

**Model DX Static Hydraulic
Universal Testing System****Reference Manual - Equipment**
M47-17029-EN Revision B

Electromagnetic Compatibility

Where applicable, this equipment is designed to comply with International Electromagnetic Compatibility (EMC) standards.

To ensure reproduction of this EMC performance, connect this equipment to a low impedance ground connection. Typical suitable connections are a ground spike or the steel frame of a building.

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Original Instructions

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About This Document

This Equipment Reference Manual has been prepared to provide customers with assembly drawings and schematics that pertain to the various models of DX Static Hydraulic Universal Testing Systems. These drawings are provided for your use and Instron personnel use only. These drawings are the property of Instron and may be subject to return upon demand. The contents of this manual must not be copied or submitted to outside parties for use or examination.

How to Use This Document

The drawings included in this manual are arranged in numerical order for ease of locating any given drawing; refer to the “List of Drawings” section for a list of drawing titles and numbers. To determine which drawings pertain to your specific model of DX testing system, use the information given in the “System Identification” section in conjunction with the “Options and Applicable Drawings” section.

System Identification

Your system has been given a unique serial number for system identification. This serial number can be found on the serial tag located on the rear of the frame.

The frame serial tag includes other important system information, including information on your frame’s configuration. Frame configuration information can also be found on your copy of the Instron quote.

Options and Applicable Drawings

This section provides a list of DX testing system options and their applicable drawings. The options are listed in alphabetical order.

Not all options have applicable drawings. If any of the options purchased for your testing system are not listed here, then there are no drawings provided that pertain to that option.

300DX

DX Power – Schematic _____	R236084-4
DX Power – Wire List Layout _____	R236670-3
General Assembly _____	R236312-3
Hydraulic Schematic _____	R217495-3A

600DX

DX Power – Schematic _____	R236084-4
DX Power – Wire List Layout _____	R236670-3
General Assembly _____	R236313-3
Hydraulic Schematic _____	R217495-3A

300DX-G7, 600DX-G7

Grips Handset – Schematic/Layout _____	R236686-3
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List of Drawings

The following is a list of all drawings that appear in this manual.

Hydraulic Schematic _____	R217495-3A
General Assembly _____	R236312-3
General Assembly _____	R236313-3
DX Power – Schematic _____	R236084-4
DX Power – Wire List Layout _____	R236670-3 (Sheet 4 and 5)
Grips Handset – Schematic/Layout _____	R236686-3 (Sheet 2 and 3)

Appendix A

This section provides the Material Safety Data Sheet for the oil used in the hydraulic power supply (HPS).

Material Safety Data Sheet _____	Altra AW32 Oil
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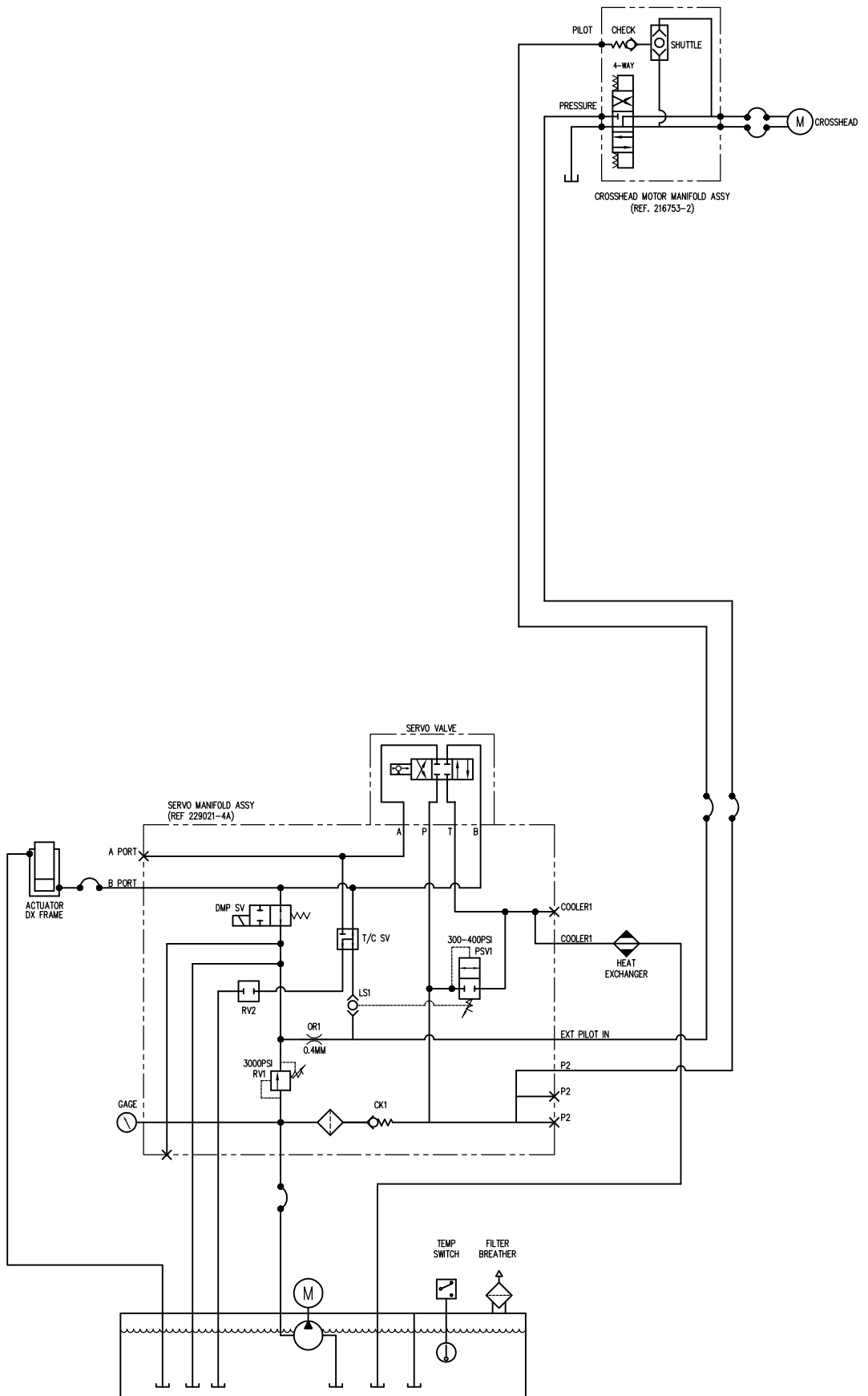
System Documentation

In addition to this Equipment Reference Manual, the following manuals are included under separate cover:

- Model DX Series Static Hydraulic Universal Testing System – Pre-Installation Manual
Manual No. M47-17026-EN
- Model DX Series Static Hydraulic Universal Testing System – Operating Instructions
Manual No. M47-17027-EN
- Model DX Series Static Hydraulic Universal Testing System – System Concepts Manual
Manual No. M47-17028-EN

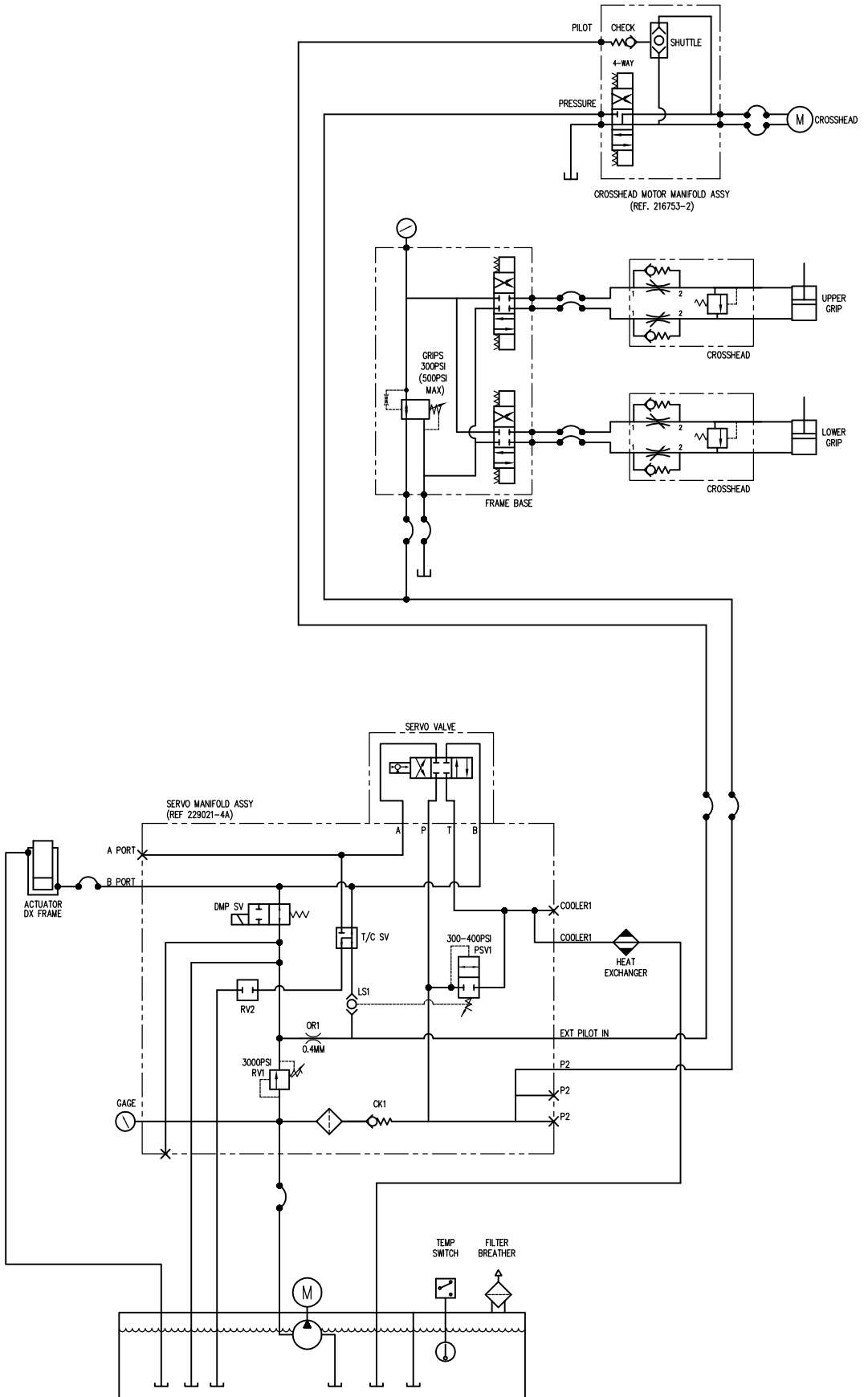
List of Drawings

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MATERIAL:		CHANGE SERIAL NUMBER	7/29/03	SAS
FINISH:		UPGRADE SERIAL NUMBER	8/24/09	AM
TOLERANCES AND DIMENSIONS UNLESS SPECIFIED:		UPGRADE SERIAL NUMBER	2/4/09	SAS
FRACTIONS: 1/16		REVISIONS:	DATE:	BY
DECIMALS: +/- .005		DESIGNED: SAS	DATE: 1/31/03	
ANGLES: +/- 1/2 DEGREE		CHECKED: NTS	SCALE: NTS	
HARDNESS:		MADE FOR: ALL DX G1/G8 OPTIONS	ACAD 2000	
TOLENCES AND DIMENSIONS UNLESS SPECIFIED:		INSTRON/SATFC SYSTEMS, INC.	DESIGN/LET	
FRACTIONS: 1/16		GROVE CITY, PENNSYLVANIA		
DECIMALS: +/- .005				
ANGLES: +/- 1/2 DEGREE				
HYDRAULIC SCHEMATIC				
STD DX G1/G8 OPTIONS				
R217495-3A				



