


LANCE

LOADING AND BRACING ON EUROPEAN RAILCAR OF PALLETIZED PROPELLANT DRAINING KIT


 DELINEATED LOADING AND BRACING PROCEDURES COMPLY WITH THE REGOLAMENTO INTERNAZIONALE VEICOLI (RIV) REGULATIONS GOVERNING THE RECIPROCAL USE OF WAGONS IN INTERNATIONAL TRAFFIC.

NOTICE: DEPICTED LOAD IS NOT OVERSIZE.

DO NOT SCALE

REVISIONS			DRAFTSMAN <i>MS/A</i>	PROJ. ENG. <i>C.F./Dhw</i>	AMSM - 3P <i>71 Signance</i>
			CHECKER <i>BNW/BSH</i>	LOG. ENGRG. OFFICE <i>Q.A.G.</i>	
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	/		APRIL 1976		
			CLASS	DIVISION	DRAWING
			19	48	7817
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GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.
- B. THE OUTLOADING PROCEDURES SHOWN HEREIN ARE APPLICABLE TO EUROPEAN RAILCARS WHICH CONFORM TO THE RIV REQUIREMENTS.
- C. THE LOAD AS SHOWN IS BASED ON RIV RAILCARS (KBS 442/443 AND KLS 442/443) 41'-0-1/8" (12,500 MM) LONG BY 9'-1-3/64" (2,770 MM) WIDE WITH 18" (457 MM) CAR SIDES. ADDITIONAL UNITS OR OTHER ITEMS MAY BE LOADED ON THE CAR, WITH THE VIEW TOWARD FULL UTILIZATION OF CARRIER EQUIPMENT.
- D. LADING DATA:
 ITEM DIMENSIONS ----- 9'-2" (2,794 MM) LONG BY 70" (1,778 MM) WIDE BY 54" (1,372 MM) HIGH.

 ITEM GROSS WEIGHT--- 2,494 POUNDS (1,132 KG) (APPROX) FOR ONE ITEM (1/2 KIT). SEE GENERAL NOTE "L" BELOW.
- E. A LIST OF RAILCARS THAT MAY BE USED FOR SHIPMENTS OF THE DEPICTED LOAD IS SHOWN IN THE CHART ON THIS PAGE. OTHER TYPES OF RAILCARS CAN BE USED PROVIDING THESE OTHER CARS ARE PROPERLY EQUIPPED FOR THE APPLICATION OF THE PRESCRIBED LOAD-SECURING BLOCKING IN ACCORDANCE WITH THE SPECIFIED PROCEDURES. MINOR DEVIATIONS FROM THE LOCATIONS SHOWN IN THE LOAD VIEWS FOR INSTALLING BLOCKING AND TIE DOWN COMPONENTS ON A CAR ARE PERMITTED. HOWEVER, THE INTENT OF THE SPECIFIED BLOCKING PROCEDURES MUST BE ACHIEVED.
- F. REMOVE ALL POSTS FROM SIDE OF CAR AND PLACE IN RACKS UNDER CAR, IF APPLICABLE.
- G. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE RAILCAR CONCERNED, OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS CONTAINED HEREIN, FOR FULL OR PARTIAL CARLOAD, MUST BE FOLLOWED FOR BLOCKING, BRACING, AND STAYING OF THIS ITEM.
- H. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE RAILCAR, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- J. NAILS USED FOR FLOOR LINE BLOCKING WILL HAVE A MINIMUM DIAMETER OF 5 MM. NAIL SIZES WILL BE SELECTED TO PROVIDE A MINIMUM OF 40 MM PENETRATION INTO THE CAR FLOOR. HOWEVER, THE LENGTH OF THE NAIL WILL BE SUCH THAT THE NAIL DOES NOT COMPLETELY PENETRATE THE CAR FLOOR. SEE THE "NAIL CHART" AT THE RIGHT AND THE "TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR" DETAIL ON PAGE 3. NAILS WHICH ARE OF OTHER SIZES OR WHICH HAVE A NOMENCLATURE DIFFERENT THAN THAT USED HEREIN, MAY ALSO BE USED PROVIDED THEY MEET THE MINIMUM REQUIREMENTS STIPULATED WITHIN THIS DOCUMENT.
- K. NAILS USED FOR FABRICATING DUNNAGE ASSEMBLIES SHALL BE OF THE MAXIMUM PRACTICAL LENGTH WHICH WILL PREVENT THE NAIL POINT FROM COMPLETELY PENETRATING THE DUNNAGE ASSEMBLY. THE NAIL POINT IS TO BE CONCEALED WITHIN THE DUNNAGE ASSEMBLY TO PREVENT DAMAGE TO THE LADING.
- L. A COMPLETE DRAINING KIT CONSISTS OF TWO PALLET UNITS, ONE FUEL PROPELLANT DRAINING KIT AND ONE OXIDIZER PROPELLANT DRAINING KIT. THE TWO KITS ARE IDENTICAL AND EACH KIT CONFORMS TO THE DIMENSIONAL AND WEIGHT CRITERIA IDENTIFIED IN GENERAL NOTE "D" ABOVE.
- M. THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON THE USE OF DIMENSIONAL SIZED LUMBER. IN MOST CASES THE METRIC EQUIVALENT IS GIVEN IN PARENTHESIS FOLLOWING THE DIMENSION. HOWEVER, WHERE THE METRIC EQUIVALENT IS NOT SHOWN, IT MAY BE COMPUTED BY USING 1" EQUALS 25.4 MM. METRIC EQUIVALENTS FOR WEIGHTS ARE BASED ON 1 LB EQUALS 0.454 KG.

