



Transport Canada
Safety and Security

Transports Canada
Sécurité et sûreté

Road Safety

Sécurité routière

Standards and Regulations Division

Standard Seat Assembly Specifications for Motor Vehicle Restraint Systems and Booster Seats Safety Regulations Compliance Testing

Issued: January 1, 2010

Standards Research and Development Branch
Road Safety and Motor Vehicle Regulation Directorate
TRANSPORT CANADA
Ottawa, Ontario
K1P 5H9

DRAWING PACKAGE: STANDARD SEAT ASSEMBLY SPECIFICATIONS FOR *MOTOR VEHICLE RESTRAINT SYSTEMS AND BOOSTER SEATS SAFETY REGULATIONS COMPLIANCE TESTING*

NAME	DRAWING SHEET NUMBER	DATE
SEAT ASSEMBLY	2010SSA100	01/01/2010
FRAME, ASSEMBLY	2010SSA200	01/01/2010
FRAME, FRONT AND SIDE ASSEMBLY	2010SSA201	01/01/2010
FRAME, BOTTOM ASSEMBLY	2010SSA202	01/01/2010
FRAME, SEAT TOP ASSEMBLY	2010SSA203	01/01/2010
ANCHOR POINTS ASSEMBLY	2010SSA204	01/01/2010
FRAME, BACK ASSEMBLY	2010SSA205	01/01/2010
CUSHION, ASSEMBLY	2010SSA300	01/01/2010
CUSHION, SEAT ASSEMBLY	2010SSA301	01/01/2010
CUSHION, BACK ASSEMBLY	2010SSA302	01/01/2010
BACKING, SEAT AND BACK ASSEMBLY	2010SSA303	01/01/2010

Unless otherwise specified, all dimensions are in mm and inches

Tolerances shall not be cumulative

MM:

0 to 12.7mm ± 0.79mm

12.7 to 25.4mm ± 1.580mm

25.4 to 127mm ± 3.175mm

127 to 254mm ± 6.35mm

FRACTIONS:

0 to 1/2 ± 1/32

1/2 to 1 INCL ± 1/16

1 to 5 INCL ± 1/8

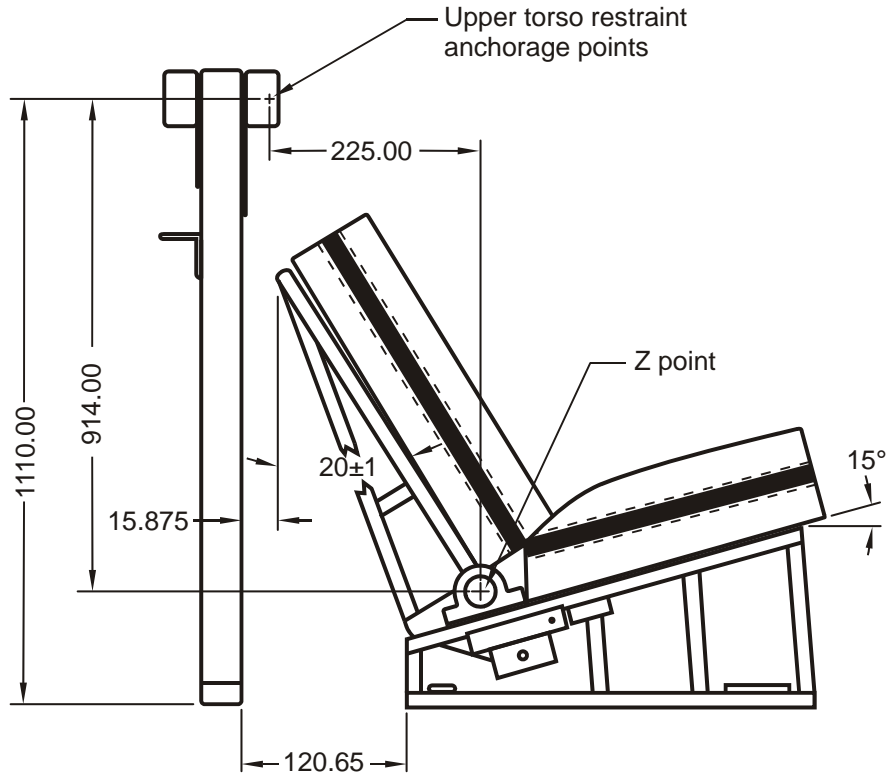
5 to 10 INCL ± 1/4

Remove all burrs. Break

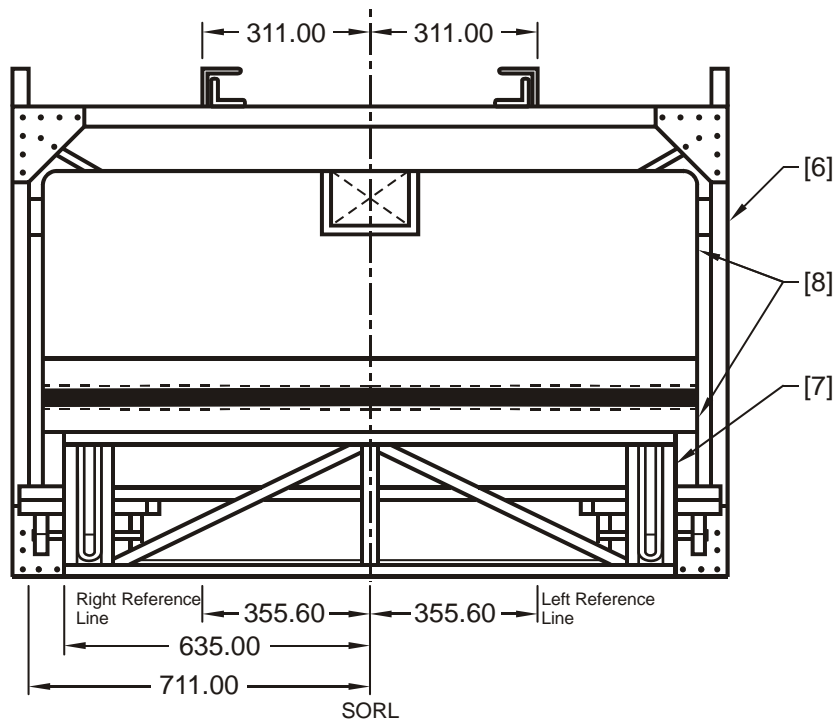
sharp edges .12700mm - .38100mm

sharp edges .005 to .015 INCHES

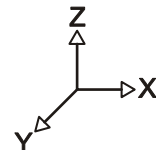
2010SSA100 – Seat Assembly



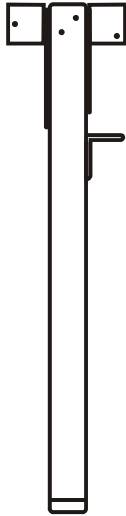
SIDE VIEW



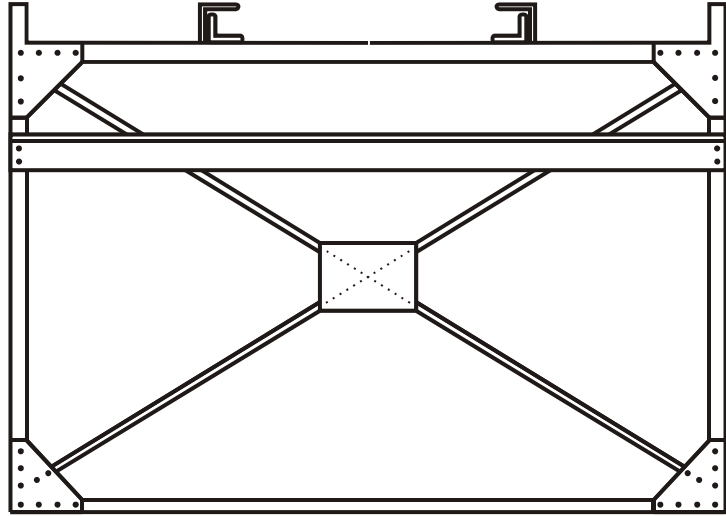
FRONT VIEW



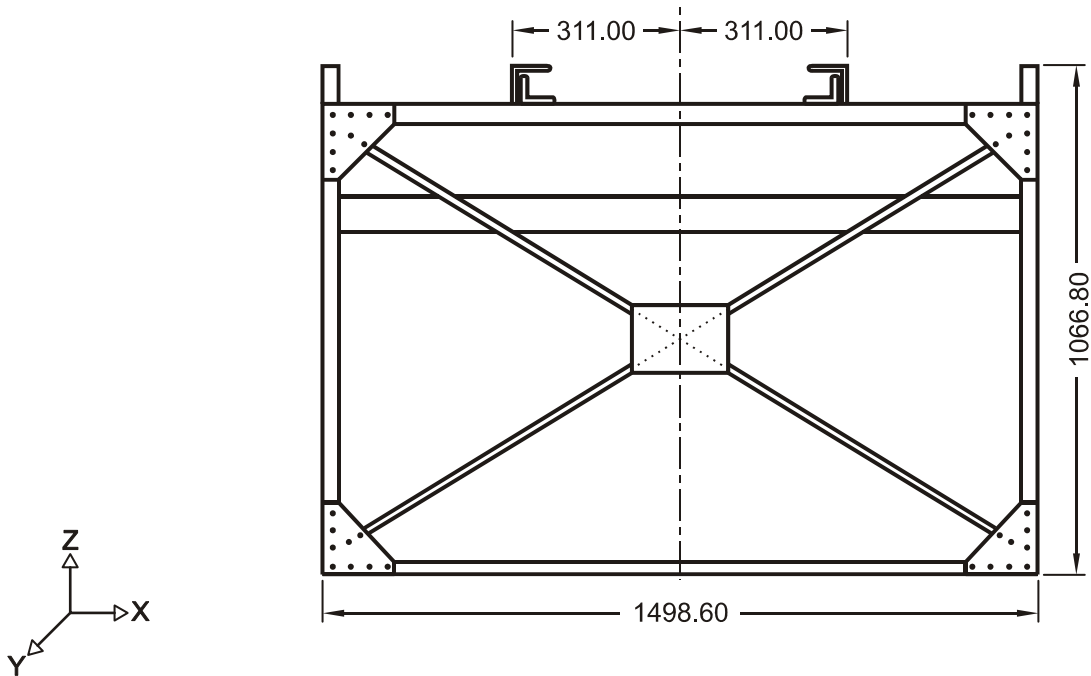
2010SSA100 – Seat Assembly (continued...)



