

**STANDARD DOUBLE GIRDER CRANES**

WEIGHT FACTORS CONTINUED

Span	End Truck Item Number	Gauge														
		6'-6	7'-0	7'-6	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0	12'-6	13'-0	13'-6
62'-1 to 72'-0	180104	250	306	362	418	473	661	726	-	-	-	-	-	-	-	-
	180205	250	306	362	418	473	661	726	-	-	-	-	-	-	-	-
	180106	250	307	365	423	480	670	736	-	-	-	-	-	-	-	-
	180108	250	311	373	435	496	689	759	828	893	961	1484	1571	-	-	-
	180209	250	309	368	428	486	677	745	811	874	939	1460	1545	1628	1713	1800
	180112	437	467	498	529	559	722	761	948	989	1033	1533	1596	1658	1721	1787
	180113	437	467	498	529	559	722	761	948	989	1033	1533	1596	1658	1721	1787
72'-1 to 82'-0	180214	437	467	498	529	559	722	761	948	989	1033	1533	1596	1658	1721	1787
	180106	279	338	398	458	517	726	795	-	-	-	-	-	-	-	-
	180108	279	342	406	470	533	745	818	890	957	1028	-	-	-	-	-
	180209	279	340	401	463	523	733	804	873	938	1006	1586	1676	1764	1854	1947
	180112	466	498	531	564	596	778	820	1010	1053	1100	1659	1727	1794	1862	1934
82'-1 to 92'-0	180113	466	498	531	564	596	778	820	1010	1053	1100	1659	1727	1794	1862	1934
	180214	466	498	531	564	596	778	820	1010	1053	1100	1659	1727	1794	1862	1934
	180108	308	373	439	505	570	801	877	952	1021	1095	-	-	-	-	-
	180209	308	371	434	498	560	789	863	935	1002	1073	1712	1807	1900	1995	2094
92'-0 to 100'-0	180112	495	529	564	599	633	834	879	1072	1117	1167	1785	1858	1930	2003	2081
	180113	495	529	564	599	633	834	879	1072	1117	1167	1785	1858	1930	2003	2081
	180108	337	404	472	540	607	857	936	1014	1085	1162	-	-	-	-	-
100'-0	180209	337	402	467	533	597	845	922	997	1066	1140	1838	1938	2036	2136	2241
	180112	524	560	597	634	670	890	938	1134	1181	1234	1911	1989	2066	2144	2228
	180113	524	560	597	634	670	890	938	1134	1181	1234	1911	1989	2066	2144	2228

**DOUBLE GIRDER TRANSFER CRANES**

Double girder transfer cranes are of the same design as standard double girder cranes with the addition of interlock mechanisms at one or both ends of the girder. Discharge points are installed at the ends of tracks where a carrier is to be transferred.

The interlocks and discharge points used on double girder transfer cranes are similar to those used on single girder cranes. The operation of double girder interlock mechanisms is the same as shown and described on Page CR-30 for single girder interlocks.

Forks are provided on interlock mechanisms and discharge points which raise to permit passage of the carrier when the interlock and discharge point are latched. When they are not latched, the forks prevent carriers from being accidentally run off the end of the girders or discharge tracks.

The throw-out mechanism actuates the interlock latch and may be manually or motor operated. Manually operated mechanisms are located on one of the girders and are operated by pull chains. Motor operated mechanisms are controlled by a push button station located on the carrier or crane.

Two or more transfer cranes may be directly interlocked or interlocked through fixed transfer sections. Direct interlocking cranes have discharge points installed on one or both of the cranes depending on the number of cranes to be interlocked.

Double girder transfer cranes use Type I or Type III control arrangements as described on Pages CR-7 and CR-8. Type II control is not used as the control station is on the crane.

**INTERLOCKS AND DISCHARGE POINTS**

Three types of interlocking equipment are available: Type L interlocks and discharge points for carriers with 5 inch diameter wheels; Type H for carriers with 6-1/2 inch diameter wheels or less; and Type J for carriers with 8 inch diameter wheels or less. In laying out transfer crane systems, the same type of interlock and discharge point must be used throughout the system.

