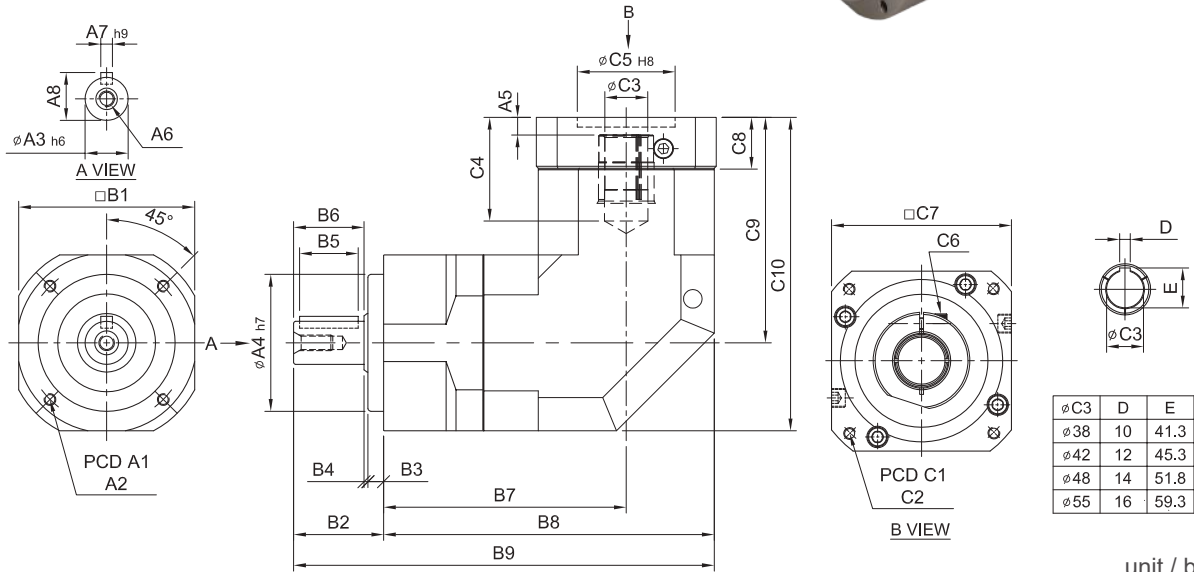
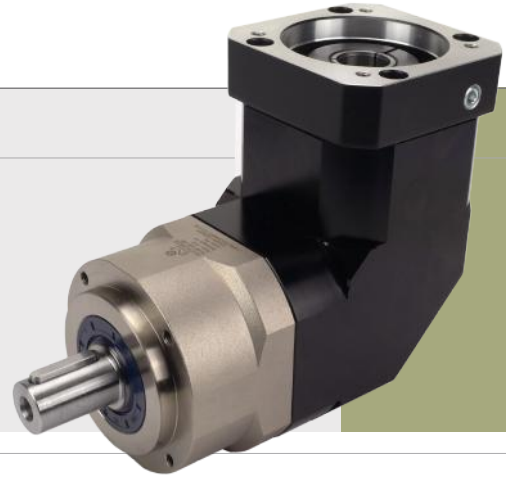


