4. For each hitch assembly identified in response to Request Nos. 1 and 2, provide a table that identifies the total number (quantity) of hitch assemblies that Valley Towing has manufactured and sold for use in North America for installation in both (a) original equipment vehicles and (b) intended for after-market installations from start of production to date.

(a) By hitch assembly part number;

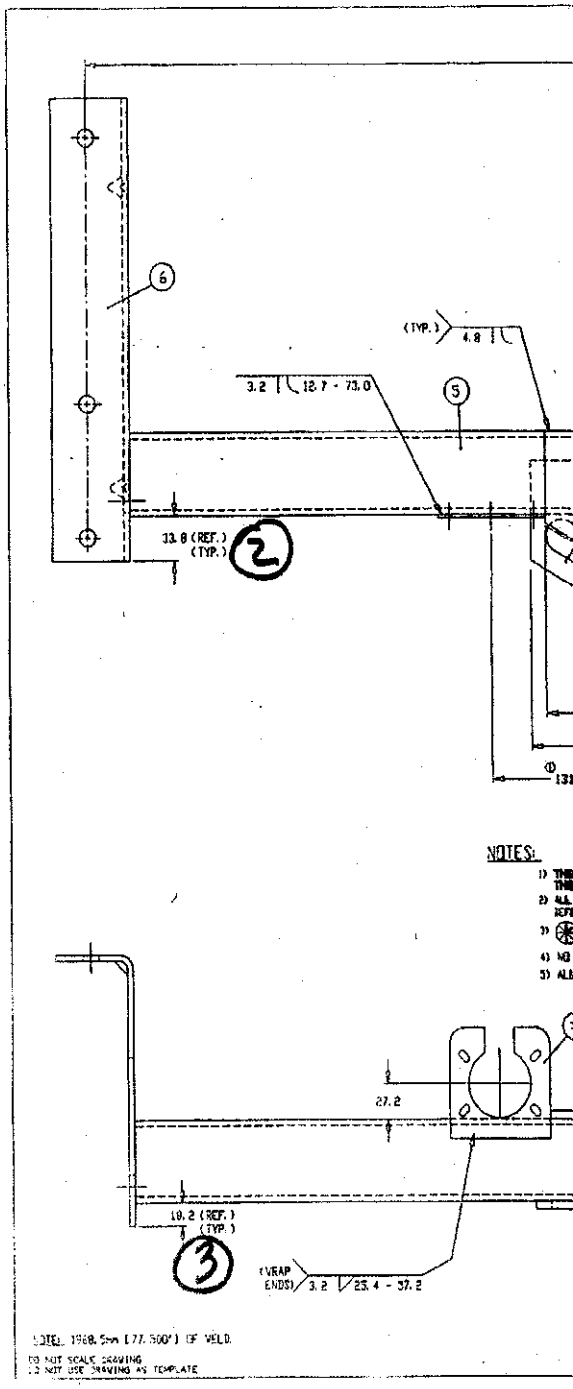
(b) By year of sale;

(c) By purchaser (*).

		Total Units Sold / Year													
7800047	3612	-	-	2044	1148	280	104	36							Winnebago
7801047	296	-	-	276	20	-	-	-							
7802047	72	-	-	72	-	-	-	-							
7803047	1004	-	-	600	376	28	-	-							
7804047	1748	-	-	300	220	644	540	44							
7805047	4056	-	-	148	1676	1648	552	32							
7807047	208	-	-	-	160	40	8	-							
7808047	2108	-	-	-	200	488	1136	284							
7810047	1752	-	-	-	-	528	884	340							
7811047	286	-	-	-	-	70	120	96							
7820047	72	-	-	-	-	-	-	48	24						
7821047	380	-	-	-	-	-	4	300	76						
7822047	84	-	-	-	-	-	4	36	44						
7823047	624	N/A					-	324	200	92	8				
7824047	1422	N/A					-	512	496	332	74	8			
7825047	49	-	-	-	-	-	-	44	-	-	-	5			
7826047	572	N/A					-	166	240	152	14				
Total	**18345**														

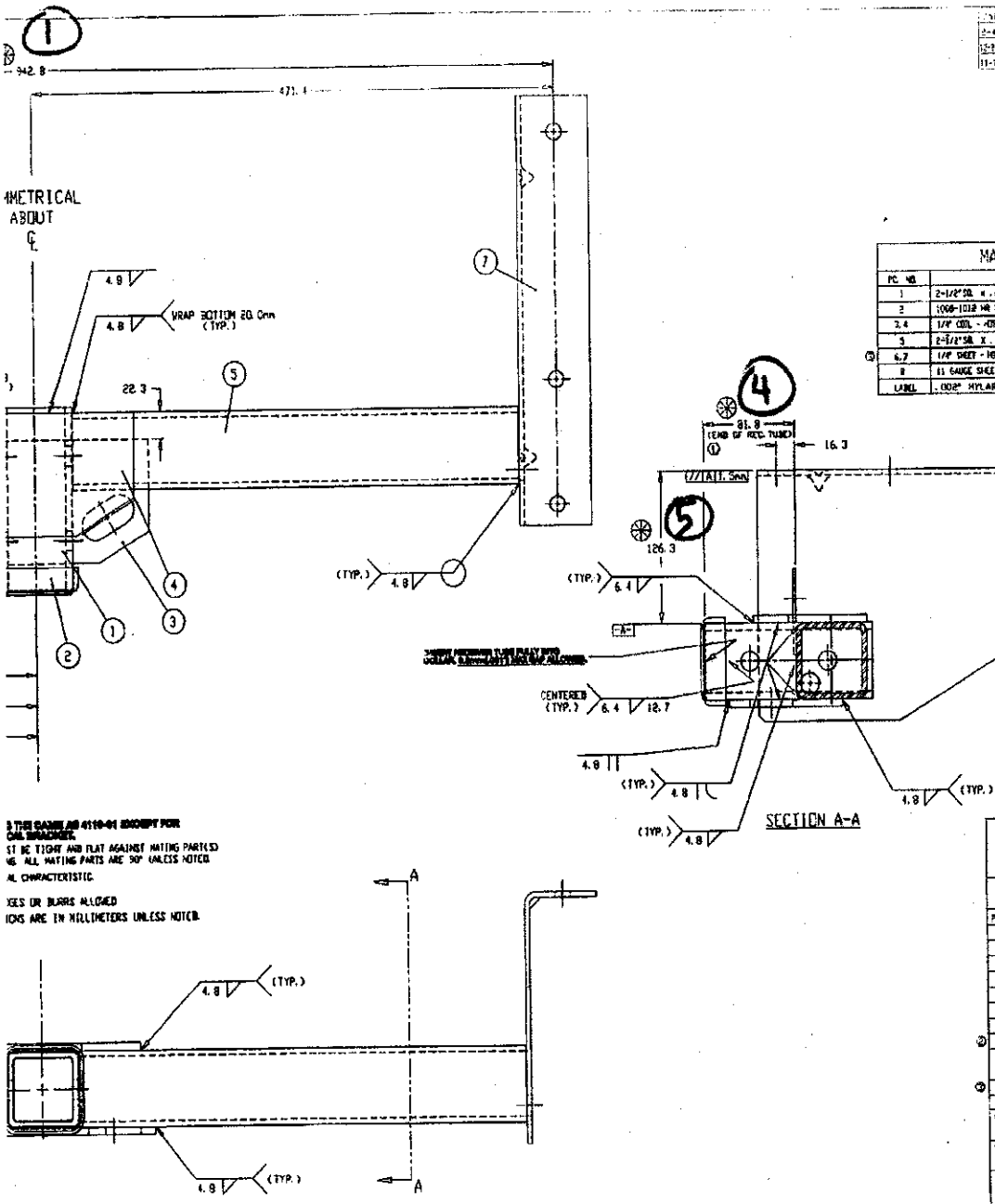
*Data for years 1999 & 2000 unavailable.

*Product was sold for OEM (Winnebago) consumption only. No Aftermarket sales.


6
(TYP.) 4.8
3.2
12.7 - 73.0
5
33.8 (REF.)
(TYP.)
2
NOTES:
27.2
19.2 (REF.)
(TYP.)
3
(WRAP ENDS) 3.2
23.4 - 37.2
TOTAL: 1968.5mm [77.500"] OF WELD
DO NOT SCALE DRAWING
DO NOT USE DRAWING AS TEMPLATE

A

DATE	REV.	DESCRIPTION		DRN	CK'D
2-4-05	①	CHG'D DIN	05-020	RHJ	T. D
12-21-05	②	CHG'D P/N	05-380	RHJ	T. D
11-7-07	③	CHG'D WT & MAT'L LISTING	07-204	M. A	



MATERIAL LISTING

PC. NO.	MATERIAL
1	2-1/2" SQ. x .208 W. TUBING - A.S.T.M. A-500 GRADE B (REC. TUBE)
2	1008-1012 HR STEEL (FORMED COLLAR)
3,4	1/4" COOL - HOT ROLLED COMMERCIAL QUALITY PICKLED & OILED A.S.T.M. A569
5	2-1/2" SQ. X .187 W. TUBING - A.S.T.M. A-500 GRADE B
③ 6,7	1/4" SHEET - HOT ROLLED STRUCTURAL QUALITY PICKLED & OILED A.S.T.M. A570
8	11 GAUGE SHEET - HOT ROLLED STRUCTURAL QUALITY A.S.T.M. A570
LABEL	.002" MYLAR W/ PERMANENT ADHESIVE

THIS CAME AS 4119-01 EXCEPT FOR
CAL BRACKET.
ST BE TIGHT AND FLAT AGAINST MATING PART(S)
NG ALL MATING PARTS ARE 90° UNLESS NOTED.
AL CHARACTERISTIC.
XES OR BURRS ALLOWED
IONS ARE IN MILLIMETERS UNLESS NOTED.

FINISH: TEXTURED BLACK POLYESTER PAINT. (MUST WITHSTAND 500 HOURS OF 5% SALT SPRAY.)

THIRD ANGLE PROJECTION

ELECTRONIC DRAWING MANUAL CHANGES PROHIBITED

BILL OF MATERIAL 4119-02

PC. NO.	QTY.	PART NO.	DESCRIPTION
1	1	3063-06	RECEIVER TUBE (5.906")
2	1	1585-05	FORMED COLLAR
3	1	2282-04	CHAIN PLATE
4	1	1622-02	TOP PLATE
5	2	4120-03	CROSS TUBE (403.0mm)
6	1	4121-05	FRAME MNTG. BRKT. - LT.
7	1	4122-04	FRAME MNTG. BRKT. - RT.
② 8	1	3132-01	ELECTRICAL BRACKET

MATERIAL CODE

③ PCS/BAR CAL. WT. 18.206 Kg. (40.137 LBS.)

MAT'L. REQ'D: LBS

SCALE 5:1 REDUCED — TOLERANCE UNLESS OTHERWISE NOTED: DECIMAL ± 1.5mm ANGULAR ± 1°-0'

DRAWN BY	DATE	CH'D BY	PROJ CHGR	CHIEF CHGR
RHJ	11-4-04	T. D.		B. F.