Interlock mechanisms are installed at one or both ends of

**CATALOG NUMBERS OF INTERLOCKS**

ITEM NUMBERS OF INTERLOCKS						
Girder Item Number	Type L Interlock		Type H Interlock		Type J Interlock	
	Right Hand Assembly	Left Hand Assembly	Right Hand Assembly	Left Hand Assembly	Right Hand Assembly	Left Hand Assembly
34037 34041 34046	45084C	45084D	45087C	45087D	N/A	N/A
34051 through 34066	45085C	45085D	45088C	45088D	45092C	45092D
34071 through 34079	45086C	45086D	45089C	45089D	45093C	45093D

**DOUBLE GIRDER TRANSFER CRANES**

both girders. The latch and slide rod assemblies are the same as used on single girder transfer cranes. The throw-out mechanism is designed to operate both interlocks at one end from one set of operating chains. The table below lists the item numbers of double girder interlock mechanisms.

The discharge points used with double girder interlock mechanisms are the same as used with single girder interlocks. Item numbers of discharge points are listed on Page CR-32.

When 2 or more transfer crane with different types of girders operate on the same runway, a constant girder depth must be established at the end trucks to allow the cranes to engage the discharge tracks. When cranes have Type 1 and Type 2 girders, the constant depth is accomplished by shimming the Type 1 girders to 16 inch at the trucks or, alternately, Type 2 girders can be furnished on all cranes. Consult factory for recommendations when Type 3 girders are used with Type 1 and Type 2 girders.

**GUIDE ROLLER ARRANGEMENT**

Guide rollers and guide roller guides maintain vertical and horizontal alignment of bridge girders and transfer tracks. The guide roller arrangement allows the transfer crane to pass spur tracks, fixed transfer section or other transfer cranes without interference. They are recommended for all double girder crane applications.

Two guide roller arrangements are available: (1) individual guide rollers and guide roller guides as used on single girder cranes, and (2) continuous guide roller guides with horizontal

and vertical guide rollers. The following guidelines have been established for selecting double girder guide roller arrangements:

1. For Class B (light service) and Class C (moderate service) transfer cranes interlocking with spur tracks or fixed transfer sections and having a maximum span of 38'-0 and a maximum rated load of 5 tons, No. 4504 guide rollers are installed on one end or both ends of both girders. All spur tracks and fixed transfer sections are equipped with individual guide roller guides (No. 4501004 upper guide and No. 4501005 lower guide). Clearances for transfer cranes with this guide roller arrangement are the same as indicated on Pages CR-34 and CR-36 except for clearances on the throw-out mechanism which are shown on Pages CR-65 and CR-67. Minimum girder overhangs are determined from the table on Page CR-43.

2. Continuous guide roller guides and horizontal and vertical guide rollers are installed on all other double girder transfer cranes. The continuous guide roller guide is designated as Item No. 45090 and is mounted on the bridge girders. It is a steel weldment which is machined after welding to provide guiding surfaces for the horizontal and vertical rollers. The guide roller assembly is designated as Item No. 45091 and is mounted on the spur tracks or fixed transfer section. The roller bracket is a steel weldment which is machined after welding for the horizontal and vertical rollers. The rollers are lubricated through readily accessible fittings. Clearances for this guide roller arrangement are shown on Pages CR-65, CR-66 and CR-67. Minimum girder overhangs are determined from the table on Page CR-43.

## DOUBLE GIRDER TRANSFER CRANES

### ELECTRIFIED TRANSFER CRANES

Insul-8-Bar's 90 amp conductor is the standard electrification for transfer cranes. Consult factory for assistance when other types of electrification are used. Transfer cranes generally are not electrified with festooned or tagline electrification.

The power conductor arrangement for transfer cranes is shown in the Electrification Section. The power conductors must be 6-1/8 inch above the tread for Type L interlocks, 7-3/4 inch for Type H interlocks and 9-1/8 inch for Type J interlocks to prevent interference with the latch.

The control conductors are not carried through the interlock gap eliminating the need for control conductors on spur tracks or fixed transfer sections. No. 550491 pickup guides and No. 450278 transfer caps are used at the ends of the control conductors to enable the collectors to leave and pick up the conductors as the carrier moves off and on the transfer crane. Carriers operating on transfer cranes use No. 560395 collectors for the power conductors and No. 560393 self-centering collectors for the control conductors.

All carriers operating on direct interlocking crane, cranes interlocking through fixed transfer sections or cranes interlocking at both ends with spur tracks require tandem collectors for the common conductor (X) and the mainline contactor conductor (M) to activate the mainline contactor as the transfer is made. The tandem collector arrangement requires 2 additional No. 560393 collectors.