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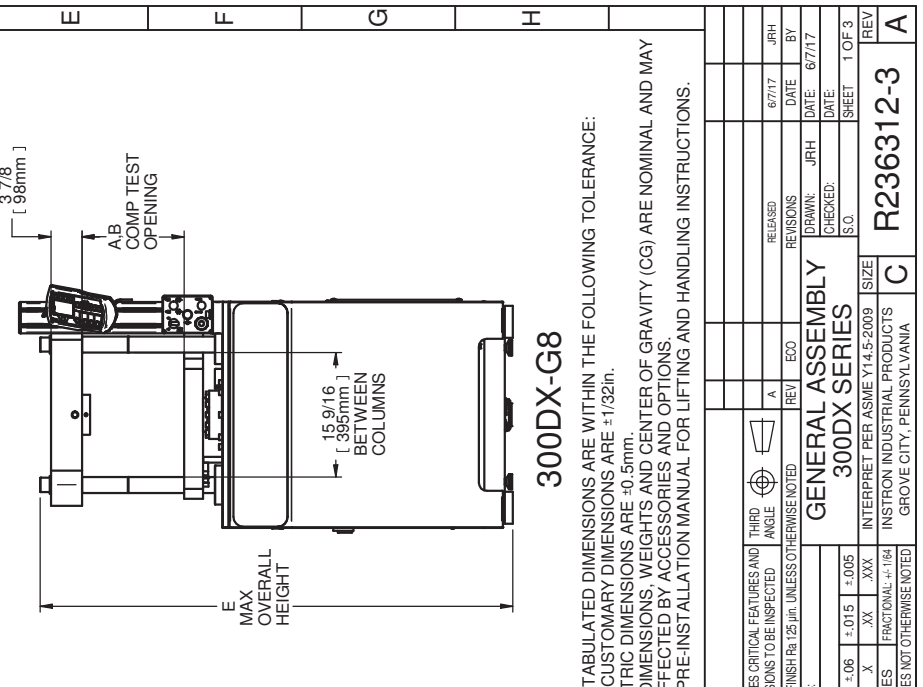
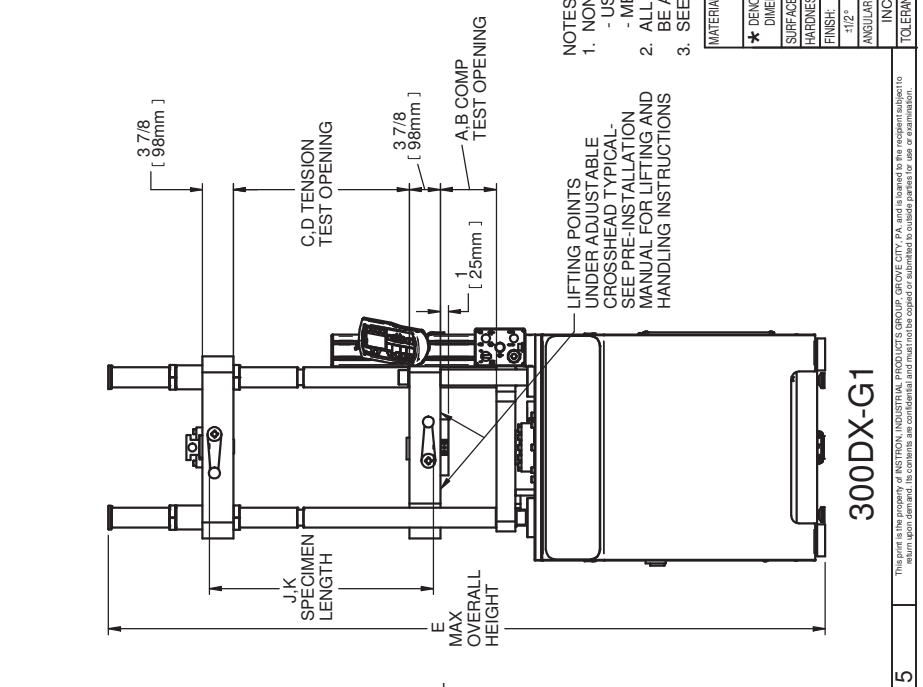
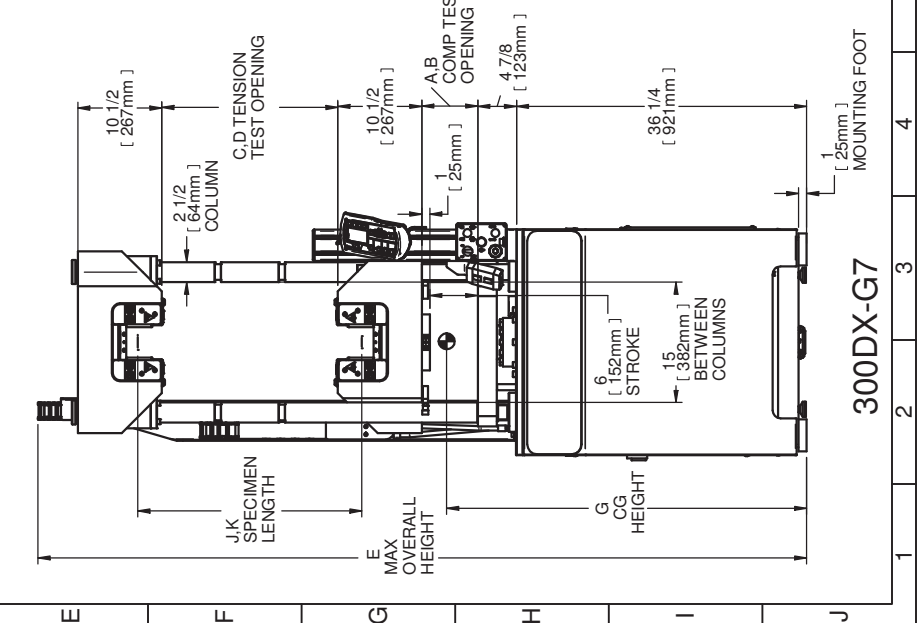
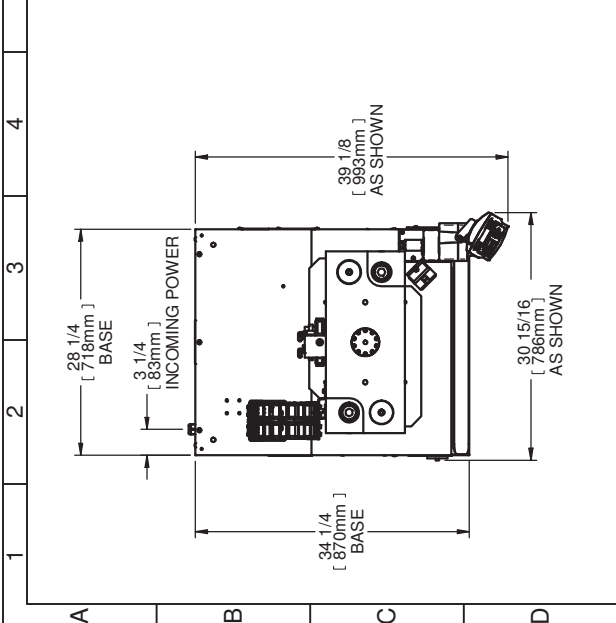
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E	316 SS	E	316 SS	E	±.005
D	316 SS	D	316 SS	D	±.005
C	316 SS	C	316 SS	C	±.005
B	316 SS	B	316 SS	B	±.005
A	316 SS	A	316 SS	A	±.005

HYDRAULIC SCHEMATIC		DRAWN:	
STD DX G7 OPTION		SAS	
MADE FOR: DX G7 OPTION		DATE: 9/18/05	
INSTROON/SATTEC SYSTEMS, INC.		CHECKED: NTS	
GROVE CITY, PENNSYLVANIA		SCALE: NTS	
R217495-3A		DESIGNLET	

		OPTION DEPENDENT MEASUREMENTS																			
		A - MINIMUM COMPRESSION TEST OPENING	B - MAXIMUM COMPRESSION TEST OPENING	C - MINIMUM TENSION TEST OPENING	D - MAXIMUM TENSION TEST OPENING	E - MAXIMUM OVERALL HEIGHT	F - WEIGHT	G - CENTER OF GRAVITY HEIGHT	H - TIP-UP HEIGHT	J - MINIMUM TENSION SPECIMEN LENGTH	K - MAXIMUM TENSION SPECIMEN LENGTH										
	Option	in	mm	in	mm	in	mm	in	mm	in	mm										
G1	STD HGT	1	25	21	533	0	36	914	96	2440	2440	1110	37	940	93	2365	10.6	270	42	1067	
G1	EXTD HGT	1	25	21	533	0	60	1524	120	3050	2510	1140	41	1045	116	2950	10.6	270	66	1676	
G7	STD HGT	1	25	21	533	0	0	28	711	102	2595	2840	1290	43	1095	95	2415	10.6	270	34	864
G7	EXTD HGT	1	25	21	533	0	0	52	1321	126	3205	2910	1320	48	1220	119	3025	10.6	270	58	1473
G8	STD HGT	6.75	171	26.75	679	NA	73	1855	2080	945	30	765	69	1755	NA	NA	NA	NA	NA	NA	NA

TABLE NOTES:

- A - MINIMUM COMPRESSION TEST OPENING MEASURED WITH PISTON FULLY EXTENDED AND ADJUSTABLE CROSSHEAD IN LOWEST POSITION.
- B - MAXIMUM COMPRESSION TEST OPENING MEASURED WITH PISTON FULLY EXTENDED AND ADJUSTABLE CROSSHEAD IN HIGHEST POSITION.
- C - MINIMUM TENSION TEST OPENING MEASURED WITH PISTON FULLY RETRACTED, ADJUSTABLE CROSSHEAD IN HIGHEST POSITION AND TENSION CROSSHEAD IN LOWEST POSITION.
- D - MAXIMUM TENSION TEST OPENING MEASURED WITH PISTON FULLY EXTENDED, ADJUSTABLE CROSSHEAD IN LOWEST POSITION AND TENSION CROSSHEAD IN HIGHEST POSITION.
- E - MAXIMUM OVERALL HEIGHT MEASURED WITH PISTON FULLY EXTENDED.
- G - CENTER OF GRAVITY MEASURED WITH PISTON FULLY EXTENDED AND ADJUSTABLE AND TENSION CROSSHEADS AT MAXIMUM HEIGHT.
- H - TIP-UP HEIGHT IS "CEILING" HEIGHT REQUIRED TO STAND THE MACHINE UPRIGHT FROM HORIZONTAL SHIPPING POSITION. DOES NOT INCLUDE CLEARANCE FOR LIFTING EQUIPMENT OR SHIPPING CONTAINER.
- J - MINIMUM TENSION SPECIMEN LENGTH MEASURED USING 6in [152mm] CLEARANCE BETWEEN ADJUSTABLE AND TENSION CROSSHEADS, PISTON FULLY RETRACTED, AND 80% SPECIMEN ENGAGEMENT IN GRIP FACES WHEN GRIP FACES ARE FLUSH WITH CROSSHEAD.
- K - MAXIMUM TENSION SPECIMEN LENGTH MEASURED USING MAXIMUM CLEARANCE BETWEEN ADJUSTABLE AND TENSION CROSSHEADS, PISTON FULLY EXTENDED, AND 100% SPECIMEN ENGAGEMENT IN GRIP FACES WHEN GRIP FACES ARE FLUSH WITH CROSSHEAD. NOTE A SPECIMEN THIS LONG CANNOT BE TESTED, MUST ALLOW FOR SPECIMEN ELONGATION.



300DX-G8

- NOTES:**
- NON-TABULATED DIMENSIONS ARE WITHIN THE FOLLOWING TOLERANCE:
 - US CUSTOMARY DIMENSIONS ARE ±1/32in.
 - METRIC DIMENSIONS ARE ±0.5mm.
 - ALL DIMENSIONS, WEIGHTS AND CENTER OF GRAVITY (CG) ARE NOMINAL AND MAY BE AFFECTED BY ACCESSORIES AND OPTIONS.
 - SEE PRE-INSTALLATION MANUAL FOR LIFTING AND HANDLING INSTRUCTIONS.