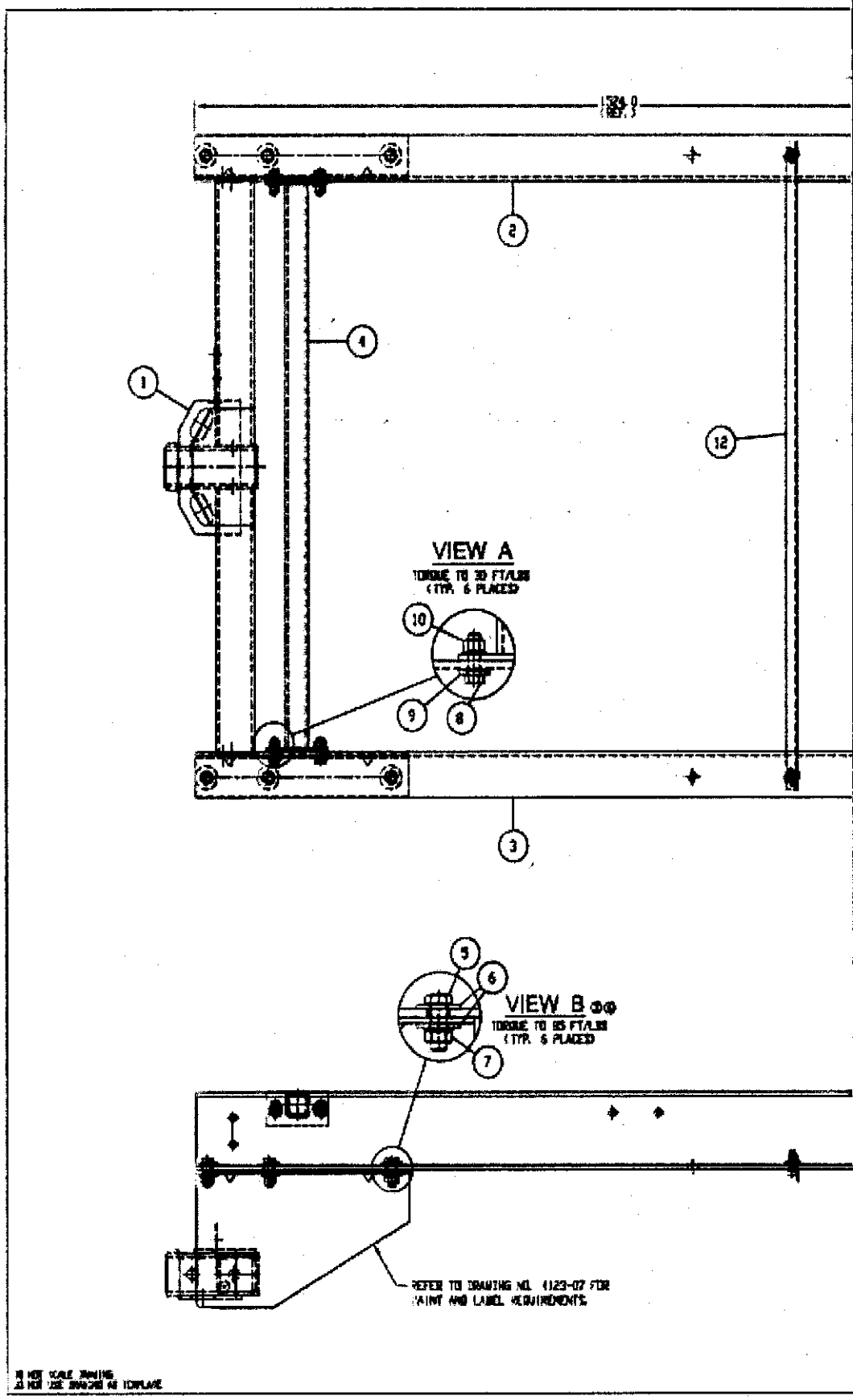
VALLEY INDUSTRIES
LODI CALIFORNIA

RECEIVER W/A

REF. WINNEBAGO P/N 154052-05, -06, -07, -08, -09 & -10

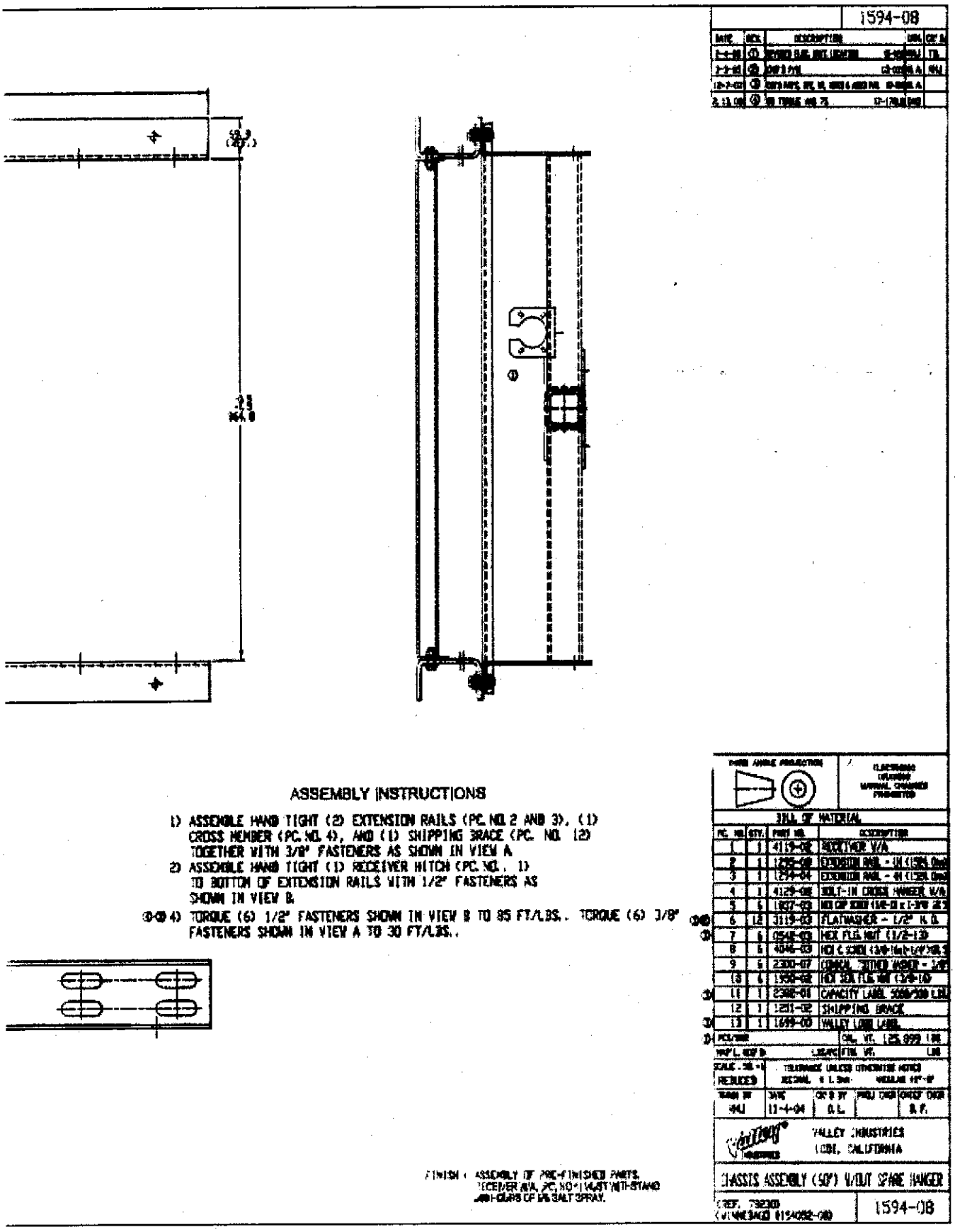
4119-02

B

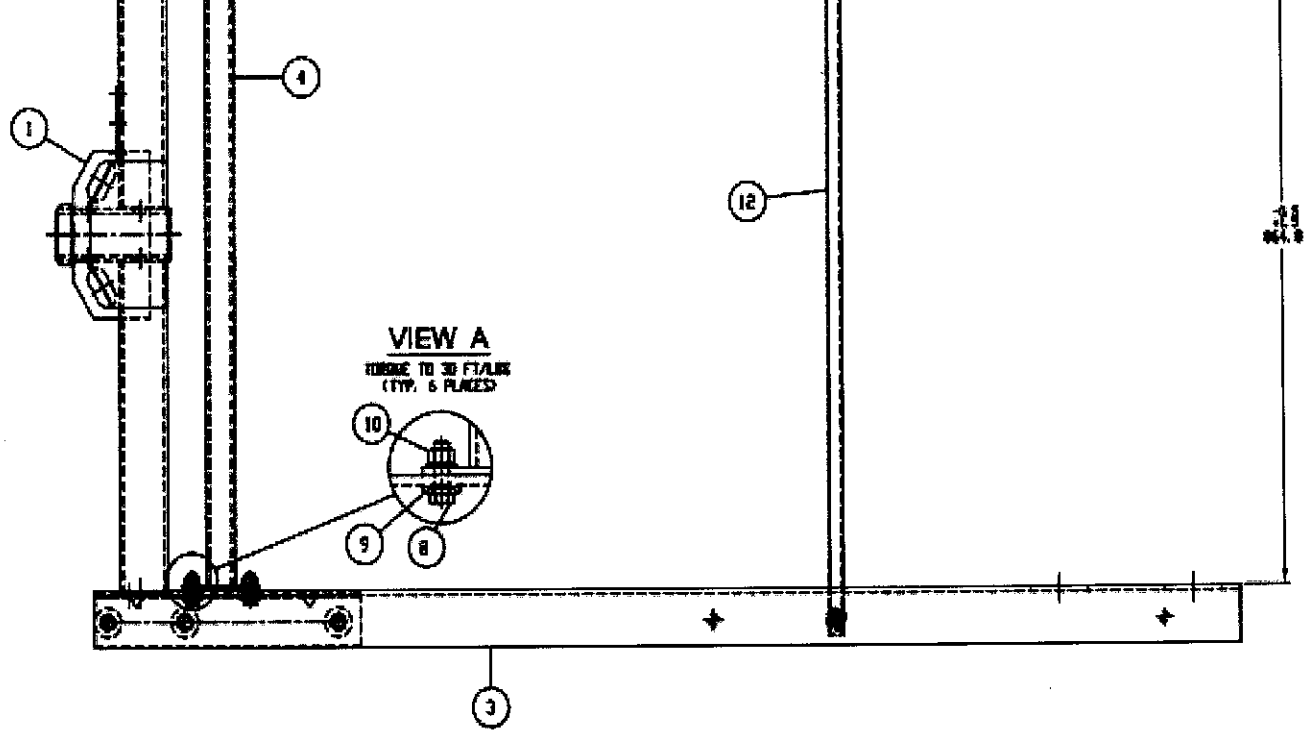

VIEW A
TORQUE TO 30 FT/LBS
(TYP. 6 PLACES)
VIEW B
TORQUE TO 85 FT/LBS
(TYP. 6 PLACES)
REFER TO DRAWING NO. 4123-07 FOR
PAINT AND LABEL REQUIREMENTS

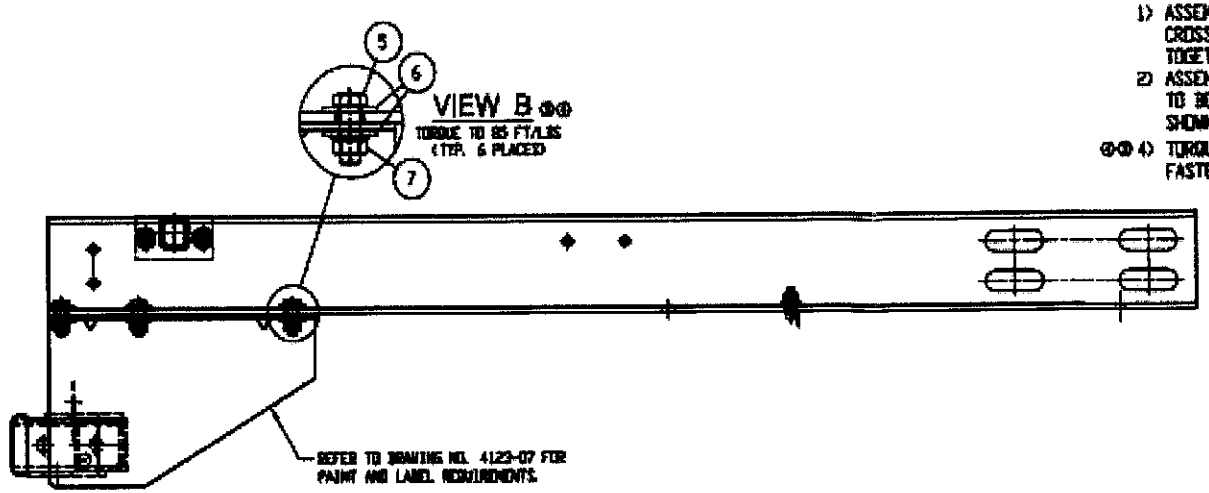
A A

5. Provide a representative engineering drawing or sketch that depicts the hitch assembly identified in response to Request No. 1.



BB





ASSE

1) ASSEMBLE HAND TIGHT
CROSS MEMBER (PC. NO.
TOGETHER WITH 3/8" F
2) ASSEMBLE HAND TIGHT
TO BOTTOM OF EXTENSI
SHOWN IN VIEW B.
⊕⊕ 4) TORQUE (6) 1/2" FAST
FASTENERS SHOWN IN V

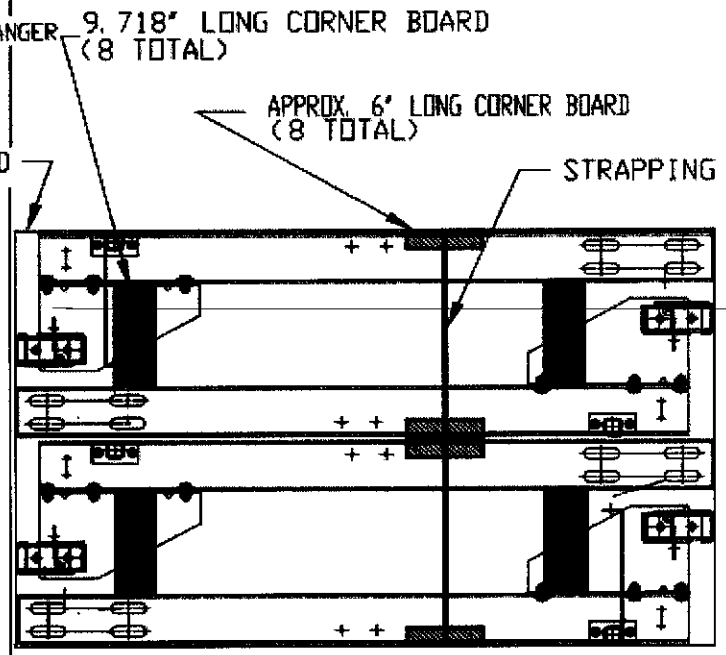
DO NOT SCALE DRAWING.
DO NOT USE DRAWING AS TEMPLATE.

78230-47

PC. NO.	QTY.	PART NO.	DESCRIPTION
1	1	1594-08	CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER
		PACKAGING	
97	.500	4197-12	PALLET BIN LID
98	.250	4197-03	P. BIN SLEEVE (60-9/16x39x39+1/2)
99	.250	4149-04	PALLET - 4 WAY (62x40)

NOTES : BULK PACK 4 PER PALLET

1) CENTER (1) 4197-12 PALLET BIN LID ONTO (1) 4149-04 62"x40" (4-WAY) PALLET AND STAPLE TO PALLET. (6 STAPLES MIN.)
2) PACK (4) CHASSIS ASSEMBLIES INTO 4197-12 PALLET BIN LID AS SHOWN.
3) PLACE (8) 9.718" LONG CORNER BOARDS BETWEEN HITCHES AND EXTENSION RAILS AS SHOWN.
4) PLACE (8) 6" LONG CORNER BOARDS BETWEEN EXTENSION RAILS AS SHOWN.
5) INDIVIDUALLY STRAP ALL 4 CHASSIS ASSEMBLIES TOGETHER AS SHOWN.
6) SLIDE 4197-03 PALLET BIN SLEEVE OVER CHASSIS ASSEMBLY PLACE LID ON TOP OF SLEEVE, AND STRAP CONTAINER TWICE.



CALCULATED SHIPPING WEIGHT	142.072 LBS.	ACTUAL SHIPPING WEIGHT	UPC NO.	DRAWN BY	DATE	CK'D BY	PROJ. ENGR.	CHIEF ENGR
				RHJ	11-4-04	D. L.		B. F.

DATE	REV	DESCRIPTION	DRN	CK'D
12-7-07	1	CHG'D WT. 07-204	M. A.	

Valley® INDUSTRIES

VALLEY INDUSTRIES
LODI, CALIFORNIA

REAR CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER

WINNEBAGO # 154052-08-01A

78230-47

O.E.

