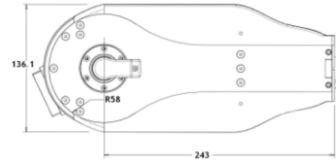
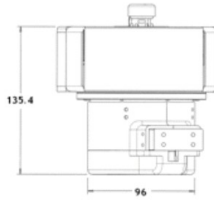


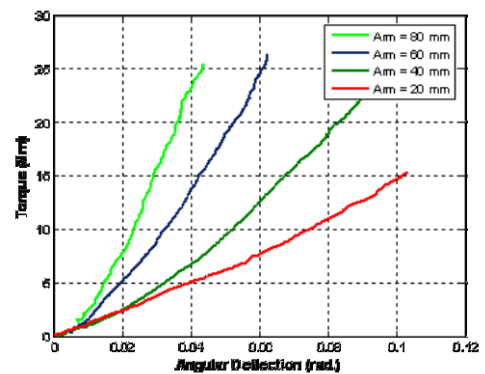
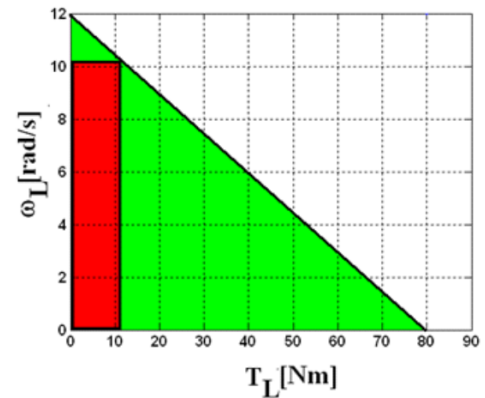
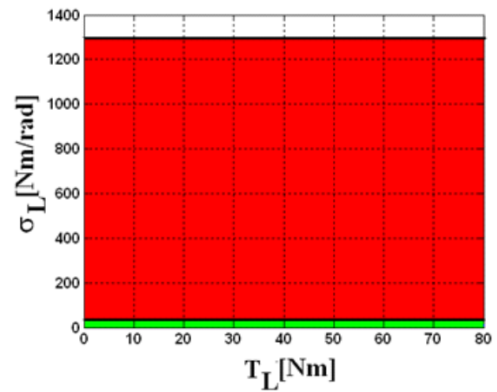
AwAS

Actuator with Adjustable Stiffness



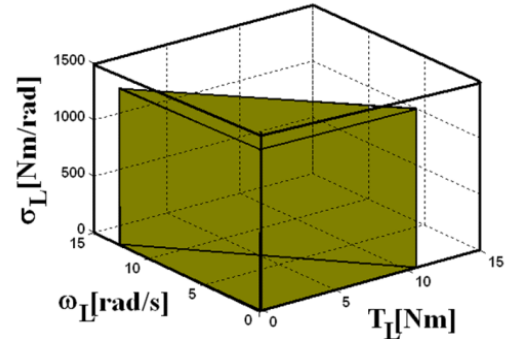
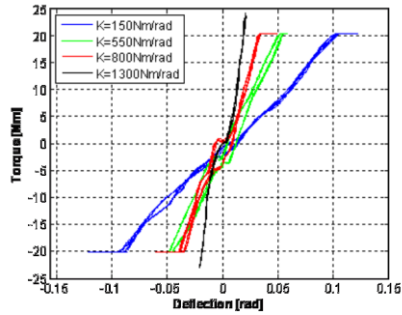
Operating Data			
#	(quantity)	(unit)	(value)
Mechanical			
1	Continuous Output Power	[W]	56
2	Nominal Torque	[Nm]	10.75
3	Nominal Speed	[rad/s]	10.2
4	Nominal Stiffness Variation Time	with no load	[s] 4
		with nominal torque	[s] 6
6	Peak (Maximum) Torque	[Nm]	80
7	Maximum Speed	[rad/s]	12
8	Maximum Stiffness	[Nm/rad]	1300
9	Minimum Stiffness	[Nm/rad]	30
10	Maximum Elastic Energy	[J]	3.5
11	Maximum Torque Hysteresis	[%]	9
12	Maximum deflection	with max. stiffness	[°] 14
		with min. stiffness	[°] 5
14	Active Rotation Angle	[°]	*-/120
15	Angular Resolution	[°]	0.02
16	Weight	[Kg]	1.8
Electrical			
17	Nominal Voltage	[V]	24
18	Nominal Current	[A]	2.3
19	Maximum Current	[A]	6.2
Control			
20	Voltage Supply	[V]	24
21	Nominal Current	[A]	2
22	I/O protocol	[]	Ethernet

BLUE		+5 TO 24 VDC 2.7K OHMS 2.7K OHMS 2.7K OHMS GND
A BROWN		
B ORANGE		
C YELLOW		
GREEN	OUTPUTS	(PROVIDED WITH EMOTEQ DRIVERS)
SENSOR ASSEMBLY		USER SUPPLIED



