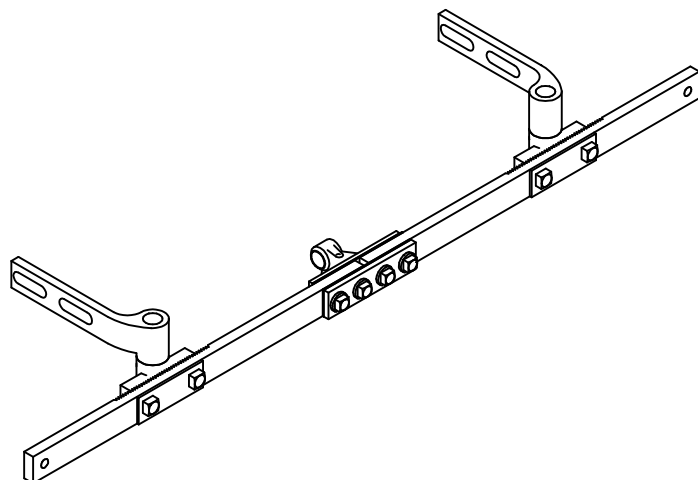
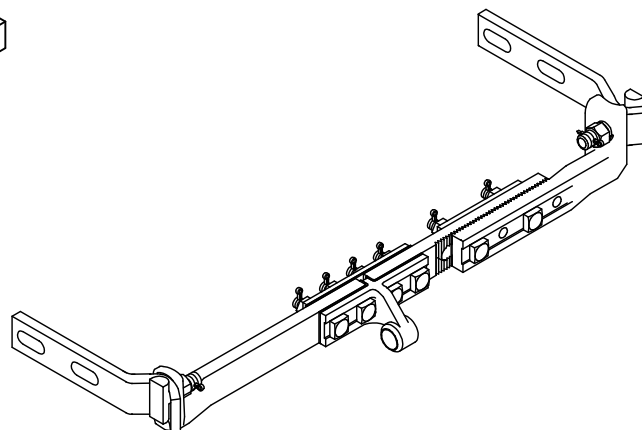


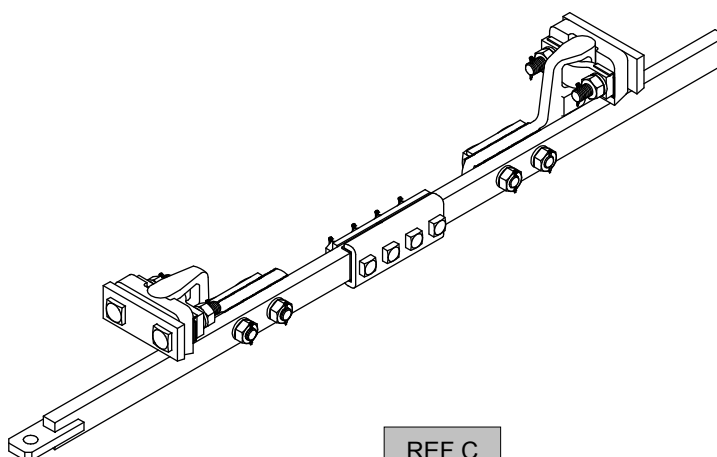
FRONT RODS



REF A



REF B

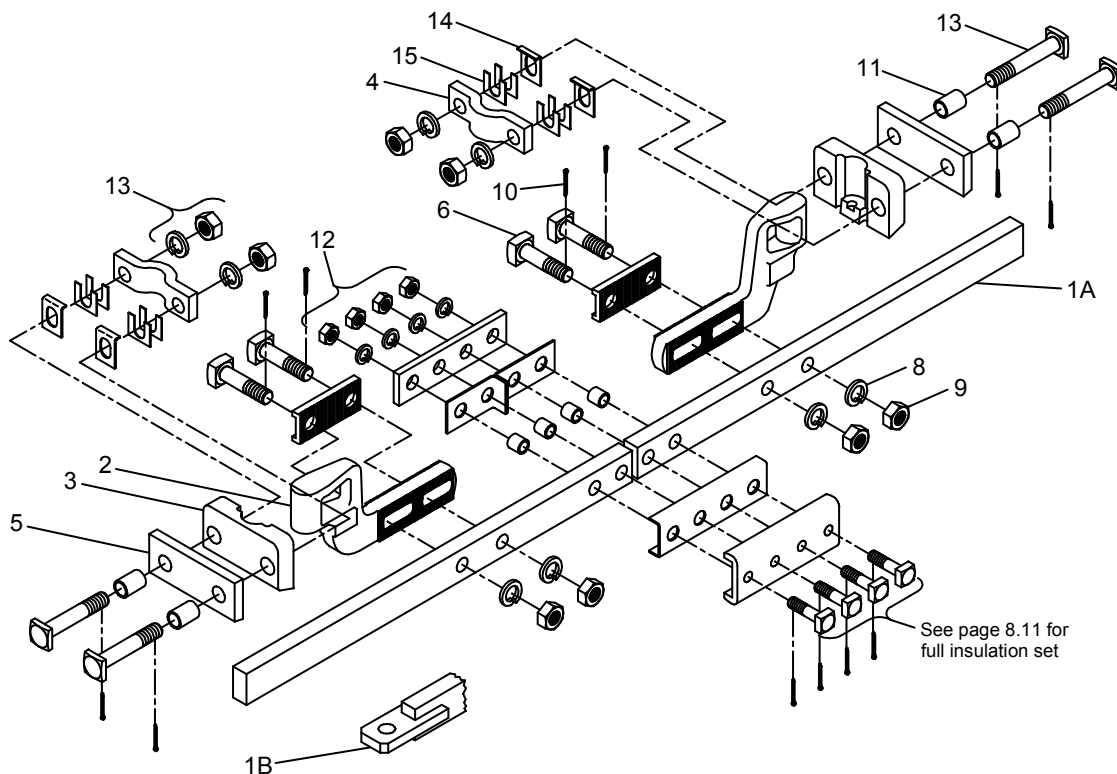


REF C

REF	J&A #	DESCRIPTION
A	22524X-XXX	ASSEMBLY, GRS STYLE FRONT ROD (SEE PAGES 8.3-8.5)
B	225312-XXX	ASSEMBLY, US&S STYLE FRONT ROD (SEE PAGES 8.6-8.7)
C	225350-XXX	ASSEMBLY, SMJ STYLE FRONT ROD (SEE PAGES 8.2)

