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HP60 planetary
25 November 2008



PARVALUX®

www.parvalux.com

Product overview

visit www.parvalux.com for more details

ermec@ermec.com

Product overview			DC brushless (PBL)				DC permanent magnet (PM)						AC induction (SD)							
visit www.parvalux.com for more details																				
	Type Code	Shaft Orientation	Power (Watts)*		Speed (rpm)		Torque (Nm)**		Power (Watts)*		Speed (rpm)		Torque (Nm)**		Power (Watts)*		Speed (rpm)		Torque (Nm)**	
			Max		Max		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
motors only																				
	PBL/PM/SD	In-line	440		4000		0.06	1.4	7.5	450	1500	5000	0.05	1.1	3.7	250	900	2800	0.025	1.3
worm																				
	S	90°	84		640 [‡]		0.2	3.5	7.5	90	21	970	0.2	4.0	3.7	120	13	680	0.06	4.5
	M	90°	220		480 [‡]		0.7	11.8	23	280	21	970	0.5	11.7	10	190	12	680	0.36	11.4
	L	90°	346		432 [‡]		0.7	19.2	45	450	25	780	0.9	18.7	100	250	15	546	1.9	17
	LS	90°	346		432 [‡]		0.7	19.2	45	450	25	780	0.9	18.7	100	250	15	546	1.9	17
	G	90°	440		240 [‡]		6.6	50	80	450	20	240	4.6	45.1	-	-	-	-	-	-
double worm																				
	SS	90° / In-line	-		-		-	-	7.5	60	0.5	150	0.8	5.9	3.7	120	0.32	40	0.34	5.9
	MM	90° / In-line	-		-		-	-	23	60	0.3	59	5	11.8	8	190	0.5	30	1.1	11.8
in-line double worm																				
	SIW	In-line	136		102 [‡]		2.5	11.3	7.5	90	1	235	0.6	11.3	8	60	1	164	0.4	11.3
	MIW	In-line	184		77 [‡]		3.2	28	23	120	1	235	1.7	28	8	120	1	164	0.5	28
	LIW	In-line	new for 2009					33	200	1	108	4.7	45	35	190	1.1	75	4.3	45	
in-line spur																				
	SIS	In-line	-		-		-	-	7.5	90	5	182	0.9	7.9	8	60	3	127	1.24	7.9
	MIS	In-line	-		-		-	-	33	200	15	623	1	37	35	120	14	436	1	45
	LIS	In-line	-		-		-	-	23	280	4	667	1	86	10	190	2.6	467	1	100
worm spur																				
	SWS	90°	52		67 [‡]		3.6	11	7.5	60	1	101	1.5	11	25	25	1	71	1.9	11
	MWS	90°	134		98 [‡]		3.3	45	7.5	90	1	149	1	45	60	60	0.65	106	1.1	45
	LWS	90°	184		80 [‡]		3.4	100	23	450	0.4	80	4	100	190	190	0.22	90	1	100
	GWS	90°	184		44 [‡]		19.4	250	60	450	0.5	71	16	250	250	250	0.4	50	2	250
planetary																				
	PG36	In-line	-		-		-	-	3.8	11	3	674	0.05	0.3	-	-	-	-	-	-
	HP42	In-line	new for 2009					new for 2009					-	-	-	-	-	-	-	
	PG45	In-line	-		-		-	-	11	14	5	863	0.1	10	-	-	-	-	-	-
	PG56	In-line	-		-		-	-	3.7	59	3	694	0.1	30	-	-	-	-	-	-
	HP60	In-line	220		1000		0.4	30	23	788	1	1000	0.52	30	-	-	-	-	-	-
	HP86	In-line	new for 2009					new for 2009					-	-	-	-	-	-	-	
extras			Variable speed AC, DC series and DC shunt wound motor technologies also available; call for details.																	

Variable speed AC, DC series and DC shunt wound motor technologies also available; call for details.

extras



tachogenerator



encoder



terminal box



brake



controller

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* Continuous rated power | ** Continuous output torque | [‡] Other ratios available on request | [‡] 17mm diameter shaft available with ratios 115:1 and 56:1

Standard options

fixing base (B)	shaft length (mm)	shaft dia. (mm)			shaft output			flange PCD (mm)			International standard flanges		
		single	double	hollow (H)	flat	keyway	custom	standard	optional (F)	3-point (3P)	IEC	NEMA	metric
-	-	○	○	-	-	-	-	●	-	-	○	○	○
-	29	8	8	-	●	○	○	41.3	-	42	-	-	-
○	52	12	12	8	○	●	○	47.6	80	50.8	-	-	-
○	51	15	15	15	○	●	○	57.1	100	72	-	-	-
-	51	25	25	15	○	●	○	-	-	-	-	-	-
-	75	25	25	15	○	●	○	-	-	-	-	-	-
-	29	8	8	-	●	○	○	41.3	-	42	-	-	-
○	52	12	12	8	○	●	○	47.6	80	50.8	-	-	-
●	29	9	-	-	●	○	○	41.3	-	-	-	-	-
●	52	12	-	-	○	●	○	47.6	-	-	-	-	-
●	51	15	-	-	○	●	○	57.1	-	-	-	-	-
●	25.5	10	-	-	●	○	○	41.3	77.2	-	-	-	-
●	51	14	-	-	○	●	○	48	-	-	-	-	-
●	51	15	-	-	○	●	○	70	-	-	-	-	-
●	32	10	10	-	●	○	○	-	-	-	-	-	-
●	51	14	14	-	○	●	○	48	-	-	-	-	-
●	51	15 [†]	15 [†]	-	○	●	○	70	-	-	-	-	-
●	76	25	25	15	○	●	○	75	-	-	-	-	-
-	20	10	-	-	●	○	○	28	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	27	10	-	-	○	●	○	35	-	-	-	-	-
-	28	12	-	-	○	●	○	45	-	-	-	-	-
-	30	15	-	-	○	●	○	45	-	-	○	○	○
-	-	-	-	-	-	-	-	-	-	-	-	-	-

Call for details of our other options and bespoke application solutions.



3-point fixing (3P)



optional flange (F)



hollow shaft (H)



fixing base (B)

KEY: ● as standard ○ optional

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E&OE (errors and omissions excepted); in line with our policy of continuous improvement all data is subject to change. All drawings and product representations enclosed herein are not to scale.

engineering reliability into every product for over sixty years

Founded in 1947, as one of the UK's first manufacturers of small geared motors, Parvalux has built a tremendous reputation for offering one of the worlds most extensive and reliable ranges of customisable AC and DC geared motor units. Today, Parvalux continues to be a successful, privately-owned and run British business with distributors in 22 countries.

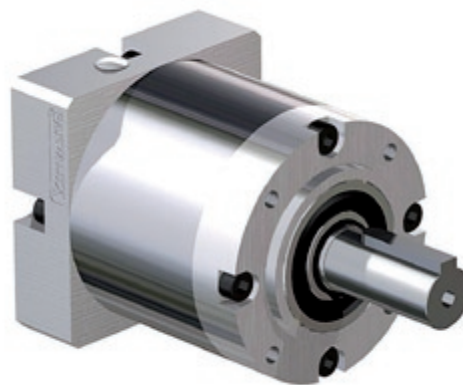


ISO 9001:2000 Certificate No. FM2171

HP60 gearbox

PARVALUX®

TYPE	60mm cylinder planetary
OPERATING TEMPERATURE	-30°C to +120°C*
AMBIENT TEMPERATURE	-30°C to +40°C
PROTECTION	IP65
LUBRICATION	Grease lubricated for life
ROTATION DIRECTION	As input direction
RATED INPUT SPEED	4000 rpm
MAX INPUT SPEED	6000 rpm
PRESS FIT MAX FORCE	750 N
GEARS	Alloy steel or composite on request
INPUT FLANGE	Servo-coupling or direct-fit on request
SERVICEABLE LIFETIME	1,000 hours at full load at rated input speed, rising to 15,000+ hours for low-wear applications



stage 1 HP60 gearbox pictured with metric flange

Stages	Efficiency (%)	Continuous Torque (Nm)	Peak Torque (Nm)	Backlash (Arcmin)	Weight (kg)	Radial Load (N)	Axial Load (N)
1	≤97	5	10	≤20	1.02	250	75
2	≤94	15	25	≤30	1.25	400	125
3	≤91	30	40	≤40	1.54	550	175
4	≤88	30	40	≤50	1.78	725	225

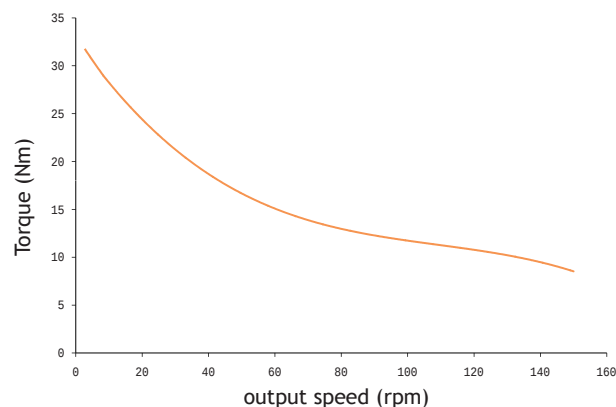
* max. operating temp. +70°C for Delrin gears

standard ratios

(other ratios available on request)

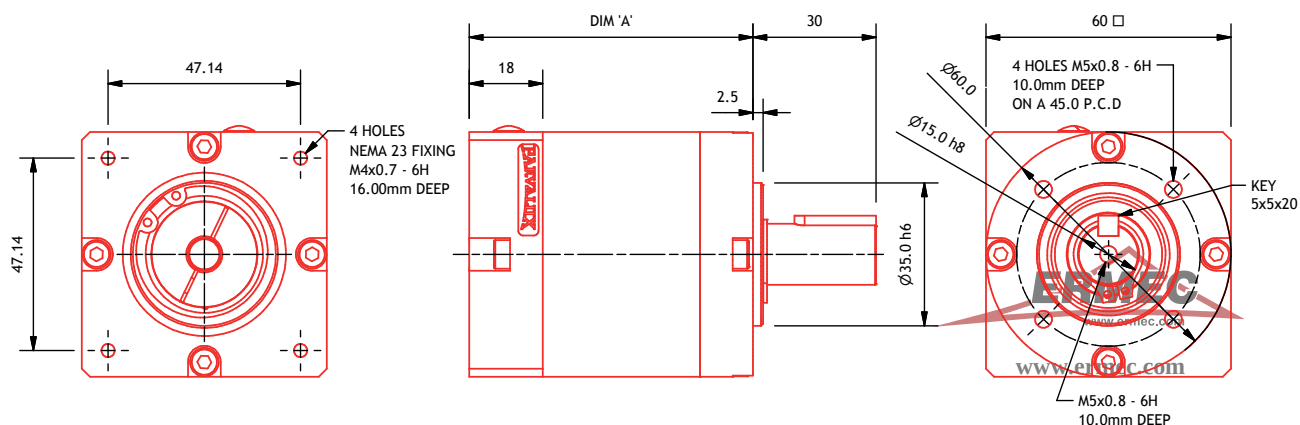
1 stage	2 stage	3 stage	4 stage
4	16	64	348
5 (4.75)	19	76	456
6	24	96	532
7	28	112	576
	36	133	684
	42	144	798
	49	168	931
		196	1026
		252	1296
		294	1512
		343	1764
			2058

