CLIMAX #1057 23 TON CLASS "B" LOCOMOTIVE BUILT 1910

SELECTED DIMENSIONS

Measured on 7/28 & 29/1971

Compiled 3/17-24/2016 by John E. Lewis

Main Frame Dimensions

Width over Main Frame Channels	53 3/4"	Main Frame Channel Height	8"
Main Frame Channel Flange Width	2 5/8"	Main Frame Length	24' - 9"
End Sill Pole Pocket Part Number	"B-68"	End Sill Pole Pocket Length	13 1/2"
. . End Sill Pole Pocket Height			8 1/2"
End Sill Pole Pocket Thickness	7/8"		
End Sill Pole Pocket Cup O/S Dia.	6"	End Sill Pocket Cup Inside Diameter	4 3/4"
End Sill Pole Pocket Spacing Between Inside Ends of Two Pole Pockets			36 1/8"

Tender Tank / Fuel Bunker Dimensions

Tender Tank / Fuel Bunker Length	60 3/4"	Tender Tank / Fuel Bunker Height	50 3/8"
Tender Tank / Fuel Bunker Width	84 7/8"	Tender/Fuel Bunker Flared Top Width	92"
Tender / Bunker Flared Section Hgt.	11 1/8"	Tender / Bunker Front Opening Width	21 1/4"
Tender Tank Water Filler Trunk Hgt.	14 1/4"	Tender Tank Water Filler Trunk O.D.	15"

Cab Dimensions

Cab Side Length	74"	Cab Width	87 1/8"
Cab Roof Front Overhang	2"	Cab Roof Rear Overhang	20"
Gangway Width – Cab Rear to Tender Tank / Fuel Bunker Front			17 3/8"

Boiler Dimensions

Boiler Saddle Part Number	N-8		
Boiler Saddle Base Width (Front View)	32"	Boiler Saddle Base Length - Front-Rear	14"
Boiler Saddle Base Front to Back Face of Front Pilot Beam -			39"
Boiler Saddle Base Length (Side View)	14"	Boiler Saddle Center Sect. Width (Side Vw)	9"
Boiler Saddle Base Thickness	1"	Boiler Saddle Top Curved Section Thickns	1 3/8"
Boiler Saddle Max. Height (Side View)	21 1/4"	Boiler Saddle Curve Sect to Smk Bx Front	12 3/4"
Boiler Saddle Width of section immediately above base (Front View)			27 1/8".
Height of Steam Exhaust Pipe surface base above Boiler Saddle Base Top Surface			2 3/4"
Boiler Saddle Steam Exhaust Pipe Connection Surface diameter			8 "
Boiler Smoke Box Length	30"	Boiler Barrel Constant Diameter Length	64 1/4"
Smoke Box Front Casting "Thickness" when Viewed From Locomotive Side View			1 3/4"

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Boiler Dimensions – Continued

Smoke Box Front Casting Diameter	36"	Boiler C/L Height Above Main Frame Top	31 1/2"
		Boiler Hand Rail Height above Main Frame	51"
Boiler Flared Section Length-on Slant	24 1/2"	Boiler Total length to Cab Front (Approx)	119 3/8"
Boiler Smoke Box Circumference	117"	Smoke Box Diameter	37 1/4"
Boiler "Spot" / Number Plate Dia.	12 1/4"	Diameter of Smoke Box Door	25"
Boiler Feed Pipe Diameter	1 5/8"		

Boiler Related Fittings Dimensions

Boiler Width at Rear inside Cab	42 3/4"	Spacing of Boiler Hand Rails (Front Vw)	32 1/2"
Smoke Stack C/L- Smoke Box Front	19 1/2"	Sand Dome C/L – Smoke Box Front	75"
Boiler Walk Length-Cab Front to End	70 1/4"	Walk Base Bottom Height above Cab Base	191/2"
Bell C/L - Smoke Box Front Spacing	125 3/8"	Sand Dome Barrel Circumference	64"
Sand Dome Diameter	20 3/8"	Sand Dome Barrel Height	18"
Diameter of the Sanding Pipes connected with Sand Dome			1 1/4"

