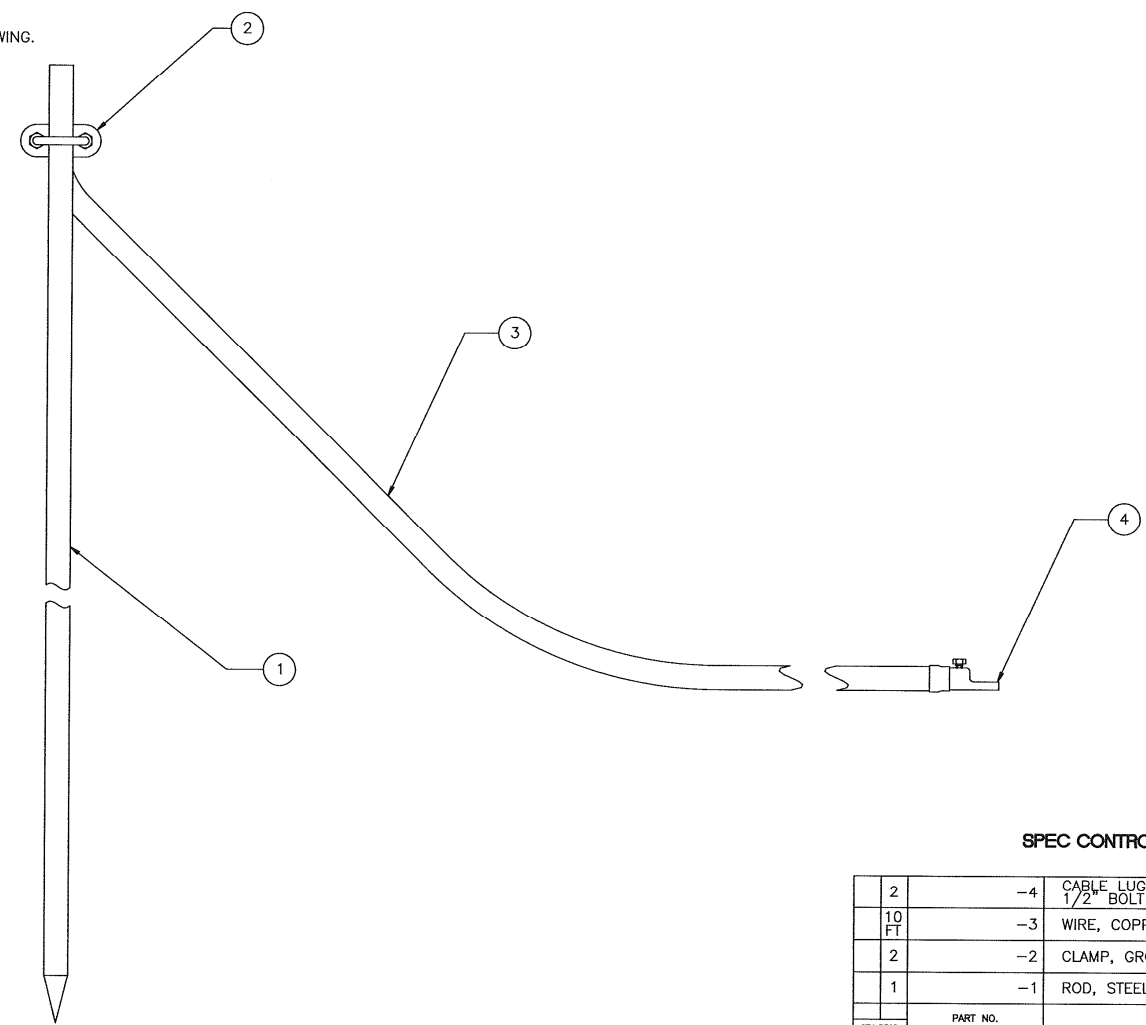
SIZE	DWG NO	REV
D	128923	L
SCALE	1/8" WT LBS	SHEET 3 OF 4



SIZE	DWG NO	REV
D	128923	L
SCALE	1/8" WT LGS	SHEET 4 of 4

5 4 3 2 1

- NOTES: UNLESS OTHERWISE SPECIFIED
1. TO BE KITTED AND SUPPLIED IN CARDBOARD BOX. BOX TO BE NO LARGER THAN 8 FT x .5 FT x .5 FT.
 2. BOX TO HAVE VARCO PART NUMBER OUTSIDE.
 3. APPROVED SOURCE:
ORANGE COUNTY WHOLESALE ELEC.
539 W. WALNUT AVE.
ORANGE, CA, 92668
 4. (OBSOLETE DWG 116004) CARRIES REVISION HISTORY FOR THIS DRAWING.



SHOWN ASSEMBLED FOR REF ONLY

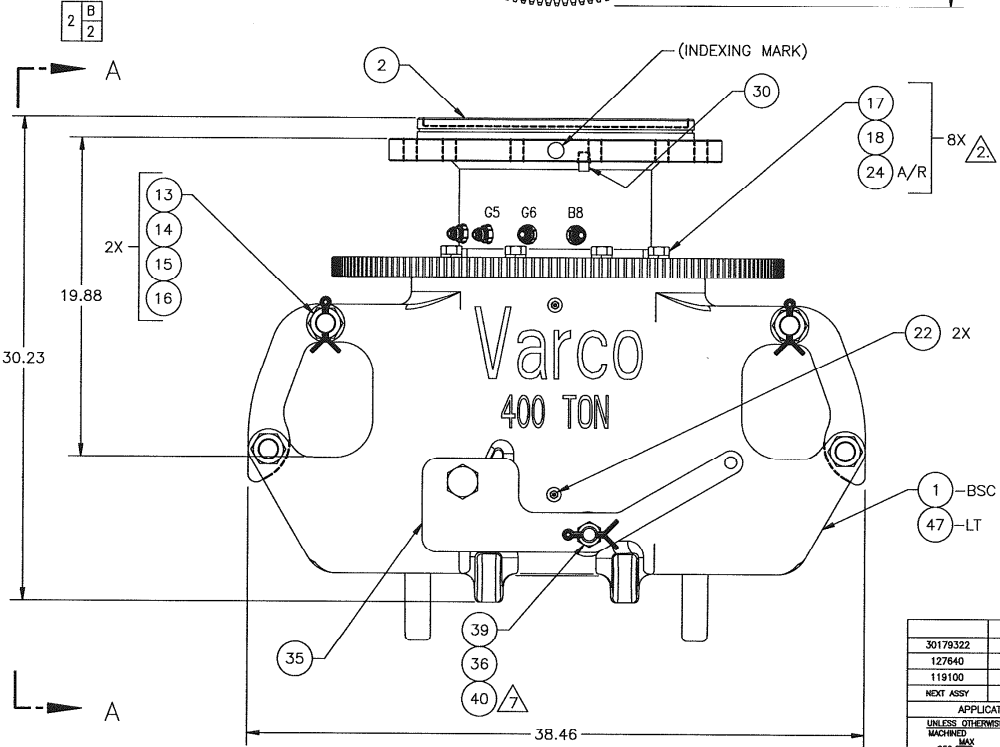
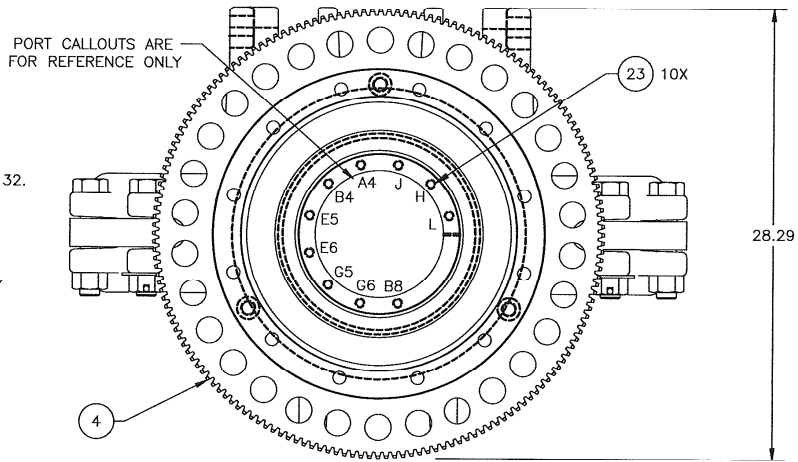
SPEC CONTROL DRAWING

QTY REQD	PART NO.	DESCRIPTION	ITEM NO.
2	-4	CABLE LUG, COPPER W/HEX SCREW CLAMP 1/2" BOLT TO 2/0 CABLE	4
10 FT	-3	WIRE, COPPER BARE OR INSUL 2/0-19 STRANDS	3
2	-2	CLAMP, GROUND ROD Ø3/4" TO 2/0 CABLE	2
1	-1	ROD, STEEL, COPPER PLATED Ø3/4	1

LIST OF MATERIALS

<input type="checkbox"/> DIMENSIONS UNLESS OTHERWISE SPECIFIED	<input type="checkbox"/> SURFACE FINISH: -	Varco Systems	
<input type="checkbox"/> DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	KIT, GROUND ROD	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	TITLE	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	DATE	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	SCALE	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	SHEET NO.	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	TOTAL SHEETS	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	REVISED BY	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	DATE	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	APPROVED BY	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	DATE	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	SCALE	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	SHEET NO.	
<input type="checkbox"/> DIMENSIONS PER ANSI Y14.5 -	<input type="checkbox"/> TOLERANCES PER ANSI Y14.5 -	TOTAL SHEETS	

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1. CRITICAL LOAD PATH, LOW TEMP ITEM. MAINTAIN TRACEABILITY PER QA 00007, LEVEL 1.
 - 2. USE "NEVER SIEZE" ON BOLTS & CROSS-TORQUE PER DS00002.
 - 3. SHRINK FIT ITEMS 28 AND 29 INTO ITEM 1.
 - 4. GREASE AFTER ASSEMBLY.
 - 5. PRESSURE TEST ALL PORTS PER TS00465
 - 6. INSTALL ITEM 32, USE LOCKING COMPOUND (ITEM 34). MATCH DRILL USING $\phi.187 \times 1.0$ DP. PRESS FIT SPIRAL PIN (ITEM 33) INTO ITEM 1 AND 32.
 - 7. INSTALL ITEM 39, TORQUE TO 20-22 ft-lbs, MATCH DRILL USING $\phi.250$. INSTALL COTTER PIN (ITEM 40).
 - 8. (OBSOLETE DWG 118150) CARRIES REVISION HISTORY FOR THIS DWG.
 - 9. CRITICAL LAOD PATH COMPONENT, MAINTAIN TRACEABILITY PER QA00007, LEVEL 1.

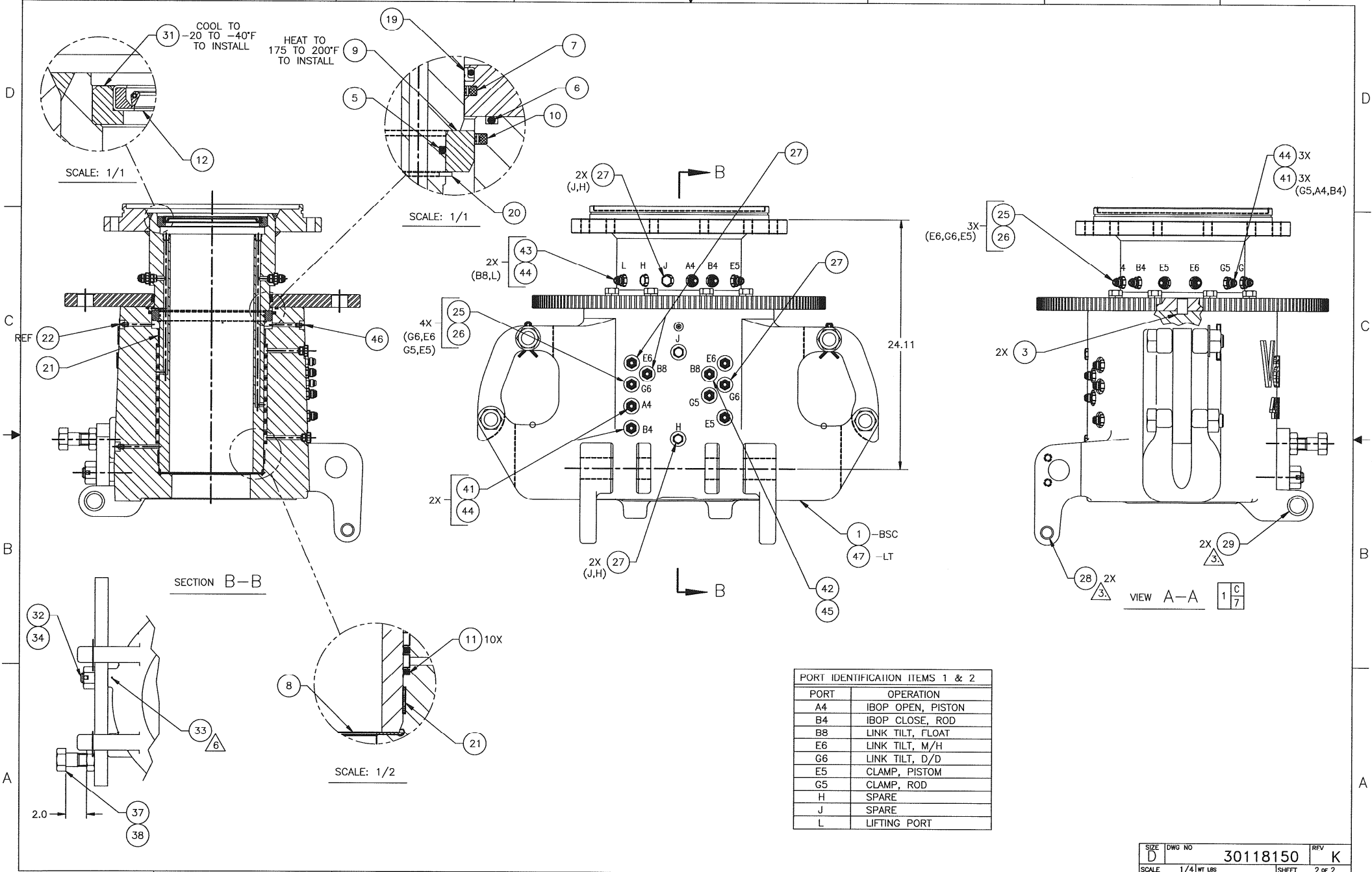


QTY	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
1	30173261 LT	ROTATING LINK ADAPTER, 400 TON	LOW TEMP	47
1	53250-5	RELIEF VALVE		46
1	53405	CAP		45
7	53406	CAP		44
2	56519-8-6-S	ELBOW, O-RING BOSS/37"		43
1	56529-8-4-S	CONNECTOR, O-RING BOSS/37"		42
5	56529-8-6-S	CONNECTOR, O-RING BOSS/37"		41
1	51437-20-S	PIN, COTTER		40
1	50516-C	NUT, HEX-SLOTTED		39
1	50320-C	NUT, HEX-JAM		38
1	50020-32-C5	SCREW, CAP-HEX HD		37
1	112754-116	BUSHING, FLANGED		36
1	119124	STOP		35
A/R	A/R	53200-271	LOCKING, COMPOUND (RED)	34
1	51222-05-12	PIN, SPIRAL		33
1	124029	SHAFT, PIVOT-LOCKING PIN		32
1	119359	RETAINER, OIL SEAL		31
1	53002-12-C	PLUG, PIPE, SQ. HEAD		30
2	118844-24-24	BUSHING, FIBERGLIDE		29
2	118844-16-20	BUSHING, FIBERGLIDE		28
7	56531-8-S	PLUG, O-RING BOSS		27
7	53408	CAP	(NOT SHOWN)	26
7	56529-8-8-S	CONNECTOR, O-RING BOSS/37"		25
A/R	A/R	Z6001	LOCKWIRE, $\phi.051$	24
10	53000-4-C	PLUG, PIPE, C'SUNK HEX		23
2	53201	FITTING, GREASE		22
2	119358	BUSHING, TURCITE		21
1	30117775-2	RETAINER RING		20
1	119547	SEAL, WIPER		19
8	50912-C	WASHER, LOCK		18
8	50012-20-C5D	SCREW, HEX HD		17
2	51405-24	PIN, COTTER		16
2	50820-R-C	WASHER, FLAT		15
2	50520-C	NUT, HEX		14
2	30114594	BOLT, CATCH LINK		13
1	77039	SEAL		12
10	118375	GLYD RING ROTARY 10.000 ROD		11
1	30119143	GLYD RING ROTARY 11.500 ROD		10
1	30173156	PISTON RING		9
1	30119357	RING, THRUST		8
1	30119319	GLYD RING ROTARY 11.000 ROD		7
1	51300-381-B	O-RING		6
1	51300-273-B	O-RING		5
1	30173157	GEAR, ROTATING LINK ADAPTER		4
2	51216-12	DOWEL $\phi 1.0 \times 1.50$		3
1	30177594-500	STEM		2
1	30173261	ROTATING LINK ADAPTER 400 TON		1

UNLESS OTHERWISE SPECIFIED		LIST OF MATERIALS	
30179322	TDS-9S	30173261	ROTATING LINK ADAPTER ASSEMBLY, 400 TON
127640	400T RLA		
119100	TDS-9S		
NEXT ASSY	USED ON	CURRENT	INITIAL
APPROVED	DATE	DATE	DATE
CHECKED	DATE	DATE	DATE
APPROVED	DATE	DATE	DATE

UNLESS OTHERWISE SPECIFIED
 INTERPRET DIM/TOL PER ASME Y14.5M
 DIMENSIONS ARE IN INCHES
 ANGLES $\pm 5^\circ$
 DO NOT SCALE DRAWING

SCALE: 1/4" = 1" WT LBS: 1900 PROJECTION: FIRST ANGLE SHEET: 1 of 2
 DRAWING NUMBER: 30118150 REVISION: K

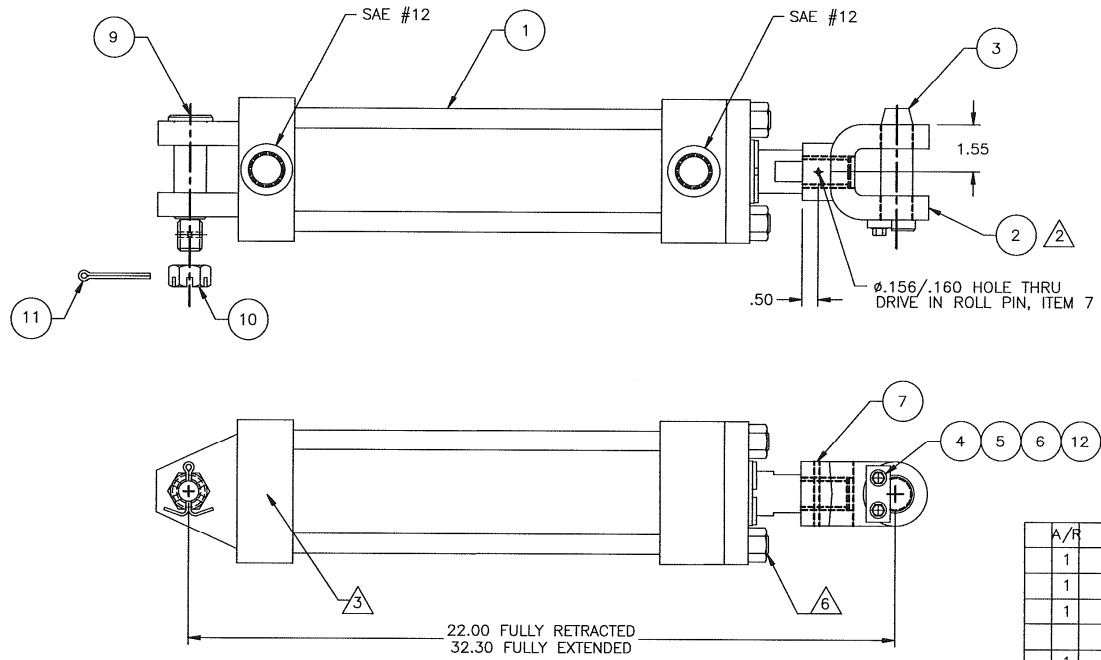


PORT IDENTIFICATION ITEMS 1 & 2	
PORT	OPERATION
A4	IBOP OPEN, PISTON
B4	IBOP CLOSE, ROD
B8	LINK TILT, FLOAT
E6	LINK TILT, M/H
G6	LINK TILT, D/D
E5	CLAMP, PISTON
G5	CLAMP, ROD
H	SPARE
J	SPARE
L	LIFTING PORT

SIZE D	DWG NO 30118150	REV K
SCALE 1/4" WT LBS	SHEET 2 OF 2	

NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DELETED
- 2. TORQUE CLEVIS (ITEM 2) TO 300/350 FT LB, THEN DRILL AND INSTALL ITEM 7 AS SHOWN.
- 3. IMPRESSION STAMP VARCO PART NUMBER APPROXIMATELY WHERE SHOWN.
- 4. PAINT PER VARCO SPECIFICATION VPS00001, COLOR - YELLOW. MASK ALL THREADS AND BORES.
- 5. (OBSOLETE DWG 119592) CARRIES REVISION HISTORY FOR THIS DWG.
- 6. PEEN CYLINDER TIE ROD THREADS AT TOP OF NUTS. 4 PLACES



A/R	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
	Z6008.1	LOCKWIRE .031Ø		12
1	51435-16	PIN, COTTER		11
1	50512-C	NUT, HEX SLOTTED		10
1	30172154	PIN, CYLINDER MOUNTING		9
				8
1	51635-12-C	PIN, ROLL		7
2	50904-C	WASHER, LOCK		6
2	50004-B-C5D	SCREW, CAP-HEX HEAD		5
1	119731	RETAINER		4
1	30119546	PIN, CLEVIS		3
1	119732	CLEVIS		2
1	119416	CYLINDER, HYDRAULIC		1

LIST OF MATERIALS

PART FLAGS <input type="checkbox"/> TRACEABILITY <input type="checkbox"/> CONTROL LOAD <input type="checkbox"/> CERTIFICATION REQUIRED <input type="checkbox"/> COMPRESSION <input type="checkbox"/> OPERATIONAL <input type="checkbox"/> INSURANCE <input type="checkbox"/> USE AND PROGRAM		UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5 & DIMENSIONS PER ANSI Y14.1 & 1.1 UNLESS OTHERWISE SPECIFIED. DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES. DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN MILLIMETERS.		SURFACE FINISHES UNLESS OTHERWISE SPECIFIED ALL SURFACES TO BE FINISHED TO A 32 RAY UNLESS OTHERWISE SPECIFIED		Varco Systems INC.	
SPARE PART DOCUMENT NUMBER: 117820 TDS-9S		NEXT ASSEMBLY PRODUCT: 117820 TDS-9S		TITLE: CYLINDER, HYDRAULIC ASSEMBLY		SIZE: D DOCUMENT NO.: 30119592 REVISION: K	
PREPARED BY: H. OLSTYNSKI CHECKED BY: JPSJ APPROVED BY: JPSJ		DATE: 12/2/98 SCALE: 1/2		WEIGHT: 1.0 PARTS: 1		Released - 02/12/2004 02:06:34P	

NOTES: UNLESS OTHERWISE SPECIFIED

1. REMOVE ALL BURRS AND SHARP EDGES .03.
2. MARK BOX WITH VARCO PART NUMBER.
3. DO NOT PAINT.
4. 30123290 PRESSURE RATED AT 7,500 PSI (11,250 PSI BURST).

8. PACKING KITS:
 - A. 30123290-PK (STANDARD)
 - CONSISTING OF: 1X 123292-2 PACKING SET
 - 2X 51300-348-F O-RING

5 BAND ASSEMBLY, BAG IN WATERPROOF PLASTIC, AND BOX (14x9x9).

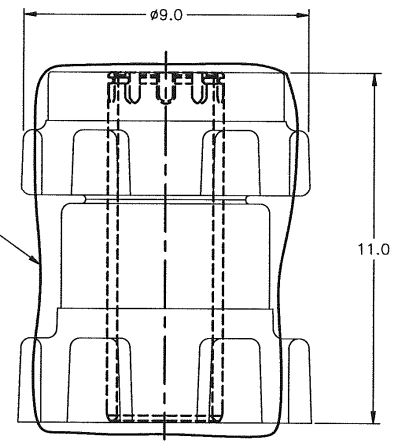
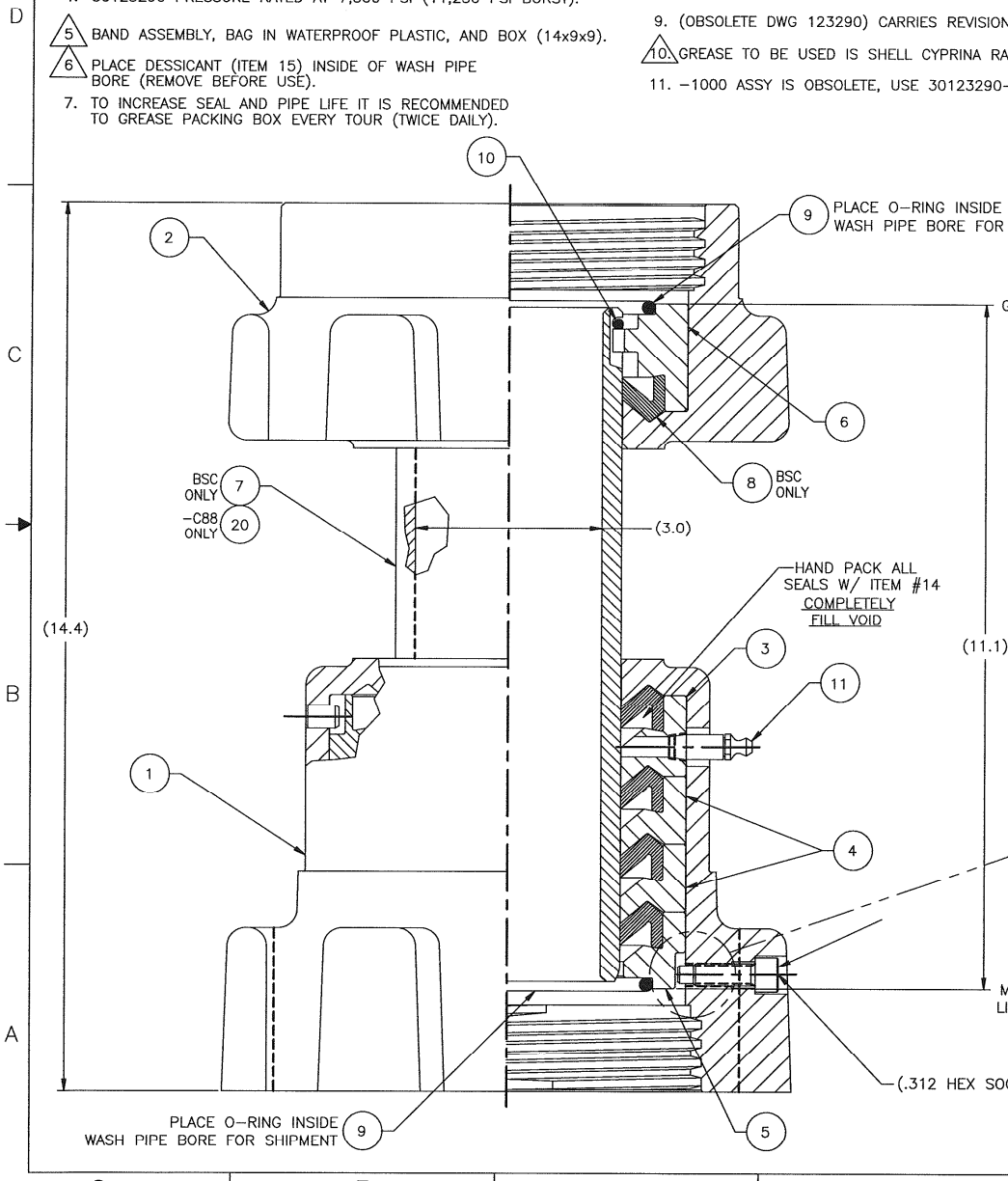
9. (OBSOLETE DWG 123290) CARRIES REVISION HISTORY FOR THIS DWG.