FRONT RODS

SMJ STYLE



225350-XXX

BASKET TYPE	X
NONE	0
US&S BASKET	1
GRS BASKET	2

BAR TYPE	X
STRAIGHT BAR	0
TANGED BAR	1

BOLT LENGTH	X
5 1/2"	0
6	1
6 1/2"	2

REF	J&A #	DESCRIPTION
	225350-XXX	ASSEMBLY, FRONT ROD, SMJ STYLE
1A	140466-000	BAR, TRANSIT, STRAIGHT
1B	160278-000	BAR, TRANSIT, TANGED
2	110080-001	LUG, SWIVEL
3	110084-001	LUG BODY, SWIVEL
4	110081-001	LUG RETAINER, SWIVEL
5	110082-000	PLATE, SWIVEL LUG, 3/4" THICK
6	140590-000	SCREW, SQUARE WITH HOLE, 1-8 X 5" Z/P
7	110083-001	PLATE, SERRATED WITH 2 HOLES
8	013000-012	WASHER, SPLIT LOCK, 1" Z/P
9	013115-012	NUT, HEAVY HEX, 1-8 Z/P
10	014001-1124	PIN, COTTER, 1/4" X 1 1/2" Z/P
11	150219-000	SPACER, SHIPPING, FOR SHIPMENT ONLY
12A	180180-002	KIT, INSULATION, SPLICE
12B	180132-002	KIT, INSULATION, US&S BASKET
12C	180049-002	KIT, INSULATION, GRS BASKET
13A	180087-004	KIT, BOLT, TRACK, 1-8 X 5 1/2"
13B	180087-005	KIT, BOLT, TRACK, 1-8 X 6"
13C	180087-006	KIT, BOLT, TRACK, 1-8 X 6 1/2"
14	014086-000	SHIM, RETAINER (T-9)
15	014087-000	SHIM, ADJUSTMENT (T-6)

INSULATION & BRACKETS

US&S basket, see page 4.10

GRS basket, see page 2.11

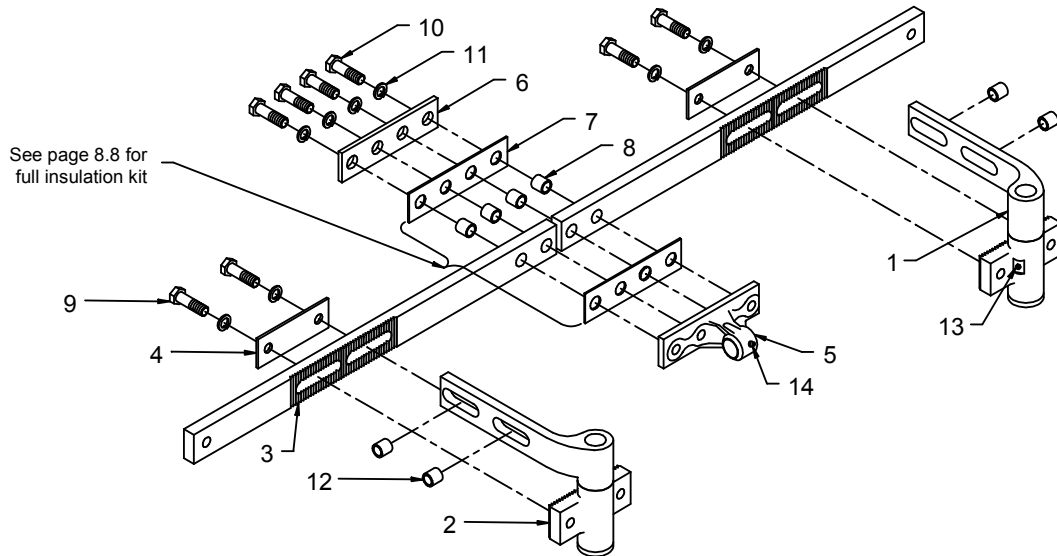
Insulation set for SMJ front rod without a basket, see page 8.10

Insulation set for SMJ front rod with US&S basket, see page 8.9

Insulation set for SMJ front rod with GRS basket, see page 8.8

FRONT RODS

GRS FRONT RODS



REF	J&A #	DESCRIPTION
	22524X-XXX	ASSEMBLY, FRONT ROD (SEE TABLES ON PAGES 8.4 & 8.5)
1	220019-XXX	ASSEMBLY, LUG, RIGHT HAND (SEE TABLE A THIS PAGE)
2	220029-XXX	ASSEMBLY, LUG, LEFT HAND (SEE TABLE B THIS PAGE)
3	140338-000	BAR, TRANSIT, 36° X 1"
4	150077-000	PLATE, WASHER, 1/8" THICK
5	110045-001	LUG, CENTER
6	150070-000	PLATE, CONNECTOR, 1/2" THICK
7	027010-000	PLATE, INSULATOR, 1/8" THICK*
8	027012-001	BUSHING, INSULATOR, FOR 1" BAR*
9	013203-640	SCREW, HEX HEAD CAP, 3/4-10 X 2 1/2" Z/P
10	013203-648	SCREW, HEX HEAD CAP, 3/4-10 X 3" Z/P
11	013000-010	WASHER, SPLIT LOCK, 3/4" Z/P
12	150093-000	BUSHING, 1" TO 3/4" (REDUCER, USE W/ 3/4" BOLTS ONLY)
13	021000-007	GREASE FITTING, 1/4-28 X 45 THREAD CUT
14	021000-002	GREASE FITTING, 1/4" DRIVE

Table A

LUG ASSY, RIGHT HAND		
Y	Z	J&A #
10 1/8	4 1/4	220019-011S
	5 3/16	220019-111S
13 1/8	4 1/4	220019-011
	5 3/16	220019-021
15 1/8	4 1/4	220019-121
	5 3/16	220019-111

