

SW - SERIES

Wash Down Servo Motor
4" Frame

Motor Data (230V)

Performance Data (40 °C)	Symbol	Unit	MS41-E	MS42-E	MS42-G	MS42-K	MS43-E
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	19.2 [2.17]	36.7 [4.14]	36.7 [4.14]	36.7 [4.14]	48.9 [5.52]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	2.05	3.85	5.26	6.96	5.45
Max. Continuous Power	P_{max}	HP [kW]	0.68 [0.51]	1.30 [0.97]	1.80 [1.34]	1.97 [1.47]	1.58 [1.18]
Torque @ Max. Power	T_p	lb-in [Nm]	17.1 [1.94]	32.7 [3.70]	30.6 [3.46]	27.7 [3.12]	39.8 [4.50]
Current @ Maximum Power	I_p	Amps (RMS)	1.85	3.47	4.73	6.26	4.91
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	2500	2500	3000	4500	2500
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	2953	2984	3980	5714	2942
Maximum Current (RMS)	I_m	Amps (RMS)	7.69	14.45	19.73	26.09	20.45
Peak Torque	T_{pk}	lb-in [Nm]	57.6 [6.51]	110.0 [12.42]	110.0 [12.42]	110.0 [12.42]	146.6 [16.56]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0024 [0.00027]	0.0036 [0.00041]	0.0036 [0.00041]	0.0036 [0.00041]	0.0045 [0.00051]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	9.37 [1.06]	9.51 [1.07]	6.97 [0.79]	5.27 [0.60]	8.97 [1.01]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	70.4 [0.67]	69.7 [0.67]	52.3 [0.5]	36.4 [0.35]	70.7 [0.68]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	14.20	4.27	2.35	1.13	2.57
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	31.60	16.00	7.70	3.40	8.70
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	30638 [28800]	38187 [36660]	38187 [36660]	38187 [36660]	40733 [39419]
Thermal Time Constant [brake]	T_{th}	minute	30 [33]	30 [33]	35 [38]	30 [33]	35 [38]
Electrical Time Constant	T_e	msec	2.23	3.75	3.28	3.01	3.39
Mechanical Time Constant [brake]	T_m	msec	5.30 [5.64]	2.43 [2.53]	2.24 [2.30]	2.22 [2.31]	1.91 [1.97]
Static Friction	T_f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	12.6 [5.71]	16.1 [7.3]	16.1 [7.3]	16.1 [7.3]	19.6 [8.9]
Line Voltage	V	VAC	230	230	230	230	230

Performance Data (40 °C)	Symbol	Unit	MS43-K	MS44-C	MS44-E	MS44-H	MS46-B
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	48.9 [5.52]	68.6 [7.75]	68.6 [7.75]	68.6 [7.75]	97.2 [10.98]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	10.72	4.92	7.70	10.34	5.60
Max. Continuous Power	P_{max}	HP [kW]	2.37 [1.77]	1.30 [0.97]	2.00 [1.49]	2.76 [2.06]	1.35 [1.01]
Torque @ Max. Power	T_p	lb-in [Nm]	29.9 [3.37]	54.6 [6.17]	50.4 [5.70]	45.8 [5.18]	68.0 [7.69]
Current @ Maximum Power	I_p	Amps (RMS)	9.64	4.40	6.93	9.31	3.90
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	5000	1500	2500	3800	1250
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	5810	1990	3052	4200	1600
Maximum Current (RMS)	I_m	Amps (RMS)	40.19	18.45	28.88	38.78	21.00
Peak Torque	T_{pk}	lb-in [Nm]	146.6 [16.56]	205.8 [23.25]	205.8 [23.25]	205.8 [23.25]	291.6 [32.94]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0045 [0.00051]	0.0056 [0.00063]	0.0056 [0.00063]	0.0056 [0.00063]	0.0071 [0.00080]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	4.56 [0.52]	13.95 [1.58]	8.91 [1.01]	6.64 [0.75]	17.36 [1.96]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	35.8 [0.34]	104.5 [1.00]	68.2 [0.65]	49.5 [0.47]	129.5 [1.24]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	0.63	3.54	1.53	0.81	3.09
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	2.00	14.43	6.14	30.00	14.43
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	40733 [39419]	45951 [44752]	45951 [44752]	45951 [44752]	51338 [49932]
Thermal Time Constant [brake]	T_{th}	minute	35 [38]	40 [43]	40 [43]	40 [43]	50 [53]
Electrical Time Constant	T_e	msec	3.17	4.08	4.01	3.70	4.67
Mechanical Time Constant [brake]	T_m	msec	1.82 [1.46]	1.42 [1.46]	1.48 [1.52]	1.45 [1.48]	1.02 [1.05]
Static Friction	T_f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	19.6 [8.9]	23.0 [10.5]	23.0 [10.5]	23.0 [10.5]	30.0 [14.0]
Line Voltage	V	VAC	230	230	230	230	230

