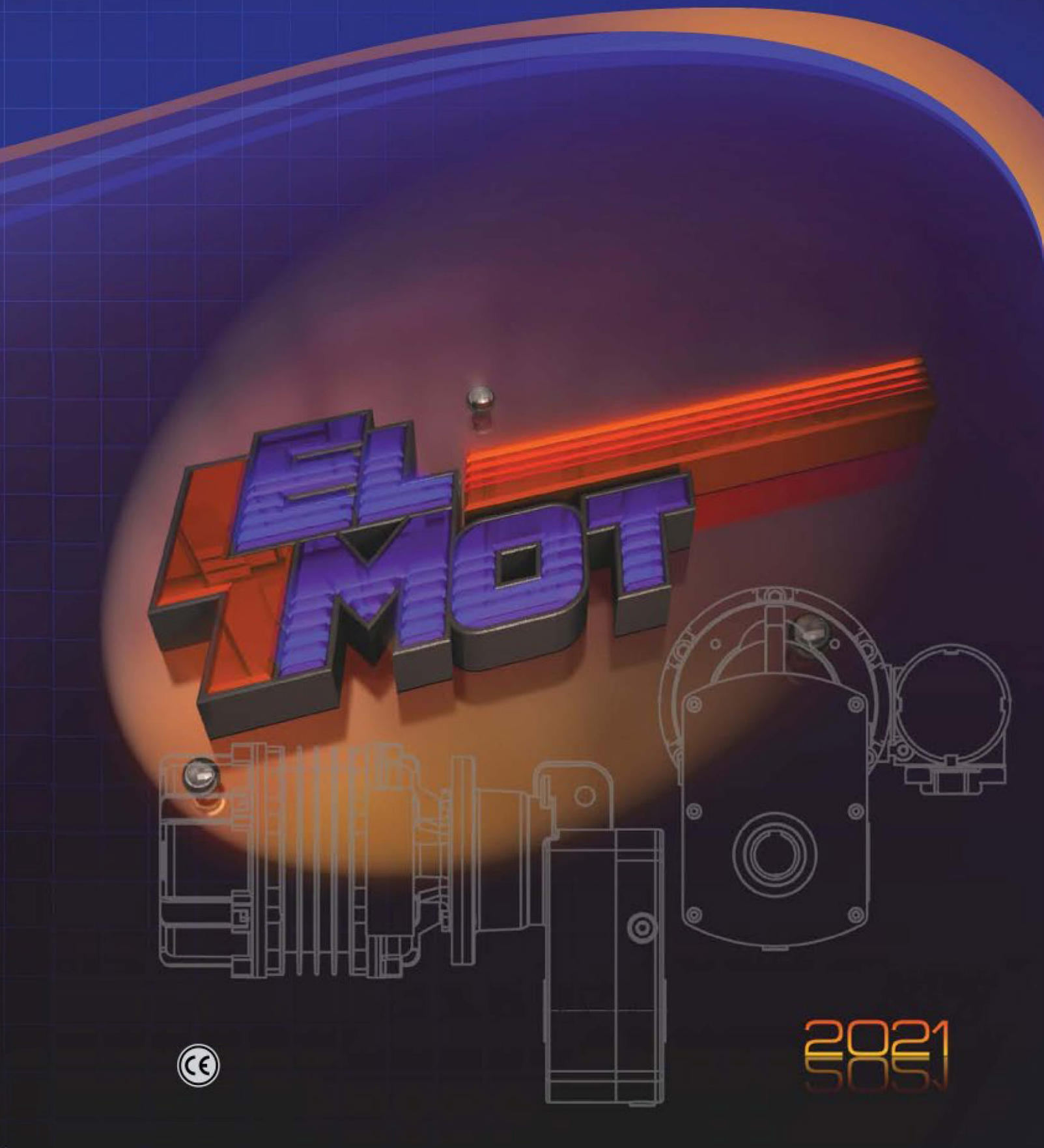
Monte Carlo Resources

GEARED MOTORS

TP SERIES



2021

Monte Carlo Resources

GLOBAL SALES AND DISTRIBUTION PARTNER

Monte Carlo Resources *is a global sales and distribution partner for Elmot's full range of products, including electric motors, crane components and hoists. Established 39 years ago, Monte Carlo Resources is a diversified industrial merchant with portfolio companies in the mining, agricultural and construction sectors and a strong operational presence in the United States, Africa and the Middle East.*

With an emphasis on bespoke customer service and decades of experience in cutting-edge logistics and distribution, the Monte Carlo Resources team works directly with Elmot's senior management and factory to ensure that your industrial equipment needs are taken care of. Get in touch today to discuss how Elmot products can power your industrial and construction operations in all specialist markets worldwide.

motors@montecarloresources.com

+1 (424) 210 8884 (United States)
+377 (0)640 625 100 (Europe)

Fifty Years of Innovation and Quality

ELMOT JSC is an industry leader in electric motor production, founded in 1967 in the town of Veliko Tarnovo, Bulgaria. Within a short period of time, the company's commitment to cutting-edge engineering, unparalleled build quality and a continuous desire for innovation has led it to become the world's largest manufacturer of asynchronous electric motors with conical rotors and built-in brakes.

As a global pioneer in the sector, ELMOT JSC now manufactures:

- ***Electric wire rope hoists***
- ***Single and double speed electric motors with built-in brake, power up to 45kW***
- ***Geared motors with standard and explosion-proof configuration***
- ***Rope load limiters***
- ***Trolleys and carriages for cranes***

Elmot JSC's Headquarters in Veliko Tarnovo, Bulgaria

Quality Certification

LRQA
Business Assurance

CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

ELMOT JSC
73 Nikola Gabrovski Str., 5002 Veliko Tarnovo
Bulgaria

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

BS EN ISO 9001:2008 EN ISO 9001:2008 ISO 9001:2008

The Quality Management System is applicable to:

Design, manufacture and servicing of asynchronous single and three phase electric motors with cone rotors and built-in brakes for lifting and driving mechanisms; electric rope hoists; geared motors, crane and crane components; elastic clutches for driving systems; load limiters; electric asynchronus motors with cylindrical rotors and their components.

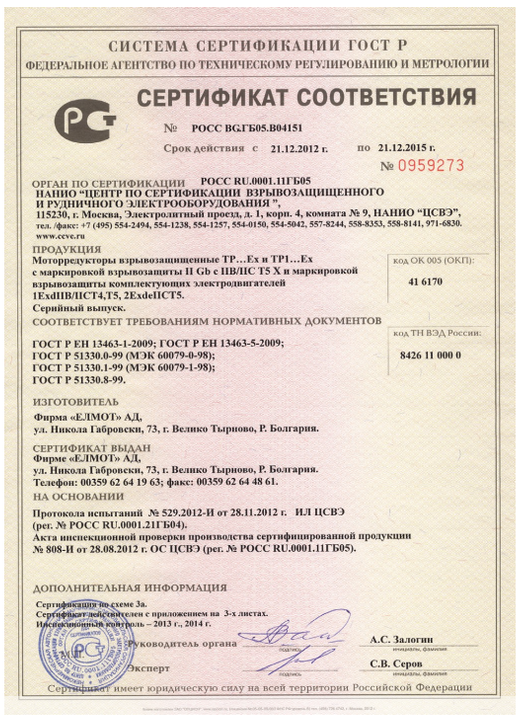
Approval Certificate No: SOF0206765

Original Approval: 08th June 1998
Current Certificate: 23rd May 2013
Certificate Expiry: 28th April 2016

Issued by: Lloyd's Register EMEA branch for and on behalf of Lloyd's Register Quality Assurance Limited

UKAS QUALITY MANAGEMENT 001

This document is subject to the provision on the reverse
91A Bulgaria Blvd., 1404 Sofia, Registration number: 121726037
For and on behalf of 71 Fenchurch Street, London EC3M 4BS United Kingdom, Registration number: 1879370
This approval is carried out in accordance with the LRQA assessment and certification procedures and monitored by LRQA.
The use of the UKAS Accreditation Mark indicates Accreditation in respect of those activities covered by the Accreditation Certificate Number 001



СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС BG.ГБ05.В04151
Срок действия с 21.12.2012 г. по 21.12.2015 г.
№ 0959273

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.11ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ",
115230, г. Москва, Электролитный проезд, д. 1, корп. 4, комната № 9, НАНИО "ЦСВЭ".
тел. /факс: +7 (495) 554-2494, 554-1238, 554-1257, 554-0150, 554-5042, 557-8244, 558-8353, 558-8141, 971-6830.
www.ccve.ru

ПРОДУКЦИЯ
Моторредукторы взрывозащищенные ТР…Ex и ТР1…Ex с маркировкой взрывозащиты II Gb c IIB/IIC T5 X и маркировкой взрывозащиты комплектующих электродвигателей 1ExdIIB/IICT4,T5, 2ExdeIICT5.
Серийный выпуск.
код ОК 005 (ОКП): 41 6170

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ
ГОСТ Р ЕН 13463-1-2009; ГОСТ Р ЕН 13463-5-2009;
ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
ГОСТ Р 51330.1-99 (МЭК 60079-1-98);
ГОСТ Р 51330.8-99.
код ТН ВЭД России: 8426 11 000 0

ИЗГОТОВИТЕЛЬ
Фирма «ЕЛМОТ» АД,
ул. Никола Габровски, 73, г. Велико Тырново, Р. Болгария.

СЕРТИФИКАТ ВЫДАН
Фирме «ЕЛМОТ» АД,
ул. Никола Габровски, 73, г. Велико Тырново, Р. Болгария.
Телефон: 00359 62 64 19 63; факс: 00359 62 64 48 61.

НА ОСНОВАНИИ
Протокола испытаний № 529.2012-И от 28.11.2012 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04).
Акта инспекционной проверки производства сертифицированной продукции № 808-И от 28.08.2012 г. ОС ЦСВЭ (рег. № РОСС RU.0001.11ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ
Сертификация по схеме 3а.
Сертификат действителен с приложением на 3-х листах.
Инспекционный контроль – 2013 г., 2014 г.

Руководитель органа — А.С. Залогин
Эксперт — С.В. Серов

Сертификат имеет юридическую силу на всей территории Российской Федерации

FTZÚ Ex

Physical Technical Testing Institute
Ostrava-Radvanice

Ex

QUALITY ASSURANCE NOTIFICATION

(1)
(2) **Equipment or Protective Systems or Components Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

(3) Notification number

FTZÚ 11 ATEX Q 008

(4) Group of products: **Electrical motors and hoists with type of protection: Flameproof enclosure "d"**

(5) Applicant: **ELMOT JSC**, 73 Nikola Gabrovski str., 5000 Veliko Tarnovo, Bulgaria

(6) Manufacturer: **ELMOT JSC**, 73 Nikola Gabrovski str., 5000 Veliko Tarnovo, Bulgaria

(7) The Physical Technical Testing Institute, notified body number 1026 for Annexes IV and VII in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, notifies to the applicant that the actual manufacturer has a quality system which complies with Annex IV and VII of the Directive.

