

## **Test Bench Measurement**

Motor type: **HP 875-50-A8 S P30** 

Date: 17.02.2021

Bearing type: RS

Controller: MST 400-133

## **Measuring Parameter**

Voltage: **70.0** [V]

Throttle setting: 100%

## **Calculated Motor Constants**

nl: 2,225.1 [RPM] lo: 2.7 [A] kV: 32.3 [RPM/V] kn: -13.24 [RPM/A] kT: 35.63 [Ncm/A]

Current	Speed	Input Power	Output Power	Torque	Efficiency <sup>1</sup>
[A]	[RPM]	[W]	[W]	[Ncm]	[%]
5.0	2,229.4	350.0	271.8	116.4	77.64
6.0	2,211.6	420.0	338.8	146.3	80.67
7.0	2,194.0	490.0	406.0	176.7	82.85
8.0	2,176.6	560.0	473.0	207.5	84.46
9.0	2,159.4	630.0	539.6	238.6	85.64
10.0	2,142.5	700.0	606.2	270.2	86.60
11.0	2,125.7	770.0	672.3	302.0	87.31
12.0	2,109.2	840.0	738.4	334.3	87.90
13.0	2,092.9	908.7	803.9	366.8	88.47
14.0	2,076.8	978.6	869.3	399.7	88.83
15.0	2,061.0	1,048.5	934.3	432.9	89.11
16.0	2,045.3	1,118.4	999.0	466.4	89.32
17.0	2,029.8	1,188.3	1,063.2	500.2	89.47
18.0	2,014.6	1,258.2	1,127.2	534.3	89.59
19.0	1,999.5	1,328.1	1,190.6	568.6	89.65
20.0	1,984.6	1,398.0	1,253.6	603.2	89.67
21.0	1,970.0	1,467.9	1,316.2	638.0	89.66
22.0	1,955.5	1,537.8	1,378.2	673.0	89.62
23.0	1,941.2	1,607.7	1,439.8	708.3	89.56
24.0	1,927.1	1,677.6	1,500.8	743.7	89.46
25.0	1,913.2	1,747.5	1,561.3	779.3	89.35
26.0	1,899.5	1,817.4	1,621.6	815.2	89.22
27.0	1,885.9	1,887.3	1,681.0	851.2	89.07
28.0	1,872.5	1,957.2	1,739.9	887.3	88.90
29.0	1,859.3	2,027.1	1,798.3	923.6	88.71
30.0	1,846.3	2,097.0	1,856.1	960.0	88.51
	[A] 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0	[A] [RPM] 5.0 2,229.4 6.0 2,211.6 7.0 2,194.0 8.0 2,176.6 9.0 2,159.4 10.0 2,142.5 11.0 2,125.7 12.0 2,109.2 13.0 2,092.9 14.0 2,076.8 15.0 2,061.0 16.0 2,045.3 17.0 2,029.8 18.0 2,014.6 19.0 1,999.5 20.0 1,984.6 21.0 1,970.0 22.0 1,955.5 23.0 1,941.2 24.0 1,927.1 25.0 1,913.2 26.0 1,885.9 28.0 1,872.5 29.0 1,859.3	[A] [RPM] [W] 5.0 2,229.4 350.0 6.0 2,211.6 420.0 7.0 2,194.0 490.0 8.0 2,176.6 560.0 9.0 2,159.4 630.0 10.0 2,142.5 700.0 11.0 2,125.7 770.0 12.0 2,109.2 840.0 13.0 2,092.9 908.7 14.0 2,076.8 978.6 15.0 2,061.0 1,048.5 16.0 2,045.3 1,118.4 17.0 2,029.8 1,188.3 18.0 2,014.6 1,258.2 19.0 1,999.5 1,328.1 20.0 1,984.6 1,398.0 21.0 1,970.0 1,467.9 22.0 1,955.5 1,537.8 23.0 1,941.2 1,607.7 24.0 1,927.1 1,677.6 25.0 1,913.2 1,747.5 26.0 1,899.5 1,817.4 27.0 1,885.9 1,887.3 28.0 1,872.5 1,957.2 29.0 1,859.3 2,027.1	[A] [RPM] [W] [W] 5.0 2,229.4 350.0 271.8 6.0 2,211.6 420.0 338.8 7.0 2,194.0 490.0 406.0 8.0 2,176.6 560.0 473.0 9.0 2,159.4 630.0 539.6 10.0 2,142.5 700.0 606.2 11.0 2,125.7 770.0 672.3 12.0 2,109.2 840.0 738.4 13.0 2,092.9 908.7 803.9 14.0 2,076.8 978.6 869.3 15.0 2,061.0 1,048.5 934.3 16.0 2,045.3 1,118.4 999.0 17.0 2,029.8 1,188.3 1,063.2 18.0 2,014.6 1,258.2 1,127.2 19.0 1,999.5 1,328.1 1,190.6 20.0 1,984.6 1,398.0 1,253.6 21.0 1,970.0 1,467.9 1,316.2 22.0 1,955.5 1,537.8 1,378.2 23.0 1,941.2 1,607.7 1,439.8 24.0 1,927.1 1,677.6 1,500.8 25.0 1,913.2 1,747.5 1,561.3 26.0 1,885.9 1,887.3 1,681.0 28.0 1,872.5 1,957.2 1,739.9 29.0 1,859.3 2,027.1 1,798.3	[A] [RPM] [W] [W] [Ncm] 5.0 2,229.4 350.0 271.8 116.4 6.0 2,211.6 420.0 338.8 146.3 7.0 2,194.0 490.0 406.0 176.7 8.0 2,176.6 560.0 473.0 207.5 9.0 2,159.4 630.0 539.6 238.6 10.0 2,142.5 700.0 606.2 270.2 11.0 2,125.7 770.0 672.3 302.0 12.0 2,109.2 840.0 738.4 334.3 13.0 2,092.9 908.7 803.9 366.8 14.0 2,076.8 978.6 869.3 399.7 15.0 2,061.0 1,048.5 934.3 432.9 16.0 2,045.3 1,118.4 999.0 466.4 17.0 2,029.8 1,188.3 1,063.2 500.2 18.0 2,014.6 1,258.2 1,127.2 534.3 19.0 1,999.5 1,328.1 1,190.6 568.6 20.0 1,984.6 1,398.0 1,253.6 603.2 21.0 1,970.0 1,467.9 1,316.2 638.0 22.0 1,955.5 1,537.8 1,378.2 673.0 23.0 1,941.2 1,607.7 1,439.8 708.3 24.0 1,927.1 1,677.6 1,500.8 743.7 25.0 1,913.2 1,747.5 1,561.3 779.3 26.0 1,885.9 1,887.3 1,681.0 851.2 28.0 1,872.5 1,957.2 1,739.9 887.3 29.0 1,859.3 2,027.1 1,798.3 923.6