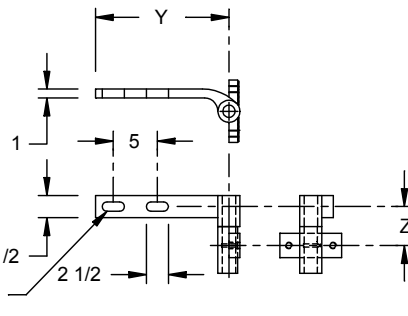


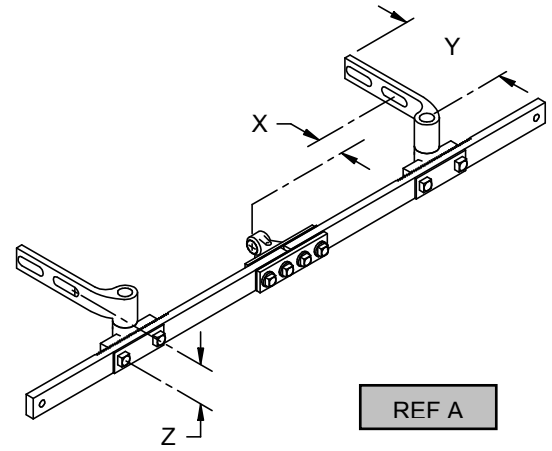
Table B

LUG ASSY, LEFT HAND		
Y	Z	J&A #
10 1/8	4 1/4	220029-011S
	5 3/16	220029-111S
13 1/8	4 1/4	220029-011
	5 3/16	220029-021
15 1/8	4 1/4	220029-121
	5 3/16	220029-111

FRONT RODS

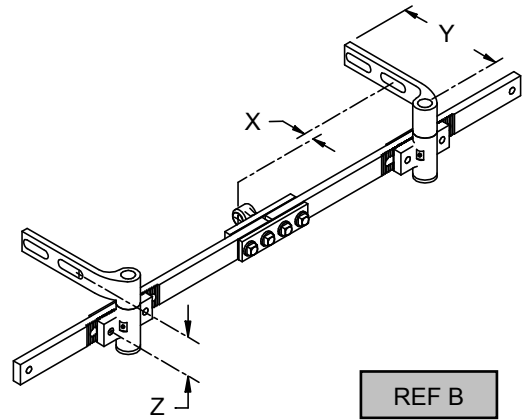
GRS FRONT RODS

REF	X	Y	Z	1" BOLTS	3/4" BOLTS
A1	1/2 to 2	10 1/8	4 1/4	A91-330S	A91-340S
				225240-001S	225240-002S
A2	1/2 to 2	10 1/8	5 3/16	A91-331S	A91-341S
				225240-003S	225240-004S
A3	3 1/2 to 5	13 1/8	4 1/4	A91-330	A91-340
				225240-001	225240-002
A4	3 1/2 to 5	13 1/8	5 3/16	A91-331	A91-341
				225240-003	225240-004
A5	5 1/2 to 7	15 1/8	4 1/4	A91-332	A91-342
				225240-005	225240-006
A6	5 1/2 to 7	15 1/8	5 3/16	A91-333	A91-343
				225240-007	225240-008



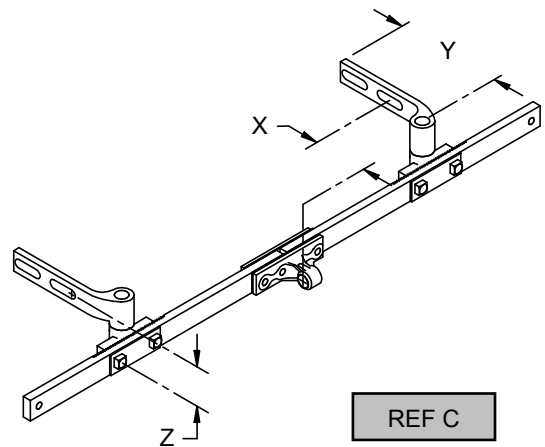
REF A

REF	X	Y	Z	1" BOLTS	3/4" BOLTS
B1	-1 to -2 1/2	10 1/8	4 1/4	A91-350S	A91-360S
				225241-001S	225241-002S
B2	-1 to -2 1/2	10 1/8	5 3/16	A91-351S	A91-361S
				225241-003S	225241-004S
B3	1/2 to 2	13 1/8	4 1/4	A91-350	A91-360
				225241-001	225241-002
B4	1/2 to 2	13 1/8	5 3/16	A91-351	A91-361
				225241-003	225241-004
B5	2 1/2 to 4	15 1/8	4 1/4	A91-352	A91-362
				225241-005	225241-006
B6	2 1/2 to 4	15 1/8	5 3/16	A91-353	A91-363
				225241-007	225241-008



REF B

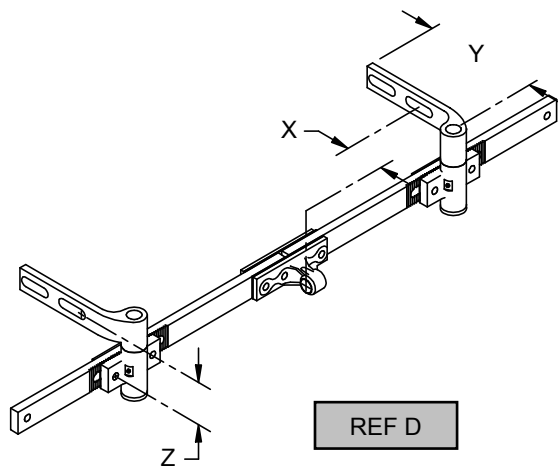
REF	X	Y	Z	1" BOLTS	3/4" BOLTS
C1	7 1/2 to 9	10 1/8	4 1/4	A91-370S	A91-380S
				225242-001S	225242-002S
C2	7 1/2 to 9	10 1/8	5 3/16	A91-371S	A91-381S
				225242-003S	225242-004S
C3	10 1/2 to 12	13 1/8	4 1/4	A91-370	A91-380
				225242-001	225242-002
C4	10 1/2 to 12	13 1/8	5 3/16	A91-371	A91-381
				225242-003	225242-004
C5	12 1/2 to 14	15 1/8	4 1/4	A91-372	A91-382
				225242-005	225242-006
C6	12 1/2 to 14	15 1/8	5 3/16	A91-373	A91-383
				225242-007	225242-008