(8) This notification is based upon Audit Report No. FTZÚ 11/ATEX/008 issued the 20th September 2011.

This notification can be withdrawn if the manufacturer no longer satisfies the requirements of Annex IV and VII.

Results of periodical re-assessment of the quality system are part of this notification.

(9) This notification is valid until **15 October 2014** and can be withdrawn if manufacturer does not satisfy the quality assurance re-assessment.

(10) According to Article 10(1) of the Directive 94/9/EC the CE marking shall be followed by the identification number 1026 identifying the FTZÚ as notified body involved in the production control stage.

Responsible person:
Dipl. Ing. Jaroslav Šindler
Head of Certification Body

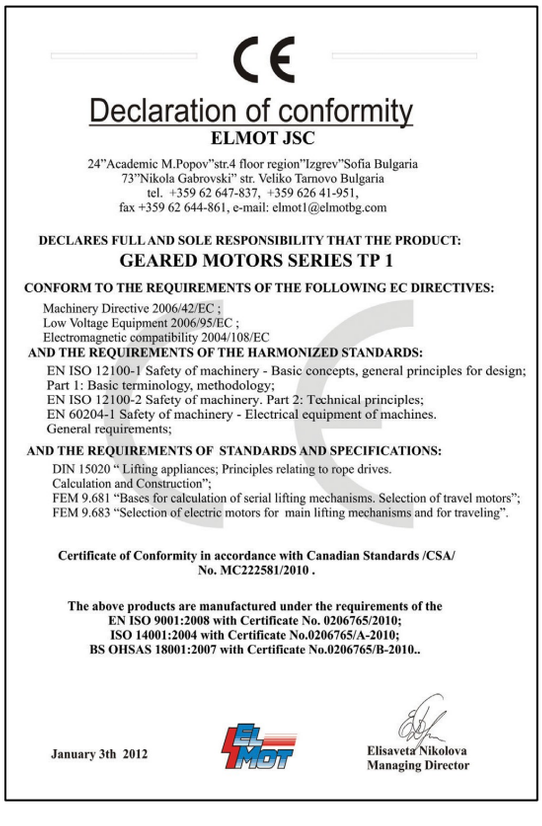
PHYSICAL-TECHNICAL TESTING INSTITUTE FTZÚ Ex AO 210 NB 1026

Date of issue: 20. October, 2011

Number of pages: 1/2

This notification may only be reproduced in its entirety and without any changes.

Fyzikálně technický zkušební ústav, s.p., Pikartská 7, 716 07 Ostrava Radvanice,
tel: +420 595 223 111, fax: +420 596 232 672, e-mail: ftzu@ftzu.cz



CE

Declaration of conformity

ELMOT JSC

24"Academic M.Popov"str.4 floor region"Izgrev"Sofia Bulgaria
73"Nikola Gabrovski" str. Veliko Tarnovo Bulgaria
tel. +359 62 647-837, +359 626 41-951,
fax +359 62 644-861, e-mail: elmot1@elmotbg.com

DECLARES FULL AND SOLE RESPONSIBILITY THAT THE PRODUCT:

GEARED MOTORS SERIES TP 1

CONFORM TO THE REQUIREMENTS OF THE FOLLOWING EC DIRECTIVES:

Machinery Directive 2006/42/EC ;
Low Voltage Equipment 2006/95/EC ;
Electromagnetic compatibility 2004/108/EC

AND THE REQUIREMENTS OF THE HARMONIZED STANDARDS:

EN ISO 12100-1 Safety of machinery - Basic concepts, general principles for design; Part 1: Basic terminology, methodology;
EN ISO 12100-2 Safety of machinery. Part 2: Technical principles;
EN 60204-1 Safety of machinery - Electrical equipment of machines. General requirements;

AND THE REQUIREMENTS OF STANDARDS AND SPECIFICATIONS:

DIN 15020 " Lifting appliances; Principles relating to rope drives. Calculation and Construction";
FEM 9.681 "Bases for calculation of serial lifting mechanisms. Selection of travel motors";
FEM 9.683 "Selection of electric motors for main lifting mechanisms and for traveling".

Certificate of Conformity in accordance with Canadian Standards /CSA/ No. MC222581/2010 .

The above products are manufactured under the requirements of the EN ISO 9001:2008 with Certificate No. 0206765/2010; ISO 14001:2004 with Certificate No.0206765/A-2010; BS OHSAS 18001:2007 with Certificate No.0206765/B-2010..

January 3th 2012

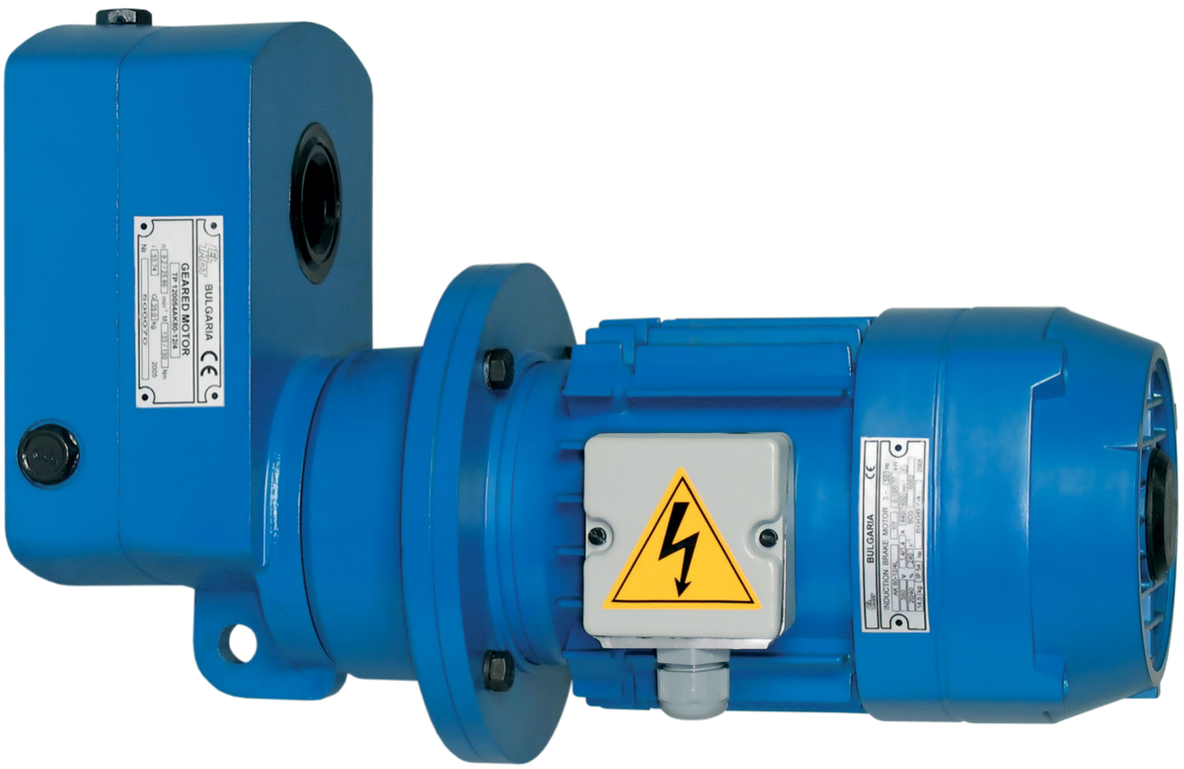
Elisaveta Nikolova
Managing Director

TP Series

Reducers and Geared Motors

- *Geared motor groups including asynchronous brake motors with conical rotor*
- *Wide range of output speeds and output torques according to client requirements*
- *IP54, brake protection IP22 (EN 60529)*
- *Flange-joining IM B5 (EN 60034-7)*
- *Optional thermal or explosion-proof protection*
- *Bespoke modifications to electric motor power and supply voltages on request*

