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: **180.0 [V]**

Throttle setting: 100%

Calculated Motor Constants

nl: 5,648.8 [RPM] Io: 3.3 [A] kV: 31.8 [RPM/V] kn: -26.66 [RPM/A] kT: 36.58 [Ncm/A]

Voltage [V]	Current [A]	Speed [RPM]	Input Power [W]	Output Power [W]	Torque [Ncm]	Efficiency[1] [%]
180.3	5.0	5,687.7	901.5	597.4	100.3	66.27
180.3	6.0	5,649.7	1,081.8	778.0	131.5	71.92
180.3	7.0	5,612.2	1,262.1	958.6	163.1	75.95
180.2	8.0	5,575.3	1,441.6	1,137.9	194.9	78.93
180.2	9.0	5,539.0	1,621.8	1,317.3	227.1	81.22
180.2	10.0	5,503.2	1,802.0	1,495.5	259.5	82.99
180.2	11.0	5,467.9	1,982.2	1,673.1	292.2	84.41
180.2	12.0	5,433.2	2,162.4	1,850.8	325.3	85.59
180.2	13.0	5,399.0	2,342.6	2,026.9	358.5	86.52
180.2	14.0	5,365.3	2,522.8	2,203.0	392.1	87.32
180.2	15.0	5,332.2	2,703.0	2,378.2	425.9	87.98
180.2	16.0	5,299.6	2,883.2	2,552.9	460.0	88.54
180.2	17.0	5,267.4	3,063.4	2,726.6	494.3	89.00
180.2	18.0	5,235.8	3,243.6	2,899.9	528.9	89.40
180.2	19.0	5,204.7	3,423.8	3,072.4	563.7	89.74
180.2	20.0	5,174.1	3,604.0	3,244.5	598.8	90.02
180.2	21.0	5,144.0	3,784.2	3,415.8	634.1	90.26
180.2	22.0	5,114.3	3,964.4	3,586.2	669.6	90.46
180.2	23.0	5,085.1	4,144.6	3,755.8	705.3	90.62
180.2	24.0	5,056.4	4,324.8	3,924.7	741.2	90.75
180.2	25.0	5,028.2	4,505.0	4,092.9	777.3	90.85
180.2	26.0	5,000.4	4,685.2	4,260.3	813.6	90.93
180.1	27.0	4,973.0	4,862.7	4,427.6	850.2	91.05
180.1	28.0	4,946.2	5,042.8	4,593.8	886.9	91.10
180.1	29.0	4,919.7	5,222.9	4,758.8	923.7	91.11
180.1	30.0	4,893.7	5,403.0	4,923.8	960.8	91.13

Voltage [V]	Current [A]	Speed [RPM]	Input Power [W]	Output Power [W]	Torque [Ncm]	Efficiency[1] [%]
180.1	32.0	4,843.0	5,763.2	5,251.1	1,035.4	91.11
180.1	33.0	4,818.2	5,943.3	5,413.4	1,072.9	91.08
180.1	34.0	4,793.9	6,123.4	5,575.4	1,110.6	91.05
180.1	35.0	4,770.0	6,303.5	5,736.9	1,148.5	91.01
180.1	36.0	4,746.5	6,483.6	5,897.0	1,186.4	90.95
180.1	37.0	4,723.4	6,663.7	6,056.8	1,224.5	90.89
180.1	38.0	4,700.7	6,843.8	6,216.2	1,262.8	90.83
180.1	39.0	4,678.3	7,023.9	6,374.2	1,301.1	90.75
180.1	40.0	4,656.4	7,204.0	6,532.1	1,339.6	90.67
180.1	41.0	4,634.8	7,384.1	6,689.2	1,378.2	90.59
180.1	42.0	4,613.6	7,564.2	6,845.1	1,416.8	90.49
180.1	43.0	4,592.8	7,744.3	7,000.8	1,455.6	90.40
180.1	44.0	4,572.3	7,924.4	7,155.3	1,494.4	90.30
180.1	45.0	4,552.1	8,104.5	7,309.6	1,533.4	90.19
180.1	46.0	4,532.4	8,284.6	7,463.1	1,572.4	90.08
180.0	47.0	4,512.9	8,460.0	7,615.8	1,611.5	90.02
180.0	48.0	4,493.8	8,640.0	7,767.6	1,650.6	89.90
180.0	49.0	4,475.0	8,820.0	7,919.2	1,689.9	89.79
180.0	50.0	4,456.6	9,000.0	8,069.6	1,729.1	89.66
180.0	51.0	4,438.4	9,180.0	8,219.3	1,768.4	89.54
180.0	52.0	4,420.6	9,360.0	8,368.7	1,807.8	89.41
180.0	53.0	4,403.1	9,540.0	8,517.3	1,847.2	89.28
180.0	54.0	4,385.9	9,720.0	8,665.0	1,886.6	89.15
180.0	55.0	4,369.0	9,900.0	8,811.8	1,926.0	89.01
180.0	56.0	4,352.3	10,080.0	8,958.2	1,965.5	88.87
180.0	57.0	4,336.0	10,260.0	9,104.0	2,005.0	88.73
180.0	58.0	4,319.9	10,440.0	9,248.9	2,044.5	88.59
180.0	59.0	4,304.2	10,620.0	9,392.9	2,083.9	88.45
180.0	60.0	4,288.6	10,800.0	9,536.2	2,123.4	88.30
180.0	61.0	4,273.4	10,980.0	9,679.2	2,162.9	88.15
180.0	62.0	4,258.4	11,160.0	9,820.9	2,202.3	88.00
180.0	63.0	4,243.6	11,340.0	9,961.9	2,241.7	87.85
180.0	64.0	4,229.1	11,520.0	10,102.3	2,281.1	87.69
180.0	65.0	4,214.9	11,700.0	10,241.9	2,320.4	87.54
179.9	66.0	4,200.9	11,873.4	10,380.7	2,359.7	87.43
179.9	67.0	4,187.1	12,053.3	10,518.9	2,399.0	87.27
179.9	68.0	4,173.5	12,233.2	10,656.1	2,438.2	87.11
179.9	69.0	4,160.1	12,413.1	10,792.2	2,477.3	86.94
179.9	70.0	4,147.0	12,593.0	10,928.0	2,516.4	86.78

Voltage [V]	Current [A]	Speed [RPM]	Input Power [W]	Output Power [W]	Torque [Ncm]	Efficiency[1] [%]
179.9	72.0	4,121.3	12,952.8	11,196.5	2,594.3	86.44
179.9	73.0	4,108.8	13,132.7	11,329.9	2,633.2	86.27
179.9	74.0	4,096.5	13,312.6	11,462.0	2,671.9	86.10
179.9	75.0	4,084.3	13,492.5	11,593.4	2,710.6	85.92

nl = rpm with no load

Io = current with no load

kV = specific rpm

kn = rpm drop per Amp

kT = torque constant

[1] incl. Controller