NAIL CHART		
SIZE	LENGTH	DIAMETER
10d	3" (76 MM)	0.1483" (3.77 MM)
12d	3-1/4" (83 MM)	0.1483" (3.77 MM)
16d	3-1/2" (89 MM)	0.1620" (4.11 MM)
20d	4" (102 MM)	0.1920" (4.88 MM)
30d *	4-1/2" (114 MM)	0.2070" (5.26 MM)
40d *	5" (127 MM)	0.2253" (5.72 MM)
50d *	5-1/2" (140 MM)	0.2437" (6.19 MM)
60d *	6" (152 MM)	0.2625" (6.67 MM)

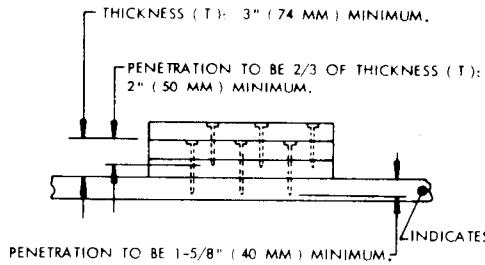
* NAILS WHICH HAVE ADEQUATE DIAMETER FOR NAILING FLOOR LINE BLOCKING. THE LENGTH OF THE NAIL MUST MEET THE REQUIREMENTS OF GENERAL NOTE "J".

LIST OF RAILCARS THAT MAY BE USED FOR SHIPMENTS			
TYPE OF RAILCAR	LENGTH OF RAILCAR	NO. OF ITEMS	MAXIMUM TOTAL WEIGHT (APPROX) OF ITEMS
KLMS 440	34'-11-11/16" (10,660 MM)	2	4,998 LBS (2,264 KG)
KLM 505	30'-4-9/16" (9,260 MM)	2	4,998 LBS (2,264 KG)
KLM 506	34'-8-1/2" (10,580 MM)	2	4,998 LBS (2,264 KG)
KBS 442/443	41'-0-1/8" (12,500 MM)	3	7,492 LBS (3,396 KG)
KLS 442/443	41'-0-1/8" (12,500 MM)	3	7,492 LBS (3,396 KG)
RMMS 663/664	41'-5-51/64" (12,644 MM)	3	7,492 LBS (3,396 KG)
RS 680/681	60'-8-23/64" (18,500 MM)	5	12,490 LBS (5,660 KG)
RS 683/684	60'-8-23/64" (18,500 MM)	5	12,490 LBS (5,660 KG)
SAS 710	49'-2-9/16" (15,000 MM)	4	9,996 LBS (4,528 KG)