Applications: *Travelling mechanisms for cranes and other lifting systems*

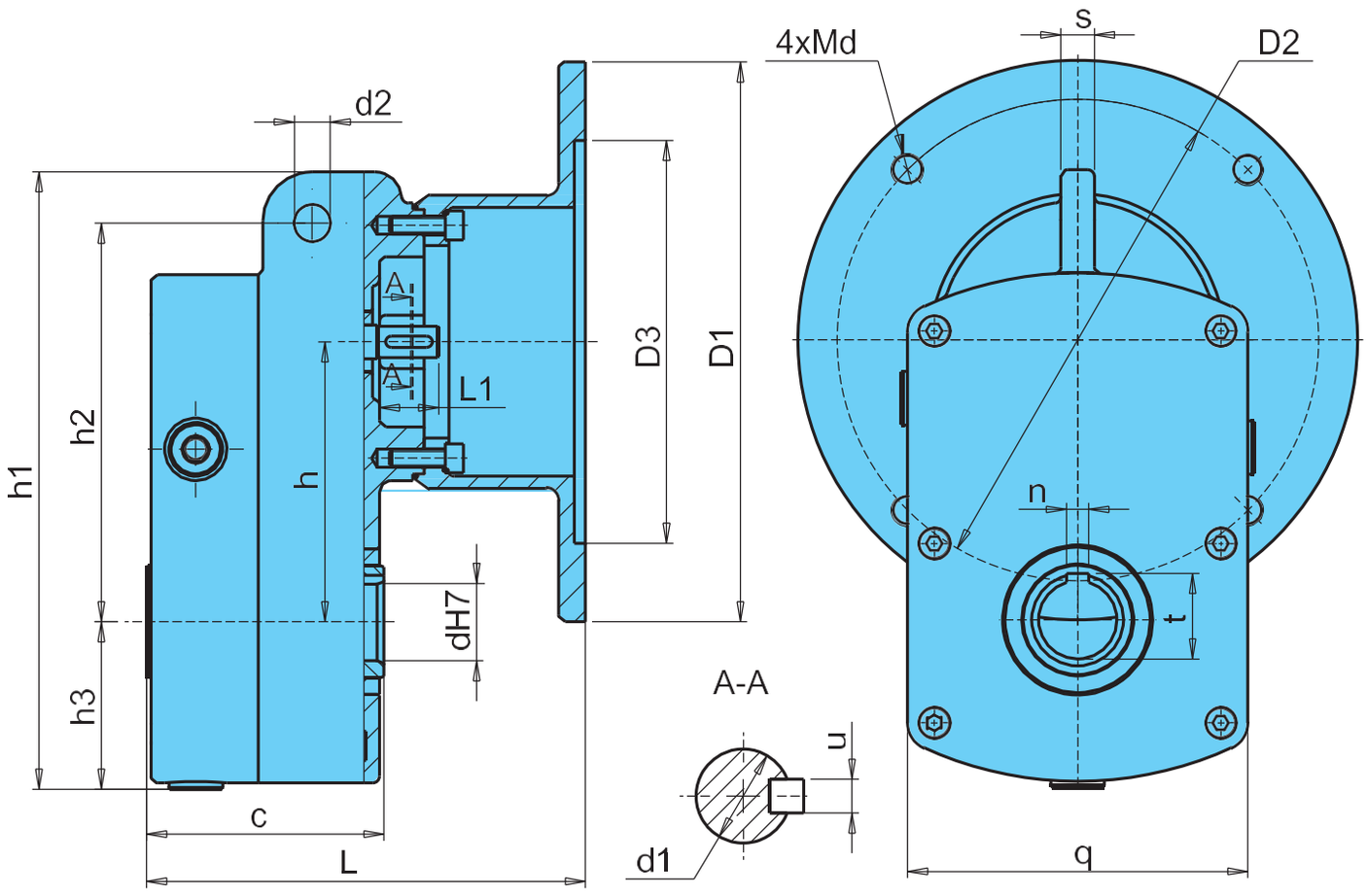


Geared Motor

Reducer with flange

Reducer designation

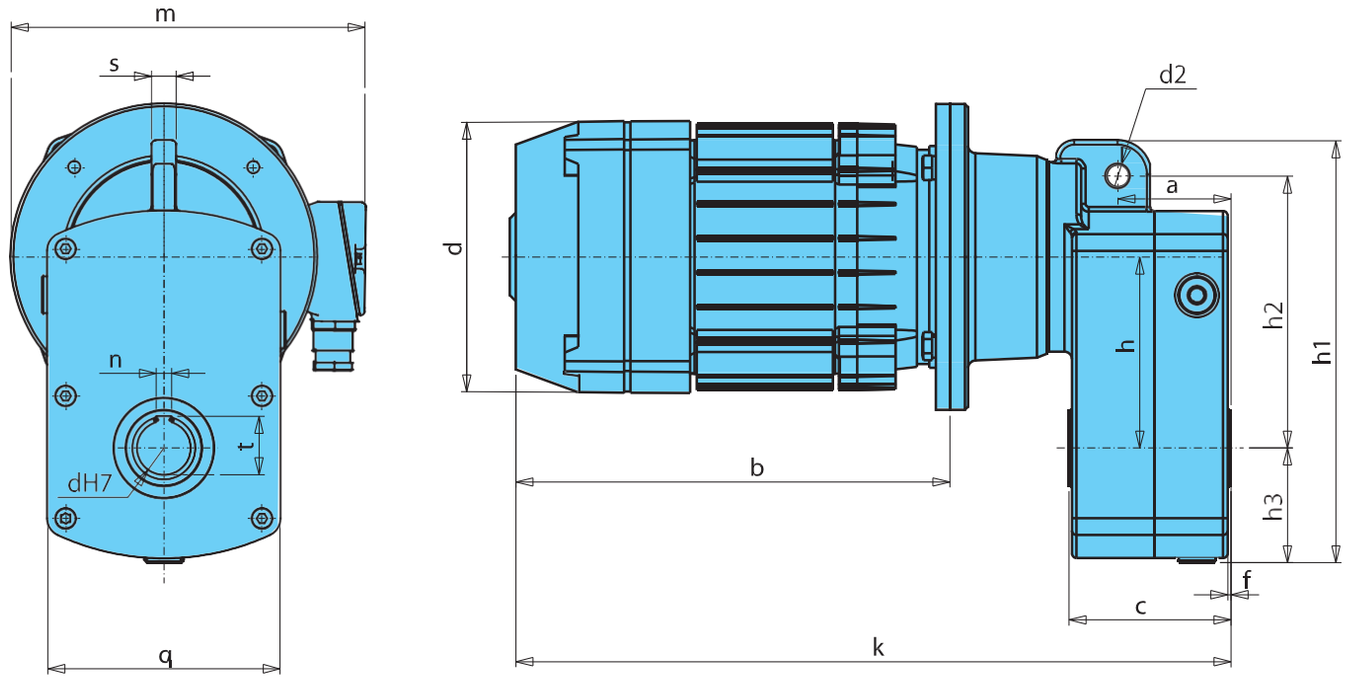
TP	160	36
Type	Dimension	Transmission ratio



Overall dimensions

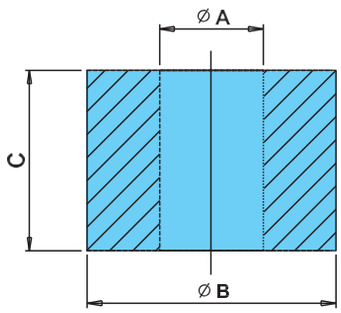
Reducer type	For motor type	c	L	L1	d2	h	h1	h2	h3	dH7	4xMd	D1	D2	D3	d1	и	n	t	s	q
TP 160	AK 71	97	150.5	22	16	100	243	150	70	30	4xM8	160	130	110	11	4	8	33.3	14	132
	AK 80		170.5								4xM10	200	165	130						
	AK 90		180.5																	
TP 200	AK 71	106	164	27	16	125	280	178	79	35	4xM8	160	130	110	14	5	10	38.3	16	152
	AK 80		184								4xM10	200	165	130						
	AK 90																			
	AK 100		196								4xM12	250	215	180						
TP 250	AK 80	118	198	27	18	145	335	207	95	40	4xM10	200	165	130	16	5	12	43.3	18	180
	AK 90																			
	AK 100		210								4xM12	250	215	180						
TP 315	AK 90	142	221	29	22	174	386	244	109	50	4xM10	200	165	130	19	6	14	53.8	16	210
	AK 100		233								4xM12	250	215	180						

Geared Motor Dimensions



Overall dimensions

Typ/Type	a	b	c	d	f	k	m	q	s	d2	h	h1	h2	h3	dH7	n	t
TP1160 AK 71	67.5	255	97	140	1.5	406	195	132	14	16	100	243	150	70	30	8	33.3
TP1160 AK 80		272		160		443	220										
TP1160 AK 90		290		178		471	230										
TP1160 AK 90P		320		178		501	230										
TP1200 AK 71	74	255	106	140	2	419	195	152	16	16	125	280	178	79	35	10	38.3
TP1200 AK 80		272		160		456	220										
TP1200 AK 80P		272		160		456	220										
TP1200 AK 90		290		178		474	230										
TP1200 AK 90P		320		178		504	230										
TP1200 AK 100		356		200		552	261										
TP1200 AK 100P		386		200		582	261										
TP1250 AK 80P	78	272	118	160	2	470	220	180	18	18	145	335	207	95	40	12	43.3
TP1250 AK 90		290		178		488	230										
TP1250 AK 90P		320		178		518	230										
TP1250 AK 100		356		200		566	261										
TP1250 AK 100P		386		200		596	261										
TP1315 AK 90P	98	320	142	178	2	541	230	210	16	22	174	386	244	109	50	14	53.8
TP1315 AK 100		356		200		589	261										
TP1315 AK 100P		386		200		619	261										



SEAL

Overall dimensions

Reducer type	Ø A	Ø B	C
	mm	mm	mm
TP 160/TP 160L	14	41	30
TP 200/TP 200L			
TP 250/TP 250L	17	50	40
TP 315	21	55	40

TP 1160	Mmax-250Nm		Rated data		
2p = 8/2 - 660/2700 min^{-1};2p = 12/4 - 455/1420 min^{-1}; 2p = 4 - 1420 min^{-1}					
Type	Power	Transmission ratio	Output Speed	Output Torque	Service Factor
	kW	-	*min^{-1}*	*Nm*	*f_s*
TP1160 79 AK71B4	0.25	79.08	16.44	137.83	1.81
TP1160 79 AK71B8/2	0.06/0.25		8.34/34.14	65.15/77.90	3.84/3.21
TP1160 79 AK71-8/2	0.06/0.30		8.34/34.14	65.15/93.48	3.84/2.67
TP1160 79 AK80B12/4	0.08/0.25		5.69/17.70	127.41/127.98	1.96/1.95
TP1160 70 AK71B4	0.25	69.89	18.60	121.80	2.05
TP1160 70 AK71B8/2	0.06/0.25		9.44/38.63	57.58/68.85	4.34/3.63
TP1160 70 AK71-8/2	0.06/0.30		9.44/38.63	57.58/70.38	4.34/3.55
TP1160 70 AK80B12/4	0.08/0.25		6.44/20.03	112.61/113.11	2.22/2.21
TP1160 64 AK71B4	0.25	63.72*	20.40	111.05	2.25
TP1160 64 AK71B8/2	0.06/0.25		10.35/42.37	52.50/62.77	4.76/3.98
TP1160 64 AK71-8/2	0.06/0.30		10.35/42.37	52.50/75.32	4.76/3.32
TP1160 64 AK80B12/4	0.08/0.25		7.06/21.97	102.66/103.13	2.43/2.42
TP1160 56 AK71-4	0.37	56.31	23.08	145.25	1.72
TP1160 56 AK80-12/4	0.12/0.37		7.81/24.68	139.18/135.84	1.80/1.84
TP1160 48 AK71-4	0.37	48.69	26.69	125.57	1.99
TP1160 48 AK80-12/4	0.12/0.37		9.04/28.55	120.35/117.46	2.08/2.13
TP1160 47 AK71-4	0.37	46.63	27.88	120.26	2.08
TP1160 47 AK80-12/4	0.12/0.37		9.44/29.81	115.25/112.49	2.17/2.22
TP1160 43 AK71- 4	0.37	43.41*	29.95	111.95	2.23
TP1160 43 AK80-12/4	0.12/0.37		10.14/32.02	107.30/104.72	2.33/2.39
TP1160 39 AK80-4	0.55	39.23	34.41	144.85	1.7
TP1160 39 AK80P12/4	0.18/0.55		11.22/35.69	145.45/139.68	1.72/1.79
TP1160 36 AK80-4	0.55	35.95*	37.55	132.74	1.88
TP1160 36 AK80P12/4	0.18/0.55		12.24/38.94	133.29/128	1.87/1.95
TP1160 33 AK80-4	0.55	33.04	40.86	121.99	2.05
TP1160 33 AK80P12/4	0.18/0.55		13.32/42.37	122.50/117.64	2.04/2.12
TP1160 30 AK80-4	0.55	30.25	44.63	111.69	2.24
TP1160 30 AK80P12/4	0.18/0.55		14.38/46.28	112.15/107.70	2.23/2.32
TP1160 29 AK90-12/4	0.25/0.75	28.66*	15.00/49.20	151.00/138.16	1.66/1.81
TP1160 28 AK90-12/4	0.25/0.75	27.87*	15.43/50.59	146.85/134.35	1.70/1.86
TP1160 22 AK90-12/4	0.25/0.75	22.09	19.46/63.83	116.40/106.49	2.15/2.35
TP1160 20 AK90-4	1.1	20.19	68.85	144.80	1.73
TP1160 20 AK90P12/4	0.37/1.1		20.80/69.84	161.19/142.75	1.55/1.75
TP1160 16 AK90-4	1.1	16.26	85.49	116.62	2.14
TP1160 16 AK90P12/4	0.37/1.1		25.83/86.72	129.82/114.96	1.92/2.17
TP1160 13 AK90P4	1.5	12.54	110.84	122.64	2.04

