

SP-E1

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LINZ ELECTRIC S.p.A., azienda del gruppo Pedrollo, è specializzata nella produzione di alternatori e saldatrici rotanti. Fondata nel 2002 Linz Electric è diventata in pochi anni un'importante realtà nel settore grazie alla decennale esperienza dei propri progettisti, alla forte propensione all'innovazione e ad una predisposizione naturale verso gli investimenti che hanno permesso di sviluppare una gamma completa di prodotti i cui elevati standard qualitativi sono riconosciuti e apprezzati in tutto il mondo dai principali costruttori di gruppi elettrogeni. I valori fondanti dell'azienda sono orientati verso la Centralità del Cliente tramite la notevole flessibilità garantita dalla forte integrazione verticale dei processi produttivi, la qualità del Prodotto e l'eccellenza del Servizio.

LINZ ELECTRIC S.p.A., part of the Pedrollo Group of companies, is specialized in the production of alternators and rotating welders. It was founded in 2002 and became in few years one of the major players in the sector. The knowledge and long experience of its designers together with the strong propensity for innovation and a natural tendency for investment has quickly led to the development of a full range of products whose high quality standards are recognised and appreciated worldwide by the most important gen-sets manufacturers. In accordance with its deep values the main focus of Linz Electric has always been the Customer Satisfaction by controlling the key points of the production through a strong vertical integration, a constant focus on the Product Quality and a quick and complete Service.

LINZ ELECTRIC S.p.A., empresa del grupo Pedrollo, está especializada en la fabricación de alternadores y soldadoras rotativas. Fundada en el año 2002 Linz Electric se ha convertido en pocos años en una importante entidad del sector gracias a la experiencia decenal de sus proyectistas, a la fuerte tendencia a la innovación y a la natural predisposición hacia las inversiones que han permitido el desarrollo de una amplia gama de productos cuyas elevadas prestaciones son apreciadas en todo del mundo por los mayores fabricantes de grupos electrógenos. Los valores fundamentales de la empresa están orientados hacia la Centralidad del Cliente, gracias a la flexibilidad de su producción, garantizada por la fuerte integración vertical de los procesos productivos, la calidad del Producto y la excelencia del Servicio.

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SP - E1

CARATTERISTICHE TECNICHE GENERALI

TECHNICAL DETAILS

CARACTERÍSTICAS GENERALES

CARATTERISTICHE MECCANICHE

Le gamme di alternatori SP ed E1 sono realizzate con soluzioni innovative e materiali di alta qualità. La struttura è in lega di alluminio resistente alle vibrazioni. L'albero è in acciaio ad alta resistenza.

Il rotore, concepito per resistere alla velocità di fuga dei motori di trascinamento, è dotato di una gabbia di smorzamento che permette un buon funzionamento anche con carichi distorcenti. I cuscinetti sono lubrificati a vita. La ventilazione è assiale con aspirazione sul lato opposto accoppiamento. Sono ammessi ambedue i sensi di rotazione.

CARATTERISTICHE ELETTRICHE

Gli isolamenti sono realizzati con materiali in classe H sia nello statore che nel rotore e gli avvolgimenti sono tropicalizzati. Il lamierino magnetico utilizzato è del tipo a basse perdite.

NORME DI RIFERIMENTO

Gli alternatori sono costruiti in conformità a quanto previsto dalle norme EN 60034-1, EN 60204-1, EN61000-6-2, EN61000-6-4, EN 55014-1, EN 55011 ed alle direttive 2006/95/CE, 2004/108/CE.

ACCOPIAMENTI

Sono previsti tutti gli standard di accoppiamento ai motori primi presenti nel mercato.

GRADO DI PROTEZIONE

Standard IP 21. A richiesta IP 23.

MECHANICAL SPECIFICATIONS

The SP and E1 series are manufactured by means of advanced technology and high quality materials. The frame is made of vibration-resistant aluminium alloy. The shaft is in high tensile steel. The rotor is designed to resist the runaway speed of the traction motors, and comes with a damping cage allowing correct operation also in case of distorted loads. The bearings are life-long lubricated. Axial ventilation is ensured with intake from the side opposite to the coupling. Both rotation directions are possible.

ELECTRIC CHARACTERISTICS:

Insulation is obtained with H class material for both stator and rotor and the windings are tropicalized. Low-loss lamination is used.