Sand Dome Sanding Piper Receptacle on Sand Dome Base (Both Sides)

Sand Dome Receptacle Height	2 3/4"	Sand Dome Receptacle Width at Base	2 3/4"
Height of Sand Dome Barrel Bottom above top of Constant Diameter Boiler Section			4"

Note that Boiler did not have any Jacket Installed. It rusted away in the woods after the locomotive was abandoned in the 1930"s

Sand Dome Barrel base height above boiler is approximately	7 3/4"
Sand Dome Barrel base height above boiler on slant is approximately	8 5/8"

Boiler Bracket Dimensions (Partial)

Note Bracket is Located on Main Frame under Cab

Bracket Width	13"	Bolts	1 3/8" Hex Type
Center Cast Brace Width (Side Vw)	1 1/4"	Brace Start above Main Frame Bottom	4"
Left Side Bolt C/L space to Brace LS	2 1/4"	Right Side Bolt C/L space to Brace Rt Side	2 3/8"
Left Bolt C/L Hgt above Frame Bott	4"	Top R.S. Bolt C/L Hgt above Frame Bott	6 1/4"
		Bott. R.S. Bolt C/L Hgt above Frame Bott	1 7/8"
Main Frame Queen Post Width	2 1/4"	Main Frame Q.P. space to N-1Frame Rear	23 3/4"

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Smoke Stack Dimensions

Smoke Stack Base Part Number	N-2	Stack Base Top - Height above Smoke Box	3 5/8"
Smoke Stack Base Flange Thickness	1 1/8"	Stack Base Flange Dist to Smoke Bx Front	11 1/2"
Smoke Stack Base Diameter	16"	Stack Constant Circumference Sect. Dia.	9 3/8"
Stack Constant Dia. Section Height	8 3/8"	Stack Constant Dia. Section Part Number	N-81

Short Constant Diameter Section Height above part N-81 3 3/4"

Smoke Stack Diamond Section Dimensions

Stack Top Exit Diameter	20"	Stack Diamond Section Max. Diameter	36"
Height of Upper Part of Diamond	9"	Height of Diamond Lower Part	22 "1/4"
Stack Total Height	44 3/4"	Lower Diamond Part + Stack Lower Sect	22 1/4"

Total Stack Height Reference Check – 9"+22 1/4" + 3 3/4" + 9 3/4" = 44 3/4"

Miscellaneous Lineshaft Fittings Dimensions

Coupling Rings – Outside Diameter	12 1/2"	Coupling Rings – Total Thickness	4"
Coupling Ring Casting Thickness	3 1/4"	Coupling Ring Plate Thickness	3/4"
Coupling Ring Lineshaft Hub Thickness	4"	Coupling Ring Plate Hub Thickness	5"
Coupling Ring Casting Part Number	"O"		

Engine & Related Fittings Dimensions

Engine Frame Casting Part Number	N-1 R&L		
Piston Rod Diameter	1 3/8"	Valve Rod Diameter	3/4"
Crank Disk Diameter	18"	Crank Disk Thickness on Outside Edge	2 5/8"
Outside Face to Face Spacing of the Two Crank Disks			62"

Connecting Rod Details

Connecting Rod Length - center to center Bronze of bearings 47 7/8"

Connecting Rod Details at Crank Disk End - View from Side of Locomotive

"U" Strap Length	10 1/2"	"U" Strap Height at Butt End O/S – O/S	4 3/4"
"U" Strap Thickness	5/8"	Crank Pin C/L to Conn. Rod Butt End	2 5/8"
Conn. Rod Height at Crank Disk End	3 1/2"		

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Connecting Rod Details at Cross Head End - View from Side of Locomotive

