LOCK BOLT

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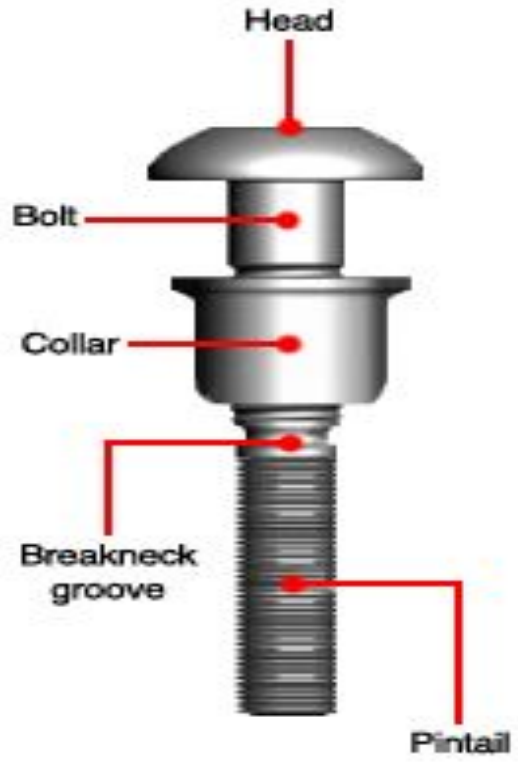
Sr.Lecturer

STC/CB


Head
Bolt
Collar
Breakneck
groove
Pintail


Lock Bolt & Collar Size:
3/16",1/4",5/16",3/8",1/2",5/8",3/4",7/8"
Material:
① SWRCH35K
② ASTM-4137
Hardness: HRC 25-34
Surface Treatment:
Zinc Plated/Black Phosphated
Gmdu.net
global trades from here
Email:sales01@ruibotechnology.com

1. Quantities of the Lock bolt & Collars used in Freight Wagons in Indian Railways:

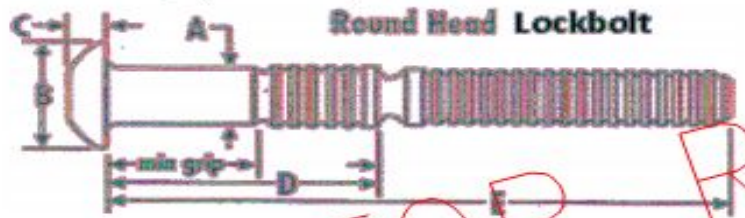
SIZE	BOXNHL(MBS) Qty.	BCNHL Qty.	BOSTHS Qty.	BOXNR Qty.	BRN22.9
3/8"	04	--	06	--	06
1/2"	244	34	352	264	116
5/8"	54	06	102	--	96
3/4"	108	68	160	40	614
7/8"	96	52	100	08	110
TOTAL	506	160	720	312	992

NOTE:- The above indicated quantities are indicative & could change based on design review.

2. Dimensional Requirement:

The finished lock bolts & collars should conform to the below detailed dimensional toleraances:

a. For lock bolt of 3/8 inch-7/8 inch dia:



All dim in inches

Dia	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
3/8"	0.380	0.385	0.713	0.787	0.223	0.248	These dimension should be within the tolerance range of: Dim 'D' ± 0.032 & Dim 'E' :+0.188/-0.063 from the dimensions detailed below.Dim 'D' & 'E' for the lock bolts vary with the grip range of the lock bolt application and the nominal values are tabulated below.			
1/2"	0.493	0.515	0.898	0.963	0.266	0.376				
5/8"	0.617	0.642	1.086	1.196	0.367	0.432				
3/4"	0.741	0.748	1.328	1.438	0.455	0.530				
7/8"	0.866	0.895	1.547	1.656	0.531	0.578				

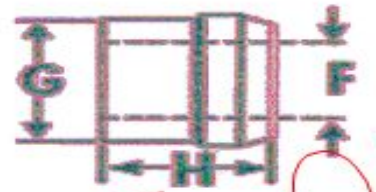
Grip Range* & Nominal values of Dim'D' & Dim 'E':