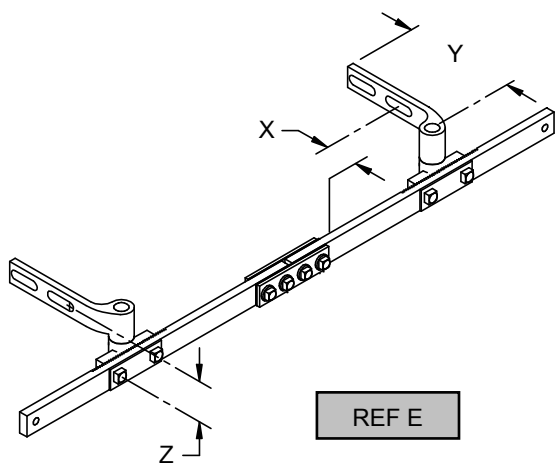
REF C

FRONT RODS

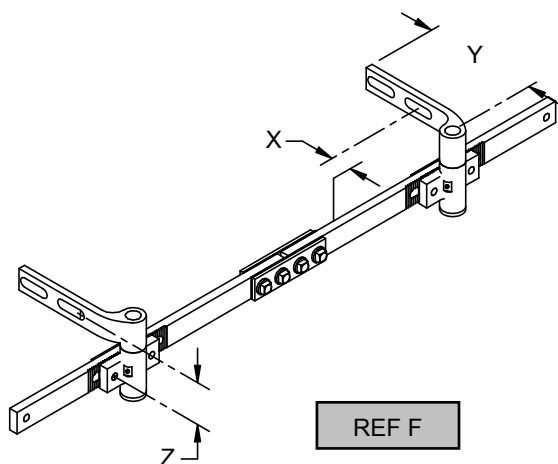
GRS FRONT RODS



REF	X	Y	Z	1" BOLTS	3/4" BOLTS
D1	4 1/2 to 6	10 1/8	4 1/4	A91-390S	A91-400S
				225243-001S	225243-002S
D2	4 1/2 to 6	10 1/8	5 3/16	A91-391S	A91-401S
				225243-003S	225243-004S
D3	7 1/2 to 9	13 1/8	4 1/4	A91-390	A91-400
				225243-001	225243-002
D4	7 1/2 to 9	13 1/8	5 3/16	A91-391	A91-401
				225243-003	225243-004
D5	9 1/2 to 11	15 1/8	4 1/4	A91-392	A91-402
				225243-005	225243-006
D6	9 1/2 to 11	15 1/8	5 3/16	A91-393	A91-403
				225243-007	225243-008



REF	X	Y	Z	1" BOLTS	3/4" BOLTS
E1	3 1/2 to 5	10 1/8	4 1/4	A91-410S	A91-420S
				225244-001S	225244-002S
E2	3 1/2 to 5	10 1/8	5 3/16	A91-411S	A91-421S
				225244-003S	225244-004S
E3	6 1/2 to 8	13 1/8	4 1/4	A91-410	A91-420
				225244-001	225244-002
E4	6 1/2 to 8	13 1/8	5 3/16	A91-411	A91-421
				225244-003	225244-004
E5	8 1/2 to 10	15 1/8	4 1/4	A91-412	A91-422
				225244-005	225244-006
E6	8 1/2 to 10	15 1/8	5 3/16	A91-413	A91-423
				225244-007	225244-008



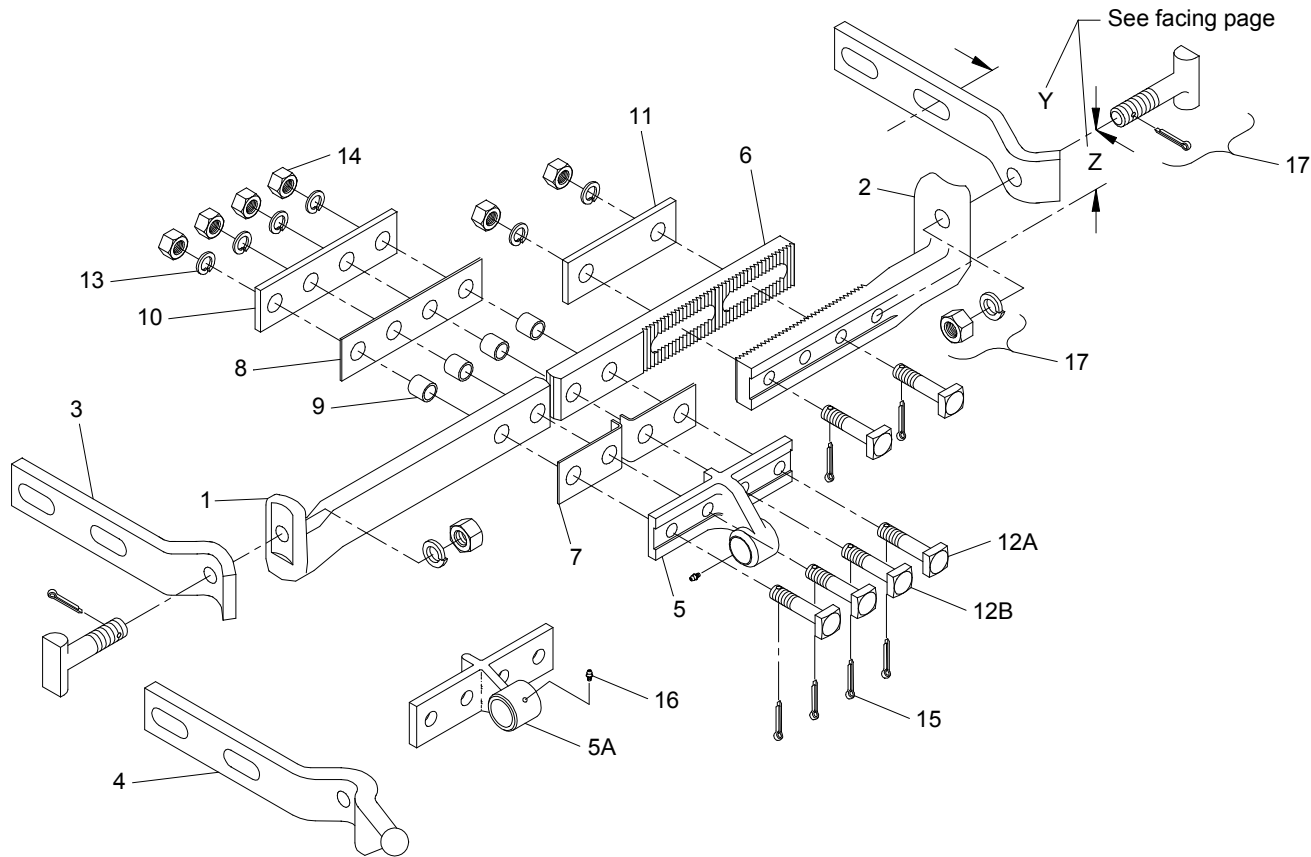
REF	X	Y	Z	1" BOLTS	3/4" BOLTS
F1	1/2 to 2	10 1/8	4 1/4	A91-430S	A91-440S
				225245-001S	225245-002S
F2	1/2 to 2	10 1/8	5 3/16	A91-431S	A91-441S
				225245-003S	225245-004S
F3	3 1/2 to 5	13 1/8	4 1/4	A91-430	A91-440
				225245-001	225245-002
F4	3 1/2 to 5	13 1/8	5 3/16	A91-431	A91-441
				225245-003	225245-004
F5	5 1/2 to 7	15 1/8	4 1/4	A91-432	A91-442
				225245-005	225245-006
F6	5 1/2 to 7	15 1/8	5 3/16	A91-433	A91-443
				225245-007	225245-008