# SERVOBOX

## MODEL : SEL

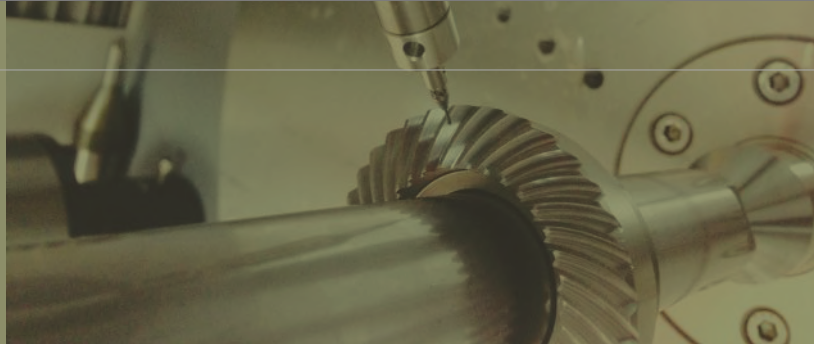
1-Stage / Kademe

RATIO / ÇEVİRİM : 3, 4, 5, 6, 7, 8, 9, 10, 12  
14, 16, 18, 20



unit / birim: mm

Model Code	44	62	90	120	142	180	220
<b>A</b> A1	44	62	82	110	140	184	218
A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M16 x P2.0
A3	13	16	22	32	40	55	75
A4	35	50	70	90	120	160	180
A5	6	6	9 · 23.5	10 · 20	10	12.5 · 14.5	12.5 · 14.5
A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
A7	5	5	6	10	12	16	20
A8	15	18	24.5	35	43	59	79.5
<b>B</b> B1	44	62	90	120	142	180	220
B2	26	36	46	65	92	106	139
B3	5	7	8	12	15	20	30
B4	1	1	2	3	3	4	5
B5	15	20	30	40	65	70	90
B6	20	28	36	50	74	82	104
B7	76	84.5	122.1	148	165.5	223.6	231.6
B8	98	115.5	167.1	208	236.5	313.6	341.6
B9	124	151.5	215.1	273	328.5	419.6	480.6
<b>C</b> C1	46 · 60 · 63	70 · 75 · 90	90 · 110 · 115 · 145	115 · 145 · 165	145 · 165 · 200	200 · 215 · 265	200 · 265 · 300
C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12	M10 · M12 · M16	M12 · M16
C3	8 · 9 · 11	14 · 19	19 · 22 · 24	24 · 28 · 32	28 · 32 · 35	38 · 42 · 48 · 55	42 · 48 · 55
C4	27	33.5 · 41.5	53 · 67.5	67 · 77	85	117 · 119	117 · 119
C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180	114.3 · 180 · 230	114.3 · 230 · 250
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 180 · 190	182 · 200 · 250	222 · 250 · 265
C8	16	21.5	26.5 · 41	35.5 · 45.5	35.5	45.5 · 47.5	45.5 · 47.5
C9	61	77 · 85	115.3 · 129.8	141 · 151	174	235 · 237	235 · 237
C10	83	108 · 116	160.3 · 174.8	201 · 211	245	325 · 327	345 · 347



Model No.		Unit/Birim	Ratio Çevrim	44	62	90	120	142	180	220
Nominal output torque / Nominal Çıkış Torku	$T_{2N}$	Nm	3	19	59	165	335	625	1,206	2,030
			4	16	51	146	300	555	1,069	1,804
			5	16	48	160	333	618	1,189	2,010
			6	15	45	151	311	583	1,118	1,911
			7	15	45	149	309	573	1,108	1,870
			8	14	43	143	298	553	1,070	1,824
			9	13	44	145	278	516	993	1,694
			10	14	43	141	294	549	1,059	1,779
			12	15	45	151	311	583	1,118	1,911
			14	15	45	149	309	573	1,108	1,870
			16	14	43	143	298	553	1,070	1,824
			18	13	44	145	278	516	993	1,694
20	14	43	141	294	549	1,059	1,779			
Max. Acceleration Torque / Max. İvmelenme Torku	$T_{2B}$	Nm	3 ~ 20	1.8 Times of Rated Output Torque / 1,8 x Nominal Çıkış Torku						
Max. Output Torque / Max. Çıkış Torku	$T_{2NOT}$	Nm	3 ~ 20	3 Times of Rated Output Torque / 3 x Nominal Çıkış Torku						
Rated Input Speed / Nominal Giriş Devri	$n_{1N}$	rpm	3 ~ 20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed / Max. Giriş Devri	$n_{1B}$	rpm	3 ~ 20	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps / Min. Boşluk Oranı		arcmin	3 ~ 20	-	-	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
Backlash P0 / Düşük Boşluk Oranı		arcmin	3 ~ 20	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Backlash P1 / Azaltılmış Boşluk Oranı		arcmin	3 ~ 20	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6
Backlash P2 / Standart Boşluk Oranı		arcmin	3 ~ 20	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
Torsional Rigidity / Burulma Direnci		Nm/arcmin	3 ~ 20	3	6	14	27	60	140	240
Max. Radial Force / Max. Radyal Yük	$F_{2rB}$	N	3 ~ 20	380	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force / Max. Aksiyel Yük	$F_{2aB}$	N	3 ~ 20	190	590	1,600	3,400	4,650	7,800	25,500
Service Life / Hizmet Ömrü	$L_H$	hr	3 ~ 20	S5 Döngüsel Çalışma: >30,000 (S1 Sürekli Çalışma: >15,000 saat) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency / Verim	$\eta$	%	3 ~ 20	≥ 95						
Operating Temperature / Çalışma Sıcaklığı		°C	3 ~ 20	- 25° C ~ + 90° C						
Lubrication / Yağlama			3 ~ 20	Synthetic Grease / Sentetik Gres						
Protection Class / Koruma Sınıfı			3 ~ 20	IP65						
Mounting Position / Montaj Pozisyonu			3 ~ 20	Any / Her Yönde						
Noise Level / Ses Seviyesi		dB	3 ~ 20	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight / Ağırlık ±3%		Kg	3 ~ 20	0.8	2.8	6.3	9.2	22.5	52.3	75