Torque/speed characteristics | 4000rpm at full load



Option: servo-coupling

Available with a standard clamped-segment servo-coupling to enable simple fitting and re-fitting to a motor. Permanently enables zero backlash at point of coupling. Standard motor shaft dimensions: 8mm dia. x 15mm long (from front fixing face of motor), location spigot must be less than 38.1mm. Other bore sizes available on request (max dia. 9.52mm).





stage 1 HP60 speed reducer pictured

TYPE	60mm cylinder planetary
OPERATING TEMPERATURE	-30°C to +120°C*
AMBIENT TEMPERATURE	-30°C to +40°C
PROTECTION	IP65
LUBRICATION	Grease lubricated for life
ROTATION DIRECTION	As input direction
RATED INPUT SPEED	4000 rpm
MAX INPUT SPEED	6000 rpm
PRESS FIT MAX FORCE	750 N
GEARS	Alloy steel or composite on request
INPUT/OUTPUT FLANGE	Parvalux, NEMA, metric, IEC B14, custom
SERVICEABLE LIFETIME	1,000 hours at full load at rated input speed, rising to 15,000+ hours for low-wear applications

Stages	Dimension 'A' (mm)	Efficiency (%)	Continuous Torque (Nm)	Peak Torque (Nm)	Backlash (Arcmin)	Weight (kg)	Radial Load (N)	Axial Load (N)
1	64	≤97	5	10	≤20	1.07	250	75
2	80.5	≤94	15	25	≤30	1.30	400	125
3	97	≤91	30	40	≤40	1.59	550	175
4	113.5	≤88	30	40	≤50	1.83	725	225

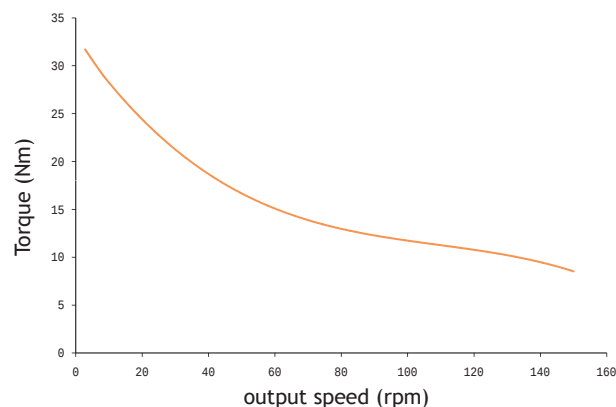
* max. operating temp. +70°C for Delrin gears

standard ratios

(other ratios available on request)

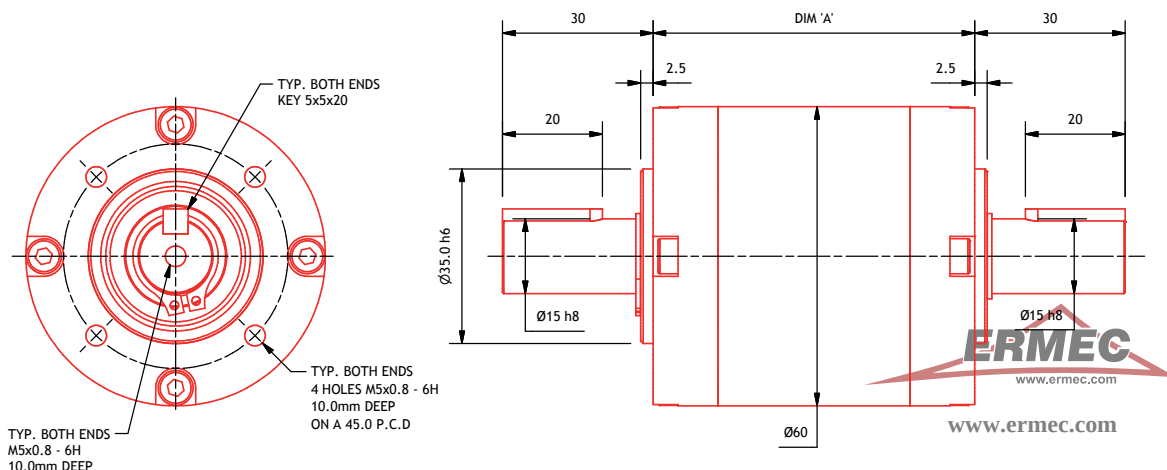
1 stage	2 stage	3 stage	4 stage
4	16	64	348
5 (4.75)	19	76	456
6	24	96	532
7	28	112	576
	36	133	684
	42	144	798
	49	168	931
		196	1026
		252	1296
		294	1512
		343	1764
			2058

Torque/speed characteristics | 4000rpm at full load



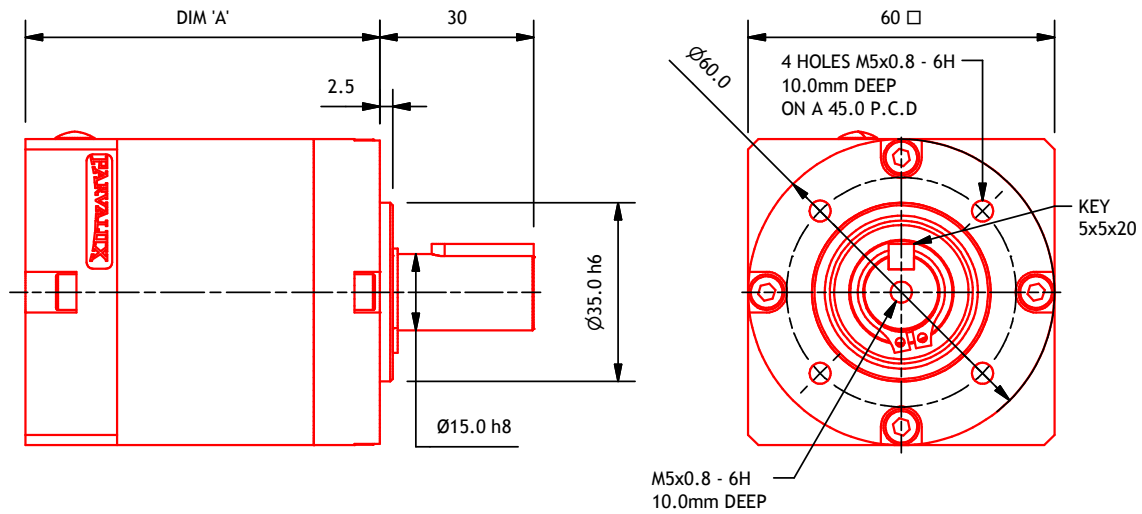
Option: customised input/output flanges

Available with customised input/output flanges and fixing arrangements; Metric standard; NEMA square; IEC B14 (56mm, 63mm & 71mm) sizes and other standard and non-standard fixing arrangements.