MATERIAL:

★ DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED	THIRD ANGLE	RELEASED	REV	ECO	REV	BY
SURFACE FINISH Rf 125 µin. UNLESS OTHERWISE NOTED						
HARDNESS:						
FINISH:						
ANGULAR	.X	.XX	.XXX			
INCHES	FRACTIONAL ±1/64					
TOLERANCES NOT OTHERWISE NOTED						

GENERAL ASSEMBLY
300DX SERIES

INTERPRET PER ASME Y14.5-2009

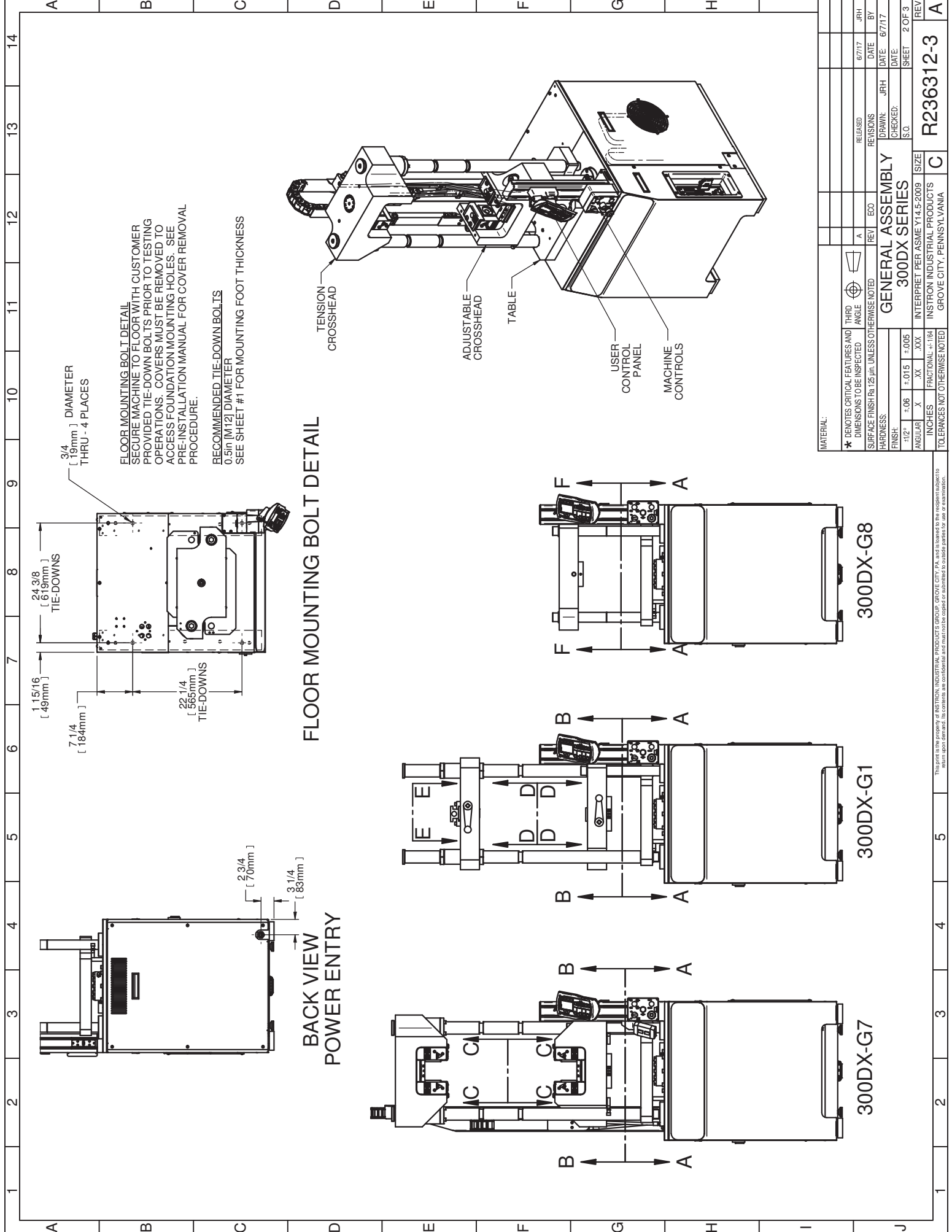
INSTRON INDUSTRIAL PRODUCTS
GROVE CITY, PENNSYLVANIA

SIZE C

SHEET 1 OF 3

REV R236312-3

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FLOOR MOUNTING BOLT DETAIL
 SECURE MACHINE TO FLOOR WITH CUSTOMER PROVIDED TIE-DOWN BOLTS PRIOR TO TESTING OPERATIONS. COVERS MUST BE REMOVED TO ACCESS FOUNDATION MOUNTING HOLES. SEE PRE-INSTALLATION MANUAL FOR COVER REMOVAL PROCEDURE.

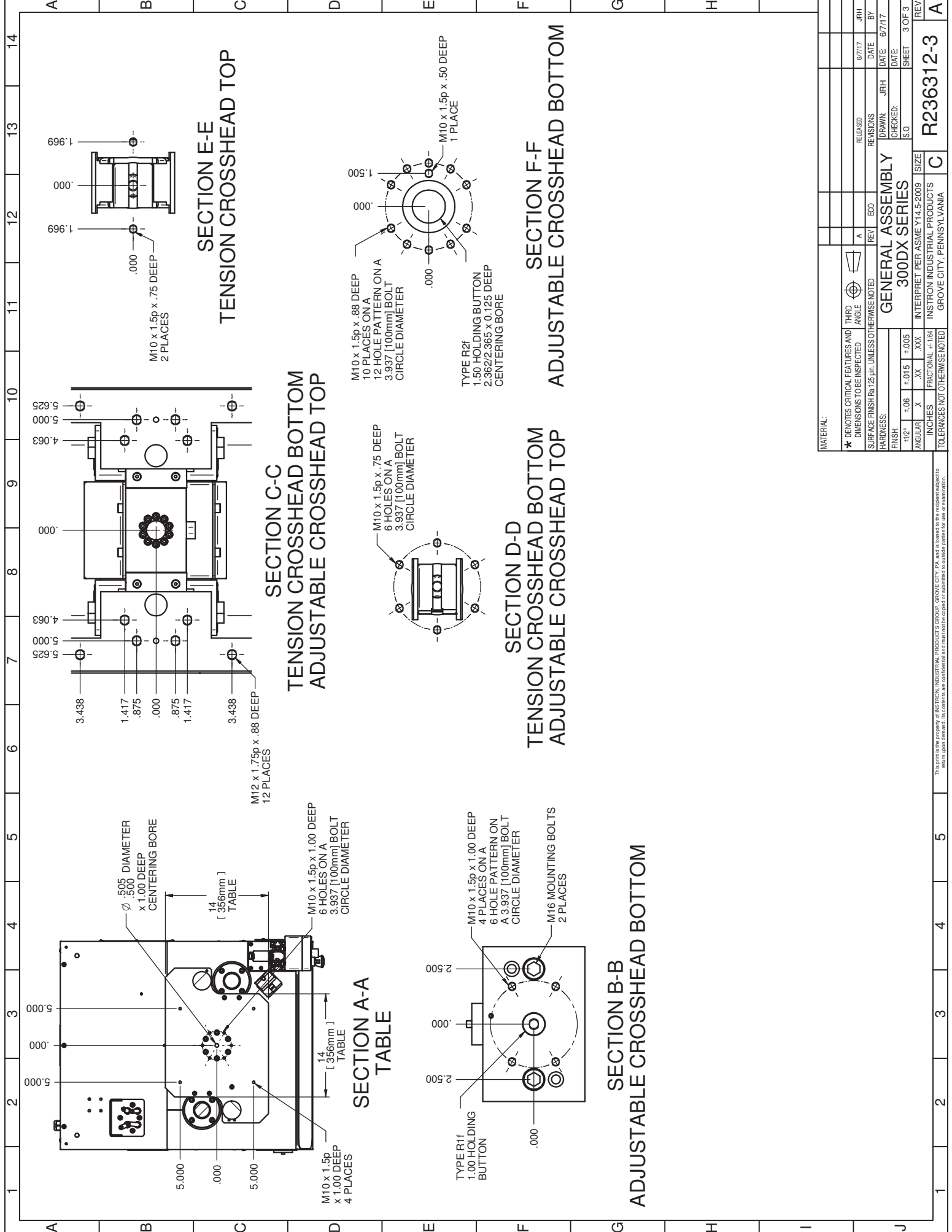
RECOMMENDED TIE-DOWN BOLTS
 0.5in [M12] DIAMETER
 SEE SHEET #1 FOR MOUNTING FOOT THICKNESS

FLOOR MOUNTING BOLT DETAIL

BACK VIEW POWER ENTRY

MATERIAL:		THIRD ANGLE		RELEASED	JRH
* DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED		REV		ECO	DATE
SURFACE FINISH Rf 125 µin. UNLESS OTHERWISE NOTED		GENERAL ASSEMBLY		REVISIONS	BY
HARDNESS:		300DX SERIES		DATE	6/7/17
FINISH:		INTERPRET PER ASME Y14.5-2009		CHECKED:	DATE
ANGULAR		SIZE		S.O.	SHEET
.X		.06 ±.015 ±.005		2 OF 3	
.XX		FRACTIONAL ±.164		REV	
.XXX		TOLERANCES NOT OTHERWISE NOTED		A	
.XXXX		INSTRON INDUSTRIAL PRODUCTS		R236312-3	
.0001		GROVE CITY, PENNSYLVANIA		C	

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A 1 2 3 4 5 6 7 8 9 10 11 12 13 14

SECTION A-A
TABLE

M10 x 1.5p x 1.00 DEEP 4 PLACES

5.000 .000 5.000

14 [356mm] TABLE

Ø .505 DIAMETER x 1.00 DEEP CENTERING BORE

M10 x 1.5p x 1.00 DEEP 6 HOLES ON A 3.937 [100mm] BOLT CIRCLE DIAMETER

M12 x 1.75p x .88 DEEP 12 PLACES

3.438 1.417 .875 .000 .875 1.417 3.438

5.625 5.000 4.063 .000 4.063 5.000 5.625

SECTION B-B
ADJUSTABLE CROSSHEAD BOTTOM

M10 x 1.5p x 1.00 DEEP 4 PLACES ON A 3.937 [100mm] BOLT CIRCLE DIAMETER

M16 MOUNTING BOLTS 2 PLACES

2.500 .000 2.500

TYPE R1f 1.00 HOLDING BUTTON

SECTION C-C
TENSION CROSSHEAD BOTTOM
ADJUSTABLE CROSSHEAD TOP

M10 x 1.5p x .88 DEEP 10 PLACES ON A 12 HOLE PATTERN ON A 3.937 [100mm] BOLT CIRCLE DIAMETER

M10 x 1.5p x .75 DEEP 6 HOLES ON A 3.937 [100mm] BOLT CIRCLE DIAMETER

SECTION D-D
TENSION CROSSHEAD BOTTOM
ADJUSTABLE CROSSHEAD TOP

M10 x 1.5p x .75 DEEP 6 HOLES ON A 3.937 [100mm] BOLT CIRCLE DIAMETER

SECTION E-E
TENSION CROSSHEAD TOP

M10 x 1.5p x .75 DEEP 2 PLACES

1.969 .000 1.969

SECTION F-F
ADJUSTABLE CROSSHEAD BOTTOM

M10 x 1.5p x .50 DEEP 1 PLACE

1.500 .000

TYPE R2f 1.50 HOLDING BUTTON 2.362/2.365 x 0.125 DEEP CENTERING BORE

GENERAL ASSEMBLY
300DX SERIES

INTERPRET PER ASME Y14.5-2009

INSTRON INDUSTRIAL PRODUCTS
GROVE CITY, PENNSYLVANIA

INCHES FRACTIONAL ± T14

TOLERANCES NOT OTHERWISE NOTED

★ DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED

THIRD ANGLE

RELEASED 6/7/17

REVISIONS DATE BY

DRAWN: JRH DATE: 6/7/17

CHECKED: S.O.