#### ■ Mass Moments of Inertia / Atalet Ağırlık Momenti (kg.cm<sup>2</sup>)

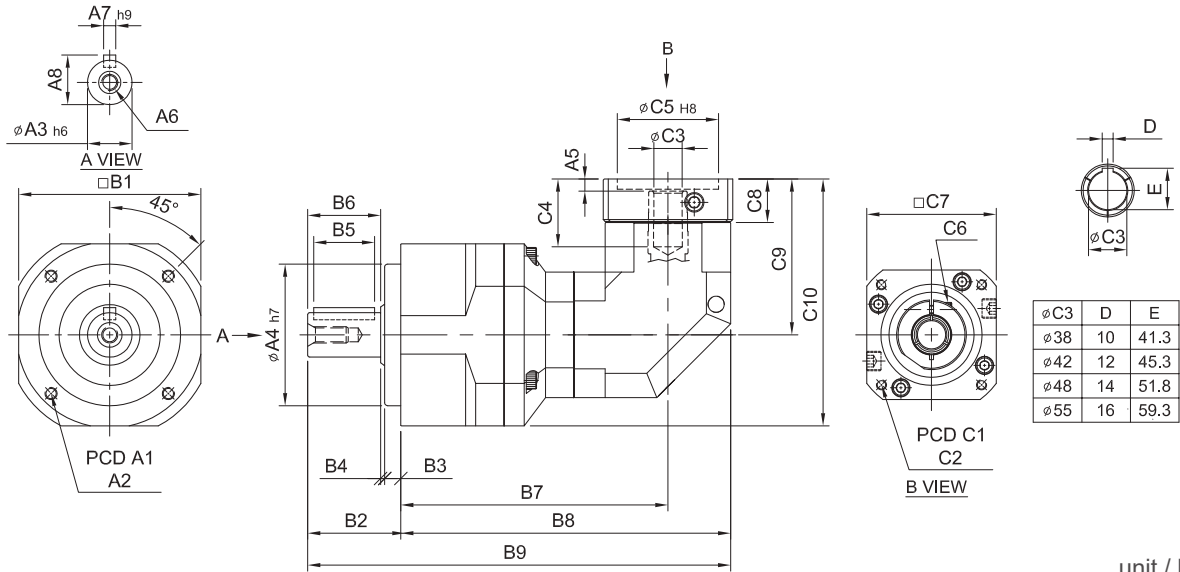
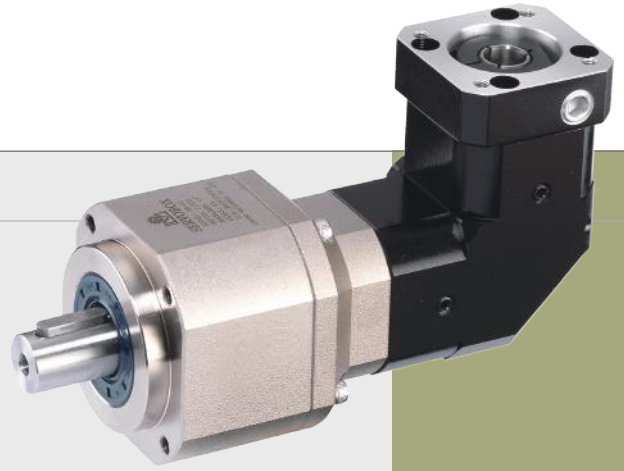
Ratio / Çevrim	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68.2	135
4	0.09	0.36	2.28	6.85	23.5	68.2	135
5	0.09	0.36	2.28	6.85	23.5	68.2	135
6	0.09	0.36	2.28	6.85	23.5	68.2	135
7	0.09	0.36	2.28	6.85	23.5	68.2	135
8	0.09	0.36	2.28	6.85	23.5	68.2	135
9	0.09	0.36	2.28	6.85	23.5	68.2	135
10	0.09	0.36	2.28	6.85	23.5	68.2	135
12	0.03	0.08	1.88	6.2	21.8	65.5	119.2
14	0.03	0.08	1.88	6.2	21.8	65.5	119.2
16	0.03	0.08	1.88	6.2	21.8	65.5	119.2
18	0.03	0.08	1.88	6.2	21.8	65.5	119.2
20	0.03	0.08	1.88	6.2	21.8	65.5	119.2