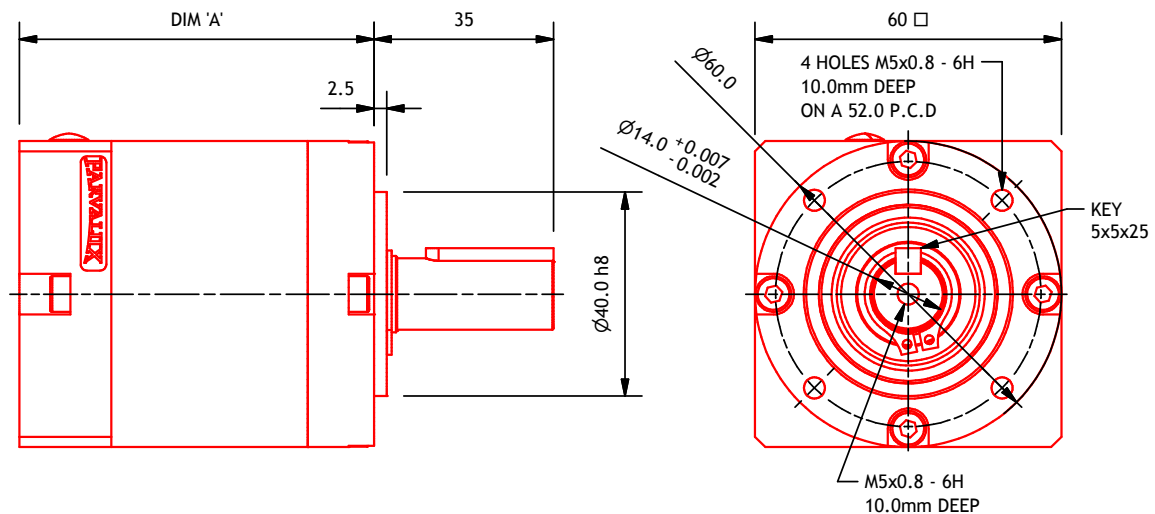


HP60 flange options 1

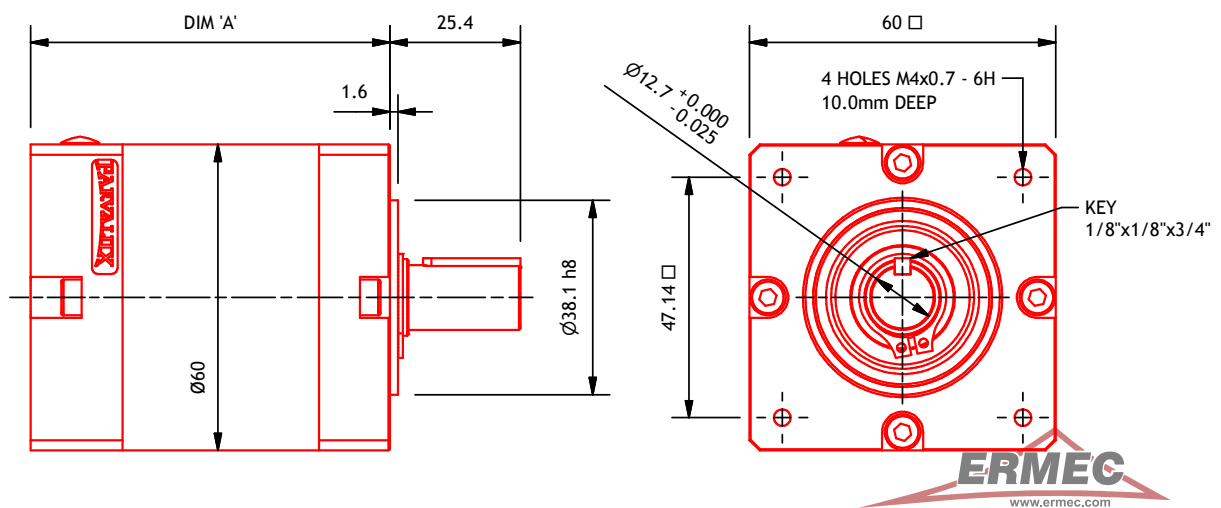
Parvalux standard flange/mount



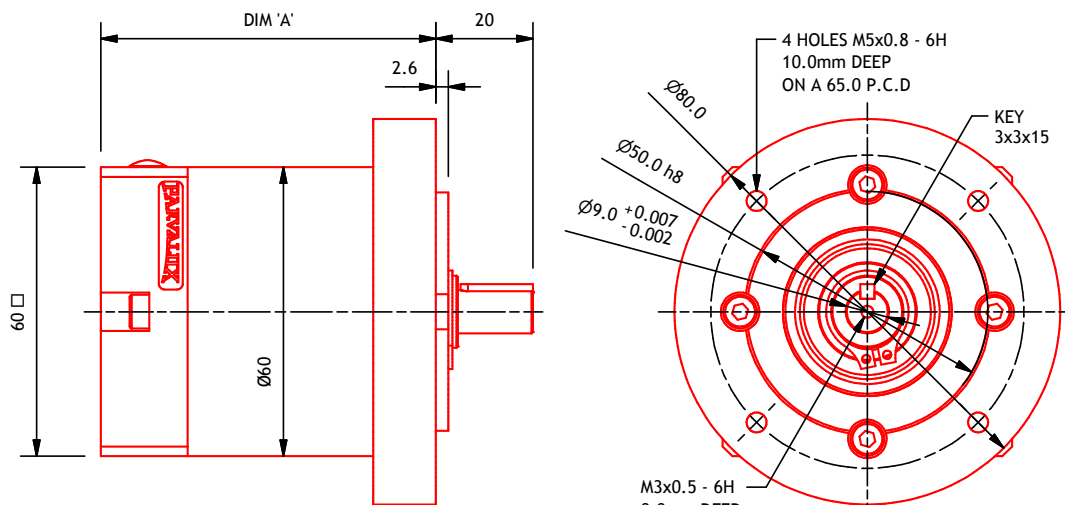
Metric flange/mount



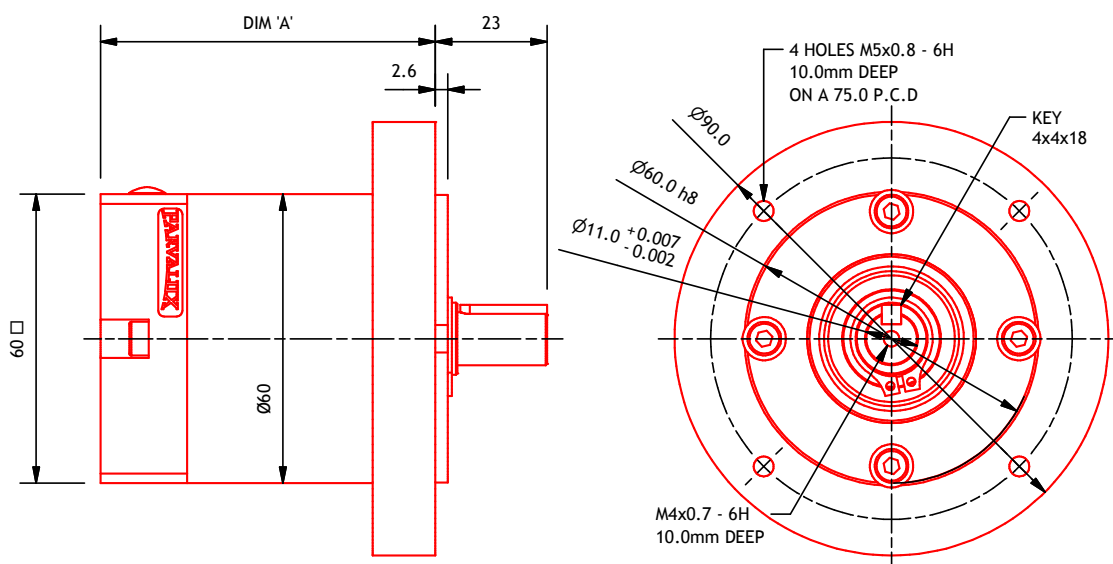
NEMA standard flange/mount



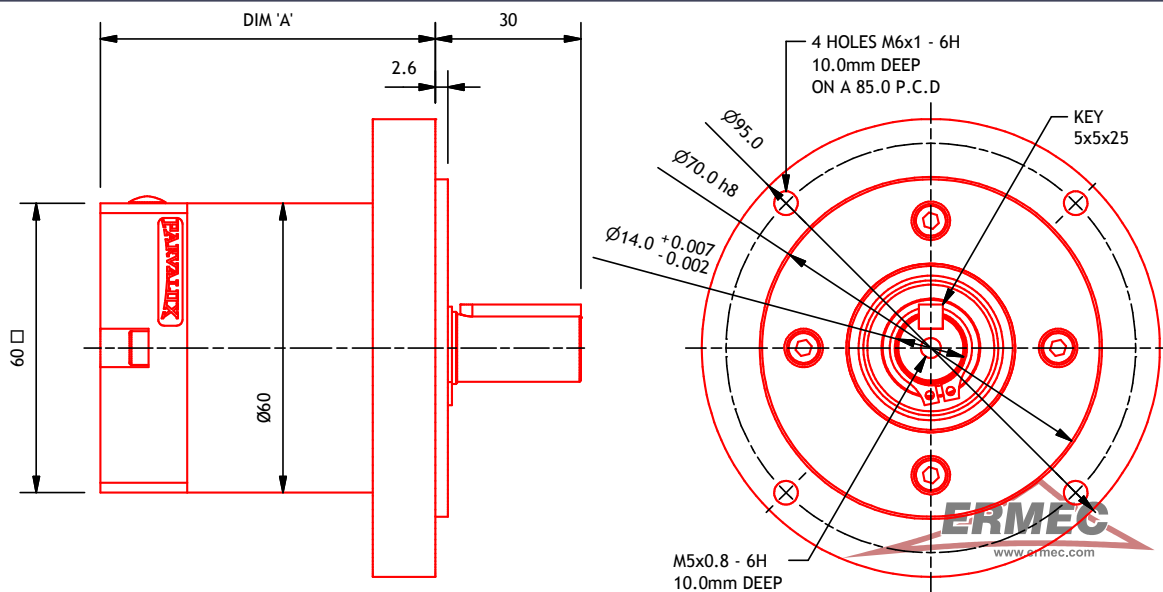
IEC (M56) standard flange/mount



IEC (M63) standard flange/mount



IEC (M71) standard flange/mount



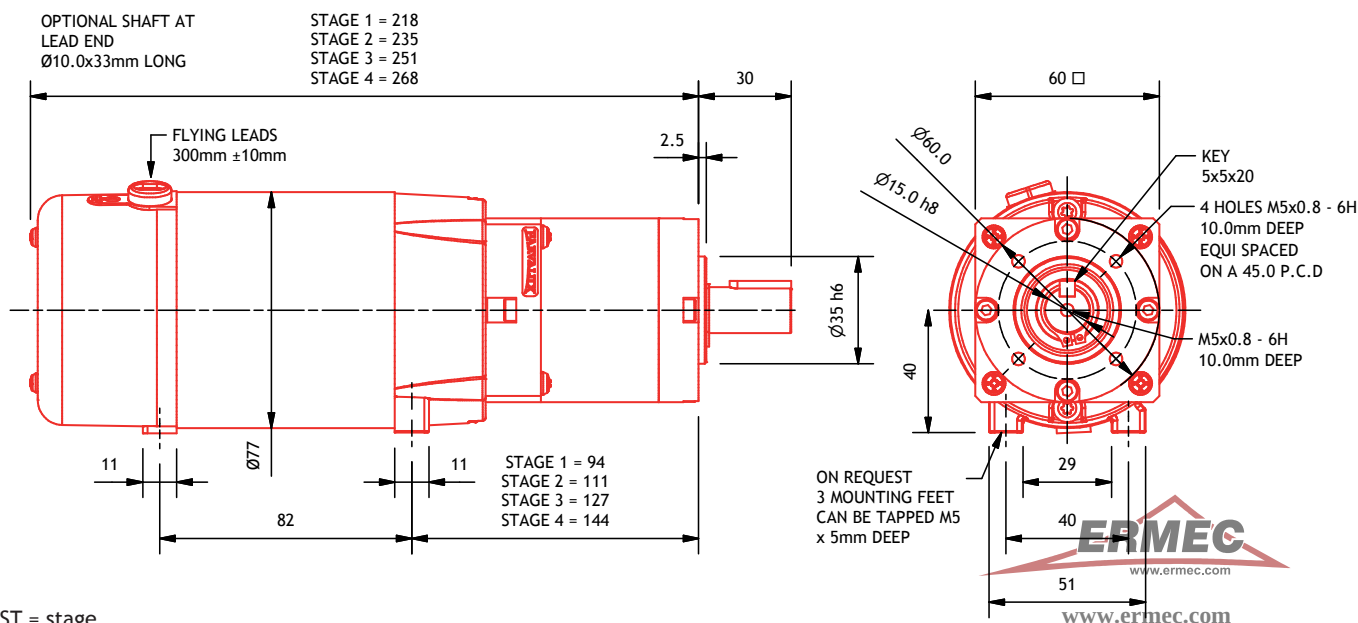
PM1HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP22
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	45 - 200 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.13kg (ST1); 3.36kg (ST2); 3.65kg (ST3); 3.89kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		45	60	90	120	TORQUE (Nm)		
Motor Power 1 Hour (W)		55	75	110	150			
Motor Power 15 Min (W)		75	100	150	200			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.1	1.3	1.8
5	1	316	421	632	842	1.3	1.6	2.2
6	1	250	333	500	667	1.6	2	2.7
7	1	214	286	429	571	1.9	2.3	3.2
16	2	94	125	188	250	4.1	5	5.8
24	2	63	83	125	167	6.2	7.6	8.1
28	2	54	71	107	143	7.2	8.8	9.1
36	2	42	56	83	111	9.3	10.9	10.9
49	2	31	41	61	82	12.6	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

PM2HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP22
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	60 - 265 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.48kg (ST1); 3.71kg (ST2); 4.00kg (ST3); 4.24kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue

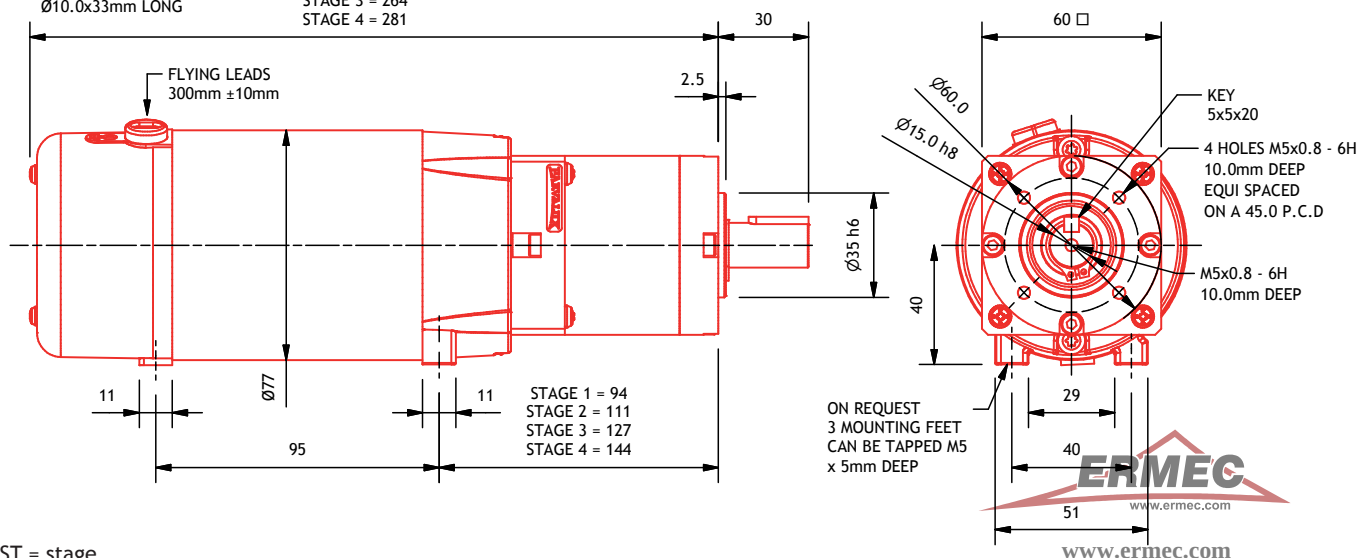


stage 1 HP60 gearbox pictured

Motor Power Cont (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	130	200	265			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.5	1.8	2.4
5	1	300	400	600	800	1.7	2.2	2.9
6	1	250	333	500	667	2.2	2.7	3.6
7	1	214	286	429	571	2.5	3.2	4.2
16	2	94	125	188	250	5.5	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33

OPTIONAL SHAFT AT
LEAD END
Ø10.0x33mm LONG

STAGE 1 = 231
STAGE 2 = 248
STAGE 3 = 264
STAGE 4 = 281



*ST = stage

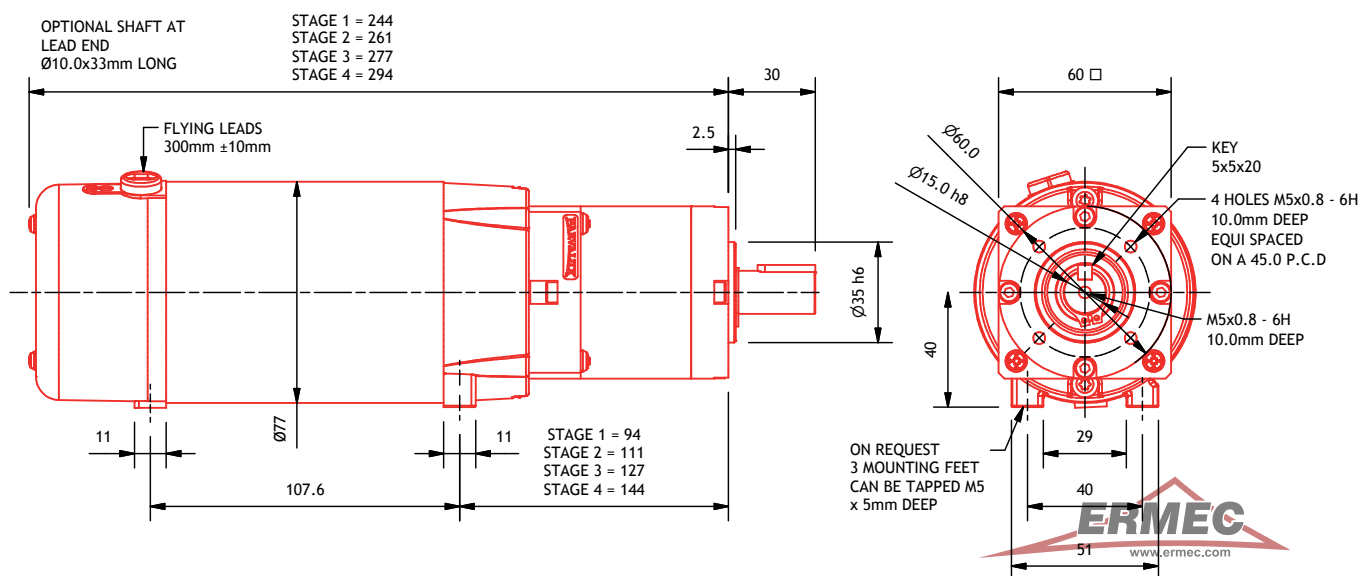
PM6HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP22
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	75 - 330 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.67kg (ST1); 3.90kg (ST2); 4.19kg (ST3); 4.43kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		75	100	150	200	TORQUE (Nm)		
Motor Power 1 Hour (W)		90	120	180	240			
Motor Power 15 Min (W)		125	165	245	330			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.8	2.2	3
5	1	300	400	600	800	2.2	2.6	3.5
6	1	250	333	500	667	2.7	3.3	4.4
7	1	214	286	429	571	3.2	3.8	5
16	2	94	125	188	250	5.8	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

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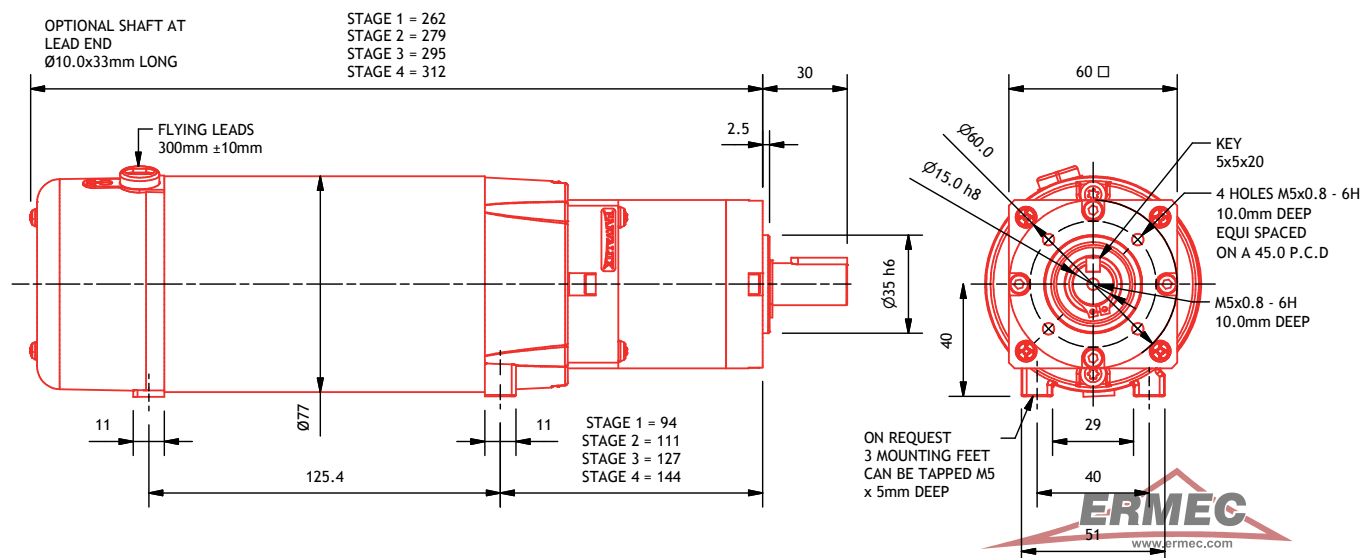
PM60HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP22
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	105 - 460 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.92kg (ST1); 4.15kg (ST2); 4.44kg (ST3); 4.68kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		105	140	210	280	TORQUE (Nm)		
Motor Power 1 Hour (W)		128	170	255	340			
Motor Power 15 Min (W)		172	230	345	460			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	2.5	3.1	4.2
5	1	300	400	600	800	3	3.7	5
6	1	250	333	500	667	3.8	4.6	5
7	1	214	286	429	571	4.4	5	5
16	2	94	125	188	250	5.8	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

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PM10HP60

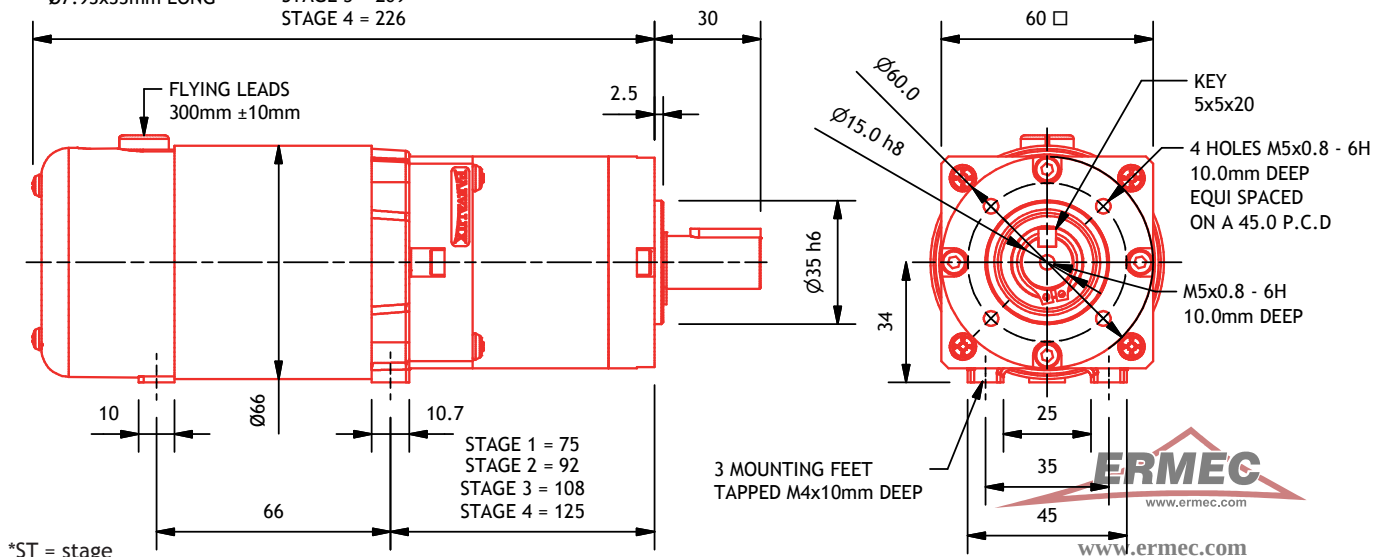
MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	23 - 100 Watts
SPEED	0.6 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	2.14kg (ST1); 2.37kg (ST2); 2.66kg (ST3); 2.90kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		23	30	45	60	TORQUE (Nm)		
Motor Power 1 Hour (W)		28	38	55	75			
Motor Power 15 Min (W)		35	50	70	100			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	0.5	0.7	0.8
5	1	316	421	632	842	0.6	0.8	1
6	1	250	333	500	667	0.8	1	1.3
7	1	214	286	429	571	1	1.2	1.5
16	2	94	125	188	250	2.1	2.5	3.2
24	2	63	83	125	167	3.1	3.8	4.8
28	2	54	71	107	143	3.6	4.4	5.6
36	2	42	56	83	111	4.6	5.7	7.2
49	2	31	41	61	82	6.3	7.7	9.8
64	3	23	31	47	63	7.8	9.5	12.1
96	3	16	21	31	42	11.7	14.3	18.2
112	3	13	18	27	36	13.6	16.7	20
144	3	10	14	21	28	17.5	21	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33