Brake Information:

Rated Holding Torque	T_s	lb-in [Nm]	40 [4.52]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.45
Inertia	J_b	lb-in-sec ² [kg-m ²]	0.00017 [0.000017]
Weight Adder	W	lb [kg]	2.6 [1.2]

Fail safe, Electric release

SW - SERIES

Wash Down Servo Motor
4" Frame

Motor Data (460V)

Performance Data (40 °C)	Symbol	Unit	MS41-E	MS42-E	MS42-G	MS42-K	MS43-E
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	19.2 [2.17]	36.7 [4.14]	36.7 [4.14]	36.7 [4.14]	48.9 [5.52]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	1.03	1.93	2.63	3.48	2.73
Max. Continuous Power	P_{max}	HP [kW]	0.68 [0.51]	1.30 [0.97]	1.80 [1.34]	1.97 [1.47]	1.58 [1.18]
Torque @ Max. Power	T_p	lb-in [Nm]	17.1 [1.94]	32.7 [3.70]	30.6 [3.46]	27.7 [3.12]	39.8 [4.50]
Current @ Maximum Power	I_p	Amps (RMS)	0.93	1.74	2.37	3.13	2.46
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	2500	2500	3000	4500	2500
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	2953	2984	3980	5714	2942
Maximum Current (RMS)	I_m	Amps (RMS)	3.85	7.23	9.85	13.05	10.23
Peak Torque	T_{pk}	lb-in [Nm]	57.6 [6.51]	110.0 [12.42]	110.0 [12.42]	110.0 [12.42]	146.6 [16.56]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0024 [0.00027]	0.0036 [0.00041]	0.0036 [0.00041]	0.0036 [0.00041]	0.0045 [0.00051]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	18.74 [2.12]	19.02 [2.14]	13.94 [1.58]	10.54 [1.20]	17.94 [2.02]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	140.8 [1.34]	139.4 [1.34]	104.6 [1.00]	72.8 [0.70]	141.4 [1.36]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	28.40	8.54	4.70	2.26	5.14
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	63.20	32.00	15.40	6.80	17.40
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	30638 [28800]	38187 [36660]	38187 [36660]	38187 [36660]	40733 [39419]
Thermal Time Constant [brake]	T_{th}	minute	30 [33]	30 [33]	30 [33]	30 [33]	35 [38]
Electrical Time Constant	T_e	msec	2.23	3.75	3.28	3.01	3.39
Mechanical Time Constant [brake]	T_m	msec	5.30 [5.64]	2.43 [2.53]	2.24 [2.30]	2.22 [2.31]	1.91 [1.97]
Static Friction	T_f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	12.6 [5.71]	16.1 [7.3]	16.1 [7.3]	16.1 [7.3]	19.6 [8.9]
Line Voltage	V	VAC	460	460	460	460	460

Performance Data (40 °C)	Symbol	Unit	MS43-K	MS44-C	MS44-E	MS44-H	MS46-B
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	48.9 [5.52]	68.6 [7.75]	68.6 [7.75]	68.6 [7.75]	97.2 [10.98]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	5.36	2.46	3.85	5.17	2.80
Max. Continuous Power	P_{max}	HP [kW]	2.37 [1.77]	1.30 [0.97]	2.00 [1.49]	2.76 [2.06]	1.35 [1.01]
Torque @ Max. Power	T_p	lb-in [Nm]	29.9 [3.37]	54.6 [6.17]	50.4 [5.70]	45.8 [5.18]	68.0 [7.69]
Current @ Maximum Power	I_p	Amps (RMS)	4.82	2.20	3.47	4.66	1.95
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	5000	1500	2500	3800	1250
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	5810	1990	3052	4200	1600
Maximum Current (RMS)	I_m	Amps (RMS)	20.10	9.23	14.44	19.39	10.50
Peak Torque	T_{pk}	lb-in [Nm]	146.6 [16.56]	205.8 [23.25]	205.8 [23.25]	205.8 [23.25]	291.6 [32.94]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0045 [0.00051]	0.0056 [0.00063]	0.0056 [0.00063]	0.0056 [0.00063]	0.0071 [0.00080]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	9.12 [1.04]	27.90 [3.16]	17.82 [2.02]	13.28 [1.50]	34.72 [3.92]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	71.6 [0.68]	209.0 [2.00]	136.4 [1.30]	99.0 [0.94]	259.0 [2.48]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	1.26	7.08	3.06	1.62	6.18
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	4.00	28.86	12.28	60.00	28.86
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	40733 [39419]	45951 [44752]	45951 [44752]	45951 [44752]	51338 [49932]
Thermal Time Constant [brake]	T_{th}	minute	35 [38]	40 [43]	40 [43]	40 [43]	50 [53]
Electrical Time Constant	T_e	msec	3.17	4.08	4.01	3.70	4.67
Mechanical Time Constant [brake]	T_m	msec	1.82 [1.46]	1.42 [1.46]	1.48 [1.52]	1.45 [1.48]	1.02 [1.05]
Static Friction	T_f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	19.6 [8.9]	23.0 [10.0]	23.0 [10.0]	23.0 [10.0]	30.0 [14.0]
Line Voltage	V	VAC	460	460	460	460	460