6. Provide a table (#3) that provides the hitch assembly ratings for each of the hitch assemblies listed in response to Requests No.1 and 2 including, but not limited to:
(a) Maximum rating for horizontal load or force;
(b) Maximum rating for horizontal bending moment, if any (state the location of the centroid from which the maximum rated bending moment is calculated);
(c) Maximum rating for vertical load or force;
(d) Maximum rating for vertical bending moment, if any (state the location of the centroid from which the maximum bending moment is calculated);
(e) All other rating information including, but not limited to load or usage limitations, restrictions, instructions, and the like;
(f) A copy of all installation instructions, warnings, and stated usage limitations or parameters;
(g) All description of all maintenance instructions and usage parameters intended for guiding owner (or dealer-provided) maintenance, including, but not limited to, recommendations to visually inspect the hitch for indications of deterioration and the recommended frequency for the identified / listed maintenance or inspection action.

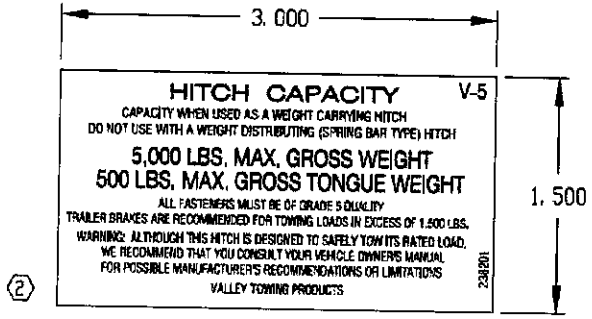
7800047	5000 lbs.	5 Deg. From 0	500 lbs.	5 Deg. From 0
7801047				
7802047				
7803047				
7804047				
7805047				
7807047				
7808047				
7810047				
7811047				
7820047				
7821047				
7822047				
7823047				
7824047				
7825047				
7826047				

A=Maximum Horizontal Load Rating
B=Maximum Horizontal Bend Moment Rating
C=Maximum Vertical Load Rating
D=Maximum Vertical Bend Moment Rating

Note: Maximum Bend ratings based on VESC V5 Table 2 Rating / SAE J684 table 3 (see tab Engineering Docs.)

Note: Centroid coordinate location is assumed to be centerline of trailer ball - (see VESC V5 Table #2 on "Engineering Docs" tab.)

Note: Valley was required to provide no warnings on the product manufactured for Winnebago, the subject of this investigation, beyond the label shown below. No instructions, warnings, usage limitations or maintenance documents were required.



1 MATERIAL: .002" WHITE MYLAR W/PERMANENT ADHESIVE.

1 COLOR: MATTE BLACK BACKGROUND
WHITE LETTERING.

DO NOT SCALE OR USE DRAWING AS TEMPLATE.

BUYOUT | 238201

DATE	REV.	DESCRIPTION	DRN.	CK'D.
8-26-96	1	CHG'D. MAT'L. & COLOR 96-219	J. W.	
11-4-10	2	REMOVED C OF ORIGIN ECN 10-174	JHW	

CAD

ELECTRONIC
DRAWING
MANUAL CHANGES
PROHIBITED

BILL OF MATERIAL

PC. NO.	QTY.	PART NO.	DESCRIPTION

MATERIAL CODE BUYOUT

PCS/BAR	CAL. WT. .001 LBS
MAT'L. REQ'D: LBS	FIN. WT. LBS

SCALE	TOLERANCE UNLESS OTHERWISE NOTED
FULL	DECIMAL ± .031 ANGULAR ±1°-0'

DRAWN BY	DATE	CK'D BY	PROJ ENGR	CHIEF ENGR
S. G.	4-29-93	J. S.		B. F.

Valley® INDUSTRIES

VALLEY INDUSTRIES
LODI, CALIFORNIA

CAPACITY LABEL

238201

7. **Provide a table that briefly describes the technical basis by which Valley established each of the ratings, installation, and maintenance parameters listed in response to Request No. 6. (see also "ratings" tab.)**

SAE J684 Revised JUL2005

TABLE 3—HITCH TEST LOADS(1)(2)

Step	Weight Carrying Hitch Force, kN (lb)	Weight Carrying Hitch Direction	Weight Distributing Hitch Force, kN (lb)	Weight Distributing Hitch Direction
a	V = 0.47R + 2.135 (480) L = 0.47R + 2.135 (480)	Downward Compressive	V = 0.045R + 7.339 (1650) M = 5.762 (51 000)	Downward See Figure 2
b	L = 0.23R + 6.805 (1530) V = 0.15R	Tensile Downward	L = 0.067R + 9.207 (2070) V = 0.15R	Tensile Downward
c	L = 0.23R + 6.805 (1530) V = 0.15R	Compressive Downward	L = 0.067R + 9.207 (2070) V = 0.15R	Compressive Downward
d	T = 0.20R + 2.224 (500)	Leftward	T = 0.20R + 2.224 (500)	Leftward
e	T = 0.20R + 2.224 (500)	Rightward	T = 0.20R + 2.224 (500)	Rightward
f	Not applicable	Not applicable	M = 2.367X + 2.372 (93.2X + 21 000) V = 0.15R	See Figure 2 Downward

1. V = Vertical Force (kN [lb])
   L = Longitudinal Force (kN [lb])
   T = Transverse Force (kN [lb])
   M = Spring Bar Moment (kN · m [in-lb]) (Leveling Force Couple)
   R = Hitch Rating in terms of trailer GVWR (kN [lb]) (Gross Vehicle Weight Rating)
   X = Hitch Rating for Maximum Vertical Load on Hitch (kN [lb]) (Tongue Weight)
2. Notes—Hitch Test Force Applications—(See Table 3 and Figure 2)
   Apply the forces in any sequence as follows:

   a. Apply the specified downward vertical force concurrently with the specified compressive longitudinal force or spring bar moment.

   b&c. Apply the specified tensile or compressive longitudinal force concurrently with the specified downward vertical force.

   d&e. Apply the specified transverse force.

   f. For hitches with weight distributing capability, apply the specified spring bar or leveling moment (leveling force couple) concurrently with the specified downward vertical force.

   All forces in steps (a) through (e) are to be applied along an axis which intersects the center of the ball. All forces are to be applied with an onset rate of not more than 0.667 kN/s (150 lb/s), and maintained at the maximum specified force level for at least 5 s.

Note: Static Loads used in Valley V5 Testing are identical to the loads used above, but adds an additional 10% to exceed industry expectations.

TABLE - 1

VALLEY ENGINEERING
WEIGHT CARRYING LOADS

Class	GTWR (lbs.) Gross Trailer Weight Rating	Longitudinal (lbs.)	(-) DOWN (lbs.)		Vertical - Down (lbs.)	
		+-Fore/Aft Span	Min.	Max.	Controller Set Point	Controller Span
CL I	1000	+- 800	-50	- 330.00	-190.00	-140.00
	1500	+- 850	-50	- 415.00	-232.50	-182.50
	2000	+- 900	-50	- 500.00	-275.00	-225.00
CL II	2500	+- 950	-50	- 585.00	-317.50	-267.50
	3000	+- 1075	-50	- 742.50	-396.25	-346.25
	3500	+- 1200	-50	- 900.00	-475.00	-425.00
CL III	4000	+- 1300	-50	- 966.66	-508.33	-458.33
	4500	+- 1400	-50	- 1033.33	-541.67	-491.67
	5000	+- 1500	-50	- 1100.00	-575.00	-525.00
CL IV	5500	+- 1625	-50	- 1165.00	-607.50	-557.50
	6000	+- 1750	-50	- 1230.00	-640.00	-590.00
	6500	+- 1875	-50	- 1295.00	-672.50	-622.50
	7000	+- 2000	-50	- 1360.00	-705.00	-655.00
	7500	+- 2125	-50	- 1425.00	-737.50	-687.50
	8000	+- 2250	-50	- 1490.00	-770.00	-720.00
	8500	+- 2375	-50	- 1555.00	-802.50	-752.50
	9000	+- 2500	-50	- 1620.00	-835.00	-785.00
	9500	+- 2625	-50	- 1685.00	-867.50	-817.50
	10000	+- 2750	-50	- 1750.00	-900.00	-850.00

TABLE - 2

VALLEY ENGINEERING

WEIGHT DISTRIBUTING LOADS

Gross Trailer Weight	Select Tongue Weight	Moment (Lb-In)			F_1 - Down (lbs.)				F_2 - Up (lbs.)			
		Min.	Mean	Max.	Min.	Max.	Test Loads		Min.	Max.	Test Loads	
							Mean	Span			Mean	Span
3500	500	18,000	24,000	30,000	-1192.3	-1653.8	-1423.1	± 230.8	692.3	1153.8	923.1	± 230.8
4000	Select Cylinder Spacing	25,333	31,000	36,667	-1474.4	-1910.3	-1692.3	± 217.9	974.4	1410.3	1192.3	± 217.9
4500	26	32,667	38,000	43,333	-1766.4	-2166.7	-1961.5	± 205.1	1266.4	1666.7	1461.5	± 205.1
5000		40,000	45,000	50,000	-2038.5	-2423.1	-2230.8	± 192.3	1538.5	1923.1	1730.8	± 192.3
5500		41,600	48,800	56,000	-2100.0	-2653.8	-2376.9	± 276.9	1600.0	2153.8	1876.9	± 276.9
6000		43,200	52,600	62,000	-2161.5	-2884.6	-2523.1	± 361.5	1661.5	2384.6	2023.1	± 361.5
6500		44,800	56,400	68,000	-2223.1	-3115.4	-2669.2	± 446.2	1723.1	2615.4	2169.2	± 446.2
7000		46,400	60,200	74,000	-2284.6	-3346.2	-2815.4	± 530.8	1784.6	2846.2	2315.4	± 530.8
7500		48,000	64,000	80,000	-2348.2	-3578.9	-2961.5	± 615.4	1848.2	3076.9	2461.5	± 615.4
8000		49,820	65,475	81,130	-2416.2	-3620.4	-3018.3	± 602.1	1918.2	3120.4	2518.3	± 602.1
8500		51,640	66,950	82,260	-2486.2	-3663.8	-3075.0	± 588.8	1986.2	3163.8	2575.0	± 588.8
9000		53,460	68,425	83,390	-2556.2	-3707.3	-3131.7	± 575.6	2056.2	3207.3	2631.7	± 575.6
9500		55,280	69,900	84,520	-2626.2	-3750.8	-3188.5	± 562.3	2126.2	3250.8	2688.5	± 562.3
10000		57,100	71,375	85,650	-2696.2	-3794.2	-3245.2	± 548.0	2196.2	3294.2	2745.2	± 549.0
10500		58,920	72,850	86,780	-2766.2	-3837.7	-3301.9	± 535.8	2266.2	3337.7	2801.9	± 535.8
11000		60,740	74,325	87,910	-2836.2	-3881.2	-3358.7	± 522.5	2336.2	3381.2	2858.7	± 522.5
11500		62,560	75,800	89,040	-2906.2	-3924.6	-3415.4	± 509.2	2406.2	3424.6	2915.4	± 509.2
12000		64,380	77,275	90,170	-2976.2	-3968.1	-3472.1	± 496.0	2476.2	3468.1	2972.1	± 496.0

NOTE: *ITALICS* INDICATE INTERPOLATED TEST LOADS.

Valley Fatigue Loads
WD FATIGUE

MTS

MTS Systems Corporation
14000 Technology Drive
Eden Prairie, MN 55344-2290

Calibration Report

Report Number: 3025 - 611
Site: 508206
Country Code: USA

Customer

Name: Valley Industries

System: 812.80
Location: Lodi, Ca.

System ID: #1

Equipment

Device Type: Force Transducer — Model: 661.20A-01 — Serial No.: 447
Calibration Data File Name: N/A
Controller/Conditioner Model: 458.12 — Serial No.: Station #1
Readout Device Model: 458.10 — Serial No.: 176 — Channel: N/A
As Found System Condition: Good

Procedure

MTS Procedure: 1234 Rev. B
Calibration has been performed in accordance with: ASTM E4-99 — Tolerance: +/- 1.0% of Force Applied
Method of Verification: Set-the-Force Method using Elastic Calibration Devices

Calibration Equipment Asset No.

Dead Weight Set: N/A — HighLevel Board: N/A — LowLevel Board: N/A — DVM: 10443
DW Compensation: N/A
Temperature Readout: 13900 — Additional Equip: N/A — Standardizer: 11219 — DJ220: 11220

Conditions

Ambient Temperature: 65 F. N/A — Polarity(+): Compr. — Bidirectional: No

Range: 1 Compression
Full Scale: 5000
As Found: X
As Adjusted:
Excitation: 8.526
Shunt Cal.: Positive: 7.900 Negative: N/A
Standard Asset No.: 16348
Date K: N/A
Lower Limit: 108
Zero Offset: 0
Upper Limit: 5500
Cal Fac: N/A

Report Units: Pounds

Applied Force Percent	Series 1 Indicated Reading Ascending	Series 1 Indicated Reading Descending	Series 1 Errors Units Error Asc	Series 1 Errors Percent Error Asc	Series 1 Errors Units Error Desc	Series 1 Errors Percent Error Desc	Series 2 Indicated Reading Ascending	Series 2 Indicated Reading Descending	Series 2 Errors Units Error Asc	Series 2 Errors Percent Error Asc	Series 2 Errors Units Error Desc	Series 2 Errors Percent Error Desc	Repeatability Percent Error Asc	Repeatability Percent Error Desc
0	0.0		0.00	0.00										
-20	-997.0		-3.00	-0.30										
-40	-1992.5		-7.50	-0.38										
-60	-2986.0		-14.00	-0.47										
-80	-3980.5		-19.50	-0.49										
-100	-4975.0		-25.00	-0.50										

Errors at Zero Force are computed in % of Range.
The resolution of this Data Set is reflected in the least significant digit reported.
Total measurement uncertainty of the data supplied is equal to or less than +/-0.25% of reading.

Range: 1 Tension
Report Units: Pounds

Applied Force Percent	Series 1 Indicated Reading Ascending	Series 1 Indicated Reading Descending	Series 1 Errors Units Error Asc	Series 1 Errors Percent Error Asc	Series 1 Errors Units Error Desc	Series 1 Errors Percent Error Desc	Series 2 Indicated Reading Ascending	Series 2 Indicated Reading Descending	Series 2 Errors Units Error Asc	Series 2 Errors Percent Error Asc	Series 2 Errors Units Error Desc	Series 2 Errors Percent Error Desc	Repeatability Percent Error Asc	Repeatability Percent Error Desc
0	0.0		0.00	0.00										
20	998.5		-0.50	-0.05										
40	1996.0		-2.00	-0.10										
60	2997.5		-2.50	-0.08										
80	3995.0		-5.00	-0.13										
100	4993.0		-7.00	-0.14										

Errors at Zero Force are computed in % of Range.
The resolution of this Data Set is reflected in the least significant digit reported.
Total measurement uncertainty of the data supplied is equal to or less than +/-0.25% of reading.