OPTIONAL SHAFT AT
LEAD END
Ø7.93x33mm LONG
STAGE 1 = 176
STAGE 2 = 193
STAGE 3 = 209
STAGE 4 = 226



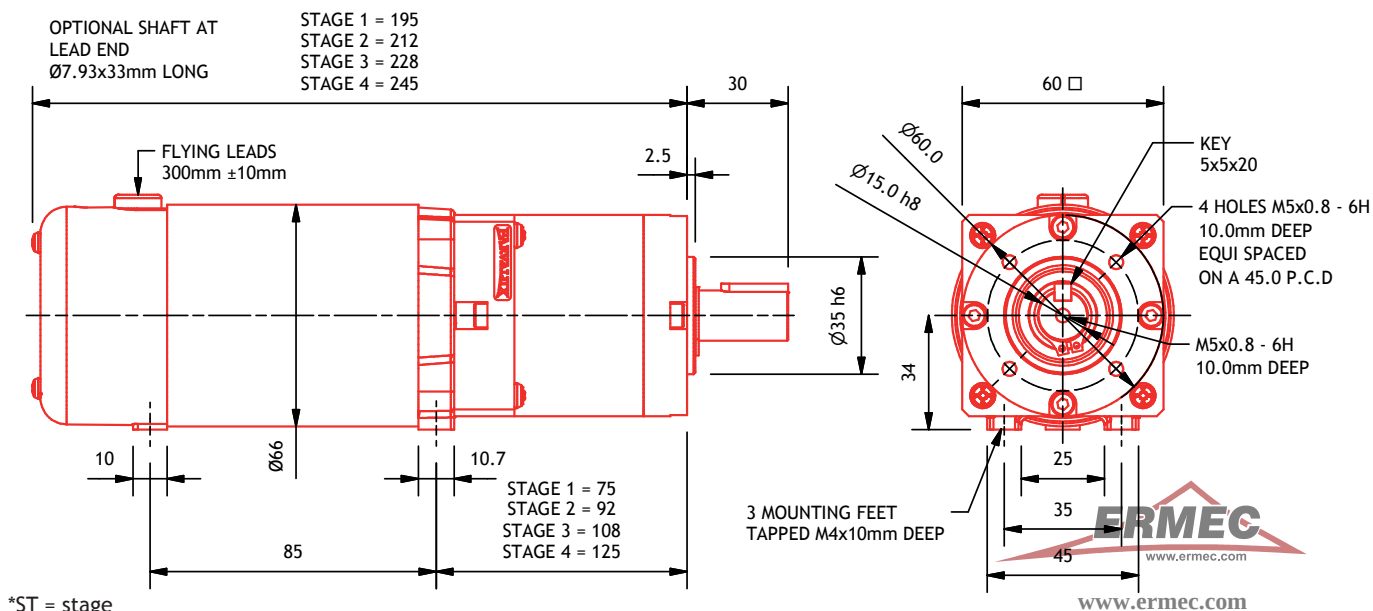
PM11HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	33 - 130 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	2.60kg (ST1); 2.83kg (ST2); 3.12kg (ST3); 3.36kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		33	45	65	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		40	55	80	110			
Motor Power 15 Min (W)		50	65	100	130			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	0.8	1	1.2
5	1	300	400	600	800	0.9	1.1	1.4
6	1	250	333	500	667	1.2	1.5	1.8
7	1	214	286	429	571	1.4	1.7	2.1
16	2	94	125	188	250	3	3.7	4.6
24	2	63	83	125	167	4.5	5.5	6.9
28	2	54	71	107	143	5.2	6.4	8
36	2	42	56	83	111	6.7	8.3	10.3
49	2	31	41	61	82	9.1	11.2	13.3
64	3	23	31	47	63	11.3	13.9	15.6
96	3	16	21	31	42	16.9	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



PM3HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	33 - 150 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.13kg (ST1); 3.36kg (ST2); 3.65kg (ST3); 3.89kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue

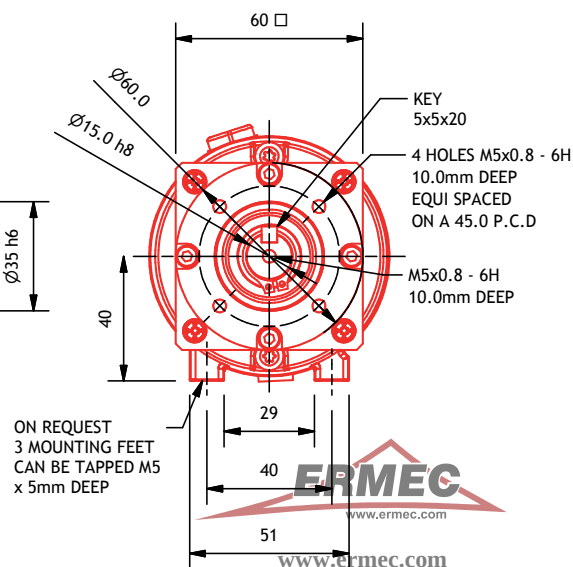
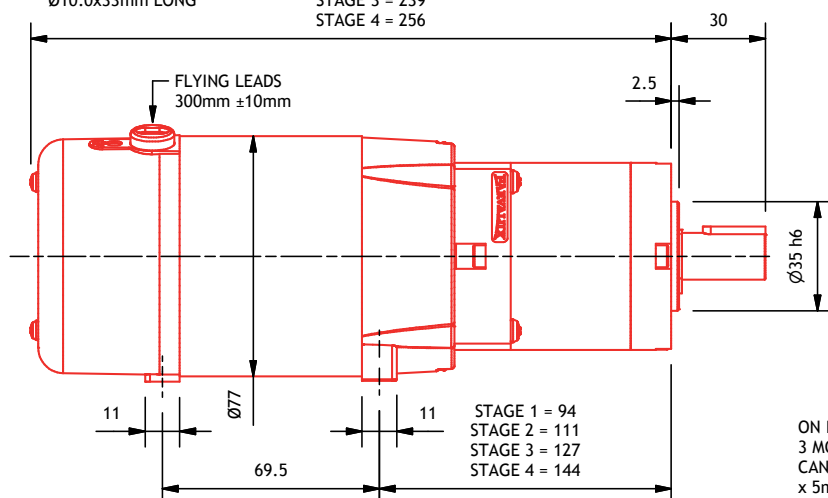


stage 1 HP60 gearbox pictured

Motor Power Cont (W)		33	45	68	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		45	60	90	120			
Motor Power 15 Min (W)		60	90	120	150			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	0.8	1.1	1.5
5	1	300	400	600	800	1	1.3	1.7
6	1	250	333	500	667	1.2	1.6	2.2
7	1	214	286	429	571	1.4	1.9	2.5
16	2	94	125	188	250	3.1	4.1	5.5
24	2	63	83	125	167	4.7	6.2	8.1
28	2	54	71	107	143	5.5	7.2	9.1
36	2	42	56	83	111	7	9.3	10.9
49	2	31	41	61	82	9.5	12.6	13.3
64	3	23	31	47	63	11.8	15.6	15.6
96	3	16	21	31	42	17.7	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33

OPTIONAL SHAFT AT
LEAD END
Ø10.0x33mm LONG

STAGE 1 = 206
STAGE 2 = 223
STAGE 3 = 239
STAGE 4 = 256



*ST = stage

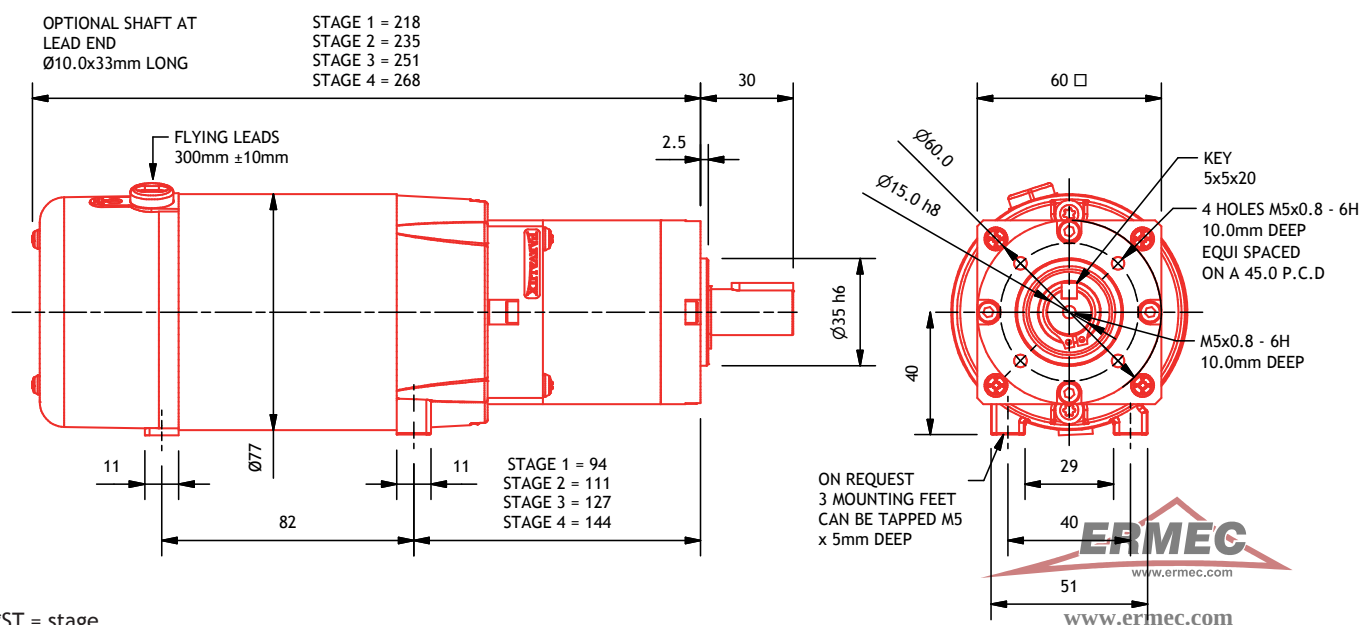
PM4HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	45 - 200 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.48kg (ST1); 3.71kg (ST2); 4.00kg (ST3); 4.24kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		45	60	90	120	TORQUE (Nm)		
Motor Power 1 Hour (W)		60	80	120	160			
Motor Power 15 Min (W)		80	120	160	200			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.1	1.5	1.9
5	1	300	400	600	800	1.3	1.7	2.3
6	1	250	333	500	667	1.6	2.2	2.9
7	1	214	286	429	571	1.9	2.5	3.4
16	2	94	125	188	250	4.1	5.5	5.8
24	2	63	83	125	167	6.2	8.1	8.1
28	2	54	71	107	143	7.2	9.1	9.1
36	2	42	56	83	111	9.3	10.9	10.9
49	2	31	41	61	82	12.6	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