6 PLACE DESSICANT (ITEM 15) INSIDE OF WASH PIPE BORE (REMOVE BEFORE USE).

10 GREASE TO BE USED IS SHELL CYPRINA RA.

7 TO INCREASE SEAL AND PIPE LIFE IT IS RECOMMENDED TO GREASE PACKING BOX EVERY TOUR (TWICE DAILY).

11. -1000 ASSY IS OBSOLETE, USE 30123290-BSC.



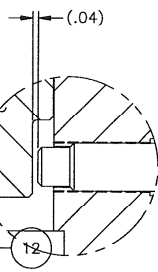
SHIPPING REQUIREMENTS

SCALE: 1/2

5

QTY	REF	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
1	REF	30123289-C88	PIPE, WASH-3" BORE, C-88	C-88 COATED	20
REF	REF	30150084	WRENCH, WASHPIPE		19
-	-	123292-3	PACKING SEAL KIT (5 PER SET)	NITRILE/ARIMIDE	18
-	-	30123289-TC	PIPE, WASH - 3 IN. BORE (HARD)	TUNGSTEN COATED	17
			DELETED		16
1	1	86268	DESSICANT	(NOT SHOWN)	15
	A/R	56005-1	GREASE,GE-MTR(SHELL/TExxon)	(NOT SHOWN)	14
			DELETED		13
1	1	30123564	SCREW, SOCKET HD-DOG NOSE		12
1	1	53219-1	FITTING, GREASE- STRAIGHT EXT.		11
1	1	30123562	RING, SNAP		10
2	2	51300-348-F	O-RING		9
1	1	123292-2	PACKING SEAL KIT (5 PER SET)	NITRILE/COTTON	8
-	1	30123289	PIPE, WASH-3 INCH BORE		7
1	1	30123288	RING, HOLDING, 3" WASH PIPE		6
1	1	30123287	SPACER, LOWER, 3" WASH PIPE		5
2	2	30123286	SPACER, MIDDLE, 3" WASH PIPE		4
1	1	123285	SPACER, UPPER, 3" WASH PIPE		3
1	1	123284	NUT, 3" WASH PIPE		2
1	REF	30123563	BOX, PACKING ASSY, 3" WASH PIPE		1

6
10



MAINSHAFT LINER FACE

(.312 HEX SOCKET)

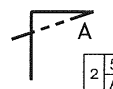
PART FLAGS <input type="checkbox"/> TRACEABILITY <input type="checkbox"/> CRITICAL LOAD PATH ITEM <input type="checkbox"/> CERTIFICATION REQUIRED		UNLESS OTHERWISE SPECIFIED INTERPRET DIM/TOL PER ASME Y14.5M DIMENSIONS ARE IN INCHES .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ± .5° DO NOT SCALE DRAWING		COPYRIGHT © VARCO INTERNATIONAL, INC. ALL RIGHTS RESERVED THIS DOCUMENT MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM WITHOUT THE WRITTEN CONSENT OF VARCO. VARCO HAS ALL RIGHTS TO THIS WORK AND INTENDS TO ENFORCE ITS RIGHTS UNDER THE COPYRIGHT LAWS AS APPLIED TO WORK.	
APPLICATION USED ON NEXT ASSY		MATERIAL FINISH / HEAT TREAT		CURRENT M. SAZO H.OLSTYNSKI INITIAL JPSJ JPSJ DATE 09/20/04 11/97	
SPARE PART <input type="checkbox"/> COMMISSIONING <input type="checkbox"/> OPERATIONAL <input type="checkbox"/> INSURANCE		UNLESS OTHERWISE SPECIFIED MACHINED 250 MAX TORCH CUT 1000 MAX		TITLE WASH PIPE ASSEMBLY, 3" BORE SIZE DWG NO D 30123290 SCALE NTS\WT LBS 85\SHEET 1 of 1	



NOTES: UNLESS OTHERWISE SPECIFIED

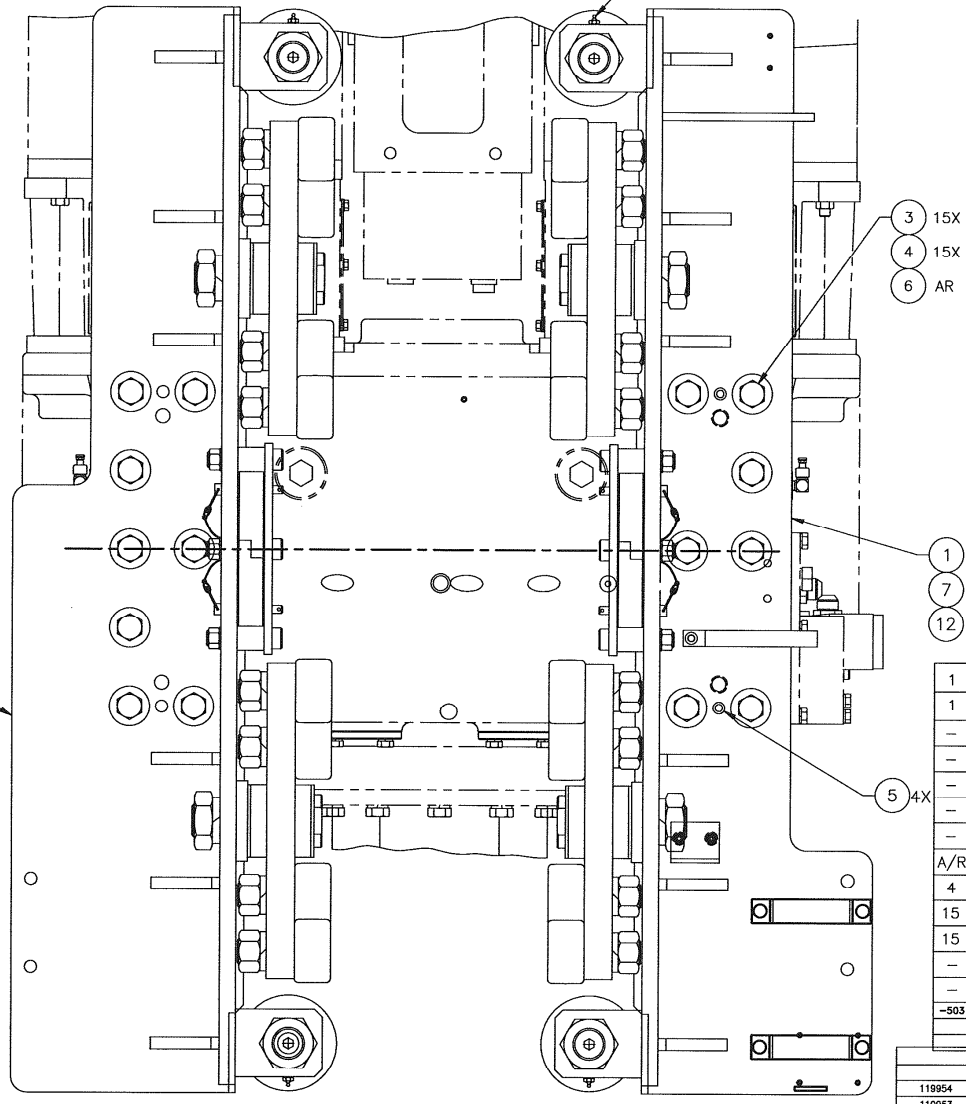
1. APPLY ANTI-SEIZE AND TORQUE ALL BOLTS PER DS00008, LOCKWIRE ALL BOLTS.

2 GREASE ALL SERVICE POINTS.



- 2 5 A
- 3 5 A
- 4 5 A

- 2
- 8
- 13



RIGHT SIDE REAR VIEW OF TDS-9S/11S LEFT SIDE

CONFIGURATION TABLE		
DASH NO	SETBACK	DESCRIPTION
-BSC	30.00	
-500	33.75	
-501	39.50	TYPICAL APPLICATION WHEN BLOCK IS NARROW SIDE TO GUIDE BEAM SPECIAL USED ONLY FOR TWO ORDERS. SEE CC 128579 & 128952
-502	39.50	STANDARD VERSION FOR 39.50" SETBACKS
-503	41.00	FIRST USED ON TALISMAN CLAYMORE A

1	-	-	-	-	124539-503	CARRIAGE ASSY, RIGHT, 41.00" SETBACK	13
1	-	-	-	-	124538-503	CARRIAGE ASSY, LEFT, 41.00" SETBACK	12
-	1	-	-	-	124539-502	CARRIAGE ASSY, RIGHT, 39.50" SETBACK	11
-	1	-	-	-	124538-502	CARRIAGE ASSY, LEFT, 39.50" SETBACK	10
-	-	2	-	-	141510	CARRIAGE SPACER, 39.50" SETBACK	9
-	-	-	1	-	124539-500	CARRIAGE ASSEMBLY, RIGHT, 33.75" SETBACK	8
-	-	-	1	-	124538-500	CARRIAGE ASSEMBLY, LEFT, 33.75" SETBACK	7
A/R	A/R	A/R	A/R	A/R	Z6001	LOCKWIRE ϕ .051	6
4	4	8	4	4	51222-12-16	PIN, SPIRAL	5
15	15	24	15	15	50816-R-S	WASHER, REGULAR FLAT	4
15	15	24	15	15	50016-20-C5D	SCREW, CAP-HEX HEAD	3
-	-	1	-	-	124539	CARRIAGE ASSY, RIGHT, 30.00" SETBACK	2
-	-	1	-	-	124538	CARRIAGE ASSY, LEFT, 30.00" SETBACK	1
-503	-502	-501	-500	-BSC			
QTY REQD						PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED
 INTERPRET DIM/TOL PER ASME Y14.5M
 DIMENSIONS ARE IN INCHES
 ANGLES \pm $^{\circ}$
 DO NOT SCALE DRAWING

118954 TDS-11S
 118953 TDS-9S
 NEXT ASSY USED ON CURRENT INITIAL

APPLICATION DRAWN M.CLARK J.MARTINES
 CHECKED H.LIM N.WEST
 APPVD H.LIM N.WEST
 DATE 3/30/07 3/26/98

UNLESS OTHERWISE SPECIFIED
 MACHINED TO 250 MAX
 TORCH CUT TO 1000 MAX

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SCALE: 1/4" = 1.000"
 PROJECTION: FIRST ANGLE
 SIZE: D
 SHEET: 1 of 5
 REVISION: G

NATIONAL OILWELL VARCO
 TITLE: CARRIAGE, PACKAGE
 DRAWING NUMBER: 30124540
 RIG SOLUTIONS
 10000 RICHMOND AVE.
 HOUSTON, TEXAS 77042 U.S.A.
 (713) 346-7500

D

D

C

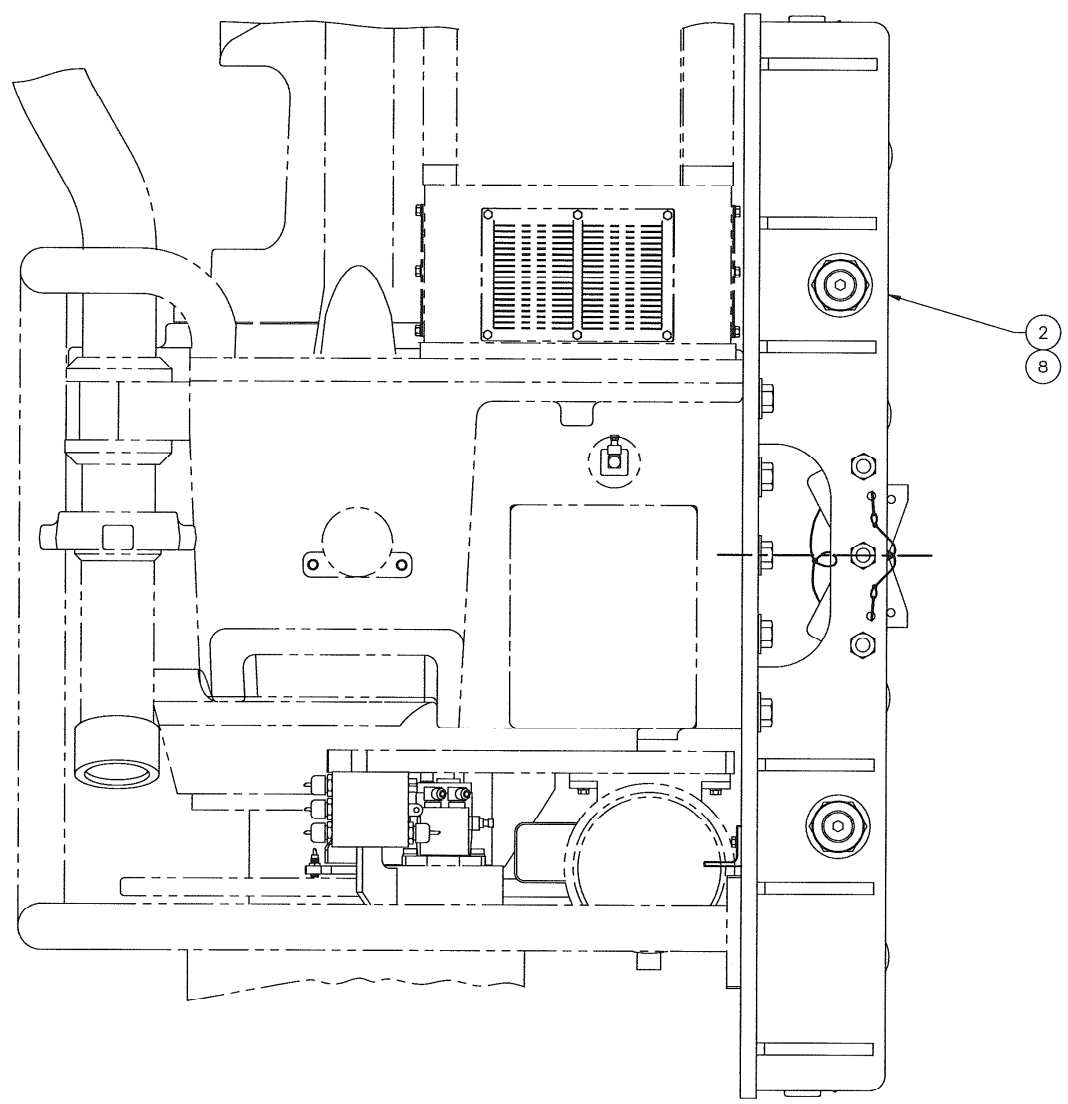
C

B

B

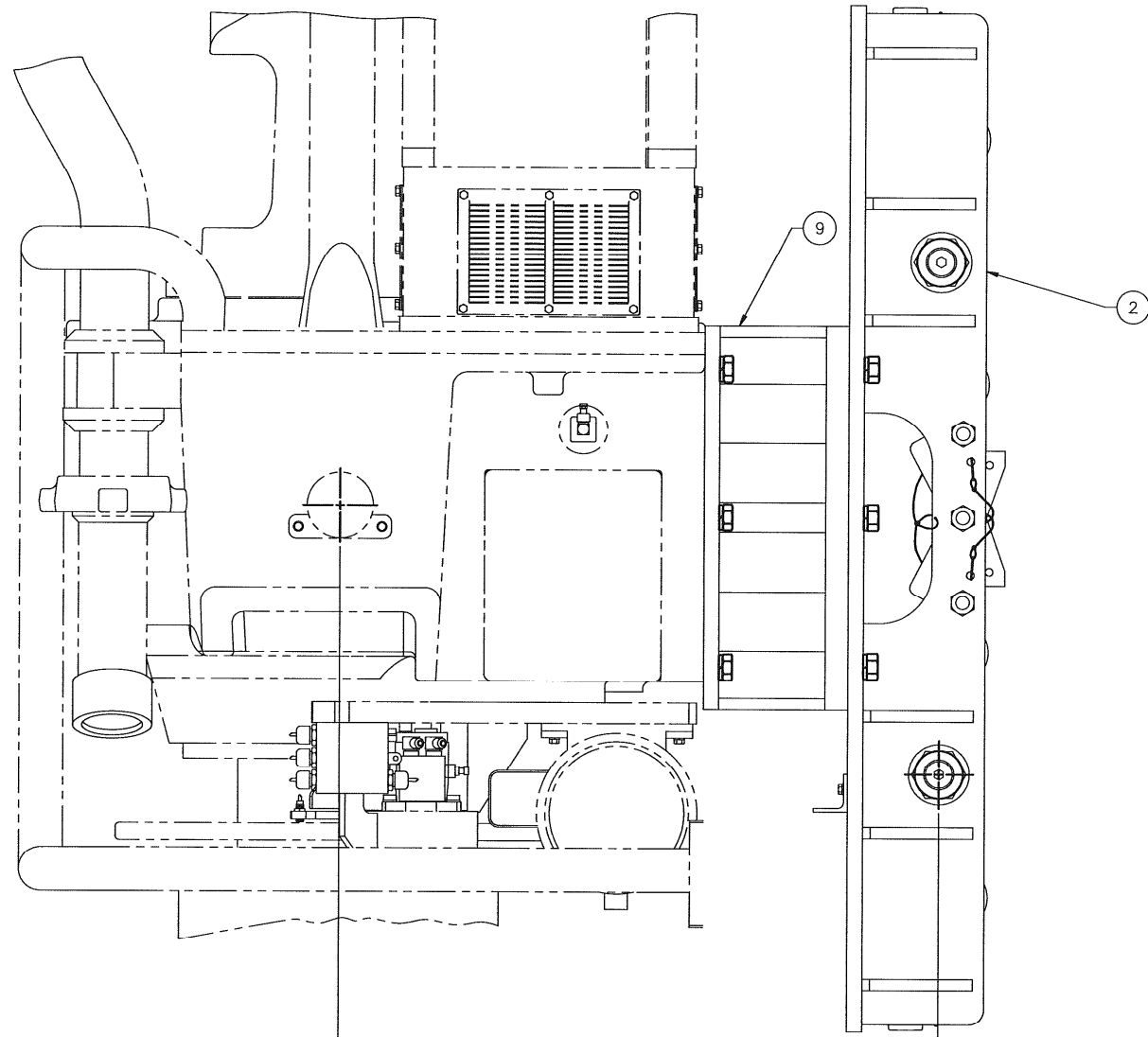
A

A



VIEW A-A 17
D
-BSC SHOWN

SIZE	DWG NO	REV
D	30124540	G
SCALE	1/4" WT LBS	1300 SHEET
		2 of 5



VIEW A-A

1	7
1	0

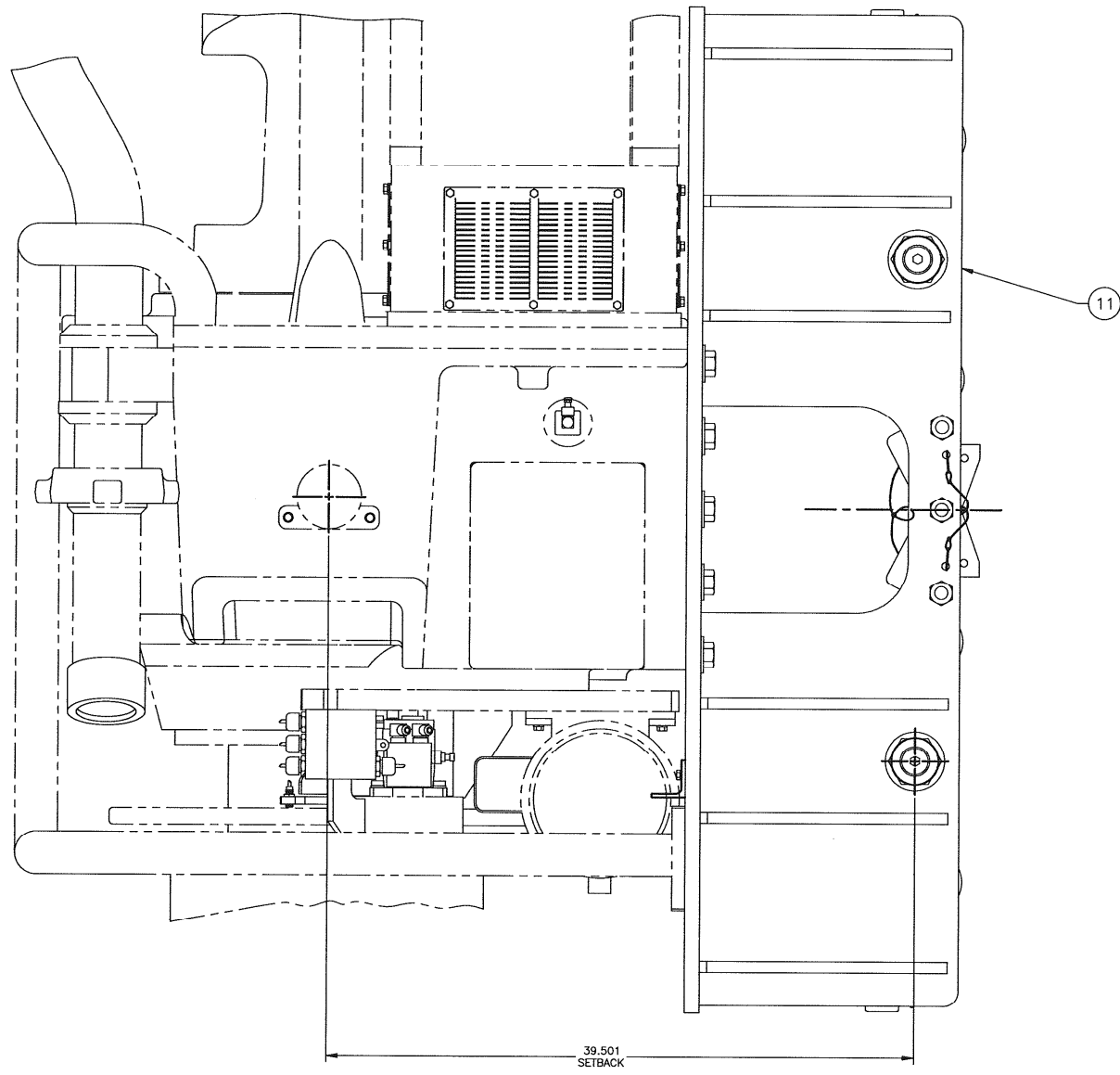
 -501 SHOWN
 (SPECIAL)

SIZE	DWG NO	REV
D	30124540	G
SCALE	1/4" WT LBS	1300 SHEET
		3 of 5

5 4 3 2 1

D
C
B
A

D
C
B
A



VIEW A-A

1	7
	D

-502 SHOWN

SIZE	DWG NO	REV
D	30124540	G
SCALE	1/4" WT LBS	1300 SHEET
		4 of 5

5 4 3 2 1

5

4

3

2

1

D

D

C

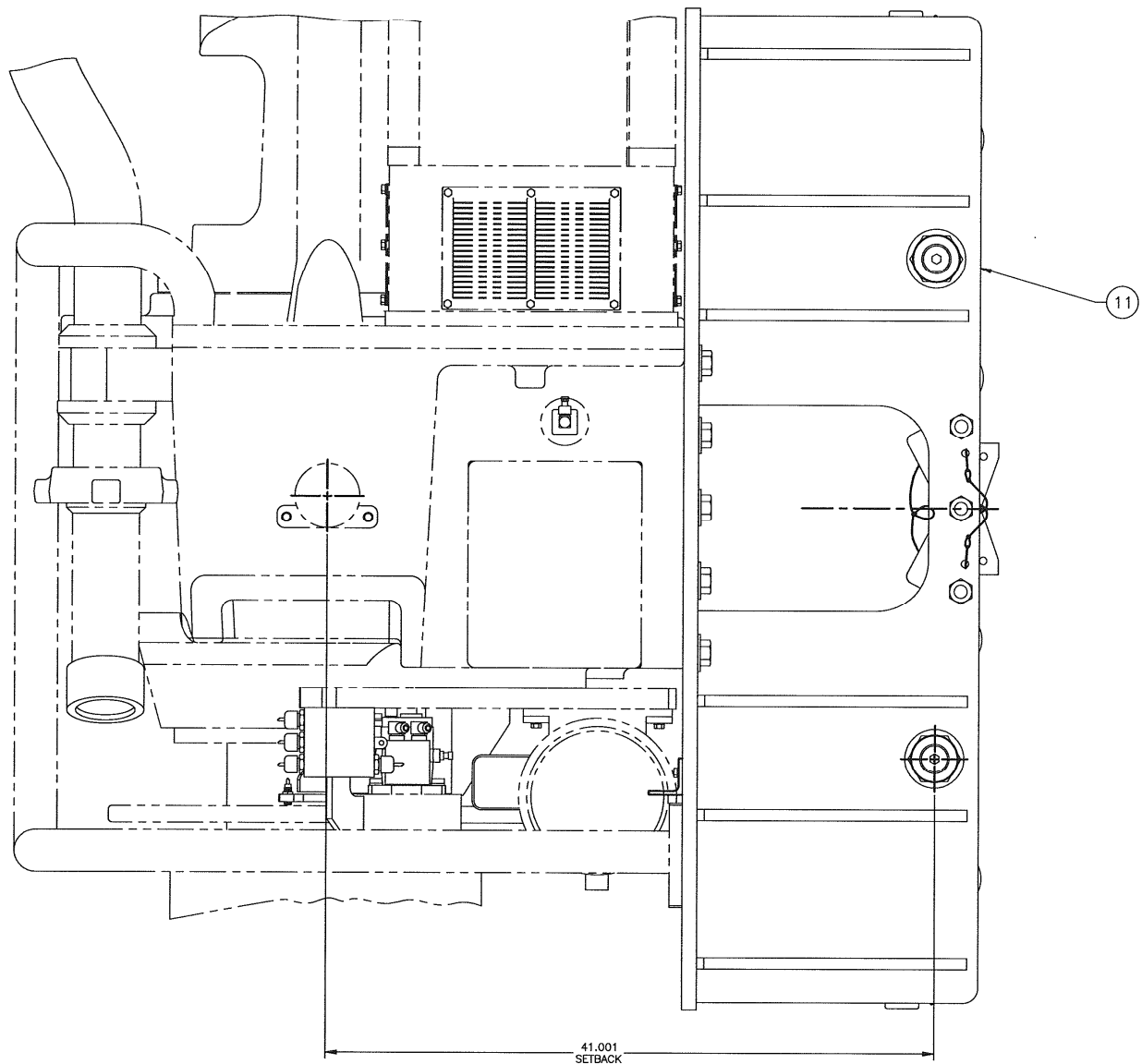
C

B

B

A

A



VIEW A-A

1	7
	D

-503 SHOWN

SIZE	DWG NO	REV
D	30124540	G
SCALE	1/4" WT LBS	1300 SHEET
		5 of 5

5

4

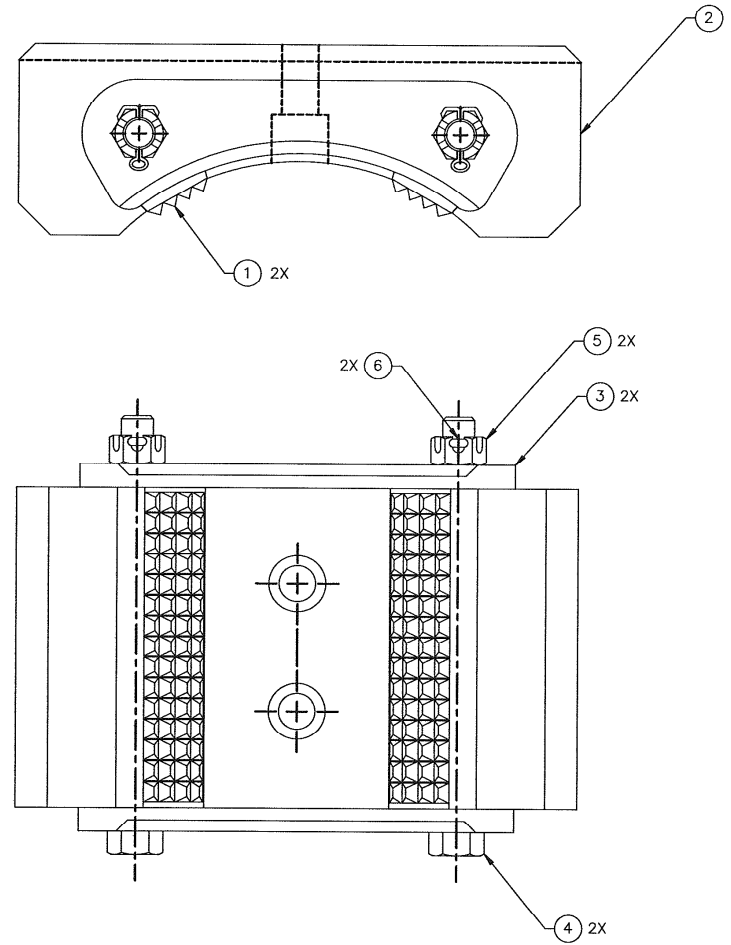
3

2

1

NOTES UNLESS OTHERWISE SPECIFIED

1. (OBSOLETE DWG 125052) CARRIES REVISION HISTORY FOR THIS DWG.