Voltage	Current	Speed	Input Power	Output Power	Torque	Efficiency <sup>1</sup>
[V]	[A]	[RPM]	[W]	[W]	[Ncm]	[%]
69.8	32.0	1,820.8	2,233.6	1,969.9	1,033.1	88.19
69.8	33.0	1,808.2	2,303.4	2,025.9	1,069.9	87.95
69.8	34.0	1,795.9	2,373.2	2,081.3	1,106.7	87.70
69.8	35.0	1,783.7	2,443.0	2,135.9	1,143.5	87.43
69.8	36.0	1,771.6	2,512.8	2,190.1	1,180.5	87.16
69.8	37.0	1,759.8	2,582.6	2,243.5	1,217.4	86.87
69.8	38.0	1,748.0	2,652.4	2,296.4	1,254.5	86.58
69.8	39.0	1,736.4	2,722.2	2,348.4	1,291.5	86.27
69.8	40.0	1,725.0	2,792.0	2,399.8	1,328.5	85.95
69.8	41.0	1,713.7	2,861.8	2,450.5	1,365.5	85.63
69.8	42.0	1,702.5	2,931.6	2,500.6	1,402.6	85.30
69.8	43.0	1,691.5	3,001.4	2,549.8	1,439.5	84.95
69.8	44.0	1,680.7	3,071.2	2,598.7	1,476.5	84.61
69.8	45.0	1,669.9	3,141.0	2,646.5	1,513.4	84.26
69.8	46.0	1,659.3	3,210.8	2,693.7	1,550.2	83.89
69.8	47.0	1,648.8	3,280.6	2,740.1	1,587.0	83.53
69.8	48.0	1,638.5	3,350.4	2,785.8	1,623.6	83.15
69.8	49.0	1,628.3	3,420.2	2,830.9	1,660.2	82.77
69.8	50.0	1,618.2	3,490.0	2,875.0	1,696.6	82.38
69.8	51.0	1,608.2	3,559.8	2,918.6	1,733.0	81.99
69.7	52.0	1,598.3	3,624.4	2,961.0	1,769.1	81.70
69.7	53.0	1,588.6	3,694.1	3,003.1	1,805.2	81.29
69.7	54.0	1,579.0	3,763.8	3,044.3	1,841.1	80.88
69.7	55.0	1,569.4	3,833.5	3,084.5	1,876.8	80.46
69.7	56.0	1,560.0	3,903.2	3,124.0	1,912.3	80.04
69.7	57.0	1,550.7	3,972.9	3,162.7	1,947.6	79.61
69.7	58.0	1,541.5	4,042.6	3,200.6	1,982.7	79.17
69.7	59.0	1,532.4	4,112.3	3,237.7	2,017.6	78.73
69.7	60.0	1,523.4	4,182.0	3,273.9	2,052.2	78.28
69.7	61.0	1,514.5	4,251.7	3,309.3	2,086.6	77.83
69.7	62.0	1,505.6	4,321.4	3,343.8	2,120.8	77.38
69.7	63.0	1,496.9	4,391.1	3,377.4	2,154.6	76.92
69.7	64.0	1,488.3	4,460.8	3,410.4	2,188.2	76.45
69.7	65.0	1,479.7	4,530.5	3,442.3	2,221.5	75.98
69.7	66.0	1,471.2	4,600.2	3,473.4	2,254.5	75.50
69.7	67.0	1,462.8	4,669.9	3,503.6	2,287.2	75.03
69.7	68.0	1,454.5	4,739.6	3,532.9	2,319.5	74.54
69.7	69.0	1,446.3	4,809.3	3,561.5	2,351.5	74.05
69.7	70.0	1,438.1	4,879.0	3,589.0	2,383.2	73.56



Voltage	Current	Speed	Input Power	Output Power	Torque	Efficiency <sup>1</sup>
[V]	[A]	[RPM]	[W]	[W]	[Ncm]	[%]
69.6	72.0	1,422.0	5,011.2	3,641.3	2,445.3	72.66
69.6	73.0	1,414.0	5,080.8	3,666.0	2,475.8	72.15
69.6	74.0	1,406.1	5,150.4	3,689.8	2,505.9	71.64
69.6	75.0	1,398.3	5,220.0	3,712.9	2,535.6	71.13

nl = rpm with no load

Io = current with no load

kV = specific rpm

kn = rpm drop per Amp

kT = torque constant

<sup>1</sup> incl. Controller