Errors were found to be: In Tolerance: X — Out of Tolerance:

MTS Systems Corporation Measurement Standards are Traceable to the National Institute of Standards and Technology

Notes: To be recalibrated at customer request.

Performed By: Dick Johnson

Date: 20-Dec-99

Signature:

Next Recommended Calibration Due Date: 31-Dec-00

4cal99CSPC

MTS Systems Corporation
14000 Technology Drive
Eden Prairie, MN 55344-2290

Calibration Report

Report Number: 3025 - 511
Site: 606206
Country Code: USA

Customer

Name: Valley Industries

System ID: #1

System: 812.80
Location: Lodi, Ca.

Equipment

Device Type: Force Transducer
Model: 661.20A-01
Serial No.: 447
Calibration Data File Name: N/A
Controller/Conditioner Model: 458.12
Serial No.: Station #1
Readout Device Model: 458.10
Serial No.: 178
Channel: N/A
As Found System Condition: Good

Procedure

MTS Procedure: 1234 Rev. B
Calibration has been performed in accordance with: ASTM E4-99
Tolerance: +/- 1.0% of Force Applied
Method of Verification: Set-the-Force Method using Elastic Calibration Devices

Calibration Equipment Asset No.

Dead Weight Set: N/A
HighLevel Board: N/A
LowLevel Board: N/A
DVM: 10443
DW Compensation: N/A
Temperature Readout: 13900
Additional Equip: N/A
Standardizer: 11219
DJ320: 11220

Conditions

Ambient Temperature: 65 F. N/A
Polarity(+): Compr.
Bidirectional: No

Range: 1 Compression
Full Scale: 5000
As Found:
As Adjusted: X
Extension: 8.836
Shunt Cal.: Positive: 7.917
Standard Asset No.: 18268
Delta E: N/A
Negative: N/A
Lower Limit: 100
Zero Offset: 0
Upper Limit: 5000
Cal Fac: N/A

Report Units: Pounds

Applied Force Percent	Series 1 Indicated Reading Ascending	Series 1 Indicated Reading Descending	Series 1 Errors Units Error Asc	Series 1 Errors Percent Error Asc	Series 1 Errors Units Error Desc	Series 1 Errors Percent Error Desc	Series 2 Indicated Reading Ascending	Series 2 Indicated Reading Descending	Series 2 Errors Units Error Asc	Series 2 Errors Percent Error Asc	Series 2 Errors Units Error Desc	Series 2 Errors Percent Error Desc	Repeatability Percent Error Asc	Repeatability Percent Error Desc
0	0.0		0.00	0.00			0.0		0.00	0.00			0.00	
-20	-1000.5		0.50	0.05			-1000.0		0.00	0.00			0.05	
-40	-2000.0		0.00	0.00			-1999.5		-0.50	-0.03			0.03	
-60	-3001.0		1.00	0.03			-3000.5		0.50	0.02			0.02	
-80	-4002.0		2.00	0.05			-4001.0		1.00	0.03			0.03	
-100	-5003.0		3.00	0.06			-5002.0		2.00	0.04			0.02	

Errors at Zero Force are computed in % of Range.
The resolution of this Data Set is reflected in the least significant digit reported.
Total measurement uncertainty of the data supplied is equal to or less than +/-0.25% of reading.

Range: 1 Tension
Report Units: Pounds

Applied Force Percent	Series 1 Indicated Reading Ascending	Series 1 Indicated Reading Descending	Series 1 Errors Units Error Asc	Series 1 Errors Percent Error Asc	Series 1 Errors Units Error Desc	Series 1 Errors Percent Error Desc	Series 2 Indicated Reading Ascending	Series 2 Indicated Reading Descending	Series 2 Errors Units Error Asc	Series 2 Errors Percent Error Asc	Series 2 Errors Units Error Desc	Series 2 Errors Percent Error Desc	Repeatability Percent Error Asc	Repeatability Percent Error Desc
0	0.0		0.00	0.00			0.0		0.00	0.00			0.00	
20	1001.5		1.50	0.15			1001.5		1.50	0.15			0.00	
40	2005.0		5.00	0.25			2004.5		4.50	0.23			0.03	
60	3008.0		8.00	0.27			3008.5		8.50	0.28			0.02	
80	4010.0		10.00	0.25			4010.0		10.00	0.25			0.00	
100	5015.0		15.00	0.30			5015.0		15.00	0.30			0.00	

Errors at Zero Force are computed in % of Range.
The resolution of this Data Set is reflected in the least significant digit reported.
Total measurement uncertainty of the data supplied is equal to or less than +/-0.25% of reading.

System was found to be: In Tolerance: X Out of Tolerance:

MTS Systems Corporation Measurement Standards are Traceable to the National Institute of Standards and Technology

Notes: Recalibrated at customer request.

Performed By: Dick Johnson

Signature: Dick John

Date: 20-Dec-99

Next Recommended Calibration Due Date: 31-Dec-00

Kal#BCCUC

8. Provide a copy of all engineering documentation (see tabs "Engineering Docs" & "ratings") including, but not limited to, calculations, engineering testing, and/or supplier technical data, that Valley has used to establish the ratings listed in response to Request No. 6.

MTS

MTS Systems Corporation
14000 Technology Drive
Eden Prairie, MN 55344-2290

Calibration Report

Page: 1 of 1
Report Number: 3025 - 612
Site: 209206
Country Code: USA

Customer

Name: Valley Industries

System ID: #2

System: 812.90
Location: Lodi, Ca.

Equipment

Device Type: Force Transducer
Model: 661.20E-01
Serial No.: V105761
Calibration Data File Name: N/A
Controller/Conditioner Model: 458.12
Serial No.: 1157
Readout Device Model: 458.10
Serial No.: 178
As Found System Condition: Good
Channel: N/A

Procedure

MTS Procedure: 1234 Rev. B
Calibration has been performed in accordance with:
Method of Verification: Set-the-Force Method using Elastic Calibration Devices
ASTM E4-98
Tolerance: +/- 1.0% of Force Applied

Calibration Equipment Asset No.

Dead Weight Set: N/A
HighLevel Board: N/A
LowLevel Board: N/A
DVM: 10443
DW Compensation: N/A
Temperature Readout: 13900
Additional Equip: N/A
Standardizer: 11219
DJ320: 11220

Conditions

Ambient Temperature: 66 F, N/A
Polarity(+): Compr.
Bidirectional: No

Range: 1 Compression
Full Scale: 5000
As Found: X
As Adjusted:
Excitation: 6.000
Shunt Cal.: Positive: 0.705
Negative: N/A
Standard Asset No.: 15966
Delta K: N/A
Lower Limit: 100
Zero Offset: 6
Upper Limit: 5500
Cal Fee: N/A

Report Units: Pounds

Applied Force Percent	Series 1 Indicated Reading Ascending	Series 1 Indicated Reading Descending	Series 1 Errors Units Error Asc	Series 1 Errors Percent Error Asc	Series 1 Errors Units Error Desc	Series 1 Errors Percent Error Desc	Series 2 Indicated Reading Ascending	Series 2 Indicated Reading Descending	Series 2 Errors Units Error Asc	Series 2 Errors Percent Error Asc	Series 2 Errors Units Error Desc	Series 2 Errors Percent Error Desc	Repeatability Percent Error Asc	Repeatability Percent Error Desc
0	0.0		0.00	0.00			0.0		0.00	0.00			0.00	
-20	-1000.5		0.50	0.05			-1000.5		0.50	0.05			0.00	
-40	-2000.5		0.50	0.03			-2000.0		0.00	0.00			0.00	
-60	-2998.0		-2.00	-0.07			-3001.0		1.00	0.03			0.03	
-80	-3996.0		-4.00	-0.10			-3998.0		-2.00	-0.05			0.10	
-100	-4995.0		-5.00	-0.10			-4996.5		-3.50	-0.07			0.05	
													0.03	

Errors at Zero Force are computed in % of Range.
The resolution of this Data Set is reflected in the least significant digit reported.
Total measurement uncertainty of the data supplied is equal to or less than +/-0.25% of reading.

Range: 1 Tension
Report Units: Pounds

Applied Force Percent	Series 1 Indicated Reading Ascending	Series 1 Indicated Reading Descending	Series 1 Errors Units Error Asc	Series 1 Errors Percent Error Asc	Series 1 Errors Units Error Desc	Series 1 Errors Percent Error Desc	Series 2 Indicated Reading Ascending	Series 2 Indicated Reading Descending	Series 2 Errors Units Error Asc	Series 2 Errors Percent Error Asc	Series 2 Errors Units Error Desc	Series 2 Errors Percent Error Desc	Repeatability Percent Error Asc	Repeatability Percent Error Desc
0	0.0		0.00	0.00			0.0		0.00	0.00			0.00	
20	1001.0		1.00	0.10			1001.5		1.50	0.15			0.05	
40	2000.5		0.50	0.03			2001.0		1.00	0.05			0.02	
60	3000.5		0.50	0.02			3000.5		0.50	0.02			0.00	
80	4001.5		1.50	0.04			4001.5		1.50	0.04			0.00	
100	5002.5		2.50	0.05			5003.0		3.00	0.06			0.01	

Errors at Zero Force are computed in % of Range.
The resolution of this Data Set is reflected in the least significant digit reported.
Total measurement uncertainty of the data supplied is equal to or less than +/-0.25% of reading.

MTS Systems Corporation Measurement Standards are Traceable to the National Institute of Standards and Technology

Section was found to be: In Tolerance X
Out of Tolerance

Notes:

Performed By: Dick Johnson

Signature:

Date: 20-Dec-99

Next Recommended Calibration Date: 31-Dec-00

fsa99009rc

Valley INDUSTRIES

STATIC TEST

DATE : 3-10-99
HITCH NO. :
HITCH RATING : 5000/500 Lbs.
APPLICATION : Winnebago Frame Extension Hitch
TYPE OF TEST : V.E.S.C. REGULATION V-5 + 10% - WEIGHT CARRYING

TEST PROCEDURE AND RESULTS

A prototype Class III hitch was fabricated and tested in accordance with V.E.S.C. Regulation V-5 Standard for weight carrying hitches. The loads used for this test represent a 5000/500 lb. weight-carrying load capacity per V.E.S.C. V-5 Standard. Actual loads used are 10% greater than specified to comply with Valley Engineering test criteria.

The hitch was installed on a non-yielding test fixture in the same manner it would be attached to a vehicle. The test fixture with the attached trailer hitch was bolted to a rigid test stand and the hydraulic cylinders attached.

HITCH CONSTRUCTION DETAILS

Cross Tube - 2½" sq. x .187"w.
Frame Brackets – ¼" formed plate.
Receiver Tube - 2" sq. I.D. x 6.375" long.
Ball Mount - Valley #7508 in the raised position.
Fasteners – ½"-13 Gr. 5 (6 locations).

STEP 1 - Horizontal compression of 3115 lbs. and a concurrent vertical compression of 3115 lbs. were applied.

	Rec. Height	Rec. Angle	Ball Mount Height	Ball Mount Angle	Cross Tube Height	Cross Tube Face Angle	Cross Tube Horiz. To Test Stand
Setup	15.000"	+0.1°	18.000"	-0.4°	15.000"	+0.7°	10.000"
Loaded	14.687"	-0.6°	17.687"	-0.6°	14.875"	+0.3°	9.937"
Unloaded	14.937"	+0.1°	18.000"	-0.4°	15.000"	+0.7°	10.000"

COMMENTS

This prototype Class III hitch withstood all forces applied during testing. The final deformation of 0° for the receiver is less than the 5° allowed by the V-5 Standard. Based on these results, this design satisfactorily meets the criteria for V.E.S.C. Regulation V-5 certification.

Bernie Fandrich
V.P.-Engineering

Valley INDUSTRIES

FATIGUE TEST

DATE : 3-9-99
HITCH NO. :
HITCH TYPE : Class III
APPLICATION : Winnebago Frame Extension Hitch
TYPE OF TEST : 5000 Lbs. Weight Carrying

A prototype Class III hitch was used for testing. The hitch was installed on a non-yielding test fixture in the same manner that it would be attached to the vehicle. The test fixture with hitch was bolted to a rigid test stand and the hydraulic servo cylinders were attached. The bolts attaching the hitch to the test fixture were torqued to 75 ft.lbs.

HITCH CONSTRUCTION DETAILS

Cross Tube – 2½" sq. x .187"
Frame Brackets – 7 ga. formed plate.
Receiver Tube – 2" sq. I.D. x 6.375" long.
Top and Chain Plate – ¼" plate.
Ball Mount – Valley #7508 in the raised position.
Fasteners – ½"-13 Gr. 5 (6 locations).

The loads used for this test were taken from the Valley Engineering standard for fatigue tests. The hitch has a gross weight rating of 5000 lbs. weight carrying. A load of 1500 lbs. in tension and compression was applied horizontally. At the same frequency, and in phase, a vertical load of +50 lbs. to +1100 lbs. was applied. The 7508 ball mount was in the raised position. The hydraulic cylinders were attached to the ball platform through a yoke. The yoke replicates a 2" ball in that the yoke has the same center lines as a ball. The test was run at 4.5 cycles per second.

The test was completed at 250,000 cycles. The hitch was inspected and no cracks were found.

The hitch successfully meets the Valley Engineering test criteria.

Jeff Sweeney
Project Engineer

Bernie Fandrich
Vice President - Engineering

Note: Although no part number is entered in the "Hitch Number" field, this test is believed to be the actual test that certifies the acceptance of test performance criteria for the 7823047 product for the following reasons:

- The timing of The test coincides with the development of the hitch
- The test objectives match the requisite loading and cycling of the hitch
- The test report was found in the Winnebago Frame Extension file folder where it would be expected to reside
- The pictures are evidence that the product is identical to the drawings that represent 7823047
- although this hitch was developed before anyone who remains in the organization today, I suspect the hitch numbers were omitted since the products affected by this test are too numerous to include in the field.

STEP 2 - Horizontal tension of 2950 lbs. and a concurrent vertical compression of 825 lbs. were applied.