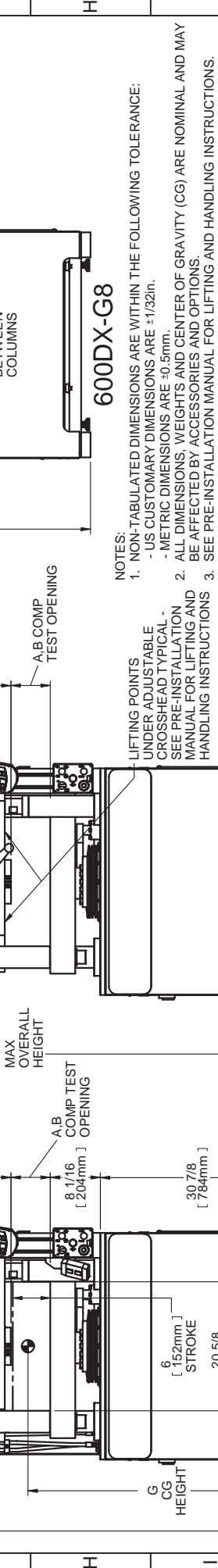
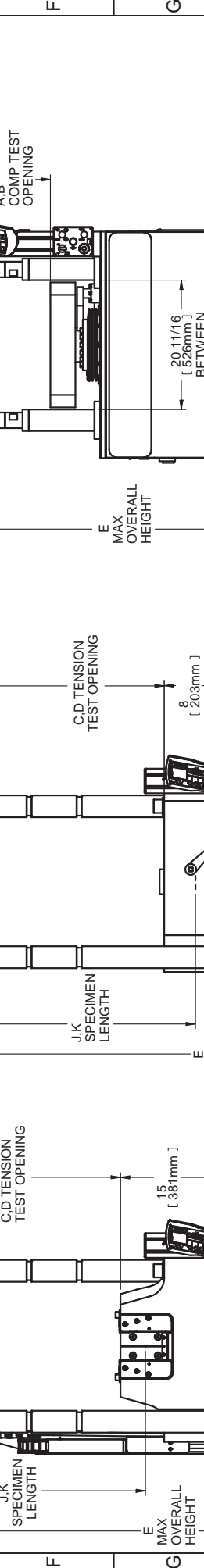
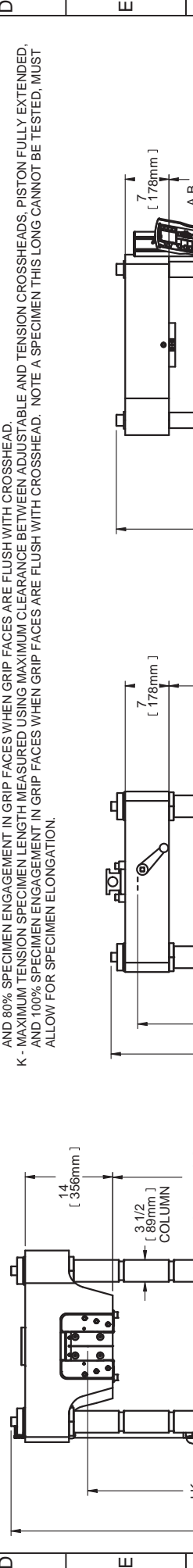
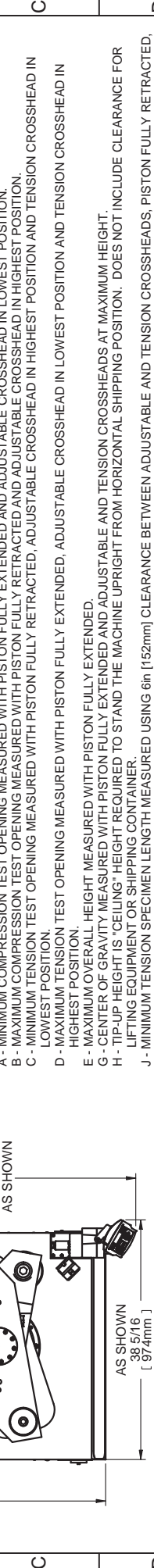
SHEET 3 OF 3

REV R236312-3

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OPTION DEPENDENT MEASUREMENTS		A - MINIMUM COMPRESSION TEST OPENING		B - MAXIMUM COMPRESSION TEST OPENING		C - MINIMUM TENSION TEST OPENING		D - MAXIMUM TENSION TEST OPENING		E - MAXIMUM OVERALL HEIGHT		F - WEIGHT		G - CENTER OF GRAVITY HEIGHT		H - TIP-UP HEIGHT		J - MINIMUM TENSION SPECIMEN LENGTH		K - MAXIMUM TENSION SPECIMEN LENGTH	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg	in	mm	in	mm	in	mm	in	mm
Option																					
G1 STD HGT	0.25	6	152.4	21.25	540	1.75	44	36	914	99	2515	5000	2270	42	1070	97	2465	13.8	350	46	1168
G1 EXTD HGT	0.25	6	152.4	21.25	540	1.75	44	52	1321	115	2925	5085	2310	46	1170	113	2875	13.8	350	62	1575
G7 STD HGT	0.25	6	152.4	21.25	540	0	0	38	965	115	2925	5285	2390	46	1170	113	2875	11.8	300	46	1168
G7 EXTD HGT	0.25	6	152.4	21.25	540	0	0	54	1372	131	3330	5350	2430	50	1270	128	3255	11.8	300	62	1575
G8 STD HGT	5.75	146	3708	26.75	679			NA		74	1880	4090	1855	32	815	69	1755				NA

TABLE NOTES:
 A - MINIMUM COMPRESSION TEST OPENING MEASURED WITH PISTON FULLY EXTENDED AND ADJUSTABLE CROSSHEAD IN LOWEST POSITION.
 B - MAXIMUM COMPRESSION TEST OPENING MEASURED WITH PISTON FULLY RETRACTED AND ADJUSTABLE CROSSHEAD IN HIGHEST POSITION.
 C - MINIMUM TENSION TEST OPENING MEASURED WITH PISTON FULLY RETRACTED, ADJUSTABLE CROSSHEAD IN HIGHEST POSITION AND TENSION CROSSHEAD IN LOWEST POSITION.
 D - MAXIMUM TENSION TEST OPENING MEASURED WITH PISTON FULLY EXTENDED, ADJUSTABLE CROSSHEAD IN LOWEST POSITION AND TENSION CROSSHEAD IN HIGHEST POSITION.
 E - MAXIMUM OVERALL HEIGHT MEASURED WITH PISTON FULLY EXTENDED.
 F - CENTER OF GRAVITY HEIGHT MEASURED WITH PISTON FULLY EXTENDED AND TENSION CROSSHEADS AT MAXIMUM HEIGHT.
 H - TIP-UP HEIGHT IS "CEILING" HEIGHT REQUIRED TO STAND THE MACHINE UPRIGHT FROM HORIZONTAL SHIPPING POSITION. DOES NOT INCLUDE CLEARANCE FOR LIFTING EQUIPMENT OR SHIPPING CONTAINER.
 J - MINIMUM TENSION SPECIMEN LENGTH MEASURED USING 6in (152mm) CLEARANCE BETWEEN ADJUSTABLE AND TENSION CROSSHEADS, PISTON FULLY RETRACTED, AND 80% SPECIMEN ENGAGEMENT IN GRIP FACES WHEN GRIP FACES ARE FLUSH WITH CROSSHEAD.
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NOTES:
 1. NON-TABULATED DIMENSIONS ARE WITHIN THE FOLLOWING TOLERANCE:
 - US CUSTOMARY DIMENSIONS ARE ±1/32in.
 - METRIC DIMENSIONS ARE ±0.5mm.
 2. ALL DIMENSIONS, WEIGHTS AND CENTER OF GRAVITY (CG) ARE NOMINAL AND MAY BE AFFECTED BY ACCESSORIES AND OPTIONS.
 3. SEE PRE-INSTALLATION MANUAL FOR LIFTING AND HANDLING INSTRUCTIONS.

MATERIAL:

FINISH:	ANGULAR	XX	.XX	±.005	SIZE	1 OF 3
HARDNESS:	INCHES	FRACTIONAL	±.164			
SURFACE FINISH Ra	125 µin. UNLESS OTHERWISE NOTED					
THIRD ANGLE	GENERAL ASSEMBLY					
REV	ECO	REV	ECO	REV	ECO	REV
DATE	6/9/17	DATE	6/9/17	DATE	6/9/17	DATE
RELEASED	JRH	RELEASED	JRH	RELEASED	JRH	RELEASED
FX METRIC CONVERSION	11/1/17					
FX METRIC CONVERSION	11/1/17					

INTERPRET PER ASME Y14.5-2009

INSTRON INDUSTRIAL PRODUCTS

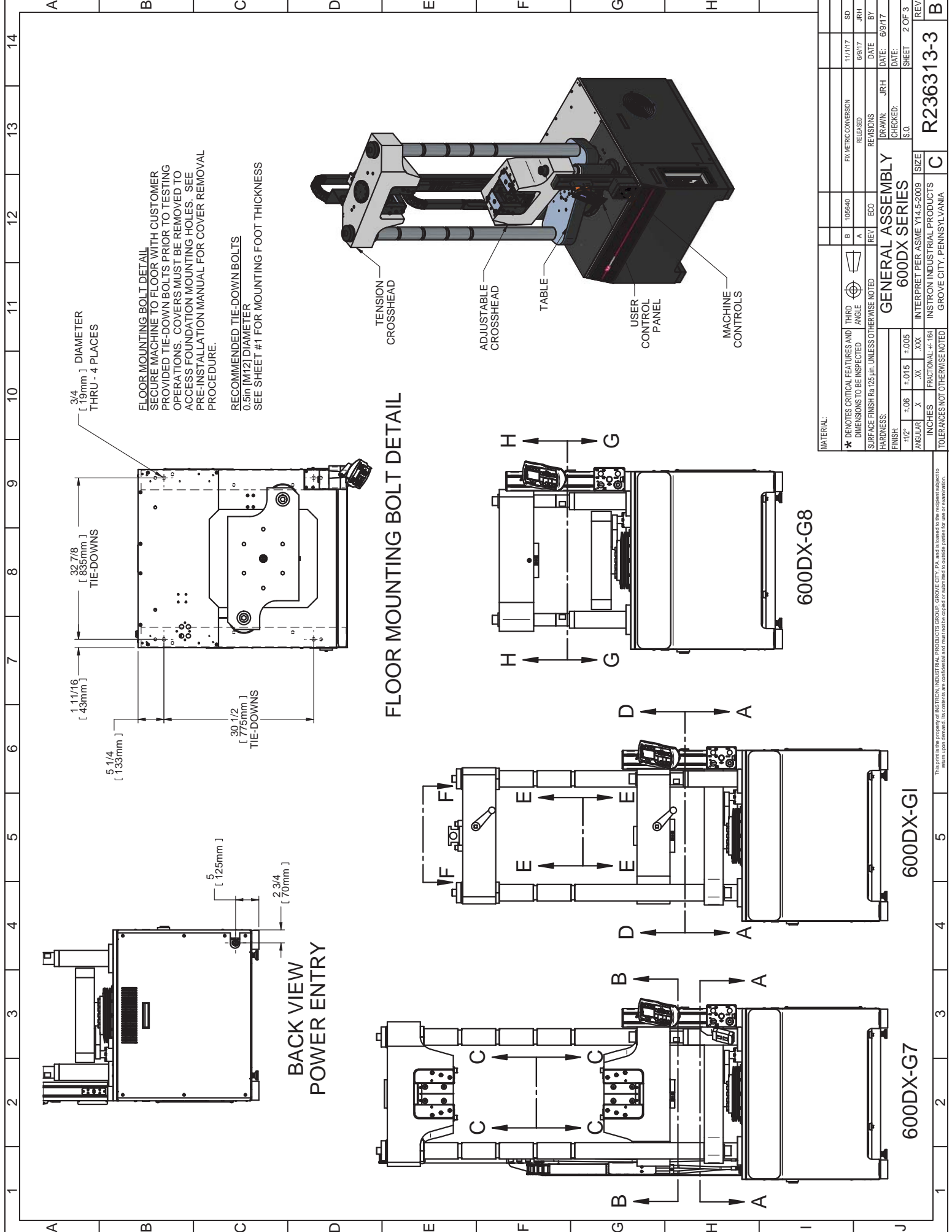
GROVE CITY, PENNSYLVANIA

600DX-G7

600DX-G8

600DX-G1

R236313-3



FLOOR MOUNTING BOLT DETAIL
 SECURE MACHINE TO FLOOR WITH CUSTOMER PROVIDED TIE-DOWN BOLTS PRIOR TO TESTING OPERATIONS. COVERS MUST BE REMOVED TO ACCESS FOUNDATION MOUNTING HOLES. SEE PRE-INSTALLATION MANUAL FOR COVER REMOVAL PROCEDURE.

