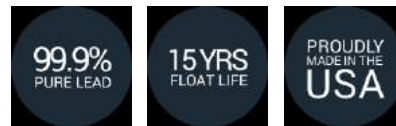


NSB 90TT HT RED

Pure Lead - High Temp



The NSB HTRED Battery[®] delivers long life in unreliable grid conditions even at high temperatures.

- Pure lead electrochemistry greatly increases temp and corrosion resistance while reducing component aging
- Thin plates deliver large surface area high power density and low resistance
- Design life 15+ years at 20°C (68°F)
- Extra long life at high temp operation 40°C (104°F)
- EUROBAT design life definition: Long Life (12+ years)
- High cyclic performance
- Fast recharging
- Shelf life of up to 24 months
- Operating temperature range -40°C to +65°C (-40°F to 149°F)
- State-of-the-art automated manufacturing ensures consistency and reliability
- Advanced 3 stage terminal design to ensure leak-free operation - brass terminals provide maximum performance
- High modulus Polyphenylene Oxide (PPO) plastic materials designed to withstand extended elevated operating temperatures and maintain high battery compression essential for reliable operation
- Non-halogenated thermally sealed plastic casing
- Approved as non-hazardous cargo for ground sea and air transport DOT 49CFR173.159(d), (i) and (ii)

NSB 90TT HT RED

Nominal Technical Specifications

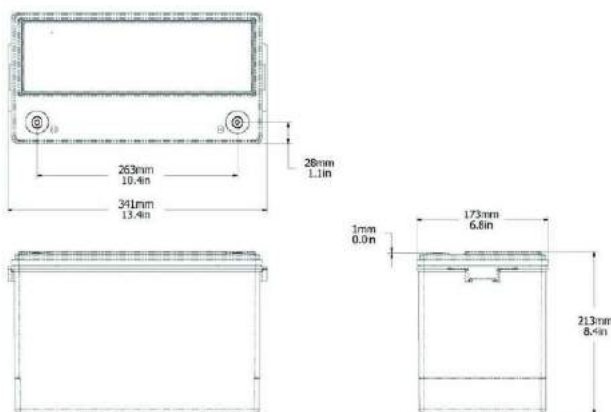
Dimensions

Height	213 mm	Width	173 mm
Length	341 mm	Weight	34 kg

Electrical

Terminal	Female M6 x 1.0
Terminal torque	8.0 Nm (71 in -lbs)
1 hr capacity to 1.70VPC @ 20/25°C (68/77°F)	74 / 77 Ah
3 hr capacity to 1.75VPC @ 20/25°C (68/77°F)	86 / 89 Ah
8 hr capacity to 1.75VPC @ 20/25°C (68/77°F)	94 / 96 Ah
10 hr capacity to 1.80VPC @ 20/25°C (68/77°F)	96 / 97 Ah
Float voltage @ 20/25°C (68/77°F)	2.28 / 2.27 VPC
Impedance (1Khz)	2.8 m Ω @ 25°C (77°F)
Conductance	1803 S
Short circuit current	3600 A
Operation temperature range	-40°C to +65°C
Nominal voltage	12 V

Technical Drawing



All NorthStar batteries are compliant with: Telcordia SR4228, IEC 60896; Bellcore GR-63-Core, Issue 1; British, German, and Russian telecom standards; UL approved and UN2800 certified. NorthStar is registered to ISO 9001 and ISO 14001.

NSB 90 HT RED Battery®

Discharge tables @ 20°C (68°F)



Current / A

Duration		End of Discharge Voltage								
Minutes	Hours	1.85	1.80	1.75	1.70	1.67	1.65	1.60	1.55	1.50
2	0.03	380.1	436.7	493.0	546.9	577.2	596.1	638.4	671.8	694.6
5	0.08	299.2	330.4	360.0	387.1	401.8	410.8	430.2	444.5	453.3
10	0.17	221.7	238.4	253.8	267.5	274.7	279.0	288.2	294.6	298.1
15	0.25	178.5	189.3	199.1	207.6	212.1	214.7	220.2	224.0	225.9
20	0.33	150.5	158.1	165.0	170.9	174.0	175.8	179.5	182.0	183.2
30	0.50	115.7	120.2	124.2	127.6	129.3	130.3	132.3	133.6	134.2
45	0.75	86.9	89.4	91.6	93.4	94.3	94.8	95.9	96.5	96.7
60	1	70.1	71.6	73.0	74.1	74.6	74.9	75.6	75.9	76.1
120	2	40.2	40.6	40.9	41.2	41.3	41.4	41.6	41.7	41.7
180	3	28.4	28.6	28.7	28.8	28.9	28.9	29.0	29.0	29.0
240	4	22.0	22.1	22.2	22.3	22.3	22.3	22.3	22.4	22.4
300	5	18.0	18.1	18.2	18.2	18.2	18.2	18.2	18.3	18.3
480	8	11.7	11.8	11.8	11.8	11.9	11.9	11.9	11.9	11.9
600	10	9.5	9.6	9.6	9.7	9.7	9.7	9.7	9.7	9.7
1200	20	5.0	5.0	5.1	5.1	5.2	5.2	5.2	5.2	5.2