	Rec. Height	Rec. Angle	Ball Mount Height	Ball Mount Angle	Cross Tube Height	Cross Tube Face Angle	Cross Tube Horiz. To Test Stand
Loaded	14.875"	-0.3°	17.875"	-2.1°	14.937"	+0.4°	10.062"
Unloaded	14.937"	+0.1°	18.000"	-0.1°	15.000"	+0.7°	10.000"

STEP 3 - Horizontal compression of 2950 lbs. and a concurrent vertical compression of 825 lbs. were applied.

Loaded	14.937"	+0.2°	18.187"	+2.7°	14.937"	+0.6°	9.937"
Unloaded	14.937"	+0.1°	18.000"	-0.2°	15.000"	+0.7°	10.000"

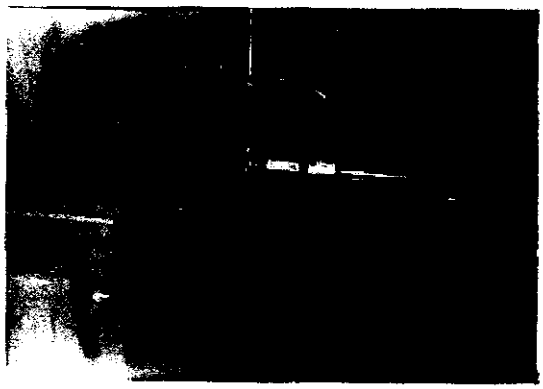
STEP 4 - Horizontal transverse compression of 1650 lbs. was applied.

	Receiver To Test Stand	Fixed Point Of Cross Tube To Test Stand	Axial Angle
Setup	20.000"	3.000"	0.0°
Loaded	20.125"	3.125"	0.0°
Unloaded	20.031"	3.000"	0.0°

FINAL MEASUREMENTS	DEFORMATION
Receiver Height	-0.062"
Receiver Angle	0.0°
Ball Mount Height	0.0"
Ball Mount Angle	+0.2°
Cross Tube Height	0.0"
Cross Tube Angle	0.0°
Cross Tube Horizontal To Test Stand	0.0"
Axial Angle	0.0°

VALLEY INDUSTRIES CLASS III STATIC TEST
V.E.S.C. REGULATION V-5 – WEIGHT CARRYING + 10%
March 10, 1999

PROTOTYPE HITCH FOR
WINNEBAGO FRAME EXTENSION HITCH
NPN



SETUP STEPS 1-3

SETUP STEP 4

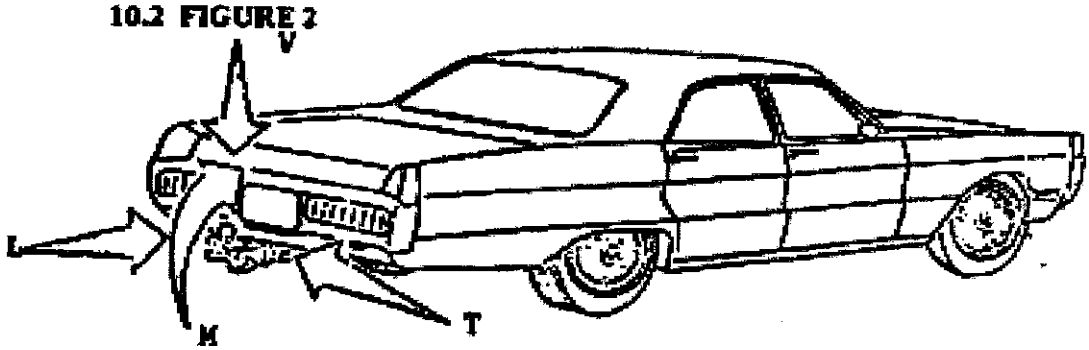
10.2

Table 2
HITCH TEST FORCES*

STEP	WEIGHT CARRYING HITCH		WEIGHT DISTRIBUTING HITCH	
	Force	Direction	Force	Direction
a	V=.47R+480 L=.47R+480	Downward Compressive	V=.045R+1650 M=51,000	Downward See Figure 2
b	L=.23R+1530 V=.15R	Tensile Downward	L=.067R+2070 V=.15R	Tensile Downward
c	L=.23R+1530 V=.15R	Compressive Downward	L=.067R+2070 V=.15R	Compressive Downward
d	T=.20R+500	Leftward	T=.20R+500	Leftward
e	T=.20R+500	Rightward	T=.20R+500	Rightward
f	Not Applicable	Not Applicable	M=93.2X+21000 V=.15R	See Figure 2 Downward

V = Vertical Force (lbs.)
L = Longitudinal Force (lbs.)
T = Transverse Force (lbs.)
M = Spring Bar Moment (inch-lbs.)
R = Hitch Rating in terms of MGTW (lbs.) (Maximum Gross Trailer Weight)
X = Hitch Rating for Maximum Vertical Load on Hitch (lbs.) (Tongue Weight)
** = Leveling Force Couple

10.2 FIGURE 2



*Footnotes to 10.2—Table 2 and Figure 2

1. When a hitch is to be tested:

   a. Assemble the hitch in its normal configuration as recommended by the hitch manufacturer.

   b. Attach the hitch to a non-yielding restraining fixture. The hitch-to-fixture attaching means must be the same as the normal hitch-to-car attaching means recommended by the hitch manufacturer.

   c. The points of hitch-to-fixture attachment must be located in the same positions as the hitch-to-car attachment point locations recommended by the hitch manufacturer.

   d. Attach a ball to the ball support platform in the manner recommended by the hitch manufacturer.

2. Hitch Test Force Applications. With the hitch attached to the test fixture as specified in footnote (1), immediately above, apply the forces designated in Table 2, in any sequence, as follows:

   a. Apply the specified downward vertical force concurrently with the specified compressive longitudinal force or spring bar moment.

   b. Apply the specified tensile longitudinal force concurrently with the specified downward vertical force.

   c. Apply the specified compressive longitudinal force concurrently with the specified downward vertical force.

   d. Apply the specified leftward transverse force.

   e. Apply the specified rightward transverse force.

   f. For hitches with weight distributing capability, apply the specified spring bar, or leveling moment, (leveling force couples) concurrently with the specified downward vertical force.

   All forces in steps (a) through (c) are to be applied along an axis which intersects the center of the ball. All forces are to be applied with an initial rate of not more than 150 pounds per second, and maintained at the maximum specified force level for at least five seconds.

3. Each hitch, when tested as specified above, shall be capable of withstanding the forces applied in accordance with footnote (2), immediately above, without causing permanent deformation of the ball platform, such that the final position of the ball axis shall not depart more than five degrees from its original, nominally vertical, position.

7. Provide a table that briefly describes the technical basis by which Valley established each of the ratings, installation, and maintenance parameters listed in response to Request No. 6. (see also "engineering docs" tab.)

8. Provide a copy of all engineering documentation (see tabs "Engineering Docs" & "ratings") including, but not limited to, calculations, engineering testing, and/or supplier technical data, that Valley has used to establish the ratings listed in response to Request No. 6.

Note:

The basis for the selection of ratings in static & bending moments is predicated on the existence of an industry-wide accepted criteria known as the SAE J684 Static Performance Test. Valley uses this test to determine hitch static loading performance. At the time the target product was manufactured, the standard was VESC V5 which preceded J684.

The basis for fatigue loads is contained in the following documentation...

VALLEY AUTOMOTIVE TRAILER HITCH TESTING

Trailer Hitch Static Testing:
Per SAE J684, table 3. This procedure is derived from the VESC regulation V-5, last revised in 1977. It was added to SAE J684 in the 1987 revision.

V-5 is not a state or national standard, or enforceable as such, since the governing body, the VESC, no longer exists. Nine states adopted it as an enforceable standard during the 1970's and each required annual submission of compliance testing. By the late 1980's, given that states no longer were acknowledging receipt of this data, Valley Industries notified each state that it would no longer voluntarily submit annual reports of compliance. Not one state acknowledged receipt of this action, much less object.

Trailer Ball Testing:
The Manufacturer tests all trailer balls marketed by Valley. Each production lot is certified and records maintained at the Manufacturer.

Safety Chain Attachment:
All methods of attachment are tested at their original development. When carry over designs are utilized on a new hitch structure, the safety chain attachment is typically not re-tested.

Fatigue Testing:
There are no Industry, State, Federal or Automotive standards in the U.S. that address the fatigue requirements of a trailer hitch system. Each of the large after market manufacturers (Valley, Reese and Draw-Tite) performs fatigue testing on their products and each company's test is different. There was some activity within the SAE Trailer Tow Committee Hitch Sub-committee a couple of years back to adopt a fatigue standard. No course of action could be agreed upon and the activity was stopped. Two points of interest: there is only one member of this committee who is from any of the OEM's and the hitch sub-committee was recently dissolved due to the lack of a volunteer to be its Chairperson.

Certain Asian-based import vehicle manufacturers have a very defined fatigue criteria. These are similar to the European standards noted on the attached. Note that the European standards do not include a static test and do not address use as a weight-distributing hitch.

Valley has two fatigue tests, weight-carrying and weight-distributing. One or both are performed on a hitch assembly, depending on the rating of the hitch. Both use a bogey of 150,000 cycles, a sample size of one and are normally assembled to a rigid fixture. Normal criteria is no cracks allowed in the hitch structure at completion of the test. These tests have been in use for over 15 years. In this time, the applied loads have remained essentially unchanged but the required cycle count has increased. The applied load values were originally designated by Draw-Tite, back when the two companies had common ownership. These load values cannot be traced back to any factual data.

The weight-carrying test is performed using two load cylinders; one oriented horizontally, the other vertically. No transverse load is applied. The cylinders are run in phase using the loads per the attached sheet. The maximum fore load is applied with the maximum down load and the maximum aft load is applied with the minimum down load. There is no vertical up component applied. Ball mount selection is dependent on design position and vehicle type.

In the weight-distributing test, inserting a leverage bar into the receiver tube and applying opposing loads generates the required leveling moment. The load values are a function of tongue weight, trailer weight and cylinder spacing, per the attached. There is no fore/aft or transverse component applied.

Other Test Methods:
When Ford and their Development source tested the PN-96 hitch, a new fatigue test was created. It was agreed that the vehicle life was to be 100,000 miles and that a figure of 33% of this life (33,000 miles) would be the required life of the hitch assembly. Real time data would be the basis for the applied loads. Transverse loading would be added. Data was generated from the following events:

- Full throttle acceleration
- Panic braking
- Secondary road travel
- Dirt road travel at 25 MPH
- Rail road crossing

A duty cycle was created using a portion of the peak loads. None of the three axes reaches peak load at the same time within the cycle.

Design Issues:
The integration of a trailer hitch assembly into other vehicle structural components has great potential for mass and cost reduction.

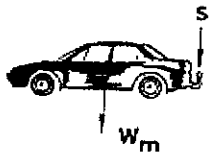
Hitch / Rear Cross Member Integration:
- Mercedes ML 320
- BMW Sport Utility

Each of the domestic OEM's have an integrated hitch / bumper system under development for launch by MY02.

Unique designs and processes must be utilized to meet packaging, mass, strength and cost targets
- Hitch sub-structure with non-structural bumper cover (fascia)
- Maintain step bumper towing capability. Non-towing capable steps are an issue with Customers.
- Towing capacities increase with enhanced power train capabilities.
- Removable receiver tubes
- "Invisible" structure.
- Hydroformed components

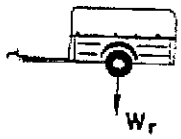
B. Burger
6-3-99

INFORMATION ABOUT DIFFERENT TEST METHODS



$$D = \frac{W_m \times W_r}{W_m + W_r} =$$

* W_m = max car weight
* W_r = max trailer weight

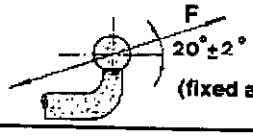


example:

W_m = 1780 kg
W_r = 1600 kg
S = 75 kg

$$D = \frac{1780 \times 1600}{1780 + 1600} = 842{,}6 \text{ kg} \rightarrow 8266 \text{ N}$$

① test acc ISO 3853



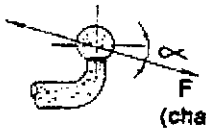
(fixed angle)

F=0,5D

example:

F = 0,5 x 8266 = 4133 N

② test acc TÜV



(changeable angle)

$$F = \sqrt{(0{,}6\,D)^2 + (1{,}5\,S)^2}$$

$$tg\,\alpha = \frac{1{,}5\,S}{0{,}6D} \rightarrow \alpha = \quad °$$

example:

$$F = \sqrt{(0{,}6 \times 842{,}6)^2 + (1{,}5 \times 75)^2}$$

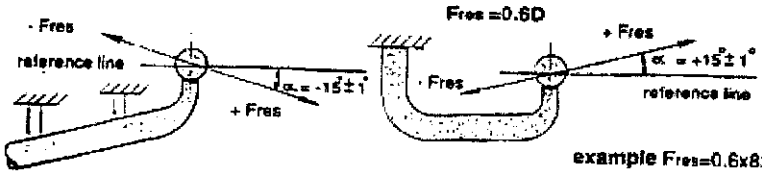
$$F = \sqrt{255591 + 12656{,}25}$$

$$F = \sqrt{268247{,}25} = 517{,}9 \text{ kg} \rightarrow \underline{F = 5080 \text{ N}}$$

$$tg\,\alpha = \frac{1{,}5 \times 75}{505{,}6} = 0{,}2225 \rightarrow \underline{\alpha = 12{,}5°}$$

* S vertical load

③ test acc EUROPEAN STANDARD



example Fres=0.6x8266=4960N

9. State the number of each of the following, by vehicle model year and vehicle model, whether or not confirmed, received by Valley, or of which Valley is otherwise aware, received since January 1, 2005, which relate to, or may relate to, the alleged defect in the hitch assemblies identified in responses to Request Nos. 1 and 2:

(a) Consumer and field reports, including dealer field reports; None known.
(b) Reports involving an injury or a fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in the vehicle hitch assembly, property damage claims, consumer complaints, or field reports; None known.
(c) Property damage claims; None known.
(d) Third-party arbitration proceedings where Valley is, or was, a party to the arbitration;Not known
(e) Lawsuits, both pending and closed, in which Valley is, or was, a party; None known.