SIDE VIEW



BACK VIEW



FRONT VIEW

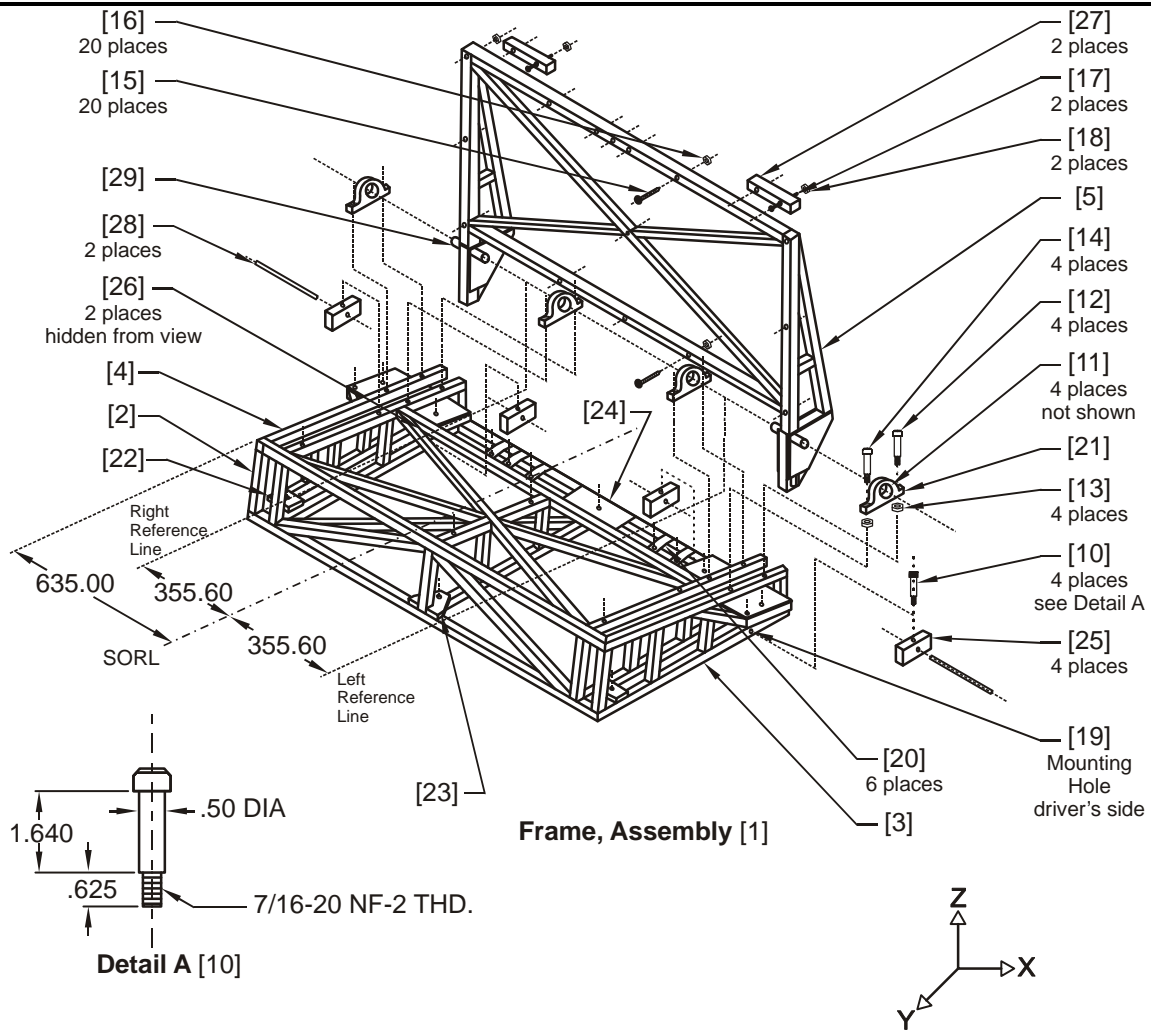
Notes:

1. Dimensions in mm
2. Drawing is not to scale.

Parts List:

- [6]. Bar assembly
- [7]. Frame, assembly
- [8]. Cushion assembly

2010SSA200 – Frame, Assembly



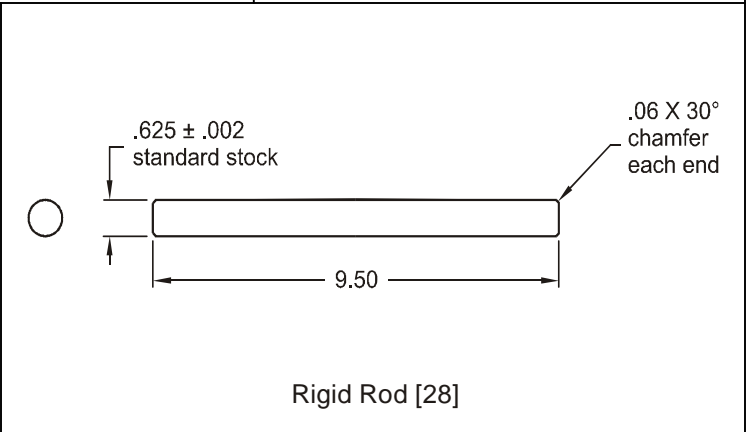
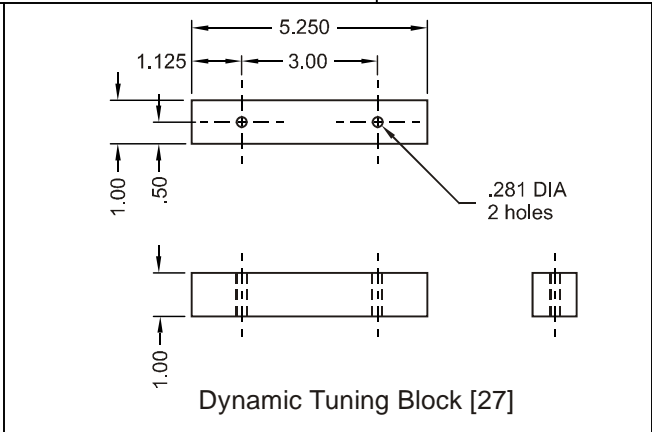
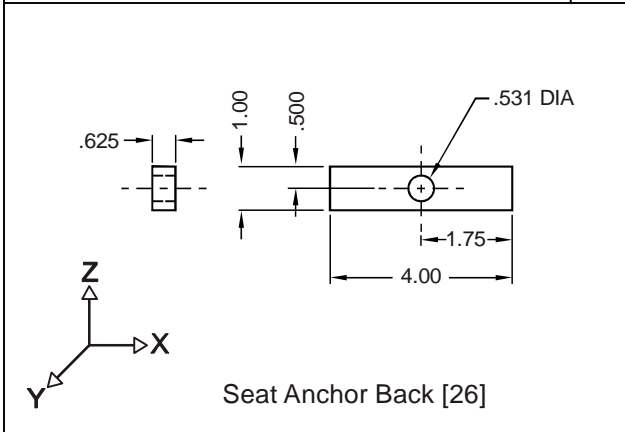
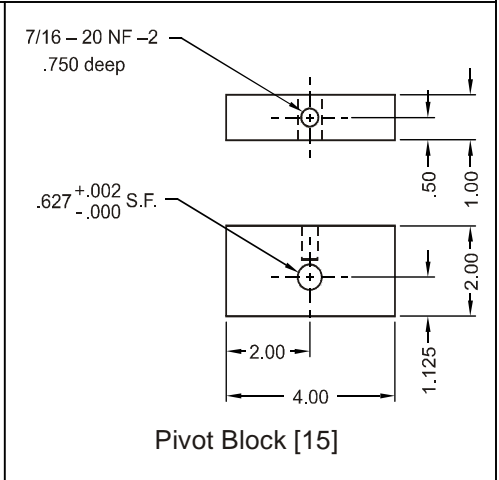
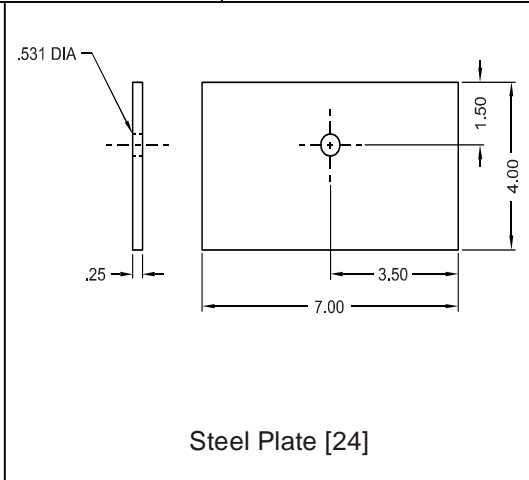
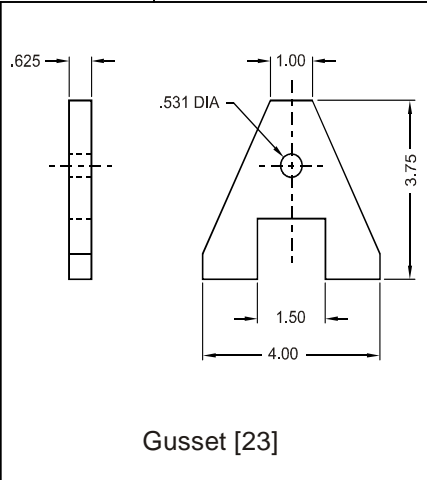
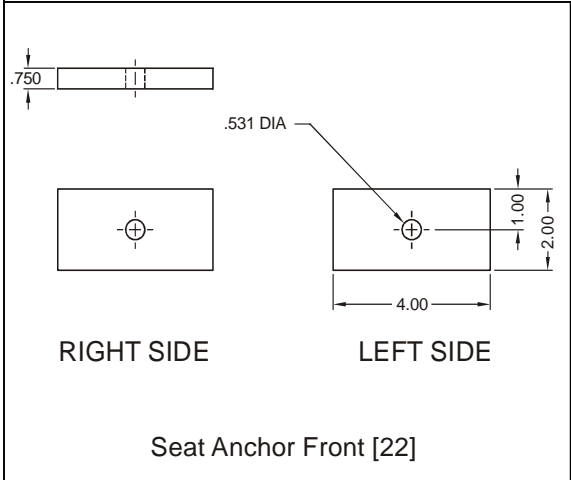
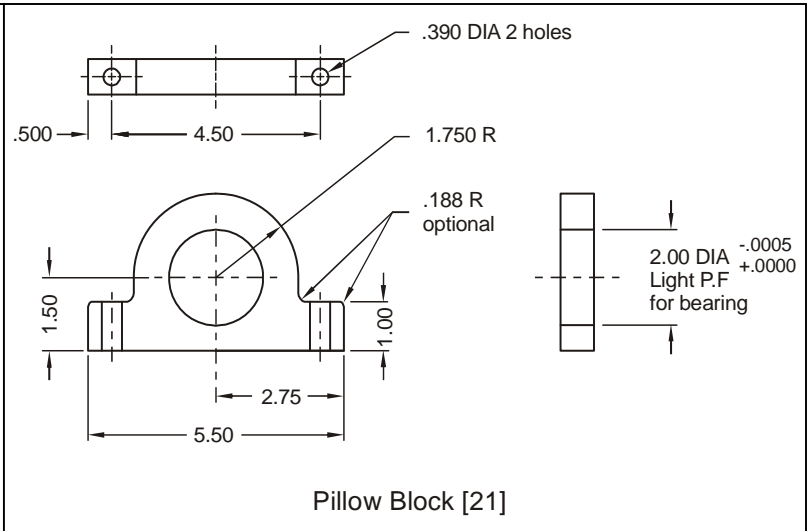
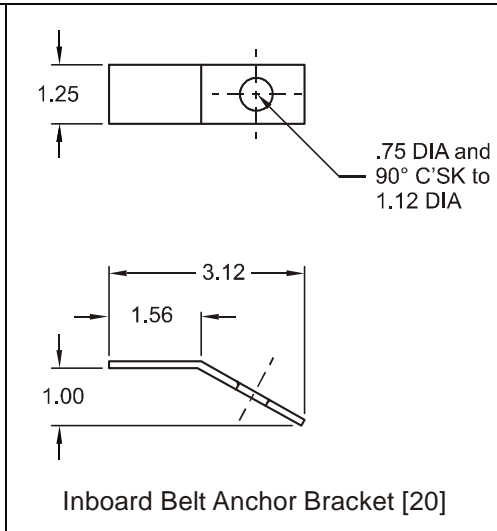
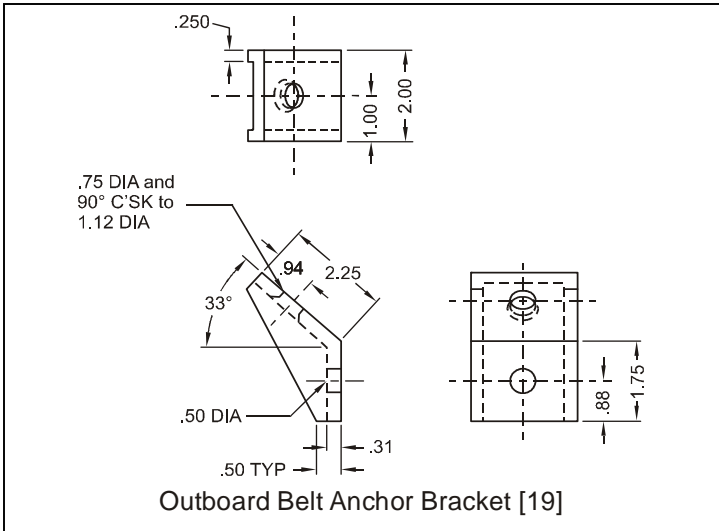
Notes:

1. All dimensions are in mm except for parts, diameters, and welds, which are in inches.
2. Drawing is not to scale.
3. Pivot Block [25] should be free to rotate with Shoulder Bolt [10] installed.
4. Rigid Rod [28] shall be replaced after each test.
5. Round HD Screw [15] and HEX Nut [16] shall be assembled to Frame, Seat Top Assembly [4] and Frame, Back Assembly [5] before cushion installations in 20 places.
6. Use 125% safety factor for all welds, electric weld with 3/32 Fleetwood 3T Rod. Weld all places possible at junctions of tube and plates. Welded assemblies may be painted for appearance and corrosion protection.
7. Grind welds flush on top and bottom surfaces of seat base weldment.

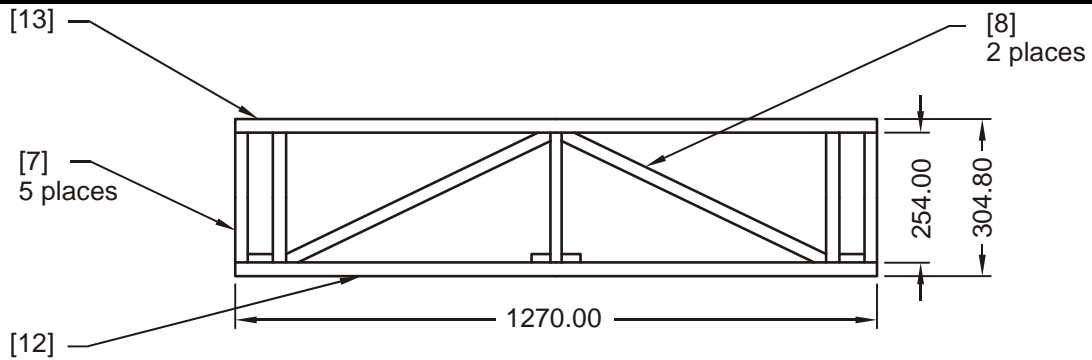
Parts:

- | | |
|---|--|
| [1]. Frame, Assembly | [18]. HEX Nut, 1/4-28 NF-2 |
| [2]. Frame, Front and Side Assembly | [19]. Outboard Belt Anchor Bracket, steel,
2 X 2 X 2.25 X 3 |
| [3]. Frame, Bottom Assembly | [20]. Inboard Belt Anchor Bracket, steel,
1/4 X 1-1/4 X 3-1/4 |
| [4]. Frame, Seat Top Assembly | [21]. Pillow Block, steel |
| [5]. Frame, Back Assembly | [22]. Seat Anchor Front, steel |
| [10]. Shoulder Bolt, 1/2 SOC. HD Bolt. See
detail A. | [23]. Gusset, steel |
| [11]. Bearing (4 places) | [24]. Steel Plate |
| [12]. HEX Head Bolt, 3/8-16 NC-2 X 2-1/2 LG | [25]. Pivot Block, steel |
| [13]. HEX Nut, 3/8-16 NC-2 | [26]. Seat Anchor Back, steel |
| [14]. HEX Head Bolt, 3/8-16 NC-2 X 3-1/2 LG | [27]. Dynamic Tuning Block, steel |
| [15]. Round HD Screw, 1/4-20 NC-2 X 2 | [28]. Rigid Rod, 1045 Cold Rolled steel |
| [16]. HEX Nut, 1/4-20 NC-2 | [29]. Rod, steel |
| [17]. Round HD Screw, 1/4-28 NF-2-1-1/2 LG | |

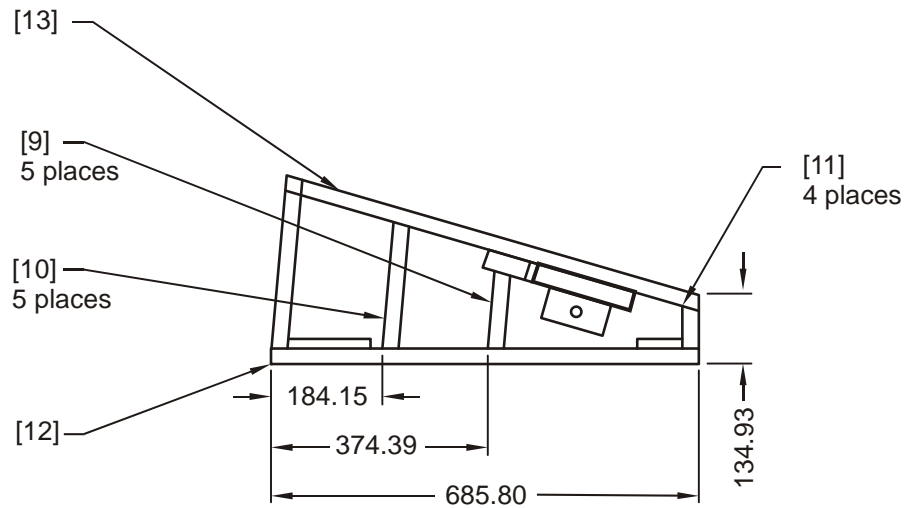
2010SSA200 – Frame, Assembly (continued...)



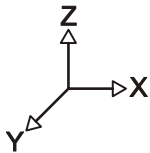
2010SSA201- Frame, Front and Side Assembly



Frame, Front Assembly [1]