QTY REQD	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
2	51402-10-S	PIN, COTTER		6
2	50508-C	NUT, HEX SLOTTED		5
2	122112	BOLT, RETAINER		4
2	124935	RETAINER, DIE		3
1	124925	JAW		2
2	16401-2	DIE, TONG		1

UNLESS OTHERWISE SPECIFIED				LIST OF MATERIALS					
30157287	PH-75			<p>NATIONAL OILWELL VARCO</p> <p>TITLE: JAW, NC50, ASSY, PH100 #.50 BOLT #6.25-#7.50 TOOL JOINT (NC 50-5 1/2 FH)</p> <p>SCALE: 1/1 WT LBS: 30 PROJECTION: SIZE: D SHEET: 1 of 1 DRAWING NUMBER: 30125052 REVISION: C</p>					
30122000	PH-100								
<p>INTERPRET DIM./TOL. PER ASME Y14.5M DIMENSIONS ARE IN INCHES .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ± .5° DO NOT SCALE DRAWING</p>				<p>THIS COMPANY'S COMPANY PROPERTY AND CONFIDENTIAL INFORMATION BEING RELEASED TO THE PUBLIC BY THE COMPANY OR BY ANY OTHER PARTY WITHOUT THE WRITTEN PERMISSION OF NATIONAL OILWELL VARCO, L.P. IS STRICTLY PROHIBITED. NATIONAL OILWELL VARCO, L.P. IS THE REGISTERED SERVICE MARK OF NATIONAL OILWELL VARCO, L.P. THE COMPANY'S COMPANY PROPERTY AND CONFIDENTIAL INFORMATION BEING RELEASED TO THE PUBLIC BY THE COMPANY OR BY ANY OTHER PARTY WITHOUT THE WRITTEN PERMISSION OF NATIONAL OILWELL VARCO, L.P. IS STRICTLY PROHIBITED.</p>					
APPLICATION		DRAWN	CURRENT	INITIAL	<p>RIG SOLUTIONS 10000 RICHMOND AVE. HOUSTON, TEXAS 77048 U.S.A. (713) 346-7500</p>				
UNLESS OTHERWISE SPECIFIED		CHECKED	B.RICE	D.SENEVIRATNE					
MACHINED		APPROV	B.RICE	D.SENEVIRATNE					
250 MAX		DATE	09/08/05	04/06/98					
TOUCH CUT									
1000 MAX									

NOTES: UNLESS OTHERWISE SPECIFIED

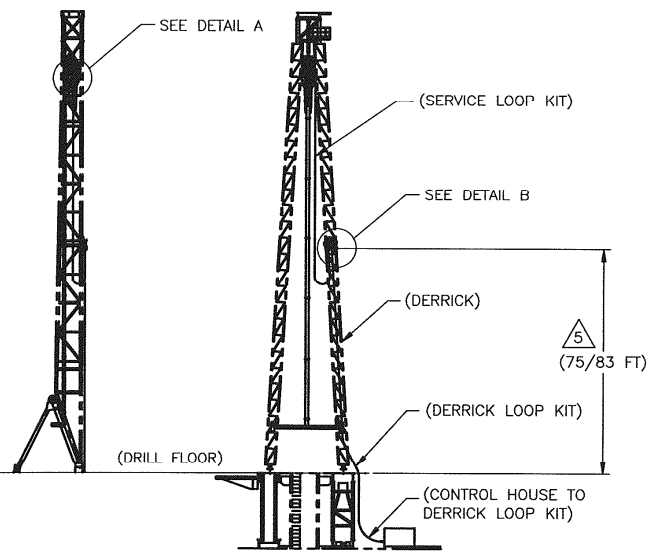
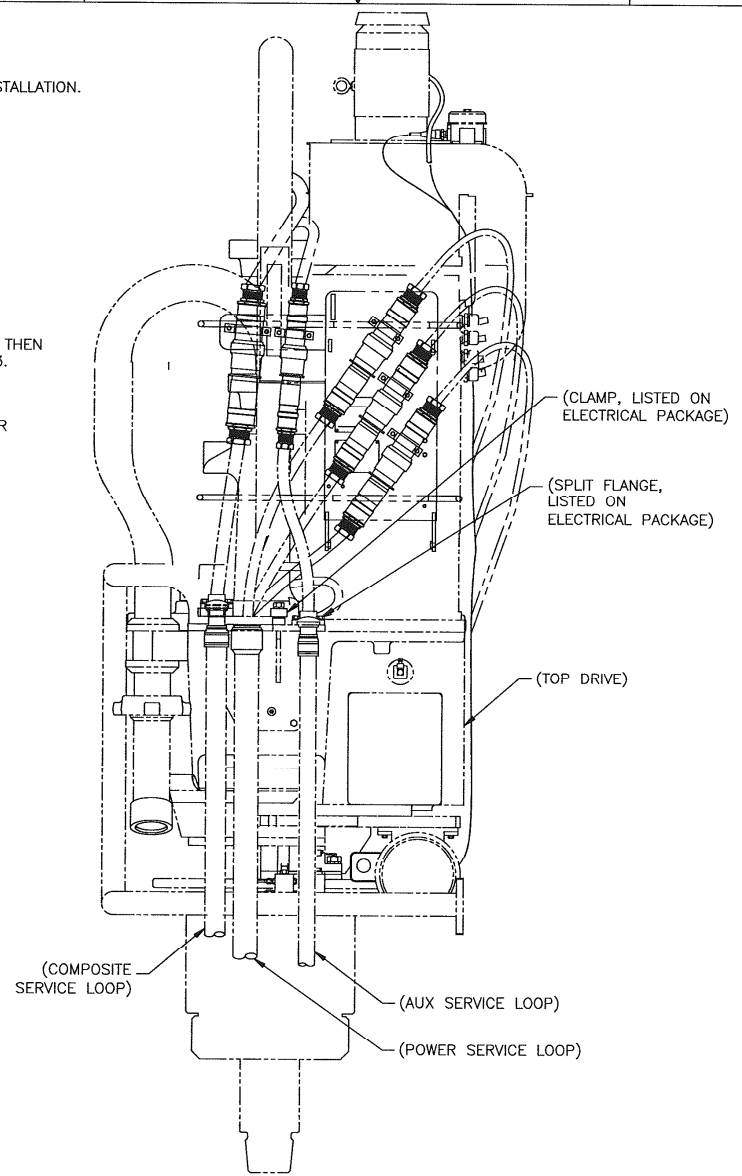
1. DERRICK LEG PLATE CAN BE WELDED TO DERRICK LEG FOR PERMANENT INSTALLATION.
 2. FOR CABLES, SEE SERVICE AND DERRICK LOOP KIT DRAWINGS.
 3. TORQUE ALL BOLTS PER VARCO DS00008.
- | DIA-THREAD | TORQUE VALUES |
|------------|----------------|
| 1/2-13UNC | 79 FT-LBF MAX |
| | 71 FT-LBF MIN |
| 3/4-10UNC | 273 FT-LBF MAX |
| | 247 FT-LBF MIN |
| 1.0-8UNC | 263 FT-LBF MAX |
| | 238 FT-LBF MIN |
4. INSTALLATION INSTRUCTIONS - FIRST INSTALL THE CABLE MOUNTING PLATE, ITEM 1, ON THE DERRICK LEG, THEN INSTALL THE SERVICE & DERRICK LOOP BRACKET ASSEMBLIES, ITEMS 2 & 3. (THE SERVICE & DERRICK LOOPS CAN BE INSTALLED ON THE BRACKETS, PRIOR TO INSTALLATION ON THE CABLE MOUNTING PLATE).
 5. FOR CORRECT CABLE MOUNTING PLATE & SADDLE ELEVATION, SEE CUSTOMER GENERAL ARRANGEMENT DRAWING.
 6. USED ON THE PORTABLE TDS-9SA/11SA.
 7. DERRICK SADDLE HANG-OFF STRUCTURE TO BE PROVIDED BY CUSTOMER.
 8. OBSOLETE DRAWING 126815 CARRIES REVISION HISTORY FOR THIS DRAWING.

D

C

B

A



ELEVATION VIEW
SCALE: NONE

DETAIL A
SCALE: 1/8

QTY REQD	DESCRIPTION	MATERIAL	ITEM NO.
2	56541-32	KIT, FLANGE	16
2	107714	MOUNT, COMPOSITE CABLE	15
1	126815-DWG	TERMINATION KIT, MID DERRICK	14
5 FT	Z6001	LOCKWIRE (Ø.051)	13
2	50008-14-CSD	SCREW, CAP HEX HEAD 1/2-13 X 1.75	12
6	50912-C	WASHER, LOCK REG. Ø3/4	11
2	7887	PIN, HITCH	10
2	50812-W-C	WASHER, FLAT, WIDE Ø3/4	9
2	50012-14-CSD	SCREW, CAP HEX HEAD, 3/4-10 X 1.75	8
2	50908-C	WASHER, LOCK , REG, Ø1/2	7
4	51812-C	NUT, SELF- LOCKING HEX HEAD, 3/4-10	6
4	116869	J-BOLT, CLAMP	5
-	30170059	ASSY. DERRICK SADDLE	4
1	30170057-500	ASSY. DERRICK TERMINATION	3
1	30170057	ASSY. DERRICK TERMINATION	2
1	116867	PLATE, CABLE MOUNTING	1

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED		INTERPRET DIM/TOL PER ASME Y14.5M		DIMENSIONS ARE IN INCHES		ANGLES ± 5°		DO NOT SCALE DRAWING							
VARIOUS	TDS-9SA/11SA	DO NOT SCALE DRAWING													
NEXT ASSY	USED ON	CURRENT	INITIAL												
APPLICATION	DRAWN	T. GONZALEZ	T. GONZALEZ												
UNLESS OTHERWISE SPECIFIED	CHECKED	T. JORDAN	T. JORDAN												
MACHINING	APPROV	T. JORDAN	T. JORDAN												
250	DATE	11/18/05	11/10/05												
UNLESS OTHERWISE SPECIFIED				RIG SOLUTIONS		SCALE: 1/4		WT LBS: 1,722		PROJECTION:		SIZE: D		SHEET: 1 of 2	
				10000 RICHMOND AVE.		DRAWING NUMBER:		30126815		REVISION:		A			
				HOUSTON, TEXAS 77042 U.S.A.											
				(713) 346-7600											

D

D

C

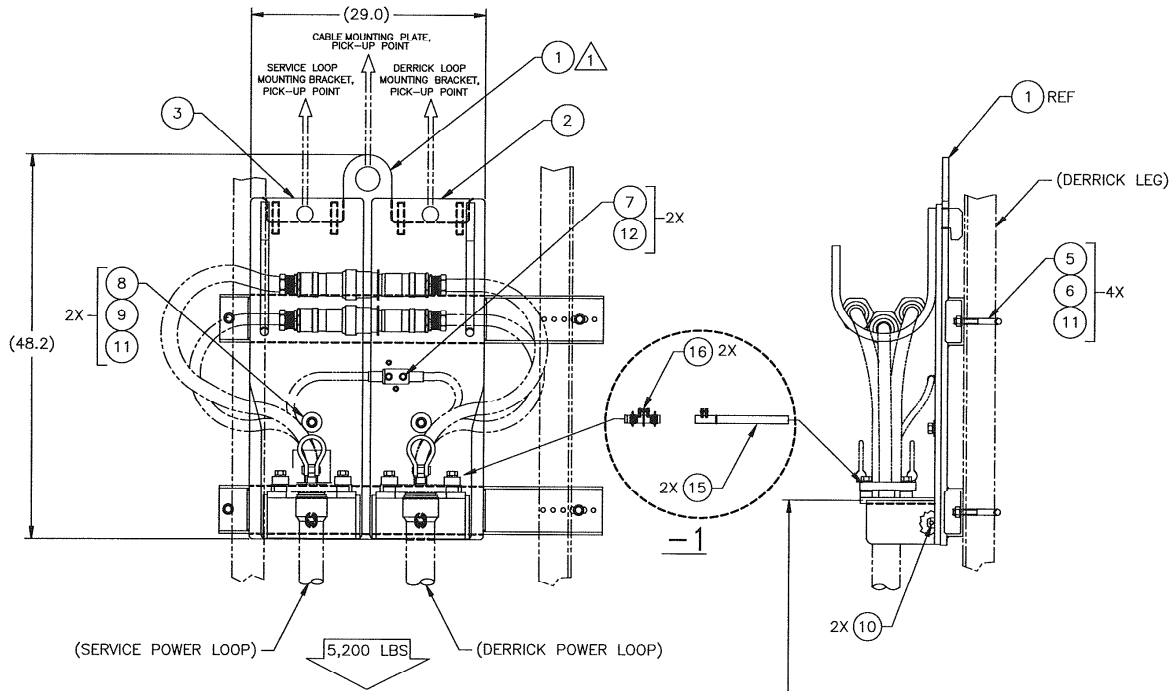
C

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B

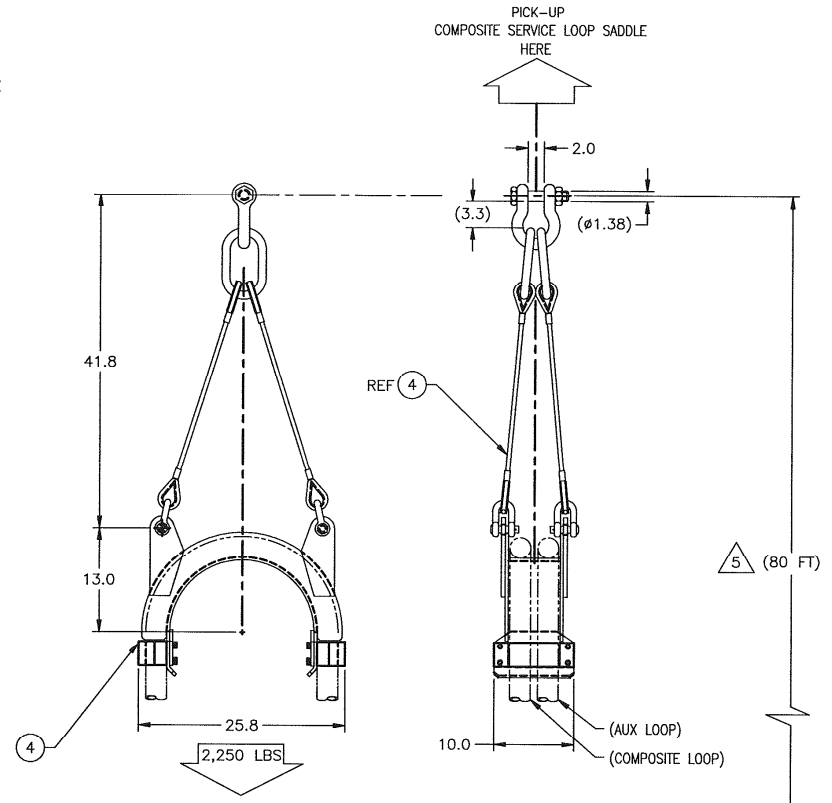
A

A



DERRICK TERMINATION

5 (75/83 FT)



DERRICK SADDLE

5 (80 FT)

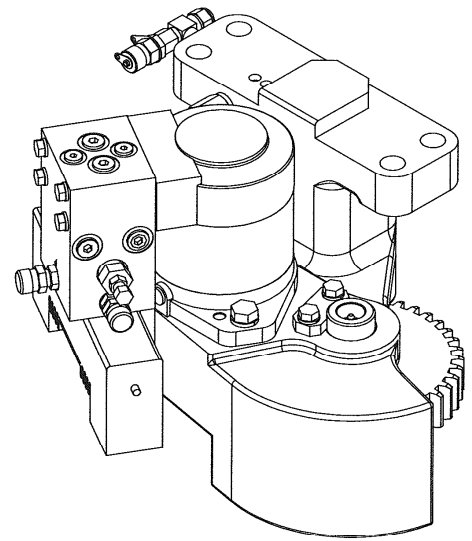
DRILL FLOOR

DRILL FLOOR

DETAIL B

SIZE	DWG NO	REV
D	30126815	A
SCALE	1/8" WT LBS	1,722 SHEET
		2 of

- NOTES: (UNLESS OTHERWISE SPECIFIED)
- LUBRICATE SHOT PIN, SHOT PIN SLEEVE AND ALL SEALS WITH HYDRAULIC OIL PRIOR TO ASSEMBLY.
 - TORQUE CAP SCREWS PER VARCO SPEC DS00008.
 - PLUG ALL PORTS FOR STORAGE AND SHIPPING.
 - INSTALL PLUGS PER VARCO SPEC. 3ASP00034.
 - MATERIAL TRACEABILITY REQUIRED.



SCALE 0.500

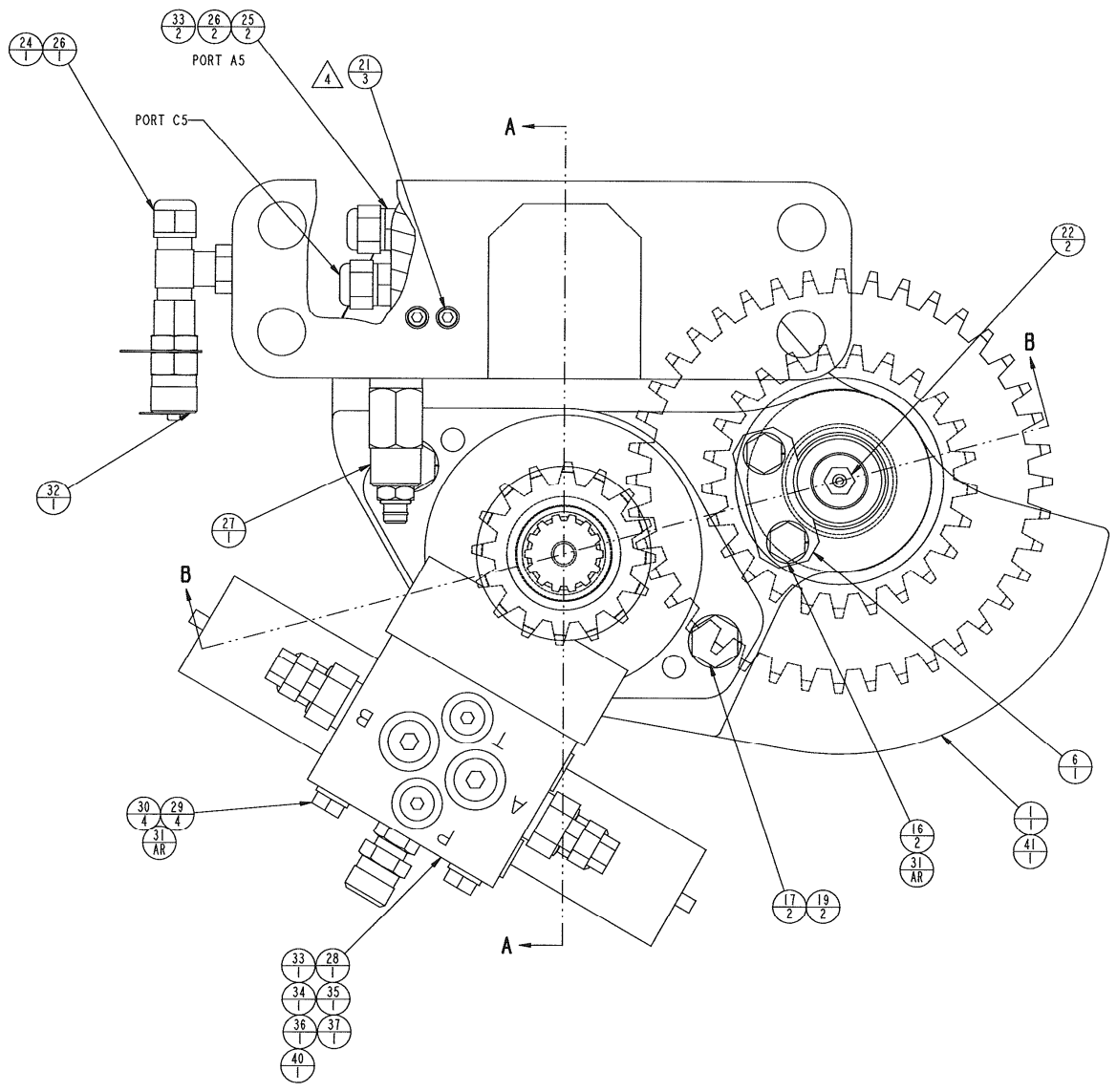
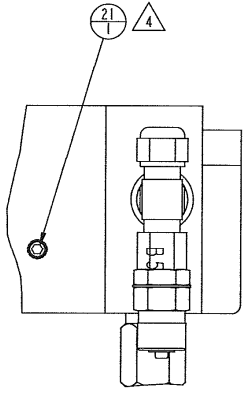
DASH NO.	DESCRIPTION	USED ON
-BSC	SOLENOID VALVE 4/3, 24 VDC EExd-S.S FITTINGS	MAERSK XL1, XL2
-500	LESS SOLENOID VALVE	TDS-11HP
-501	SOLENOID VALVE 4/3, 24 VDC EExd	PH100
-502	SOLENOID VALVE 4/3, 24 VDC UL	PH100 & TDS-10S
-503	SHIPPED LESS SOLENOID VALVE (SOLENOID VALVE TO BE TRANSFERRED FROM EXISTING UNIT)	RETRO-FIT TDS-8SA/PH100
-504	LESS SOLENOID VALVE	TDS-9 & 11SA
-LT	LOW TEMP OPERATION -40°C	TDS-8SA

△	1	-	-	-	-	-	30151953-LT	HOUSING SHOT PIN	41
△	1	-	-	-	-	-	30152190-LT	MANIFOLD ASSY (24 VDC EExd) -40°C	40
△	1	-	-	-	-	-	30173958-LT	SHOT PIN	39
△	1	-	-	-	-	-	30151960-LT	SHAFT, COMPOUND GEAR	38
-	1	-	-	-	-	-	30152190-4	MANIFOLD ASSEMBLY (COVER PLATE) (NO SOLENOID VALVE)	37
-	-	1	-	-	-	-	30152190-3	MANIFOLD ASSEMBLY (COVER PLATE) (NO SOLENOID VALVE)	36
-	-	-	1	-	-	-	30152190-2	MANIFOLD ASSEMBLY (24 VDC UL VALVE)	35
-	-	-	-	1	-	-	30152190-1	MANIFOLD ASSEMBLY (24 VDC EExd VALVE)	34
-	-	-	-	-	1	-	30152190	MANIFOLD ASSEMBLY (NO SOLENOID VALVE)	33
1	1	1	1	1	1	1	93024-6JIC	FITTING, TEST, 1/4 NPT	32
A/R	A/R	A/R	A/R	A/R	A/R	A/R	Z6001	LOCKWIRE, .051 DIA	31
4	4	4	4	4	4	4	50905-C	WASHER, LOCK-REGULAR	30
4	4	4	4	4	4	4	50005-26-C5D	SCREW, CAP-HEX HEAD	29
-	-	-	-	-	-	1	30152190-SS	MANIFOLD ASSEMBLY	28
1	1	1	1	1	1	1	94522-1EN	VALVE, CART, PRES. RELIEF	27
3	3	3	3	3	3	3	56544-6-S	CAP, FEMALE 37 DEG. SEAT	26
2	2	2	2	2	2	2	56529-6-6-C	CONNECTOR, O-RING BOSS /37	25
1	1	1	1	1	1	1	56555-6-S	TEE, O-RING	24
1	1	1	1	1	1	1	53500-225	RING, RETAINING - INTERNAL	23
3	3	3	3	3	3	3	53201-SS	FITTING, GREASE, STRAIGHT	22
4	4	4	4	4	4	4	53000-01-S	PLUG, EXTERNAL PIPE	21
1	1	1	1	1	1	1	51300-226-B	O-RING	20
2	2	2	2	2	2	2	50908-C	WASHER, LOCK-REGULAR	19
4	4	4	4	4	4	4	50906-C	WASHER, LOCK-REGULAR	18
2	2	2	2	2	2	2	50008-12-C5D	SCREW, CAP-HEX HEAD	17
4	4	4	4	4	4	4	50006-08-C5D	SCREW, CAP-HEX HEAD	16
4	4	4	4	4	4	4	50006-06-C5D	SCREW, CAP-HEX HEAD	15
-	1	1	1	1	1	1	30173958	SHOT PIN	14
2	2	2	2	2	2	2	112754-130	BEARING, SINTER BRONZE, FLANGED	13
1	1	1	1	1	1	1	110061-326	PISTON SEAL ASSY	12
1	1	1	1	1	1	1	110056	ROD SEAL ASSY	11
1	1	1	1	1	1	1	30156256	GEAR, DRIVE	10
1	1	1	1	1	1	1	30156250	GEAR, COMPOUND, 40X25	9
1	1	1	1	1	1	1	30151961	FLG BUSHING, SHOT PIN	8
-	1	1	1	1	1	1	30151960	SHAFT, COMPOUND GEAR	7
1	1	1	1	1	1	1	30151959	RETAINER, PIN	6
1	1	1	1	1	1	1	30158011	HYD MOTOR, LOW SPEED HIGH TORQUE	5
1	1	1	1	1	1	1	30151955	RETAINER, BEARING	4
2	2	2	2	2	2	2	30151954	BEARING, RADIAL, LIGHT	3
1	1	1	1	1	1	1	30151951	SLEEVE, SHOT PIN	2
-	1	1	1	1	1	1	30151953	HOUSING, HYD DRIVE/SHOTPIN	1

30153045	TDS-11HP	UNLESS OTHERWISE SPECIFIED INTERPRET DIM/TOL PER ASME Y14.5M DIMENSIONS ARE IN INCHES .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ± 0° 30'	THIS DOCUMENT CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE. THE USER SHALL BE LIMITED TO THE USE OF THIS INFORMATION IN CONNECTION WITH THE PERFORMANCE OF THE DUTY FOR WHICH IT WAS OBTAINED. THE USER SHALL NOT DISSEMINATE OR REPRODUCE THIS INFORMATION WITHOUT THE EXPRESS WRITTEN CONSENT OF NATIONAL OILWELL VARCO. THIS DOCUMENT IS TO BE RETURNED TO NATIONAL OILWELL VARCO, P.O. BOX 190000, HOUSTON, TX 77260-0000. IF YOU HAVE ANY QUESTIONS CONCERNING THIS DOCUMENT, PLEASE CONTACT THE NATIONAL OILWELL VARCO REPRESENTATIVE AT THE ADDRESS LISTED ABOVE.	NATIONAL OILWELL VARCO	TITLE: HYD DRIVE/SHOTPIN ASSY ROT LINK ADAPT
120900	TDS-11SA	DO NOT SCALE DRAWING			
124900	PH100				
NEXT ASSY	USED ON	CURRENT	INITIAL		
		M. CLARK	QUIGLEY		
APPLICATION		DRAWN	CHECKED	RIG SOLUTIONS	
UNLESS OTHERWISE SPECIFIED MACHINED TO CHG TORCH CUT 250 MAX 1000 MAX		H. LIM	D. SENEVIRATNE	10000 RICHMOND AVE. HOUSTON, TX 77042, USA (713) 346-1500	
APPROV	H. LIM	D. SENEVIRATNE	DATE	9/8/06	2/27/01
SCALE:	WT LBS:	PRODUCTION:	SIZE:	SHEET: 1 OF 3	
1:1	150		D	REVISION: OF	
DRAWING NUMBER:	30151875				