**Recommended transmission ratios*

TP 1200	M_{max} = 500Nm	Rated data

2p = 8/2 - 660/2700 min^{-1};2p = 12/4 - 455/1420 min^{-1}; 2p = 4 - 1420 min^{-1}

Type	Power	Transmission ratio	Output Speed	Output Torque	Service Factor
	kW	***-***	***min^{-1}***	***Nm***	***f_s***
TP1200 84 AK71-4	0.37	84.40*	15.99	212.07	2.36
TP1200 84 AK80-12/4	0.12/0.37		5.21/16.47	211.03/205.97	2.37/2.43
TP1200 70 AK80P12/4	0.18/0.55	69.56	6.32/20.13	260.88/250.53	1.92/1.99
TP1200 57 AK80P 4	0.75	57.29	23.74	289.65	1.73
TP1200 57 AK90-12/ 4	0.25/0.75		7.50/24.61	305.37/279.38	1.64/1.79
TP1200 54 AK80P 4	0.75	53.74*	25.30	271.70	1.84
TP1200 54 AK90-12/ 4	0.25/0.75		8.00/26.24	286.45/262.07	1.75/1.91
TP1200 50 AK80P 4	0.75	49.65	27.39	251.02	1.99
TP1200 50 AK90-12/ 4	0.25/0.75		8.66/28.40	264.65/242.12	1.89/2.06
TP1200 50 AK90PB12/4	0.3/0.9		8.46/28.40	325.14/290.55	1.54/1.72
TP1200 44 AK80P 4	0.75	44.29*	30.71	223.92	2.23
TP1200 44 AK90-12/ 4	0.25/0.75		9.71/31.84	236.08/215.98	2.12/2.31
TP1200 44 AK90PB12/4	0.3/0.9		9.48/31.84	290.04/259.18	1.79/2.00
TP1200 43 AK80P 4	0.75	42.70	31.85	215.89	2.32
TP1200 43 AK90-12/ 4	0.25/0.75		10.07/33.02	227.60/208.23	2.20/2.40
TP1200 43AK90PB12/4	0.3/0.9		9.84/33.02	279.62/249.88	1.79/2.00
TP1200 41 AK80P 4	0.75	40.92	33.24	206.89	2.42
TP1200 41 AK90-12/ 4	0.25/0.75		10.51/34.46	218.11/199.55	2.29/2.50
TP1200 41 AK90PB12/4	0.3/0.9		10.26/34.46	267.97/239.46	1.86/2.09
TP1200 40 AK90- 4	1.1	39.72	34.74	290.27	1.72
TP1200 40 AK90PB12/4	0.3/0.9		10.57/35.50	260.11/232.44	1.92/2.15
TP1200 40 AK90P12/4	0.37/1.1		10.57/35.50	320.80/284.09	1.56/1.76
TP1200 35 AK90- 4	1.1	35.19*	39.26	256.87	1.95
TP1200 35 AK90PB12/4	0.3/0.9		11.95/40.11	230.18/205.69	2.17/2.43
TP1200 35 AK90P12/4	0.37/1.1		11.95/40.11	283.89/251.40	1.76/1.99
TP1200 32 AK90- 4	1.1	32.27*	42.76	235.82	2.12
TP1200 32 AK90PB12/4	0.3/0.9		13.01/43.69	260.63/230.81	1.92/2.17
TP1200 32 AK90P12/4	0.37/1.1		13.01/43.69	211.32/188.84	2.37/2.65
TP1200 27 AK90P4	1.5	26.60*	53.00	259.44	1.93
TP1200 27 AK100- 12/4	0.5/1.5		15.79/53.00	290.32/259.44	1.72/1.93
TP1200 25 AK90P4	1.5	24.82	56.81	242.07	2.06
TP1200 25 AK100-12/4	0.5/1.5		16.92/56.81	270.89/242.07	1.84/2.06
TP1200 22 AK90P 4	1.5	21.84*	64.56	213.01	2.35
TP1200 22 AK100-12/4	0.5/1.5		19.23/64.56	238.37/213.01	2.09/2.35
TP1200 18 AK100- 4	2.2	18*	76.67	263.08	1.90
TP1200 18 AK100P12/4	0.75/2.2		23.33/78.33	294.68/257.48	1.70/1.94

**Recommended transmission ratios*

TP 1250	M_{max} = 800Nm		Rated data		
2p = 8/2 - 660/2700 min^{-1};2p = 12/4 - 455/1420 min^{-1}; 2p = 4 - 1420 min^{-1}					
Type	Power	Transmission ratio	Output Speed	Output Torque	Service Factor
	kW	-	*min^{-1}*	*Nm*	*f_s*
TP1250 88AK90-12/4	0.25/0.75	87.53	4.91/16.11	461/422	1.73/1.9
TP1250 72AK90-12/4	0.25/0.75	72.30*	5.95/19.50	381/348	2.10/2.3
TP1250 66AK90-12/4	0.25/0.75	65.82	6.53/21.42	347/317	2.30/2.52
TP1250 61AK90-4	1.1	60.87	22.67	440	1.82
TP1250 61AK90P12/4	0.37/1.1		6.90/23.16	486/430	1.65/1.86
TP1250 54AK90-4	1.1	54.37*	25.38	393	2.04
TP1250 54AK90P12/4	0.37/1.1		7.72/25.93	434/384	1.84/2.08
TP1250 52AK90-4	1.1	51.99	26.54	376	2.13
TP1250 52AK90P12/4	0.37/1.1		8.08/27.12	415/368	1.93/2.18
TP1250 48AK90-4	1.1	48.24	28.61	348	2.30
TP1250 48AK90P12/4	0.37/1.1		8.71/29.23	385/341	2.08/2.35
TP1250 46AK90P4	1.5	45.78*	30.14	451	1.77
TP1250 46 AK100-12/4	0.5/1.5		8.74/30.58	519/444	1.54/1.80
TP1250 39AK90P4	1.5	39.09	35.30	385	2.08
TP1250 39 AK100-12/4	0.5/1.5		10.23/35.81	443/380	1.80/2.10
TP1250 36AK90P4	1.5	36.28*	38	357	2.24
TP1250 36 AK100-12/4	0.5/1.5		11.02/38.59	411/352	1.95/2.27
TP1250 27AK100-4	2.2	26.59*	51.90	384	2.08
TP1250 27AK100P12/4	0.75/2.2		15.04/52,65	452/379	1.77/2.11
Tp1250 20AK100P4	3.0	20.00	69.50	391	2.05
TP1250 16AK100P4	3.0	15.71	88.48	307	2.60
TP 1315	**M_{max} = 1200Nm**		**Rated data**		
2p = 8/2 - 660/2700 min^{-1}; 2p = 12/4 - 455/1420 min^{-1}; 2p = 4 - 1420 min^{-1}					
TP1315 86 AK90P12/4	0.37/1.1	86.03	4.88/16.39	680.6/602.5	1.76/1.77
TP1315 78 AK90P12/4	0.37/1.1	77.86	5.39/18.11	616.2/545.3	1.94/2.2
TP1315 71 AK90P4	1.5	70.56*	19.56	695.12	1.73
TP1315 71 AK100-12/4	0.5/1.5		5.95/19.98	754.4/673.9	1.59/1.78
TP1315 65 AK90P4	1.5	65.07	21.21	641.0	1.87
TP1315 65 AK100-12/4	0.5/1.5		6.45/21.67	695.9/621.4	1.72/1.93
TP1315 60 AK90P4	1.5	59.83	23.07	589.39	2.04
TP1315 60 AK100-12/4	0.5/1.5		7.02/23.57	639.4/571.3	1.88/2.10
TP1315 58 AK90P4	1.5	58.89*	23.43	580.15	2.07
TP1315 58 AK100-12/4	0.5/1.5		7.13/23.94	629.5/562.5	1.91/2.13
TP1315 54 AK90P4	1.5	54.15	25.48	533.46	2.25
TP1315 54 AK100-12/4	0.5/1.5		7.76/26.04	578.4/517.1	2.07/2.32
TP1315 51 AK90P4	1.5	51.10	27.01	503.41	2.38
TP1315 51 AK100-12/4	0.5/1.5		8.22/27.59	546.0/488.0	2.2/2.46
TP1315 46 AK100-4	2.2	46.24	29.84	668.8	1.79
TP1315 46 AK100P12/4	0.75/2.2		9.08/30.49	741.5/647.7	1.62/1.85
TP1315 45 AK100-4	2.2	44.98*	30.68	650.56	1.84
TP1315 45 AK100P12/4	0.75/2.2		9.34/31.35	720.85/630.0	1.66/1.90
TP1315 41 AK100-4	2.2	41.35*	33.37	598.06	2.01
TP1315 41 AK100P12/4	0.75/2.2		10.16/34.10	662.7/579.2	1.81/2.07
TP1315 35 AK100P4	3.0	35.32*	39.35	684.4	1.75
TP1315 35 AK100P12/4	0.75/2.2		11.89/39.92	566.25/494.7	2.12/2.42
TP1315 30 AK100P4	3.0	29.60	46.96	573.5	2.09
TP1315 30 AK100P12/4	0.75/2.2		14.19/47.64	474.5/414.6	2.53/2.89
TP1315 27 AK100P4	3.0	26.79*	51.88	519.1	2.31
TP1315 27 AK100P12/4	0.75/2.2		15.68/52.63	429.4/375.2	2.79/3.20
TP1315 20 AK100P4	3.0	20.46	67.94	396.4	3.03
TP1315 20 AK100P12/4	0.75/2.2		20.53/68.91	327.9/286.6	3.66/4.19