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FRONT RODS

US&S SWIVEL



225312-XXX

See facing page

REF	O.E.M. #	J&A #	DESCRIPTION
	UN-451387-XX	225312-XXX	FRONT ROD ASSEMBLY (SWIVEL)
1	UN-290005-00X	110065-XXX	BAR, SWIVEL, L.H. DROP (SEE TABLE A ON FACING PAGE)
2	UN-290006-00X	110066-XXX	BAR, SWIVEL, R.H. DROP (SEE TABLE A ON FACING PAGE)
3	UM-SERIES	110067-XXX	LUG, SWIVEL (SEE TABLE B ON FACING PAGE)
4	UM-SERIES	110069-XXX	LUG, SWIVEL (SEE TABLE B ON FACING PAGE)
5		110062-001	LUG, CONNECTING, 1 3/4 DROP (STANDARD ON ALL FRONT RODS)
5A		160652-000	LUG, CONNECTING, NO DROP
6	UN-239076	140453-000	BAR, CONNECTING
7		027020-000	PLATE, INSULATOR, ANGLE WITH (2) 1 1/32" HOLES
8		027010-000	PLATE, INSULATOR, 1/8" THICK WITH (4) 1 1/32" HOLES
9		027012-000	BUSHING, INSULATOR, L=1 7/32" FOR 1" BAR
10		150079-000	WASHER, PLATE 1/4" THICK, WITH (4) 13/16" HOLES
11		150186-000	WASHER, PLATE 1/4" THICK, WITH (2) 13/16" HOLES
12A		140100-001	BOLT, 3/4-10 X 3 1/2"
12B		141033-000	BOLT, 3/4-10 X 3 1/2" FOR NO DROP CONNECTING LUG
13		013000-010	WASHER, SPLIT LOCK, 3/4"
14		013100-010	NUT, HEX, 3/4-10
15		014001-0932	PIN, COTTER, 3/16" X 2"
16		021000-002	FITTING, GREASE, 1/4" DRIVE
17		180207-000	KIT, T-BOLT US&S FRONT ROD

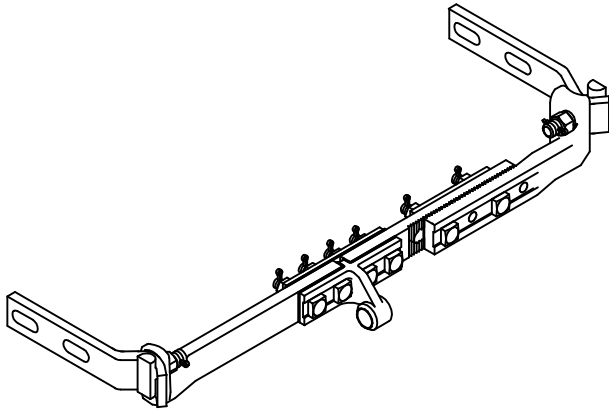
Note: See page 8.9 for complete insulation set

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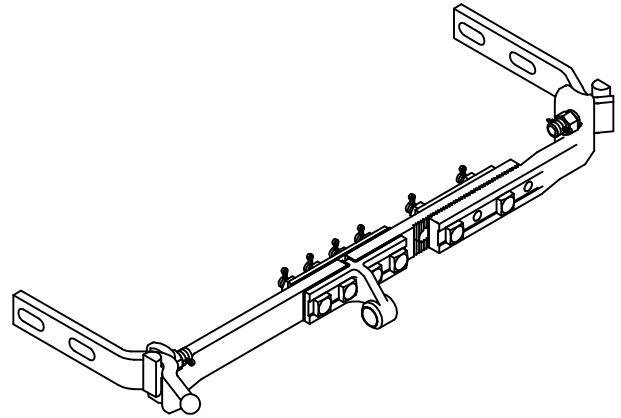
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FRONT RODS

US&S SWIVEL



Plain End Front Rod



Ball End Front Rod

225312-XXX

Table A
(See dim "Z" on previous page)

SWIVEL BAR DROP DIMENSION				
X	Z	ITEM 1	ITEM 2	ITEM 5
0	2 1/2	110065-001	110066-001	110062-001
1	4 3/8	110065-002	110066-002	110062-001
2	4 3/8	110065-002	110066-002	160652-000
3	4 3/8	110065-002	110066-003	160652-000

Table B
(See dim "Y" on previous page)