# SERVOBOX

## MODEL : SEL

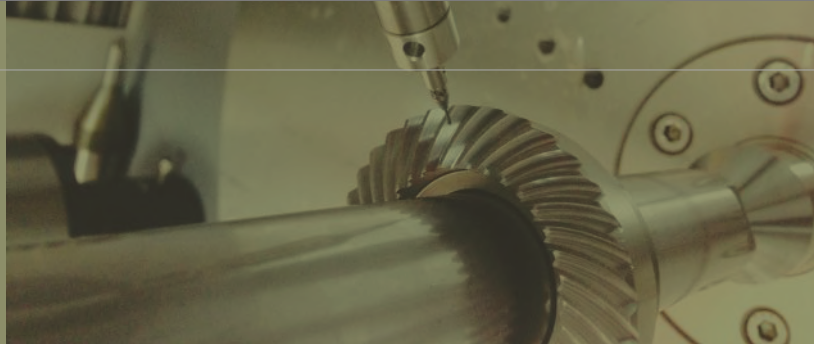
2-Stage / Kademe

RATIO / ÇEVİRİM : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80  
90, 100, 120, 140, 160, 180, 200



unit / birim: mm

Model Code	62	90	120	142	180	220
<b>A</b> A1	62	82	110	140	184	218
A2	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M16 x P2.0
A3	16	22	32	40	55	75
A4	50	70	90	120	160	180
A5	6	6	9 · 23.5	10 · 20	10	12.5 · 14.5
A6	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
A7	5	6	10	12	16	20
A8	18	24.5	35	43	59	79.5
<b>B</b> B1	62	90	120	142	180	220
B2	36	46	65	92	106	139
B3	7	8	12	15	20	30
B4	1	2	3	3	4	5
B5	20	30	40	65	70	90
B6	28	36	50	74	82	104
B7	110.5	132	181.6	214.5	249.5	313.6
B8	132.5	163	226.6	274.5	320.5	403.6
B9	168.5	209	291.6	366.5	426.5	542.6
<b>C</b> C1	46 · 60 · 63	70 · 75 · 90	90 · 110 · 115 · 145	115 · 145 · 165	145 · 165 · 200	200 · 215 · 265
C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12	M12 · M16
C3	8 · 9 · 11	14 · 19	19 · 22 · 24	24 · 28 · 32	28 · 32 · 35	38 · 42 · 48 · 55
C4	27	33.5 · 41.5	53 · 67.5	67 · 77	85	117 · 119
C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180	114.3 · 180 · 200 · 230 · 250
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 180 · 190	182 · 200 · 220 · 250 · 265
C8	16	21.5	26.5 · 41	35.5 · 45.5	35.5	45.5 · 47.5
C9	61	77 · 85	115.3 · 129.8	141 · 151	174	235 · 237
C10	92	122 · 130	175.3 · 189.8	212 · 222	264	345 · 347