RECOMMENDED TIE-DOWN BOLTS
 0.5in [12.7] DIAMETER
 SEE SHEET #1 FOR MOUNTING FOOT THICKNESS

FLOOR MOUNTING BOLT DETAIL

TENSION CROSSHEAD
 ADJUSTABLE CROSSHEAD
 TABLE
 USER CONTROL PANEL
 MACHINE CONTROLS

3/4 [19mm] DIAMETER THRU - 4 PLACES

32 7/8 [835mm] TIE-DOWNS

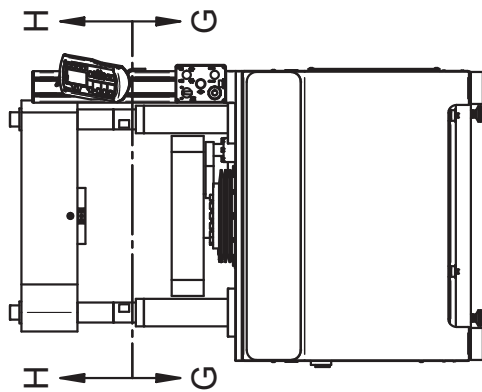
1 11/16 [43mm]

5 1/4 [133mm]

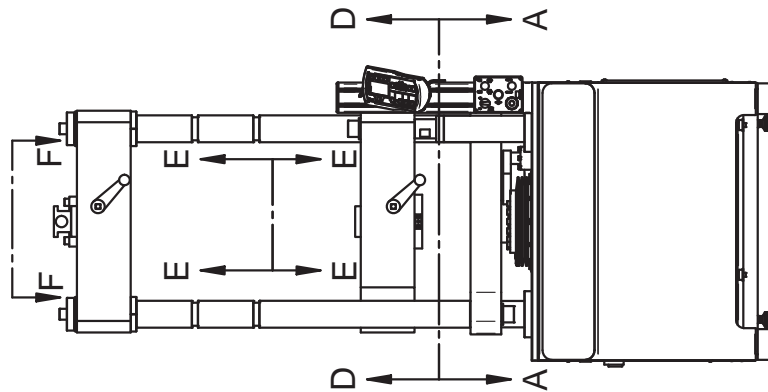
5 [125mm]

2 3/4 [70mm]

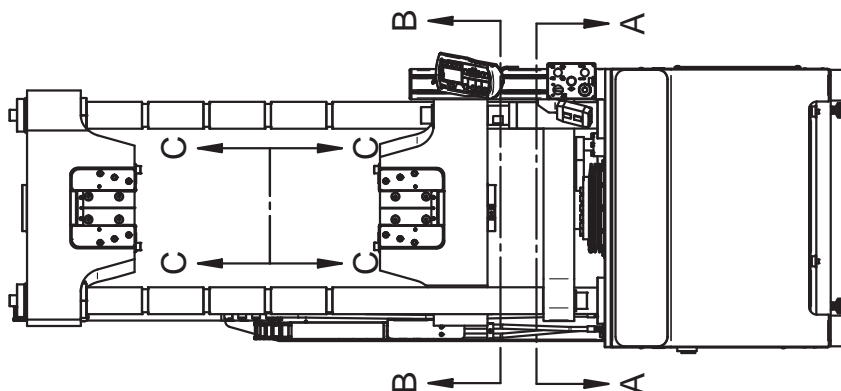
BACK VIEW POWER ENTRY



600DX-G8



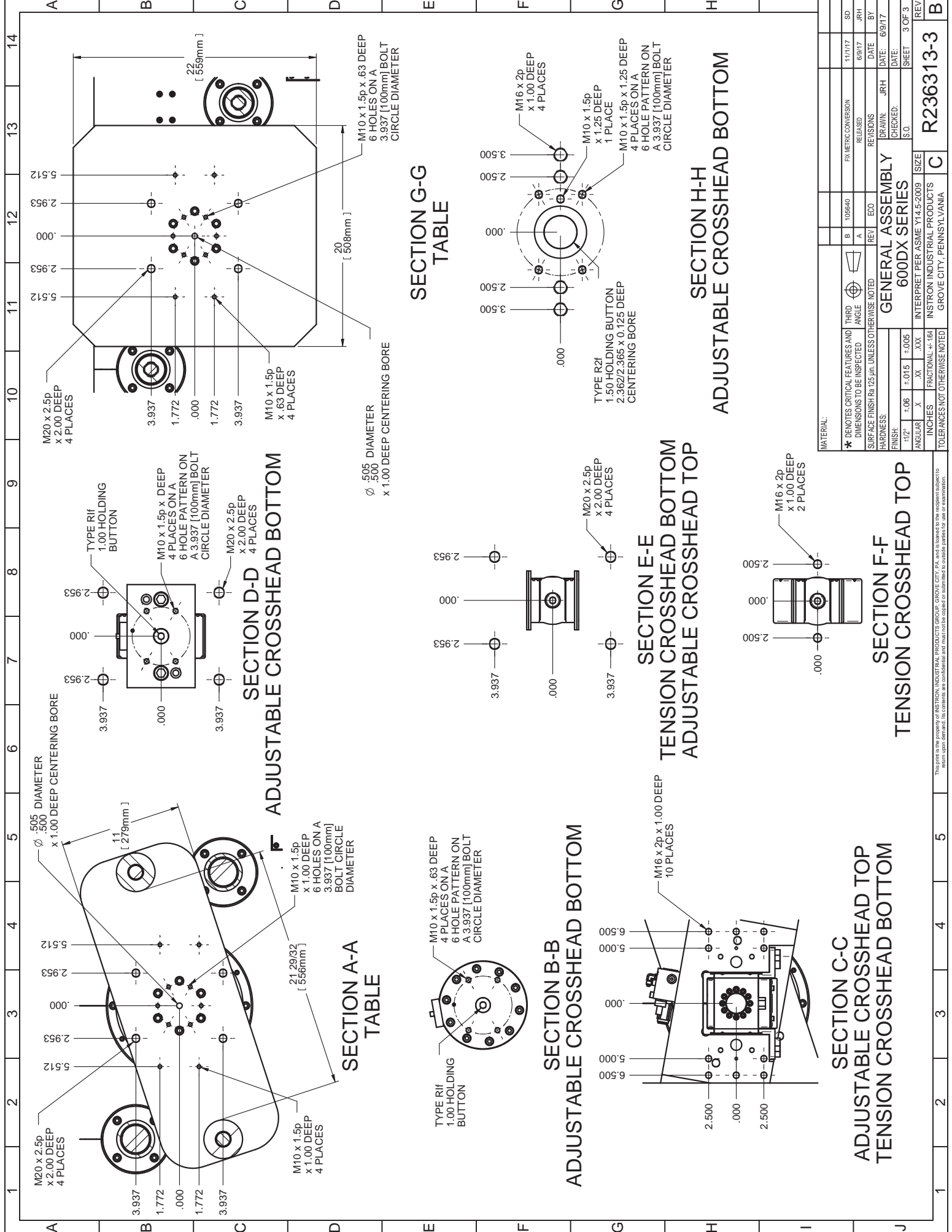
600DX-GI



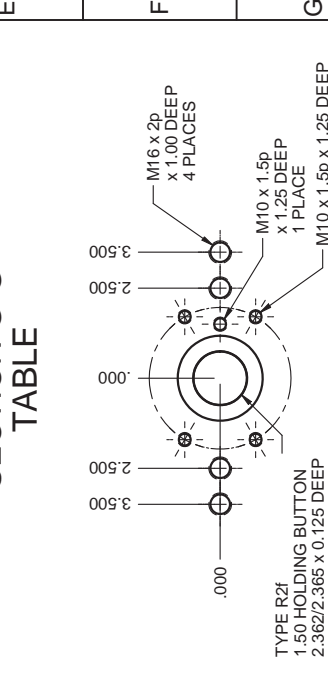
600DX-G7

MATERIAL:		THIRD ANGLE		SD	REV
* DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED		11/1/17		106640	11/1/17
SURFACE FINISH Ra 125 µin. UNLESS OTHERWISE NOTED		RELEASED		6/9/17	6/9/17
HARDNESS:		REV ECO		REVISIONS	
FINISH:		DRAWN: JRH		DATE: 6/9/17	
ANGULAR .X ±.06 ±.015 ±.005		CHECKED: S.O.		SHEET 2 OF 3	
INCHES FRACTIONAL + .164		INTERPRET PER ASME Y14.5-2009		SIZE	
TOLERANCES NOT OTHERWISE NOTED		INSTON INDUSTRIAL PRODUCTS		C	
		GROVE CITY, PENNSYLVANIA		R236313-3	

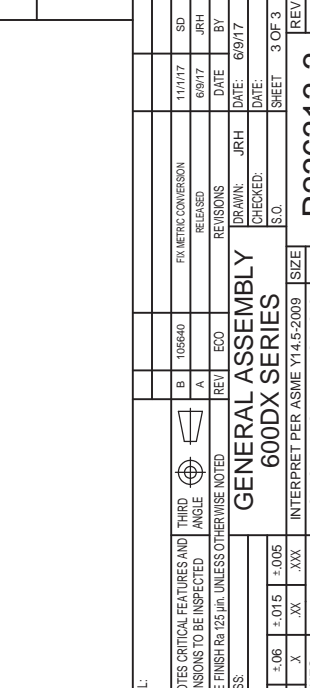
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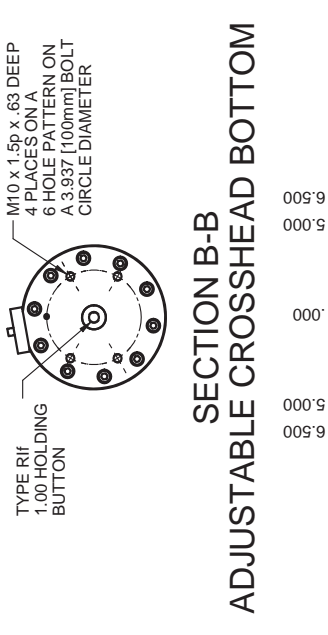
**SECTION G-G
TABLE**



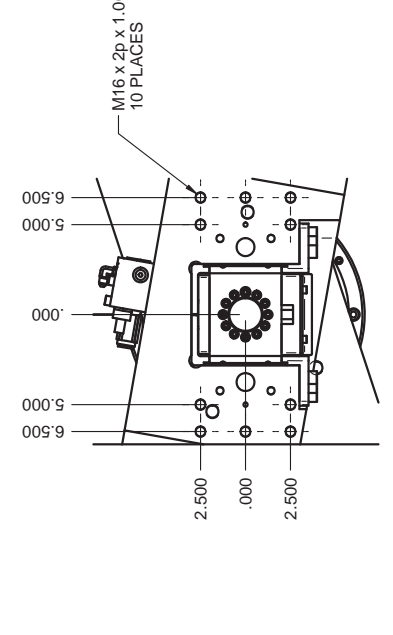
**SECTION H-H
ADJUSTABLE CROSSHEAD BOTTOM**



**SECTION A-A
TABLE**



**SECTION B-B
ADJUSTABLE CROSSHEAD BOTTOM**



**SECTION C-C
ADJUSTABLE CROSSHEAD TOP**



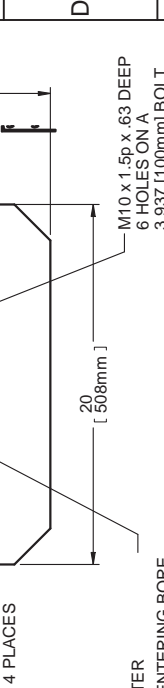
**SECTION F-F
TENSION CROSSHEAD TOP**



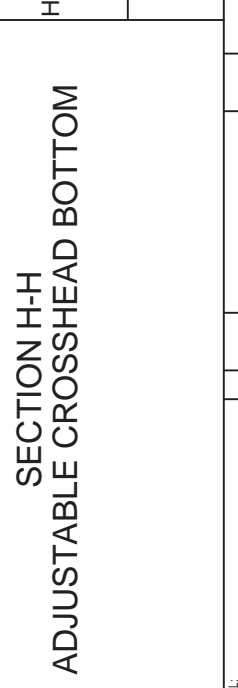
**SECTION E-E
TENSION CROSSHEAD BOTTOM**