(f) Warranty claims, whether or not reimbursed, including requests for special policy adjustment, extended warranty, and/or other similar consumer considerations such as "good will" and/or any and all other reimbursement request programs.State the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple reports of the same incident are to be counted separately (i.e., a consumer complaint and a field report involving the same incident are to be counted as a field report and a consumer complaint, etc.). None known.

In addition, for items "c" through "e," provide a summary description of the alleged problem and causal and contributing factors and Valley's assessment of the problem, with a summary of the significant underlying facts and evidence. N/A

For item "e," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other documents initiating the action was filed. N/A

Provide the table in Microsoft Access or Excel 2003, or a compatible format, entitled "PE10-048, Request Number Nine - Complaint Summary." N/A

10. For each consumer complaint, warranty claim report, etc. identified in response to Request No. 9 above, received by Valley, or of which Valley is otherwise aware, received since January 1, 2005, whether or not confirmed, that alleges, or may reasonably be inferred to describe the alleged defect in hitches identified in responses to Request Nos. 1 and 2, identify:

a. Valley's file number or other claim identifier used; 1777, 1803
b. The category of the incident as identified in response to Request No. 9 (i.e., consumer complaint, field report, etc.); warranty hitch, hitch install.
c. The owner's name; See "Claims" tab
d. The owner's address; Unknown
e. The owner's phone number; See "claims" tab
f. The incident date; See "claims" tab
g. The incident location; N/A
h. The report or claim date; See "claims" tab
i. The complete vehicle 17 digit VIN; N/A
j. The vehicle make; See "claims" tab
k. The vehicle model; See "claims" tab
l. The vehicle model year; N/A
m. A brief description of the incident, including the observed condition of the affected hitch assembly;

n. The hitch assembly part number; Not identified, but '07 Ithaca used 7823047 Hitch assy.

o. Whether the some or all of the hitch assembly components were examined by Valley representatives; N/A

p. A summary of the examination findings; N/A

q. Whether property damage is alleged; N/A

r. The number of alleged injuries, if any; None known

s. The number of alleged fatalities, if any. None known

Stewart, Dan

From: Debol, Ken
Sent: Thursday, February 03, 2011 10:47 AM
To: Stewart, Dan
Subject: FW: Winnebago hitch failure
Attachments: P1010012.JPG; P1010015.JPG; P1010017.JPG; P1010013.JPG; P1010014.JPG; P1010006.JPG; P1010011.JPG

From: Aaron Bashore - Service Writer [mailto:aaron@tomschaeffers.com]
Sent: Wednesday, October 20, 2010 11:10 AM
To: Debol, Ken
Subject: Fw: Winnebago hitch failure

----- Original Message -----
From: Aaron Bashore - Service Writer
To: k.debol@vtowing.com
Sent: Wednesday, October 20, 2010 11:08 AM
Subject: Winnebago hitch failure

Ken

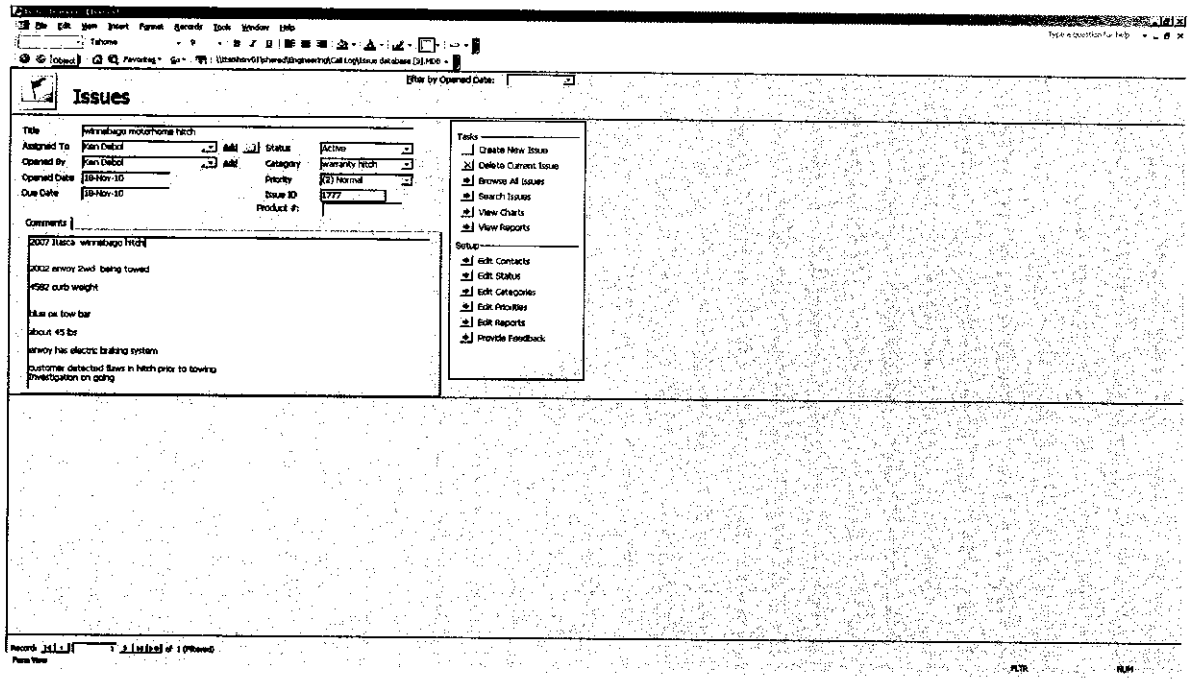
Good morning, I just got off the phone with a customers of mine Mrs. Michael about there Valley hitch on there Winnebago. I have attached the pictures of the hitch and were the hitch mounts to the frame. Please review the pictures and let me know. The other problem that we have is that the hitch is no longer available, so I did not know if you have a replacement for that hitch or have any other suggestions.

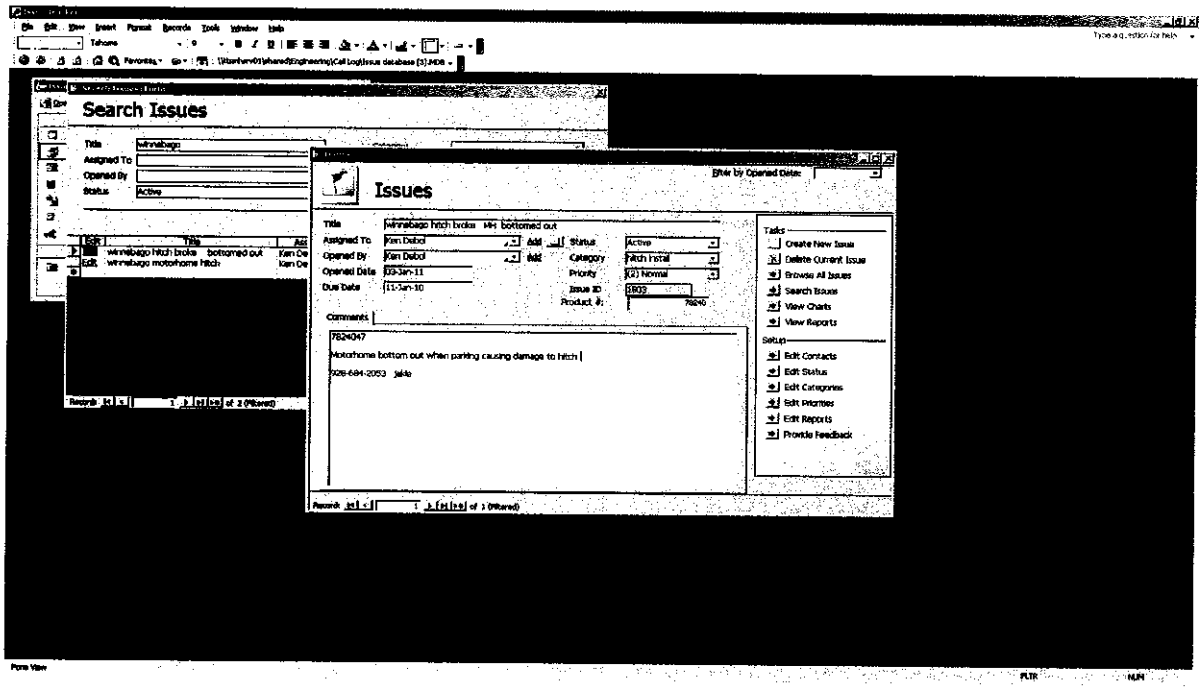
Thanks

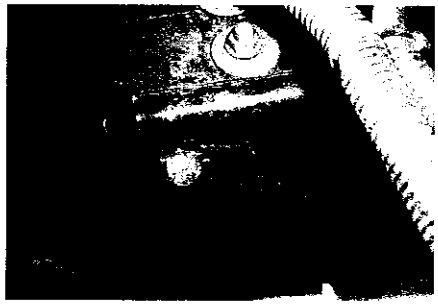
Aaron Bashore
Service Writer
Tom Schaeffers Camping and Travel Center
610-562-3071

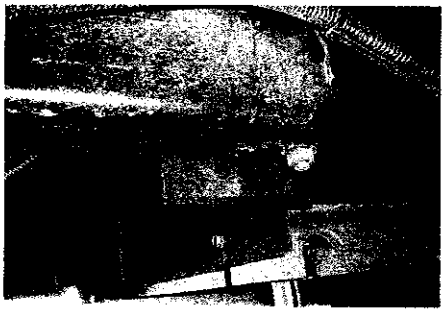
The message is ready to be sent with the following file or link attachments:
P1010012
P1010015
P1010017
P1010013
P1010014
P1010006
P1010011

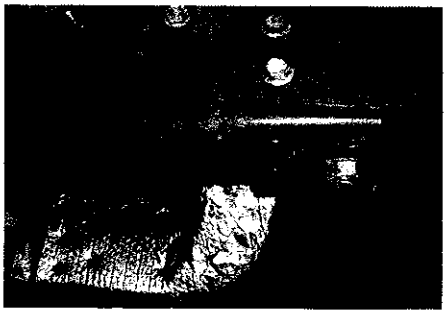
Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

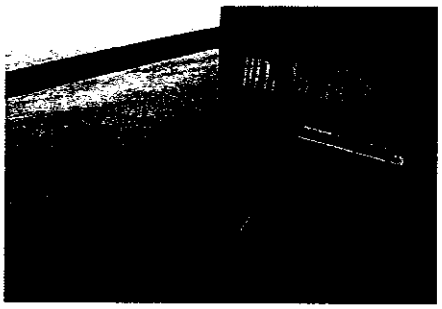

Issues
Filter by Opened Date:
Title winnebago motorhome hitch
Assigned To Ken Debol
Opened By Ken Debol
Opened Date 18-Nov-10
Due Date 18-Nov-10
Status Active
Category warranty hitch
Priority (2) Normal
Issue ID 1777
Product #:
Comments
2007 itasca winnebago hitch
2002 envoy 2wd being towed
4582 curb weight
blue on tow bar
about 45 lbs
envoy has electric braking system
customer detected flaws in hitch prior to towing
investigation on going
Tasks
Create New Issue
Delete Current Issue
Browse All Issues
Search Issues
View Charts
View Reports
Setup
Edit Contacts
Edit Status
Edit Categories
Edit Priorities
Edit Reports
Provide Feedback


Search Issues
Title winnebago
Assigned To
Opened By
Status Active
Edit Title
winnebago hitch broke bottomed out
winnebago motorhome hitch
Issues
Filter by Opened Date:
Title winnebago hitch broke MH bottomed out
Assigned To Ken Debol
Opened By Ken Debol
Opened Date 03-Jan-11
Due Date 11-Jan-10
Status Active
Category Hitch Install
Priority (2) Normal
Issue ID 1803
Product #: 7824047
Comments
7824047
Motorhome bottom out when parking causing damage to hitch
928-684-2053 jake
Tasks
Create New Issue
Delete Current Issue
Browse All Issues
Search Issues
View Charts
View Reports
Setup
Edit Contacts
Edit Status
Edit Categories
Edit Priorities
Edit Reports
Provide Feedback









11. Describe all modifications or changes made by, or on behalf of, Valley in the design, material composition, manufacture, quality control, supply, or installation of which relate to, or may relate to, the "alleged defect" in the "subject components." For each such modification or change, provide the following information:

(a) The date or approximate date on which the modification or change was incorporated into vehicle production;

(b) A detailed description of the modification or change;

(c) The reason(s) for the modification or change;

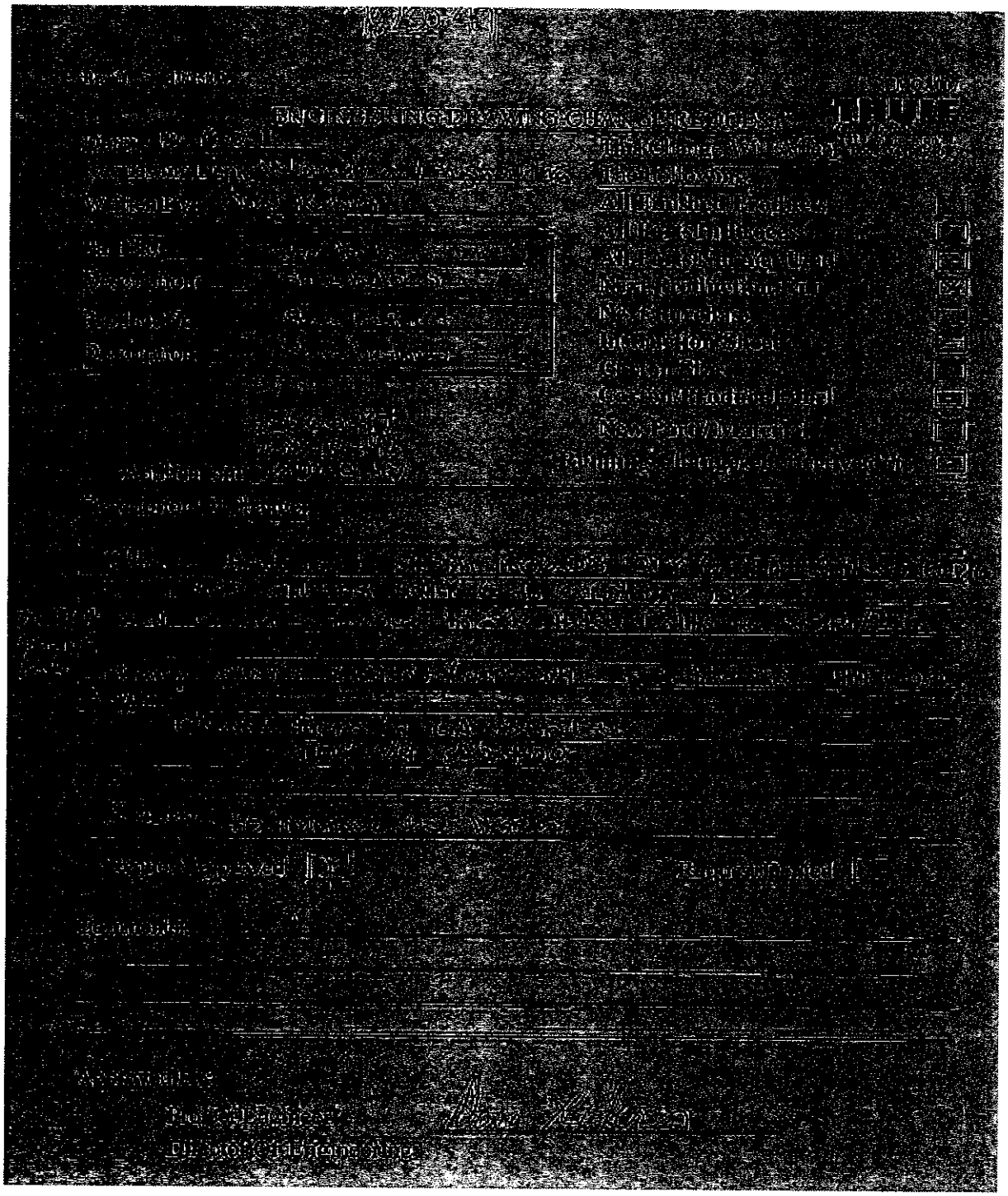
(d) The part numbers (service and engineering) of the original component;

(e) The part number (service and engineering) of the modified component;

(f) Whether the original unmodified component was withdrawn from production and/or sale, and if so, when; If part number is advanced, old is superceded. Unless customer authorizes the sale of inventory, the product is withdrawn.