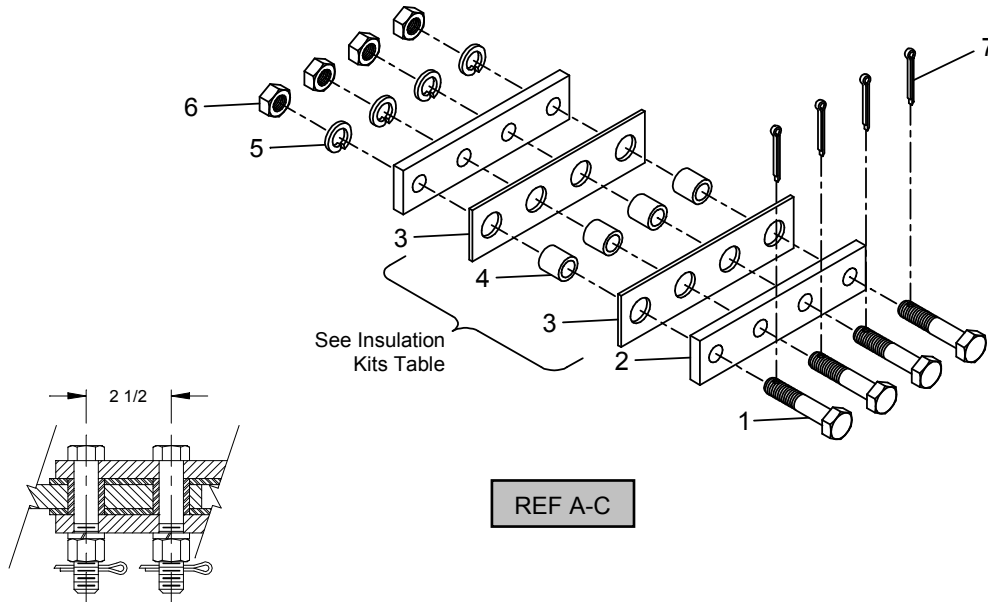
SWIVEL LUG STYLE AND DIMENSION						
XX	END STYLE	Y	ITEM 3	QTY	ITEM 4	QTY
0	PLAIN	3 1/2 to 6 1/2	110067-001	2	N/R	0
1	PLAIN	5 3/8 to 8 3/8	110067-002	2	N/R	0
10	BALL	3 1/2 to 6 1/2	110067-001	1	110069-001	1
11	BALL	5 3/8 to 8 3/8	110067-002	1	110069-002	1
22	N/R	N/A	N/R	0	N/R	0

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INSULATION

GRS FRONT RODS & BASKETS



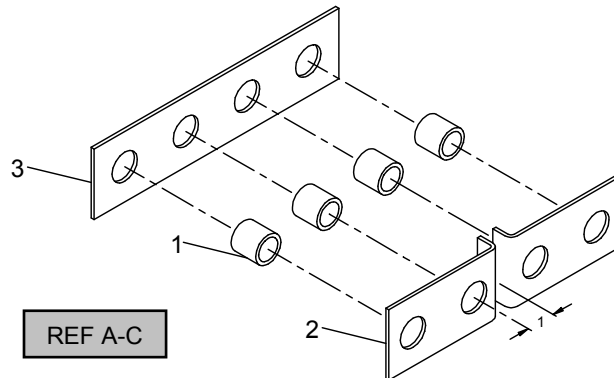
REF	J&A #	DESCRIPTION	BAR
A	180123-000	KIT, INSULATOR SET	1 1/4
B	180123-001	KIT, INSULATOR SET	3/4
C	180123-002	KIT, INSULATOR SET	1
1A	140451-001	BOLT, HEX HEAD CAP WITH HOLE, 3/4-10 X 4" Z/P	1 1/4
1B	140451-000	BOLT, HEX HEAD CAP WITH HOLE, 3/4-10 X 3 1/2" Z/P	3/4
1C	140451-003	BOLT, HEX HEAD CAP WITH HOLE, 3/4-10 X 3 3/4" Z/P	1
2	150070-000	PLATE, CONNECTOR, 1/2" THICK	
3	027010-000	PLATE, INSULATOR WITH 4 HOLES	
4A	027012-001	BUSHING, INSULATOR, 3/4" X 1 15/32"	1 1/4
4B	027012-002	BUSHING, INSULATOR, 3/4" X 31/32"	3/4
4C	027012-000	BUSHING, INSULATOR, 3/4" X 1 7/32"	1
5	013000-010	WASHER, SPLIT LOCK, 3/4"	
6	013115-010	NUT, HEAVY HEX, 3/4-10 Z/P	
7	014001-0932	PIN, COTTER, 3/16" X 2" Z/P	

Insulation Kits

REF	J&A #	DESCRIPTION	BAR
A1	180032-002	KIT, INSULATION	1 1/4
B1	180032-000	KIT, INSULATION	3/4
C1	180032-001	KIT, INSULATION	1

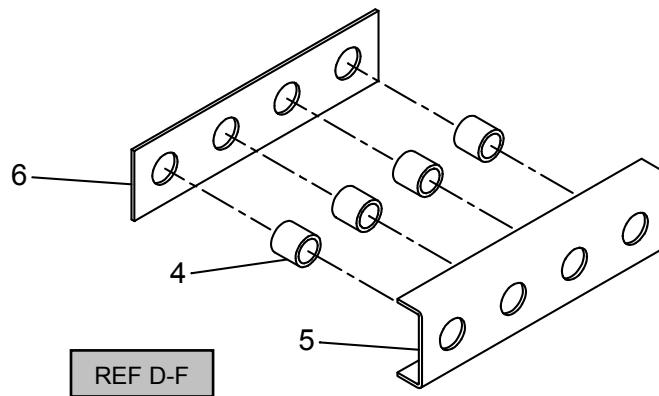
INSULATION

US&S FRONT RODS & BASKETS



Front Rod Insulation Kits

REF	J&A #	DESCRIPTION	BAR
A	180203-000	KIT, INSULATION	3/4
B	180203-001	KIT, INSULATION	1
C	180203-002	KIT, INSULATION	1 1/4
1A	027012-002	BUSHING, INSULATING, 3/4" X 31/32"	3/4
1B	027012-000	BUSHING, INSULATING, 3/4" X 1 7/32"	1
1C	027012-001	BUSHING, INSULATING, 3/4" X 1 15/32"	1 1/4
2A	027020-002	PLATE, INSULATING WITH 2 HOLES	3/4
2B	027020-001	PLATE, INSULATING WITH 2 HOLES	1
2C	027020-000	PLATE, INSULATING WITH 2 HOLES	1 1/4
3	027010-000	PLATE, INSULATING WITH 4 HOLES	