**Frame, Side Assembly [2]
RH shown LH opposite**



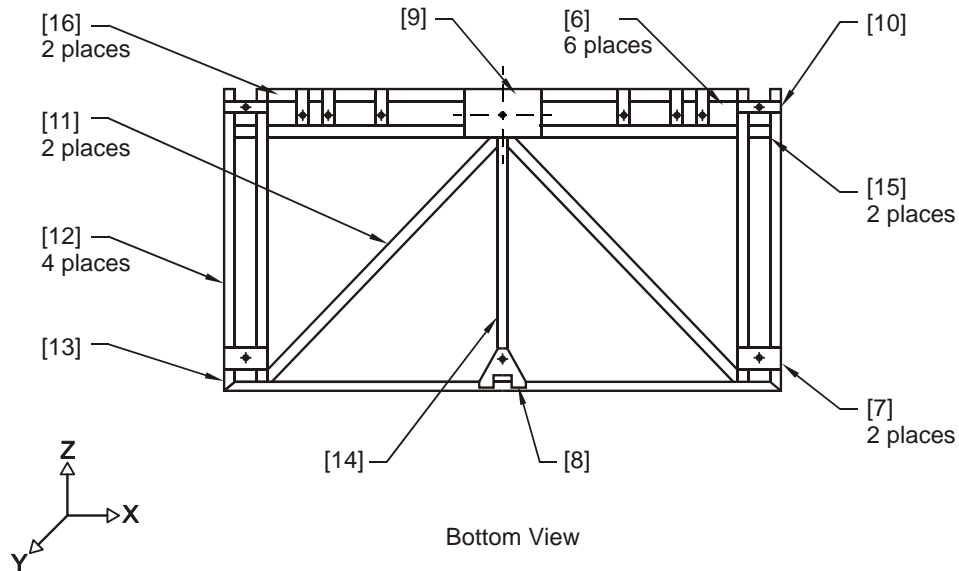
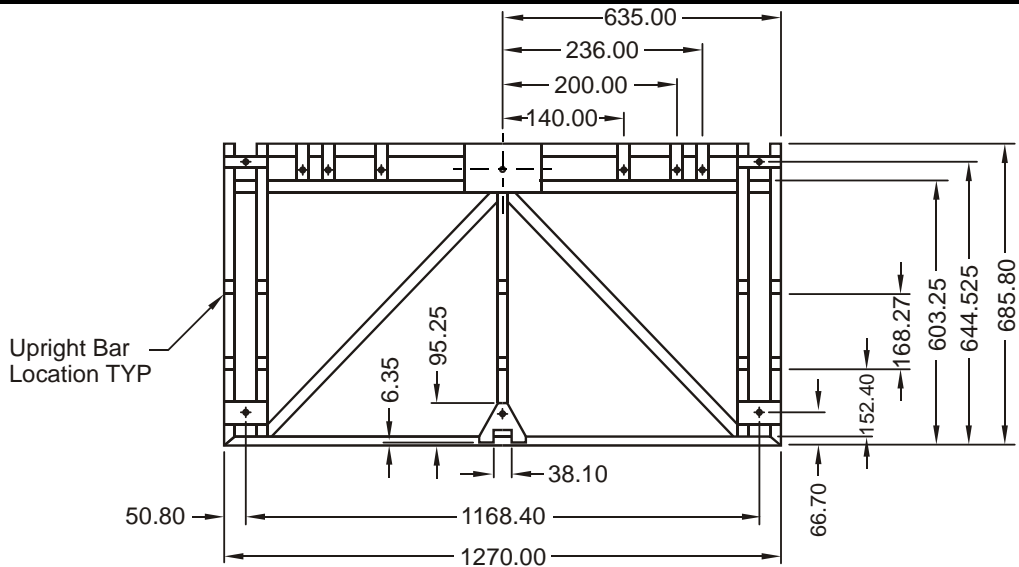
Notes:

1. Dimensions in mm except for welds, which are in inches.
2. Drawing is not to scale.
3. Use 125% safety factor for all welds, electric weld with 3/32 Fleetwood 3T Rod. Weld all places possible at junctions of tube and plates. Welded assemblies may be painted for appearance and corrosion protection.
4. Grind welds flush on top and bottom surfaces of seat base weldment.

Parts List:

- [1]. Frame, Front Assembly
- [2]. Frame, Side Assembly
- [7]. Tubing, steel, 15ga. 1 sq. cut lg. = 254.00 mm
- [8]. Tubing, steel, 15ga. 1 sq. cut lg. = 558.80 mm
- [9]. Tubing, steel, 15ga. 1 sq. cut lg. = 139.70 mm
- [10]. Tubing, steel, 15ga. 1 sq. cut lg. = 165.10 mm
- [11]. Tubing, steel, 15ga. 1 sq. cut lg. = 92.07 mm
- [12]. Frame, Bottom Assembly
- [13]. Frame, Seat Top Assembly

2010SSA202 – Frame, Bottom Assembly



Frame, Bottom Assembly [1]

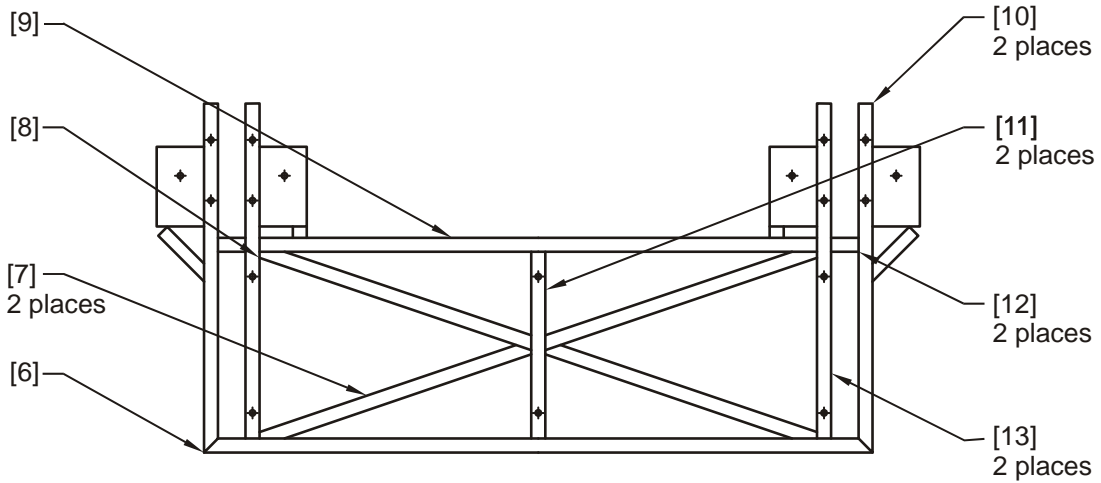
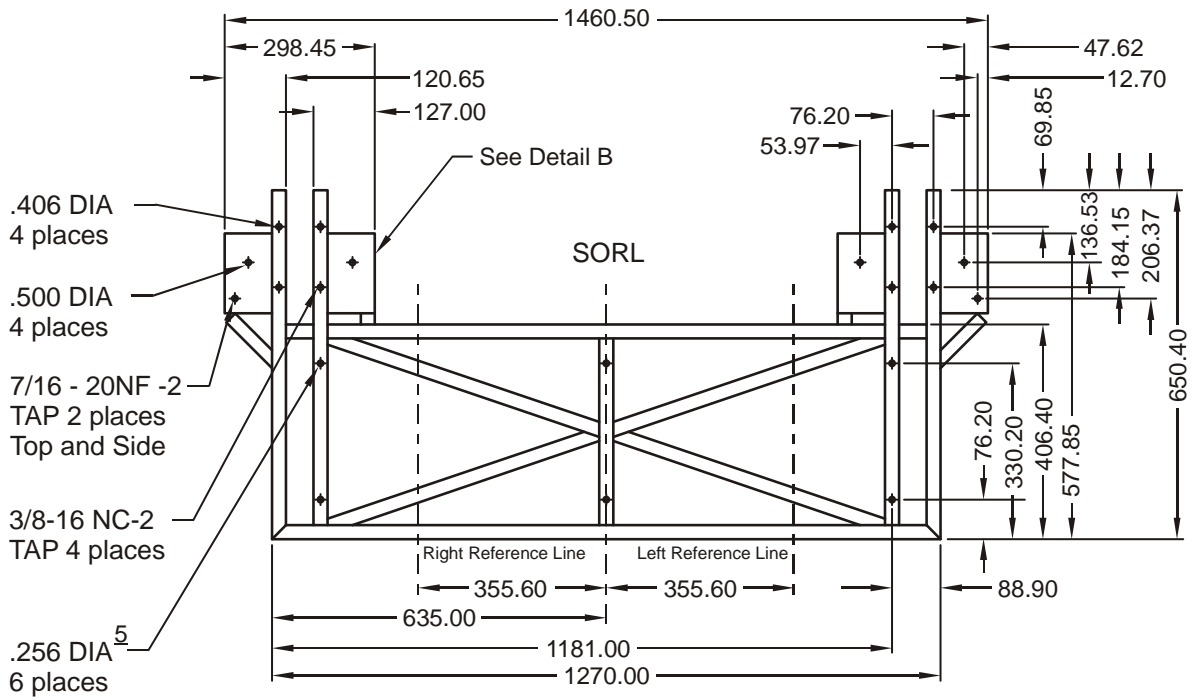
Notes:

1. Dimensions in mm except for welds, parts, diameters which are in inches.
2. Drawing is not to scale.
3. Use 125% safety factor for all welds, electric weld with 3/32 Fleetwood 3T Rod. Weld all places possible at junctions of tube and plates. Welded assemblies may be painted for appearance and corrosion protection.
4. Grind welds flush on top and bottom surfaces of seat base weldment.

Parts List:

- [1]. Frame, Bottom Assembly
- [6]. Inboard Belt Anchor Bracket
- [7]. Seat Anchor Front
- [8]. Gusset
- [9]. Steel Plate
- [10]. Seat Anchor Back
- [11]. Tubing, steel, 15ga. 1 sq. cut lg. = 762.00 mm
- [12]. Tubing, steel, 15ga. 1 sq. cut lg. = 685.80 mm
- [13]. Tubing, steel, 15ga. 1 sq. cut lg. = 1270.00 mm
- [14]. Tubing, steel, 15ga. 1 sq. cut lg. = 552.45 mm
- [15]. Tubing, steel, 15ga. 1 sq. cut lg. = 50.80 mm
- [16]. Tubing, steel, 15ga. 1 sq. cut lg. = 1066.80 mm

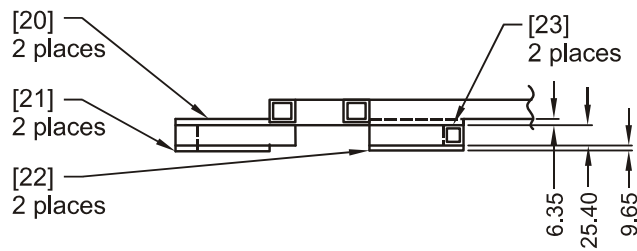
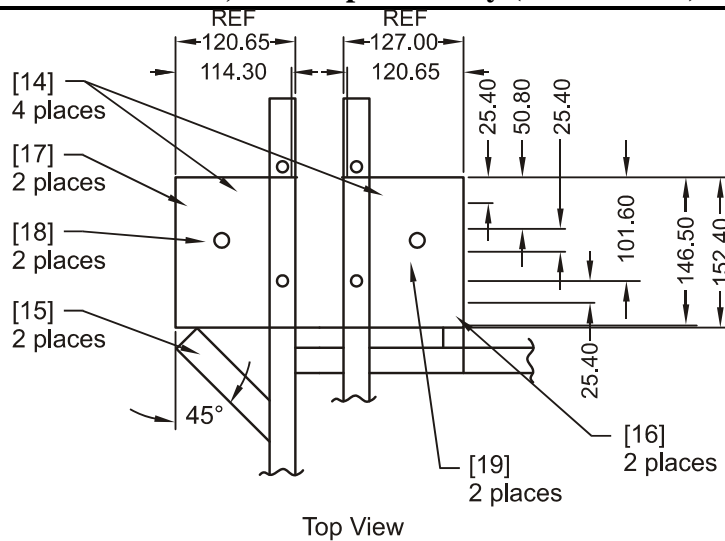
2010SSA203 – Frame, Seat Top Assembly



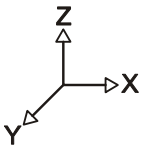
Top View

Frame, Seat Top Assembly [1]

2010SSA203 – Frame, Seat Top Assembly (continued...)