(g) When the modified component was made available as a service component; N/A and,

(h) Whether the modified component can be interchanged with earlier production components. In the case of the changes authorized on this hitch, the changes would permit interchangeability.



ENGINEERING CHANGE NOTICE

CHANGE NO. 07-204 DATE 12-7-07 PAGE 3 OF 4

DESCRIPTION OF CHANGE: - CONTINUED -

78230-47 REAR CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER REV. 1

CHG'D WT.
FROM: 141.604 LBS.
TO: 142.072 LBS.

2800-04 CHASSIS ASSEMBLY 91160.3mm) REV. 4
1594-08 CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER REV. 3
2049-05 CHASSIS ASSEMBLY (1374.3mm) REV. 3

CHG'D P/N'S.
FROM: 1836-03 HEX CAP SCREW (1/2-13 x 1-1/2) QTY. 6
TO: 1837-03 HEX CAP SCREW (1/2-13 x 1-3/4) GR. 5 QTY. 6

FROM: 1044-00 CAPACITY LABEL 5000/500 LBS QTY. 1
TO: 2382-01 CAPACITY LABEL 5000/500 LBS QTY. 1

CHG'D QTY.
FROM: 6 3119-03 FLATWASHER - 1/2" H.D.
TO: 12 3119-03 FLATWASHER - 1/2" H.D.

ADDED P/N.
1699-00 VALLEY LOGO LABEL QTY. 1

CHG'D NOTES.
FROM: TORQUE TO 75 FT/LBS
TO: TORQUE TO 85 FT/LBS

FROM: 4) TORQUE (6) 1/2" FASTENERS SHOWN IN VIEW B TO 75 FT/LBS.. TORQUE (6) 3/8" FASTENERS SHOWN IN VIEW A TO 30 FT/LBS..

TO: 4) TORQUE (6) 1/2" FASTENERS SHOWN IN VIEW B TO 85 FT/LBS.. TORQUE (6) 3/8" FASTENERS SHOWN IN VIEW A TO 30 FT/LBS..

2800-04 CHASSIS ASSEMBLY 91160.3mm) REV. 4

CHG'D WT.
FROM: 114.324 LBS
TO: 114.792 LBS

1594-08 CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER REV. 3

CHG'D WT.
FROM: 125.431 LBS
TO: 125.899 LBS

REASON: TO IMPROVE THE HITCH. Customer request

REPLACE PREVIOUS REVISION PRINT WITH NEWLY REVISED PRINT.
DISCARD PRINTS OF OBSOLETE DRAWINGS AND PREVIOUS PRINTS.

APPROVED BY: Jim Clayton

FILE PRINT
DEC 12 2007
DO NOT DESTROY

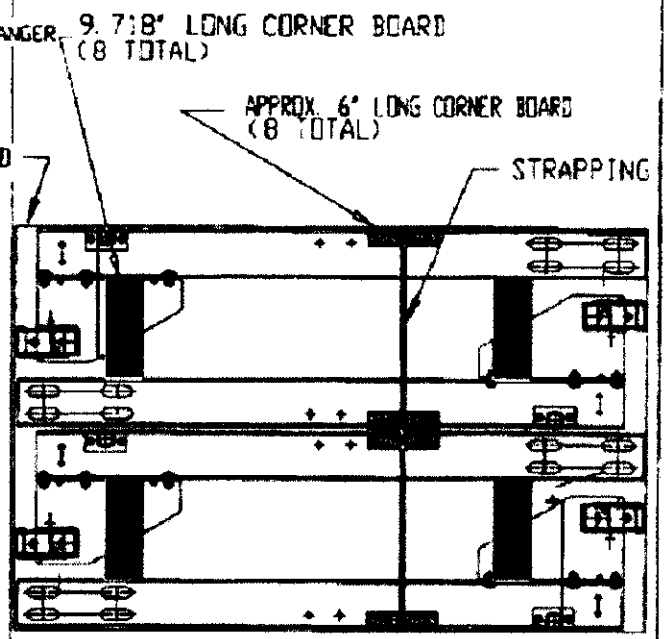
4-360

78230-47

PC. NO.	QTY.	PART NO.	DESCRIPTION
1	1	1594-08	CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER
		PACKAGING	
97	500	4197-12	PALLET BIN LID
98	250	4197-03	P. BIN SLEEVE (60-9/16x39x39+1/2)
99	250	4149-04	PALLET - 4 WAY (62x40)

NOTES: BULK PACK 4 PER PALLET

1) CENTER (1) 4197-12 PALLET BIN LID ONTO (1) 4149-04 62"x40" (4-WAY) PALLET AND STAPLE TO PALLET. (6 STAPLES MIN.)
2) PACK (4) CHASSIS ASSEMBLIES INTO 4197-12 PALLET BIN LID AS SHOWN.
3) PLACE (8) 9.718" LONG CORNER BOARDS BETWEEN HITCHES AND EXTENSION RAILS AS SHOWN.
4) PLACE (8) 6" LONG CORNER BOARDS BETWEEN EXTENSION RAILS AS SHOWN.
5) INDIVIDUALLY STRAP ALL 4 CHASSIS ASSEMBLIES TOGETHER AS SHOWN.
6) SLIDE 4197-03 PALLET BIN SLEEVE OVER CHASSIS ASSEMBLY PLACE LID ON TOP OF SLEEVE, AND STRAP CONTAINER TWICE.



CALCULATED SHIPPING WEIGHT	ACTUAL SHIPPING WEIGHT	UPC NO.	DRAWN BY	DATE	CK'D BY	PROJ. ENGR	CHIEF ENGR
142.072 LBS.			RHJ	11-4-04	D. L.		B. F.

DATE	REV	DESCRIPTION		DRN	CK'D
12-7-07	(1)	CHG'D WT.	07-204	M.A.	TD

FILE PRINT
DEC 12 2007
DO NOT

VALLEY INDUSTRIES
LODI, CALIFORNIA

REAR CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER

WINNEBAGO # 154052-08-01A

78230-47

O.E.

PRODUCT RELEASE NOTICE

NOV 30 2004

DATE: 11-9-04 RELEASE NO : 04-116

PRODUCT NO. 78230-47 SHIPPING WT : 141.604 LBS.

PRIVATE LABEL NO. WINNEBAGO #154052-08 UPC CODE NO. 0 84689

DESCRIPTION : REAR CHASSIS CLIP ASSEMBLY - 60" W/OUT SPARE HANGER (CL. III RECEIVER HITCH)

APPLICATION : **SAME AS 78080-47 EXCEPT FOR 7-WAY BRACKET. ON HITCH.**

RATED PRODUCT CAPACITY :

WEIGHT CARRYING : WEIGHT DISTRIBUTING :

MAX. TRAILER WT. 5,000 LBS MAX. TRAILER WT. -

MAX. TONGUE WT. 500 LBS. MAX. TONGUE WT. -

PACKAGING INFORMATION INDIVIDUAL PACK ☐ BULK PACK ■

BOX SIZE -

1st PRODUCTION RUN QTY : - EST. COST: -

PRODUCT AVAILABILITY DATE : - ANNUAL SALES EST. -

TOOLING REQUIRED

TYPE OF TOOLING	QTY.	P/N	TYPE OF TOOLING	QTY.	P/N
WELD FIXTURE	-	-	FAB CTR. /PLASMA/TITAN/LASER	-	-
FORM DIE			DRILL FIXTURE		-
PROGRESSIVE DIE			I. D. STAMP	-	-
PUNCH DIE / TEMPLATE	-	-	CHECK FIXTURE		-
		-	SIZING BAR	-	-

DISTRIBUTION CHART

DEPARTMENT OR PLANT	TO		DEPARTMENT OR PLANT	TO	
ENGINEERING	■	1 SET	PRESIDENT		1 COPY
Q. ASSURANCE (FAB PARTS)	■	1 SET	V.P. OF ENGINEERING	■	1 COPY
TOOLING-PROD. MGR.	■	1 SET	CUSTOMER SERVICE		3 COPIES
COST ACCOUNTING		1 SET	MARKETING		1 COPY
PRODUCTION FLOOR PRINTS	■	3 SETS	SALES		1 COPY
RECEIVING (BUYOUTS)		1 COPY	MIST. FORECASTER	■	1 COPY/1 BN
INSTR. & ILLUST.		1 COPY/BOM/HK	PRODUCTION CONTROL	■	1 COPY/1 SET
PURCHASING		1 COPY/1 BOM/1 BUYOUT	ROUTING	■	1 SET
V.P. OF OPERATIONS	■	1 COPY	OUTSIDE WAREHOUSES (3)		1 SET
RETURNS	■	1 BN/HK/FK			

FILE PRINT

NOV 30 2004

DO NOT DESTROY

APPROVED BY: [signature]

V.P. OF ENGR. [signature] DATE : [illegible]

[signature] 12/1/04

03-056

78230-47

PC. NO.	QTY.	PART NO.	DESCRIPTION
1	1	1594-08	CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER
		PACKAGING	
97	.500	4197-12	PALLET BIN LID
98	.250	4197-03	P. BIN SLEEVE (60-9/16x39x39+1/2)
99	.250	4149-04	PALLET - 4 WAY (62x40)

NOTES : BULK PACK 4 PER PALLET

1) CENTER (1) 4197-12 PALLET BIN LID ONTO (1) 4149-04 62"x40" (4-WAY) PALLET AND STAPLE TO PALLET. (6 STAPLES MIN.)
2) PACK (4) CHASSIS ASSEMBLIES INTO 4197-12 PALLET BIN LID AS SHOWN.
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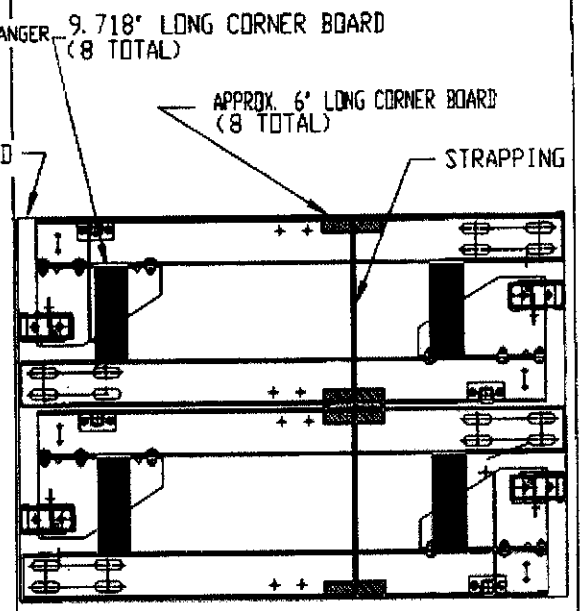
6) SLIDE 4197-03 PALLET BIN SLEEVE OVER CHASSIS ASSEMBLY PLACE LID ON TOP OF SLEEVE, AND STRAP CONTAINER TWICE.



CALCULATED SHIPPING WEIGHT	141.604 LBS.	ACTUAL SHIPPING WEIGHT	UPC NO.	DRAWN BY	DATE	CK'D BY	PROJ. ENGR.	CHIEF ENGR
				RHJ	11-4-04			

DATE	REV	DESCRIPTION	DRN	CK'D

FILE PRINT
NOV 30 2004
DO NOT DESTROY

Valley® INDUSTRIES

VALLEY INDUSTRIES
LODI, CALIFORNIA

REAR CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER

WINNEBAGO # 154052-08-01A

78230-47

O.E.

BUYOUT	3331-00

DATE	REV.	DESCRIPTION	DRN.	CK'D.
5-28-97	4	(REVISED & REWRITTEN) 97-185	J.W.	

CLASSIFICATION : ASTM A570

GRADE : 30

TYPE : HOT ROLLED, STRUCTURAL QUALITY, PICKLED AND OILED

THICKNESS : 7 GA. (.1868 / .1719)

WIDTH : 48"

LENGTH : 120"

FLATNESS : .250" WITHIN 5 FEET

YIELD STRENGTH: 30 KSI MIN.

NOTES:

1) REFER TO ASTM A568 FOR GENERAL REQUIREMENTS UNLESS OTHERWISE NOTED.
2) GRAIN OF MATERIAL TO RUN LENGTHWAYS.

DO NOT SCALE OR USE DRAWING AS TEMPLATE.