REFERENCE STANDARDS

Alternators are manufactured pursuant to the provisions of the EN 60034-1, EN 60204-1, EN61000-6-2, EN61000-6-4, EN 55014-1, EN 55011 standards and 2006/95/CEE, 2004/108/CEE directives.

COUPLINGS

All the motor coupling standards available on the market are supported.

PROTECTION DEGREE

Standard IP 21. IP 23 on request.

CARACTERÍSTICAS MECÁNICAS

Las gamas de alternadores SP y E1 han sido fabricadas con tecnologías de vanguardia y materiales de alta calidad. La estructura de aleación de aluminio es resistente a las vibraciones. El eje es de acero de gran resistencia. El rotor, concebido para resistir a la sobrevelocidad de los motores primarios, es dotado de una jaula amortiguadora, que permite un buen funcionamiento incluso con cargas no lineales. Los cojinetes son lubricados por vida. La ventilación es axial con aspiración en la parte opuesta al acoplamiento. Admiten ambos sentidos de rotación.

CARACTERÍSTICAS ELÉCTRICAS:

Los aislantes son en clase H tanto en el rotor como en el estator. Los bobinados están tropicalizados. La lámina magnética es del tipo a bajas pérdidas.

NORMAS DE REFERENCIA

Los alternadores han sido fabricados en conformidad con lo previsto por las normas EN 60034-1, EN 60204-1, EN61000-6-2, EN61000-6-4, EN 55014-1, EN 55011 y a las directivas 2006/95/CEE, 2004/108/CEE.

ACOPLAMIENTOS

Están previstos todos los tipos de acoplamiento a los principales motores presentes en el mercado.

GRADO DE PROTECCIÓN

Estándard IP 21. Bajo pedido IP 23.



CONDIZIONI DI UTILIZZO

I dati sulle prestazioni riportati nel presente catalogo sono dichiarati per un funzionamento ad un altitudine non superiore ai 1000 m s.l.m. e con temperatura ambiente fino a 40°C. Per utilizzi in condizioni diverse consultare la tabella sotto riportata.

OPERATING CONDITIONS

The performance datas reported in the present catalogue are valid for operation at an altitude not exceeding 1000 m a.s.l. and ambient temperature not exceeding 40°C. If operation takes place in different conditions, see the table below.

CONDICIONES DE USO

Los datos sobre las prestaciones mencionados en el presente catálogo se refieren al funcionamiento a una altitud no superior a los 1000 m s.n.m. y con temperatura ambiente hasta 40°C. Para usos en condiciones distintas, consultar la tabla que se muestra a continuación.

Variazione di potenza con la temperatura e l'altitudine
Power variation according to temperature and altitude

ALTITUDINE ALTITUDE m	Temperatura ambiente Ambient temperature				
	25 °C	40 °C	45 °C	50 °C	55 °C
	< 1000	1.09	1	0.96	0.93
1000 - 1500	1.01	0.96	0.92	0.89	0.87
1500 - 2000	0.96	0.91	0.87	0.84	0.83
2000 - 3000	0.9	0.85	0.81	0.78	0.76



SP - E1C - SPE - E1E

ALTERNATORI SINCRONI MONOFASE 2- 4 POLI

2-4 POLES SINGLE PHASE SYNCHRONOUS ALTERNATORS

ALTERNADORES SÍNCRONOS MONOFÁSICOS 2-4 POLOS

- **Alto rendimento**

High efficiency

Alto rendimiento

- **Eccellente forma d'onda**

Excellent wave form

Excelente forma de onda

- **Compattezza e resistenza meccanica**

Compactness and mechanical strenght

Compacidad y resistencia mecánica

- **Ampia scelta di accessori**

Wide availability of accessories

Amplia gama de accesorios

SP

ALTERNATORI MONOFASE A 2 POLI CON CONDENSATORE
 SINGLE-PHASE 2 POLES BRUSHLESS ALTERNATORS WITH CAPACITOR
 ALTERNADORES MONOFÁSICOS 2 POLOS SIN ESCOBILLAS CON CONDENSADOR