Model No.		Unit/Birim	Ratio Çevrim	62	90	120	142	180	220
Nominal output torque / Nominal Çıkış Torku	$T_{2N}$	Nm	15	59	165	335	625	1,206	2,030
			20	51	146	300	555	1,069	1,804
			25	48	160	333	618	1,189	2,010
			30	45	151	311	583	1,118	1,911
			35	45	149	309	573	1,108	1,870
			40	43	143	298	553	1,070	1,824
			50	48	160	333	618	1,189	2,010
			60	45	151	311	583	1,118	1,911
			70	45	149	309	573	1,108	1,870
			80	43	143	298	553	1,070	1,824
			90	44	145	278	516	993	1,694
			100	43	141	294	549	1,059	1,779
			120	45	151	311	583	1,118	1,911
			140	45	149	309	573	1,108	1,870
			160	43	143	298	553	1,070	1,824
180	44	145	278	516	993	1,694			
200	43	141	294	549	1,059	1,779			
Max. Acceleration Torque / Max. İvmelenme Torku	$T_{2B}$	Nm	15 ~ 200	1.8 Times of Rated Output Torque / 1,8 x Nominal Çıkış Torku					
Max. Output Torque / Max. Çıkış Torku	$T_{2NOT}$	Nm	15 ~ 200	3 Times of Rated Output Torque / 3 x Nominal Çıkış Torku					
Rated Input Speed / Nominal Giriş Devri	$n_{1N}$	rpm	15 ~ 200	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed / Max. Giriş Devri	$n_{1B}$	rpm	15 ~ 200	6,000	6,000	5,000	5,000	4,000	4,000
Backlash Ps / Min. Boşluk Oranı		arcmin	15 ~ 200	-	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Backlash P0 / Düşük Boşluk Oranı		arcmin	15 ~ 200	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P1 / Azaltılmış Boşluk Oranı		arcmin	15 ~ 200	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Backlash P2 / Standart Boşluk Oranı		arcmin	15 ~ 200	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
Torsional Rigidity / Burulma Direnci		Nm/arcmin	15 ~ 200	6	14	27	60	140	240
Max. Radial Force / Max. Radyal Yük	$F_{2rB}$	N	15 ~ 200	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force / Max. Aksiyel Yük	$F_{2aB}$	N	15 ~ 200	590	1,600	3,400	4,650	7,800	25,500
Service Life / Hizmet Ömrü	$L_{H}$	hr	15 ~ 200	S5 Döngüsel Çalışma: >30,000 (S1 Sürekli Çalışma: >15,000 saat) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
Efficiency / Verim	$\eta$	%	15 ~ 200	≥ 92					
Operating Temperature / Çalışma Sıcaklığı		°C	15 ~ 200	- 25° C ~ + 90° C					
Lubrication / Yağlama			15 ~ 200	Synthetic Grease / Sentetik Gres					
Protection Class / Koruma Sınıfı			15 ~ 200	IP65					
Mounting Position / Montaj Pozisyonu			15 ~ 200	Any / Her Yönde					
Noise Level / Ses Seviyesi		dB	15 ~ 200	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight / Ağırlık ±3%		Kg	15 ~ 200	1.8	5.8	12	22.8	43.9	78.5