D
C
B
A

D
C
B
A



SIZE	DWG NO	REV
D	30151875	N
SCALE	1.000	SHEET 2 OF 3

D

D

C

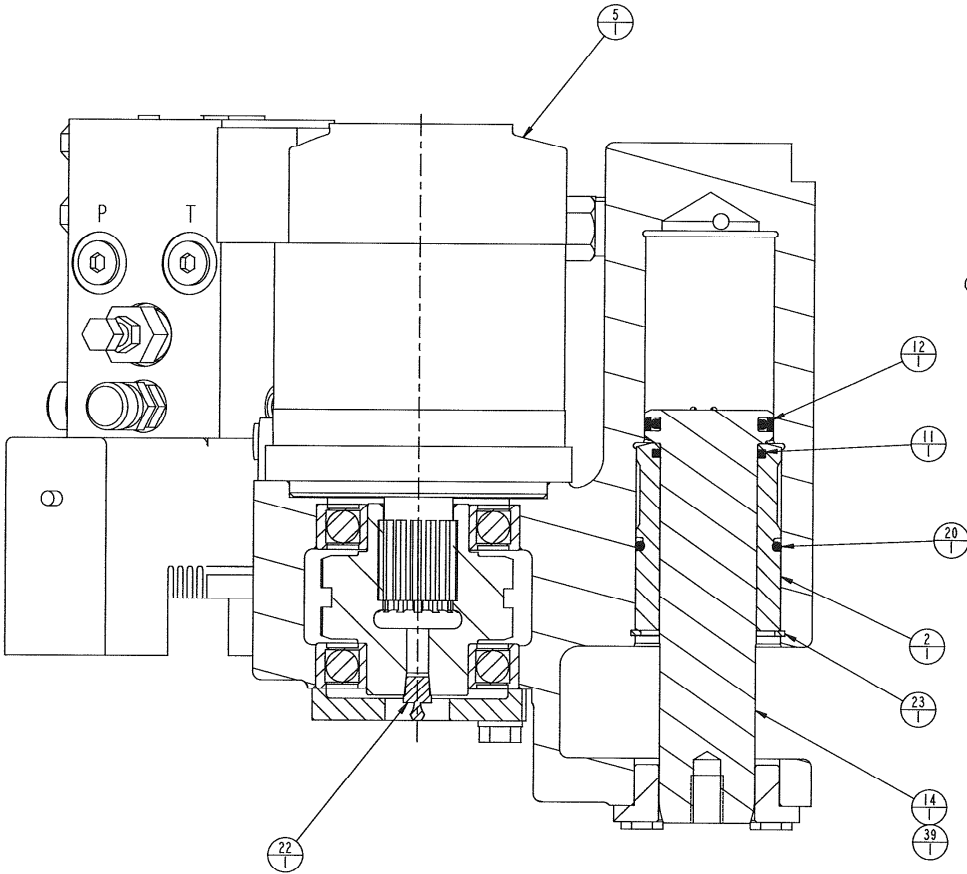
C

B

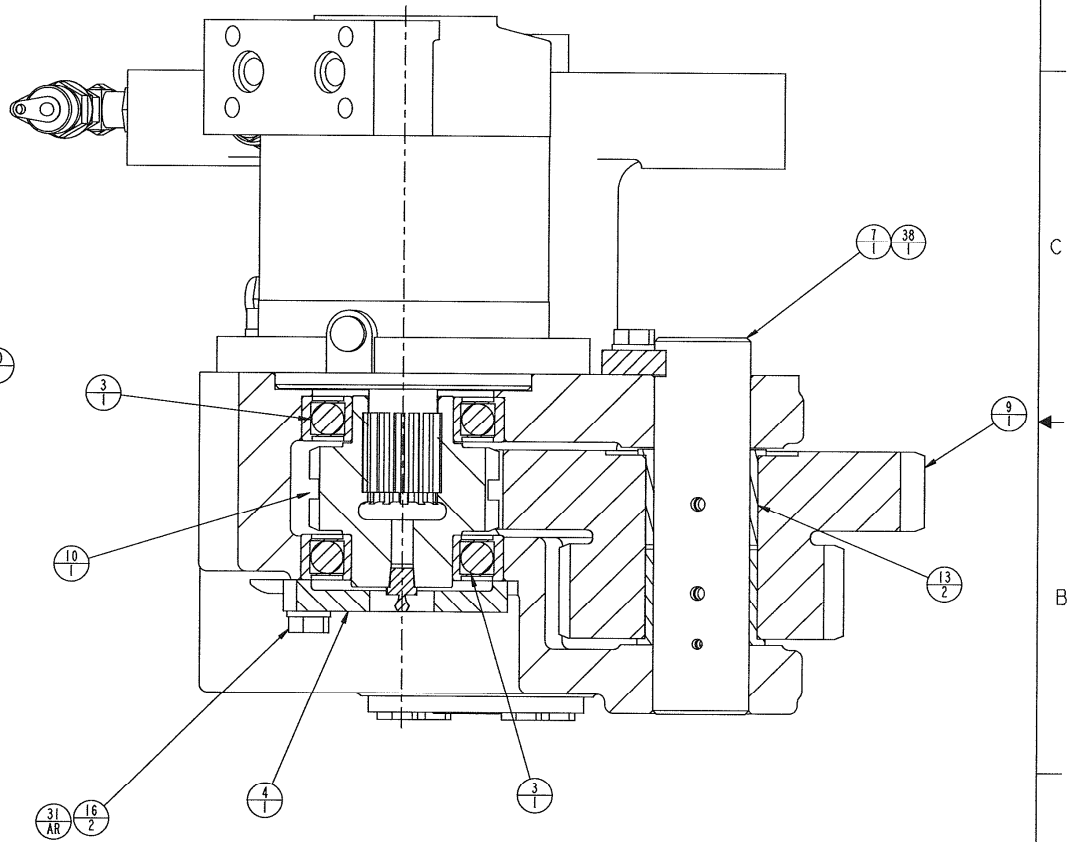
B

A

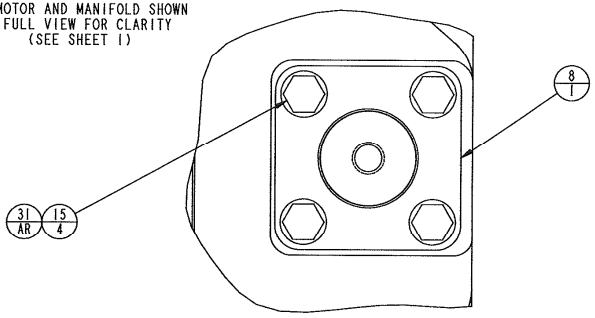
A



SECTION A-A
 MOTOR AND MANIFOLD SHOWN
 FULL VIEW FOR CLARITY
 (SEE SHEET 1)



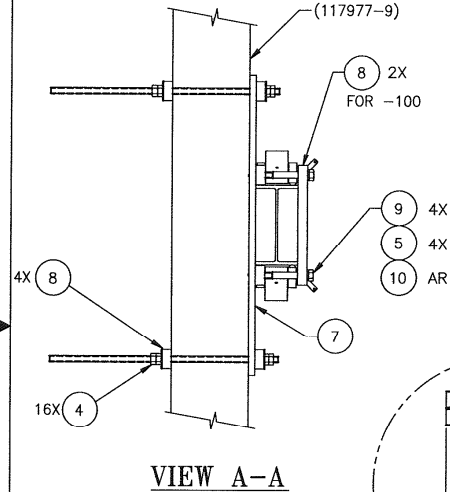
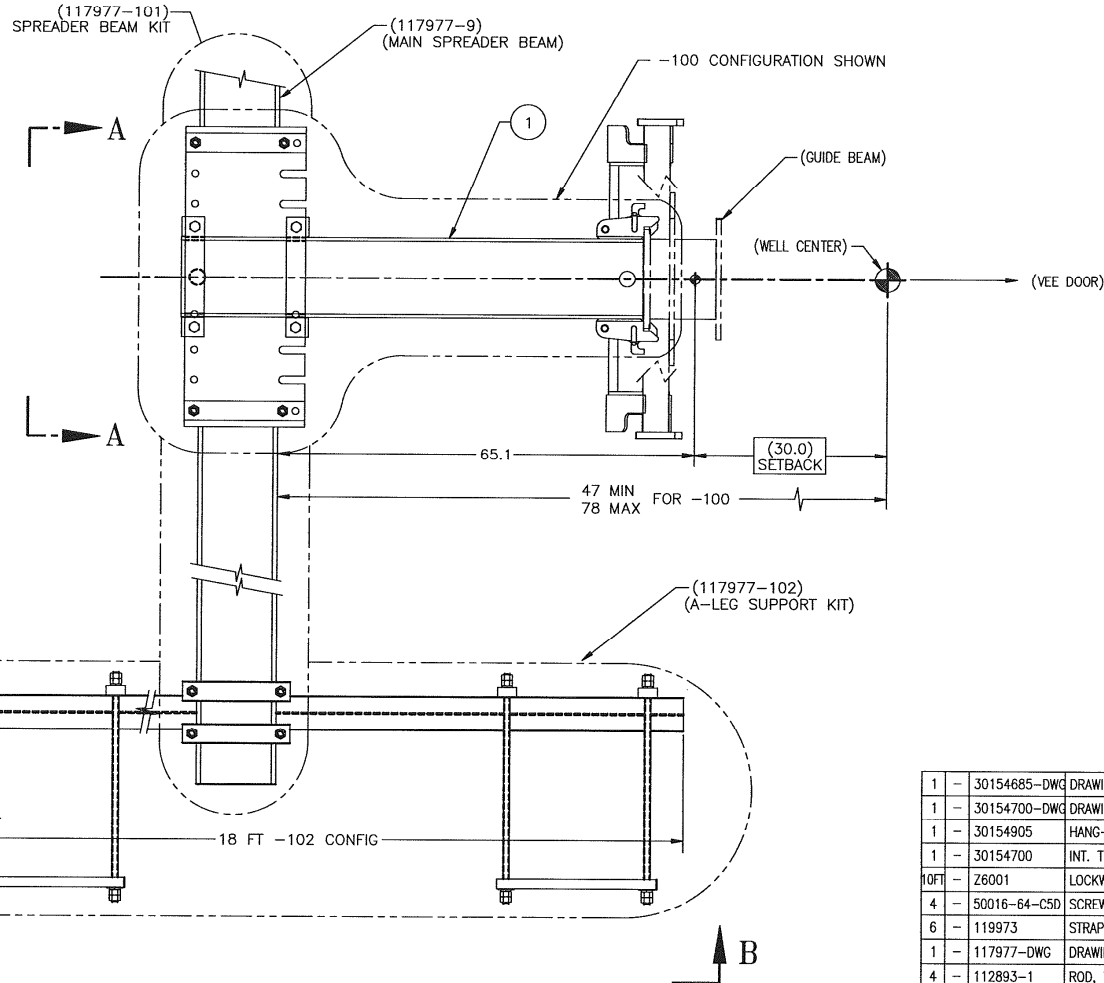
SECTION B-B
 MOTOR SHOWN FULL VIEW &
 MANIFOLD OMITTED FOR CLARITY
 (SEE SHEET 1)



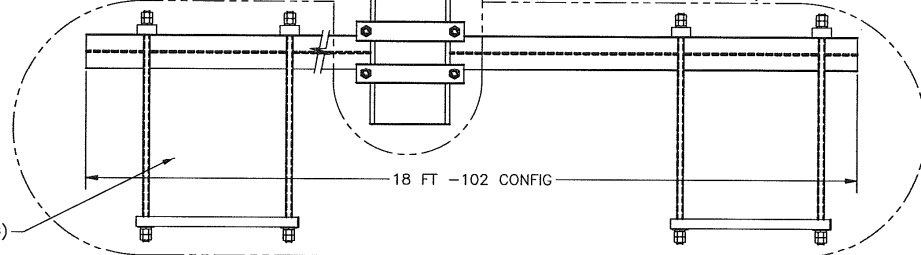
SIZE D	DWG NO 30151875	REV N
SCALE 1,000	SHEET 3 OF 3	

NOTES: (UNLESS OTHERWISE SPECIFIED)

- 1. REMOVED
- 2. REMOVED
- 3. USE ITEM 3 AS REQUIRED TO AID IN INSTALLATION. ITEM NOT SHOWN.
- 4. THE OPTIONS SHOWN ARE SUGGESTIONS FOR COMMON INSTALLATIONS.
- 5. ALL COMPONENTS MAY BE MIXED AND MATCHED AS NECESSARY.
- 6. FOR PERMANENT INSTALLATIONS, CUT OFF UNNECESSARY MATERIAL AS REQUIRED AND WELD CLAMPED JOINTS AS ALLOWABLE.



VIEW A-A

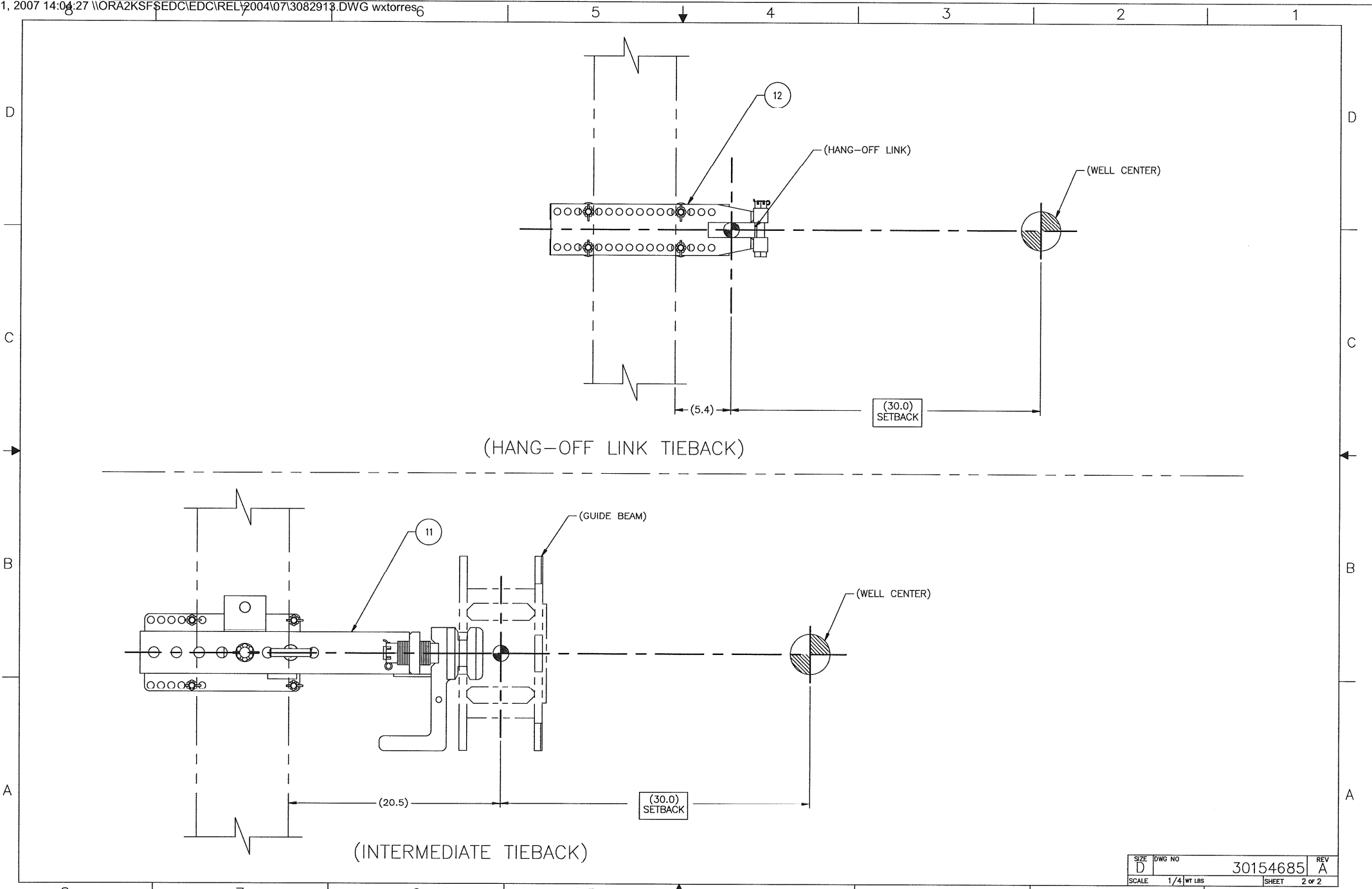


B

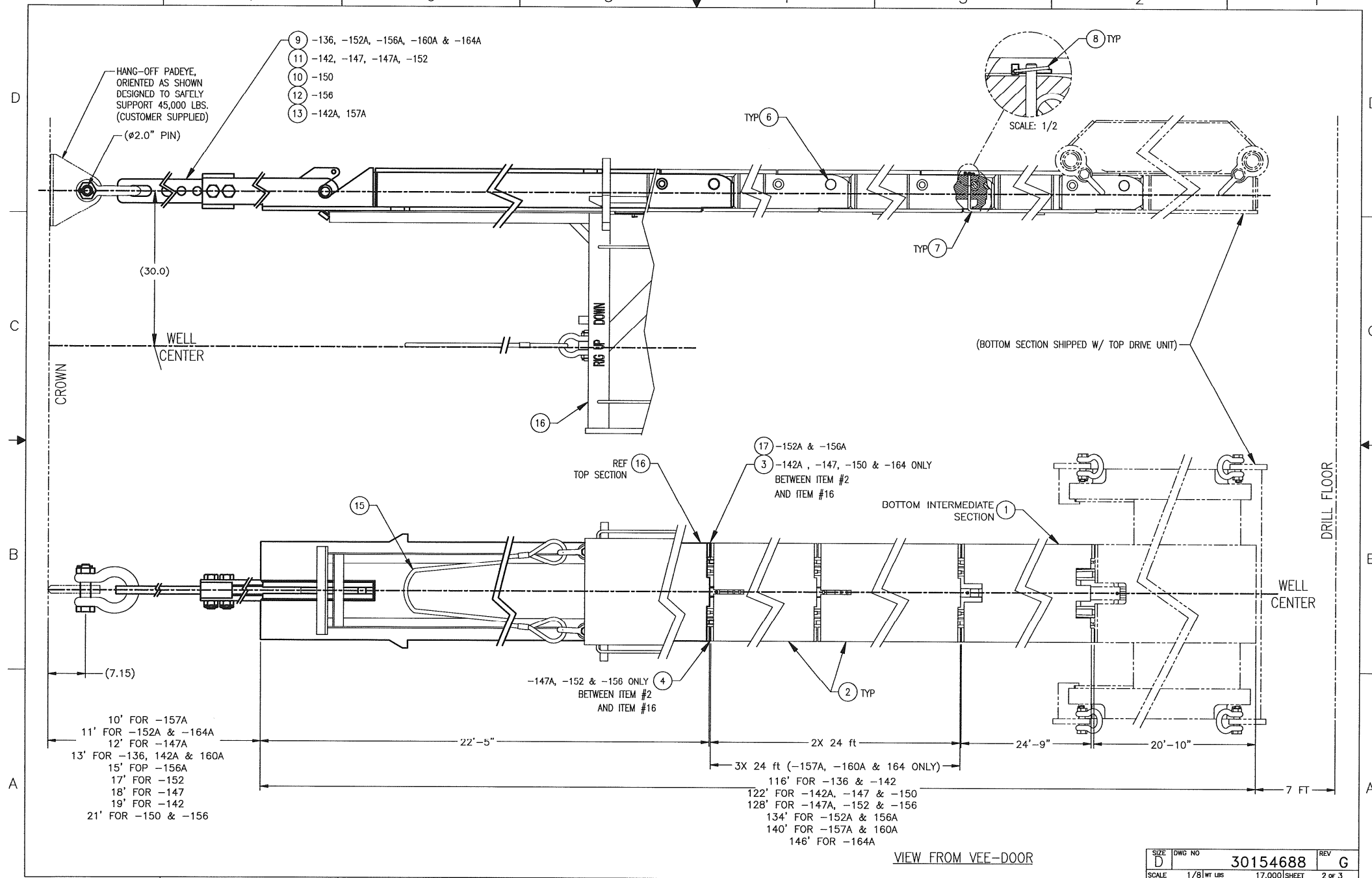
CONFIGURATION TABLE			
CONFIG. No.	DESCRIPTION	WEIGHT	NOTES
-BSC	DELETED		
-100	UNIVERSAL TIEBACK KIT (LOWER TIEBACK KIT)	650 lbs.	
	SPREADER BEAM KIT	2800 lbs.	USE 117977-101
	A-LEG SUPPORT KIT	1000 lbs.	USE 117979-102

QTY REQD	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
1	30154685-DWG	DRAWING, KIT, TIEBACKS		14
1	30154700-DWG	DRAWING, INSTALL RESTRAINT		13
1	30154905	HANG-OFF TIEBACK		12
1	30154700	INT. TIEBACK		11
10FT	Z6001	LOCKWIRE	(#.056)	10
4	50016-64-C5D	SCREW, CAP-HEX HEAD	(1"-8 UNC x 8")	9
6	119973	STRAP		8
1	117977-DWG	DRAWING, TIEBACK KIT		7
4	112893-1	ROD, THREADED	(1"-8 x 36.0 LG)	6
4	50916-C	WASHER, LOCK-REGULAR	(1")	5
16	50416-C	NUT, HEX	(1"-8 UNC) Δ 3	4
8	30117731	FLANGE CLAMP		3
1	117982	PLATE, TIEBACK		2
1	30154683	TIEBACK LINK		1

PART FLAGS <input type="checkbox"/> TRACEABILITY <input type="checkbox"/> CRITICAL LOAD <input type="checkbox"/> PART ITEM CERTIFICATION REQUIRED		UNLESS OTHERWISE SPECIFIED INTERPRET DIM/TOL PER ASME Y14.5M DIMENSIONS ARE IN INCHES .X ±.1 .XX ±.03 .XXX ±.010 ANGLES ±.5° DO NOT SCALE DRAWING		COPYRIGHT © VARCO INTERNATIONAL, INC. ALL RIGHTS RESERVED. THIS DOCUMENT MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF VARCO. VARCO OWNS ALL RIGHTS IN THIS WORK AND INTENDS TO ENFORCE ITS RIGHTS UNDER THE COPYRIGHT LAWS AS A PUBLISHED WORK.	
SPARE PART <input type="checkbox"/> COMMISSIONING <input type="checkbox"/> OPERATIONAL <input type="checkbox"/> INSURANCE		APPLICATION MACHINED 250 MAX TORCH CUT 1000 MAX		MATERIAL FINISH / HEAT TREAT	
NEXT ASSY USED ON		CHECKED H. LIM APP'D H. LIM DATE 7/22/04		CURRENT B. MEISCH INITIAL E.AVILA H. LIM H. LIM H. LIM 4/2/02	
THIRD ANGLE PROJECTION		TITLE KIT, TIEBACKS		SIZE DWG NO D 30154685 SCALE 1/10" WT LBS SEE TABLE SHEET 1 of 2	



SIZE	DWG NO	REV
D	30154685	A
SCALE	1/4" WT LBS	SHEET
		2 of 2



SIZE	DWG NO	REV
D	30154688	G
SCALE	1/8" WT LBS	17,000 SHEET
		2 OF 3

D

D

REF 16

ENSURE THAT SHIPPING PINS ARE REMOVED PRIOR TO INSTALLATION OF TOP BEAM SECTION IN DERRICK

C

C

B

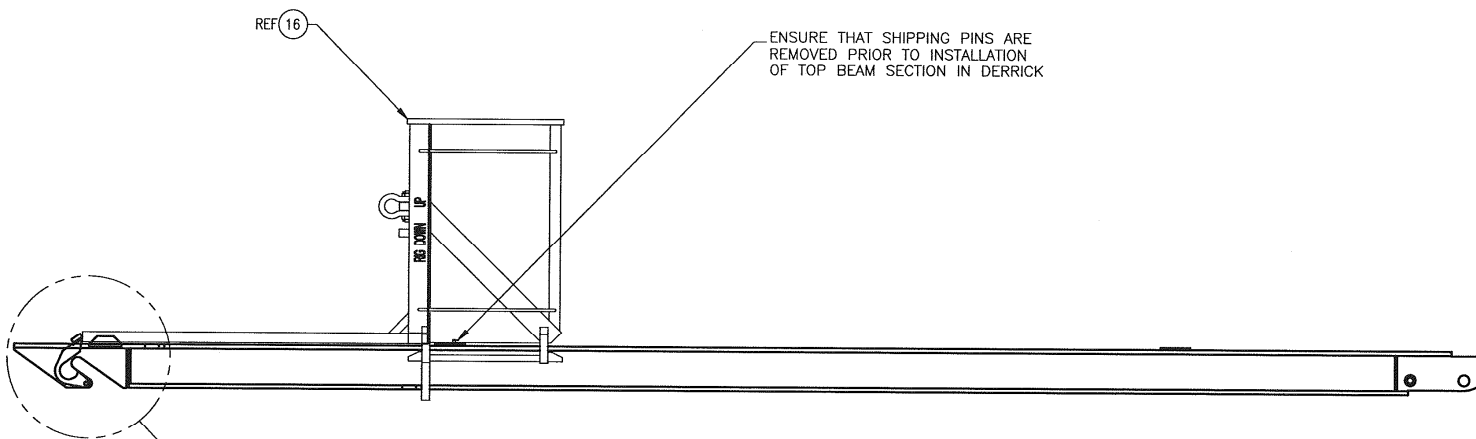
B

B

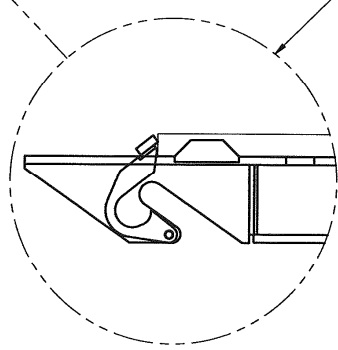
B

A

A



HOIST EXTENSIONS HOLD LATCH OPEN FOR INSTALLATION



SIZE	DWG NO	REV
D	30154688	H
SCALE	1/12 WT LBS	17,000 SHEET
		3 of 3

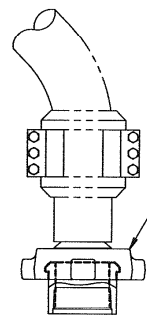
NOTES: UNLESS OTHERWISE SPECIFIED

1. APPLY ANTI-SEIZE AND TORQUE ALL BOLTS PER DS00008 AND LOCKWIRE
2. MATCH DRILL PRIOR TO CARRIAGE INSTALLATION
3. VARCO PART NUMBER DESCRIPTION:
30156835-XXX-X
SEE TABULATION TABLE 2
SEE TABULATION TABLE 1
4. CONFIG. -4 INCLUDES ITEMS 29 & 30 ONLY. NO SUB OR ELBOW WITH THIS OPTION
5. ALL S-PIPE WELDMENTS RATED AT 7500PSI, ASSEMBLY RATING BASED ON CONNECTION (TABLE 2).