TIPO - TYPE	50 Hz - 3000 giri/1' - $\cos\phi = 1$					60 Hz - 3600 giri/1' - $\cos\phi = 1$				
	Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power		Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power	
		4/4	3/4	kW	Hp		4/4	3/4	kW	Hp
SP10S A	1.7	72.5	73.0	2.3	3.1	2	73.5	74.0	2.7	3.6
SP10S B	2.2	73.5	74.0	3.0	4.0	2.7	74.5	75.0	3.6	4.9
SP10S C	2.6	74.5	75.0	3.5	4.7	3.2	75.5	76.0	4.2	5.7
SP10S D	3	75.0	75.5	4.0	5.4	3.7	76.0	76.5	4.9	6.5
SP10S E	3.5	75.5	76.0	4.6	6.2	4.3	76.5	77.0	5.6	7.5
SP10M F	4.2	75.0	75.5	5.6	7.5	5	76.0	77.0	6.6	8.8
SP10M G	5	76.0	77.0	6.6	8.8	6	77.5	78.0	7.7	10.4

TIPO - TYPE	Potenza resa Rating kVA (kW)		Mom.di inerzia Mom. of inertia (J) (kgm ²)	Peso Weight (kg) B9	Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz			50 Hz	60 Hz
SP10S A	1.7	2	0.010	11.3	3.85	4.85
SP10S B	2.2	2.7	0.010	13.5	3.80	4.80
SP10S C	2.6	3.2	0.011	15.0	3.80	4.80
SP10S D	3	3.7	0.011	16.3	3.75	4.70
SP10S E	3.5	4.3	0.012	17.7	3.75	4.70
SP10M F	4.2	5	0.013	19.8	3.70	4.60
SP10M G	5	6	0.014	21.0	3.70	4.60



E1C/2

ALTERNATORI MONOFASE A 2 POLI CON CONDENSATORE
 SINGLE-PHASE 2 POLES BRUSHLESS ALTERNATORS WITH CAPACITOR
 ALTERNADORES MONOFÁSICOS 2 POLOS SIN ESCOBILLAS CON CONDENSADOR

TIPO - TYPE	50 Hz - 3000 giri/1' - $\cos\phi = 1$						60 Hz - 3600 giri/1' - $\cos\phi = 1$					
	Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA (kW)	Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA (kW)
		4/4	3/4	kW	Hp			4/4	3/4	kW	Hp	
E1C10S B	2.2	73	73.5	3	4	5	2.7	74	74.5	3.6	4.9	6
E1C10S D	3	74.5	75	4	5.4	7.1	3.7	75.5	76	4.9	6.6	8.2
E1C10S E	3.5	75	75.5	4.7	6.3	8.2	4.3	76	76.5	5.7	7.6	9.6
E1C10S F	4.2	75	75.5	5.6	7.5	10	5	76	77	6.6	8.8	12
E1C10S G	5	76	77	6.6	8.8	12	6	77.5	78	7.7	10.4	14
E1C10M H	6	77.5	78	7.7	10.4	14	7.25	79	79.5	9.2	12.3	16.5
E1C10M I	7	79	80	8.9	11.9	17	8.5	80.5	81	10.6	14.2	20
E1C10M L	8	79.2	80.1	10.1	13.5	18.5	9.75	79.5	80.5	12.3	16.4	22
E1C11M B	10	79.5	80.5	12.6	16.9	22	12.5	80	81	15.6	21	27
E1C11M C	12	80	81	15	20.1	26	15	80.5	81.5	18.6	25	30
E1C13M D/2	15	80.5	81.5	18.6	25.0	31.5	18	81.5	82.0	22.1	29.6	38
E1C13M E/2	18	81.0	81.4	22.2	29.8	37.5	22	82.1	82.6	26.8	39.9	45

TIPO - TYPE	Potenza resa Rating kVA (kW)		Mom.di inerzia Mom. of inertia (J) (kgm ²)	Peso Weight (kg)		Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz		B3/B9	B3/B14	50 Hz	60 Hz
	E1C10S B	2.2	2.7	0.01	15.8	16.3	3.8
E1C10S D	3	3.7	0.011	18.0	18.7	3.75	4.7
E1C10S E	3.5	4.3	0.0115	20.0	20.7	3.75	4.7
E1C10S F	4.2	5	0.012	21.3	22	3.7	4.6
E1C10S G	5	6	0.013	23.0	23.7	3.7	4.6
E1C10M H	6	7.25	0.016	29.3	30	3.6	4.5
E1C10M I	7	8.5	0.019	32.3	33	3.6	4.5
E1C10M L	8	9.75	0.022	36.7	37.5	3.6	4.5
E1C11M B	10	12.5	0.025	47.8	48.5	4.9	5.9
E1C11M C	12	15	0.027	52.2	53.2	4.8	5.8
E1C13M D/2	15	18	0.065	77.4	80.3	9.2	11.2
E1C13M E/2	18	22	0.069	88.4	91.3	9.0	10.8