**SECTION D-D
ADJUSTABLE CROSSHEAD BOTTOM**



**SECTION E-E
TENSION CROSSHEAD BOTTOM**

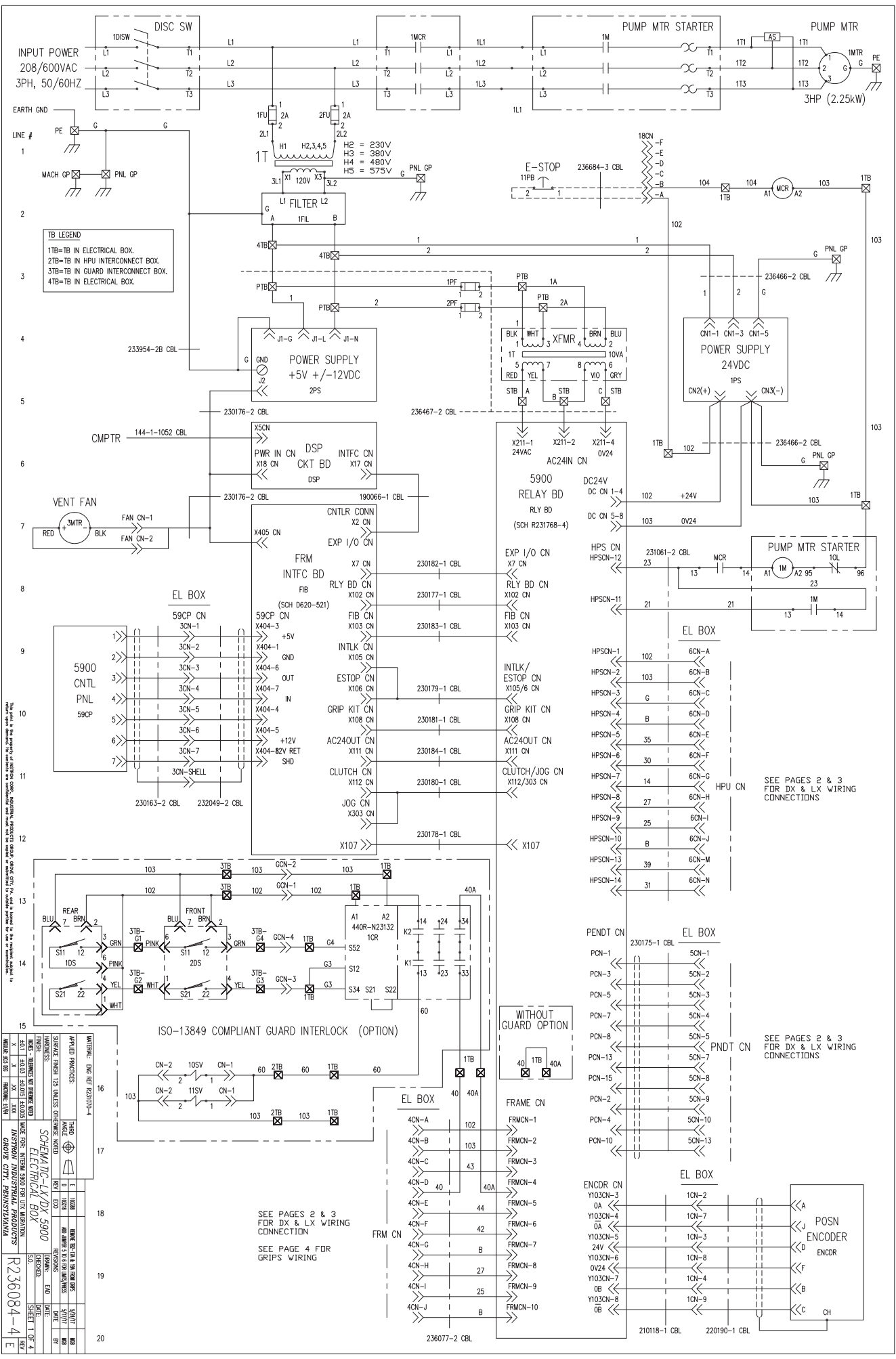


**SECTION C-C
ADJUSTABLE CROSSHEAD TOP**



MATERIAL:		THIRD ANGLE		SD	REV
* DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED		E		11/1/17	B
SURFACE FINISH Ra 125 µin. UNLESS OTHERWISE NOTED		REV		6/9/17	
HARDNESS:		ECO		DATE	BY
FINISH:		REV		DATE	BY
ANGULAR .X .XX .XXX		REV		DATE	BY
FRACTIONAL ±.164		REV		DATE	BY
TOLERANCES NOT OTHERWISE NOTED		REV		DATE	BY
INTERPRET PER ASME Y14.5-2009		REV		DATE	BY
INSTRON INDUSTRIAL PRODUCTS		REV		DATE	BY
GROVE CITY, PENNSYLVANIA		REV		DATE	BY
GENERAL ASSEMBLY		REV		DATE	BY
600DX SERIES		REV		DATE	BY
SIZE		REV		DATE	BY
3 OF 3		REV		DATE	BY
R236313-3		REV		DATE	BY

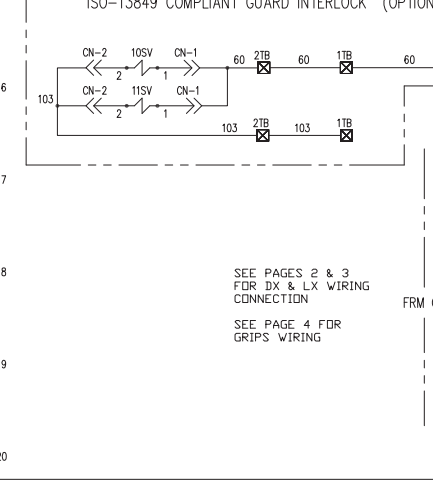
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TB LEGEND
 1TB=TB IN ELECTRICAL BOX.
 2TB=TB IN HPU INTERCONNECT BOX.
 3TB=TB IN GUARD INTERCONNECT BOX.
 4TB=TB IN ELECTRICAL BOX.

This part of the drawing is a schematic diagram. It is not intended to be used for construction. It is intended to be used for design and manufacturing purposes only. It is not intended to be used for installation or maintenance purposes. It is not intended to be used for safety or security purposes. It is not intended to be used for legal or regulatory purposes. It is not intended to be used for any other purpose.

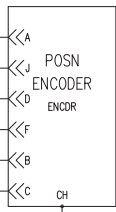
DATE	REV	DESCRIPTION
10/11/04	1	ISSUED FOR CONSTRUCTION
10/11/04	2	REVISED TO ADD COMMENTS
10/11/04	3	REVISED TO ADD COMMENTS
10/11/04	4	REVISED TO ADD COMMENTS
10/11/04	5	REVISED TO ADD COMMENTS
10/11/04	6	REVISED TO ADD COMMENTS
10/11/04	7	REVISED TO ADD COMMENTS
10/11/04	8	REVISED TO ADD COMMENTS
10/11/04	9	REVISED TO ADD COMMENTS
10/11/04	10	REVISED TO ADD COMMENTS
10/11/04	11	REVISED TO ADD COMMENTS
10/11/04	12	REVISED TO ADD COMMENTS
10/11/04	13	REVISED TO ADD COMMENTS
10/11/04	14	REVISED TO ADD COMMENTS
10/11/04	15	REVISED TO ADD COMMENTS
10/11/04	16	REVISED TO ADD COMMENTS
10/11/04	17	REVISED TO ADD COMMENTS
10/11/04	18	REVISED TO ADD COMMENTS
10/11/04	19	REVISED TO ADD COMMENTS
10/11/04	20	REVISED TO ADD COMMENTS



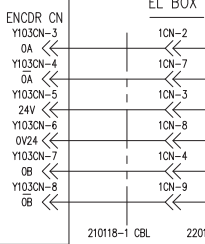
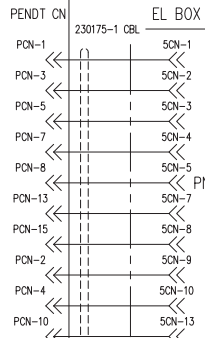
SEE PAGES 2 & 3 FOR DX & LX WIRING CONNECTION
 SEE PAGE 4 FOR GRIPS WIRING

SEE PAGES 2 & 3 FOR DX & LX WIRING CONNECTIONS

SEE PAGES 2 & 3 FOR DX & LX WIRING CONNECTIONS



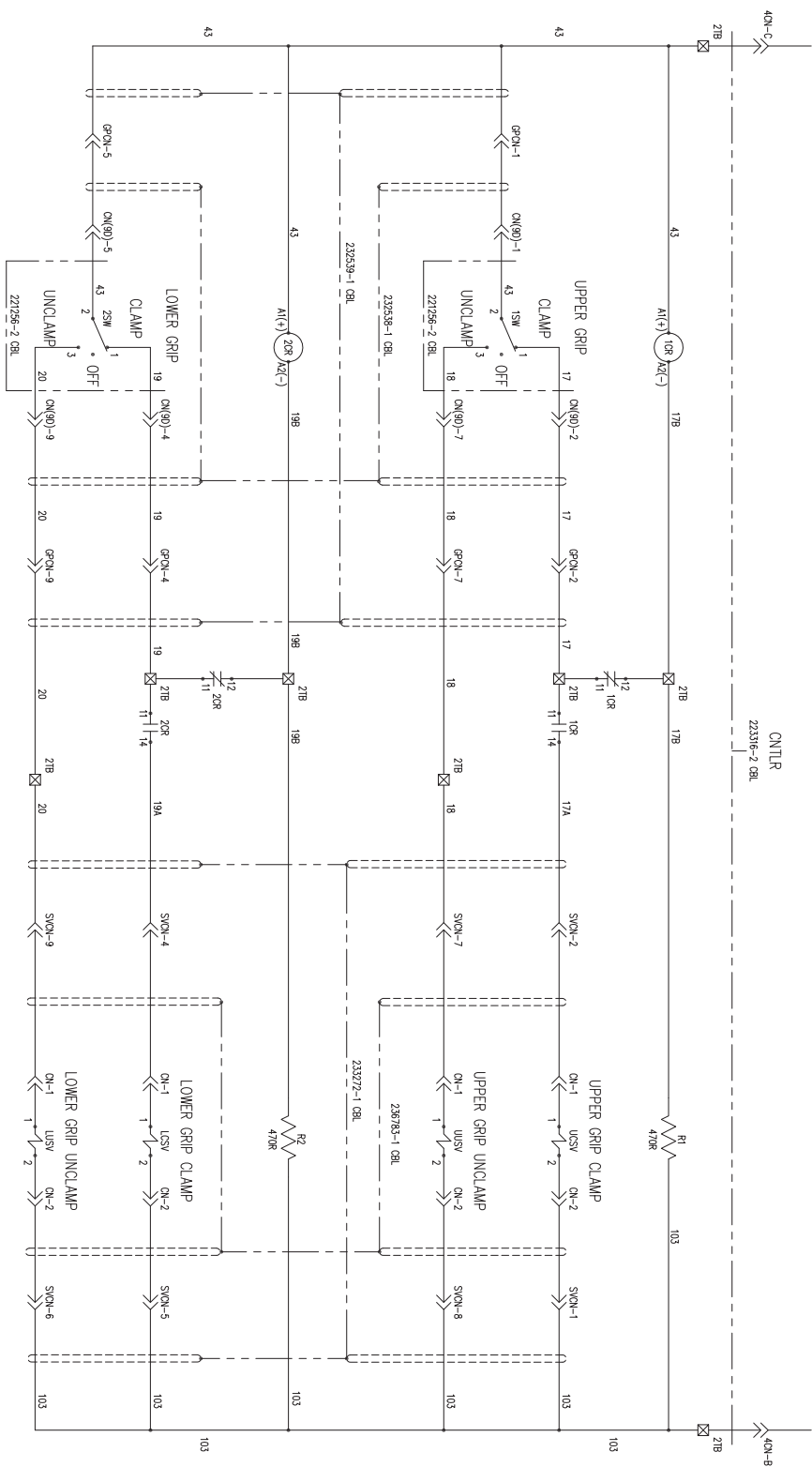
236077-2 CBL



24V E-STOP POWER

GRIPS SCHEMATIC

0/24



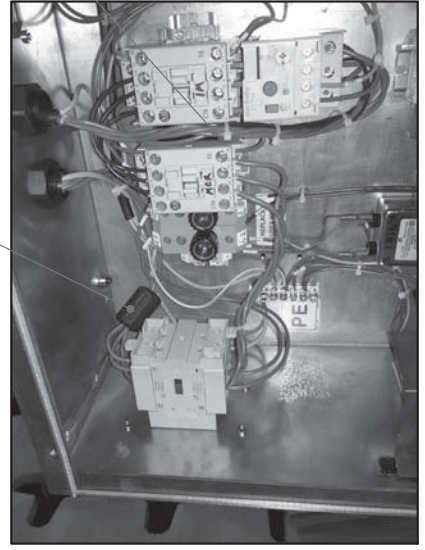
This part of the drawing is intended for information only. It is not to be used for manufacturing purposes. The user is responsible for the correct interpretation of the drawing. The user is responsible for the correct interpretation of the drawing.