Detail B
RH shown LH opposite



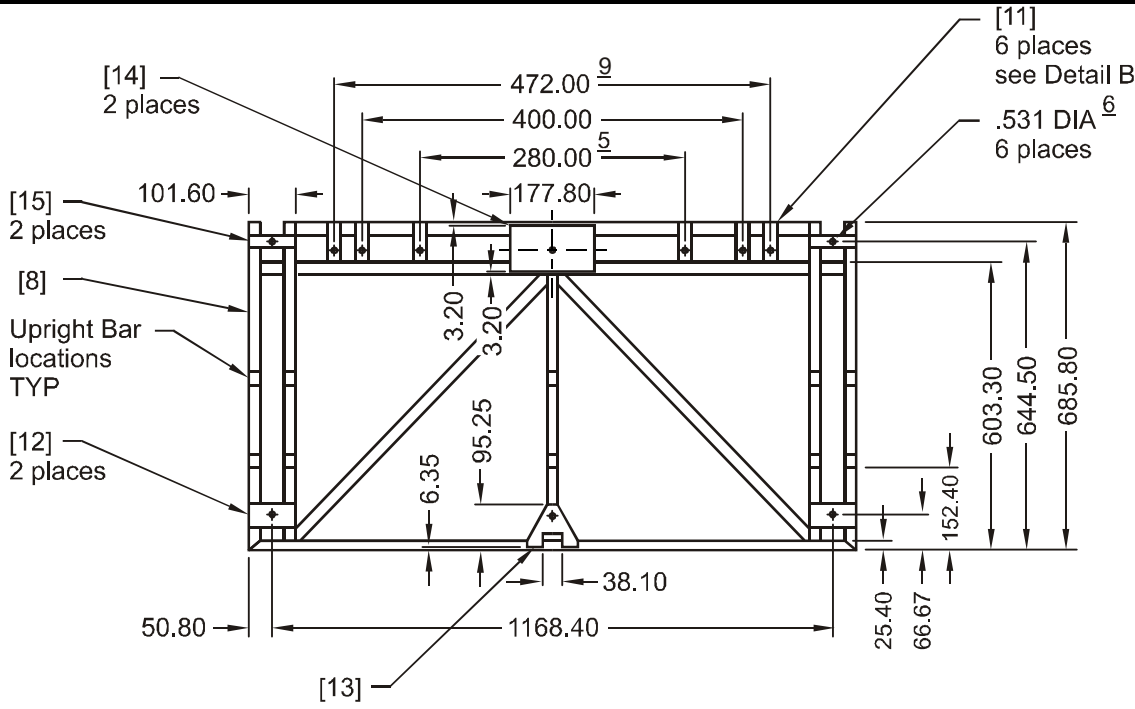
Notes:

1. Dimensions in mm except for welds, parts, diameters which are in inches.
2. Drawing is not to scale.
3. Use 125% Safety Factor for all welds, electric weld with 3/32 Fleetwood 3T Rod.
Weld all places possible at junctions of tube and plates. Welded assemblies may be painted for appearance and corrosion protection.
4. Grind welds flush on top and bottom surfaces of seat base weldment.
5. .265 DIA holes shall be drilled in Frame, Seat Top Assembly [1] for attachment of Cushion, Seat Assembly in 6 places.

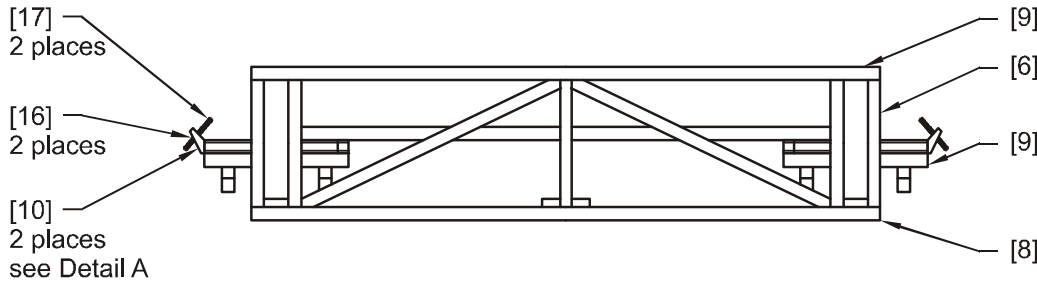
Parts List:

- [1]. Frame, Seat Top Assembly
- [6]. Tubing, steel, 15ga. 1 sq. cut lg. = 1270.00 mm
- [7]. Tubing, steel, 15ga. 1 sq. cut lg. = 558.80 mm
- [8]. Tubing, steel, 15ga. 1 sq. cut lg. = 1130.30 mm
- [9]. Tubing, steel, 15ga. 1 sq. cut lg. = 1066.80 mm
- [10]. Tubing, steel, 15ga. 1 sq. cut lg. = 660.40 mm
- [11]. Tubing, steel, 15ga. 1 sq. cut lg. = 165.10 mm
- [12]. Tubing, steel, 15ga. 1 sq. cut lg. = 50.80 mm
- [13]. Tubing, steel, 15ga. 1 sq. cut lg. = 635.00 mm
- [14]. Tubing, steel, 15ga. 1 sq. cut lg. = 95.25 mm
- [15]. Tubing, steel, 15ga. 1 sq. cut lg. = 171.45 mm
- [16]. Tubing, steel, 15ga. 1 sq. cut lg. = 247.65 mm
- [17]. Bar, steel, 1 X 1, cut lg. = 165.10 mm
- [18]. Bar, steel, 1 X 1, cut lg. = 95.25 mm
- [19]. Bar, steel, 1 X 1, cut lg. = 101.60 mm
- [20]. Plate, steel, 1/4 X 3.75 X 6 in
- [21]. Plate, steel, 3/8 X 4.75 X 6 in
- [22]. Plate, steel, 3/8 X 5 X 5.75 in
- [23]. Plate, steel, 1/4 X 4 X 5 in

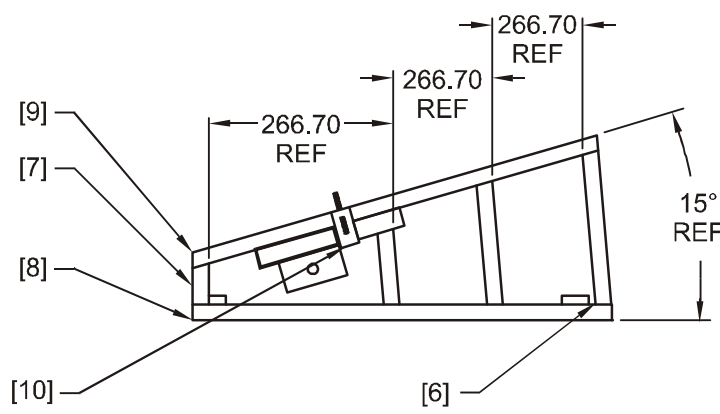
2010SSA204 – Anchor Points Assembly



Bottom View



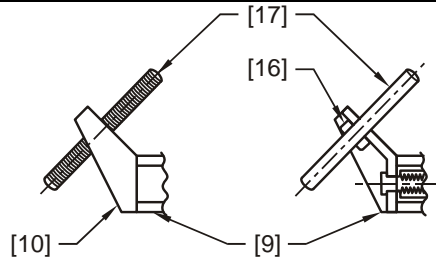
Front View



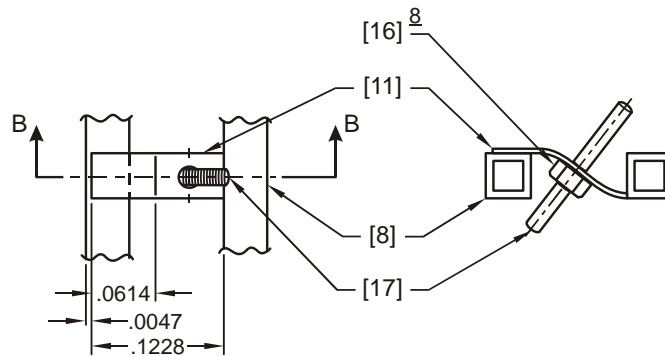
Side View

Anchor Points Assembly [1]

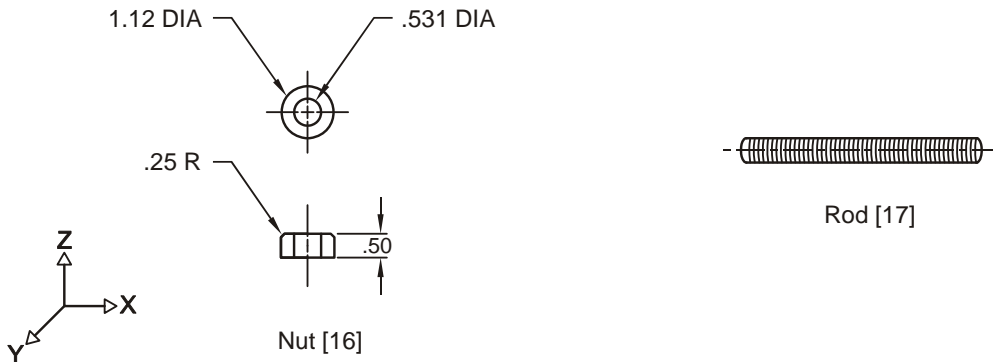
2010SSA204 – Anchor Points Assembly (continued...)