E1C/4

ALTERNATORI MONOFASE A 4 POLI CON CONDENSATORE IN ALLUMINIO
 SINGLE-PHASE 4 POLES BRUSHLESS ALTERNATORS WITH ALUMINUM CAPACITOR
 ALTERNADORES MONOFÁSICOS 4 POLOS SIN ESCOBILLAS CON CONDENSADOR

TIPO - TYPE	50 Hz - 1500 giri/1' - $\cos\phi = 1$						60 Hz - 1800 giri/1' - $\cos\phi = 1$					
	Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power		Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power			
		4/4	3/4	kW	Hp		4/4	3/4	kW	Hp		
E1C13S A/4	5.5	77.0	78.0	7.1	9.6	7	78.0	78.5	9.0	12		
E1C13S B/4	7	78.0	79.0	9.0	12.0	8.5	79.0	80.0	10.8	14.4		
E1C13S C/4	8	79.0	80.0	10.1	13.6	9.75	80.0	80.5	12.2	16.3		
E1C13S D/4	9	79.5	80.0	11.3	15.2	11	80.0	81.0	13.8	18.4		
E1C13M E/4	11.5	80.0	81.0	14.4	19.3	14	81.0	81.5	17.3	23.2		
E1C13M F/4	12.5	81.5	82.0	15.3	20.6	15	81.5	82.5	18.4	24.7		

TIPO - TYPE	Potenza resa - Rating kVA (kW)		Mom.di inerzia Mom. of inertia (J) (kgm ²)		Peso - Weight (kg)			Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz	B3/B14	B2 SAE	B3/B9	B3/B14	B2	50 Hz	60 Hz
	E1C13S A/4	5.5	7	0.044	0.042	44.0	47.0	51.1	3.1
E1C13S B/4	7	8.5	0.049	0.048	50.6	53.5	57.6	5.3	6.4
E1C13S C/4	8	9.75	0.055	0.055	57.1	60.0	64.1	5.1	6.1
E1C13S D/4	9	11	0.060	0.06	61.5	64.4	68.5	4.9	5.9
E1C13M E/4	11.5	14	0.072	0.073	76.6	79.5	83.6	4.7	5.6
E1C13M F/4	12.5	15	0.075	0.077	80.1	83.0	87.1	4.6	5.5

La serie E1C13/4 è costituita da alternatori monofase a 4 poli, senza spazzole, con avvolgimento ausiliario caricato su un condensatore che assicura la regolazione della tensione. Questa serie è stata ottimizzata per l'utilizzo in torri di illuminazione con lampade a luce bianca a vapori di mercurio od alogene.

E1C13/4 series are single-phase 4 poles brushless alternators with an auxiliary winding loaded on a capacitor, regulating the voltage. This series has been designed for application in lighting towers with metal halide or halogen lamps.

La serie E1C13/4 está constituida por alternadores monofásicos de 4 polos, sin escobillas, con devanado auxiliar cargado sobre un condensador que asegura la regulación de la tensión. Dicha serie ha sido proyectada especialmente para torres de iluminación con lámparas a vapor de mercurio o halógena.