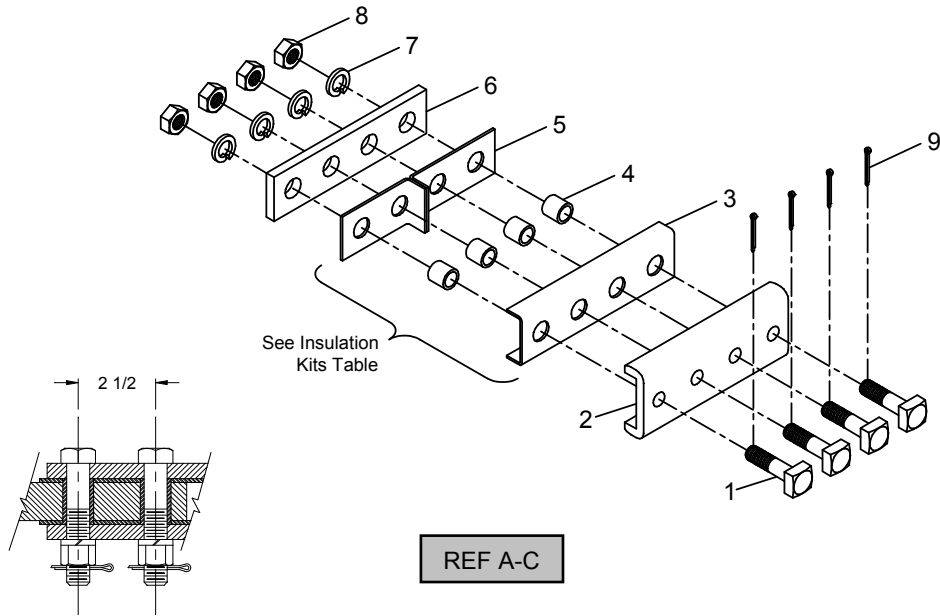


Basket Insulation Kits

REF	J&A #	DESCRIPTION	BAR
D	180133-000	KIT, INSULATION	3/4
E	180133-001	KIT, INSULATION	1
F	180133-002	KIT, INSULATION	1 1/4
4D	027012-002	BUSHING, INSULATING, 3/4" X 31/32"	3/4
4E	027012-000	BUSHING, INSULATING, 3/4" X 1 7/32"	1
4F	027012-001	BUSHING, INSULATING, 3/4" X 1 15/32"	1 1/4
5	027009-000	CHANNEL, INSULATING WITH 4 HOLES	
6	027010-000	PLATE, INSULATING WITH 4 HOLES	

INSULATION

SMJ FRONT ROD



REF	J&A #	DESCRIPTION	BAR
A	180180-000	KIT, INSULATOR SET FOR SMJ FRONT ROD	3/4
B	180180-001	KIT, INSULATOR SET FOR SMJ FRONT ROD	1
C	160278-000	KIT, INSULATOR SET FOR SMJ FRONT ROD	1 1/4
1A	140100-001	SCREW, SQUARE HEAD, 3/4-10 X 3 1/2"	3/4
1B	140100-004	SCREW, SQUARE HEAD, 3/4-10 X 3 3/4"	1
1C	140100-005	SCREW, SQUARE HEAD, 3/4-10 X 4"	1 1/4
2	150196-000	PLATE, CHANNEL, 1/2" X 9 1/2" WITH 4 HOLES	
3	027009-000	PLATE, CHANNEL INSULATOR, 2 3/4" X 1 X 1/8"	
4A	027012-002	BUSHING, INSULATOR, 3/4" X 31/32"	3/4
4B	027012-000	BUSHING, INSULATOR, 3/4" X 1 7/32"	1
4C	027012-001	BUSHING, INSULATOR, 3/4" X 1 15/32"	1 1/4
5A	027011-002	PLATE, INSULATOR	3/4
5B	027011-001	PLATE, INSULATOR	1
5C	027011-000	PLATE, INSULATOR	1 1/4
6	150070-000	PLATE, CONNECTOR, 1/2" THICK	
7	013000-010	WASHER, SPLIT LOCK, 3/4" Z/P	
8	013115-010	NUT, HEAVY HEX, 3/4-10 Z/P	
9	014001-0920	PIN, COTTER, 3/16" X 1 1/4" Z/P	

Insulation Kits

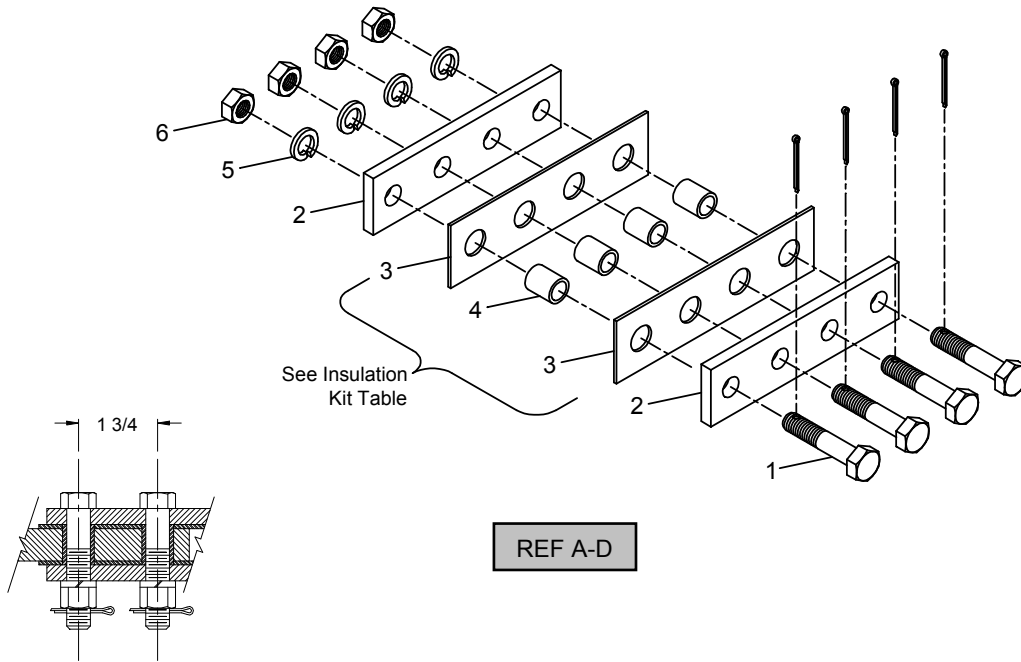
REF	J&A #	DESCRIPTION	BAR
A1	180311-000	KIT, INSULATION	3/4
B1	180311-001	KIT, INSULATION	1
C1	180311-002	KIT, INSULATION	1 1/4