**Recommended transmission ratios*

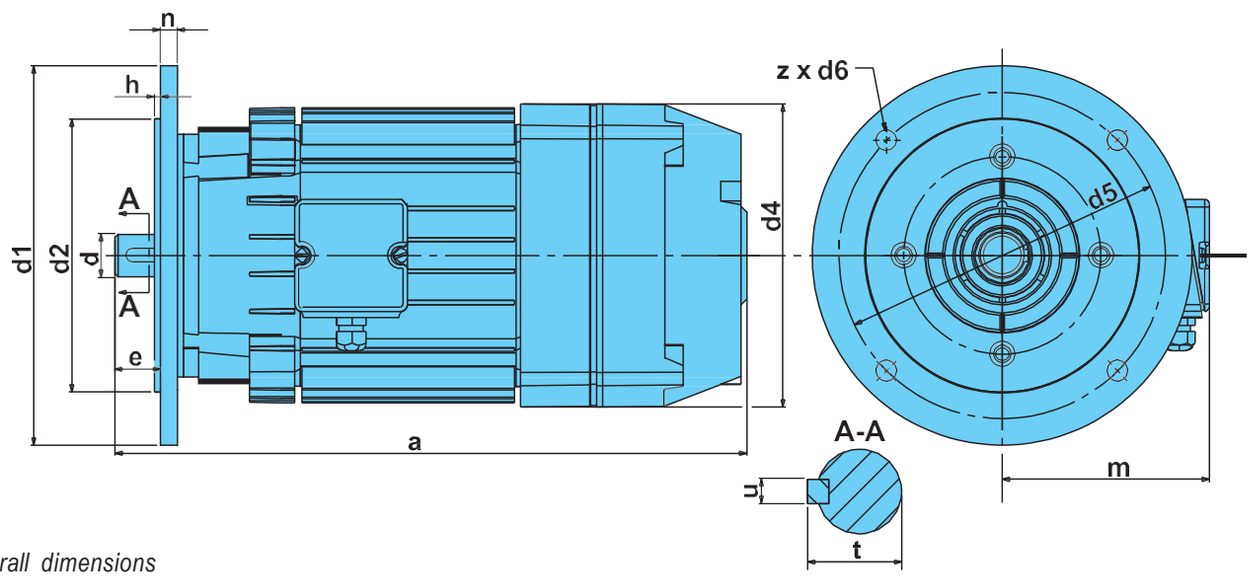
AK

AK Series

Asynchronous Electric Motors with Built-In Brake for Geared Motors

- Voltage modifications 50Hz / 60 Hz
- Insulation class F
- Axial shaft run 0.5 – 1.0 mm
- IP 54, brake protection IP 22 (EN 60529)
- Flange-joining IM B5 (EN 60034-7)
- Optional overheat protection

Power	Type	Speed of revolution	Voltage	Duty cycle		Current	Starting torque	Braking torque	Weight
				CD	SF				
kW	-	min^{-1}	V	%	sw/h	A	Nm	Nm	kg
0,06/0,25	AK 71B 8/2	660/2700	400	15/25	180	1,2/0,75	2,6/2,6	1,25	11
0,06/0,3	AK 71 8/2					1,2/1,2		1,5	
0,25	AK 71B 4	1350	400/230	40	240	0,85/1.5	5,0	1,3-1,9	11
0,37	AK 71-4					1.3/2.3	6,5	2,2-3,0	
0,08/0,25	AK 80B12/4	450/1400	400	20/40	240	0,9/0,85	3,2/3,2	1,3 - 1,6	14,5
0,12/0,37	AK 80-12/4	440/1390		20/40	240	1.3/1.3	4,5/4,0	2,4 - 2,8	
0,13/0,55	AK 80-8/2	550/2550		15/25	160/80	1,4/1,8	4,3/4,3	1,6 - 2,0	
0,12/0,37	AK 80PD12/4	440/1400		25/50	300	1,4/1,3	6,0/5,4	2,4 - 2,8	15
0,18/0,55	AK 80P12/4	440/1400		20/40	240	1,8/1,7	7,2/7,2	3,6 - 4,1	
0,18/0,37	AK 80P12/6	440/900		20/40	240	1,9/1,6	7,2/6,5	3,6 - 4,1	
0,6	AK 80-2	2800	400/230	40	240	1,7/3,0	7,0	1,6 - 2,0	14
0,55	AK 80-4	1350				1,8/3,1	10,0	3,6-4,1	
0,75	AK 80P4	1360				2,1/3,6	14,0	4,4-5,2	15
0,55	AK 80P6	940				2,2/3,8	13,0	4,4 - 5,2	
0,18/0,55	AK 90D12/4	430/1410	400	25/50	300	1,6/1,5	7,0/7,0	3,2-3,8	21
0,25/0,75	AK 90-12/4	430/1410		20/40	240	2,4/2,0	9,0/9,0	4,9-5,7	
0,25/0,75	AK 90PD12/4	420/1410		25/50	300	2,0/1,9	8,0/8,0	4,9-5,7	24
0,3/0,9	AK 90PB12/4	420/1410		25/50	300	2,4/2,4	11,0/11,0	6,8-7,8	
0,37/1,1	AK 90P12/4	420/1410		20/40	240	3,4/3,4	13,5/13,5	6,8-7,8	
1,5	AK 90-2	2620	400/230	40	240	3,9/6,8	11,5	6,8 - 7,8	21
1,1	AK 90-4	1380				2,7/4,7	15,0	6,8 - 7,8	
1,5	AK 90P4	1380				4,1/7,1	30,0	9,0 - 10,0	24
1,1	AK 90P6	890				4,0/6,9	28,0	9,0 - 10,0	
0,37/1,1	AK 100D12/4	390/1390	400	25/50	300	3,2/3,4	12,0/18,0	5.4-6.4	32
0,5/1,5	AK 100-12/4	420/1410		20/40	240	4,5/4,3	17,0/23,0	6,8-7,8	
0,5/1,5	AK 100PD 12/4	390/1400		25/50	300	4,2/5,1	17,0/23,0	6,8-7,8	36,5
0,75/2,2	AK 100P12/4	420/1410		20/40	240	6,4/6,8	25,0/33,0	9,3-10,7	
2,2	AK 100-4	1380	400/230	40	240	5,2/9,0	35,0	9,3 - 10,7	32
1,5	AK 100-6	910				5,5/9,5	36,0	9,3 - 10,7	
3,0	AK 100P4	1380				6,6/11,5	46,0	13,5-15,5	36,5
2,2	AK 100P6	920				7,0/12,2	41,0	13,5-15,5	



Overall dimensions

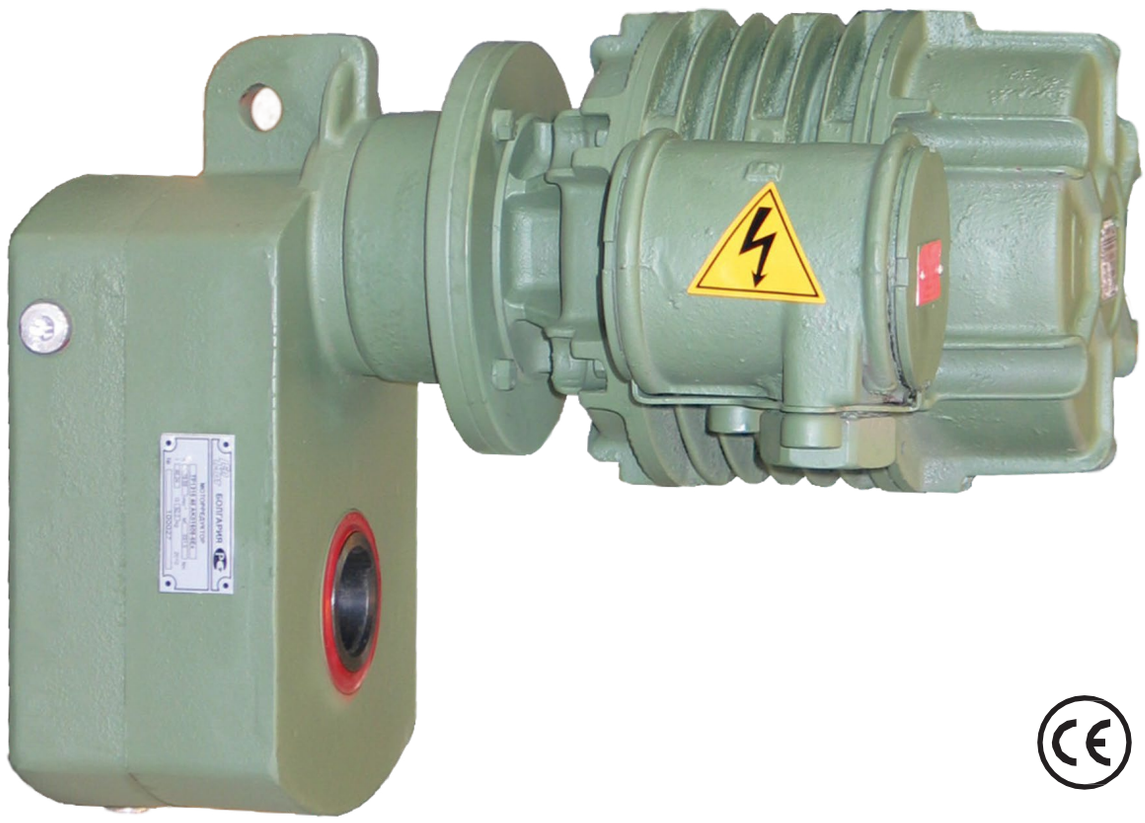
Type	Dimensions										Shaft		
	a	m	e	h	n	d1	d2	d4	d5	z x d6	d	t	u
AK 71	285	115	30	3.5	9	160	110	140	130	4x9	14	16	5
AK 80/AK 80 P	312	120	40	3.5	10	200	130	160	165	4x11	19	21.5	6
AK 90/AK 90 P	340/370	130	50	3.5	10	200	130	178	165	4x11	24	27	8
AK 100/AK 100 P	416/446	136	60	4.0	11	250	180	200	215	4x13	28	31	8