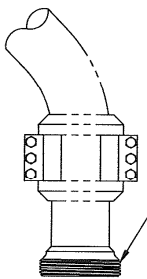
DASH	DESCRIPTION	LOCATION	NOTES
-R50	S-PIPE RIGHT HAND, 5000 psi	OUTSIDE GUARD	OBSOLETE, USE -R75
-L50	S-PIPE LEFT HAND, 5000 psi	OUTSIDE GUARD	OBSOLETE, USE -L75
-C1	S-PIPE RIGHT HAND	REAR	5000 psi, SPECIAL
-C2	S-PIPE LEFT HAND		NOT AVAILABLE
-R75	S-PIPE RIGHT HAND, 7500 psi	OUTSIDE GUARD	STANDARD OPTION
-L75	S-PIPE LEFT HAND, 7500 psi	OUTSIDE GUARD	STANDARD OPTION

QTY	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
1	114093-75	ELBOW, S-PIPE, 5" FIG 1002, FEMALE	7500 PSI	31
1	117679	MALE SUB, 4" FIG 1002, 4" API LPT END	5000 PSI	31
1	84617	ELBOW, S-PIPE, 4" FIG 1002, FEMALE	7500 PSI	31
1	81153	ELBOW, S-PIPE, 4" API LPT END, FEMALE	5000 PSI	31

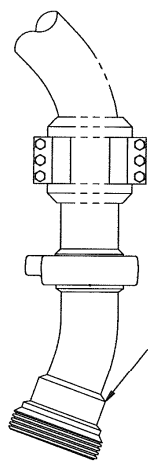
LIST OF MATERIAL
TABULATION TABLE 2



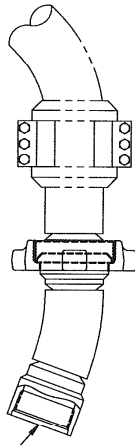
EXAMPLE: 30156835-XXX-3 (SCALE: 1/5)



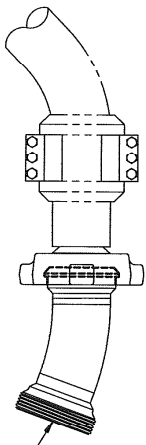
EXAMPLE: 30156835-XXX-4 (SCALE: 1/5)



EXAMPLE: 30156835-XXX-5 (SCALE: 1/5)



EXAMPLE: 30156835-XXX-1 (SCALE: 1/5)



EXAMPLE: 30156835-XXX-2 (SCALE: 1/5)

QTY	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
1	30123290	ASSEMBLY, WASH PIPE		34
1	81158	WING NUT, 4" FIG 1002		30
1	114833	SEAL RING, 4" FIG 1002		29
1	30114855-7500	S-PIPE, LH, WELDMENT, 7500 psi (OUTSIDE GUARD)		28
1	117063-7500	S-PIPE, RH, WELDMENT, 7500 psi (OUTSIDE GUARD)		27
1	50908-C	WASHER, LOCK-REGULAR		26
4	50008-16-C5D	SCREW, CAP-HEX HEAD		25
2	50012-13-C5D	SCREW, CAP-HEX HEAD		24
1	78002	CLAMP, SERVICE LOOP BRACKET		23
1	107714	MOUNT, COMPOSITE CABLE		22
2	50012-30-C5D	SCREW, CAP-HEX HEAD		21
4	50012-16-C5D	SCREW, CAP-HEX HEAD		20
6	50912-C	WASHER, LOCK-REGULAR		19
A/R	Z6001	LOCKWIRE (#.051)		18
4	50910-C	WASHER, LOCK-REGULAR		17
4	50010-18-C5D	SCREW, CAP-HEX HEAD		16
1	30170449	WING NUT, 3" FIG 1002		15
1	91923	SEAL RING, 3" FIG 1002		14
1	91921	PLUG, BLIND, 3" FIG 1002		13
1	56541-32	KIT, FLANGE		12
6	50908-C	WASHER, LOCK-REGULAR		11
1	92426	RUBBER, S-PIPE		10
1	114840	MOUNT, S-PIPE, LH (OUTSIDE GUARD)		9
1	117061	MOUNT, S-PIPE, RH (OUTSIDE GUARD)		8
1	108870-1	MOUNT, S-PIPE-BASE		7
1	108870-2	MOUNT, S-PIPE-TOP		6
1	116411	BRACKET, SERVICE LOOP/S-PIPE		5
1	116376	S-PIPE, WELDMENT (HERCULES)		4
1	30114855	S-PIPE, LH, WELDMENT, 5000 psi (OUTSIDE GUARD)		3
1	117063	S-PIPE, RH, WELDMENT, 5000 psi (OUTSIDE GUARD)		2
6	50008-30-C5D	SCREW, CAP-HEX HEAD		1

UNLESS OTHERWISE SPECIFIED INTERPRET DIM/FOL PER ASME Y14.5M DIMENSIONS ARE IN INCHES ANGLES ± ° DO NOT SCALE DRAWING		<p>NATIONAL OILWELL VARCO</p> <p>TITLE: PACKAGE, S-PIPE TDS-9/11SA</p> <p>SCALE: 1/10 WT LBS: 597 PROJECTION: 3RD ANGLE SIZE: D SHEET: 1 of 3 REVISION:</p> <p>DRAWING NUMBER: 30156835</p>
APPLICATION: TDS-11S CHECKED: H LIM APPVD: H LIM DATE: 21 MAR 06	DRAWN: R SHUMSKI CURRENT: H LIM INITIAL: C. ZAPATA O. RIEHLE T. CLARK 11/21/02	

D

D

C

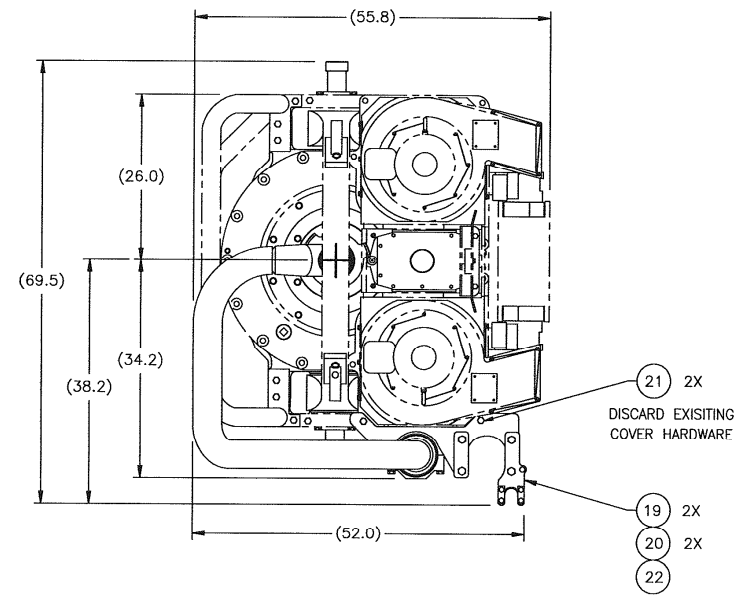
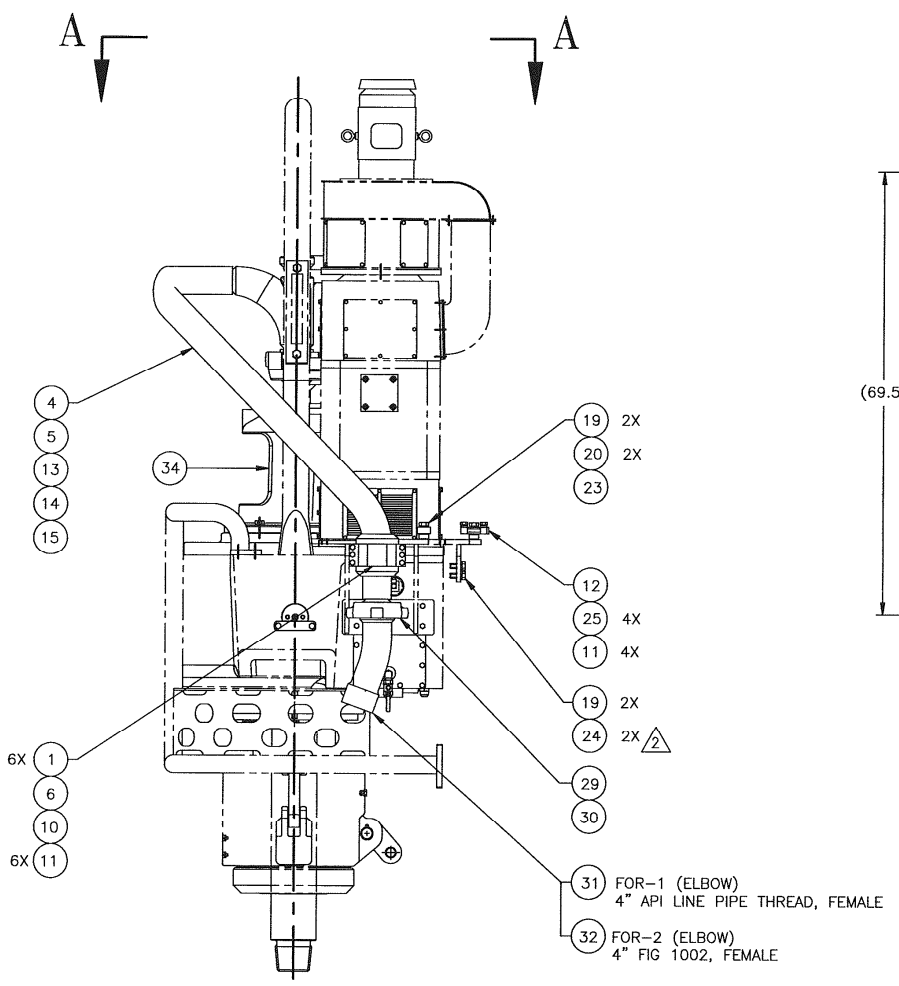
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VIEW A-A

-C CONFIGURATION (SHOWN)

SIZE D	DWG NO 30156835	REV D
SCALE 1/10	WT LBS 597	SHEET 2 OF 3

D

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C

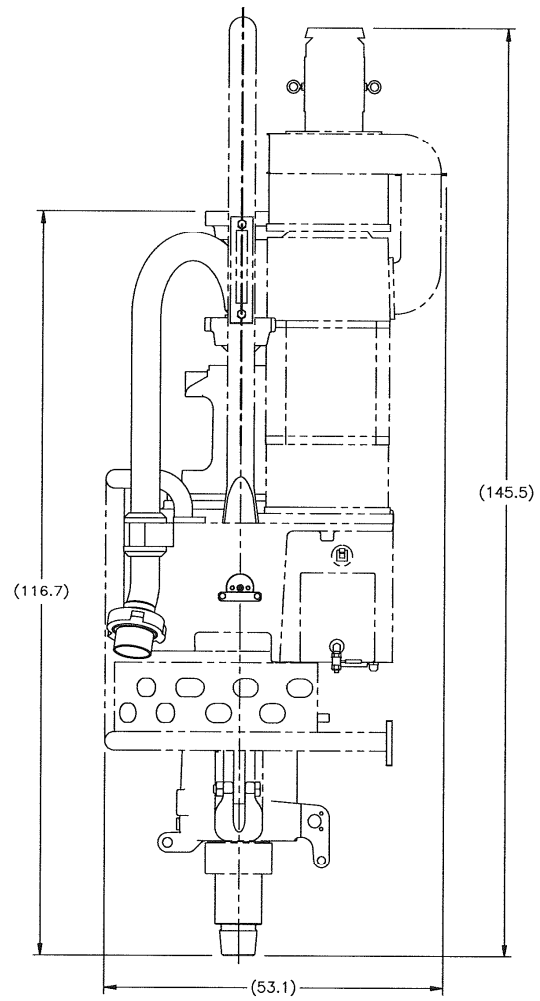
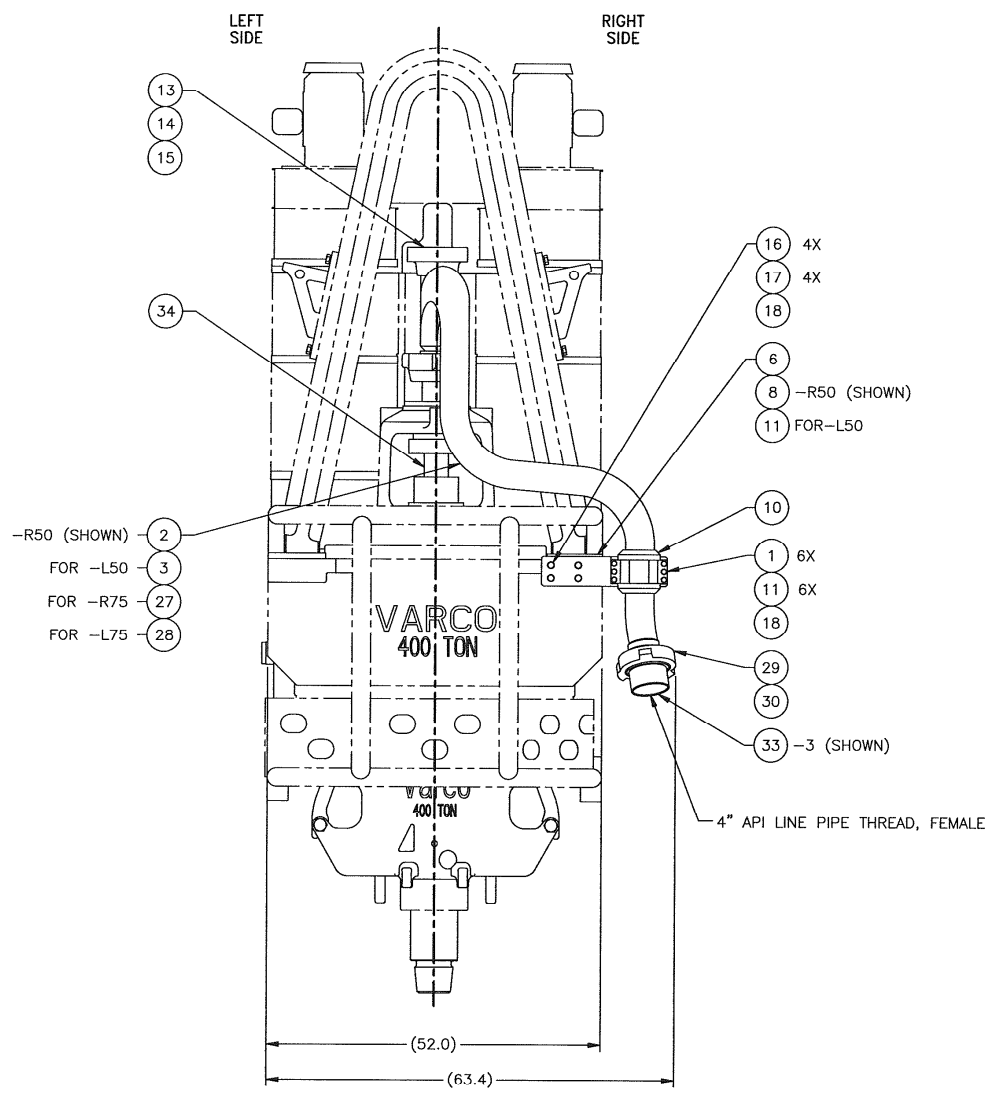
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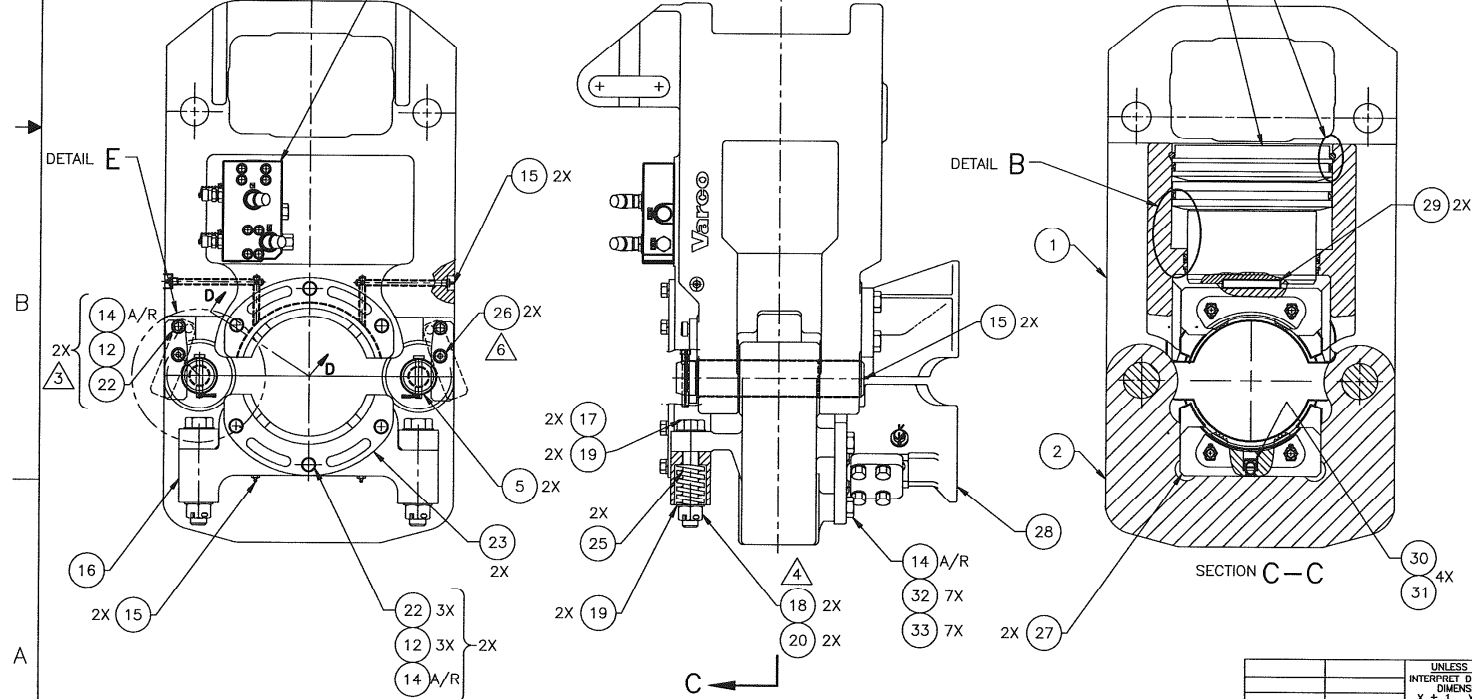
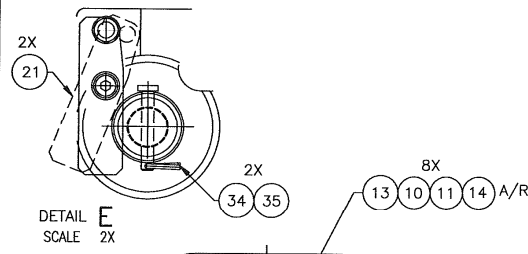
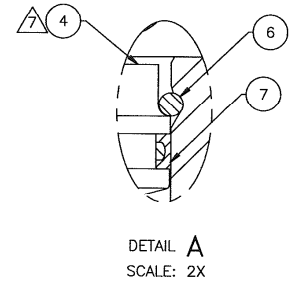
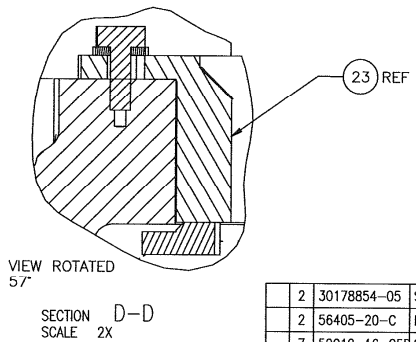
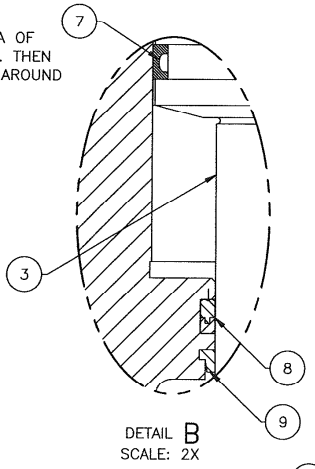
-R50 CONFIGURATION (SHOWN)

SIZE	DWG NO	REV
D	30156835	D
SCALE	1/10 WT LBS	597 SHEET
		3 OF 3

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. APPLY ANTI-SIEZE AND TORQUE ALL BOLTS PER VARCO SPEC. DS00008 AND LOCKWIRE
2. CLEAN AND LIGHTLY LUBRICATE ALL SEALS AND SEAL SURFACES PRIOR TO ASSEMBLY
3. FULLY TORQUE AND LOCK WIRE AT NEXT ASSEMBLY
4. TORQUE ITEM 18 UNTIL WASHER IS FLUSH WITH ITEM 16 (FRONT STABILIZER)
5. GREASE ALL GREASE FITTINGS AFTER NEXT ASSEMBLY
6. SECURE ITEM 26 SHOULDER BOLT USING 53200-262 LOCTITE (RED)

 CLEAN AND PRIMER EXTERNAL AREA OF PISTON INSTALL ITEMS 4, 6 AND 7. THEN APPLY A THIN LAYER OF SILICONE AROUND CYLINDER HEAD.




QTY REQD	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
2	30178854-05	SPLIT RING, SS		35
2	56405-20-C	PIN, CLEVIS		34
7	50012-16-C5D	SCREW, HEX HD		33
7	50912-C	WASHER, LOCK, REG		32
4	51108-C	WASHER, LOCK, HI COLLAR		31
4	50108-14-C	SCREW, CAP, SOC HEAD		30
2	16532	KEY		29
1	125158	STAB. GUIDE ASSY, NC50 - 5 1/2 FH (SET) (#6.25-#7.50 T.J.)		28
2	30125052	JAW ASSY, NC50 - 5 1/2 FH (#6.25-7.50)		27
2	30177109-04	MODIFIED, SHOULDER BOLT		26
2	79179	SPRING, DIE		25
				24
2	30158690	LINER, STABILIZER		23
8	50008-10-C5D	SCREW, HEX HD		22
2	30178859	RETAINER, HINGE PIN		21
2	51403-14-S	PIN, COTTER		20
4	50816-N-C	WASHER		19
2	50516-C	NUT, HEX, SLOTTED		18
2	117989	SCREW, HEX HD, DRILLED SHANK		17
1	30124898	STABILIZER, FRONT		16
6	53201	FITTING, GREASE		15
A/R	Z6001	LOCKWIRE, .051 DIA		14
1	118511	MANIFOLD ASSEMBLY, CLAMP CYLINDER		13
8	50908-C	WASHER, LOCK, REG		12
8	50005-20-C5D	SCREW, HEX HD		11
8	50905-C	WASHER, LOCK, REG		10
1	72221	RING, WIPER		9
1	72220	SEAL, ROD		8
2	72219	SEAL, PISTON		7
1	11085	RING, CYLINDER HEAD		6
2	30178847	PIN, HINGE		5
1	11075	CYLINDER HEAD		4
1	12820	PISTON		3
1	124902	GATE		2
1	30157221	BODY, CLAMP CYLINDER		1
QTY REQD	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.

UNLESS OTHERWISE SPECIFIED		INTERPRET DIM/TOL PER ASME Y14.5-M		DIMENSIONS ARE IN INCHES		ANGLES ± 3°		DO NOT SCALE DRAWING	
30157288	PH-75								
NEXT ASSY	USED ON	CURRENT	INITIAL						
APPLICATION		DRAWN	T.MILLER	G.QUIGLEY					
UNLESS OTHERWISE SPECIFIED	CHECKED	E.LEGER	D.SENEVIRATNE						
MACHINED	APPROV	B. BRAMAN	D.SENEVIRATNE						
220 MAX	DATE	10-21-05	8-02-01						
TORCH CUT									
1000 MAX									

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NATIONAL OILWELL VARCO
CLAMP, CYLINDER ASSEMBLY
PH-75

SCALE: .25 WT LBS: 1150 PROJECTION:  SIZE: D SHEET: 1 of 1
 DRAWING NUMBER: 30157287 REVISION: K

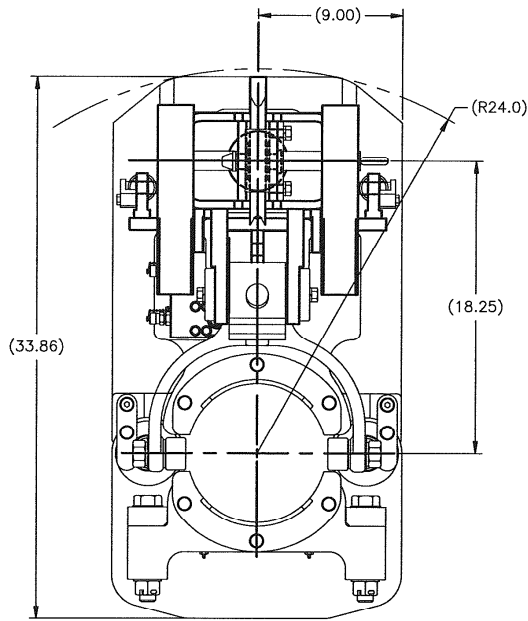
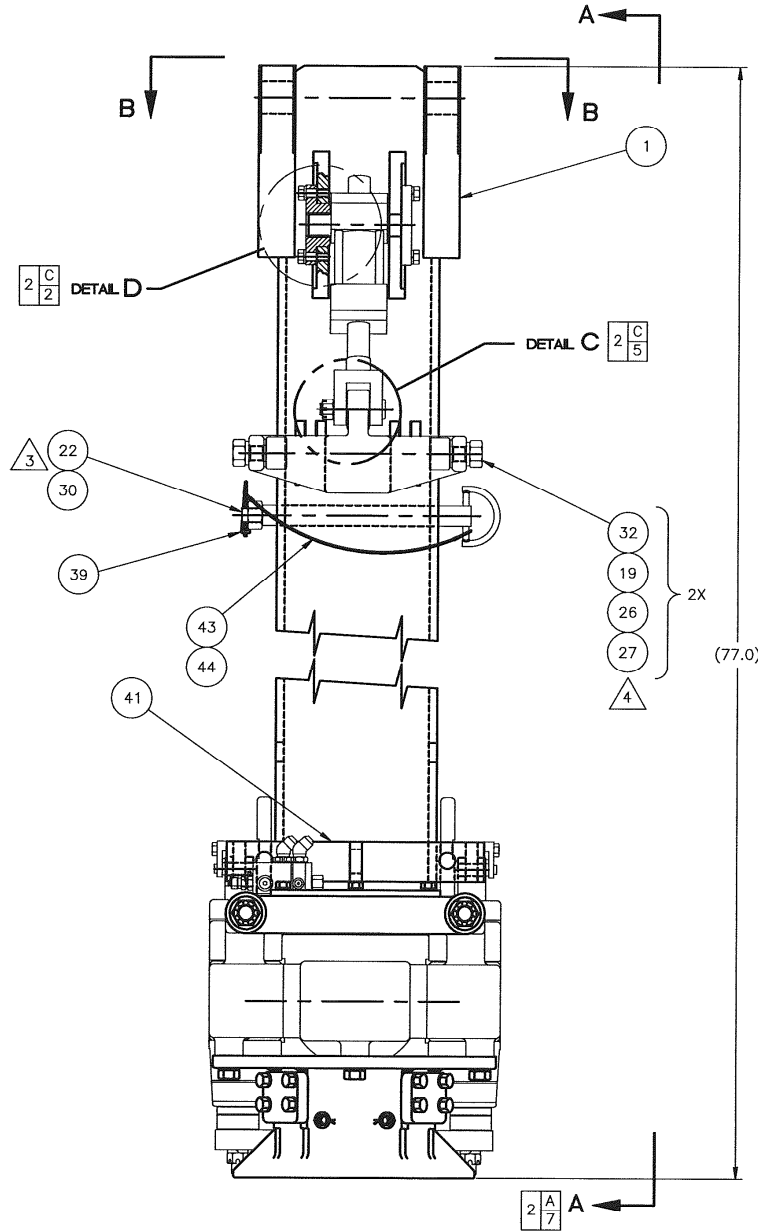
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. APPLY ANTI-SEIZE AND TORQUE ALL BOLTS PER VARCO SPEC DS00008 AND LOCKWIRE

2. DELETED (REMOVED CLAMP CYLINDER WINCH)

3. CLAMP CYLINDER SAFETY PIN (ITEM 22) SHOWN IN STORED POSITION. SEE DRAWING 30157366 FOR PIN/CLAMP CYLINDER POSITIONING INSTRUCTIONS