Detail A



Detail B
[11] with rod assembly



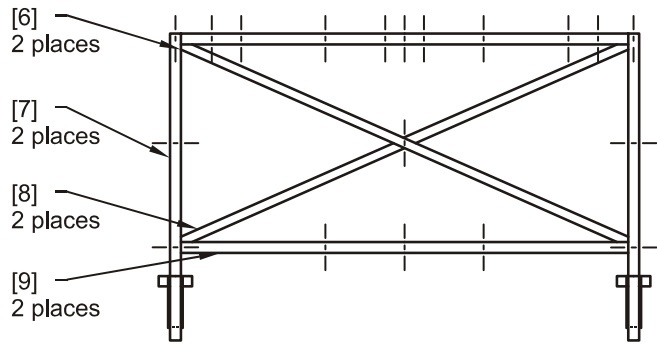
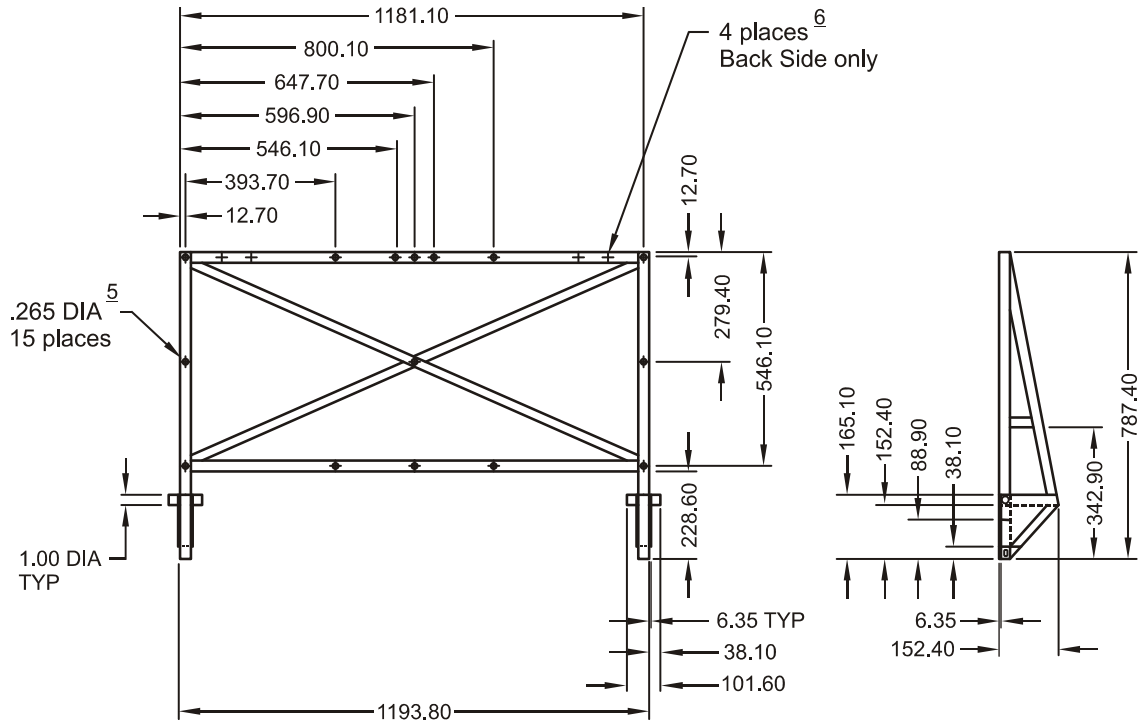
Notes:

1. Dimensions in mm except for welds, parts, diameters which are in inches.
2. Drawing is not to scale.
3. Use 125% Safety Factor for all welds, electric weld with 3/32 Fleetwood 3T Rod.
Weld all places possible at junctions of tube and plates. Welded assemblies may be painted for appearance and corrosion protection.
4. Grind welds flush on top and bottom surfaces of seat base weldment.
5. Lower Universal Anchor Bars: 6 mm DIA, 25 mm length, located 102 mm forward of point Z and 323 mm upward from floor.
6. .531 DIA holes 6 places for Seat Base Attachment to test fixture.
7. ½ Threaded Rod [17] is recommended with Belt Clevis and Nut [16] to simplify belt tensioning adjustment at both Inboard and Outboard Belt Anchors.
8. 2 Nuts [16] are required to be used with Inboard Belt Anchor Bracket [11]. If the Outboard Belt Anchor Bracket [10] is used, 2 more Nuts [16] are required.
9. Maximum distance from the seat bight to the end of the belt buckle is 175 mm.

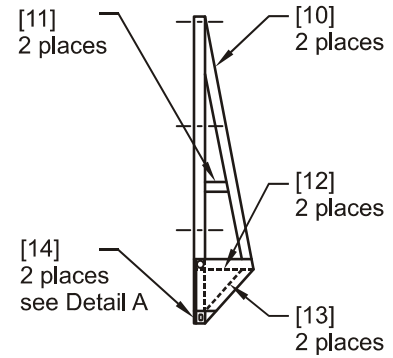
Parts List:

- | | |
|------------------------------------|-------------------------------------|
| [1]. Anchor Points Assembly | [12]. Seat Anchor Front |
| [6]. Frame, Front Assembly | [13]. Gusset |
| [7]. Frame, Side Assembly | [14]. Steel Plate |
| [8]. Frame, Bottom Assembly | [15]. Seat Anchor Back |
| [9]. Frame, Seat Top Assembly | [16]. Nut, steel, 1-1/8 DIA X ½ TK. |
| [10]. Outboard Belt Anchor Bracket | [17]. Rod, Threaded Rod, ½ DIA |
| [11]. Inboard Belt Anchor Bracket | |

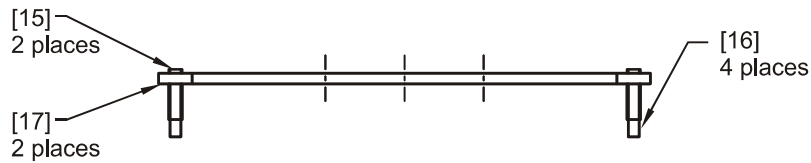
2010SSA205 – Frame, Back Assembly



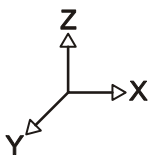
Front Views



Side Views

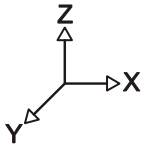
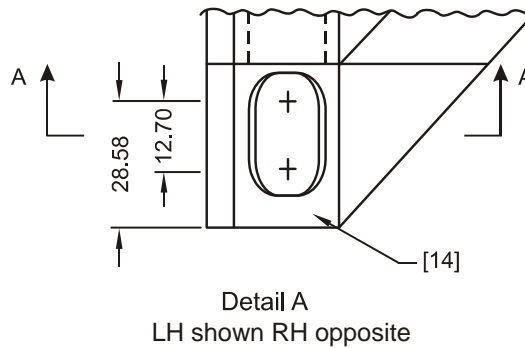
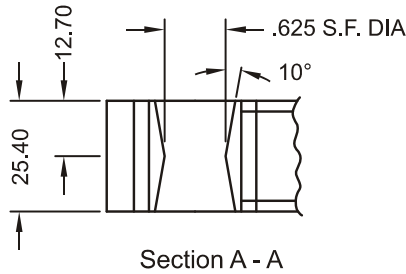
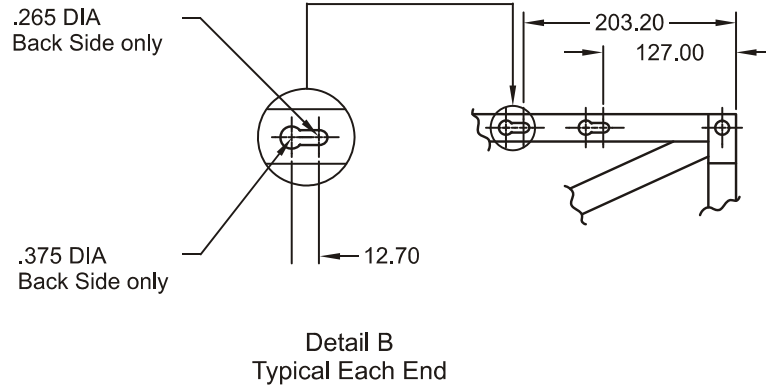


Bottom View



Frame, Back Assembly [1]

2010SSA205 – Frame, Back Assembly (continued...)

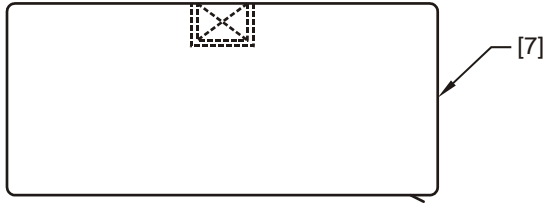


Notes:

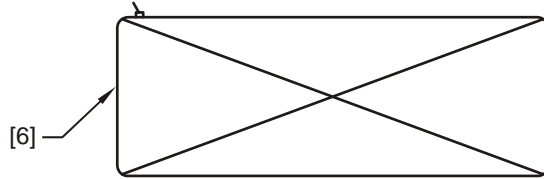
1. Dimensions in mm except for parts, diameters, and welds, which are in inches.
2. Drawing is not to scale.
3. Use 125% Safety Factor for all welds, electric weld with 3/32 Fleetwood 3T Rod. Weld all places possible at junctions of tube and plates. Welded assemblies may be painted for appearance and corrosion protection.
4. Grind welds flush on top and bottom surfaces of seat base weldment.
5. .265 DIA holes shall be drilled 15 places in Frame, Back Seat Assembly [1] for attachment of Cushion, Back Assembly.
6. Slotted holes shall be placed in the back of Frame, Back Assembly [1] for attachment of Dynamic Tuning Block, 4 places. See Detail B.