"U" Strap Height at Cross Head End	3 1/4"	"U" Strap Thickness	1/2"
Conn. Rod Height at Cross Head End	2 1/4"		
"U" Strap Inner End Spacing between Crank Disk and Cross Head End			32 5/8"
Conn. Rod Width at Crank Disk End	2"	Conn. Rod Width at Center Section	1"
Space Between Crank Disk Face and Connecting Rod Center Line (Top View)			1 5/8"

Engine Component Dimensions

Engine Frame Tie Bars-*View from Side of Locomotive*

Tie Bar Base-Fitted Under Frame W	6"	Tie Bar Base Thickness	1"
Tie Bar Total Height	6 3/8"	Tie Bar Width of Lower Portion	2 3/4"
Tie Bar Height of Lower Portion	3 3/8"	Section Thick from Base to Lower Portion	1"
Tie Bar Lower Portion Bottom Width	1 3/4"	(at extreme bottom end)	

Cylinder Dimensions

Cylinder Diameter	14 1/8"	Cylinder Length	20 9/16"
Front Cylinder Head Part No.	B-124	Front Cylinder Head Diameter	14 1/8"
Steam Chest Length (Side View)	13 1/4"	Steam Chest Cover Length (side View)	14 1/2"
Steam Chest Cover Thick (Side View)	1 1/8"	Steam Chest Height above Cylinder Top	4 3/4"
Steam Chest Width (Front View)	12 3/4"	Steam Chest Lid Width (Front View)	13 3/4"

Engine Frame N-1R Casting Dimensions

Portion of N-1R Engine Frame Casting Supporting Crank Shaft and Disk Assembly

Engine Frame Casting dimensions are referenced to the front face of the Locomotive's Cab and are based on a theoretical direct (Side) View of the casting. These dimensions are all horizontal unless note otherwise.

Cab to casting horizontal surface end where it slants upward into Cross Head support Area	45"
Cab to C/L of Lift Shaft	37 7/8"
Cab to start of horizontal surface	11 1/2"
Cab to point where Main Frame Channel top disappears behind casting	6"
Length of N-1R Casting bottom to the rear of the Crank Shaft C/L	6 1/4"
Combined Length of N-1R Casting bottom surfaces rear and front of Crank Shaft C/L	33"

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The Following Vertical Dimensions are based on top face of N-1R Engine Frame Casting as the Reference Surface

Vertical Thickness of Engine Frame Casting Top Flange	3/4 "
Vertical Thickness of Engine Frame Casting Bottom Flange in front of Crank Shaft C/L	1/2 "
Vertical distance from top face of N-1R Casting to C/L of Crank Shaft	20 1/4"
Vertical distance - top face of N-1R to Bottom Surface of N-1R in front of Crank Shaft C/L	20 "
Engine Frame Attachment Bolts 11/2" Dia. Bolt Head Height	3/4 "

Portion of N-1R Engine Frame Supporting Cross Head Slide Area of Casting

Length of Flange at Cylinder end of Casting	1 3/4"	A
Length of constant diameter part of Cross Head Slide part of Engine Frame Casting	27 "	B
Length of Rounded End Cutout in Constant Diameter portion of Cross Head Slide area	23 "	F
Distance from inner Face of Flange at Cylinder End of Casting	2 1/4 "	E
Rounded End Cutout Extreme Width in Constant Diameter portion of Cross Head Slide area	8 3/4 "	
Rounded End Cutout Inner Width in Constant Diameter portion of Cross Head Slide area	7 1/2 "	
Diameter of Cast-in Ring at Crank Shaft end of Cross Head Slide area	14 1/8"	
Distance from Inner Face of Cast-in Ring at Crank Shaft end of Cross Head Slide area	1 3/4"	G
Length of Cast-in Ring at Crank Shaft end of Cross Head Slide area	1 3/4"	C
Total Length of Cross Head Slide portion of N-1R Engine Frame Casting	30 1/2"	D

To avoid confusion when drawing this portion of the N-1R Engine Frame Casting make sure that A+B+C=D in that exact order. Similarly to insure proper location of the cutout in the constant diameter portion of the casting make sure that the dimensions A+E+F+G+C=D and that they are placed in that exact order

Rotating the Cross Head Slide area to determine the correct angle in relation to the main frame is difficult. Since no formal angular degree measuring device or protractor was available on site when dimensions were taken. A crude method of obtaining the proper angle can be used. When the Cylinder portion of a drawing is located so that the front bottom corner of the cylinder is 8 3/4 scale inches above the top of the main frame and the rear bottom corner is 7/8" scale inches above the top of the main frame, a close approximation of the angle can be obtained.

