

SW - SERIES

Wash Down Servo Motor
2" Frame

Motor Data (115V)

Performance Data (40 °C)	Symbol	Unit	MS21-A	MS21-B	MS21-C	MS22-A	MS22-B
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	4.38 [0.49]	4.38 [0.49]	4.38 [0.49]	6.44 [0.73]	6.44 [0.73]
Continuous Rated Current (RMS)	I_c	Amps (RMS)					3.40
Max. Continuous Power	P_{max}	HP [kW]					0.49 [0.36]
Torque @ Max. Power	T_p	lb-in [Nm]					5.5 [0.62]
Current @ Maximum Power	I_p	Amps (RMS)					3.08
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	3000	6000	9000	3000	6000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	4000	8000	11000	4000	8000
Maximum Current (RMS)	I_m	Amps (RMS)					10.20
Peak Torque	T_{pk}	lb-in [Nm]	13.14 [1.47]	13.14 [1.47]	13.14 [1.47]	19.2 [2.19]	19.2 [2.19]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]				7.37E-5 [8.31E-6]	7.37E-5 [8.31E-6]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]					1.93 [0.22]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]					13.9 [0.14]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_s	Ohm					6.3
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_s	millihenry					9.0
Max. Theoretical Acceleration @ Stall [brake]	ΔE	Rad/sec ²					
Thermal Time Constant [brake]	T_{th}	minute					12 [XX]
Electrical Time Constant	T_e	msec					
Mechanical Time Constant [brake]	T_m	msec					
Static Friction	T_f	lb-in [Nm]				0.188 [0.03]	0.188 [0.03]
Weight	W	lb [kg]				3.5 [1.6]	3.5 [1.6]
Line Voltage	V	VAC	115	115	115	115	115

Performance Data (40 °C)	Symbol	Unit	MS22-C	MS23-A	MS23-B	MS23-C
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	6.44 [0.73]	8.75 [0.98]	8.75 [0.98]	8.75 [0.98]
Continuous Rated Current (RMS)	I_c	Amps (RMS)				
Max. Continuous Power	P_{max}	HP [kW]				
Torque @ Max. Power	T_p	lb-in [Nm]				
Current @ Maximum Power	I_p	Amps (RMS)				
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	9000	3000	6000	9000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	11000	4000	8000	11000
Maximum Current (RMS)	I_m	Amps (RMS)				
Peak Torque	T_{pk}	lb-in [Nm]	19.2 [2.19]	26.25 [2.94]	26.25 [2.94]	26.25 [2.94]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	7.37E-5 [8.31E-6]			
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]				
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]				
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_s	Ohm				
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_s	millihenry				
Max. Theoretical Acceleration @ Stall [brake]	ΔE	Rad/sec ²				
Thermal Time Constant [brake]	T_{th}	minute				
Electrical Time Constant	T_e	msec				
Mechanical Time Constant [brake]	T_m	msec				
Static Friction	T_f	lb-in [Nm]	0.188 [0.03]			
Weight	W	lb [kg]	3.5 [1.6]			
Line Voltage	V	VAC	115	115	115	115

Brake Information:

Rated Holding Torque	T_s	lb-in [Nm]	8 [0.9]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.54
Inertia	J_b	lb-in-sec ² [kg-m ²]	1.726E-5 [1.950E-6]
Weight Adder	W	lb [kg]	0.5 [0.23]

Fail safe, Electric release

SW - SERIES

Wash Down Servo Motor
2" Frame

Motor Data (230V)

Performance Data (40 °C)	Symbol	Unit	MS21-A	MS21-B	MS21-C	MS22-A	MS22-B
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	4.38 [0.49]	4.38 [0.49]	4.38 [0.49]	6.44 [0.73]	6.44 [0.73]
Continuous Rated Current (RMS)	I_c	Amps (RMS)					1.70
Max. Continuous Power	P_{max}	HP [kW]					0.49 [0.36]
Torque @ Max. Power	T_p	lb-in [Nm]					5.5 [0.62]
Current @ Maximum Power	I_p	Amps (RMS)					1.54
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	3000	6000	9000	3000	6000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	4000	8000	11000	4000	8000
Maximum Current (RMS)	I_m	Amps (RMS)					5.10
Peak Torque	T_{pk}	lb-in [Nm]	13.14 [1.47]	13.14 [1.47]	13.14 [1.47]	19.2 [2.19]	19.2 [2.19]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]				7.37E-5 [8.31E-6]	7.37E-5 [8.31E-6]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]					3.85 [0.43]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]					27.9 [0.27]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm					12.5
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry					17.9
Max. Theoretical Acceleration @ Stall [brake]	\ddot{A}	Rad/sec ²					
Thermal Time Constant [brake]	T_{th}	minute					12 [13]
Electrical Time Constant	T_e	msec					
Mechanical Time Constant [brake]	T_m	msec					
Static Friction	T_f	lb-in [Nm]				0.188 [0.03]	0.188 [0.03]
Weight	W	lb [kg]				3.5 [1.6]	3.5 [1.6]
Line Voltage	V	VAC	230	230	230	230	230