SPE-E1E

ALTERNATORI MONOFASE A 2 POLI CON SPAZZOLE E REGOLAZIONE ELETTRONICA (AVR)
 SINGLE-PHASE 2 POLES ALTERNATORS WITH BRUSHES AND ELECTRONIC REGULATOR (AVR)
 ALTERNADORES MONOFÁSICOS 2 POLOS CON ESCOBILLAS Y REGULADOR ELECTRÓNICO (AVR)

TIPO - TYPE	50 Hz - 3000 giri/1' - $\cos\phi = 1$					60 Hz - 3600 giri/1' - $\cos\phi = 1$				
	Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power		Potenza resa Rating kVA (kW)	Rendimento % Efficiency %		Potenza assorbita Driving power	
		4/4	3/4	kW	Hp		4/4	3/4	kW	Hp
SPE10M F	3.5	75.0	75.5	4.7	6.3	4.2	75.3	75.8	5.6	7.5
SPE10M G	4.5	76.0	77.0	5.9	7.9	5.4	77.5	78.0	7.0	9.3
E1E10M H	6	77.0	78.0	7.8	10.4	7.2	79.0	79.5	9.1	12.2
E1E10M I	7	79.0	80.0	8.9	11.9	8.4	80.5	81.0	10.4	14.0
E1E10L L	8	79.1	80.2	10.1	13.6	9.75	80.1	80.5	12.2	16.3
E1E11M B	10	80.0	81.0	12.5	16.8	12	80.4	81.3	14.9	20.0
E1E13S C	13	82.0	82.5	15.9	21.3	15.6	82.4	82.9	18.9	25.4
E1E13M D	15	82.8	83.2	18.1	24.3	18	83.3	83.8	21.6	29.0
E1E13M E	18	83.0	83.5	21.7	29.1	21.6	83.6	84.0	25.8	34.6

TIPO - TYPE	Potenza resa Rating kVA (kW)		Mom.di inerzia Mom. of inertia (J) (kgm ²)	Peso Weight (kg)		Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz		B3/B9	B3/B14	50 Hz	60 Hz
SPE10M F	3.5	4.2	0.013	20.1	/	3.7	4.8
SPE10M G	4.5	5.4	0.014	21.3	/	3.7	4.8
E1E10M H	6	7.2	0.016	29.6	30.3	3.6	4.5
E1E10M I	7	8.4	0.019	33.3	34.0	3.5	4.5
E1E10L L	8	9.75	0.022	37.8	38.5	3.7	4.7
E1E11M B	10	12	0.025	48.1	49.1	4.9	5.9
E1E13S C	13	15.6	0.061	62.3	65.2	9.4	12.2
E1E13M D	15	18	0.065	77.7	80.6	9.2	11.2
E1E13M E	18	21.6	0.069	88.7	91.6	9.0	10.8

SP-E1C-SPE-E1E

CARATTERISTICHE TECNICHE

TECHNICAL DETAILS

CARACTERÍSTICAS TÉCNICAS

TENSIONI

Per le serie SP e SPE standard 230V, 50 Hz. Per le serie E1C e E1E standard 115/230V, 50Hz. A richiesta tensioni speciali sia a 50 che a 60 Hz.

PRECISIONE DELLA TENSIONE

Per le serie SP e E1C è del $\pm 5\%$ da vuoto a pieno carico, $\cos\phi = 1$ con velocità di rotazione costante.

Per le serie SPE e E1E è del $\pm 1\%$ da vuoto a pieno carico, $\cos\phi = 1$ con velocità di rotazione costante.

CORRENTE DI CORTO CIRCUITO

La corrente permanente in caso di corto circuito per le serie SP e E1C è superiore a tre volte la corrente nominale, permettendo un buon funzionamento delle protezioni.

SOVRACCARICHI

Si accetta un sovraccarico del 10% per 1 ora ogni 6 ore.

FORMA D'ONDA DELLA TENSIONE D'USCITA

Il basso contenuto armonico ($<5\%$) permette di alimentare qualsiasi tipo di carico monofase: è quindi possibile utilizzare elettro-utensili con controllo elettronico, computers, motori, TV, ect.

TRANSITORIO AL MOMENTO DELL'INSERZIONE DEL CARICO NOMINALE

La caduta di tensione all'istante dell'inserzione del carico è minore del 10% a $\cos\phi = 1$ e giri nominali.

VOLTAGES

For SP and SPE series standard 230V, 50 Hz. For E1C and E1E series standard 115/230V, 50Hz. Special voltages on request at both 50 and 60 Hz.

VOLTAGE ACCURACY

For SP and E1C series $\pm 5\%$ from no load to full load, $\cos\phi = 1$ at constant rotation speed. For SPE and E1E series $\pm 1\%$ from no load to full load, $\cos\phi = 1$ at constant rotation speed.