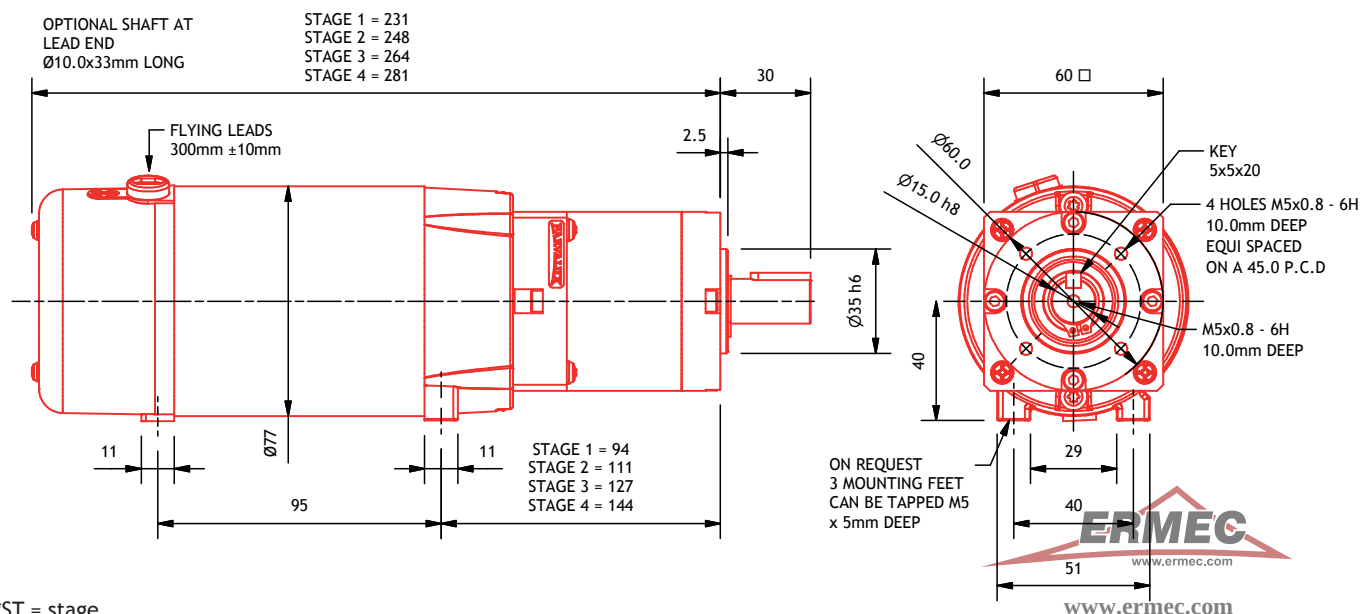
PM5HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	60 - 250 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.67kg (ST1); 3.90kg (ST2); 4.19kg (ST3); 4.43kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	150	200	250			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.5	1.8	2.4
5	1	300	400	600	800	1.7	2.2	2.9
6	1	250	333	500	667	2.2	2.7	3.6
7	1	214	286	429	571	2.5	3.2	4.2
16	2	94	125	188	250	5.5	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

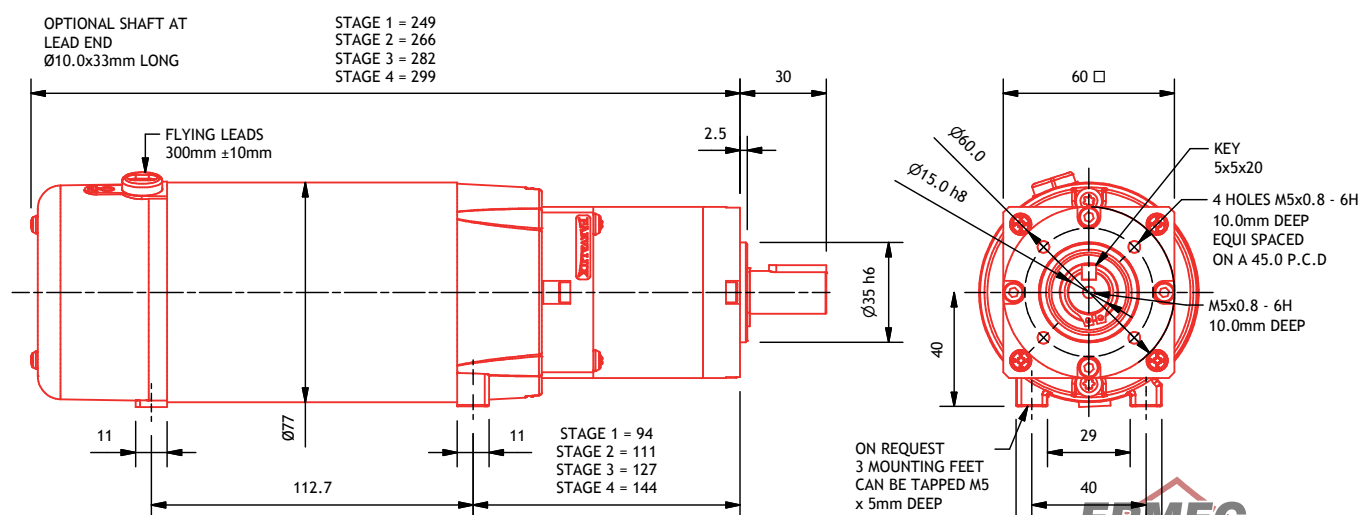
PM50HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	80 - 375 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.92kg (ST1); 4.15kg (ST2); 4.44kg (ST3); 4.68kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		80	105	155	205	TORQUE (Nm)		
Motor Power 1 Hour (W)		100	135	200	265			
Motor Power 15 Min (W)		140	185	280	375			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.9	2.4	3.4
5	1	300	400	600	800	2.2	2.9	4
6	1	250	333	500	667	2.8	3.6	5
7	1	214	286	429	571	3.3	4.2	5
16	2	94	125	188	250	5.8	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

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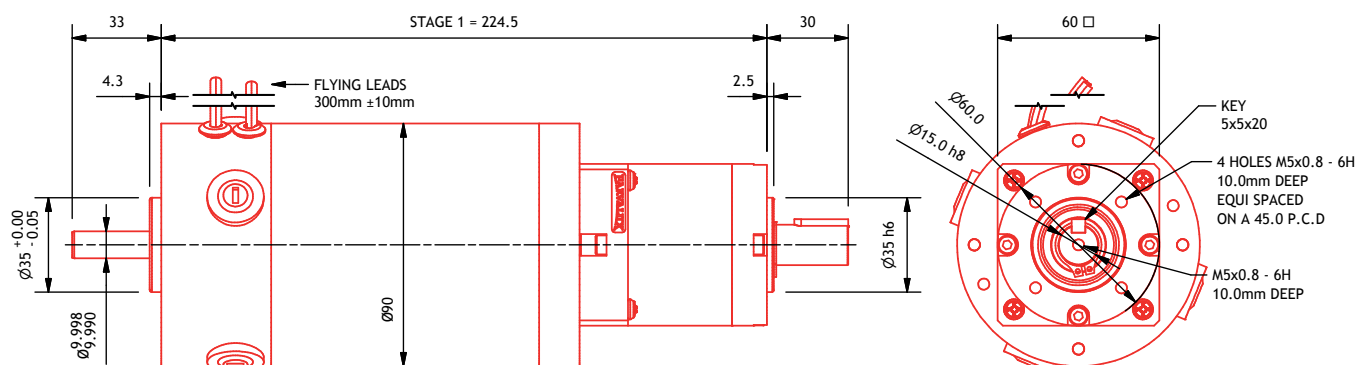
PM90HP60

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	113 - 525 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V, 24V, 36V or 48V DC
WEIGHT	4.52kg (ST1); 4.75kg (ST2); 5.04kg (ST3); 5.28kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		113	150	225	300	TORQUE (Nm)		
Motor Power 1 Hour (W)		141	188	281	375			
Motor Power 15 Min (W)		198	263	394	525			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	2.7	3.4	4.8
5	1	300	400	600	800	3.2	4	5
6	1	250	333	500	667	4.1	5	5
7	1	214	286	429	571	4.8	5	5
16	2	94	125	188	250	5.8	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

PM95HP60

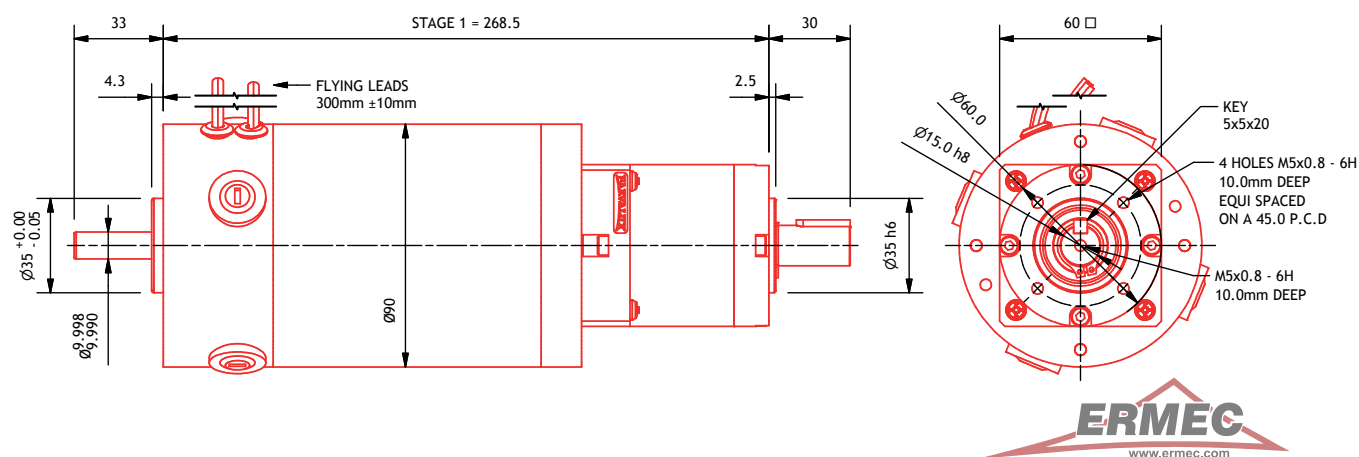
PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	168 - 788 Watts
SPEED	1 - 1000 rpm
VOLTAGE	12V, 24V, 36V or 48V DC
WEIGHT	6.02kg (ST1); 6.25kg (ST2); 6.54kg (ST3); 6.78kg (ST4)*
RADIAL LOAD	250N (ST1); 400N (ST2); 550N (ST3); 725N (ST4)*
AXIAL LOAD	75N (ST1); 125N (ST2); 175N (ST3); 225N (ST4)*
EXTRAS	See page 36 of 2009 permanent magnet catalogue



stage 1 HP60 gearbox pictured

Motor Power Cont (W)		168	225	337	450	TORQUE (Nm)		
Motor Power 1 Hour (W)		210	281	421	563			
Motor Power 15 Min (W)		294	394	590	788			
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	4.1	5	5
5	1	300	400	600	800	4.8	5	5
6	1	250	333	500	667	5	5	5
7	1	214	286	429	571	5	5	5
16	2	94	125	188	250	5.8	5.8	5.8
24	2	63	83	125	167	8	8.1	8.1
28	2	54	71	107	143	9	9.1	9.1
36	2	42	56	83	111	10.7	10.9	10.9
49	2	31	41	61	82	13	13.3	13.3
64	3	23	31	47	63	15.1	15.6	15.6
96	3	16	21	31	42	18.4	19.1	19.1
112	3	13	18	27	36	19.6	20	20
144	3	10	14	21	28	21	23	23
196	3	8	10	15	20	24	25	25
252	3	6	8	12	16	25	27	27
384	4	3.9	5.2	7.8	10	27	29	29
532	4	2.8	3.8	5.6	7.5	28	30	30
684	4	2.2	2.9	4.4	5.8	29	31	31
1026	4	1.5	1.9	2.9	3.9	30	32	32
1512	4	1	1.3	2	2.6	30	33	33