4. LOCKWIRE THE 30172060 NUT TO IBOP ACTUATOR YOKE.



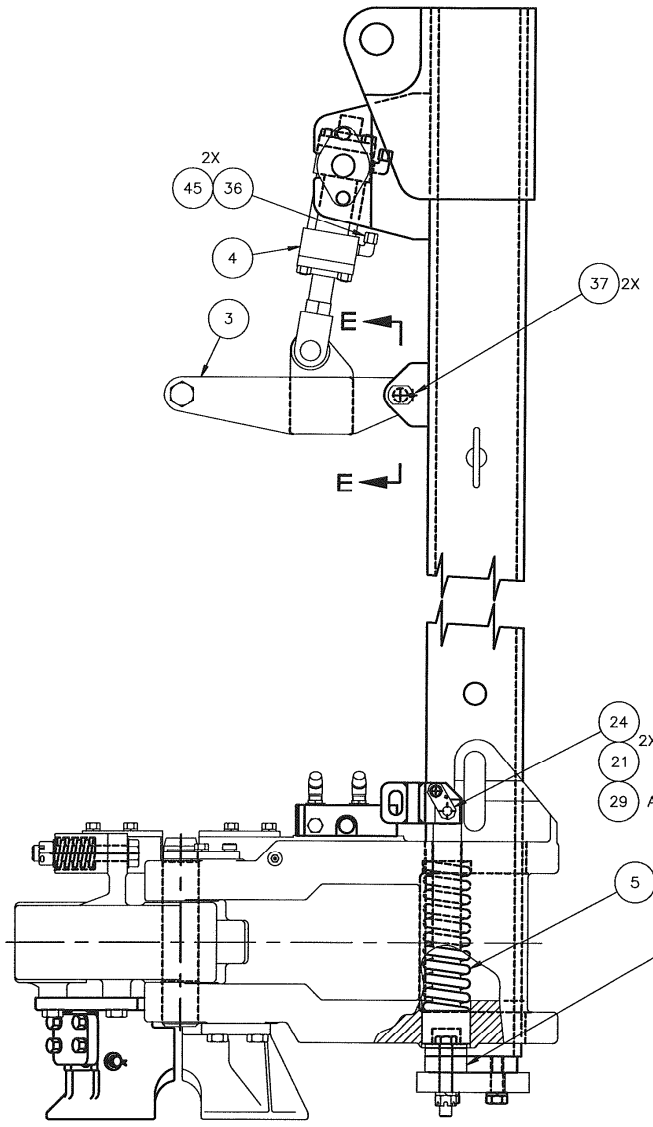
VIEW B-B

QTY	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
3	51435-16-S	PIN, COTTER		47
2	50516-S	NUT, HEX-SLOTTED		46
2	53406	PLUG, PLASTIC PIPE CLOSURE		45
2	51219-2	FERRULE, CABLE		44
1	51220-2	CABLE, Ø.063 X 24.0 LG, NYLON COATED		43
2	30157426	SCREW, DRILLED SHANK		42
1	30157297	HANGER, CLAMP CYLINDER		41
				40
1	30114259	PIN, SAFETY		39
				38
2	51604-6-C	PIN, ROLL, Ø.250 X .75 LG		37
2	56519-8-6-S	ELBOW, O-RING BOSS/37		36
				35
3	50512-C	NUT, HEX HD, SLOTTED		34
2	51402-12	PIN, COTTER		33
2	71847	ROLLER		32
				31
1	50216-C	NUT, HEX HD, STD		30
A/R	Z6001	LOCKWIRE (Ø.051)		29
4	50908-C	WASHER, LOCK, REG		28
2	30172060	NUT, HEX, MODIFIED, PH60/85		27
2	50914-C	WASHER, LOCK, REG		26
4	51012-C	WASHER, LOCK, HEAVY		25
2	30172825	PIN, PIVOT		24
4	50012-20-C5	SCREW, CAP, HEX HD		23
1	30172179	BAR, SAFETY, CLAMP CYLINDER		22
6	50008-12-C5	SCREW, CAP, HEX HD		21
2	118844-22-23	BEARING, SELF LUB, 1.375 ID X .50 LG		20
2	53208	FITTING, GREASE		19
				18
2	118844-16-12	BEARING, SELF LUB, 1.00 ID X .75 LG		17
2	118844-16-8	BEARING, SELF LUB, 1.00 ID X .50 LG		16
2	30157318-3	SPACER, SPRING		15
2	30157318-2	SPACER, SPRING		14
2	30157318-1	SPACER, SPRING		13
				12
2	30158766-1	PIN, PIVOT, YOKE		11
1	30172154	PIN, CYLINDER MOUNTING		10
2	30157292	POST, SPRING		9
2	121979	TRUNNION BUSHING, CYL MOUNT		8
				7
1	30157294	BOTTOM PLATE		6
2	30157308	SPRING		5
1	125594	CYLINDER ASSY, HYD, IBOP ACTUATOR		4
1	30157225	YOKE, IBOP ACTUATOR		3
1	30157287	CLAMP CYLINDER ASSEMBLY		2
1	30157226	TORQUE ARRESTOR, PIPE HANDLER		1

QTY REQD		LIST OF MATERIAL		ITEM NO.
PART NO.	DESCRIPTION	MATERIAL	ITEM NO.	
30157388	PH-75			
<p>VARCO SYSTEMS ASSY, TORQUE ARRESTOR PH-75</p>				
30157388	PH-75			
<p>PREPARED BY: H. SETH, G. QUIGLEY CHECKED BY: D. RICE, D. SENEVIRATNE APPROVED BY: D. RICE, D. SENEVIRATNE</p>				
<p>DATE: 02/01/03, 6/28/02, 1/4</p>				
<p>SCALE: 1/4</p>				
<p>REVISION: 1 OF 2</p>				

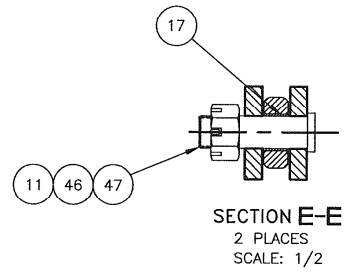
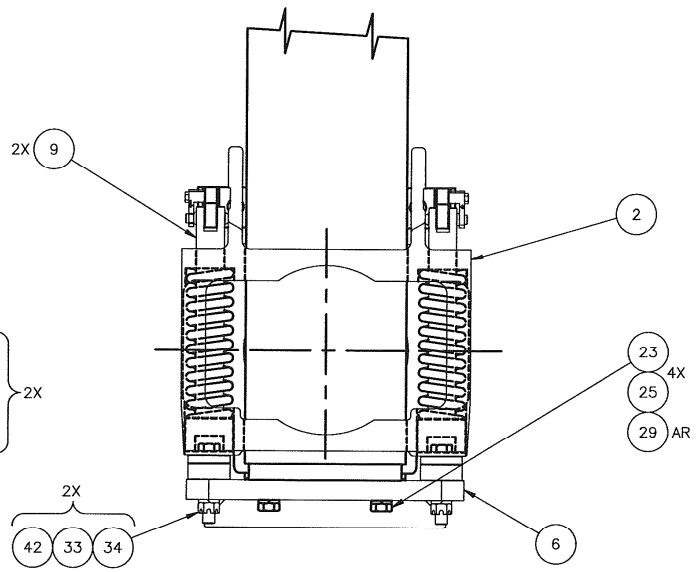
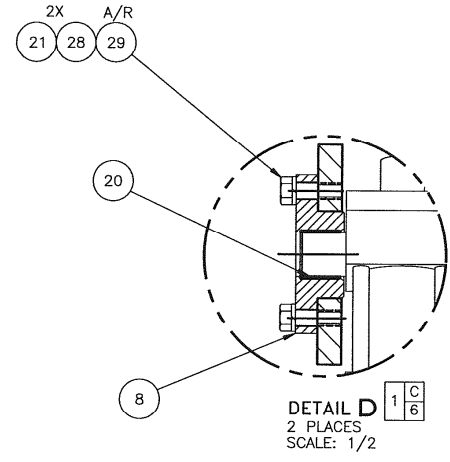
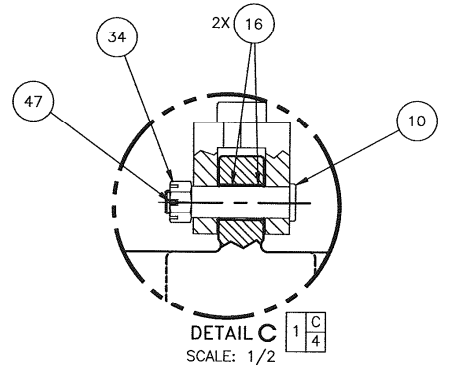
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VIEW A-A

2	A
4	



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TITLE
ASSY, TORQUE ARRESTOR
PH-75

SIZE D	DOCUMENT NO. 30157288	REVISION G
SCALE 1/4	SHEET 2	OF 2

NOTES: UNLESS OTHERWISE SPECIFIED

1. PAINT PER VARCO VPS0001, YELLOW.

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C

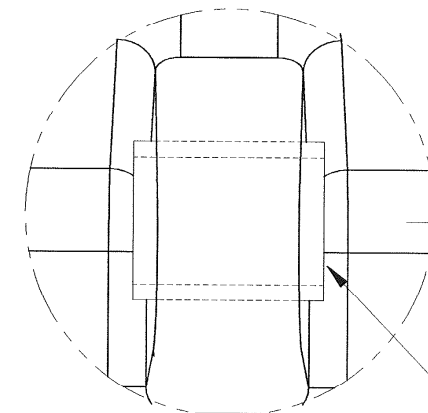
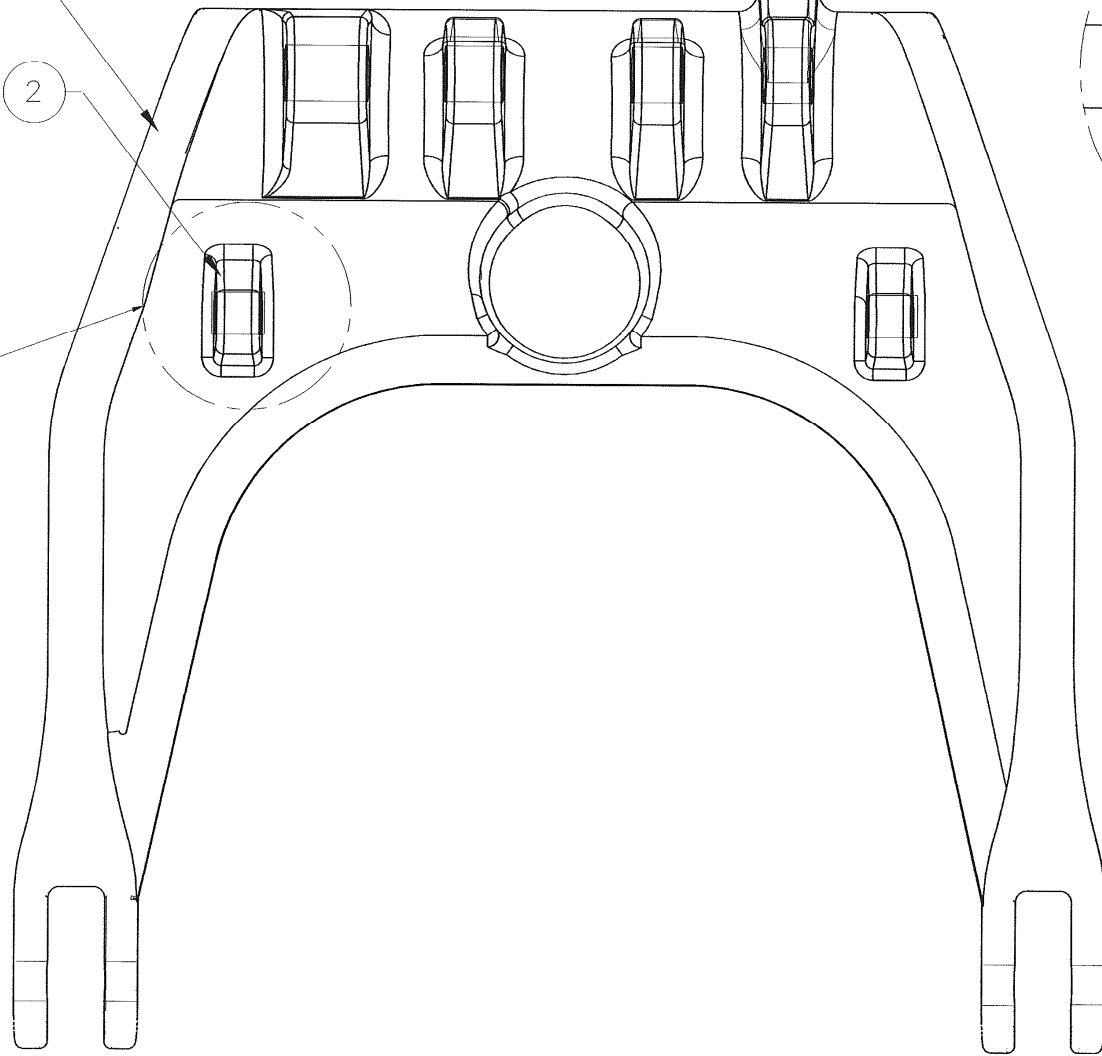
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SEE DETAIL A



2

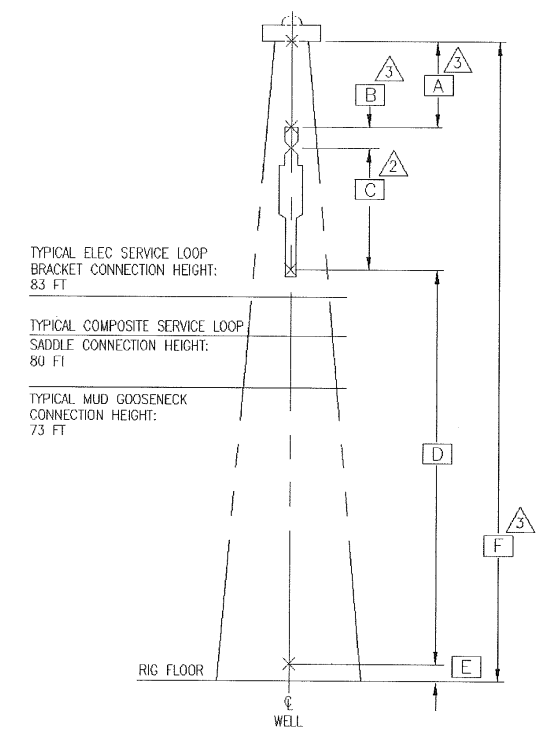
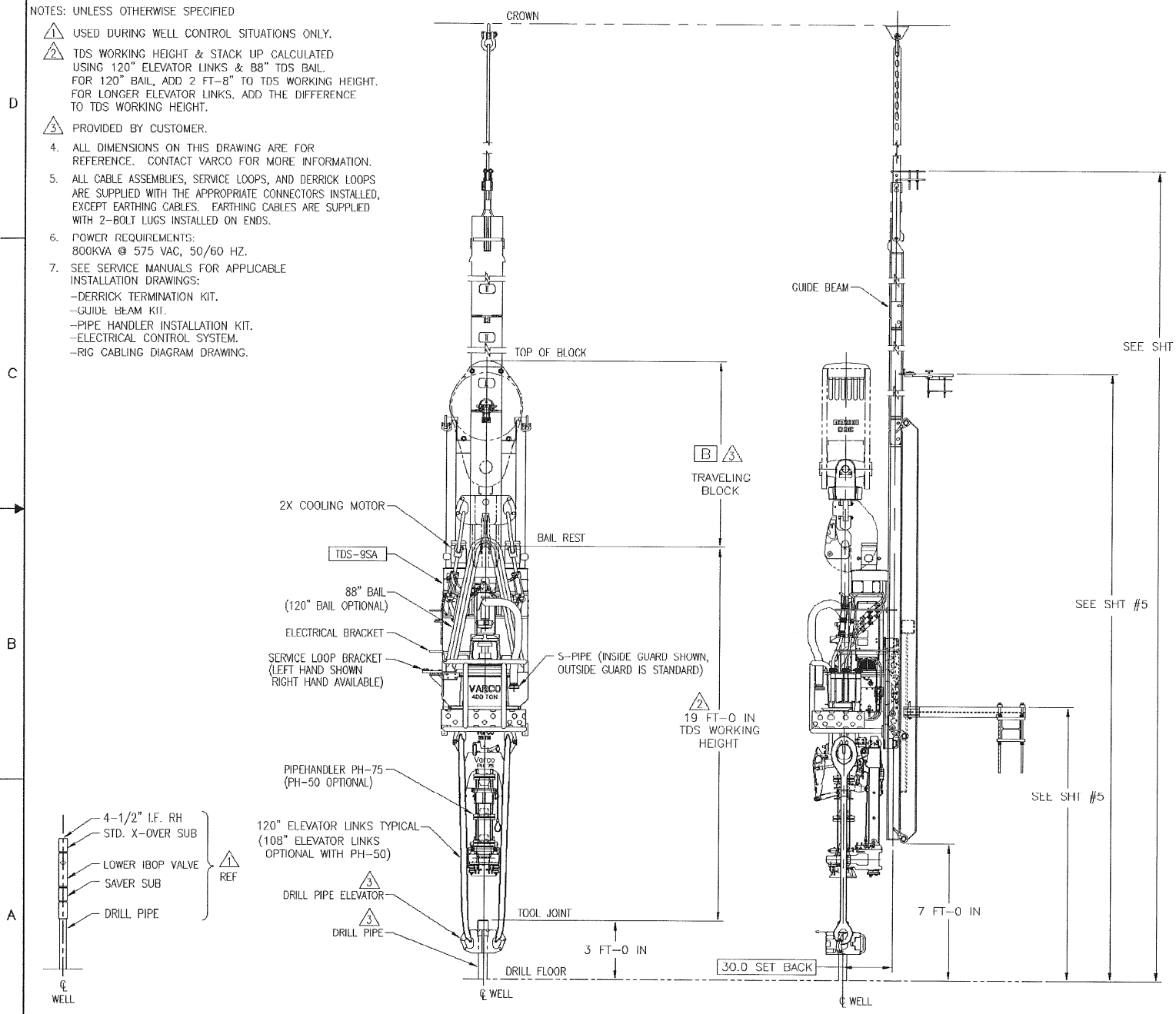
CENTERFD

DETAIL - A
SCALE: 1/1

2 PLACES

2	118844-16-24	BUSHING, FIBREGLIDE		2
1	30158188	CRANK, ASSEMBLY		1
	PART NO.	DESCRIPTION	MATERIAL	REV
LIST OF MATERIAL				
QTY REQD PART FLAGS <input type="checkbox"/> TRACEABILITY <input type="checkbox"/> CRITICAL LOAD <input type="checkbox"/> PATH ITEM <input type="checkbox"/> CERTIFICATION REQUIRED <input type="checkbox"/> SPARE PART <input type="checkbox"/> COMMISSIONING <input type="checkbox"/> OPERATIONAL <input type="checkbox"/> INSURANCE DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES TOLERANCES PER ANSI Y14.5 & ABBREVIATIONS PER ANSI Y11.1 DO NOT SCALE XX ± 0.50 XXX ± 0.10 SURFACE FINISHES MILL/TEXT 250/ANX TURN/OUT 1000/ANX TITLE CRANK, ASSEMBLY Varco Systems A World of Options 117820 TDS-9S NEXT ASSY PRODUCT SIZE D DOCUMENT NO. 30158189 REVISION PREPARED BY A. GLOCKNER CHECKED BY D SENEVIRATNE DATE 2/12/02 SCALE 1/3 WEIGHT 204 SHEET 1 OF 1				

- NOTES: UNLESS OTHERWISE SPECIFIED
- ⚠ USED DURING WELL CONTROL SITUATIONS ONLY.
 - ⚠ TDS WORKING HEIGHT & STACK UP CALCULATED USING 120" ELEVATOR LINKS & 88" TDS BAIL. FOR 120" BAIL, ADD 2 FT-8" TO TDS WORKING HEIGHT. FOR LONGER ELEVATOR LINKS, ADD THE DIFFERENCE TO TDS WORKING HEIGHT.
 - ⚠ PROVIDED BY CUSTOMER.
 - 4. ALL DIMENSIONS ON THIS DRAWING ARE FOR REFERENCE. CONTACT VARCO FOR MORE INFORMATION.
 - 5. ALL CABLE ASSEMBLIES, SERVICE LOOPS, AND DERRICK LOOPS ARE SUPPLIED WITH THE APPROPRIATE CONNECTORS INSTALLED, EXCEPT EARTHING CABLES. EARTHING CABLES ARE SUPPLIED WITH 2-BOLT LUGS INSTALLED ON ENDS.
 - 6. POWER REQUIREMENTS: 800KVA @ 575 VAC, 50/60 HZ.
 - 7. SEE SERVICE MANUALS FOR APPLICABLE INSTALLATION DRAWINGS:
 - DERRICK TERMINATION KIT.
 - GUIDE BEAM KIT.
 - PIPE HANDLER INSTALLATION KIT.
 - ELECTRICAL CONTROL SYSTEM.
 - RIG CABLING DIAGRAM DRAWING.

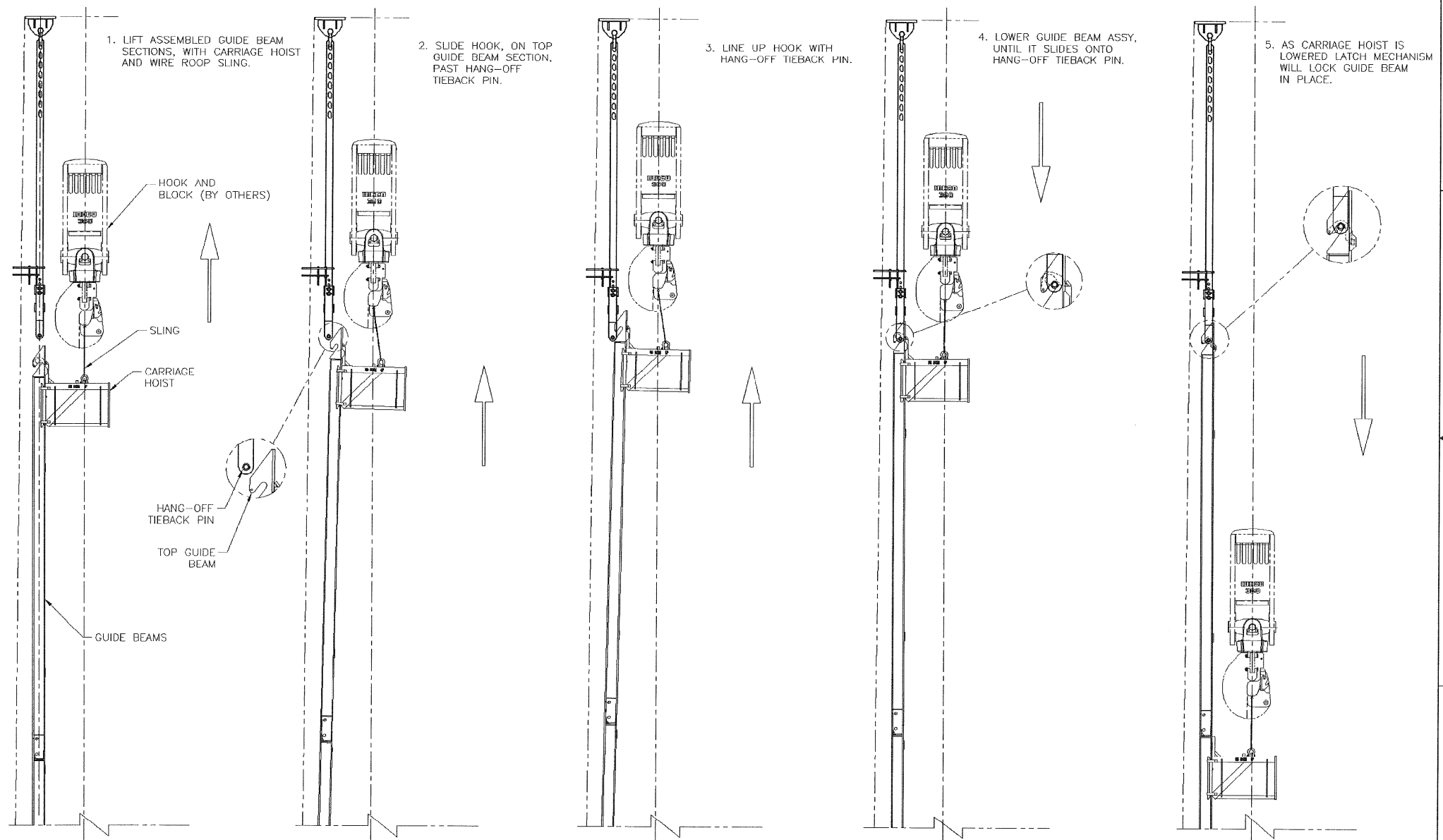


DERRICK/MAST INTERFACE DIMENSIONS		
DERRICK/MAST CLEARANCE HEIGHT	A	⚠
TRAVELING BLOCK	B	⚠
TDS WORKING HEIGHT	C	19FT-0 IN ⚠
DRILL PIPE STAND	D	93 FT-0 IN ⚠
TOOL JOINT CONNECTION	E	3 FT-0 IN ⚠
CROWN CLEARANCE WHILE TRIPPING	F	⚠

TDS WEIGHT	
TDS WITHOUT PH-75	: 25,250 LBS
PH-75	: 5,150 LBS
GUIDE BEAM KIT	: 17,000 LBS
TOTAL SYSTEM	: _____ LBS

PART FLAGS <input type="checkbox"/> TRACEABILITY <input type="checkbox"/> CRITICAL LOAD <input type="checkbox"/> PATH ITEM <input type="checkbox"/> CERTIFICATION REQUIRED SPARE PART <input type="checkbox"/> COMMISSIONING <input type="checkbox"/> OPERATIONAL <input type="checkbox"/> INSURANCE <input type="checkbox"/> THIRD PARTY PRODUCTION	DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES. TOLERANCES FOR ANGLES & ABBREVIATIONS PER ANSI Y14.9 DO NOT SCALE. * ±.1 CAN BE TYPED OUT * .030, .005, & .010 DOCUMENTED ANGULAR TOLERANCE ±.030 PER DRAWING CONVENTION. OTHERWISE, ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED TO OTHERWISE BE OBSERVED TO OTHERS FOR ANY PURPOSE, ARE USED FOR MANUFACTURING PURPOSES WITHIN TOLERANCE FROM VARCO INTERNATIONAL, INC.	SURFACE FINISHES: MACHINED TO FINISH POLISHED TO FINISH TDS-9SA PRODUCT NEXT ASSY	Varco Systems GENERAL ARRANGEMENT, STANDARD TDS-9SA	
			TITLE SIZE D SCALE 1/20 SHEET 1 OF 5	DOCUMENT NO. 30170540 WEIGHT LB 35.00

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1. LIFT ASSEMBLED GUIDE BEAM SECTIONS, WITH CARRIAGE HOIST AND WIRE ROOP SLING.