MATERIAL SPECIFICATIONS

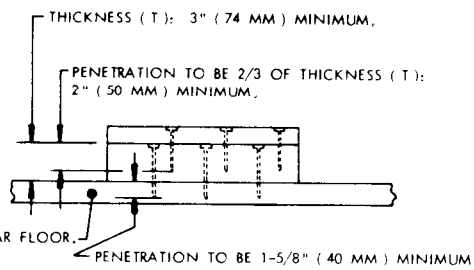
LUMBER --- : DOUGLAS FIR OR COMPARABLE LUMBER WITH STRAIGHT GRAIN AND FREE FROM MATERIAL DEFECTS. REF: FED SPEC MM-L-751.

NAILS --- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED. REF: FED SPEC FF-N-105. ALT: ANNULAR-RING TYPE NAIL OF THE SAME SIZE.



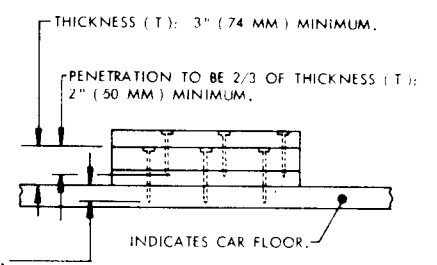
TRIPLED 2' X 6' LUMBER SHOWN

DETAIL A



2' X 6' AND 4' X 6' LUMBER SHOWN

DETAIL B



MIXED THICKNESSES OF LUMBER SHOWN

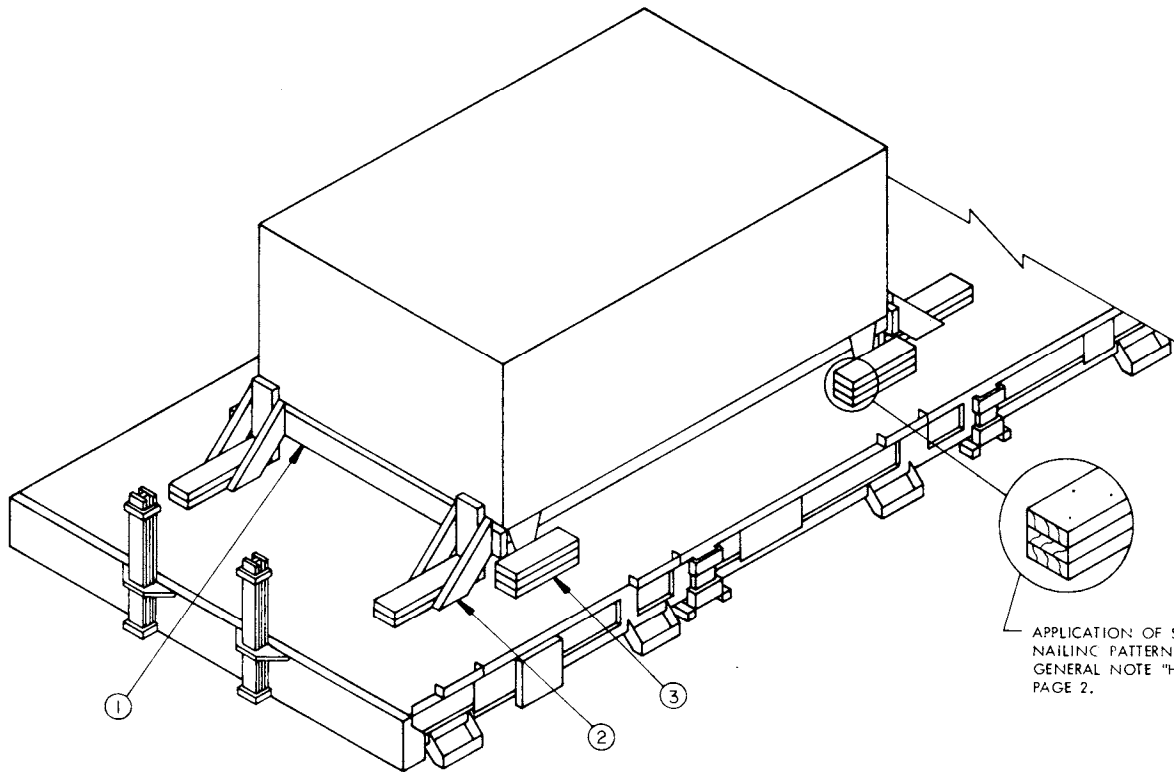
DETAIL C

TYPICAL NAILING OF FLOOR LINE BLOCKING TO CAR FLOOR

SPECIAL NOTES:

1. THE DETAILS ON THIS PAGE DEPICT POSSIBLE VARIATIONS THAT MAY RESULT FROM USING AVAILABLE LUMBER FOR FLOOR LINE BLOCKING. KEY NUMBERS THROUGHOUT THIS DOCUMENT SPECIFY DOUBLED OR TRIPLED PIECES OF LUMBER WHICH ARE 2" X 6" IN SIZE FOR LCL BRACES AND SIDE BLOCKING, AS TYPICALLY SHOWN IN DETAIL A