TP-Ex Series

Explosion-Proof Reducers and Geared Motors

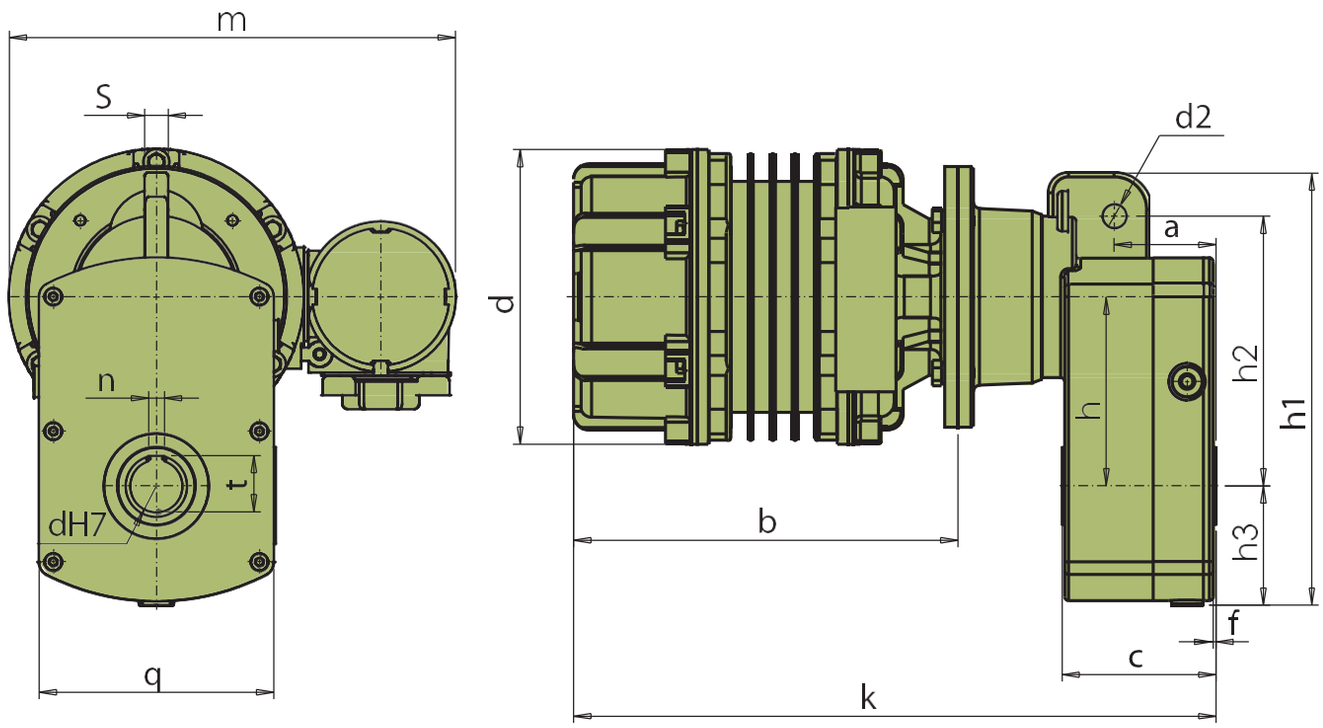
- Geared motors with explosion proof asynchronous electric motors, conical rotor and built-in brake
- Wide range of output speeds and output torques according to client requirements
- Protection class IP54 (EN 60529)
- Flange-joining IM B5 (EN 60034-7)
- Execution with thermal and explosion-proof protection for groups IIBT5 (T4) or IICT5 (T4)
- Bespoke modifications to electric motor power and supply voltages on request

Applications: Travelling mechanisms for cranes and other lifting systems, operating in environments with explosion-proof requirements



TP-Ex Series

Explosion proof reducers and geared motors



Type	a	b	c	d	f	к	m	q	s	d2	h	h1	h2	h3	dH7	n	t
TP 1160 AKK1608Ex	67.5	295	97	226	1.5	466	338	132	14	16	100	243	150	70	30	8	33.3
TP 1160 AKK1605Ex																	
TP 1200 AKK1608Ex	74	295	106	226	2	479	338	152	16	16	125	280	178	79	35	10	38.3
TP 1200 AKK1605Ex																	
TP 1200 AKII1608Ex																	
TP 1250 AKK1608Ex	78	295	118	226	2	493	338	180	18	18	145	335	207	95	40	12	43.3
TP 1250 AKK1605Ex																	
TP 1250 AKII1608Ex																	
TP 1250 AKII1608PEx		307				517	350										
TP1315 AKK1608Ex	98	295	142	226	2	516	338	210	16	22	174	386	244	109	50	14	53.8
TP1315 AKK1605Ex																	
TP1315 AKII1608Ex																	
TP 1315AKII1608PEx		307				540	350										

Explosion proof reducers and geared motors (TP-Ex Series)

TP 1160...AKK...Ex; Mmax - 250Nm								
Type	Gear ratio	Output speed	Output torque	Power	Speed of revolution	CD	SF	Service factor
	-	min^{-1}	N.m	kW	min^{-1}	%	h^{-1}	f_s
TP1160 58 AKK1608-6Ex	57.88	15.89	142.69	0.25	920	40	240	1.75
TP1160 56 AKK1608-6Ex	56.31	16.34	138.82	0.25	920	40	240	1.80
TP1160 49 AKK1608-6Ex	49.12	18.73	121.10	0.25	920	40	240	2.06
TP1160 48 AKK1608-6Ex	48.69	18.90	120.04	0.25	920	40	240	2.08
TP1160 47 AKK1608-6Ex	46.63	19.73	114.96	0.25	920	40	240	2.17
TP1160 45 AKK1608-6Ex	44.87	20.50	110.62	0.25	920	40	240	2.26
TP1160 43 AKK1608-6Ex	43.41	21.19	107.02	0.25	920	40	240	2.33
TP1160 39 AKK1608B6Ex	39.23	23.45	143.14	0.37	920	40	240	1.75
TP1160 36 AKK1608B6Ex	35.95	25.59	131.17	0.37	920	40	240	1.90
TP1160 35 AKK1608B6Ex	35.57	25.86	129.78	0.37	920	40	240	1.93
TP1160 33 AKK1608B6Ex	33.04	27.85	120.55	0.37	920	40	240	2.07
TP1160 30 AKK1608B6Ex	30.25	30.41	110.37	0.37	920	40	240	2.26
TP1160 29 AKK1608B6Ex	28.66	32.10	104.57	0.37	920	40	240	2.39
TP1160 29 AKK1608-12/4Ex		13.96/47.2	162.4/144.5	0.25/0.75	400/1350	20/40	240	1.53/1.73
TP1160 28 AKK1608B6Ex	27.87	33.01	101.69	0.37	920	40	240	2.46
TP1160 28 AKK1608-12/4Ex		14.35/48.44	158.0/140.5	0.25/0.75	400/1350	20/40	240	1.58/1.78
TP1160 27 AKK1608P6Ex	26.62	34.56	144.38	0.55	920	40	240	1.73
TP1160 27 AKK1608-12/4Ex		15.02/50.71	150.9/134.2	0.25/0.75	400/1350	20/40	240	1.66/1.86
TP1160 22 AKK1608P6Ex	22.09	41.65	119.81	0.55	920	40	240	2.08
TP1160 22 AKK1608-12/4Ex		18.1/61.11	125.2/111.3	0.25/0.75	400/1350	20/40	240	1.99/2.25
TP1160 21 AKK1608P6Ex	20.52	44.83	111.29	0.55	920	40	240	2.24
TP1160 21 AKK1608-12/4Ex		19.50/65.79	116.3/103.4	0.25/0.75	400/1350	20/40	240	2.15/2.42
TP1160 20 AKK1608P6Ex	20.19	45.56	109.50	0.55	920	40	240	2.28
TP1160 16 AKK1608P6Ex	16.26	56.58	88.19	0.55	920	40	240	2.83
TP1160 16 AKK1605-6Ex		55.96	121.58	0.75	910	40	240	2.06
TP1160 16 AKK1605-4Ex		83.64	119.32	1.1	1360	40	240	2.10

Explosion proof reducers and geared motors (TP-Ex series)

TP 1200...AKK...Ex; Mmax - 500 Nm								
Type	Gear ratio	Output speed	Output torque	Power	Speed of revolution	CD	SF	Service factor
	-	min^{-1}	N.m	kW	min^{-1}	%	h^{-1}	f_s
TP1200 84 AKK1608-6Ex	84.40	10.90	208.07	0.25	920	40	240	2.40
TP1200 70 AKK1608B6Ex	69.56	13.22	253.80	0.37	920	40	240	1.97
TP1200 69AKK1608B6Ex	69.51	13.23	253.62	0.37	920	40	240	1.97
TP1200 57AKK1608B6Ex	57.29	16.06	209.03	0.37	920	40	240	2.39
TP1200 57AKK1608-12/4Ex		6.98/23.56	324.8/288.7	0.25/0.75	400/1350	20/40	240	1.54/1.73
TP1200 54 AKK1608P6Ex	53.74	17.12	291.47	0.55	920	40	240	1.72
TP1200 54AKK1608-12/4Ex		7.44/25.12	304.7/270.9	0.25/0.75	400/1350	20/40	240	1.64/1.85
TP1200 50 AKK1608P6Ex	49.65	18.53	269.29	0.55	920	40	240	1.85
TP1200 50AKK1608-12/4Ex		8.1/27.2	281.5/250.2	0.25/0.75	400/1350	20/40	240	1.78/2.0
TP1200 44 AKK1608P6Ex	44.29	20.77	240.21	0.55	920	40	240	2.08
TP1200 44AKK1608-12/4Ex		9.03/30.48	251.1/223.2	0.25/0.75	400/1350	20/40	240	2.0/2.24
TP1200 43 AKK1608P6Ex	42.70	21.54	231.59	0.55	920	40	240	2.15
TP1200 43AKK1608-12/4Ex		9.37/31.62	242.1/215.2	0.25/0.75	400/1350	20/40	240	2.06/2.32
TP1200 41 AKK1608P6Ex	40.92	22.48	221.94	0.55	920	40	240	2.25
TP1200 41AKK1608-12/4Ex		9.78/32.99	232.1/206.2	0.25/0.75	400/1350	20/40	240	2.15/2.42
TP1200 40 AKK1608P6Ex	39.72	23.16	215.43	0.55	920	40	240	2.32
TP1200 40 AKK1605-4Ex		34.24	291.47	1.1	1360	40	240	1.72
TP1200 35 AKK1608P6Ex	35.19	26.14	190.86	0.55	920	40	240	2.62
TP1200 35 AKK1605-6Ex		25.86	263.13	0.75	910	40	240	1.90
TP1200 35 AKK1605-4Ex		38.65	258.23	1.1	1360	40	240	1.94
TP1200 18 AK II 1608-6Ex	18	51.11	266.26	1.5	920	40	240	1.88