2. SLIDE HOOK, ON TOP GUIDE BEAM SECTION, PAST HANG-OFF TIEBACK PIN.

3. LINE UP HOOK WITH HANG-OFF TIEBACK PIN.

4. LOWER GUIDE BEAM ASSY, UNTIL IT SLIDES ONTO HANG-OFF TIEBACK PIN.

5. AS CARRIAGE HOIST IS LOWERED LATCH MECHANISM WILL LOCK GUIDE BEAM IN PLACE.

HOOK AND BLOCK (BY OTHERS)

SLING

CARRIAGE HOIST

HANG-OFF TIEBACK PIN

TOP GUIDE BEAM

GUIDE BEAMS

TYPICAL GUIDE BEAM HANGING PROCEDURE

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TITLE GENERAL ARRANGEMENT, STANDARD TDS-95A

SIZE D	DOCUMENT NO. 30170540	REVISION -
SCALE 1/30	SHEET 2	OF 5

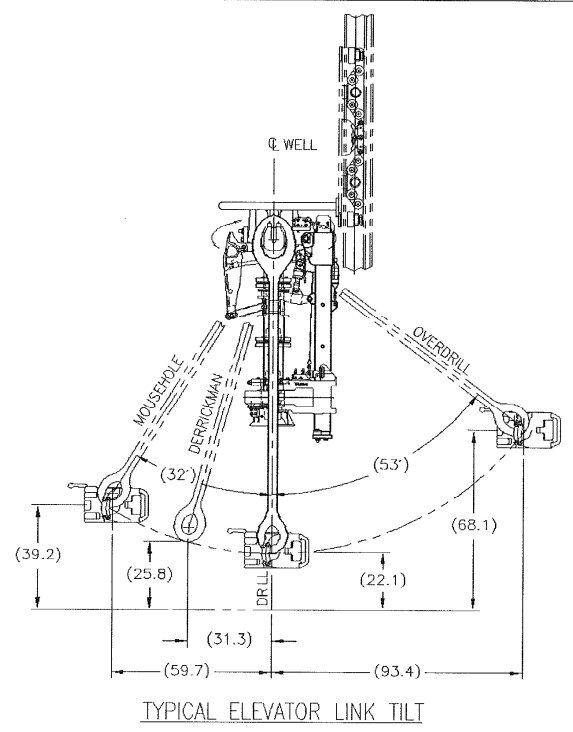
Released - 01/31/2003 12:43:29P

DCF0022 (REV B)

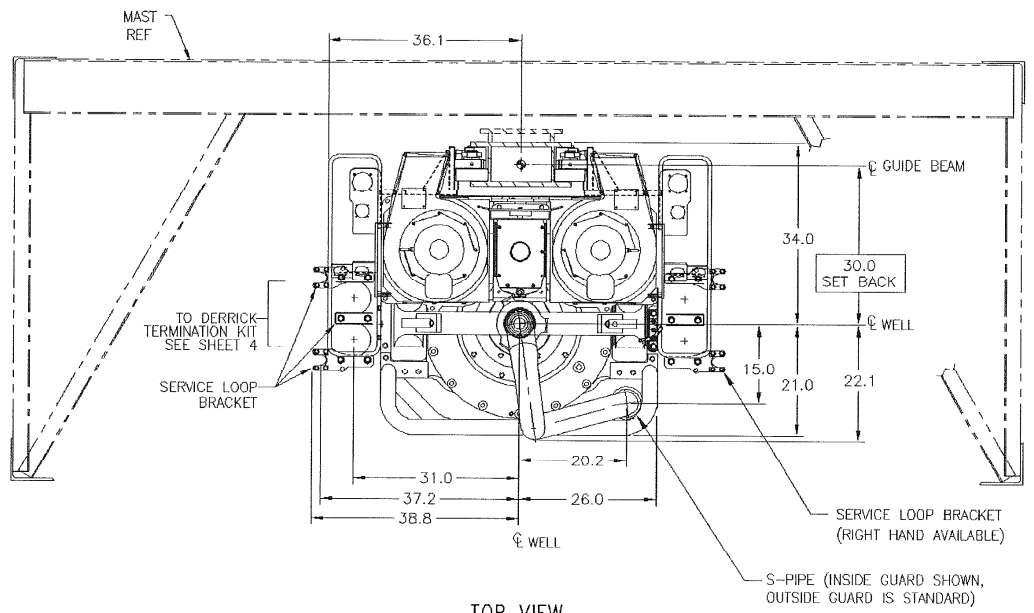
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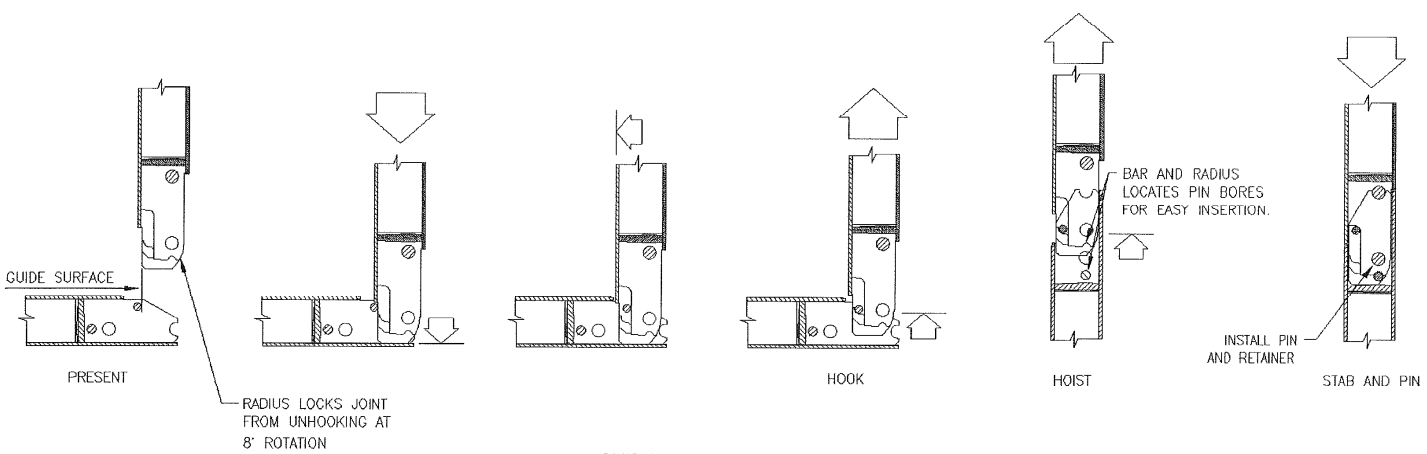
TYPICAL ELEVATOR LINK TILT



TOP VIEW
TYPICAL MAST SECTION SHOWN

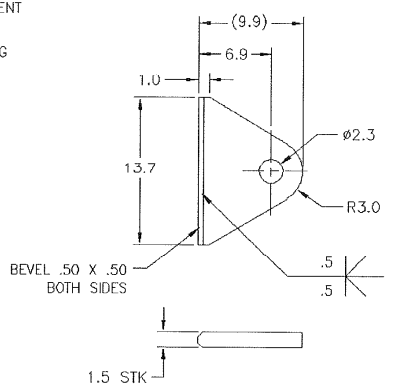
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GUIDE BEAM JOINT CONNECTION SEQUENCE

SAMPLE CROWN PADEYE
UPPER GUIDE BEAM ATTACHMENT
SCALE: 1/4
PADEYE: 25 TONS RATING



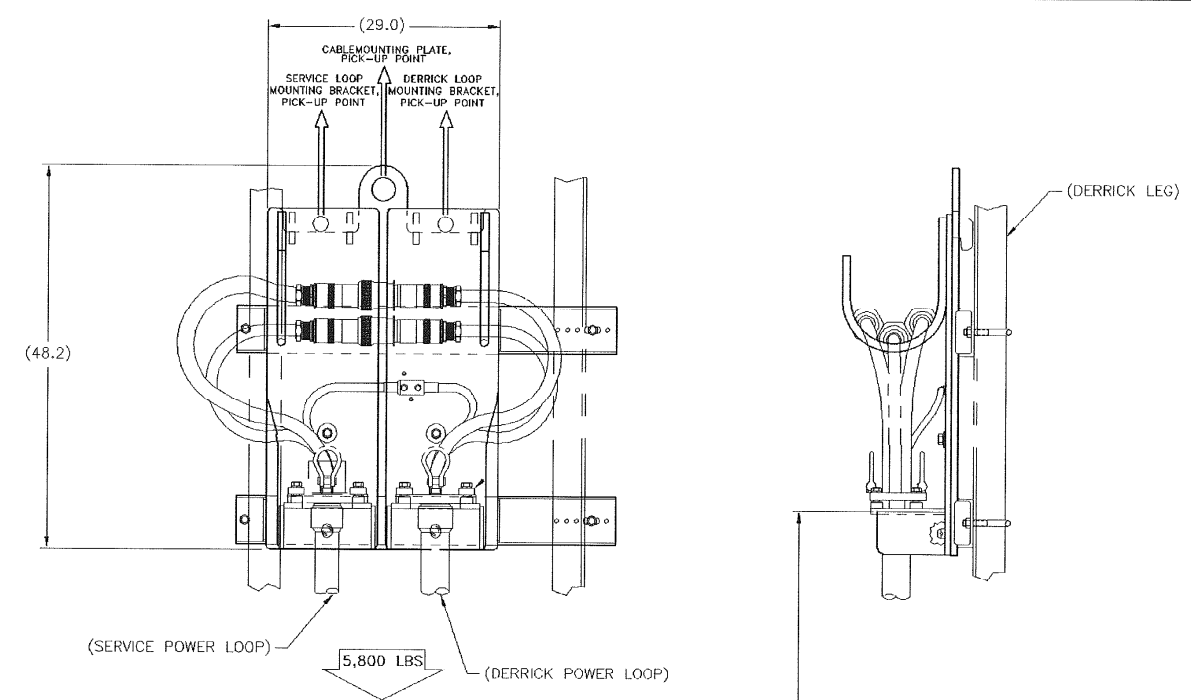
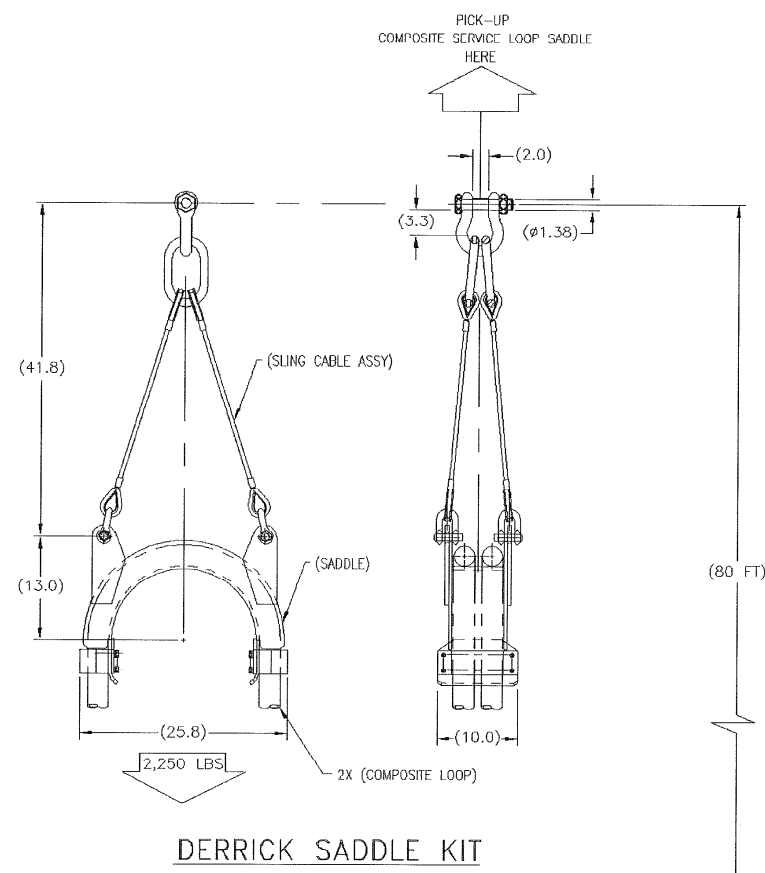
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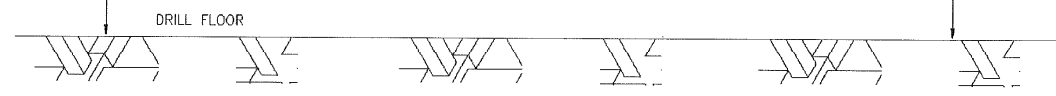
FILE	GENERAL ARRANGEMENT, STANDARD TDS-9SA	SIZE	D	DOCUMENT NO.	30170540	REVISION	-
SCALE	1/1	SHEET	3	OF	5		

D
C
B
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D
C
B
A



DERRICK TERMINATION KIT



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TITLE	GENERAL ARRANGEMENT, STANDARD TDS-95A	SIZE	D	DOCUMENT NO.	30170540	REVISION	-
SCALE	1/8"	SHEET	4	OF	5		

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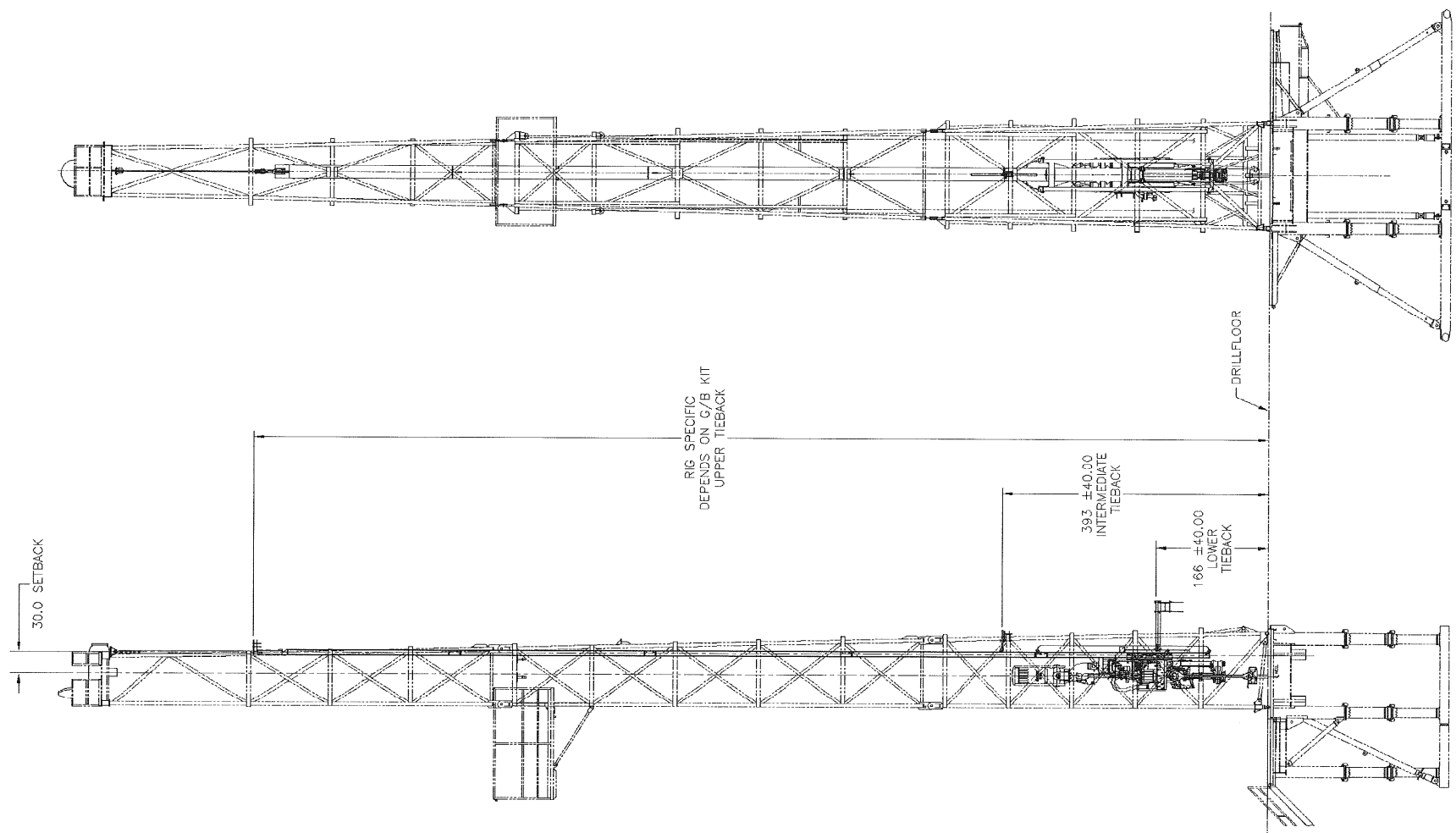
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B

A

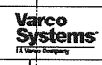
A



REAR ELEVATION

OFF DRILLERS SIDE ELEVATION

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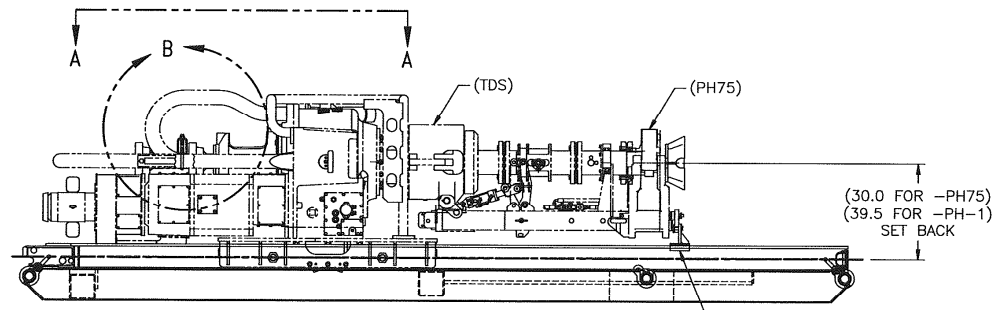


TITLE
GENERAL ARRANGEMENT,
STANDARD TDS-95A

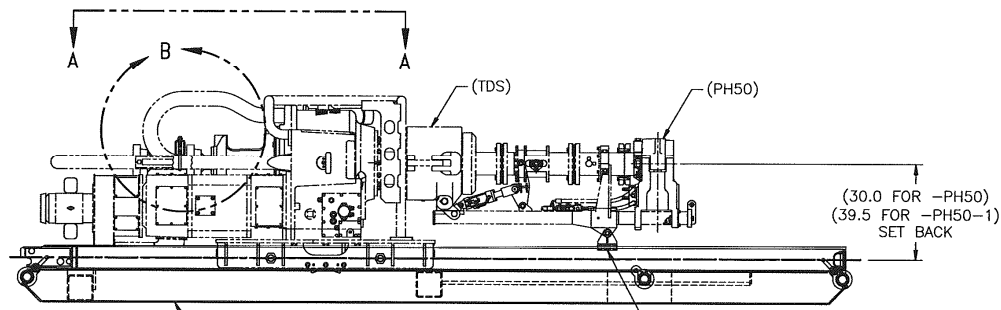
SIZE	DOCUMENT NO.	REVISION
D	30170540	-
SCALE	SHEET	OF
1/1	5	5

Released - 01/31/2003 J243:18P

NOTES: UNLESS OTHERWISE SPECIFIED,



CONFIGURATION -PH75
SAME AS COIFFURATION -PH50
EXCEPT AS SHOWN



CONFIGURATION -PH50

1	-	-	124345-501	BRACKET ASSY, SKID, 39.5" SET BACK	8
-	1	-	30170891-501	BRACKET ASSY, SHIPPING, 39.5"	7
-	1	-	30170891	BRACKET ASSY, SHIPPING, 30.0"	6
-	-	1	124345	BRACKET ASSY, SKID, 30.0" SET BACK	5
1	1	1	30113497	U-BOLT, 1.00-8	4
1	1	1	30113498	TUBE, 3" X 5" X 32"	3
2	2	2	50216-C	NUT, 1.00-8	2
1	1	1	30154382	GUIDE BEAM BOTTOM SECTION	1
PH5-1 PH5-1 PH75-1 PH50 QTY RECD PART NO. DESCRIPTION ITEM NO.					

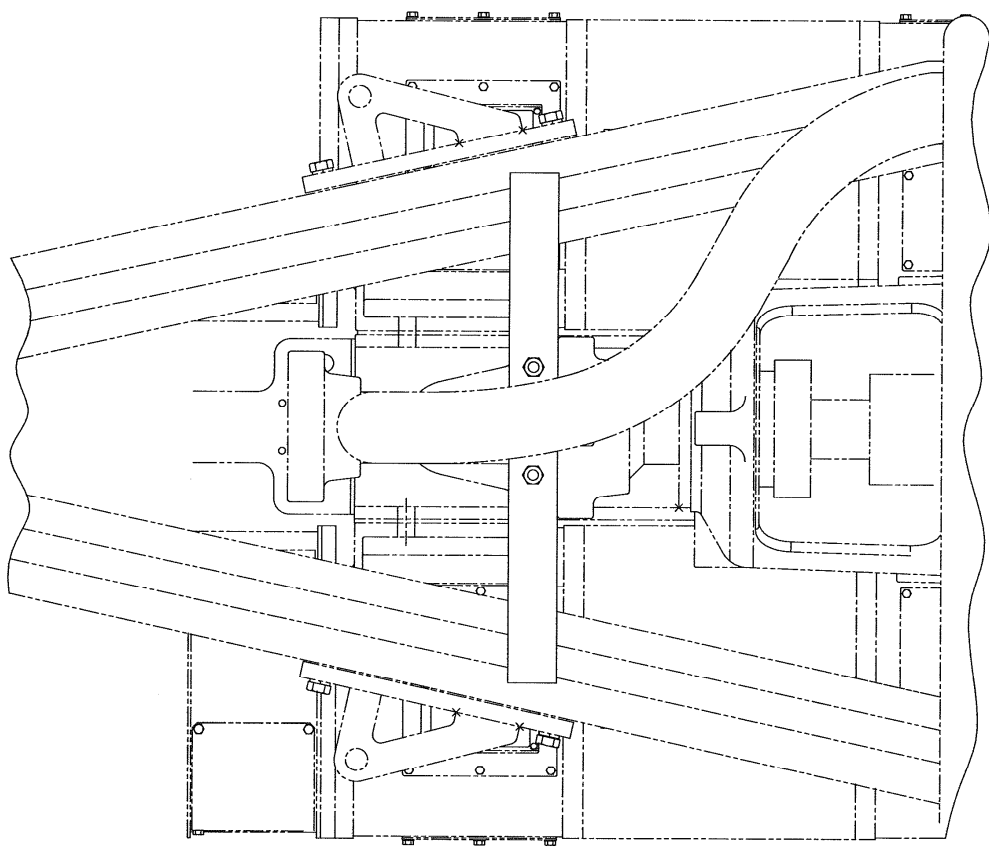
PART FLAGS <input type="checkbox"/> TRACEABILITY <input type="checkbox"/> CONTROL LOAD <input type="checkbox"/> PART ID <input type="checkbox"/> IDENTIFICATION <input type="checkbox"/> SPARE PART <input type="checkbox"/> COMPRESSION <input type="checkbox"/> OPERATIONAL <input type="checkbox"/> MARRIAGE		AMERICAN UNLESS OTHERWISE SPECIFIED ARE IN DIMENSIONS DO NOT SCALE UNLESS TOLERANCE IS SHOWN UNLESS OTHERWISE SPECIFIED		SURFACE FINISHES UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED		TITLE SHIPPING PACKAGE, TDS-9/11SA	
PREPARED BY M. HERNANDEZ		CHECKED BY T. CLARK		APPROVED BY T. CLARK		DATE 12/07/02	
SCALE 1/20		WEIGHT LB 5000		SHEET NO 1		OF 2	

D

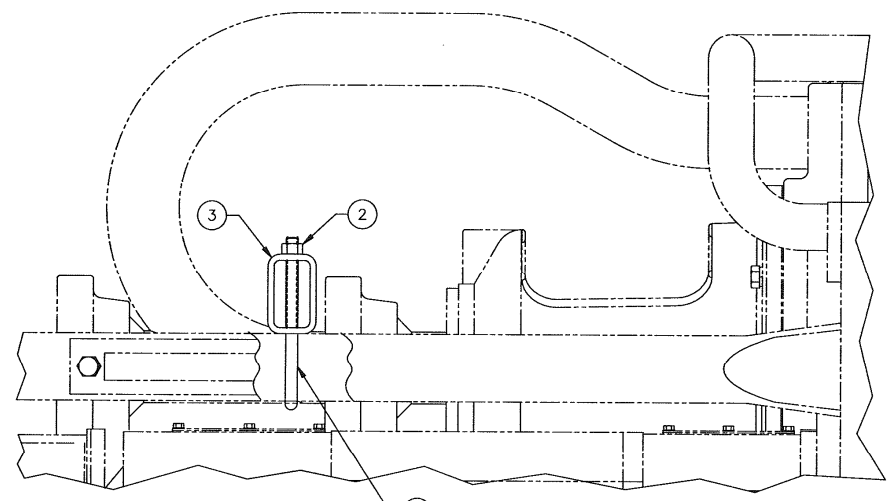
C

B

A



VIEW A-A



DETAIL B

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TITLE SHIPPING PACKAGE, TDS-9/11SA

SIZE D	DOCUMENT NO. 30171423	REVISION C
SCALE 1/4	SHEET 2	OF 2

Released - 07/22/2003 02:22:54P

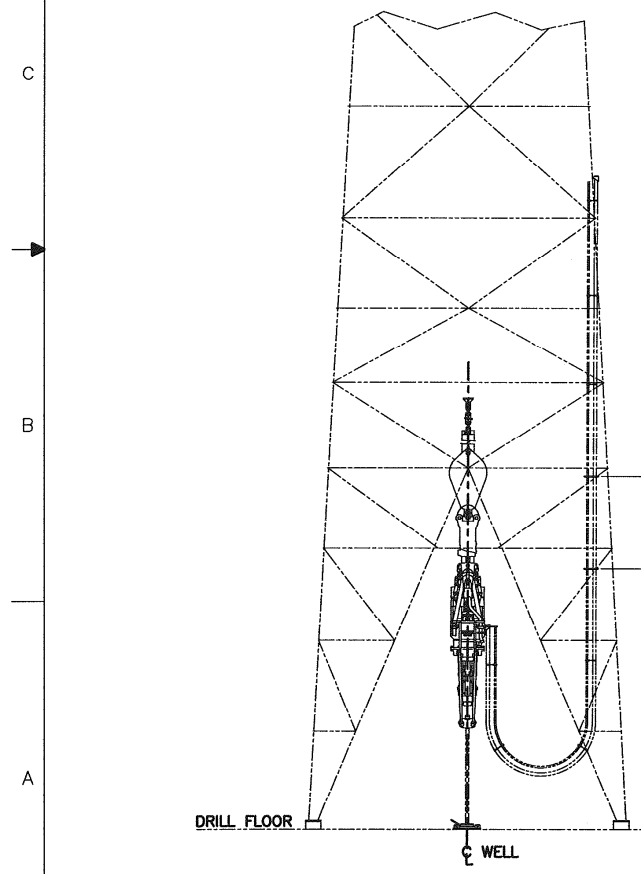
DCF0022 (REV B)

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 SERVICE LOOP SUPPORTS, ITEMS 4 AND 5 TO BE EVENLY SPACED, 7 TO 10 FEET APART, AS REQUIRED.
- 2 -86-200 IS STANDARD.
- 3. THIS DRAWING SUPERSEDES DWG. 124973 (SEE REV C).