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INSULATION

GRS POINT DETECTOR & SWITCH CIRCUIT RODS



REF	J&A #	DESCRIPTION
A	180033-000	KIT, INSULATOR SET FOR 1/2" BAR WITH SQUARE HEAD HARDWARE
B	180033-001	KIT, INSULATOR SET FOR 1/2" BAR WITH HEX HEAD HARDWARE
C	180033-002	KIT, INSULATOR SET FOR 1/2" BAR WITH HEX HEAD AND COTTER PIN
D	180033-003	KIT, INSULATOR SET FOR RAIL LOCK DETECTION ROD
1A	013217-440	SCREW, SQUARE, 1/2-13 X 2 1/2" (FOR -000)
1B	013000-008	SCREW, HEX, 1/2-13 X 2 1/2" (FOR -001)
1C	140471-000	SCREW, HEX WITH HOLE, 1/2-13 X 2 1/2" (FOR -002 AND -003)
1D	140471-001	SCREW, HEX WITH HOLE, 1/2-13 X 2 3/4" (FOR -003)
2	140148-000	PLATE, CONNECTOR, 3/8" THICK
3	027017-000	PLATE, INSULATOR WITH 4 HOLES
4	027018-000	BUSHING, INSULATOR FOR 1/2" BARS
5	013000-008	WASHER, SPLIT LOCK, 1/2"
6A	013121-008	NUT, HEAVY SQUARE, 1/2-13 Z/P (FOR -000)
6B	013115-008	NUT, HEAVY HEX, 1/2-13 Z/P (FOR -001, -002, AND -003)
7	014001-0616	PIN, COTTER, 1/8" X 1" Z/P (FOR -002 AND -003)

Insulation Kit

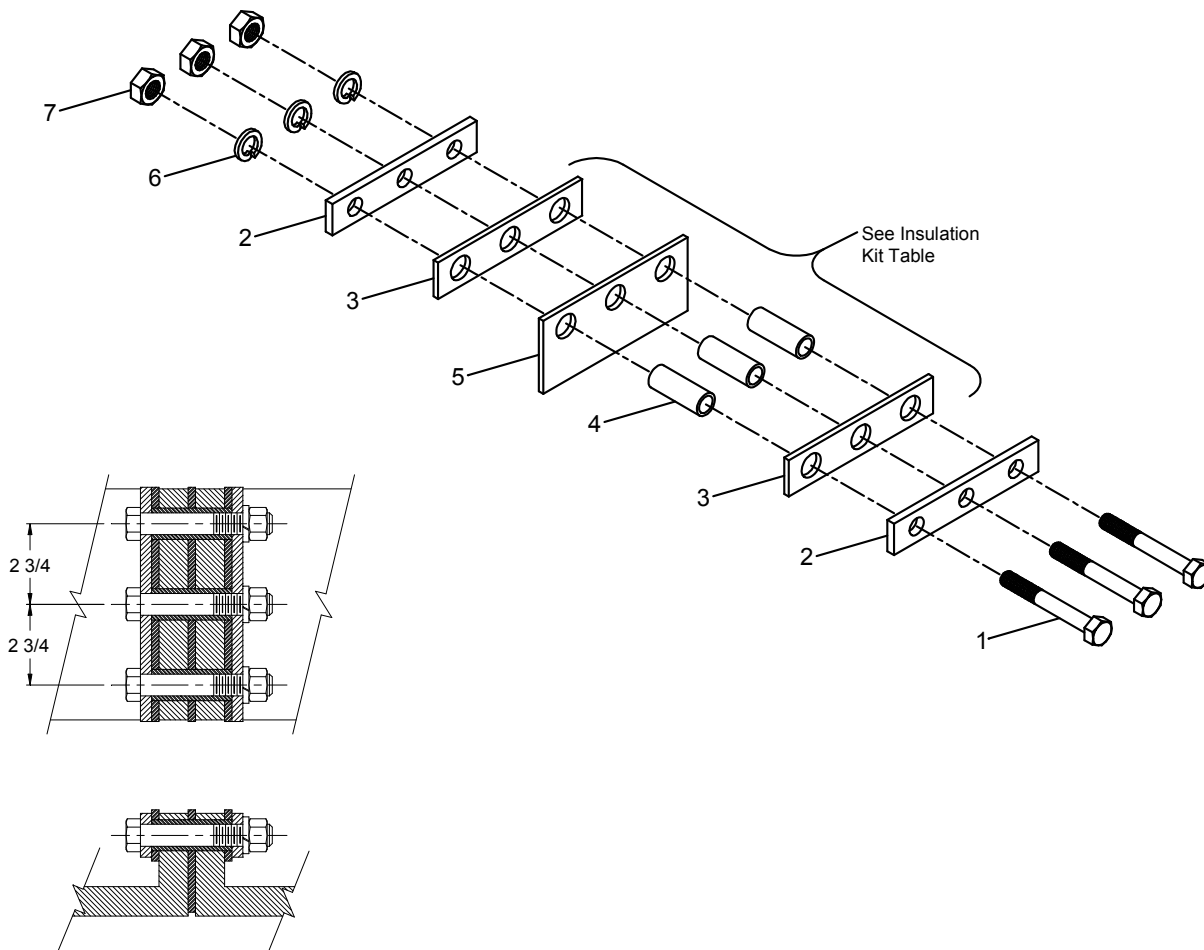
J&A #	DESCRIPTION
180416-000	KIT, INSULATION FOR SWITCH CIRCUIT ROD

J&A INDUSTRIES, INC.

14 S. Ewing Street Kansas City, KS 66118 PH (913) 281-5722 (800) 748-7722 FAX (913) 281-1401

INSULATION

GRS GAUGE PLATE



REF	J&A #	DESCRIPTION
	180196-000	KIT, INSULATION FOR GAUGE PLATE
1	013203-680	BOLT, HEX HEAD CAP, 3/4-10 X 5\" Z/P
2	150171-000	PLATE, 1 1/2\" X 8\" X 3/8\" WITH 3 HOLES
3	019029-000	PLATE, INSULATOR, 1 3/4\" X 8\" X 1/4\" WITH 3 HOLES
4	019021-007	BUSHING, INSULATOR, 3/4\" X 2 11/16\"
5	019028-000	PLATE, INSULATOR, 3 1/2\" X 8\" X 1/4\" WITH 3 HOLES
6	013000-010	WASHER, SPLIT LOCK, 3/4\" Z/P
7	013100-010	NUT, HEAVY HEX, 3/4-10 Z/P

Insulation Kit

J&A #	DESCRIPTION
180312-000	KIT, INSULATION