Parts List:

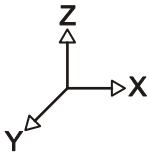
- | | |
|--|---|
| [1]. Frame, Back Assembly | [12]. Tubing, steel, 15ga. 1 sq. cut lg. = 1276.35 mm |
| [6]. Tubing, steel, 15ga. 1 sq. cut lg. = 1276.35 mm | [13]. Tubing, steel, 15ga. 1 sq. cut lg. = 196.85 mm |
| [7]. Tubing, steel, 15ga. 1 sq. cut lg. = 749.30 mm | [14]. Bar, steel, 1 X 1, cut lg. = 88.90 mm |
| [8]. Tubing, steel, 15ga. 1 sq. cut lg. = 622.30 mm | [15]. Plate, steel, 1/4 X 1 X 6.50 in |
| [9]. Tubing, steel, 15ga. 1 sq. cut lg. = 1143.00 mm | [16]. Plate, steel, 1/4 X 5 X 6.00 in |
| [10]. Tubing, steel, 15ga. 1 sq. cut lg. = 641.35 mm | [17]. Rod, steel, 1 DIA lg. = 4.00 in |
| [11]. Tubing, steel, 15ga. 1 sq. cut lg. = 69.85 mm | |



Back Front View



Base Top View



Cushion, Assembly [1]

Notes:

1. Foam shall measure 54 X 24 X 6 inches. One or two pieces of foam may be used to achieve required dimension.
2. To be suitable for compliance testing, foam inserts shall compress 25% under the following load limits:
51 mm (2 in) thick foam: 20.4 to 24.9 kg (45 to 55 lbs)
102 mm (4 in) thick foam: 9.5 to 12.2 kg (21 to 27 lbs)

Parts List:

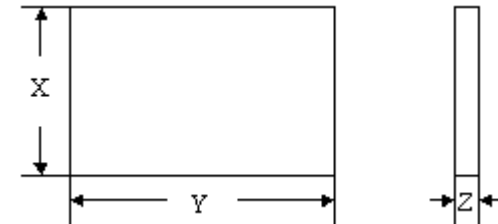
- [1]. Cushion, Assembly
- [6]. Cushion, Seat Assembly
- [7]. Cushion, Back Assembly

2010SSA300 – Cushion, Assembly (continued...)

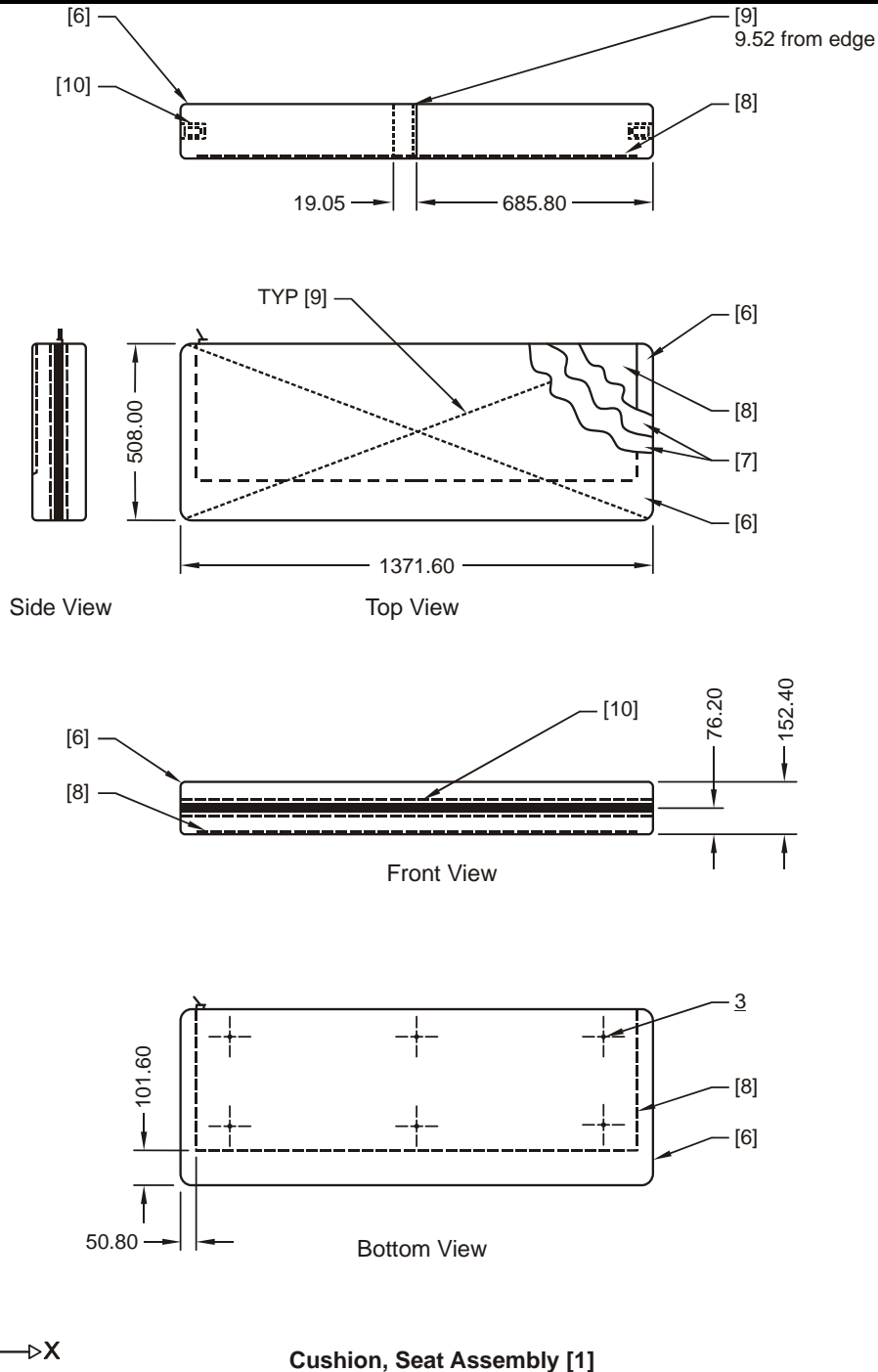
SPECIFICATIONS, SEATING FOAM POLYURETHANE		FOAM A	FOAM B
DESCRIPTION		EXTRA FIRM HIGH DENSITY GRADE	MEDIUM SOFT GRADE
DENSITY – PCF		2.70 ± .10	1.50 +.05 -.10
*INDENT LOAD – LBS. – 4 THK @ 25% DEFLECTION		45 – 55	21 – 27
INDENT LOAD RATIO (65/25) – MIN		2.0	1.9
TENSILE – PSI – MIN		12	12
ELONGATION - % - MIN		175	175
TEAR RESISTANCE – LBS/IN – MIN		1.75	1.75
COMPRESSION SET	METHOD B – ORIGINAL – 50% MAX	15.0	
	22 HRS. @ 58° F – 90% - MAX		20.0
HUMIDITY AGED 5 HRS. @ 250° F	50% MAX	20.0	20.0
	90% MAX		20.0

* AS PER METHOD B₁ OF ASTM STANDARD d3574-08 *Standard Test Methods for Flexible Cellular Materials—Slab, Bonded, and Molded Urethane Foams*

FOAM POSITION	FOAM TYPE	X	Y	Z
SEAT BACK LOWER (AGAINST PLYWOOD BACKING)	A	24	54	2
SEAT BACK UPPER	B	24	54	4
SEAT BASE LOWER (AGAINST PLYWOOD BACKING)	A	20	54	2
SEAT BASE UPPER	B	20	54	4



2010SSA301 – Cushion, Seat Assembly



Cushion, Seat Assembly [1]

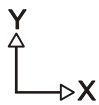
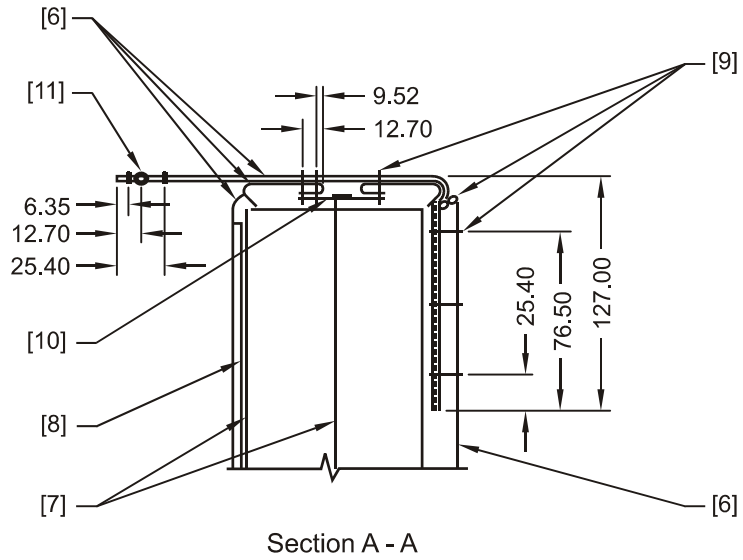
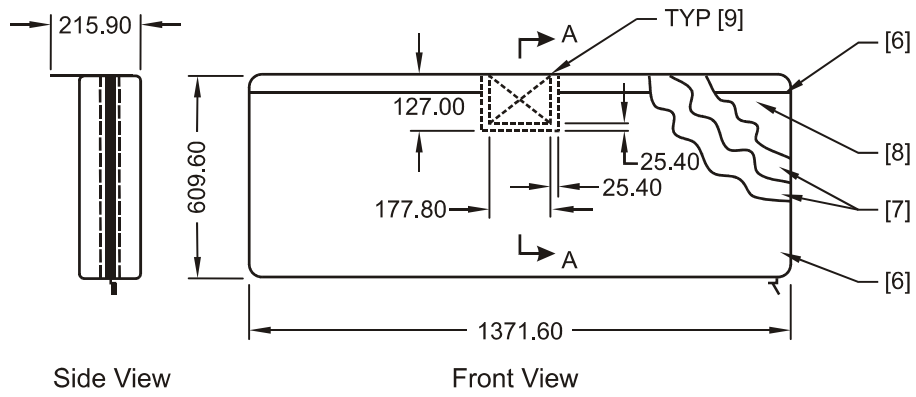
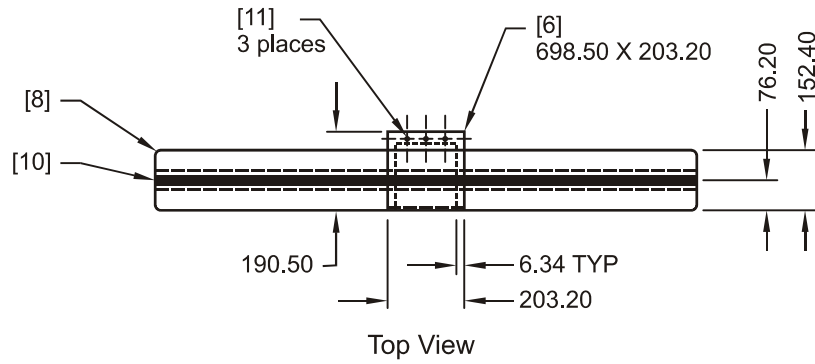
Notes:

1. Dimensions in mm except for parts which are in inches.
2. Drawing is not to scale.
3. Punch 6 holes .28 DIA on back of [6] to allow protrusion of screws (match to Backing, Seat Assembly).
4. [6] shall be elastic back automotive upholstery vinyl.
5. [10] shall be 100 inches long and run around 3 sides of [6].
6. Stitching as described in ASTM D6193- 09 *Standard Practice for Stitches and Seams*, stitch type 301, 6 to 8 SPL.