#### ■ Mass Moments of Inertia / Atalet Ağırlık Momenti (kg.cm<sup>2</sup>)

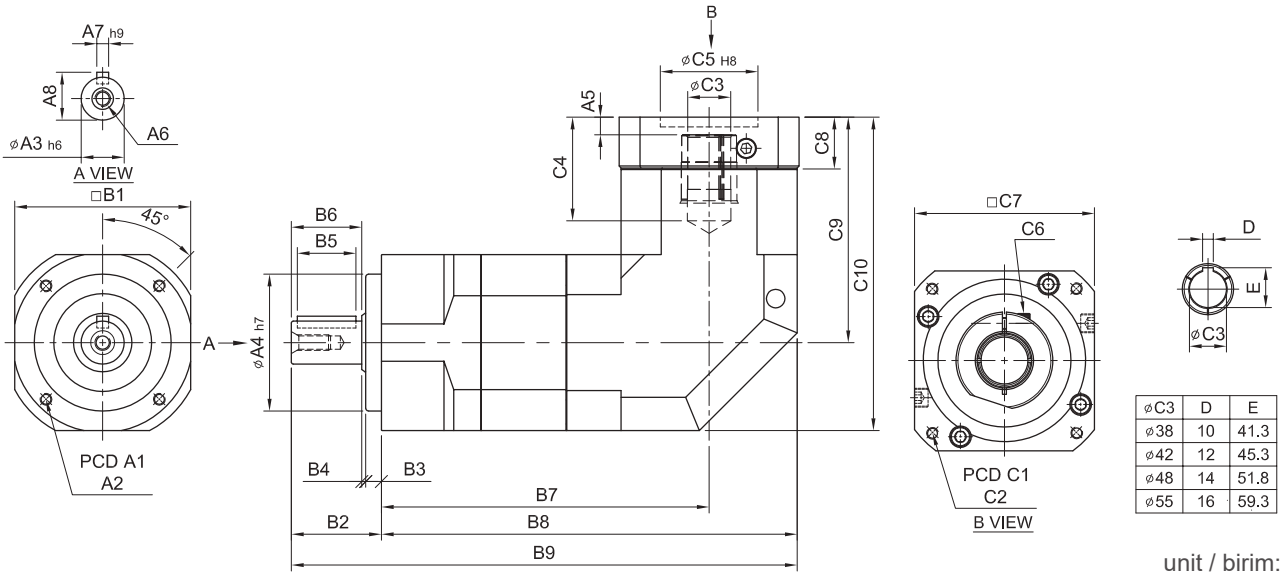
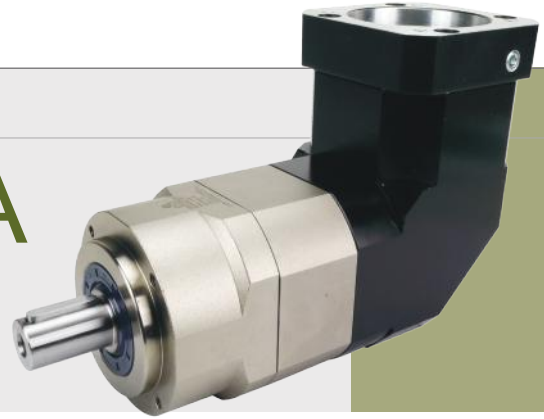
Ratio / Çevrim	62	90	120	142	180	220
15	0.09	0.36	6.28	6.85	26.2	70.1
20	0.09	0.36	6.28	6.85	26.2	70.1
25	0.09	0.36	2.28	6.85	23.1	68.2
30	0.09	0.36	2.28	6.85	23.1	68.2
35	0.09	0.36	2.28	6.85	23.1	68.2
40	0.09	0.36	2.28	6.85	23.1	68.2
50	0.09	0.36	2.28	6.85	23.1	68.2
60	0.09	0.36	2.28	6.85	23.1	68.2
70	0.09	0.36	2.28	6.85	23.1	68.2
80	0.09	0.36	2.28	6.85	23.1	68.2
90	0.09	0.36	2.28	6.85	23.1	68.2
100	0.09	0.36	2.28	6.85	23.1	68.2
120	0.03	0.1	1.88	6.2	21.2	65.1
140	0.03	0.1	1.88	6.2	21.2	65.1
160	0.03	0.1	1.88	6.2	21.2	65.1
180	0.03	0.1	1.88	6.2	21.2	65.1
200	0.03	0.1	1.88	6.2	21.2	65.1