Explosion proof reducers and geared motors (TP-Ex series)

TP 1250...AKK ...Ex/AK II/AK/ ...Ex; Mmax - 800Nm								
Type	Gear ratio	Output speed	Output torque	Power	Speed of revolution	CD	SF	Service factor
	-	min^{-1}	N.m	kW	min^{-1}	%	h^{-1}	f_s
TP1250 88 AKK1608B6Ex	87.53	10.51	319.37	0.37	920	40	240	2.50
TP1250 88 AKK1608-12/4Ex		4.57/15.42	496.3/441.2	0.25/0.75	400/1350	20/40	240	1.61/1.81
TP1250 72 AKK1608P6Ex	72.30	12.72	392.14	0.55	920	40	240	2.04
TP1250 72 AKK1608-12/4Ex		5.53/18.67	410.0/364.4	0.25/0.75	400/1350	20/40	240	1.95/2.2
TP1250 66 AKK1608P6Ex	65.82	13.97	356.99	0.55	920	40	240	2.24
TP1250 66 AKK1608-12/4Ex		6.08/20.51	373.2/331.8	0.25/0.75	400/1350	20/40	240	2.14/2.41
TP1250 61 AKK1608P6Ex	60.87	15.11	330.14	0.55	920	40	240	2.42
TP1250 61 AKK1608-12/4Ex		6.57/22.18	345.0/306.8	0.25/0.75	400/1350	20/40	240	2.32/2.60
TP1250 61 AKK1605-6Ex		14.95	454.63	0.75	910	20/40	240	1.76
TP1250 61 AKK1605-4Ex		22.34	446.78	1.1	1360	20/40	240	1.79
TP1250 54 AKK1605-6Ex	54.37	16.74	406.70	0.75	910	20/40	240	1.97
TP1250 54 AKK1605-4Ex		25.01	399.07	1.1	1360	20/40	240	2.00
TP1250 52 AKK1605-6Ex	51.99	17.5	388.89	0.75	910	20/40	240	2.06
TP1250 52 AKK1605-4Ex		26.16	381.60	1.1	1360	20/40	240	2.10
TP1250 48 AKK1605-6Ex	48.24	18.86	360.83	0.75	910	20/40	240	2.22
TP1250 48 AKK1605-4Ex		28.19	354.08	1.1	1360	20/40	240	2.26
TP1250 46 AKK1605-6Ex	45.78	19.88	342.31	0.75	910	20/40	240	2.34
TP1250 46 AKK1605-4Ex		29.70	335.94	1.1	1360	20/40	240	2.38
TP1250 27 AKII 1608-6Ex	26.59	34.60	393.32	1.5	920	40	240	2.03
TP1250 20 AKII 1608P6Ex	20	46.00	433.90	2.2	920	40	240	1.84
TP1250 16 AKII 1608P6Ex	15.71	58.56	340.83	2.2	920	40	240	2.34
TP 1315...AKK ...Ex /AKII/AK/...Ex; Mmax- 1200Nm								
TP1315 86 AKK1608P6Ex	86.03	10.69	466.60	0.55	920	40	240	2.57
TP1315 86 AKK1608-12/4Ex		4.65/15.69	487.8/433.6	0.25/0.75	400/1350	20/40	240	2.46/2.77
TP1315 86 AKK1605-6Ex		10.58	643.28	0.75	910	40	240	1.86
TP1315 86 AKK1605-4Ex		15.81	631.46	1.1	1360	40	240	1.90
TP1315 78 AKK1605-4Ex	77.86	17.46	571.49	1.1	1360	40	240	2.10
TP1315 71 AKK1605-6Ex	70.56	12.90	527.79	0.75	910	40	240	2.27
TP1315 46 AKII 1608-6Ex	46.24	19.90	683.99	1.5	920	40	240	1.75
TP1315 45 AKII1608-6Ex	44.98	20.45	665.35	1.5	920	40	240	1.80
TP1315 41 AKII1608-6Ex	41.35	22.25	611.65	1.5	920	40	240	1.96
TP1315 35 AKII1608-6Ex	35.32	26.05	522.45	1.5	920	40	240	2.30
TP1315 30 AKII1608P6Ex	29.60	31.08	642.17	2.2	920	40	240	1.87
TP1315 27 AKII1608P6Ex	26.79	34.34	581.21	2.2	920	40	240	2.06

AKK-Ex Series

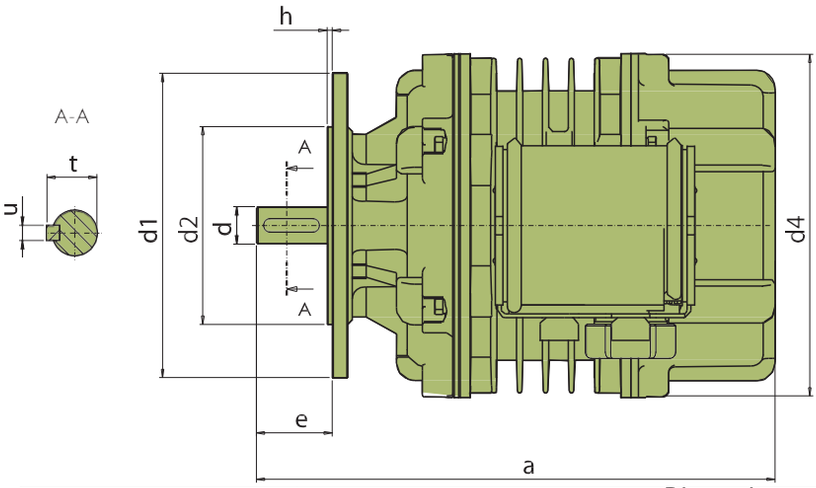
Asynchronous Electric Motors with Built-In Brake for Explosion-Proof Travel Mechanisms

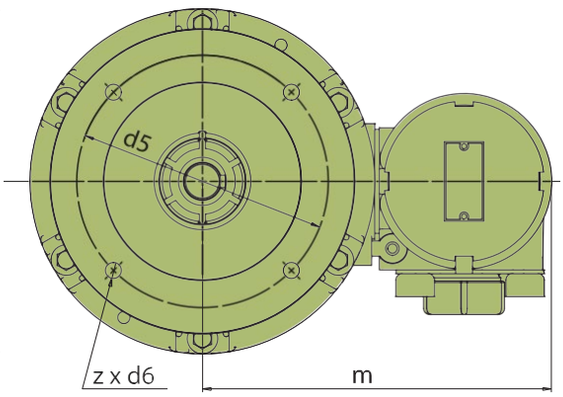
- *Voltage modifications 50Hz / 60 Hz*
- *Insulation class F*
- *Axial shaft run 0.5 – 1.0 mm*
- *IP 44 (EN 60529)*
- *Flange execution*
- *Built-in thermal protection*
- *Explosion-proof execution*
- *Ex(d), IIB T5, Ex(d) IIC T5 (EN5018)*

Asynchronous electric motors with built-in brake for explosion proof travel mechanisms, AKK-Ex series

Power	Type	Rotation Speed	Voltage	Duty Cycle		Current	Starting Torque	Braking Torque	Weight
				CD	SF				
kW	-	min^{-1}	V	%	h^{-1}	A	Nm	Nm	kg
0.18	AKK1305-6Ex	910	400	40	240	1.0	4.2	1.1	27
0.25	AKK1305P6Ex	900	400	40	240	1.1	5.2	2.2	27
0.18	AKK1305B4Ex	1420	400	40	240	1.0	3.0	1.0	26
0.25	AKK1305-4Ex	1390	400	40	240	1.1	4.1	1.1	27
0.37	AKK1305P4Ex	1360	400	40	240	1.3	6.0	2.2	27
0.06/0.12	AKK1305-12/6Ex	420/920	400	20/40	240	1.1/0.9	2.3/2.6	1.1	27
0.06/0.18	AKK1305-12/4Ex	420/1420	400	20/40	240	1.1/1.0	2.3/3.5	1.1	27
0.25	AKK1608-6Ex	940	400	40	240	1.1	6.0	2.2	46.5
0.37	AKK1608B6Ex	940	400	40	240	1.6	6.0	3.3	46.5
0.12/0.25	AKK1608B12/6Ex	400/890	400	20/40	240	1.3/1.1	6.0/5.5	2.2	46.5
0.12/0.37	AKK1608B12/4Ex	400/1380	400	20/40	240	1.3/1.2	6.0/5.0	2.2	46.5
0.37	AKK1608-4Ex	1410	400	40	240	1.2	15.0	3.3	46.5
0.55	AKK1608P6Ex	940	400	40	240	1.1	6.0	2.2	47
0.25/0.75	AKK1608-12/4Ex	400/1350	400	20/40	240	2.1/2.0	11.0/11.0	4	47
0.25/0.55	AKK1608-12/6Ex	400/920	400	20/40	240	2.1/2.2	11.0/14.0	4	47
0.75	AKK1605-6Ex	910	400	40	240	3.3	16.5	8.0	41
1.1	AKK1605-4Ex	1360	400	40	240	3.6	15.0	8.0	41
1.5	AKII1608-6Ex	910	400	40	240	3.8	30	10.5	47
2.2	AKII1608P6Ex	910	400	40	240	6.5	45	17	54
0.5/1.5	AKII1609-12/4Ex	460/1410	400	20/40	240	3.8/3.5	17.5/20.5	11	54

Overall dimensions





Type	Dimensions									Shaft		
	a	e	h	m	d1	d2	d4	d5	z x d6	d	t	u
AKK1305 Ex	302	40	3.5	202	200	130	170	165	4x11	19	21.5	6
AKK1608-6Ex AKK1608B6Ex AKK1608B12/4Ex AKK1608-4Ex	335	40	3.5	225	200	130	226	165	4x10.5	19	21.5	6
AKK1608P6AEx AKK1608-12/4Ex AKK1608-12/6Ex AKK1605-6Ex AKK1605-4Ex AKII1608-6Ex	345	50	3.5	225	200	130	226	165	4x10.5	24	27	8
AKII1608P6Ex AKII1609-12/4Ex	367	60	4	225	250	180	226	215	4x15	28	31	8