CAD

ELECTRONIC DRAWING MANUAL CHANGES PROHIBITED

PCS/BAR	CAL. WT. 7.500 LBS./SQ.FT.
MAT'L. REQ'D: LBS	FIN. WT. LBS

SCALE	TOLERANCE UNLESS OTHERWISE NOTED DECIMAL ± ANGULAR ±			
NONE				
DRAWN BY	DATE	CK'D BY	PROJ ENGR	CHIEF ENGR
J.W.	5-28-97			

Valley® INDUSTRIES

VALLEY INDUSTRIES
LODI, CALIFORNIA

7 GA. STEEL SHEET - H.R.S.Q.P.&O.

48" x 120" | 3331-00

MATERIAL SPECIFICATION

1. Scope – To define and establish chemical, mechanical and dimensional
property for leveled and cut continuously cast low carbon hot–rolled sheet steel suitable for required laser or plasma cutting, forming, welding, coating and assembling. The following specifications form a part of this specification as follows:
   ASTM A1018 and ASTM A635
2. Grade – ASTM A1018 CS 1008/1010 modified.
3. Required Mechanical Properties
   Yield Strength 30 – 50 ksi
   Elongation 25% minimum
3. Chemistry – Modified to reduce mechanical and chemical property variation.
   C 0.03 – 0.13
   Mn 0.60 maximum
   P 0.030 maximum
   S 0.035 maximum
4. Certifications for Mechanical and Chemical Properties are required with all shipments.
5. Surface and internal abnormalities:
   (12) P&O
   Free of rust at time of receipt.
   Free of scratches (fingernail test), gouges, dents, pitting, rolled in scale, heavy coil breaks and other detrimental surface blemishes.
6. Dimensions per ASTM A635 modified to reduce dimensional variation
   Thickness .238 inch minimum + .014 inch (aim for minimum)
   Flatness 0.250" within 5 feet
   Other dimensional tolerances 3/4 ASTM
   Width 48 inches
   Length 120 inches (grain of material to run lengthwise)

3224–00

DATE	SYM.	REVISION RECORD	DR.	CK.	AP.
1/10/08	11	UPDATED SPEC & REDRAWN	DJV	CJF	CJF
		PER ECN 08–011			
2/11/09	12	ADDED P&O ECN 08–740	GTS		

Valley INDUSTRIES ®
LODI, CALIFORNIA
MADISON HEIGHTS, MICHIGAN

DO NOT SCALE

SCALE –

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS IN INCHES
TOLERANCES: ONE PLACE DIM. ±
TWO PLACE DIM. ±
ANGULAR DIM. ±

MATERIAL
NOTED

DRAWN	DATE	REF.	CHKD.	APPR.
DJV	01/10/08		CJF	

NAME
STEEL PLATE – .238" MINIMUM H.R.L.C.

REFERENCE NO. 35091600

DRAWING NO. 3224–00

78230-47

PC. NO.	QTY.	PART NO.	DESCRIPTION
1	1	1594-08	CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER
		PACKAGING	
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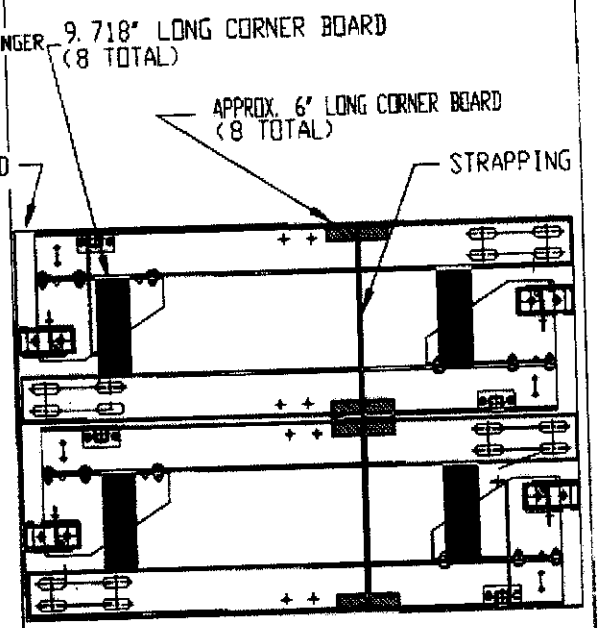

CALCULATED SHIPPING WEIGHT	141.604 LBS.	ACTUAL SHIPPING WEIGHT	UPC NO.	DRAWN BY	DATE	CK'D BY	PROJ. ENGR.	CHIEF ENGR
				RHJ	11-4-04			

DATE	REV	DESCRIPTION	DRN	CK'D

FILE PRINT
DEC 06 2007
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Valley INDUSTRIES

VALLEY INDUSTRIES
LODI, CALIFORNIA

REAR CHASSIS ASSEMBLY (60") W/OUT SPARE HANGER

WINNEBAGO # 154052-08-01A

78230-47

O.E.

THULE TOWING SYSTEMS

Engineering Change Request

No. 08- 011-SH1

Date: 1/9/2008 | Requested by | Customer Part No.: | Cust. Rev. Level:

Customer:

Description: STEEL COIL, STEEL PLATE, STEEL ROUND, STEEL FLAT, STEEL TUBE
COMMONIZATION OF STEEL & SPECIFICATIONS

Program:

Part No.	Rev. Level	Part Description and Description of Change:
3503-00	2	Updated spec and redrawn (reference Madison Heights part # 26210000)
3221-00	2	Updated spec and redrawn (reference Madison Heights part # 26190000)
3169-00	5	Updated spec and redrawn (reference Madison Heights part # 10530900)
3099-00	6	Updated spec and redrawn (reference Madison Heights part # 10441100)
3538-00	3	Updated spec and redrawn (reference Madison Heights part # 35091600)
3224-00	11	Updated spec and redrawn (reference Madison Heights part # 35091600)
3003-00	4	Updated spec and redrawn (reference Madison Heights part # 111728)
3157-00	3	Updated spec and redrawn (reference Madison Heights part # 11156300)
3017-00	1	Updated spec and redrawn (reference Madison Heights part # 111940)
3187-00	4	Updated spec and redrawn (reference Madison Heights part # 111820)
3470-00	2	Updated spec and redrawn (reference Madison Heights part # 112095)
3055-00	3	Updated spec and redrawn (reference Madison Heights part # 111745)

PDF'S UPLOADED: Yes | MATH DATA UPLOADED

Reason for Change:

New Part Release		Customer Request	
Cost Reduction		To Agree w/Tooling	
Process Improvement		Manufacturing Req.	
Product Improvement		Correct Info/Print	
Add Info (Charts, Specs..)		Other	Part Number Commonization Program

ECR Approved: N/A | By:

Engineering Change Notice

No. 08- 011-SH1

		This change will affect the following:	N/A
Customer Approval Required	N/A	Running change (w/o scrap)	
Approval Received	N/A	Next Production Run (w/scrap)	
		All Parts in Process	
		Next Purchase	
		All Finished Goods	
		Carton Size	
		Carton/Product Label	
Effective Date (If applicable)		All Parts Not Yet Used &/or Packed	
		Cost	

APPROVED BY: Dan Stewart (signed) DATE 1/16/2008

REPLACE PREVIOUS PRINT(S) WITH NEWLY REVISED PRINT(S).
DISCARD PRINTS OF OBSOLETE DRAWINGS AND PREVIOUS PRINTS

13. Provide a list that identifies by VIN each of the following associated with reported hitch cracking / fracturing incidents:

(a) A description of the returned parts; no VIN known. See tab "claims"

(b) A copy of the inspection report / observations conducted by Valley, Valley's suppliers, and/or sub-contractors; None known.

(c) The current location of the retained returned components (if known). State if the inspected components have been scrapped. Never received sample.

Valley Towing Products

FMOP294	
Rev Date: 6/18/09	**PPAP Dimensional Results Form**
Rev Level: 0	

Organization: Valley, Lodi Ca.		**Part Name:**	Receiver W/A
Supplier/Vendor Code:		**Part Number:**	4119-02
Inspection Facility: Same		**Revision No.:**	3
PROD Finished No.:	**78230-47**	**Engineering Change Documents:**	
Shop Order No.:		**Block Tolerance:**	+-1.50 / +-1° 0'

Item	Dimension / Specification	Specification / Limits	Qty Tested	Organization Measurement Results 1	2	3	4	5	Go ACC	No/Go REJ
1	942.80	941.30 - 944.30		933.00						X
2	33.80 Ref Typ	32.30 - 35.30	Lt / Rt	35.33	36.13					X
3	18.20 Ref Typ	16.70 - 19.70	Lt / Rt	16.07	16.47					X
4	81.80	80.30 - 83.30	Lt / Rt	79.19	83.19					X
5	126.90	124.80 - 127.80		133.96						X
6										
7										
8										
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Comments: Frame brackets was bent and broken.

Hitch date 2/1/06

Signature: Larry Wright (Signed) Date: 1/27/2011

15. Furnish Valley's detailed opinion of the alleged defect in the "subject components." Include an assessment of the following:

(a&b) Causal or Contributing Factors & potential failure modes.

A. Possible customer misunderstanding of towing set-up
B. Possible customer misapplication of load distribution
C. Possible that receiver bottomed out on ground causing fractures consistent with what is seen on subject hitch
D. Possible that hitch absorbed blunt shock force from tow vehicle coming in contact with stationary object and transmitted through load path.
E. Possible that customer overloaded hitch causing fractures and distortion consistent with subject hitch.
F. Possible that customer jacknifed tow vehicle while backing up placing sudden and intense stress on hitch causing fractures consistent with what is seen on subject hitch.
G. Possible that customer left tow-bar height adjustment shank in receiver, thereby decreasing ground clearance and concurrently increasing the risk that receiver accepts loads through contact with ground.
H. Possible that customer failed to follow directions for tow bar and incorrectly assembled hitch, adapter, tow bar and vehicle in such a fashion as to not be horizontal, causing increased stress on receiver.

(c) Risk to motor vehicle safety

Any failure related to the receiver, regardless of cause, has the potential to cause countless events & damage both property and personal.

(d) What warnings, if any, are provided to the operator and other persons.

Valley was required to provide no instruction sheet or warning beyond the label shown on table 3. Valley is aware that Blue Ox issues an instruction/warning document that explicitly informs the customer what is and what is not acceptable when using their product. Winnebago may provide similar documents for its customers, but Valley is not aware of them.

Valley Towing Products

FMOP294	
Rev Date: 6/18/09	**PPAP Dimensional Results Form**
Rev Level: 0	

Organization: Valley, Lodi Ca.		**Part Name:**	Frm Brkt Lt & Rt
Supplier/Vendor Code:		**Part Number:**	4121-05 / 4122-04
Inspection Facility: Same		**Revision No.:**	2 / 2
PROD Finished No.:	**78230-47**	**Engineering Change Documents:**	
Shop Order No.:		**Block Tolerance:**	+-1.50 / +-1° 0'

Item	Dimension / Specification	Specification / Limits	Qty Tested	Organization Measurement Results Lt		Rt			Go ACC	No/Go REJ
1	64.70	63.20 - 66.20		64.53		64.96			X	
2	34.70	33.20 - 36.20		33.95		34.38			X	
3	208.00	206.50 - 209.50		212.00		213.00				X
4	4.60 old dim.	3.10 - 6.10		4.71		4.71			X	
5	90° 0'	89° 0' - 91° 0'		88° 0'		89° 35'				X
6	13.50 / +-0.40	13.10 - 13.90		13.52		13.19			X	
7	102.00 / +-0.80	101.20 - 102.80		102.36		101.73			X	
8	17.50	16.00 - 19.00		17.98		17.77			X	
9	30.00	28.50 - 31.50		30.58		30.58			X	
10	Correct Spacing between	dimples 241.40.	acc / rej	ACCEPT		ACCEPT			X	
11										
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Comments: **Frame Brackets was bent and broken**

Line # 4 dimenions in 2006 was 4.60 for material thickness. Material Thickness was changed on 12/7/2007 to 6.40.

Hitch date 2/1/06

Signature: Larry Wright (Signed) Date: 1/27/2011

Valley

Valley

Returned Hitch Evaluation

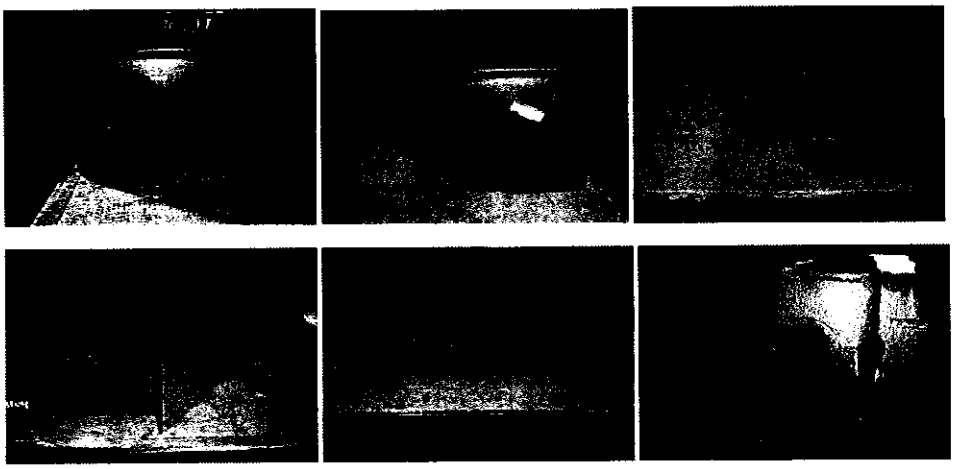
DATE : January 31, 2011
VALLEY P.N. : 411902
RATING : 5,000/500lb W/C
DESCRIPTION : Class III 2" Receiver
APPLICATION : Winnebago 154052-08

Frame Brackets - 0.179" Plate Formed
Cross Tube - 0.187" Wall X 2.5" Sq
Receiver Tube - 2.000" ID X 6.000" Long
Fasteners - 1/2" – 13 Grade 5 (6 Locations)

RESULTS

The 411902 returned hitch below shows signs of physical stress consistent with the following scenarios:

Bottoming out Receiver on asphalt or concrete.
Backing Receiver into wall or some stationary object.
Jackknife situation forcing Hitch sideways.



Russ Lexau
Test Engineer