# SERVOBOX

## MODEL : SEL-A

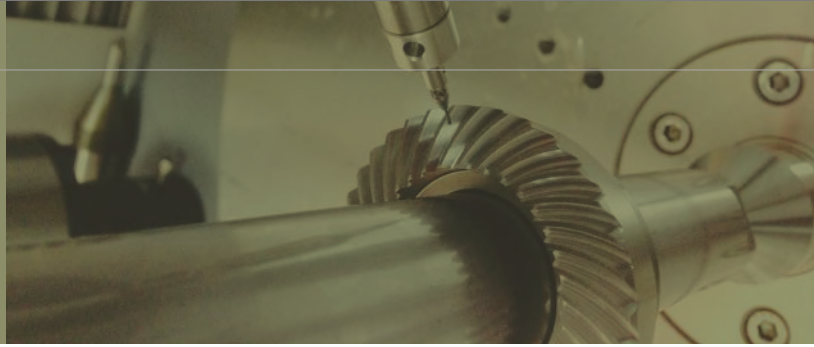
2-Stage / Kademe

RATIO / ÇEVİRİM : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80  
90, 100, 120, 140, 160, 180, 200



unit / birim: mm

Model Code	44A	62A	90A	120A	142A	180A	220A
<b>A</b>							
A1	44	62	82	110	140	184	218
A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M16 x P2.0
A3	13	16	22	32	40	55	75
A4	35	50	70	90	120	160	180
A5	6	6	9 · 23.5	10 · 20	10	12.5 · 14.5	12.5 · 14.5
A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
A7	5	5	6	10	12	16	20
A8	15	18	24.5	35	43	59	79.5
<b>B</b>							
B1	44	62	90	120	142	180	220
B2	26	36	46	65	92	106	139
B3	5	7	8	12	15	20	30
B4	1	1	2	3	3	4	5
B5	15	20	30	40	65	70	90
B6	20	28	36	50	74	82	104
B7	102	118.3	167.6	204	232	304.6	324.6
B8	124	149.3	212.6	264	303	394.6	434.6
B9	150	185.3	258.6	329	395	500.6	573.6
<b>C</b>							
C1	46 · 60 · 63	70 · 75 · 90	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 200	200 · 215 · 265	200 · 265 · 300
C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12	M10 · M12 · M16	M12 · M16
C3	8 · 9 · 11	14 · 19	19 · 22 · 24	24 · 28 · 32	28 · 32 · 35	38 · 42 · 48 · 55	42 · 48 · 55
C4	27	33.5 · 41.5	53 · 67.5	67 · 77	85	117 · 119	117 · 119
C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180	114.3 · 180 · 230	114.3 · 230 · 250
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 150 · 190	182 · 200 · 250	220 · 250 · 265
C8	16	21.5	26.5 · 41	35.5 · 45.5	35.5	45.5 · 47.5	45.5 · 47.5
C9	61	77 · 85	115.3 · 129.8	141 · 151	174	235 · 237	235 · 237
C10	83	108 · 116	160.3 · 174.8	201 · 211	245	325 · 327	345 · 347