SHORT CIRCUIT CURRENT

For SP and E1C series in case of short circuit the permanent current exceeds rated current by three times, ensuring the correct operation of protections.

OVERLOAD

A 10% overload for one hour every 6 hours is accepted.

OUTPUT VOLTAGE WAVE FORM

The low harmonic content ($<5\%$) allows supplying any type of single-phase load: therefore electrical appliances with electronic regulation, computers, motors, TV sets, etc. can be used.

TRANSIENT VOLTAGE DIP AT RATED LOAD INSERTION

The voltage dip when the load is inserted is lower than 10% at $\cos\phi = 1$ and nominal rpm.

TENSIONES

Para las series SP y SPE estándar 230V, 50 Hz. Para las series E1C y E1E estándar 115/230V, 50Hz. A pedido tensiones especiales tanto de 50 como de 60 Hz.

PRECISIÓN DE LA TENSIÓN

Para las series SP y E1C es del $\pm 5\%$ de vacío a plena carga, $\cos\phi = 1$ con velocidad de rotación constante. Para las series SPE y E1E es del $\pm 1\%$ de vacío a plena carga, $\cos\phi = 1$ con velocidad de rotación constante.

CORRIENTE DE CORTO CIRCUITO

Para las series SP y E1C la corriente permanente en caso de corto circuito es tres veces superior a la corriente nominal, permitiendo un buen funcionamiento de las protecciones.

SOBRECARGAS

Se acepta una sobrecarga del 10% por 1 hora cada 6 horas.

FORMA DE ONDA DE LA TENSIÓN DE SALIDA

El bajo contenido armónico ($<5\%$) permite alimentar cualquier tipo de carga monofásica: por lo tanto, es posible utilizar electroherramientas con control electrónico, ordenadores, motores, TV, etc.

TRANSITORIO AL MOMENTO DE APLICAR LA CARGA NOMINAL

La caída de tensión al momento de aplicar la carga es menor al 10% a $\cos\phi = 1$ y giros nominales.

QUADRI PER ACCESSORI
PANELS FOR ACCESSORIES
CUADROS PARA ACCESORIOS

È possibile installare varie combinazioni di accessori tra i quali prese schuko e CEE, breaker, voltmetro a led, kit per carica batterie, commutatore 115/230 V, magnetotermico, differenziale, su quadri posteriori (per le serie SP10-SPE-E1C10-E1E10) o quadri superiori (per le serie SP10-E1C10M-E1C11-E1E11). Su quest'ultimi le prese sono montate a sinistra nella versione standard o a destra, su richiesta.

It is possible equipped with different combinations of accessories, including Schuko and CEE sockets protected by breakers or magneto-thermic switch, led voltmeter, battery charger kit, 115-230V commutator, earth leakage breaker, rear panels (for SP10-SPE-E1C10-E1E10 series) or top panels (for SP10-E1C10M-E1C11-E1E11 series). On top panels sockets are mounted on left side on standard version or on right side on request.

Es posible alojar varias combinaciones de accesorios, como por ejemplo las tomas Schuko y CEE, breaker, voltímetro a LED, kit carga baterías, conmutador 115/230 V, magneto-térmico, diferencial, sobre cuadros traseros (para las gamas SP10-SPE-E1C10-E1E10) o cuadros superiores (para las gamas SP10-E1C10M-E1C11-E1E11). En los últimos las tomas están en lado izquierdo en la versión estandar o derecho, a pedido.





E1S - E1X

ALTERNATORI SINCRONI TRIFASE 2- 4 POLI

2-4 POLES THREE PHASE SYNCHRONOUS ALTERNATORS

ALTERNADORES SÍNCRONOS TRIFÁSICOS 2-4 POLOS

- **Alto rendimento**

High efficiency

Alto rendimiento

- **Eccellente forma d'onda**

Excellent wave form

Excelente forma de onda

- **Compattezza e resistenza meccanica**

Compactness and mechanical strenght

Compacidad y resistencia mecánica

- **Minima manutenzione**

Minimum maintenance

Mínimo mantenimiento



E1S/2

ALTERNATORI TRIFASE 2 POLI CON SPAZZOLE E REGOLAZIONE COMPOUND
 THREE-PHASE 2 POLES ALTERNATORS WITH BRUSHES AND COMPOUND REGULATION
 ALTERNADORES TRIFÁSICOS 2 POLOS CON ESCOBILLAS Y REGULACIÓN COMPOUND.