Performance Data (40 °C)	Symbol	Unit	MS22-C	MS23-A	MS23-B	MS23-C
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	6.44 [0.73]	8.75 [0.98]	8.75 [0.98]	8.75 [0.98]
Continuous Rated Current (RMS)	I_c	Amps (RMS)				
Max. Continuous Power	P_{max}	HP [kW]				
Torque @ Max. Power	T_p	lb-in [Nm]				
Current @ Maximum Power	I_p	Amps (RMS)				
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	9000	3000	6000	9000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	11000	4000	8000	11000
Maximum Current (RMS)	I_m	Amps (RMS)				
Peak Torque	T_{pk}	lb-in [Nm]	19.2 [2.19]	26.25 [2.94]	26.25 [2.94]	26.25 [2.94]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	7.37E-5 [8.31E-6]			
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]				
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]				
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm				
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry				
Max. Theoretical Acceleration @ Stall [brake]	\ddot{A}	Rad/sec ²				
Thermal Time Constant [brake]	T_{th}	minute				
Electrical Time Constant	T_e	msec				
Mechanical Time Constant [brake]	T_m	msec				
Static Friction	T_f	lb-in [Nm]	0.188 [0.03]			
Weight	W	lb [kg]	3.5 [1.6]			
Line Voltage	V	VAC	230	230	230	230

Brake Information:

Rated Holding Torque	T_s	lb-in [Nm]	8 [0.9]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.54
Inertia	J_b	lb-in-sec ² [kg-m ²]	1.726E-5 [1.950E-6]
Weight Adder	W	lb [kg]	0.5 [0.23]

Fail safe, Electric release

SW - SERIES

Wash Down Servo Motor
2" Frame

Motor Dimensions

Model	"A"	"B"	"C"	"D"	"E"	"F"	"G"
MS21	∅ 0.3750 0.3745	1.25	N.A.	N.A.	N.A.	0.25	0.06
	∅ 9.010 8.999	20	N.A.	N.A.	N.A.	6	1.5
MS22	∅ 0.3750 0.3745	1.25	N.A.	N.A.	N.A.	0.25	0.06
	∅ 9.010 8.999	20	N.A.	N.A.	N.A.	6	1.5
MS23	∅ 0.3750 0.3745	1.25	N.A.	N.A.	N.A.	0.25	0.06
	∅ 9.010 8.999	20	N.A.	N.A.	N.A.	6	1.5

Model	"H"	"J"	"K"	"L"	"L" w/BRAKE	"M"	"N"
MS21	∅ 1.502 1.498	0.201	∅2.625	3.68		0.94	0.58
	∅ 40.011 39.995	4.80	63	93.5		23.8	14.7
MS22	∅ 1.502 1.498	0.201	∅2.625	4.65		0.94	0.58
	∅ 40.011 39.995	4.80	63	118.10		23.8	14.7
MS23	∅ 1.502 1.498	0.201	∅2.625	5.62		0.94	0.58
	∅ 40.011 39.995	4.80	63	142.8		23.8	14.7

Model	"P"	"Q"	"R"	"S"	"T"
MS21	∅2.25		1.13	R0.20	∅3.05
	∅57.2		28.6	R5.1	∅74
MS22	∅2.25		1.13	R0.20	∅3.05
	∅57.2		28.6	R5.1	∅74
MS23	∅2.25		1.13	R0.20	∅3.05
	∅57.2		28.6	R5.1	∅74

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Wash Down Servo Motor
2" Frame

Connection Data

Motor Connection

WIRE COLOR	AWG	FUNCTION
BLACK	20	ØA
RED	20	ØB
WHITE	20	ØC
GREEN	20	GROUND

Inc. Encoder Connection

WIRE COLOR	AWG	FUNCTION
RED	24	+VDC
BLACK	24	COMMON
BROWN	24	OUTPUT A
WHITE	24	OUTPUT A'
BLUE	24	OUTPUT B
GREEN	24	OUTPUT B'
ORANGE	24	OUTPUT Z
YELLOW	24	OUTPUT Z'
VIOLET	24	OUTPUT U
GRAY	24	OUTPUT U'
BROWN/WHITE	24	OUTPUT V
RED/WHITE	24	OUTPUT V'
ORANGE/WHITE	24	OUTPUT W
YELLOW/WHITE	24	OUTPUT W'
BLACK/WHITE	24	CASE GND (NOT USED)
DRAIN WIRE	24	SHIELD
X	18	BRAKE (+) Optional
X	18	BRAKE (-) Optional
X	18	OTL
X	18	OTL