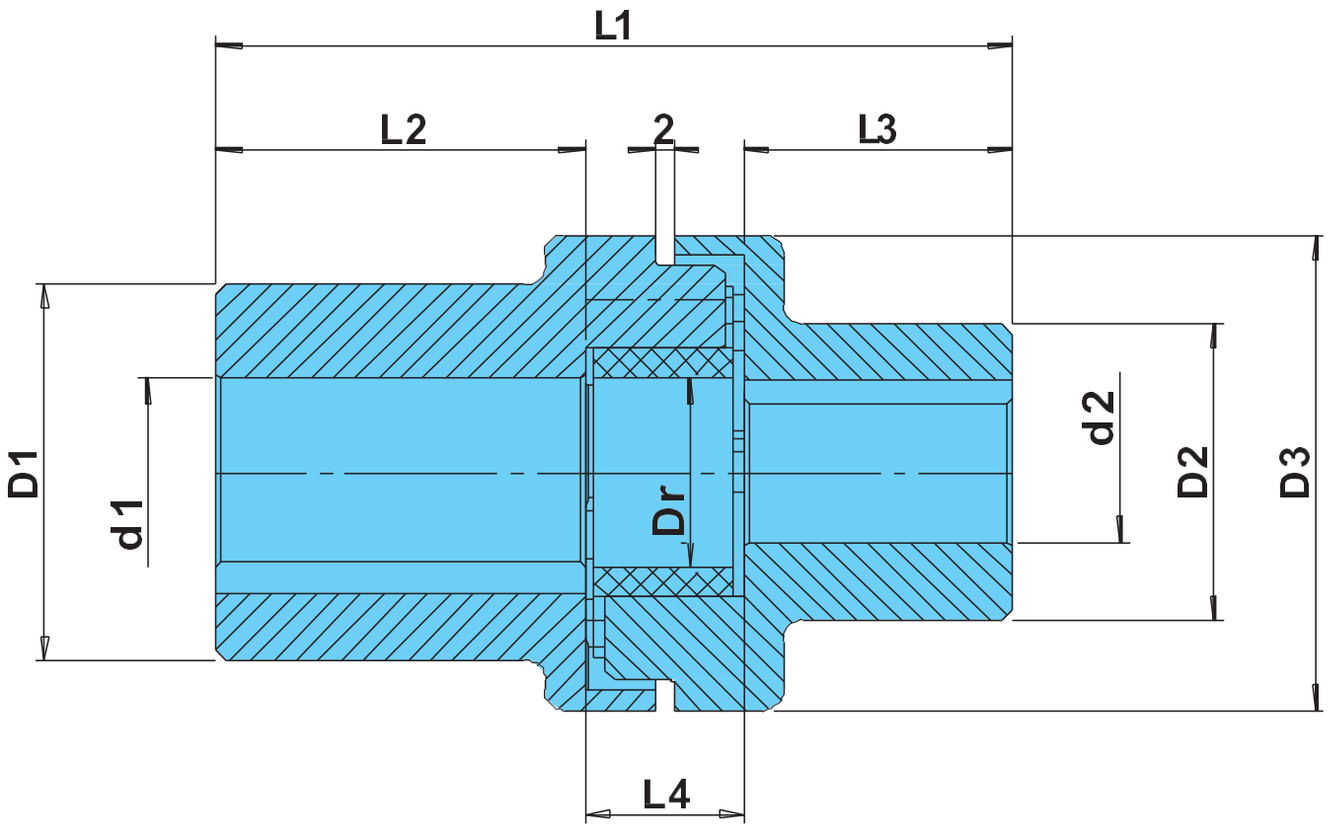
Elastic Couplings

Elmot's elastic couplings are elements of the machine operating system, designed for shaft coupling. The couplings operate at medium load and at medium-to-high motor service factor, or frequent motor switches.

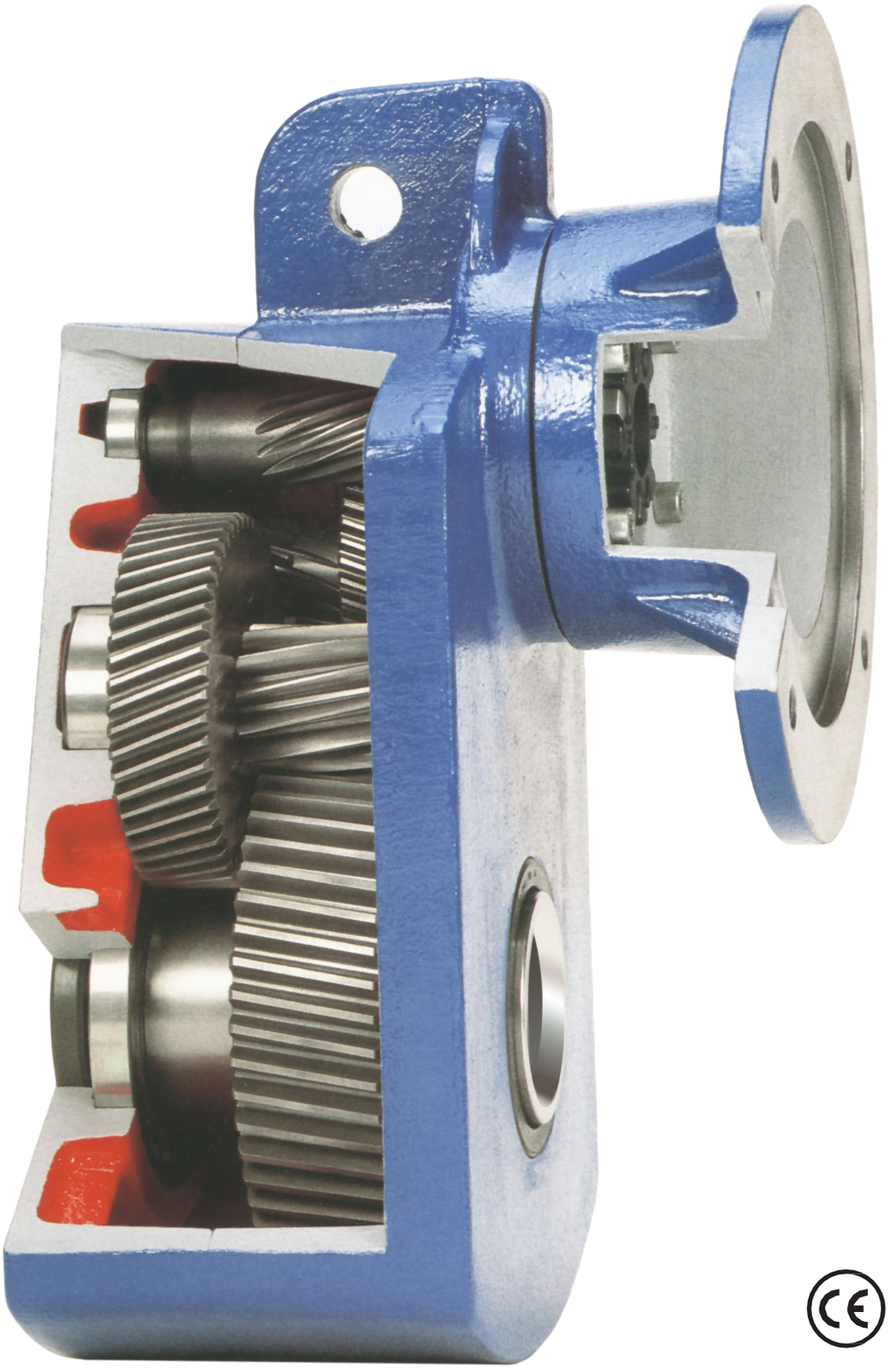
The couplings are made of aluminum allow and the elastic component is made of oil-resistant vulcanizate.

CE

Elastic Couplings



Type	Maximum torque	G.D^2.10^{-4}	Dimensions										Weight
			d1	d2	L1	L2	L3	L4	D1	D2	D3	Dr	
	N.m	kg.m^2	mm										kg
TP 160.71	250	0.35	14	11	55	20.0	19.0	16	30	30	48	19	0.115
TP 160.80	375	0.60	19	11	76	41.0	19.0	16	38	30	48	19	0.175
TP 200.71	250	0.35	14	14	60	22.0	22.0	16	30	30	48	19	0.180
TP 200.80	375	0.60	19	14	80	37.0	27.0	16	38	30	48	19	0.210
TP 200.90	745	2.00	24	14	80	41.5	20.5	18	48	34	65	29	0.310
TP 250.80	375	1.50	19	16	80	41.5	20.5	18	42	34	65	29	0.270
TP 250.90	745	2.00	24	16	80	41.5	20.5	18	48	34	65	29	0.320
TP 250.100	1556	3.30	28	16	90	51.5	20.5	18	58	34	65	29	0.400
TP 315.90	745	2.00	24	19	80	41.5	20.5	18	48	42	65	29	0.310
TP 315.100	1556	3.30	28	19	90	51.5	20.5	18	58	42	65	29	0.420



Components

	Parts	TP 160 / TP 160L	TP 200 / TP 200L	TP 250 / TP 250L	TP 315
1.	Coupling	71-80	71-80-90	80-90-100	90-100
2.	Flange	Ø 160-200	Ø 160-200	Ø 200-250	Ø 200-250
3.	Feather DIN 6885	4x4x18	5x5x20	5x5x20	6x6x25
4.	Seal DIN 3760	12x24x7	15x27x7	17x30x7	20x32x7
5.	Ball bearing SKF	6201	6202	6203	6004
6.	Corpus	2092926/2886896	2092753/2092250	2092774/2092989	2092711
7.	Seal				
8.	Lid	2092947/2886880	2092769/2092245	2092780/2092973	2092727
9.	Input shaft				
10.	Ball bearing SKF	6001	6202	6202	6202
11.	Ball bearing SKF	6201	6302	6303	6204
12.	Shaft I				
13.	Gear II				
14.	Ball bearing SKF	6201	6302	6304	6305
15.	Shaft II				
16.	Output shaft				
17.	Seal DIN 3760	45x60x7	50x65x8	60x80x8	70x90x10
18.	Ball bearing SKF	16009	16010	16012	16014
19.	Screw DIN 912	M 8x50	M 8x55	M 8x55	M 8x70
20.	Stopper	M 18x1.5	M 18x1.5	M 18x1.5	M 18x1.5
21.	Pin	8x30	8x30	8x30	8x30
22.	Feather	-	-	2210784	2210632
23.	Gear III				
24.	Ball bearing SKF	6202	6204	6304	6305
25.	Gear I				
26.	Ball bearing SKF	6001	6202	6203	6204
27.	Screw DIN 912	M 8x20	M 8x25	M 8x25	M 8x25

ELMOT JSC - 73 Nikola Gabrovski Str., 5000 Veliko Tarnovo, Bulgaria
phone/fax +359 62 647 837; +359 62 641 963; +359 62 641 952
E-mail: elmot1@elmotbg.com, http://www.elmotbg.com