Boiler Brace Dimensions

Brace Upper End Hex Diameter	2 3/4"	Brace Upper End Hex Thickness	1 5/8"
Brace Strut Rod Diameter	1 3/4"	Height of Hex End C/L above main Frame	30 1/2"
Brace Front End Foot Length	3"	Dist.- Hex End C/L to Smoke Box Front	9 1/2"

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Boiler Brace Dimension - Continued

Brace Front End Foot Thickness	1"	Space of 2 Braces (Front View) on PB Top	36"
Front View, 2 Braces at Smoke Box	38 1/2"	Bell Mount Top Height above Boiler	3 1/8"
Bell Mount Diameter	9"	Bell Mount Space to Sand Dome	10 1/8"
		Bell Mount to Boiler Straight Section Seam	19 1/4"
Boiler Feed Pipe Diameter	1 5/8"		

Lift Shaft Arm Dimensions

Lift Shaft Length C/L of Shaft - C/L of Pin	12 1/2"	Lift Shaft Arm Width at Shaft C/L	3 1/4"
Lift Shaft Arm Width at Pin C/L	2 1/8"	Width of Reverse Lever Bar at Pin C/L	2"
Lift Arm Length C/L – C/L of Lift Bar	11 3/8"	Lift Arm Width at Shaft C/L	3"
Lift Arm Width at Lift Bar C/L	2"	Lift Shaft Arm Pin C/L to Lift Bar C/L	12 7/8"

Valve Rod Assembly Dimensions

Valve Rod Diameter	1"	Valve Rod C/L above Cross Head Casting	4 1/4"
Rod end C/L to Cylinder Steam Chest	27 7/8"	Rod End Round Pin C/L Surface Diameter	1"
Rod end Connecting Lever Base Width	3 1/2"	Rod Steam Gland Total Length (side View)	4 1/8"
Rod Steam Gland Height (side View)	2 3/4"	Gland Length Sect.Next to (Stm Chest End)	2 3/4"
Steam Gland Adjusting Plate Height	2 3/4"	Steam Gland Adjust. Plate Thick (Side VW)	5/8"

Steam Dry Pipe Above Boiler - Assembly Dimensions

The following dimensions are based upon a theoretical side view of the Boiler and Cab of #1057

The C/L of the Vertical Section of the Steam Pipe is 31 "ahead of the Cab Front
The C/L of the Horizontal Section of the Steam pipe is 17 1/8 " below the Cab Roof Top Center
The C/L of the Horizontal Section of the Steam pipe is 12 1/8 " above the Boiler Top Center

Steam Dry Pipe O/S Diameter	2 1/4"	Throttle Assembly Total Length	9 1/4"
Throttle Assembly Total Length	9 1/4"	Throttle Rear Face distance to Cab Front	8 1/2"

Steam Dome – Inside Cab

Steam Dome Circumference	66"	Steam Dome Diameter	21"
Steam Dome Max Height above Boiler	18"	Dome Const Dia Sect Top above Boiler Top	17"
Steam Dome Rear to Boiler Shell rear	8 1/2"		

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Pilot Beam / End Sill Step - Steel Support Bars

Bar Width	3"	Bar Thickness	1"
Inside to Inside Spacing of the 2 each Front Pilot or Rear Pilot step support bars			37 3/4"
Vertical Height of Typical Bar from End of Bar at Top to Bottom Face of Bent Section			31 3/4"
Horizontal Length of Bar Bent Section Upper Surface that supports Wood Step			8 1/2"