### ACCESSORY EQUIPMENT

Accessory equipment can be furnished on double girder transfer cranes to increase their flexibility and improve their operation. Some accessory equipment is furnished as standard and some are optional.

A limit switch is furnished on the throw-out mechanism as standard on transfer cranes interlocking with spur tracks or fixed transfer sections.

The switch interrupts the crane control circuit when the latch is extended and prevents the operator from moving the crane while it is latched to the discharge track.

When a system has 2 or more discharge tracks and 2 or more transfer cranes with Type I control, and auxiliary push button station may be installed on the crane for controlling the crane motion. This enables the operator to move the crane from one discharge track to another without the hoist

and carrier being on the crane.

When transfer cranes are arranged for direct crane to crane interlocking it may be desirable to have them travel as a unit when interlocked. This is accomplished by contacts at the ends of the cranes switch connect the crane control circuits. A limit switch disconnects the contacts when the cranes are not interlocked allowing the cranes to pass without connecting their control circuits. Other limit switch arrangements are used to prevent the crane from traveling when the latch is extended and the crane is not aligned with the other crane. Consult factory for information on limit switch arrangements, clearances and girder overhangs on all direct interlocking cranes.

### MOTOR OPERATED INTERLOCKS

Motor operated interlocks can be furnished on all double girder transfer cranes as optional equipment. The latches and slide rod assemblies are the same as used on manually operated interlocks. The throw-out mechanism uses a gearmotor and roller chain drive to extend and retract the latches. A magnetic contactor is furnished for control of the gearmotor; limit switches control the movement of the latches and also interrupt the crane motion when the interlock is extended.

The interlock is controlled from 2 additional buttons in the carrier push button station (Type I control) or crane push button station (Type III control) or from an auxiliary push button station suspended from the crane. On cab operated systems, a push button is mounted in the cab. When controlled from the carrier, 2 additional control conductors are required for the crane electrification and 2 additional control collectors for the carrier.

When transfer cranes with motor operated interlocks are arranged for direct crane to crane interlocking, contacts to connect the crane control circuits may be required to meet the following conditions: (1) control of the interlock from either of the 2 interlocked cranes; (2) cranes to travel as a unit when interlocked; and (3) the combination of conditions (1) and (2). When contacts are used, a limit switch is provided to disconnect the contacts when the cranes are not interlocked allowing the cranes to pass without connecting their control circuits. Other limit switches are provided to prevent the crane from traveling when latches are extended and the crane is not aligned with the other crane. Consult factory for information on limit switch arrangements, clearances and girder overhangs on all direct interlocking cranes where contacts are used.