Capacity / Ah

Duration		End of Discharge Voltage								
Minutes	Hours	1.85	1.80	1.75	1.70	1.67	1.65	1.60	1.55	1.50
2	0.03	12.7	14.6	16.4	18.2	19.2	19.9	21.3	22.4	23.2
5	0.08	24.9	27.5	30.0	32.3	33.5	34.2	35.8	37.0	37.8
10	0.17	37.0	39.7	42.3	44.6	45.8	46.5	48.0	49.1	49.7
15	0.25	44.6	47.3	49.8	51.9	53.0	53.7	55.1	56.0	56.5
20	0.33	50.2	52.7	55.0	57.0	58.0	58.6	59.8	60.7	61.1
30	0.50	57.9	60.1	62.1	63.8	64.6	65.1	66.2	66.8	67.1
45	0.75	65.2	67.1	68.7	70.0	70.7	71.1	71.9	72.4	72.6
60	1	70.1	71.6	73.0	74.1	74.6	74.9	75.6	75.9	76.1
120	2	80.3	81.1	81.8	82.4	82.7	82.8	83.2	83.3	83.3
180	3	85.2	85.7	86.1	86.5	86.6	86.7	86.9	87.0	87.0
240	4	88.2	88.5	88.8	89.1	89.2	89.2	89.4	89.4	89.5
300	5	90.2	90.5	90.8	91.0	91.0	91.1	91.2	91.3	91.3
480	8	93.9	94.3	94.5	94.8	94.9	95.0	95.1	95.2	95.3
600	10	95.5	95.9	96.3	96.6	96.7	96.8	97.1	97.2	97.3
1200	20	99.6	100.9	101.9	102.8	103.3	103.6	104.1	104.5	104.8

Power / WPC

Duration		End of Discharge Voltage								
Minutes	Hours	1.85	1.80	1.75	1.70	1.67	1.65	1.60	1.55	1.50
2	0.03	706.8	791.3	872.9	949.0	990.7	1016.6	1073.2	1116.4	1144.4
5	0.08	567.0	614.5	658.7	698.3	719.3	732.1	759.1	778.5	789.6
10	0.17	426.0	451.8	475.3	495.7	506.4	512.7	525.9	534.8	539.4
15	0.25	345.5	362.4	377.5	390.5	397.1	401.1	409.2	414.5	417.0
20	0.33	292.7	304.8	315.5	324.6	329.3	332.0	337.5	341.1	342.6
30	0.50	226.7	233.8	240.1	245.4	248.0	249.6	252.7	254.6	255.4
45	0.75	171.4	175.4	178.8	181.7	183.1	184.0	185.6	186.6	186.9
60	1	138.7	141.2	143.4	145.2	146.1	146.6	147.6	148.2	148.4
120	2	80.2	80.9	81.5	82.0	82.2	82.3	82.6	82.8	82.8
180	3	53.8	54.3	54.7	55.0	55.2	55.3	55.4	55.5	55.6
240	4	44.3	44.5	44.6	44.7	44.8	44.8	44.9	44.9	45.0
300	5	36.3	36.4	36.5	36.6	36.7	36.7	36.7	36.8	36.8
480	8	23.7	23.8	23.8	23.9	23.9	23.9	24.0	24.0	24.0
600	10	19.3	19.3	19.4	19.5	19.5	19.5	19.6	19.6	19.6
1200	20	10.0	10.2	10.2	10.3	10.4	10.4	10.4	10.5	10.5

NSB 90 HT RED Battery®

Discharge tables @ 25°C (77°F)