All dim in inches

Grip Range (For 3/8" dia)		3/8" Dia		Grip Range (For 1/2"-7/8'dia)		1/2" Dia		5/8" Dia		3/4" Dia		7/8" Dia	
Min	Max	'D'	'E'	Min	Max	'D'	'E'	'D'	'E'	'D'	'E'	'D'	'E'
0.125	0.375	0.809	2.125	0.250	0.500	1.213	3.172	1.433	3.656	1.518	4.156	---	---
0.250	0.500	0.934	2.250	0.500	0.750	1.463	3.422	1.683	3.906	1.768	4.406	1.921	4.688
0.375	0.625	1.059	2.375	0.750	1.000	1.713	3.672	1.933	4.156	2.018	4.656	2.171	4.938
0.500	0.750	1.184	2.500	1.000	1.250	1.963	3.922	2.183	4.406	2.268	4.906	2.421	5.188
0.625	0.875	1.309	2.625	1.250	1.500	2.213	4.172	2.433	4.656	2.518	5.156	2.671	5.438
0.750	1.000	1.434	2.750	1.500	1.750	2.463	4.422	2.683	4.906	2.768	5.406	2.921	5.688
0.875	1.125	1.559	2.875	1.750	2.000	2.713	4.672	2.933	5.156	3.018	5.656	3.171	5.938
1.000	1.250	1.684	3.000	2.000	2.250	2.963	4.922	3.183	5.406	3.268	5.906	3.421	6.188
1.125	1.375	1.809	3.125	2.250	2.500	3.213	5.172	3.433	5.656	3.518	6.156	3.671	6.438
1.250	1.500	1.934	3.250	2.500	2.750	3.463	5.422	3.683	5.906	3.768	6.406	3.921	6.688
1.375	1.625	2.059	3.375	2.750	3.000	3.713	5.672	3.933	6.156	4.018	6.656	4.171	6.938
1.500	1.750	2.184	3.500	3.000	3.250	3.963	5.922	4.183	6.406	4.268	6.906	4.421	7.188
1.625	1.875	2.309	3.625	3.250	3.500	4.213	6.172	4.433	6.656	4.518	7.156	4.671	7.438
1.750	2.000	2.434	3.750	3.500	3.750	4.463	6.422	4.683	6.906	4.768	7.406	4.921	7.688
1.875	2.125	2.559	3.875	3.750	4.000	4.713	6.672	4.933	7.156	5.018	7.656	5.171	7.938
				4.000	4.250	4.963	6.922	5.183	7.406	5.268	7.906	5.421	8.188
				4.250	4.500	5.213	7.172	5.433	7.656	5.518	8.156	5.671	8.438
				4.500	4.750	5.463	7.422	5.683	7.906	5.768	8.406	5.921	8.688
				4.750	5.000	5.713	7.672	5.933	8.156	6.018	8.656		
				5.000	5.250	5.963	7.922						
				5.250	5.500								
				5.500	5.750								
				5.750	6.000								

* Grip is the actual thickness of the material to be fastened .

b. For Collars for 3/8"-7/8' dia Lock bolts:



All dim in inches

Collar Dia	'F' Dia	'G' Dia	'H' Length
3/8"	0.375-0.385	0.590-0.600	0.430-0.460
1/2"	0.515-0.540	0.800-0.765	0.645-0.610
5/8"	0.650-0.665	1.010-0.970	0.875-0.845
3/4"	0.775-0.790	1.180-1.165	0.960-0.930
7/8"	0.910-0.935	1.375-1.345	1.113-1.083

3. Surface Coating/Surface Finish:

Lock Bolt fasteners (Lock Bolt & Collars) Should be finished with a surface coating/ finish of zinc plating with clear chromate to ensure corrosion resistance. The coatings details should be as following:-

Base Material:	Steel		
Description:	Zinc Plate, Clear Chromate	Ref. Specs.:	ASTM B633, electroplate ASTM B695, mechanical plate
Thickness(in. min.):	0.0003" min. on significant surface		
ASTM B117 (Min. Hrs.):	48 hrs.		
Add Comments:	Electroplate only, CrVI-free		

Counlniued in drg. no.WD-11036-S-02 :-

ALT	ITEM	AUTHY	DESCRIPTION	DATE	ASSLY. DRG.

SUPERSEDED BY		
SUPERSEDES		DATE
SCALE	PASSED	05/11
NOT TO SCALE	CHECKED	05/11
	DRAWN	AJUSHARMA 05/11
	TRACED	
	A.S.NO.	WD-11036 05/11

TECHNICAL REQUIREMENT & PERFORMANCE PARAMETER OF LOCK BOLT AND COLLARS USED IN WAGONS

B.G. | R.D.S.O. [W] | GROUP | WD-11036-S-01

LOCK BOLT

Almost all new wagons specially stainless steel wagons are provided with lock bolting instead of riveting. In repair/maintenance CP top of all wagons irrespective of materials are to be lock bolted. entire lock bolting is to be done with zinc plated/galvanized lock bolts (grade-8) having a minimum yield strength of 250 N/mm^2.

- Lock Bolts have been introduced in the fabrication of Wagons. Lock bolt fasteners consist of Lock bolt pin and collar, and are installed with the help of special installation tools, as follows
- Lock bolt pin is placed in drilled hole, and collar is placed onto the lock bolt pin.
- Installation tool engages and pulls the lock bolts pin.
- Tool swages the collar onto lock bolt grooves.
- Pin tail breaks off the lock bolt pin.

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Advantages

- High strength
- Vibration resistant
- Fast and easy installation
- Maintenance free

Defects Of Lock Bolts

- Loose Lock Bolts
- Badly Formed Locked bolt Collars
- Pin Tail of Lock Bolt Not removed
- Improperly filled Holes

Proper Installation of lock bolts

- The collar of lock bolt are completely swaged. The collar of lock bolt fasteners not completely swaged may be causes of improper tool operation or worn anvil in nose.
- The pintail of fastener break without fail. The pintail of fastener fails to break due to improper installation/incorrect fasteners.
- After breaking of pintail, the extruded/projected portion of lock bolt should be in the range of 2.00 to 10 mm and collar should always be on annular groove of lock bolt.
- Mismatch of holes to be reamed properly to align and gas cutting to match holes is strictly prohibited.

ANY QUESTION ?

THANK YOU