**DOUBLE GIRDER TRANSFER CRANE CLEARANCES**

**SPUR TRACK ARRANGEMENT**

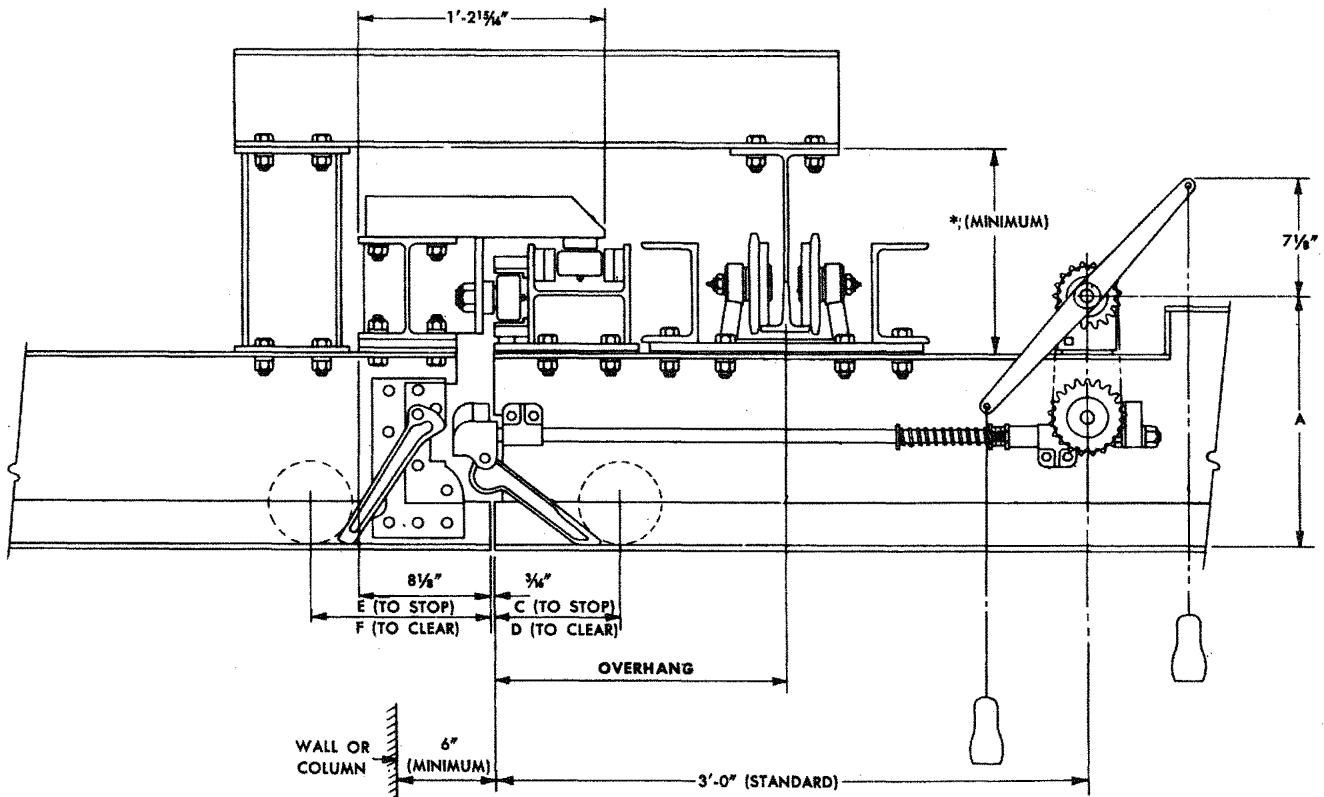
The arrangement of a transfer crane interlocking with a spur track is shown in the drawing. Spur tracks interlocking with the transfer crane are equipped with discharge points and guide rollers.

Structural ties are required between the discharge tracks and crane runway. These ties maintain the gap between the ends of the discharge tracks and girders and permit the crane to pass the discharge tracks without interference. The ties may be bolted or welded to the top flange of the runway track. They are installed with the transfer crane latched to

the spur and with a 3/16 inch gap between the ends of the discharge tracks and girders. When bolting, holes in runway tracks are field drilled.

The discharge tracks are supported from the building structure or steel superstructure adjacent to the structural ties. The structural ties are not designed to support the end of the discharge tracks.

Bracing of the discharge tracks is recommended to maintain alignment. The bracing is made in the field to suit the conditions and consists of steel angles installed perpendicular to the tracks. Bracing is installed after system has been aligned.



\*11-1/2 inch minimum with 5 inch wheel end trucks; 14 inch minimum with 6-1/2 inch or 8 inch wheel end trucks.

Interlock Mechanism	A			C	D	E	F
	Type 1 Girders	Type 2 Girders	Type 3 Girders				
Type L	1'-3-3/8	1'-6-7/8	2'-1-3/8	7-3/4	10-1/2	10-3/4	1'-2-5/8
Type H	1'-3-3/8	1'-6-7/8	2'-1-3/8	10-3/8	1'-2-1/4	1'-0-1/2	1'-5-5/8
Type J	N. A.	1'-6-7/8	2'-1-3/8	1'-1-1/8	1'-5-7/8	1'-1-7/8	1'-8-1/8