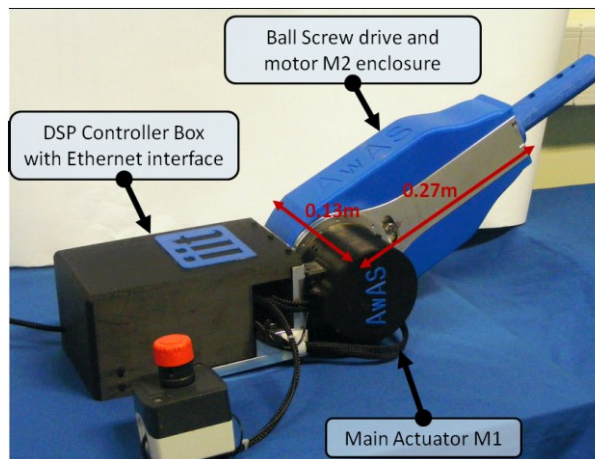
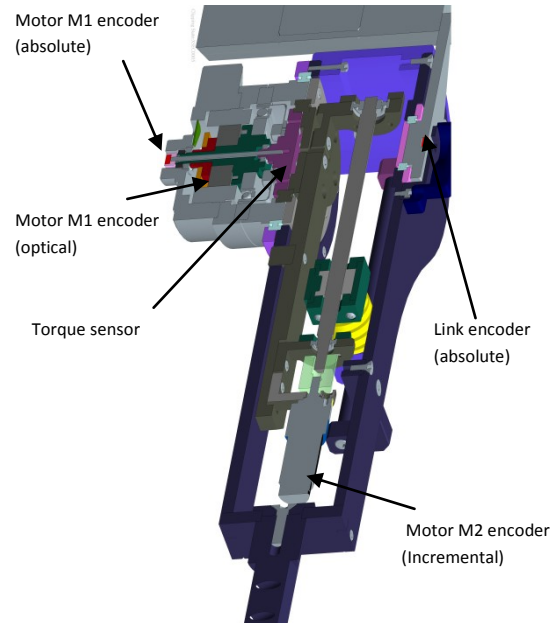
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Additional Characteristics



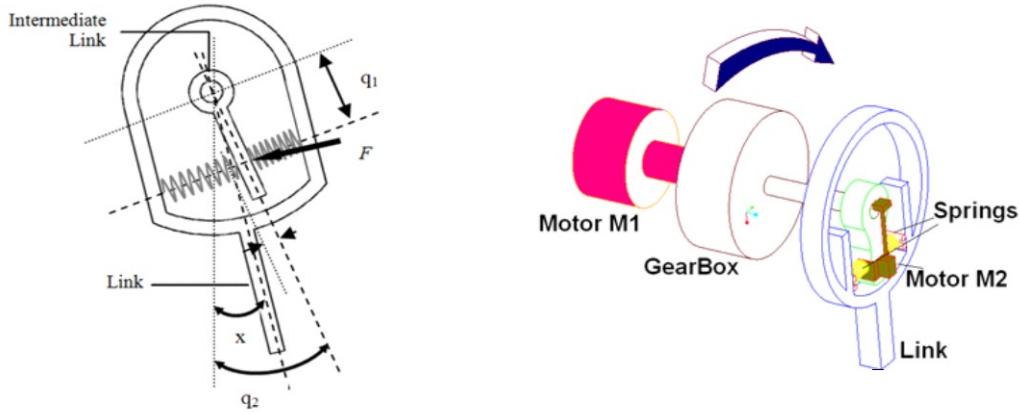
Sensor Map

Additional sensors data			
#	(quantity)	(unit)	(value)
Sensor 1 and 2			
a0	Resolution	[CPR]	20000
a1	Range	[kHz]	650
a2	I/O protocol	[yyy]	Ethernet
ax	(specific sensor properties)	[yyy]	xxx
Sensor 3			
bx	Resolution	[LPR]	512
by	Range	[kHz]	1600
bz	I/O protocol	[yyy]	Ethernet
Sensor n			
n0
...



AwAS

Model



Mathematical model ($K_s=80\text{N/mm}$, $l_0=6\text{mm}$)

101	Recoil Point Function	$x_e = q_2$
102	Energy Function	$H = 1/2 K_s [(l_0 + q_1 \sin(x - q_2))^2 + (l_0 - q_1 \sin(x - q_2))^2]$
103	Output Torque Function	$\tau = 2 K_s q_1^2 \sin(x - q_2) \cos(x - q_2)$
104	Output Stiffness Function	$\sigma = 2 K_s q_1^2 (2 \cos^2(x - q_2) - 1)$
105	Spring Torque Function	$e_s = e_s(q_1, q_2, x)$
106	Springs to Motors Transmission Ratio	$A = A(q_1, q_2, x)$
107	Springs to Output Transmission Ratio	$B = B(q_1, q_2, x)$