MATERIAL: ENG BR F23070-4	
APPLIED FINISHES:	1. LUBRICANT
SURFACE FINISH: 125 UNLESS OTHERWISE NOTED	2. POLISH
FINISH:	3. POLISH
FINISH:	4. POLISH
FINISH:	5. POLISH
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FINISH:	93. POLISH
FINISH:	94. POLISH
FINISH:	95. POLISH
FINISH:	96. POLISH
FINISH:	97. POLISH
FINISH:	98. POLISH
FINISH:	99. POLISH
FINISH:	100. POLISH

R236084-4

WIRELIST

From Title	Pos.	To Title	Pos.	Wire or Cable			Misc Info	
				Num	Pairs	Cond	AWG	Color
ELECTRICAL BOX CONNECTIONS								
MAINS INPUT CORD	L1	1DISW	L1	4	12	RED	ATTACH FERRITE BEAD	
	L2		L2			OR	USE SJO 17 FT LG	
	L3	PE	L3			BLK	12" WIRE IN BOX	
EL BOX GP	G	WACH GP	G	1	12	GNLYL	15" GRYL WIRE IN BOX	
						GNLYL	12" YEL RING BOTH ENDS	
1DISW	T1	MCR	T1	1	12	RED	11" TWIST WIRES	
	T2		T2			OR		
	T3	IFU	T3			BLK		
MCR	T1		T1	1	12	RED	13"	
	L1	1M	L1	1	14	BLK	5"	
	L2		L2					
AS (SUPPR)	L3		L3					
	A1	1TB	104	1	18	GRY	17"	
	A2		103			PINK		
1MTR (PUMP MTR)	1	1M	T1			LEADS		
	2		T2					
	3		T3					
1M (PUMP STR)	1	1M	T1	4	14	RED	USE SJO 7 FT LG	
	2		T2				13" RED WIRE IN BOX	
	3	PE	T3			GNLYL	14" GRYL WIRE IN BOX	
1FIL (PUMP STR)	A1	MCR	--	1	18	GRY	7"	
	A2		13			13"		
	A3	1M	95			14"		
1FIL	96	1TB	103	1	18	PINK	10"	
	A	4TB	1	1	18	BRN	6" LG	
	B	PE	2			BLU	5" LG	
1PS CN1 (AC IN)	1	4TB	1	1	18	BRN	USE 236466-2 CBL	
	2		2			BLU		
	3	PE	--			GNLYL		
1PS CN2 (+24VDC)	1-4	RELAY BD	DC24V	1	18	VIO	USE 236466-2 CBL	
	5-6	1TB	102					
	1	PE	--			GNLYL		
1PS CN3 (024VDC)	2-3	1TB	103	1	18	GNLYL	USE 236466-2 CBL	
	4-7	RELAY BD	DC24V			PINK		
	1	4TB	1	3	18	BRN	USE 236467-2 CBL	
PTB	2	CH GND	PE			BLU		
						GNLYL		



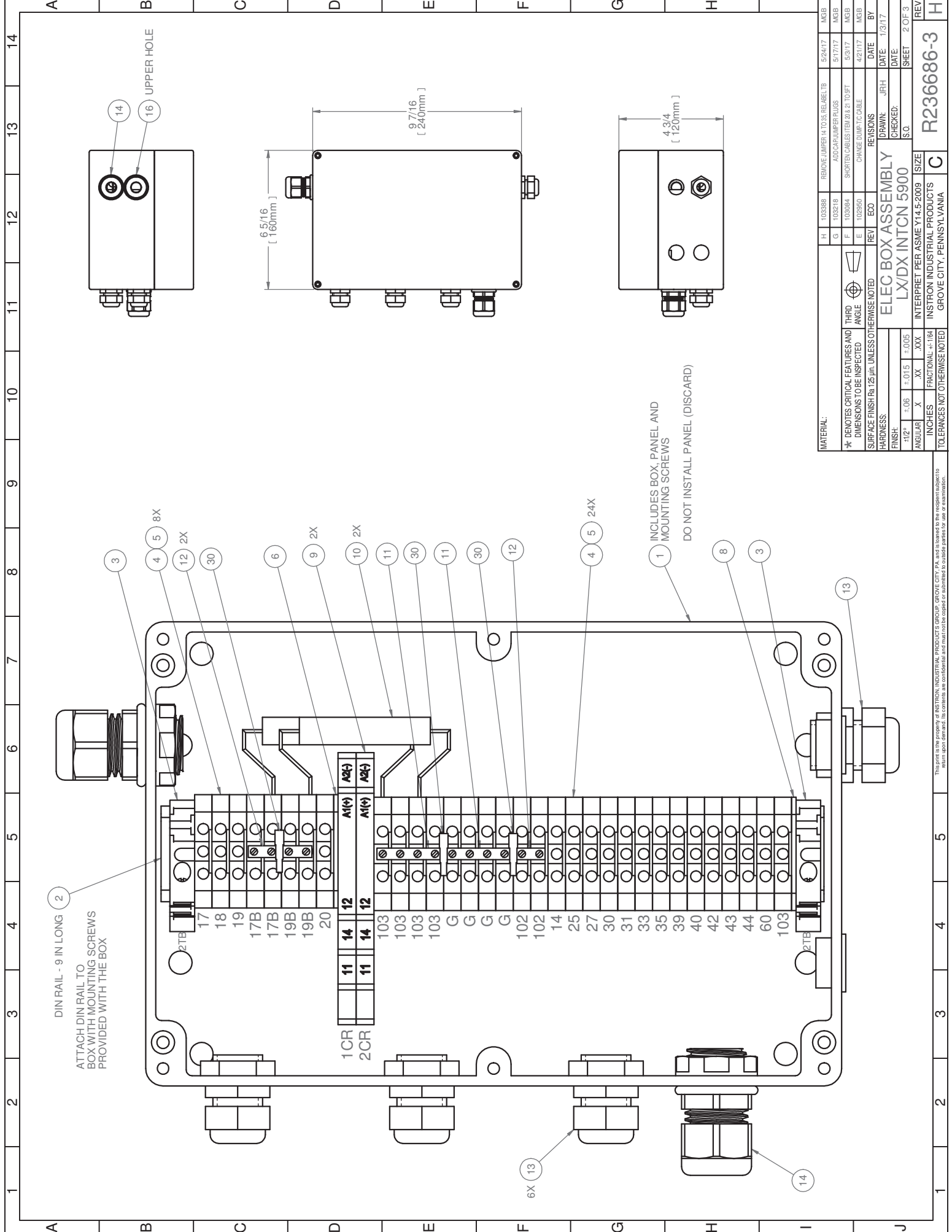
ATTACH FERRITE BEAD (ITEM #501)
TO POWER INPUT LINES AS SHOWN

ROUTE MOTOR WIRING BETWEEN CONTACTORS AS SHOWN AND USE CABLE TIE NEAR THE OL RELAY

From Title	Pos.	To Title	Pos.	Wire or Cable			Misc Info	
				Num	Pairs	Cond	AWG	Color
2PS J1 (AC IN)	L	PTB	1	1				USE 236467-2 CBL
	N	G	2PS	2				
2PS J2 (5/12VDC)	X1	DSP	X18					USE 230176-2A CBL
		FIB	X405					
3MTR (VENT MTR)	BLK	FAN CN	1					USE A604-57
	RED		2					
RLY BD	Y103	1CN	--					USE 210118-1D CBL
	PENDT	5CN	--					USE 230175-1A CBL
HPS	HPS-11	1M	13	21				USE 231061-2A CBL (LABELED #13)
	HPS-12	14	23					(LABELED #A1)
FRAME	4CN	40A	40A	1	18	GRY		USE 2366077-2 CBL
	1TB	40	40					
3CN	D	1TB	40					
	X404							USE 232049-2A
18CN (E-STOP)	A	1TB	102	1	18	VIO		USE 235711-2A CBL
	B		104			GRY		
1TB	40	1TB	40A	1	18	GRY	JUMPER	
Transformer Secondary Connections all voltages:								
1T	X1	1FIL	L1	3L1	1	18	BRN	18" LG
	X3	PE	L2	3L2			BLU	17.5" LG
	X3						GNLYL	25" LG
Transformer Primary Connections 230V:								
1T	H1	IFU	2	2L1	1	18	BLK	12"
	H2		2	2L2				
Transformer Primary Connections 380V:								
1T	H1	IFU	2	2L1	1	18	BLK	12"
	H3	2FU	2	2L2				
Transformer Primary Connections 480V:								
1T	H1	IFU	2	2L1	1	18	BLK	12"
	H4	2FU	2	2L1				

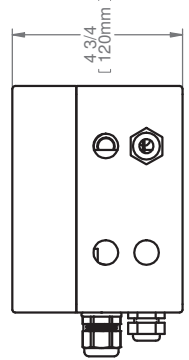
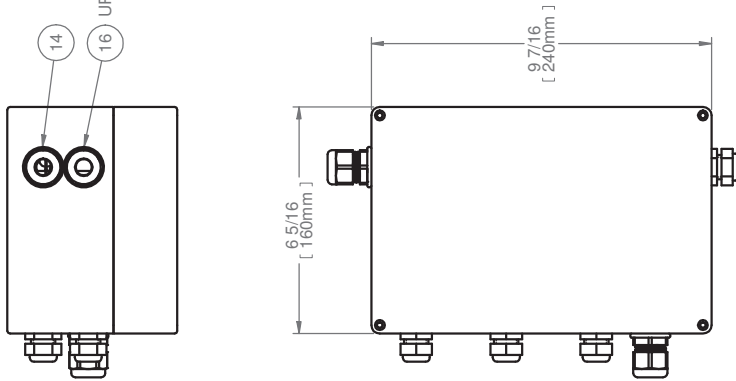
MATERIAL:	F	103658	SHOW LABEL DETAILS - JUMPER 40 TO 40A	MGB	6/14/17
	E	103248	CHANGE FAN ASSY ADP FROM TO ITB ADD LABELS	MGB	5/17/17
* DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED	D	103096	REMOVE NO. 40 FERRITE TO POWER IN	MGB	5/3/17
SURFACE FINISH R4 125 µm UNLESS OTHERWISE NOTED	C	102675	CHANGE 303.34 TO 28.64A	MGB	4/13/17
HARDNESS:	REV	ECO	REVISIONS	DATE	BY
FINISH:	DRAWN: BuchanM				
ANGULAR	X	.XX	±.015	CHECKED:	DATE:
INCHES	FRACTIONAL	±.164	SIZE	ELEC ENCL ASSY LX/DX CE 5900	
TOLERANCES NOT OTHERWISE NOTED			INTERPRET PER ASME Y14.5-2009	SHEET 5 OF 5	
			INSTRON INDUSTRIAL PRODUCTS	GROVE CITY, PENNSYLVANIA	
			REV	R236670-3	

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DIN RAIL - 9 IN LONG
 ATTACH DIN RAIL TO BOX WITH MOUNTING SCREWS PROVIDED WITH THE BOX

INCLUDES BOX, PANEL AND MOUNTING SCREWS
 DO NOT INSTALL PANEL (DISCARD)



MATERIAL:	H	103388	REMOVE LUMPER H TO S RE LABEL TB	5/24/17	MGB
	G	103218	ADD CAP LUMPER PLUGS	5/17/17	MGB
* DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED	F	103064	SHORTEN CABLES (TEL 2) & TO FT	5/3/17	MGB
	E	102950	CHANGE DIM T O CABE	4/21/17	MGB
SURFACE FINISH Rf 125 µin. UNLESS OTHERWISE NOTED	REV	ECO	REVISIONS	DATE	BY
HARDNESS:					
ANGULAR	X	.XX	±.015	±.005	
INCHES	FRACTIONAL	±.164			
TOLERANCES NOT OTHERWISE NOTED			ELEC BOX ASSEMBLY		
INTERPRET PER ASME Y14.5-2009			LX/DX INTCON 5900		
DRAWN: JRH			DATE: 1/31/17		
CHECKED: S.O.			SHEET 2 OF 3		
REV			REV		
INSTRON INDUSTRIAL PRODUCTS			R236686-3		
GROVE CITY, PENNSYLVANIA			C		