Brake Information:		Fail safe, Electric release	
Rated Holding Torque	T_s	lb-in [Nm]	40 [4.52]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.45
Inertia	J_b	lb-in-sec ² [kg-m ²]	0.00017 [0.000017]
Weight Adder	W	lb [kg]	2.6 [1.2]

SW - SERIES

Wash Down Servo Motor
4" Frame

Connection Data

Motor Connector PT02E-14-5P

PIN	AWG	FUNCTION
A	16	ØA
B	16	ØB
C	16	ØC
D	16	GROUND

Inc. Encoder Connector PT02E-14-18P

PIN	AWG	FUNCTION
X	24	+VDC
X	24	COMMON
X	24	OUTPUT A
X	24	OUTPUT A'
X	24	OUTPUT B
X	24	OUTPUT B'
X	24	OUTPUT Z
X	24	OUTPUT Z'
X	24	OUTPUT U
X	24	OUTPUT U'
X	24	OUTPUT V
X	24	OUTPUT V'
X	24	OUTPUT W
X	24	OUTPUT W'
X	24	CASE GND (NOT USED)
X	24	SHIELD
X	18	BRAKE (+) Optional
X	18	BRAKE (-) Optional
X	18	OTL
X	18	OTL

Abs. Encoder Connector PT02E-14-18P

PIN	AWG	FUNCTION
X	24	+VDC
X	24	COMMON
X	24	+SIN
X	24	REFSIN
X	24	+COS
X	24	REFCOS
X	24	DATA +
X	24	DATA -
X	24	SHIELD
X	18	BRAKE (+) Optional
X	18	BRAKE (-) Optional
X	18	OTL
X	18	OTL

Resolver Connector PT02E-14-18P

PIN	AWG	FUNCTION
A	24	R1 (+REF)
B	24	R2 (-REF)
C	24	S1 (+COSINE)
D	24	S3 (-COSINE)
N	24	S2 (+SINE)
P	24	S4 (-SINE)
R	24	SHIELD
G	18	BRAKE (+) Optional
H	18	BRAKE (-) Optional
E	18	OTL
F	18	OTL

SW - SERIES

Wash Down Servo Motor
4" Frame

Motor Dimensions

Model	"A"	"B"	"C"	"D"	"E"	"F"	"G"
MS41	∅ 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	∅ 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
MS42	∅ 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	∅ 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
MS43	∅ 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	∅ 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
MS44	∅ 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	∅ 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
MS46	∅ 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	∅ 19.015 18.998	40	30 (captive)	15.5	6	9.4	3

Model	"H"	"J"	"K"	"L"	"L" w/BRAKE	M	N
MS41	∅ 2.500 2.498	∅0.344	∅5.000	7.35	9.27	1.38	1.45
	∅ 95.013 94.991	∅9	∅115	186.7	235.5	35.1	36.8
MS42	∅ 2.500 2.498	∅0.344	∅5.000	8.85	10.77	1.38	1.45
	∅ 95.013 94.991	∅9	∅115	224.8	273.6	35.1	36.8
MS43	∅ 2.500 2.498	∅0.344	∅5.000	10.35	12.27	1.38	1.45
	∅ 95.013 94.991	∅9	∅115	262.89	311.66	35.1	36.8
MS44	∅ 2.500 2.498	∅0.344	∅5.000	11.85	13.77	1.38	1.45
	∅ 95.013 94.991	∅9	∅115	301.0	349.8	35.1	36.8
MS46	∅ 2.500 2.498	∅0.344	∅5.000	14.85	15.27	1.38	1.45
	∅ 95.013 94.991	∅9	∅115	377.2	387.9	35.1	36.8

Model	"P"	"Q"	"R"	"S"	"T"
MS41	∅4.30	2.42	1.92	R0.44	∅5.71
	∅109.2	61.5	48.8	R11.2	∅145
MS42	∅4.30	2.42	1.92	R0.44	∅5.71
	∅109.2	61.5	48.8	R11.2	∅145
MS43	∅4.30	2.42	1.92	R0.44	∅5.71
	∅109.2	61.5	48.8	R11.2	∅145
MS44	∅4.30	2.42	1.92	R0.44	∅5.71
	∅109.2	61.5	48.8	R11.2	∅145
MS46	∅4.30	2.42	1.92	R0.44	∅5.71
	∅109.2	61.5	48.8	R11.2	∅145