ABOVE. WHERE TRIPLED 2" X 6" LUMBER IS SPECIFIED, AS TYPICALLY SHOWN IN DETAIL A ABOVE, IT IS PERMISSIBLE TO USE MIXED THICKNESSES OF LUMBER, AS TYPICALLY SHOWN IN DETAILS B AND C, IN LIEU OF THE SPECIFIED TRIPLED 2" X 6" LUMBER. THE INTENT OF THE SPECIFIED BLOCKING PROCEDURE MUST BE OBTAINED.
2. THE NUMBER OF NAILS USED TO SECURE EACH PIECE OF BLOCKING WILL BE AS SPECIFIED IN THE KEY NUMBERS FOR EACH SPECIFIC PROCEDURE. THE LENGTH OF THE NAILS SELECTED WILL BE ADEQUATE TO NAIL THROUGH THE BLOCKING AND ACHIEVE THE PENETRATION OF THE CAR FLOOR AS SPECIFIED. WHEN NAILING FLOOR LINE BLOCKING TO THE CAR FLOOR, AS DEPICTED IN DETAILS A, B, AND C, THE FOLLOWING APPLIES:

THICKNESS (T) OF BLOCKING		SIZE OF NAIL
MINIMUM	MAXIMUM	
3" (74 MM)	3" (74 MM)	30d (4-1/2") (114 MM)
3" (74 MM)	3-3/8" (87 MM)	40d (5") (127 MM)
3-3/8" (87 MM)	4" (100 MM)	50d (5-1/2") (140 MM)
4" (100 MM)	4-3/8" (112 MM)	60d (6") (152 MM)