TABLE 1					
DASH NO.	ITEM #1 PART NO.	ITEM #2 PART NO.	ITEM #3 PART NO.	REMARKS (ITEM # 1 ONLY)	REMARKS (ITEM # 2 AND # 3 ONLY)
-86-200	30175883-86-4-3-B	122517-200-25-3-B	124457-200-25-4-B	86 FT. MAIN POWER LOOP WITH 4 FT. DERRICK PIGTAILS AND 3 FT MOTOR PIGTAILS	200 FT. COMPOSITE & AUX. POWER LOOP WITH 25 FT. DERRICK PIGTAILS & 3 FT. TDS SERVICE LOOP BRACKET PIGTAILS
-75-200	30175883-75-4-3-B	122517-200-25-3-B	124457-200-25-4-B	75 FT. MAIN POWER LOOP WITH 4 FT. DERRICK PIGTAILS AND 3 FT MOTOR PIGTAILS	200 FT. COMPOSITE & AUX. POWER LOOP WITH 25 FT. DERRICK PIGTAILS & 3 FT. TDS SERVICE LOOP BRACKET PIGTAILS
-65-200	30175883-65-4-3-B	122517-200-25-3-B	124457-200-25-4-B	65 FT. MAIN POWER LOOP WITH 4 FT. DERRICK PIGTAILS AND 3 FT MOTOR PIGTAILS	200 FT. COMPOSITE & AUX. POWER LOOP WITH 25 FT. DERRICK PIGTAILS & 3 FT. TDS SERVICE LOOP BRACKET PIGTAILS
-86-86	30175883-86-4-3-B	122517-86-4-3-B	124457-86-4-4-B	86 FT. MAIN POWER LOOP WITH 4 FT. DERRICK PIGTAILS AND 3 FT MOTOR PIGTAILS	86 FT. COMPOSITE & AUX. POWER LOOP WITH 4 FT. DERRICK PIGTAILS & 3 FT. TDS SERVICE LOOP BRACKET PIGTAILS
-101-101	30175883-101-4-3-B	122517-101-4-3-B	124457-101-4-4-B	101 FT. MAIN POWER LOOP WITH 4 FT. DERRICK PIGTAILS AND 3 FT MOTOR PIGTAILS	101 FT. COMPOSITE & AUX. POWER LOOP WITH 4 FT. DERRICK PIGTAILS & 3 FT. TDS SERVICE LOOP BRACKET PIGTAILS

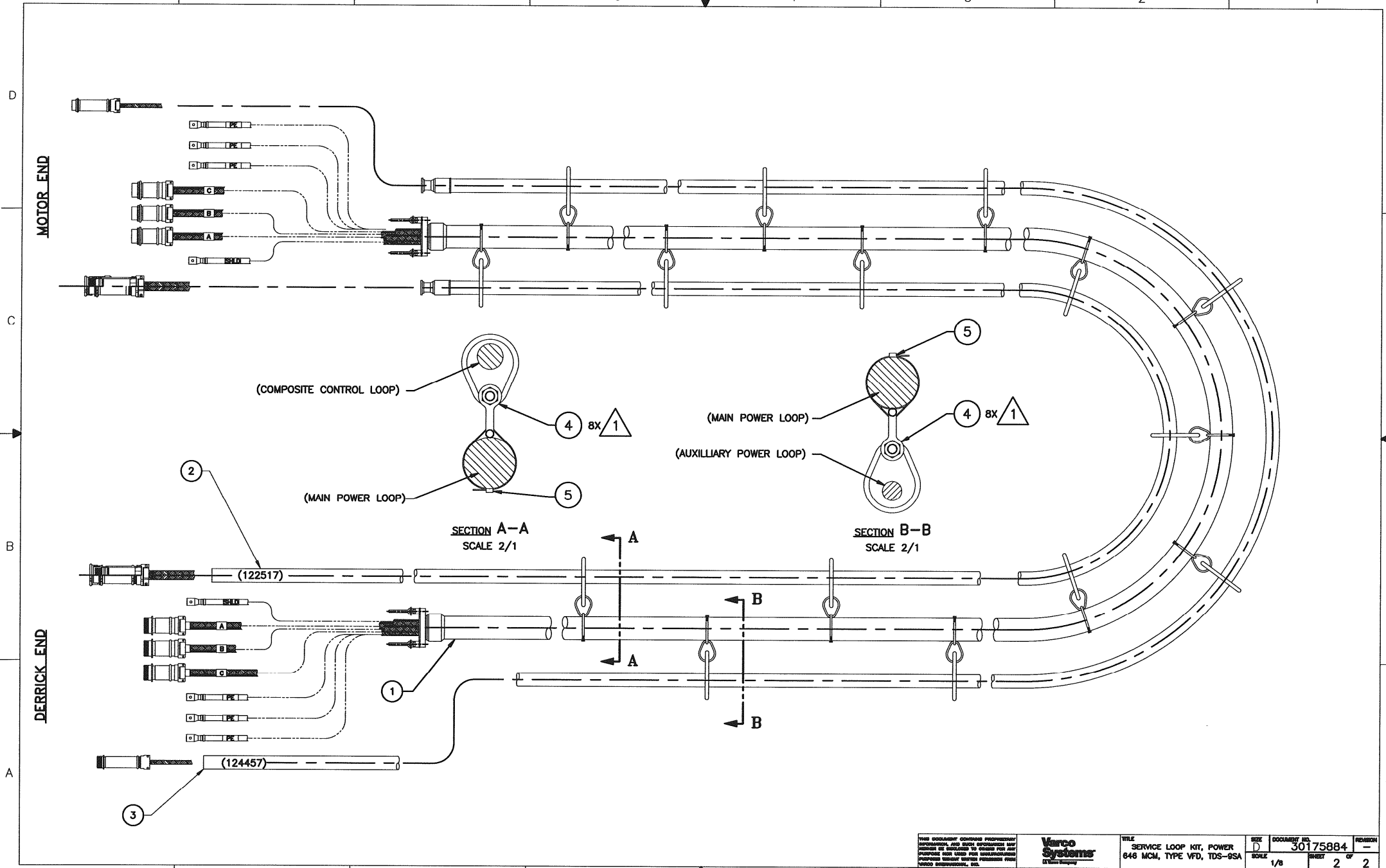


30175884-XX-XXX

- 86 = 86 FOOT AUXILIARY POWER/COMPOSITE CABLE
- 101 = 101 FOOT AUXILIARY POWER/COMPOSITE CABLE
- 200 = 200FOOT AUXILIARY POWER/COMPOSITE CABLE
- 65 = 65 FOOT FLANGE/FLANGE W/4 FOOT DERRICK AND 3 FOOT MOTOR LEADS
- 75 = 75 FOOT FLANGE/FLANGE W/4 FOOT DERRICK AND 3 FOOT MOTOR LEADS
- 86 = 86 FOOT FLANGE/FLANGE W/4 FOOT DERRICK AND 3 FOOT MOTOR LEADS
- 101 = 101FOOT FLANGE/FLANGE W/4 FOOT DERRICK AND 3 FOOT MOTOR LEADS
- BASIC PART NUMBER

7 TO 10 FEET APPROX SPACING OF SUPPORTS 1

50	117121-500	CABLE TIE	5	
16	117125	RING ASSEMBLY	4	
1	SEE TABLE 1	AUX POWER LOOP ASSY, W/CONNECTORS	3	
1	SEE TABLE 1	COMPOSITE CONTROL LOOP ASSY, W/CONNECTORS	2	
1	SEE TABLE 1	POWER LOOP ASSY, W/CONNECTORS (3 X 646 MCM)	1	
QTY REQD		PART NO.	DESCRIPTION	ITEM NO.
LIST OF MATERIALS				
PART FLAGS		DIMENSIONS (UNLESS OTHERWISE SPECIFIED)		SURFACE FINISHES
<input type="checkbox"/> UNDESIRABLE	ARE IN	SHOWN		AS NOTED
<input type="checkbox"/> CRITICAL LEAD	CONSTRUCTION	TOLERANCES PER ANSI Y14.5		FINISHES PER ANSI Y14.1
<input type="checkbox"/> CONTROL LEAD	DO NOT	SCALE		SCALE
<input type="checkbox"/> CONSTRUCTION	SCALE	TOLERANCES PER ANSI Y14.5		SCALE
<input type="checkbox"/> RECORD	SCALE	TOLERANCES PER ANSI Y14.5		SCALE
SPARE PART		DOCUMENT		ANALOGUE TOLERANCE
<input type="checkbox"/> COMMISSIONING	FOR RECORD	FOR RECORD		FOR RECORD
<input type="checkbox"/> OPERATIONAL	FOR RECORD	FOR RECORD		FOR RECORD
<input type="checkbox"/> INSPECTION	FOR RECORD	FOR RECORD		FOR RECORD
TITLE		PRODUCT		SIZE
SERVICE LOOP KIT, POWER		TDS-GSA		DOCUMENT NO.
646 MCM, TYPE VFD,TDS-GS		TDS-GSA		30175884
REVISION		DATE		OF
1		7-19-04		2
PREPARED BY		CHECKED BY		SCALE
J.Foydock		T. GOODWIN		1/8
LTR		T. GOODWIN		1
7-19-04		DATE		2



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TITLE	SERVICE LOOP KIT, POWER	SIZE	D	DOCUMENT NO.	30175884	REVISION	-
	646 MCM, TYPE VFD, TDS-9SA	SCALE	1/8	SHEET	2	OF	2

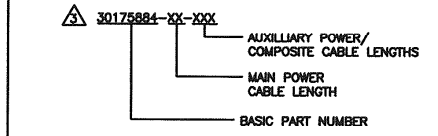
NOTES: UNLESS OTHERWISE SPECIFIED

- 1. ALL CABLE ASSEMBLIES, SERVICE LOOPS, AND DERRICK LOOPS ARE SUPPLIED WITH THE APPROPRIATE CONNECTORS INSTALLED, EXCEPT EARTHING CABLES. EARTHING CABLES ARE SUPPLIED WITH LUGS INSTALLED ON ENDS.
- 2. MAXIMUM HOSED LENGTH IS 200 FEET.
- 3. DESIGNATORS FOR SERVICE LOOP CABLE KIT DEFINE DIFFERENT CABLE LENGTHS WITHIN SAME KIT.
- 4. CABLE SUPPLIED W/ OPTIONAL VDC HEATER KIT: P/N 30150895
- 5. CABLE JUMPER CABLE KIT IS OPTIONAL.
- 6. THIS DRAWING SUPERSEDES DWG. 125333 (SEE REV B)

CABLE KIT, INCOMING POWER		
CHECK ONE	LENGTH (FT)	KIT PART NO.
	50	125274-50
	100	125274-100
	150	125274-150
	175	125274-175
	200	125274-200
	NONE	

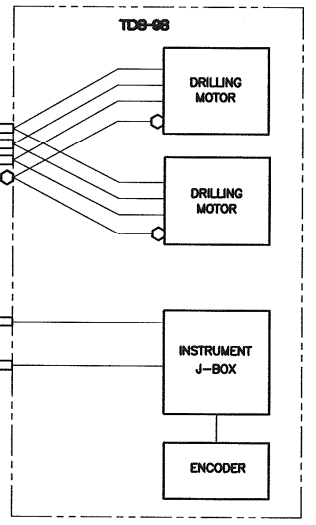
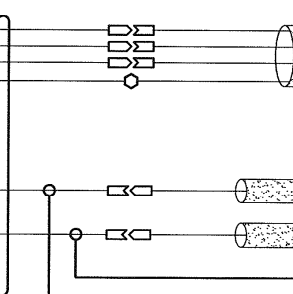
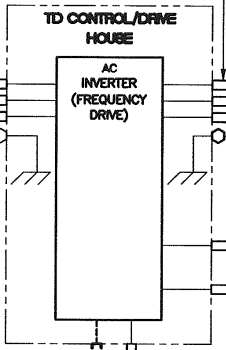
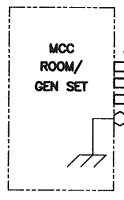
DERRICK LOOP ASSEMBLY		
CHECK ONE	LENGTH (FT)	PART NO.
	135	124975-135-25-4-B
	NONE	

CABLE KIT, SERVICE LOOP		
CHECK ONE	LENGTH (FT)	KIT PART NO.
	86	30175884-86-200



BULKHEAD CONNECTORS SUPPLIED IN KIT P/N 114738 (PURCHASED SEPARATELY)

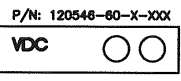
BULKHEAD CONNECTORS SUPPLIED WITH HOUSE 2 SIDES



VDC HTR CABLE ASSEMBLY		
CHECK ONE	LENGTH (FT)	ASSY PART NO.
	50	30155867-50-B
	100	30155867-100-B
	150	30155867-150-B
	175	30155867-175-B
	200	30155867-200-B
	NONE	

VDC CABLE ASSEMBLY		
CHECK ONE	LENGTH (FT)	ASSY PART NO.
	50	122443-50-B
	100	122443-100-B
	150	122443-150-B
	175	122443-175-B
	200	122443-200-B
	NONE	

CABLE KIT, JUMPER		
CHECK ONE	LENGTH (FT)	KIT PART NO.
	50	124977-50
	100	124977-100
	150	124977-150
	175	124977-175
	200	124977-200
	NONE	



PART FLAGS	UNLESS OTHERWISE SPECIFIED	SURFACE FINISHES	Verco Systems
<input type="checkbox"/> TRACEABILITY	ARE IN	2000/HR	TITLE RIG CABLING SELECT DIAGRAM TDS-9S
<input type="checkbox"/> CONTROL LOAD	TOLERANCES FOR ANG. YLDR & APPROXIMATIONS PER ANG. YL.1	2000/HR	
<input type="checkbox"/> DIMENSION FROM FIG.	1/2 & 1/4 DIA. BE WOOD CUT		REV D
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		SCALE 1/1
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		DATE 6/23/04
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		PREPARED BY J.Faydock
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		CHECKED BY T. GOODWIN
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		APPROVED BY T. GOODWIN
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		DATE 6/23/04
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		SCALE 1/1
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		REVISION 1 OF 1
<input type="checkbox"/> DIMENSION FROM CENTER	1/2 & 1/4 DIA. BE WOOD CUT		Released - 07/28/2004 01:06:30P



TDS-9SA

SIEMENS SERIES 70 DRIVE

CUVC CONTROL

NOTES: (Unless Otherwise Specified)

1. File No. 30177529.zip contains the following files:
 - 30177529.doc (Microsoft Word document of sheets 1 thru 14).
 - 30177529_cuvc.dnl (SIMOVIS file for Inverter).
 - 30177529_cur.dnl (SIMOVIS file for Rectifier).
2. Set P60 to zero, to limit unauthorized access.
3. See sheet 2 for initial start up Autotune.
4. See sheet 4 for emergency single motor operation.
5. For use with software 30177530.

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			TITLE TDS-9SA PARAMETERS CUVC CONTROL, SIEMENS			
	CURRENT	INITIAL	SIZE	DWG NO	REV	
AWN	S. CURLEE	R. HOLLADAY	A	30177529	A	
CHECKED	M. MASLYAR	M. MASLYAR				
APPVD	M. MASLYAR	M. MASLYAR				
DATE	8/15/05	04/19/2005	SCALE	NONE	WT LBS	SHEET 1 OF 14

Siemens 70 Series Drive Auto Parameterization of the CUVC Card

This function is used to pre-assign Open Loop or closed loop control parameters dependent on the selected drive settings for the Inverter and Motor. Only the selected Motor Data Sets (MDS's) will be parameterized during this operation, so each individual MDS should be Auto Parameterized separately. When carrying out an Auto Parameterization, no drill pipe etc. should be connected to the Top Drive.

Before the Auto Parameterization is carried out, parameter P590 should be changed from 0 to 1. This allows the Drive to be controlled from the Operator Panel (OP1S) instead of the Varco Drillers Console (VDC), and parameter P103 should be set to 0%, so that the no load current will be properly set during autotuning.

Note: Insure that the hydraulic motor is running before performing the auto parameterization.
Damage to the Rotating Head can occur if hydraulic pressure is not present.

The auto parameterization Mode is entered through parameter P115. Once in this parameter, the following steps should be carried out:

(function 1 is part of Motor Identification)

1. P115 should be set from "0" to "2" and the "P" toggle key pressed. At this point both the green LED (Run) and red LED (fault) will flash and the drive should be energized within 20 seconds by pressing the "1" ON Key on the OP1S. This carries out a Motor data identification at a standstill. When completed the parameter value will return from "2" to "0".
2. P115 should be set from "0" to "4" and the "P" toggle key pressed. Again the drive should be energized within 20 seconds by pressing the "1" ON Key. This carries out a No Load Measurement of the Top Drive Motors. Drive will run and Top Drive will turn. When complete the parameter value will return from "4" to "0".
3. P115 should be set from "0" to "5" and the "P" toggle key pressed. Again the drive should be energized within 20 seconds by pressing the "1" ON Key. This carries out a controller optimization (encoder). Drive will run and Top Drive will turn. When complete, the parameter value will return from "5" to "0".

Repeat steps 1 through 3 with the Encoder/Encoder Bypass Switch in the Encoder Bypass Mode to parameterize MDS 2.

Once complete parameter P590 should be returned from "1" to "0" to return control of the Top drive to the VDC and the following parameters should be returned to their pre-test values, with reference to the attached Varco Parameter set: - P128, P215, P259, P295, and P602. If any Faults are found carrying out the Auto Parameterization, consult the Siemens CUVC manual for fault analysis.

SIZE	DWG NO	REV
A	30177529	A
SCALE	NONE	WT LBS
SHEET	2	OF 14

DCF0045 (REV A)

To save parameters from RAM to EPROM change P971 from "0" to "1". If P971 is already at "1", change to "0", then back to "1". A transition from "0" to "1" must be made to successfully save memory to EPROM.

SAFETY NOTE: When carrying out steps 2 and 3 the Top Drive will rotate. Caution should be advised to ensure that the required safety measures are in place.

SIZE A	DWG NO 30177529	REV A
SCALE NONE	WT LBS	SHEET 3 OF 14

DCF0045 (REV A)

Siemens 70 Series Drive Single Motor Operation with CUVC Card

This Procedure should Be Followed under Emergency situations when the Top Drive must be operated with one Motor.

Completely isolate the Power Leads to the non-functioning Motor. Remove the Leads from the Motor Terminals, insulate and tie back.

Modify the Parameters in the VFD utilizing the OP1S and the following steps.

- 1) Verify P60 is set to "7".
- 2) Change P128.001 from "993" to "496". This changes I_{max}.
- 3) Change P128.002 from "993" to "496".
- 4) Change P60 from "7" to "5". This allows you to change Drive Settings.
- 5) Change P102.001 from "662" to "331". This is Motor Rated Amps.
- 6) Change P102.002 from "662" to "332".
- 7) Change P105.001 from "700" to "350". This is Motor Rated HP.
- 8) Change P105.002 from "700" to "350".
- 9) Change P113.001 from "4203" to "2101". This is Motor Rated Torque.
- 10) Change P113.002 from "4203" to "2101".
- 11) Change P350 from "662" to "331". This is Ref. Amps.
- 12) Change P354 from "4203" to "2101". This is Ref. Torque.
- 13) Change P60 from "5" to "7".
- 14) Continuously Hit the Reset Button until you return to the Main Screen and have a Flashing Green LED.

You are now ready to operate the Top Drive with only one Motor.

NOTE: It is not necessary to perform an Auto-Tune at this time.

SIZE A	DWG NO 30177529	REV A
SCALE NONE	WT LBS	SHEET 4 OF 14

DCF0045 (REV A)

LISTING OF INVERTER PARAMETERS

PAR NO.	IND.	PARAMETER DESCRIPTION	VALUE (Units)	COMMENTS
P050	-	Language	1	Language (1=English)
P053	-	Parameter Access	6	Access for Parameters
P060	-	Menu Select	0	Parameter Menu (7 = Free Access)
P068	0	Output Filter	0	No Output filter
P070	-	Order No. 6SE70	38-6U.6.	MLFB: Drive Size 128
P071	-	Line Volts	780V	Rated Drive Voltage
P072	-	Rated Drive Amps	860.0A	Rated Drive Current
P073	-	Rated Drive Power	630.0 kW	Rated Drive Power
P075	1	X (magnet,d)tot	150.0%	(Default)
P075	2	X (magnet,d)tot	150.0%	(Default)
P076	1	X (magnet,q)tot	150.0%	(Default)
P076	2	X (magnet,q)tot	150.0%	(Default)
P095	1	Type of Motor	11	NEMA Induction Motor
P095	2	Type of Motor	11	NEMA Induction Motor
P100	1	Control Mode	4	Speed Regulation
P100	2	Control Mode	3	Frequency Regulation
P101	1	Motor Rated Volts	550V	Motor Nameplate
P101	2	Motor Rated Volts	550V	Motor Nameplate
P102	1	Motor Rated Current	662.0A	Motor Nameplate
P102	2	Motor Rated Current	662.0A	Motor Nameplate
P103	1	Motor Magn Current	0	Typ = 22.3%
P103	2	Motor Magn Current	0	Typ = 22.3%
P104	1	Motor Power Factor	0.87	Motor Nameplate
P104	2	Motor Power Factor	0.87	Motor Nameplate
P105	1	Motor Rated Power	700.0 Hp	Motor Nameplate
P105	2	Motor Rated Power	700.0 Hp	Motor Nameplate
P106	1	Motor Rated Efficiency	92%	Motor Nameplate
P106	2	Motor Rated Efficiency	92%	Motor Nameplate
P107	1	Motor Rated Frequency	39.2 Hz	Motor Nameplate
P107	2	Motor Rated Frequency	39.2 Hz	Motor Nameplate
P108	1	Motor Rated Speed	1155 1/min	Motor Nameplate
P108	2	Motor Rated Speed	1155 1/min	Motor Nameplate
P109	1	Motor #Pole Pairs	2	Motor Nameplate
P109	2	Motor #Pole Pairs	2	Motor Nameplate
P113	1	Motor Rated Torque	4203.0 Nm	Calculated From Motor Nameplate
P113	2	Motor Rated Torque	4203.0 Nm	Calculated From Motor Nameplate
P115	-	Calc Motor Model	0	Auto Tune (P115=2, 4, 5)
P116	1	Start-Up Time	0.20 s typ	Auto Tuned
P116	2	Start-Up Time	0.21 s typ	Auto Tuned
P120	1	Main Reactance	380.9 typ	(Auto tuned)
P120	2	Main Reactance	388.3 typ	(Auto tuned)
P121	1	Stator Resistance	3.43% typ	(Auto tuned)
P121	2	Stator Resistance	3.38% typ	(Auto tuned)
P122	1	Total Leakage React	31.15% typ	(Auto tuned)
P122	2	Total Leakage React	31.21% typ	(Auto tuned)

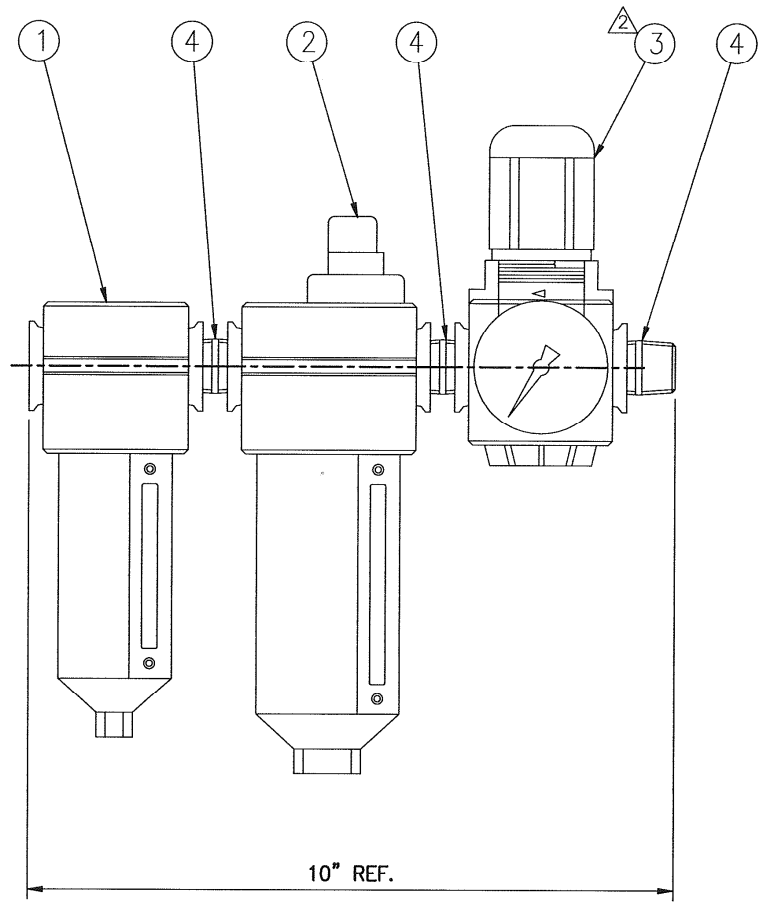
SIZE	DWG NO	REV
A	30177529	A
SCALE NONE	WT LBS	SHEET 5 OF 14

NOTES: UNLESS OTHERWISE SPECIFIED

1. APPLY TEFLON PASTE TO ALL THREADS PRIOR TO ASSEMBLY.

2 BACK OUT REGULATOR TO FULL OUT POSITION (FLOW OFF)

3 PARTS USED TO CONNECT TO Z PURGED VDC



3 NOT SHOWN

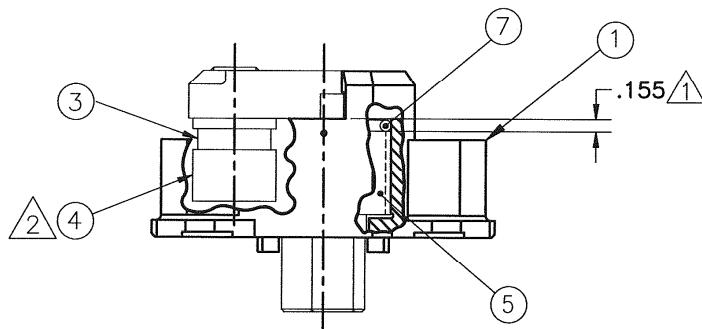
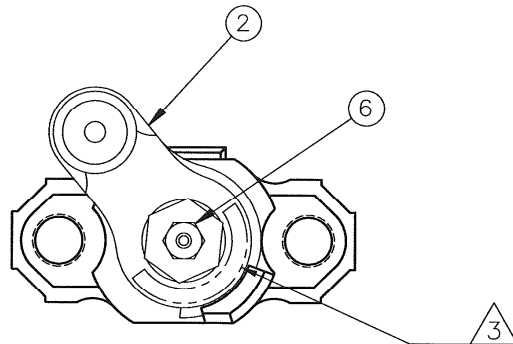
QTY REQD	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
- 1	59024P080072	HOSE, 1/4" JIC x 6ft LONG.		7
- 1	56501-8-4-S	NIPPLE, 1/2" NPT TO 1/4" JIC		6
- 1	56506-2-4-S	ELBOW 90°, 1/8" NPT TO 1/4" JIC MALE		5
- 3	53908-BR	NIPPLE, CLOSE 1/2" NPT		4
- 1	88549	REGULATOR, AIR, 1/2" PORT, 5-125 PSIG		3
- 1	88548	FILTER, AIR-OIL REMOVAL, 1/2" PORT		2
- 1	88547	FILTER, AIR, 50 MICRON, 1/2" PORT		1

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED		INTERPRET DIM/TOL PER ASME Y14.5M		DIMENSIONS ARE IN INCHES		DO NOT SCALE DRAWING		THE DOCUMENT CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH IS SOLEMLY THE PROPERTY OF NATIONAL OILWELL VARCO. IT IS TO BE USED FOR THE PURPOSES ONLY AND REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE EXPRESS WRITTEN PERMISSION OF NATIONAL OILWELL VARCO. THE DOCUMENT AND THE INFORMATION CONTAINED AND SPECIFICATIONS HEREIN IS THE CONFIDENTIAL PROPERTY OF NATIONAL OILWELL VARCO.	
Z PURGE VDC		.X ± .1 .XX ± .03 .XXX ± .010		ANGLES ± .5°		DO NOT SCALE DRAWING		TITLE: FILTER REGULATOR ASSEMBLY SCALE: 1/1 WT LBS: 14 PROJECTION: SIZE: D SHEET: 1 of 1 DRAWING NUMBER: 88550 REVISION:	
APPLICATOR	USED ON	CURRENT	INITIAL	RIG SOLUTIONS 743 No. ECKHOFF SL. ORANGE, Ca. 92668 (714) 972-1900					
UNLESS OTHERWISE SPECIFIED	CHECKED	R.HESI/OP	J.FAYDOCK						
MACHINED	APPROV	H.LJM	JPSJ						
250 MAX	DATE	07/15/05	11/88						

NOTES: UNLESS OTHERWISE SPECIFIED

- 1. PRESS ROLLER BEARING, ITEM 5, INTO CRANK HOUSING, ITEM 1, TO NOTED DEPTH.
- 2. ASSEMBLE CAM FOLLOWER, ITEM 4, TO CRANK ARM, ITEM 2, USING ITEM 8. TORQUE TO 300 IN-LB MIN.
- 3. STAMP "98898" APPROXIMATELY WHERE SHOWN.



QTY REQD	PART NO.	DESCRIPTION	MATERIAL	ITEM NO.
	A/R 53200-271	COMPOUND, LOCKING		8
	1 51300-220-B	O-RING		7
	1 53201	FITTING, GREASE, STRAIGHT (.125-27 NPT)		6
	1 79825	ROLLER BEARING		5
	1 79824	CAM FOLLOWER		4
	1 99168	SPACER		3
	1 98899	ARM, CRANK (MACHINING)		2
	1 98897	CRANK HOUSING (MACHINING)		1

LIST OF MATERIALS

PART FLAGS	DIMENSIONS ARE IN INCHES	UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5 & ABBREVIATIONS PER ANSI Y1.1	SURFACE FINISHES		TITLE
			MACHINED 250/MAX	TORCH CUT 1000/MAX	
<input type="checkbox"/> TRACEABILITY	DO NOT SCALE	X ±.1 CAN BE TORCH CUT	98903	PH60d	ASSEMBLY, EXTERNAL CRANK
<input type="checkbox"/> CRITICAL LOAD PATH ITEM	DOCUMENT	3/4 ±.030 1/8" ±.010 ANGULAR TOLERANCE: ±30° 30'	98900	PH60d	
<input type="checkbox"/> CERTIFICATION REQUIRED	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION, AND SUCH INFORMATION MAY BE RELEASED TO OTHERS FOR ANY PURPOSES WITH THE WRITTEN PERMISSION FROM VARCO INTERNATIONAL, INC.		NEXT ASSY	PRODUCT	SIZE
<input type="checkbox"/> SPARE PART	<input type="checkbox"/> COMMISSIONING				DOCUMENT NO. 98898
<input type="checkbox"/> OPERATIONAL	<input type="checkbox"/> INSURANCE	B K. NGUYEN HYOUING LIM	HYOUNG LIM	3/7/03	REVISION B
<input type="checkbox"/> WELD PROTECTION		- J. POPE	B. PRIOR	7/93	SCALE 1/1
		LTR PREPARED BY	CHECKED BY	APPROVED BY	DATE
					WEIGHT LB SHEET 1 OF 1

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