*ST = stage

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PBL60-78HP60

PARVALUX®

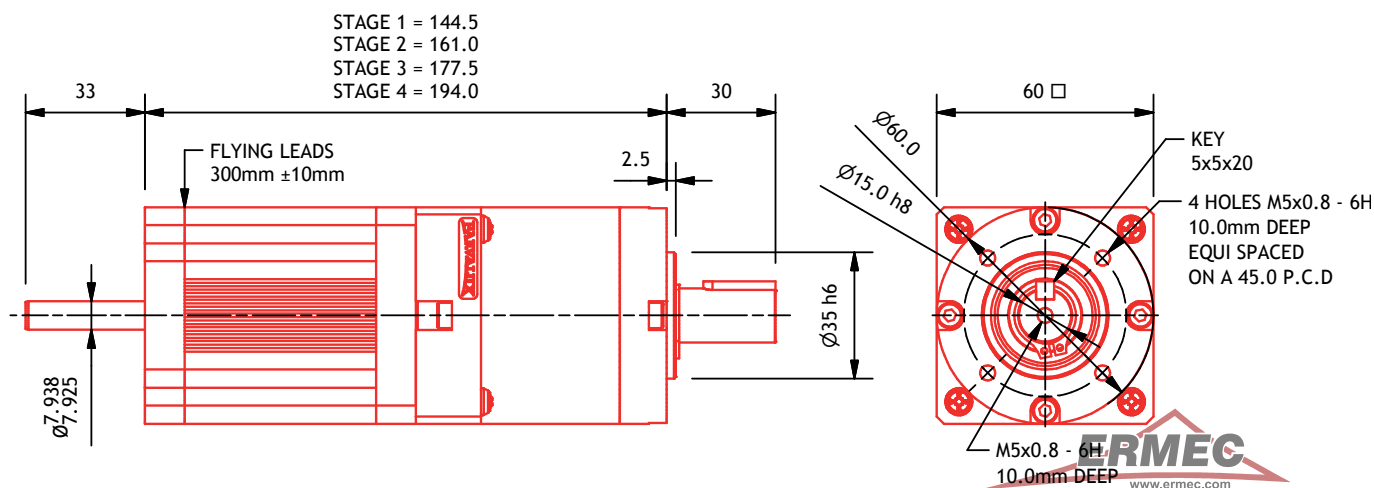
MOTOR	Brushless DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	17 - 46 Watts
SPEED*	1 - 1000 rpm
VOLTAGE	24V DC
WEIGHT	1.72kg (ST1); 1.95kg (ST2); 2.24kg (ST3); 2.48kg (ST4)* (plus an additional 0.20kg with IE model)
CONTROLLER	N (or integral with IE model)
EXTRAS	See page 18 of 2009 DC brushless catalogue



*input speed variable up to 4000 rpm

stage 1 HP60 gearbox pictured

Motor Power Cont (W)		17	23	35	46	TORQUE (Nm)		
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS up to 4000 rpm	PEAK up to 2500 rpm	15 MINUTE up to 3500 rpm
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	0.4	0.8	0.5
5	1	316	421	632	842	0.5	1	0.6
6	1	250	333	500	667	0.6	1.3	0.8
7	1	214	286	429	571	0.7	1.5	0.9
16	2	94	125	188	250	1.6	3.2	2
24	2	63	83	125	167	2.4	4.8	3
28	2	54	71	107	143	2.8	5.5	3.5
36	2	42	56	83	111	3.6	7.1	4.5
49	2	31	41	61	82	4.9	9.7	6.2
64	3	23	31	47	63	6	12	7.6
96	3	15.6	21	31	42	9	18	11.4
112	3	13.4	17.9	27	36	10.5	21	13.3
144	3	10.4	13.9	21	28	13.5	26	17.1
196	3	7.7	10.2	15.3	20	18.3	28	23
252	3	6	7.9	11.9	15.9	24	29	27
384	4	3.9	5.2	7.8	10.4	27	31	30
532	4	2.8	3.8	5.6	7.5	28	32	31
684	4	2.2	2.9	4.4	5.8	29	33	32
1026	4	1.5	1.9	2.9	3.9	30	33	33
1512	4	1	1.3	2	2.6	30	34	33



*ST = stage

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HP20

PBL60-98HP60

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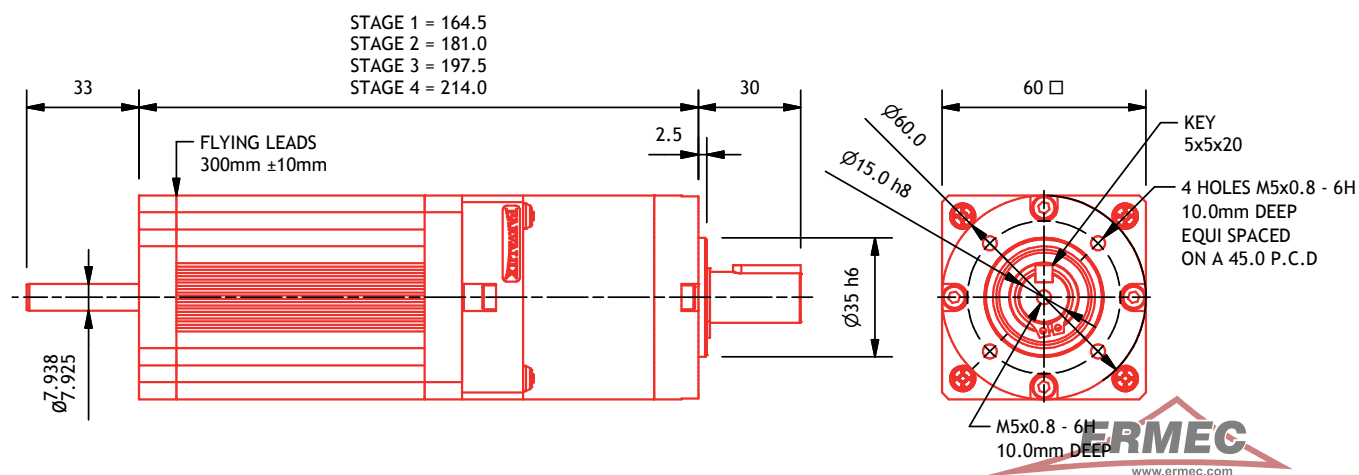
MOTOR	Brushless DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	35 - 92 Watts
SPEED*	1 - 1000 rpm
VOLTAGE	24V DC
WEIGHT	2.02kg (ST1); 2.25kg (ST2); 2.54kg (ST3); 2.78kg (ST4)* (plus an additional 0.20kg with IE model)
CONTROLLER	N (or integral with IE model)
EXTRAS	See page 18 of 2009 DC brushless catalogue



*input speed variable up to 4000 rpm

stage 1 HP60 gearbox pictured

Motor Power Cont (W)		35	46	69	92	TORQUE (Nm)		
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS up to 4000 rpm	PEAK up to 2500 rpm	15 MINUTE up to 3500 rpm
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	0.8	1.7	1.1
5	1	316	421	632	842	1	2	1.3
6	1	250	333	500	667	1.3	2.5	1.6
7	1	214	286	429	571	1.5	2.9	1.9
16	2	94	125	188	250	3.2	6.3	4
24	2	63	83	125	167	4.8	9.5	6
28	2	54	71	107	143	5.5	11.1	7.1
36	2	42	56	83	111	7.1	14.3	9.1
49	2	31	41	61	82	9.7	17.3	12.3
64	3	23	31	47	63	12	19.6	15.2
96	3	15.6	21	31	42	18	23	20
112	3	13.4	17.9	27	36	19.6	24	22
144	3	10.4	13.9	21	28	21	26	24
196	3	7.7	10.2	15.3	20	24	28	26
252	3	6	7.9	11.9	15.9	25	29	27
384	4	3.9	5.2	7.8	10.4	27	31	30
532	4	2.8	3.8	5.6	7.5	28	32	31
684	4	2.2	2.9	4.4	5.8	29	33	32
1026	4	1.5	1.9	2.9	3.9	30	33	33
1512	4	1	1.3	2	2.6	30	34	33



*ST = stage

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HP21

PBL60-118HP60

PARVALUX®

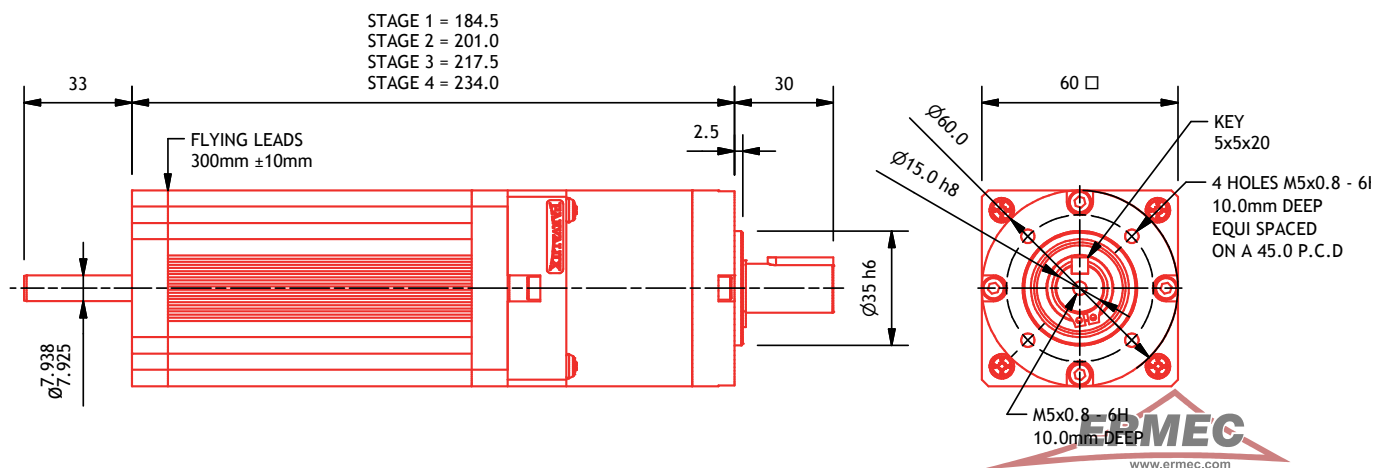
MOTOR	Brushless DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	50 - 134 Watts
SPEED*	1 - 1000 rpm
VOLTAGE	24V DC
WEIGHT	2.32kg (ST1); 2.55kg (ST2); 2.84kg (ST3); 3.08kg (ST4)* (plus an additional 0.20kg with IE model)
CONTROLLER	B (or integral with IE model)
EXTRAS	See page 18 of 2009 DC brushless catalogue