Model No.		Unit/Birim	Ratio Çevrim	44A	62A	90A	120A	142A	180A	220A
Nominal output torque / Nominal Çıkış Torku	$T_{2N}$	Nm	15	19	59	165	335	625	1,206	2,030
			20	16	51	146	300	555	1,069	1,804
			25	16	48	160	333	618	1,189	2,010
			30	15	45	151	311	583	1,118	1,911
			35	15	45	149	309	573	1,108	1,870
			40	14	43	143	298	553	1,070	1,824
			50	16	48	160	333	618	1,189	2,010
			60	15	45	151	311	583	1,118	1,911
			70	15	45	149	309	573	1,108	1,870
			80	14	43	143	298	553	1,070	1,824
			90	13	44	145	278	516	993	1,694
			100	14	43	141	294	549	1,059	1,779
			120	15	45	151	311	583	1,118	1,911
			140	15	45	149	309	573	1,108	1,870
			160	14	43	143	298	553	1,070	1,824
			180	13	44	145	278	516	993	1,694
200	14	43	141	294	549	1,059	1,779			
Max. Acceleration Torque / Max. İvmelenme Torku	$T_{2B}$	Nm	15 ~ 200	1.8 Times of Rated Output Torque / 1,8 x Nominal Çıkış Torku						
Max. Output Torque / Max. Çıkış Torku	$T_{2NOT}$	Nm	15 ~ 200	3 Times of Rated Output Torque / 3 x Nominal Çıkış Torku						
Rated Input Speed / Nominal Giriş Devri	$n_{1N}$	rpm	15 ~ 200	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed / Max. Giriş Devri	$n_{1B}$	rpm	15 ~ 200	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps / Min. Boşluk Oranı		arcmin	15 ~ 200	-	-	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Backlash P0 / Düşük Boşluk Oranı		arcmin	15 ~ 200	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P1 / Azaltılmış Boşluk Oranı		arcmin	15 ~ 200	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Backlash P2 / Standart Boşluk Oranı		arcmin	15 ~ 200	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
Torsional Rigidity / Burulma Direnci		Nm/arcmin	15 ~ 200	3	6	14	27	60	140	240
Max. Radial Force / Max. Radyal Yük	$F_{2rB}$	N	15 ~ 200	380	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force / Max. Aksiyel Yük	$F_{2aB}$	N	15 ~ 200	190	590	1,600	3,400	4,650	7,800	25,500
Service Life / Hizmet Ömrü	$L_{H1}$	hr	15 ~ 200	S5 Döngüsel Çalışma: >30,000 (S1 Sürekli Çalışma: >15,000 saat) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency / Verim	$\eta$	%	15 ~ 200	≥ 92						
Operating Temperature / Çalışma Sıcaklığı		°C	15 ~ 200	-25° C ~ +90° C						
Lubrication / Yağlama			15 ~ 200	Synthetic Grease / Sentetik Gres						
Protection Class / Koruma Sınıfı			15 ~ 200	IP65						
Mounting Position / Montaj Pozisyonu			15 ~ 200	Any / Her Yönde						
Noise Level / Ses Seviyesi		dB	15 ~ 200	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight / Ağırlık ±3%		Kg	15 ~ 200		2.9	8	12	22.6	51.7	94.5

#### ■ Mass Moments of Inertia / Atalet Ağırlık Momenti (kg.cm<sup>2</sup>)

Ratio / Çevrim	44A	62A	90A	120A	142A	180A	220A
15	0.09	0.36	2.28	6.85	23.45	55.2	80.2
20	0.09	0.36	2.28	6.85	23.45	55.2	80.2
25	0.09	0.36	2.28	6.85	23.45	50.4	76.5
30	0.09	0.36	2.28	6.85	23.5	50.4	76.5
35	0.09	0.36	2.28	6.85	23.5	50.4	76.5
40	0.09	0.36	2.28	6.85	23.5	50.4	76.5
50	0.09	0.36	2.28	6.85	23.5	50.4	76.5
60	0.09	0.36	2.28	6.85	23.5	50.4	76.5
70	0.09	0.36	2.28	6.85	23.5	50.4	76.5
80	0.09	0.36	2.28	6.85	23.5	50.4	76.5
90	0.09	0.36	2.28	6.85	23.5	50.4	76.5
100	0.09	0.36	2.28	6.85	23.5	50.4	76.5
120	0.03	0.08	1.88	6.2	21.8	48.7	74.2
140	0.03	0.08	1.88	6.2	21.8	48.7	74.2
160	0.03	0.08	1.88	6.2	21.8	48.7	74.2
180	0.03	0.08	1.88	6.2	21.8	48.7	74.2
200	0.03	0.08	1.88	6.2	21.8	48.7	74.2