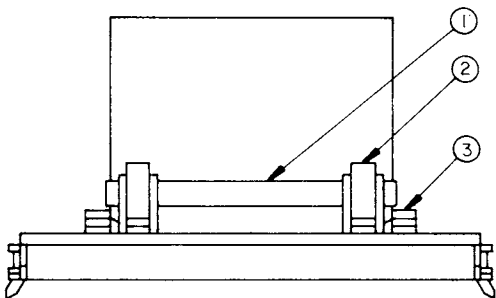


APPLICATION OF STAGGERED NAILING PATTERN. SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

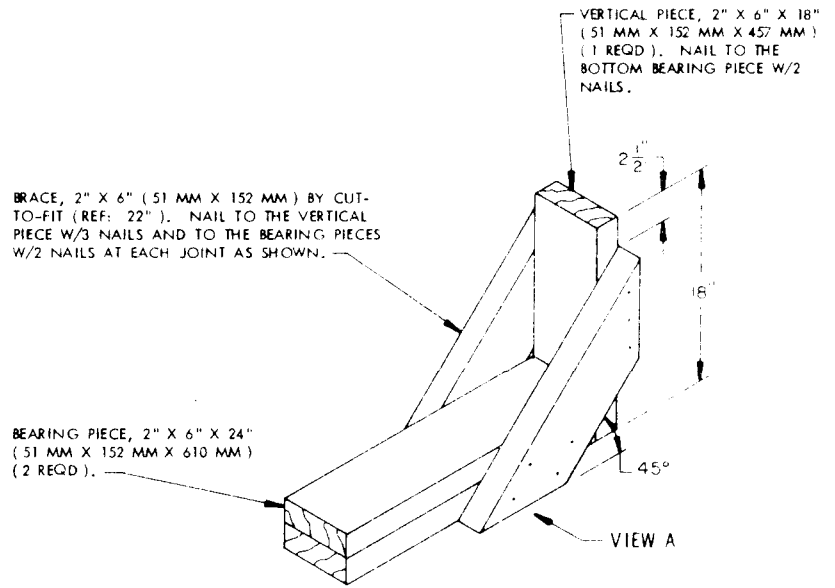
- ① HEADER, 2" X 6" X 6'-0" (51 MM X 152 MM X 1,829 MM) (2 REQD). PRE-NAILED TO THE VERTICAL PIECE OF THE LCL BRACE W/3 NAILS AT EACH JOINT. SEE THE "VIEW A" DETAIL ON PAGE 5 AND GENERAL NOTE "K" ON PAGE 2 FOR ADDITIONAL GUIDANCE.
- ② BRACE (4 REQD). SEE THE "LCL BRACE" DETAIL ON PAGE 5. WITH THE HEADER, PIECE MARKED ① PRE-NAILED TO THE VERTICAL PIECE, POSITION AGAINST THE CRATE AS SHOWN AND NAIL TO THE CAR FLOOR W/6 NAILS.
- ③ SIDE BLOCKING, 2" X 6" X 18" (51 MM X 152 MM X 457 MM) (TRIPLED) (4 REQD). PLACE THE SECOND PIECE DIRECTLY ON TOP OF THE FIRST AND NAIL THRU BOTH PIECES AND INTO THE CAR FLOOR W/3 NAILS. PLACE THE THIRD PIECE DIRECTLY ON TOP OF THE FIRST TWO PIECES AND NAIL THRU PIECE THREE INTO PIECES ONE AND TWO W/3 NAILS.



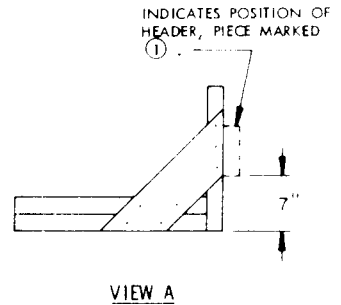
END VIEW

SPECIAL NOTE:

1. A ONE UNIT LOAD IS SHOWN ON A 9'-1-3/4" (2,770 MM) WIDE EUROPEAN RAILCAR. SEE GENERAL NOTE "E" ON PAGE 2.



LCL BRACE



BILL OF MATERIAL		
LUMBER	LENGTH	BOARD FEET
2" X 6" (51 MM X 152 MM)	67 FT (20,421 MM)	67
NAILS	NO. REQD	WEIGHT
SIZE AS REQD	124	7 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DRAINING KIT	1	2,494 (1,132 KG)
DUNNAGE		168 (76 KG)
TOTAL WEIGHT		2,662 (1,208 KG)