*input speed variable up to 4000 rpm

stage 1 HP60 gearbox pictured

Motor Power Cont (W)		50	67	101	134		TORQUE (Nm)	
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS up to 4000 rpm	PEAK up to 2500 rpm	15 MINUTE up to 3500 rpm
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.2	2.4	1.5
5	1	316	421	632	842	1.4	2.9	1.8
6	1	250	333	500	667	1.8	3.6	2.3
7	1	214	286	429	571	2.1	4.3	2.7
16	2	94	125	188	250	4.6	8.5	5.8
24	2	63	83	125	167	6.9	11.4	8.6
28	2	54	71	107	143	8.1	12.6	10
36	2	42	56	83	111	10.4	14.7	11.9
49	2	31	41	61	82	13	17.3	14.4
64	3	23	31	47	63	15.1	19.6	16.7
96	3	15.6	21	31	42	18.4	23	20
112	3	13.4	17.9	27	36	19.6	24	22
144	3	10.4	13.9	21	28	21	26	24
196	3	7.7	10.2	15.3	20	24	28	26
252	3	6	7.9	11.9	15.9	25	29	27
384	4	3.9	5.2	7.8	10.4	27	31	30
532	4	2.8	3.8	5.6	7.5	28	32	31
684	4	2.2	2.9	4.4	5.8	29	33	32
1026	4	1.5	1.9	2.9	3.9	30	33	33
1512	4	1	1.3	2	2.6	30	34	33



*ST = stage

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HP22

PBL60-138HP60

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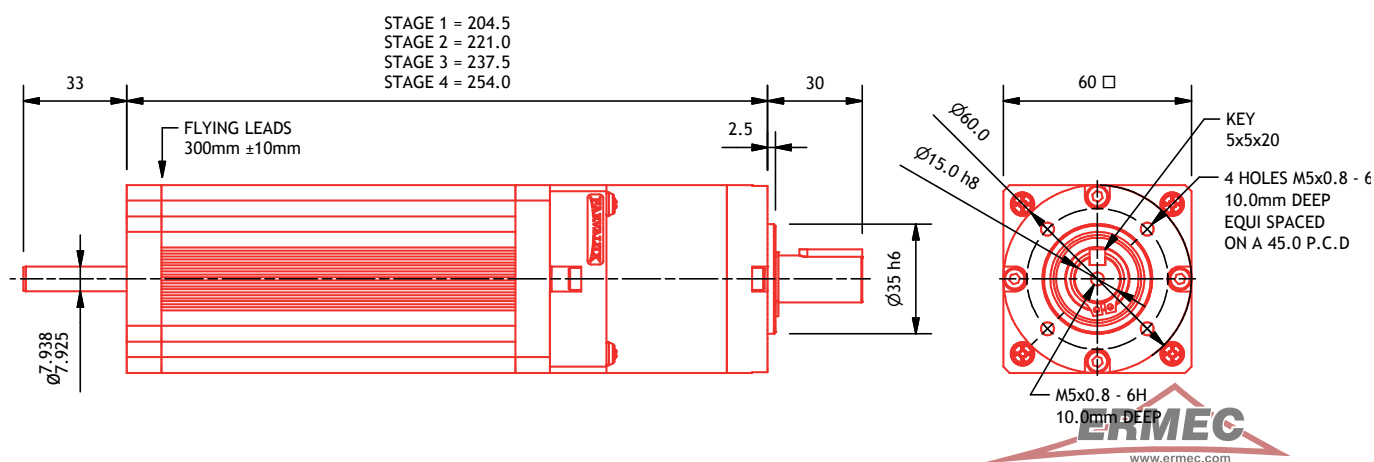
MOTOR	Brushless DC motor
PROTECTION	IP54
GEARBOX	Planetary HP60 (Protection IP65)
MOTOR POWER	69 - 184 Watts
SPEED*	1 - 1000 rpm
VOLTAGE	24V DC (or 48V DC with IE model)
WEIGHT	2.62kg (ST1); 2.85kg (ST2); 3.14kg (ST3); 3.38kg (ST4)* (plus an additional 0.20kg with IE model)
CONTROLLER	B (or integral with IE model)
EXTRAS	See page 18 of 2009 DC brushless catalogue



*input speed variable up to 4000 rpm

stage 1 HP60 gearbox pictured

Motor Power Cont (W)		69	92	138	184	TORQUE (Nm)		
Gear Ratio	Number of stages	MOTOR SPEED (rpm)				CONTINUOUS up to 4000 rpm	PEAK up to 2500 rpm	15 MINUTE up to 3500 rpm
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4	1	375	500	750	1000	1.7	3.3	2.1
5	1	316	421	632	842	2	4	2.5
6	1	250	333	500	667	2.5	5	3.1
7	1	214	286	429	571	2.9	5	3.7
16	2	94	125	188	250	5.8	8.5	6.5
24	2	63	83	125	167	8	11.4	8.9
28	2	54	71	107	143	9	12.6	10
36	2	42	56	83	111	10.7	14.7	11.9
49	2	31	41	61	82	13	17.3	14.4
64	3	23	31	47	63	15.1	19.6	16.7
96	3	15.6	21	31	42	18.4	23	20
112	3	13.4	17.9	27	36	19.6	24	22
144	3	10.4	13.9	21	28	21	26	24
196	3	7.7	10.2	15.3	20	24	28	26
252	3	6	7.9	11.9	15.9	25	29	27
384	4	3.9	5.2	7.8	10.4	27	31	30
532	4	2.8	3.8	5.6	7.5	28	32	31
684	4	2.2	2.9	4.4	5.8	29	33	32
1026	4	1.5	1.9	2.9	3.9	30	33	33
1512	4	1	1.3	2	2.6	30	34	33



*ST = stage

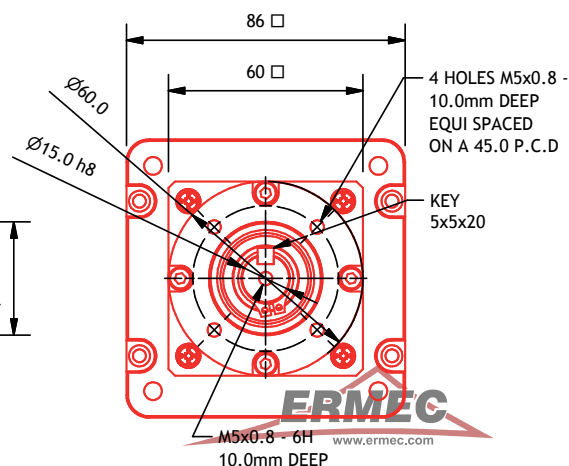
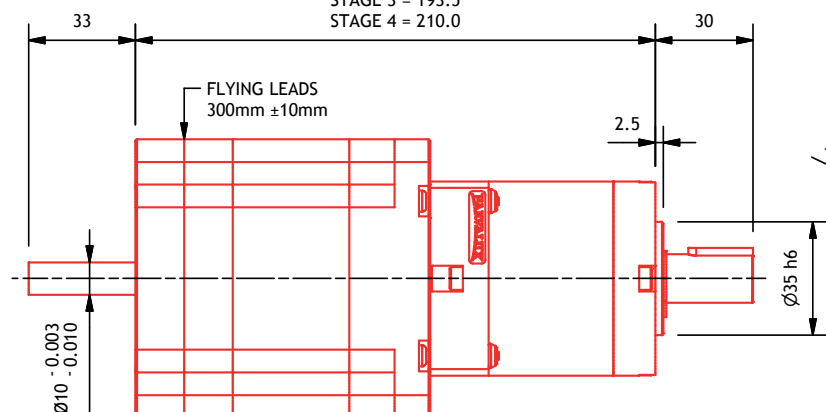
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HP23



stage 1 HP60 gearbox pictured

STAGE 1 = 160.5
STAGE 2 = 177.0
STAGE 3 = 193.5
STAGE 4 = 210.0

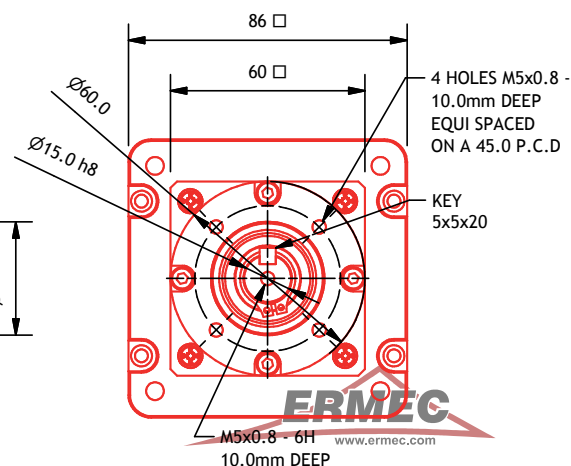
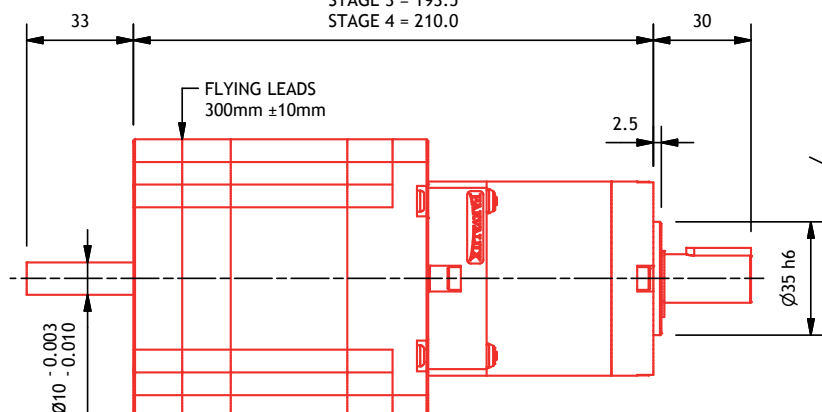


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stage 1 HP60 gearbox pictured

STAGE 1 = 160.5
STAGE 2 = 177.0
STAGE 3 = 193.5
STAGE 4 = 210.0



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