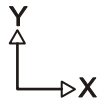
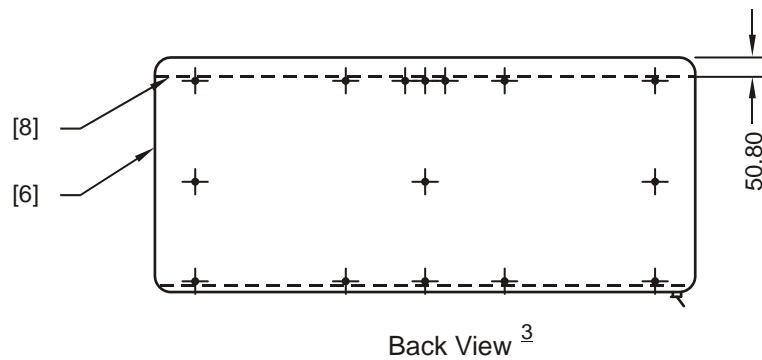
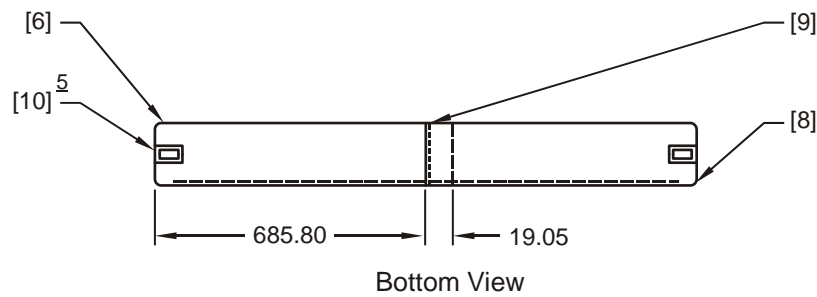
Parts List:

- [1]. Cushion, Seat Assembly
- [6]. Cover, Cushion
- [7]. Foam, Cushion
- [8]. Backing, Cushion .38 plywood
- [9]. Thread, (stitching) V-T-295-E
- [10]. Slide Fastener VF-106

2010SSA302 – Cushion, Back Assembly



2010SSA302 – Cushion, Back Assembly (continued...)



Cushion, Back Assembly [1]

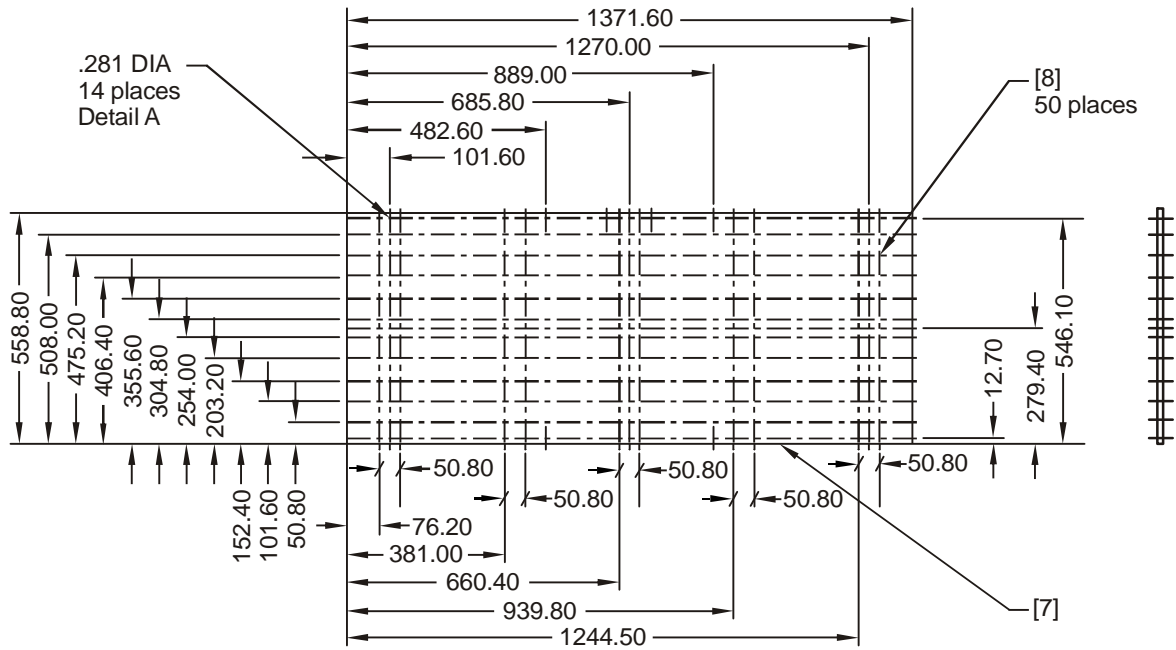
Notes:

1. Dimensions in mm except for parts which are in inches.
2. Drawing is not to scale.
3. Punch 15 holes .28 DIA on back of [6] to allow protrusion of screws.
4. [6] shall be elastic back automotive upholstery vinyl.
5. [10] shall be 100 inches long and run around 3 sides of cover.
6. Stitching as described in ASTM D6193-09 *Standard Practice for Stitches and Seams*, stitch type 301, 6 to 8 SPI.

Parts List:

- [1]. Cushion, Back Assembly
- [6]. Cover, Cushion; Vinyl; Automotive upholstery
- [7]. Foam, Cushion
- [8]. Backing, Cushion .38 plywood
- [9]. Thread, (stitching) V-T-295-E
- [10]. Slide Fastener VF-106
- [11]. Grommets

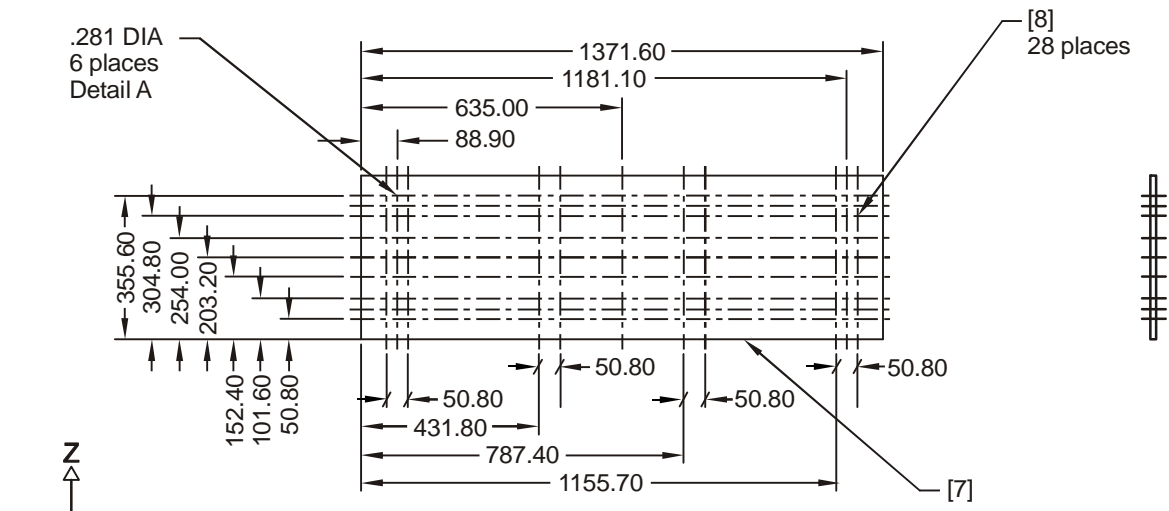
2010SSA303 – Backing, Seat and Back Assembly



Back View

Back Side View

Backing, Back Assembly [2]

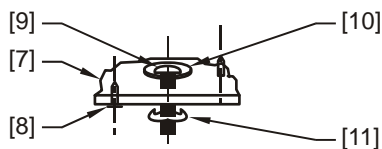


Base Top View

Base Side View

Backing, Seat Assembly [1]

2010SSA303 – Backing, Seat and Back Assembly (continued...)



Detail A TYP

Notes:

1. Dimensions in mm except for parts and diameters, which are in inches.
2. Drawing is not to scale.
3. It is recommended that the Frame, Seat Top Assembly be used as a template to drill holes. [1] shall be clamped in position on the Frame, Seat Top Assembly, in order to drill holes to match. Use a .281 DIA hole or a size for light press fit to the neck of the "T" Nut [11].
4. It is recommended that the Frame, Back Assembly be used as a template to drill holes. [1] shall be clamped in position on Frame, Seat Top Assembly, in order to drill holes to match. Use a .281 DIA hole or a size for light press fit to the neck of the "T" Nut [11].
5. [9] shall be securely fastened to Backing, Seat Assembly [1] and Backing, Back Assembly [2] as shown in Detail A. The neck of [11] shall not exceed the thickness of Backing [7].
6. See Detail A for typical view showing nails [8] and "T" Nut Assembly [9] used to secure Foam to Backing [7] and to attach [7] to Frame, Seat Top Assembly and Frame, Back Assembly.
7. Remove all sharp edges of Backing [7] to avoid tearing Vinyl Cover. A .50 radius shall be typical for corners of [7].
8. Nails [8] shall be driven THRU from underside of Backing [7] to maintain Foam in position during impact.

Parts List:

- | | |
|------------------------------------|--------------------------------------|
| [1]. Backing, Seat Assembly | [9]. "T" Nut Assembly |
| [2]. Backing, Back Assembly | [10]. Washer, Fender, 1.00 O.D. |
| [7]. Backing, Cushion, .38 plywood | [11]. "T" Nut, .25-20 NC X .38 Thick |
| [8]. Nails, Flat Head, .750 Long | |