Current / A

Duration		End of Discharge Voltage								
Minutes	Hours	1.85	1.80	1.75	1.70	1.67	1.65	1.60	1.55	1.50
2	0.03	421.8	484.6	547.1	606.9	640.5	661.5	708.5	745.5	770.9
5	0.08	325.7	359.7	392.0	421.5	437.5	447.3	468.3	484.0	493.5
10	0.17	238.2	256.2	272.7	287.4	295.1	299.8	309.6	316.5	320.3
15	0.25	190.4	201.9	212.3	221.5	226.2	229.0	234.9	238.9	240.9
20	0.33	159.7	167.8	175.1	181.4	184.7	186.6	190.5	193.2	194.4
30	0.50	122.0	126.7	130.9	134.5	136.3	137.4	139.5	140.9	141.5
45	0.75	91.1	93.7	95.9	97.8	98.8	99.3	100.4	101.1	101.3
60	1	73.1	74.7	76.1	77.3	77.8	78.2	78.8	79.2	79.3
120	2	41.5	41.9	42.3	42.6	42.7	42.8	42.9	43.0	43.0
180	3	29.2	29.4	29.5	29.6	29.7	29.7	29.8	29.8	29.8
240	4	22.6	22.7	22.7	22.8	22.8	22.8	22.9	22.9	22.9
300	5	18.4	18.5	18.5	18.6	18.6	18.6	18.6	18.6	18.7
480	8	11.9	12.0	12.0	12.0	12.1	12.1	12.1	12.1	12.1
600	10	9.7	9.7	9.8	9.8	9.8	9.8	9.8	9.9	9.9
1200	20	5.0	5.1	5.1	5.2	5.2	5.2	5.2	5.3	5.3

Capacity / Ah

Duration		End of Discharge Voltage								
Minutes	Hours	1.85	1.80	1.75	1.70	1.67	1.65	1.60	1.55	1.50
2	0.03	14.1	16.2	18.2	20.2	21.3	22.1	23.6	24.9	25.7
5	0.08	27.1	30.0	32.7	35.1	36.5	37.3	39.0	40.3	41.1
10	0.17	39.7	42.7	45.5	47.9	49.2	50.0	51.6	52.8	53.4
15	0.25	47.6	50.5	53.1	55.4	56.5	57.3	58.7	59.7	60.2
20	0.33	53.2	55.9	58.4	60.5	61.6	62.2	63.5	64.4	64.8
30	0.50	61.0	63.4	65.5	67.2	68.1	68.7	69.8	70.4	70.7
45	0.75	68.3	70.2	71.9	73.4	74.1	74.5	75.3	75.8	76.0
60	1	73.1	74.7	76.1	77.3	77.8	78.2	78.8	79.2	79.3
120	2	83.0	83.8	84.5	85.1	85.4	85.6	85.9	86.1	86.1
180	3	87.5	88.1	88.5	88.9	89.0	89.1	89.3	89.4	89.4
240	4	90.3	90.6	91.0	91.2	91.3	91.4	91.5	91.6	91.6
300	5	92.2	92.4	92.7	92.9	93.0	93.1	93.2	93.2	93.3
480	8	95.5	95.8	96.1	96.3	96.4	96.5	96.7	96.8	96.9
600	10	96.8	97.2	97.6	97.9	98.1	98.2	98.4	98.6	98.7
1200	20	100.4	101.6	102.7	103.6	104.1	104.3	104.9	105.3	105.6

Power / WPC

Duration		End of Discharge Voltage								
Minutes	Hours	1.85	1.80	1.75	1.70	1.67	1.65	1.60	1.55	1.50
2	0.03	784.4	878.1	968.7	1053.1	1099.4	1128.1	1190.9	1238.9	1270.0
5	0.08	617.3	669.1	717.1	760.2	783.2	797.1	826.5	847.6	859.7
10	0.17	457.7	485.5	510.6	532.6	544.0	550.9	565.0	574.6	579.5
15	0.25	368.5	386.5	402.6	416.5	423.6	427.8	436.4	442.1	444.7
20	0.33	310.7	323.5	334.9	344.5	349.5	352.4	358.2	362.0	363.7
30	0.50	239.0	246.5	253.1	258.7	261.5	263.1	266.4	268.4	269.2
45	0.75	179.5	183.7	187.3	190.3	191.8	192.7	194.4	195.5	195.8
60	1	144.7	147.3	149.6	151.5	152.4	152.9	154.0	154.6	154.7
120	2	82.8	83.5	84.2	84.7	84.9	85.1	85.3	85.5	85.5
180	3	55.3	55.8	56.2	56.5	56.7	56.8	57.0	57.1	57.1
240	4	45.3	45.5	45.7	45.8	45.9	45.9	46.0	46.0	46.0
300	5	37.1	37.2	37.3	37.4	37.4	37.5	37.5	37.6	37.6
480	8	24.1	24.1	24.2	24.3	24.3	24.3	24.4	24.4	24.4
600	10	19.5	19.6	19.7	19.7	19.8	19.8	19.8	19.9	19.9
1200	20	10.1	10.2	10.3	10.4	10.4	10.5	10.5	10.5	10.6