TIPO - TYPE	50 Hz - 3000 giri/1' - $\cos\varphi = 0,8$						60 Hz - 3600 giri/1' - $\cos\varphi = 0,8$					
	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA
		4/4	3/4	kW	Hp			4/4	3/4	kW	Hp	
E1S10M G	5.5	78.5	79	5.6	7.5	18	7	79.0	80.0	7.1	9.5	20
E1S10M H	7	80.5	81	7	9.3	21	8.5	81.0	82.0	8.4	11.3	25
E1S10M I	9	82.5	83	8.7	11.7	27	11	82.5	83.0	10.7	14.3	33
E1S10L L	10	82.6	83.1	9.70	13.0	30	12	82.7	83.3	11.6	15.6	36
E1S11M AS	11.5	83.0	83.2	11.1	14.9	37	14	83.5	83.7	13.4	18	44
E1S11M B	13.5	83.5	83.7	12.9	17.3	40	16.5	84.0	84.3	15.7	21.1	50
E1S13S C/2	16	85.0	85.5	15.1	20.2	46	19.2	85.5	85.7	18	24.1	58
E1S13M D/2	22	86.0	86.5	20.5	27.4	60	26.4	86.5	86.7	24.4	32.7	76
E1S13M E/2	27	87.0	87.5	24.8	33.3	75	32.4	87.5	88.0	29.6	39.7	95

TIPO - TYPE	Potenza resa - Rating kVA		Mom.di inerzia Mom. of inertia (J) (kgm ²) B3/B14	Peso - Weight (kg)			Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz		B3/B9	B3/B14	B2	50 Hz	60 Hz
E1S10M G	5.5	7	0.013	28.7	29.4	/	3.7	4.6
E1S10M H	7	8.5	0.016	33.1	33.8	/	3.7	4.6
E1S10M I	9	11	0.019	36.9	37.6	/	3.6	4.5
E1S10L L	10	12	0.022	41.4	42.1	/	3.6	4.5
E1S11M AS	11.5	14	0.024	45.3	46.0	50.6	4.9	5.9
E1S11M B	13.5	16.5	0.027	51.5	52.2	56.8	4.8	5.8
E1S13S C/2	16	19.2	0.058	61.0	63.9	68.0	9.4	11.2
E1S13M D/2	22	26.4	0.065	77.4	80.3	84.5	9.2	11.2
E1S13M E/2	27	32.4	0.069	88.4	91.3	95.4	9.0	10.8

TIPO - TYPE	Potenza resa Rating kVA		pcc	Reattanze e costanti di tempo / Reactances and time constants							Resistenza avv. princ. a 20°C Main winding resistance at 20°C
	50 Hz	60 Hz		Xd%	X'd%	X''d%	Xq%	T'do	T'd	T''do	
								(ms)	(ms)	(ms)	
E1S10M G	5.5	7	0.50	265	19	7.0	145	420	30	5.0	1.8
E1S10M H	7	8.5	0.60	270	20	6.5	150	450	33	5.5	1.24
E1S10M I	9	11	0.65	285	19	6.0	165	500	33	6.0	0.92
E1S10L L	10	12	0.67	290	20	6.5	170	550	33	6.0	0.65
E1S11M AS	11.5	14	0.62	280	21	5.8	155	530	40	6.0	0.63
E1S11M B	13.5	16.5	0.65	275	22	5.3	150	580	46	5.9	0.46
E1S13S C/2	16	19.2	0.41	382	26	10.0	166	600	41	6.0	0.48
E1S13M D/2	22	26.4	0.42	373	29	12.0	162	600	47	6.0	0.28
E1S13M E/2	27	32.4	0.40	350	31	11.0	152	610	54	7.0	0.23