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From		To		Wire or Cable			Misc		
Title	Pos.	Title	Pos.	Num	Pairs	Cond	AWG	Color	Info
MACHINE INTERCONNECTION BOX CONNECTIONS									
102	2TB	102	2TB	-	-	-	-	METAL	JUMPER
103	103	103	103	-	-	-	-	.	.
103	103	103	103	-	-	-	-	.	.
G	G	G	G	-	-	-	-	.	.
G	G	G	G	-	-	-	-	.	.
17B	17B	17B	17B	-	-	-	-	.	.
19B	19B	19B	19B	-	-	-	-	.	.
R1	2TB	17B	17B	-	-	-	-	LEADS	.
R2	2TB	19B	19B	-	-	-	-	LEADS	.
1CR	A1(+)	2TB	43	43	43	1	18	GRY	.
2CR	A1(+)	1CR	A1(+)	43	43	1	18	GRY	.
	A2(-)	2TB	17B	17B	17B	-	-	.	.
	11	11	11	17	17	-	-	.	.
	12	12	12	17B	17B	-	-	.	.
ITEM 20 - ELECTRICAL BOX CONNECTION - 14 WAY									
6CN	A	2TB	102	102	15	18	18	RED	USE 223313-2 CBL
	B	103	103	G	G	.	.	BLK	.
	C	N/C	N/C	B	CAP	.	.	GRN	.
	D	35	35	35	35	.	.	WHT	.
	E	30	30	30	30	.	.	ORG	.
	F	30	30	30	30	.	.	BLU	.
	G	14	14	14	14	.	.	RED/WHT	.
	H	27	27	27	27	.	.	RED/BLK	.
	I	25	25	25	25	.	.	BLU/WHT	.
	J	33	33	33	33	.	.	BLU/BLK	.
	K	N/C	N/C	B	CAP	.	.	BLK/WHT	.
	L	N/C	N/C	B	CAP	.	.	WHT/BLK	.
	M	39	39	39	39	.	.	GRN/WHT	.
	N	31	31	31	31	.	.	GRN/BLK	.
	NC	N/C	N/C	B	CAP	.	.	ORG/BLK	.
ITEM 21 - DX FRAME LIMITS & LX-I3 FRAME XHD LOCKS									
4CN	A	2TB	102	102	12	18	18	RED	USE 223316-2 CBL
	B	103	103	G	G	.	.	BLK	.
	C	43	43	43	43	.	.	GRN	.
	D	40	40	40	40	.	.	WHT	.
	E	44	44	44	44	.	.	ORG	.
	F	42	42	42	42	.	.	BLU	.
	G	N/C	N/C	-	-	.	.	BRN	.
	H	N/C	N/C	-	-	.	.	YEL	.
	I	N/C	N/C	-	-	.	.	VIO	.
	J	N/C	N/C	-	-	.	.	GRY	.
	NC	N/C	N/C	-	-	.	.	PINK	.
	NC	N/C	N/C	-	-	.	.	TAN	.
	NC	N/C	N/C	-	-	.	.	SHD	.
ITEM 22 - GRIP HANDSET CABLE									
GPCN	2	2TB	17	17	8	20	20	BLK	USE 232539-1 CBL
	1	43	43	43	43	.	.	RED	.
	7	18	18	18	18	.	.	WHT	.
	4	19	19	19	19	.	.	GRN	.
	5	43	43	43	43	.	.	ORG	.
	9	20	20	20	20	.	.	BLU	.
	NC	N/C	N/C	-	-	.	.	BRN	.
	NC	N/C	N/C	-	-	.	.	YEL	.

From		To		Wire or Cable			Misc		
Title	Pos.	Title	Pos.	Num	Pairs	Cond	AWG	Color	Info
ITEMS 23A & 23B - VENT MOTOR WIRING									
CCN	1	2TB	102	102	3	18	18	BRN	USE 236780-2 CBL
	(VENT	2	103	103	G	.	.	BLU	.
	CONN)	3	G	G	.	.	.	GR/YL	.
2MTR	1	(RED) CCN	1	102	3	18	18	BRN	USE 229867-2 CBL
	(VENT	2	103	103	G	.	.	BLU	.
	MOTOR)	G	3	G	.	.	.	GR/YL	.
ITEM 24 - SERVO VALVE CABLE									
TSV	A	2TB	39	39	1	2	20	BLK	USE CABLE 219149-2
	(SER VLV)	B	31	31	G	.	.	WHT	.
	NC	G	G	G	.	.	.	SHD	.
ITEM 25 - TEMPERATURE LEVEL SWITCH									
1TMP	1	2TB	NC	NC	.	.	.	BRN	USE CABLE 300-8923-9727
	(TEMP/LVL)	2	30	30	.	.	.	BLU	30° OUTSIDE OF BOX
	SW	3	103	103	G	.	.	BLK	.
		G	G	G	.	.	.	GR/YL	.
ITEM 26 - DX DUMP OR LX T/C									
TCCN	1	2TB	14	14	4	20	20	RED	USE 236977-1 CBL
	2	35	35	35	.	.	.	BLK	.
	3	103	103	103	.	.	.	WHT	.
	4	G	G	G	.	.	.	GRN	.
ITEM 27 - DX LIMITS / LX PRESSURE SW									
CNI	1	2TB	42	42	8	20	20	RED	USE 236781-1 CBL
	2	43	43	43	.	.	.	BLK	.
	3	44	44	44	.	.	.	ORG	.
	4	43	43	43	.	.	.	BLU	.
	5	102	102	102	.	.	.	YEL	.
	6	40	40	40	.	.	.	WHT	.
	7	42	42	42	.	.	.	GRN	.
	8	NC	NC	NC	.	.	.	BRN	.
	9	NC	NC	NC	.	.	.	BRN	.
ITEM 28 - GRIP MANIFOLD SOLENOIDS									
SVCN	1	2TB	103	103	8	20	20	RED	USE 233272-1 CBL
	2	1CR	14	17A	.	.	.	BLK	.
	3	NC	NC
	4	2CR	14	19A	.	.	.	ORG	.
	5	2TB	103	103	.	.	.	BLU	.
	6	103	103	103	.	.	.	YEL	.
	7	18	18	18	.	.	.	WHT	.
	8	103	103	103	.	.	.	GRN	.
	9	20	20	20	.	.	.	BRN	.
ITEM 29 - DX/LX - XHD UP/DOWN CABLE AND LX - LOCKS CABLE									
LKCN	1	2TB	103	103	8	20	20	RED	USE 236782-1 CBL
	2	25	25	25	.	.	.	BLK	.
	3	33	33	33	.	.	.	ORG	.
	4	103	103	103	.	.	.	BLU	.
	5	103	103	103	.	.	.	YEL	.
	6	27	27	27	.	.	.	WHT	.
	7	103	103	103	.	.	.	GRN	.
	8	42	42	42	.	.	.	BRN	.

WIRELIST

MATERIAL:

H	103888	REMOVE JUMPER IN TOSS RE LABEL TB	5/24/17	MBG
G	103218	ADD CAP/JUMPER RAUS	5/17/17	MBG
F	103064	SHORTEN CABLES (TEL 20A 21 TO FT)	5/31/17	MBG
E	102950	CHANGE DUMP T/C CABLE	4/21/17	MBG

*** DENOTES CRITICAL FEATURES AND DIMENSIONS TO BE INSPECTED**

SURFACE FINISH: R_a 125 μm, UNLESS OTHERWISE NOTED

HARDNESS:

FINISH:	±0.05
ANGULAR:	.XX
INCHES:	FRACTIONAL ±.164

TOLERANCES NOT OTHERWISE NOTED

ELEC BOX ASSEMBLY
LX/DX INTCON 5900

DRAWN: JRH DATE: 1/31/17
CHECKED: S.O. SHEET 3 OF 3

REV H
R236686-3

SIZE C
INSTRON INDUSTRIAL PRODUCTS
GROVE CITY, PENNSYLVANIA

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Appendix A

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identification

Product Name: Altra AW 32 Hydraulic Oil
Product Number: 11005
Synonyms: Antiwear Hydraulic Fluid, Petroleum Based Lubricant
Chemical Name: Hydrotreated heavy paraffinic distillate
Chemical Family: Petroleum Distillate
CAS Number: Blend

Company Identification

Allegheny Petroleum Products Co.
999 Airbrake Avenue
Wilmerding, PA 15148 USA
1-412-829-1990 (For product information)
1-800-424-9300 (For emergencies)
1-800-424-9300 or 1-703-527-3887 (CHEMTREC)

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT LISTING:

<u>Chemical Name</u>	<u>Amount</u>	<u>CAS Number</u>
HYDROTREATED PARAFFINIC DISTILLATE, DEWAXED	> 98.0 %	64742-65-0
ADDITIVES	< 2.0 %	Blend

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

HAZARDS DISCLOSURE

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains no known hazardous materials.

3. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW *****
*
* Not expected to cause a severe emergency hazard. *
*

HMIS Rating - Health: 1
Flammability: 1
Reactivity: 0

NFPA Rating - Health: 1
Flammability: 1
Reactivity: 0
Special Hazard: N/A

POTENTIAL HEALTH EFFECTS

EYE:

Contact may cause eye irritation and redness.

SKIN:

Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

INHALATION:

Inhalation of vapors or mist may be mildly irritating to the nose, throat, and respiratory tract.

INGESTION:

Small amounts swallowed during normal handling operations are not likely to cause injury.

CHRONIC EFFECTS:

No adverse effects have been documented in humans as a result of chronic exposure.

CARCINOGENICITY INFORMATION:

Based on OSHA 1910.1200 and IARC study requirements, this product does not require labeling.

4. FIRST AID MEASURES

EYE CONTACT FIRST AID:

Flush eye with water for 15 minutes.

Get medical attention if irritation develops or persists.

SKIN CONTACT FIRST AID:

Wash skin with soap and water.

(section 4 continued)

Thoroughly wash (or discard) clothing and shoes before reuse.

INHALATION FIRST AID:

Remove to fresh air.

If not breathing, give artificial respiration.

INGESTION FIRST AID:

If vomiting should occur spontaneously, keep airway clear.

NOTES TO PHYSICIAN:

Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

COC Flash Point: 248.9 C (480.0 F)

Autoignition Temperature: > 315.6 C (> 600.1 F)

FLAMMABLE LIMITS IN AIR

LEL: N/A

UEL: N/A

EXTINGUISHING MEDIA:

Carbon dioxide, foam, or dry powder. Water may be used to cool below flash point.

FIRE FIGHTING INSTRUCTIONS:

As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

COMBUSTION PRODUCTS:

Fumes, smoke and carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):

Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:

Absorb spills with inert material.

LARGE SPILLS PROCEDURE:

Contain spilled material.

Large spillage should be dammed-off and pumped into containers.

(section 6 continued)

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

SMALL SPILLS PROCEDURE:

Clean up area by absorbent material.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

7. HANDLING AND STORAGE

HANDLING (PERSONNEL):

DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

Wash hands thoroughly after handling.

HANDLING (PHYSICAL ASPECTS):

Store in a cool dry area.

Keep container closed to avoid contamination.

STORAGE PRECAUTIONS:

Keep container closed when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Not required under normal conditions of use. However, if unusual operating conditions exist, then provide sufficient mechanical ventilation to maintain exposure below PEL/TLV (s).

EYE / FACE PROTECTION REQUIREMENTS:

Where contact with this material is likely, eye protection is recommended.

SKIN PROTECTION REQUIREMENTS:

When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material.

RESPIRATORY PROTECTION REQUIREMENTS:

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

EXPOSURE GUIDELINES:

No Information Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Liquid
COLOR: Amber
ODOR: Characteristic
BOILING POINT: >425 F
VAPOR PRESSURE: Nil mm Hg
VAPOR DENSITY: >1 (Air = 1)
SOLUBILITY IN WATER: Nil
SPECIFIC GRAVITY: 0.861 at 60 deg F (Water = 1)
BULK DENSITY: 7.17 Pounds per Gallon at 60 Deg F
MELTING/FREEZING POINT ...: N/A F
% VOLATILES: Nil %
VISCOSITY: 32 cSt at 40 Deg C

10. STABILITY AND REACTIVITY

STABILITY:

Stable.

POLYMERIZATION:

Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS:

Avoid contact with strong oxidizing agents.

DECOMPOSITION:

In the case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

Minimal irritation on contact.

SKIN EFFECTS:

Practically non-toxic if absorbed. May cause mild irritation with prolonged and repeated exposure.

ACUTE ORAL EFFECTS:

Tests on similar materials indicate low order of acute oral toxicity.

ACUTE INHALATION EFFECTS:

Low acute toxicity expected on inhalation.

MISCELLANEOUS:

Please contact supplier for additional toxicological information.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS:

Ecotoxicological Information: No specific aquatic data available for this product.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Do not flush to surface water or sanitary sewer system.

CONTAINER DISPOSAL:

Empty drums should be completely drained, properly bunged and promptly shipped to the supplier or a drum reconditioner.

All other containers should be disposed of in an environmentally safe manner.

14. TRANSPORTATION INFORMATION

PRODUCT LABEL: Altra AW 32 Hydraulic Oil
D.O.T. SHIPPING NAME ...: Not regulated by DOT

15. REGULATORY INFORMATION

MISCELLANEOUS INFORMATION:

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

16. OTHER INFORMATION

REASON FOR ISSUE ...: Revised
APPROVAL DATE: March 3, 2009
SUPERCEDES DATE: March 3, 2009
RTN NUMBER: 00011005 (Official Copy)

ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

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except that it is accurate to the best knowledge of Allegheny Petroleum
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END OF MSDS

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The background of the page is a light gray color with a subtle, abstract design. It features several curved, overlapping lines in shades of gray, creating a sense of motion and depth. A prominent feature is a large, curved band of small, light gray dots that follows the curve of the lines, resembling a halftone or mesh pattern. The overall aesthetic is clean, modern, and technical.

Product Support: www.instron.com