**DOUBLE GIRDER TRANSFER CRANE CLEARANCES**

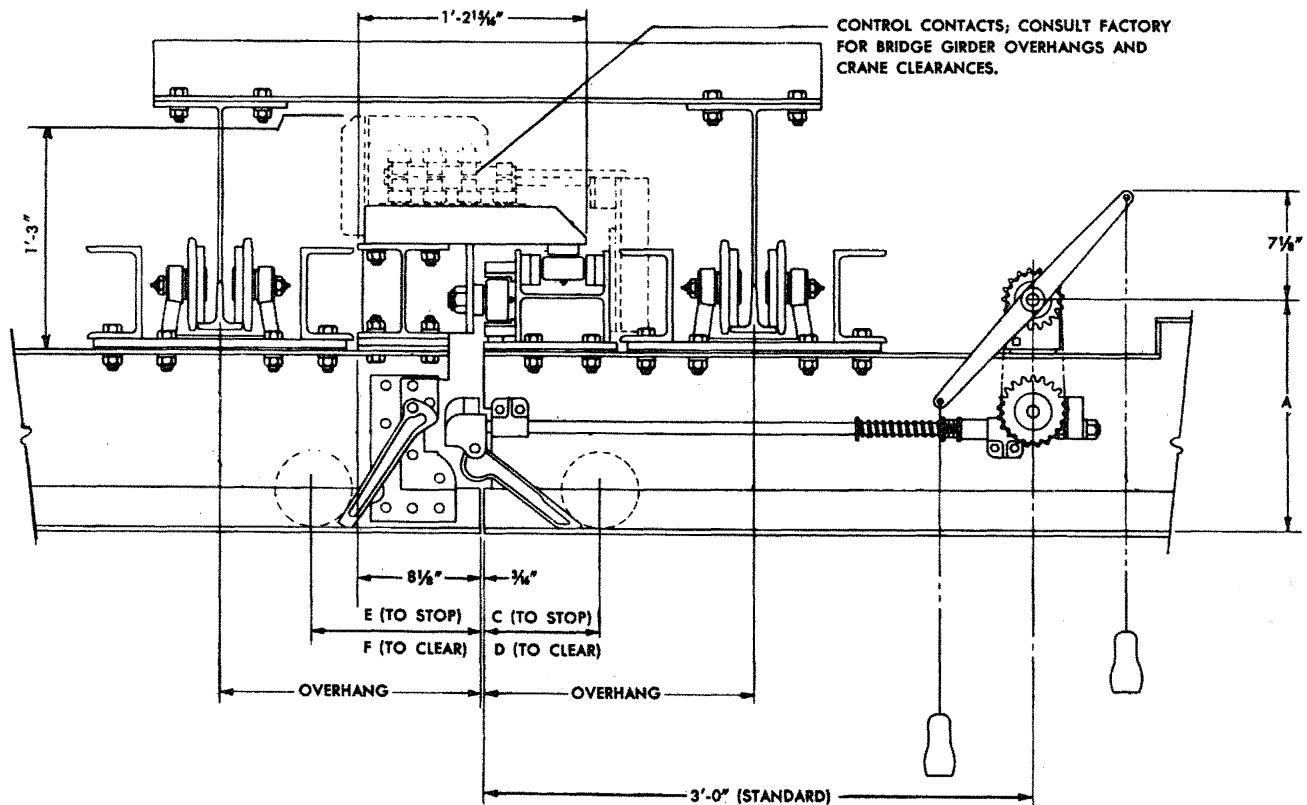
**DIRECT CRANE TO CRANE INTERLOCK ARRANGEMENT**

The arrangement of 2 direct interlocking transfer cranes is shown in the drawing. This arrangement is frequently used in an assembly bay area where operations on one side of the bay are different from those on the other side. It provides greater availability of the cranes and permits transfer of loads from one side of the bay to the other.

Consult factory for clearance dimensions when cranes are required to travel as a unit, as girder overhangs may have to be increased to accommodate the control contacts. Data on

desired control functions, girder and runway track sizes and type of end trucks are required to determine clearances.

Structural ties are required between adjacent runways. These ties maintain the gap between the ends of the girders and permit the cranes to pass without interference. They are located at the support point and intermediate points as required to maintain a tie spacing of not more than 10'-0" centers. The ties may be bolted or welded to the top flange of the runway tracks. They are installed with the cranes located directly under the tie and latched with a 3/16 inch gap between the ends of the girders. When bolting, holes in runway tracks are field drilled.



Interlock Mechanism	A			C	D	E	F
	Type 1 Girders	Type 2 Girders	Type 3 Girders				
Type L	1'-3-3/8	1'-6-7/8	2'-1-3/8	7-3/4	10-1/2	10-3/4	1'-2-5/8
Type H	1'-3-3/8	1'-6-7/8	2'-1-3/8	10-3/8	1'-2-1/4	1'-01/2	1'-5-5/8
Type J	N. A.	1'-6-7/8	2'-1-3/8	1'-1-1/8	1'-5-7/8	1'-1-7/8	1'-8-1/8

