

## 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: **140.0 [V]**

Throttle setting: 100%

## Calculated Motor Constants

nl: 4,416.2 [RPM]    lo: 3.0 [A]    kV: 32.0 [RPM/V]    kn: -21.97 [RPM/A]    kT: 36.48 [Ncm/A]

Voltage [V]	Current [A]	Speed [RPM]	Input Power [W]	Output Power [W]	Torque [Ncm]	Efficiency <sup>1</sup> [%]
140.1	5.0	4,442.1	700.5	512.6	110.2	73.18
140.1	6.0	4,411.1	840.6	650.9	140.9	77.43
140.1	7.0	4,380.5	980.7	788.5	171.9	80.41
140.1	8.0	4,350.4	1,120.8	926.6	203.4	82.68
140.1	9.0	4,320.7	1,260.9	1,063.7	235.1	84.36
140.1	10.0	4,291.4	1,401.0	1,200.8	267.2	85.71
140.1	11.0	4,262.6	1,541.1	1,337.8	299.7	86.81
140.1	12.0	4,234.1	1,681.2	1,473.8	332.4	87.67
140.1	13.0	4,206.1	1,821.3	1,609.9	365.5	88.39
140.1	14.0	4,178.5	1,961.4	1,745.5	398.9	88.99
140.1	15.0	4,151.3	2,101.5	1,880.6	432.6	89.49
140.1	16.0	4,124.5	2,241.6	2,015.3	466.6	89.91
140.1	17.0	4,098.1	2,381.7	2,149.6	500.9	90.26
140.1	18.0	4,072.1	2,521.8	2,283.1	535.4	90.53
140.1	19.0	4,046.4	2,661.9	2,416.2	570.2	90.77
140.1	20.0	4,021.2	2,802.0	2,548.9	605.3	90.97
140.1	21.0	3,996.4	2,942.1	2,680.9	640.6	91.12
140.0	22.0	3,971.9	3,080.0	2,812.1	676.1	91.30
140.0	23.0	3,947.8	3,220.0	2,943.1	711.9	91.40
140.0	24.0	3,924.1	3,360.0	3,073.4	747.9	91.47
140.0	25.0	3,900.8	3,500.0	3,203.0	784.1	91.51
140.0	26.0	3,877.8	3,640.0	3,331.9	820.5	91.54
140.0	27.0	3,855.2	3,780.0	3,459.8	857.0	91.53
140.0	28.0	3,832.9	3,920.0	3,587.5	893.8	91.52
140.0	29.0	3,811.0	4,060.0	3,714.3	930.7	91.49
140.0	30.0	3,789.4	4,200.0	3,840.5	967.8	91.44

Voltage [V]	Current [A]	Speed [RPM]	Input Power [W]	Output Power [W]	Torque [Ncm]	Efficiency <sup>1</sup> [%]
140.0	32.0	3,747.3	4,480.0	4,090.9	1,042.5	91.32
140.0	33.0	3,726.8	4,620.0	4,214.9	1,080.0	91.23
140.0	34.0	3,706.6	4,760.0	4,338.4	1,117.7	91.14
140.0	35.0	3,686.7	4,900.0	4,461.0	1,155.5	91.04
140.0	36.0	3,667.2	5,040.0	4,582.6	1,193.3	90.92
140.0	37.0	3,648.0	5,180.0	4,703.8	1,231.3	90.81
140.0	38.0	3,629.1	5,320.0	4,824.2	1,269.4	90.68
140.0	39.0	3,610.5	5,460.0	4,943.9	1,307.6	90.55
140.0	40.0	3,592.2	5,600.0	5,062.6	1,345.8	90.40
139.9	41.0	3,574.2	5,735.9	5,180.5	1,384.1	90.32
139.9	42.0	3,556.6	5,875.8	5,297.7	1,422.4	90.16
139.9	43.0	3,539.2	6,015.7	5,414.1	1,460.8	90.00
139.9	44.0	3,522.2	6,155.6	5,529.7	1,499.2	89.83
139.9	45.0	3,505.4	6,295.5	5,644.7	1,537.7	89.66
139.9	46.0	3,488.9	6,435.4	5,758.8	1,576.2	89.49
139.9	47.0	3,472.7	6,575.3	5,872.0	1,614.7	89.30
139.9	48.0	3,456.8	6,715.2	5,984.1	1,653.1	89.11
139.9	49.0	3,441.2	6,855.1	6,095.9	1,691.6	88.92
139.9	50.0	3,425.8	6,995.0	6,206.7	1,730.1	88.73
139.9	51.0	3,410.7	7,134.9	6,316.5	1,768.5	88.53
139.9	52.0	3,395.9	7,274.8	6,425.7	1,806.9	88.33
139.9	53.0	3,381.3	7,414.7	6,533.6	1,845.2	88.12
139.9	54.0	3,367.0	7,554.6	6,641.1	1,883.5	87.91
139.9	55.0	3,352.9	7,694.5	6,747.4	1,921.7	87.69
139.9	56.0	3,339.1	7,834.4	6,853.2	1,959.9	87.48
139.9	57.0	3,325.6	7,974.3	6,958.2	1,998.0	87.26
139.9	58.0	3,312.2	8,114.2	7,061.6	2,035.9	87.03
139.9	59.0	3,299.2	8,254.1	7,164.8	2,073.8	86.80
139.9	60.0	3,286.3	8,394.0	7,266.9	2,111.6	86.57
139.8	61.0	3,273.7	8,527.8	7,367.9	2,149.2	86.40
139.8	62.0	3,261.3	8,667.6	7,468.4	2,186.8	86.16
139.8	63.0	3,249.2	8,807.4	7,567.6	2,224.1	85.92
139.8	64.0	3,237.2	8,947.2	7,666.1	2,261.4	85.68
139.8	65.0	3,225.5	9,087.0	7,763.7	2,298.5	85.44
139.8	66.0	3,214.0	9,226.8	7,860.2	2,335.4	85.19
139.8	67.0	3,202.7	9,366.6	7,955.7	2,372.1	84.94
139.8	68.0	3,191.6	9,506.4	8,050.4	2,408.7	84.68
139.8	69.0	3,180.7	9,646.2	8,144.2	2,445.1	84.43
139.8	70.0	3,170.0	9,786.0	8,237.0	2,481.3	84.17

Voltage	Current	Speed	Input Power	Output Power	Torque	Efficiency <sup>1</sup>
[V]	[A]	[RPM]	[W]	[W]	[Ncm]	[%]
139.8	72.0	3,149.2	10,065.6	8,419.4	2,553.0	83.65
139.8	73.0	3,139.1	10,205.4	8,509.1	2,588.5	83.38
139.8	74.0	3,129.1	10,345.2	8,597.6	2,623.8	83.11
139.8	75.0	3,119.4	10,485.0	8,685.3	2,658.8	82.84

nl = rpm with no load

lo = current with no load

kV = specific rpm

kn = rpm drop per Amp

kT = torque constant

<sup>1</sup> incl. Controller