**DOUBLE GIRDER TRANSFER CRANE CLEARANCES**

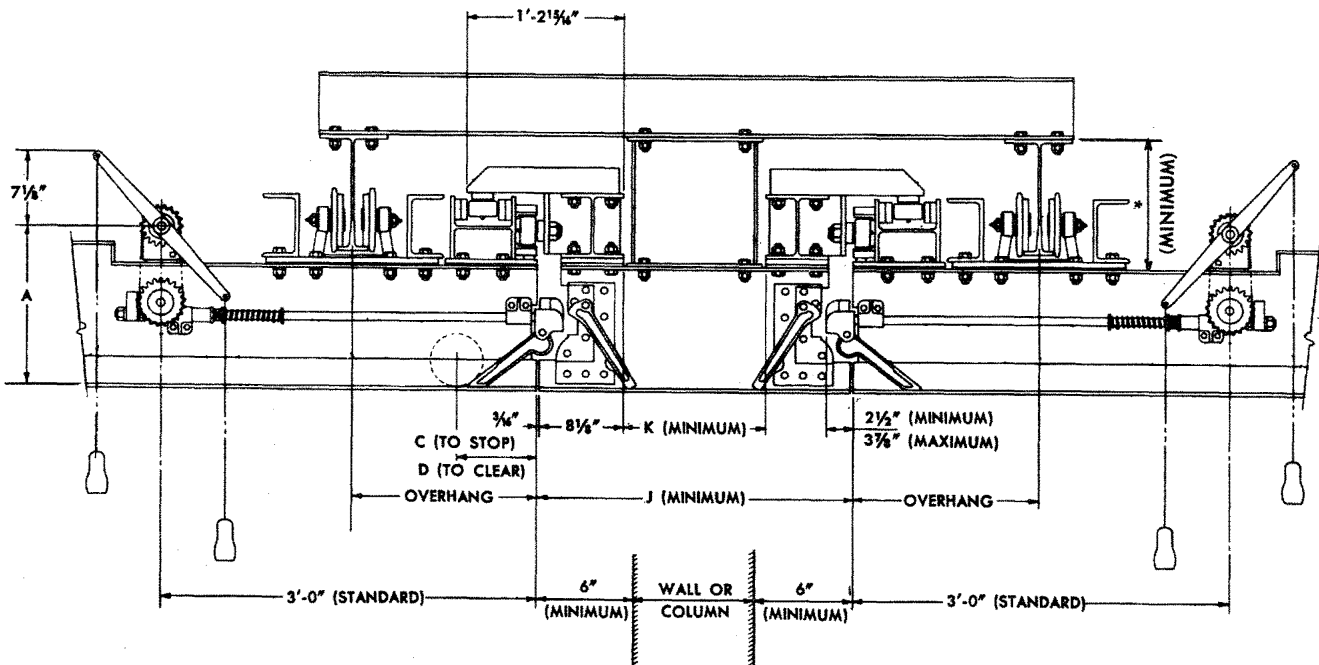
**FIXED TRANSFER SECTION ARRANGEMENT**

The arrangement of 2 transfer cranes interlocking with a fixed transfer section is shown in the drawing. This arrangement is used where transfer of loads from one bay to another is desired.

The transfer tracks are suspended from the adjacent runway tracks by structural supports. The supports maintain the gaps between the ends of transfer tracks and bridge girders and permit the cranes to pass the transfer tracks without interfer-

ence. The supports may be bolted or welded to the top flange of the runway tracks. They are installed with the transfer cranes latched to the transfer tracks with 3/16 inch gaps between the ends of the transfer tracks and bridge girders. When bolting, holes in runway tracks are field drilled.

Bracing of the transfer tracks is recommended to maintain alignment. The bracing is made in the field to suit the conditions and consists of steel angles installed perpendicular to the tracks. Bracing is installed after system has been aligned.



\*11-1/2 inch minimum with 5 inch wheel end trucks; 14 inch minimum with 6-1/2 inch or 8 inch wheel end trucks.

Interlock Mechanism	A			C	D	J	K
	Type 1 Girders	Type 2 Girders	Type 3 Girders				
Type L	1'-3-3/8	1'-6-7/8	2'-1-3/8	7-3/4	10-1/2	2'-3-3/8	11-3/8
Type H	1'-3-3/8	1'-6-7/8	2'-1-3/8	10-3/8	1'-2-1/4	2'-8-3/8	1'-4-1/8
Type J	N. A.	1'-6-7/8	2'-1-3/8	1'-1-1/8	1'-5-7/8	3'-0-3/8	1'-8-1/8