E1S/4

ALTERNATORI TRIFASE 4 POLI CON SPAZZOLE E REGOLAZIONE COMPOUND

THREE-PHASE 4 POLES ALTERNATORS WITH BRUSHES AND COMPOUND REGULATION

ALTERNADORES TRIFÁSICOS 4 POLOS CON ESCOBILLAS Y REGULACIÓN COMPOUND

TIPO - TYPE	50 Hz - 1500 giri/1' - $\cos\phi = 0,8$						60 Hz - 1800 giri/1' - $\cos\phi = 0,8$					
	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA
		4/4	3/4	kW	Hp			4/4	3/4	kW	Hp	
E1S13S A/4	8	81.0	81.3	7.9	10.6	23	9.6	81.4	81.8	9.4	12.7	29
E1S13S B/4	10	83.0	83.5	9.6	12.9	33	12	83.5	84.0	11.5	15.4	38
E1S13M D/4	13	84.8	85.4	12.3	16.4	43	16	85.0	85.5	15.1	20.2	53
E1S13M E/4	16	85.8	86.3	14.9	20	52	19	86.3	86.7	17.6	23.6	62
E1S13M F/4	20	86.0	86.2	18.6	24.9	62	24	86.5	86.8	22.2	29.8	76

TIPO - TYPE	Potenza resa - Rating kVA		Mom.di inerzia Mom. of inertia (J) (kgm ²)		Peso - Weight (kg)			Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz	B3/B14	B2 SAE	B3/B9	B3/B14	B2	50 Hz	60 Hz
E1S13S A/4	8	9.6	0.044	0.042	51.0	53.9	58.0	5.4	6.5
E1S13S B/4	10	12	0.049	0.048	57.4	60.3	64.4	5.3	6.4
E1S13M D/4	13	16	0.060	0.06	70.5	73.4	77.5	4.9	5.9
E1S13M E/4	16	19	0.072	0.073	83.5	86.4	90.5	4.7	5.6
E1S13M F/4	20	24	0.075	0.077	87.0	89.9	94.0	4.6	5.5

TIPO - TYPE	Potenza resa Rating kVA		pcc	Reattanze e costanti di tempo / Reactances and time constants								Resistenza avv. princ. a 20°C Main winding resistance at 20°C
	50 Hz	60 Hz		Xd%	X'd%	X''d%	Xq%	T'do	T'd	T''do		
								(ms)	(ms)	(ms)		
E1S13S A/4	8	9.6	0.90	159	22	9.8	127	358	48	5.5	1.58	
E1S13S B/4	10	12	0.91	157	20	7.7	117	363	46	5.6	0.97	
E1S13M D/4	13	16	0.89	165	23	8.5	141	370	52	6.3	0.61	
E1S13M E/4	16	19	0.88	170	21	8.2	135	385	48	6.5	0.46	
E1S13M F/4	20	24	0.90	157	21	7.6	135	400	53	6.4	0.38	



E1S KE

ALTERNATORI TRIFASE CON SPAZZOLE A 2 POLI CON REGOLAZIONE MISTA COMPOUND ED ELETTRONICA
 THREE-PHASE 2 POLES ALTERNATORS WITH BRUSHES AND MIXED COMPOUND AND ELECTRONIC REGULATION
 ALTERNADORES TRIFÁSICOS CON ESCOBILLAS 2 POLOS CON REGULACIÓN MIXTA COMPOUND Y ELECTRÓNICA

TIPO - TYPE	50 Hz - 3000 giri/1' - $\cos\varphi = 0,8$						60 Hz - 3600 giri/1' - $\cos\varphi = 0,8$					
	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Cap. Avv Start. Cap. kVA
		4/4	3/4	kW	Hp			4/4	3/4	kW	Hp	
E1S10M G KE	4.5	78.5	79.0	4.6	6.1	18	5.4	79.0	80.0	5.5	7.3	20
E1S10M H KE	5.5	80.5	81.0	5.4	7.3	21	7	81.0	82.0	6.9	9.3	25
E1S10M I KE	7	82.5	83.0	6.8	9.1	27	8.5	82.5	83.0	8.2	11.1	32
E1S10L L KE	9	82.7	83.1	8.7	11.7	29	11	82.8	83.4	10.6	14.3	35
E1S11M AS KE	10	83.0	83.2	9.6	12.9	37	12.5	83.5	83.7	12	16.1	44
E1S11M B KE	11.5	83.5	83.7	11.0	14.8	40	14	84.0	84.3	13.3	17.9	50

TIPO - TYPE	Potenza resa - Rating kVA		Mom.di inerzia Mom. of inertia (J) (kgm ²) B3/B14	Peso - Weight (kg)			Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz		B3/B9	B3/B14	B2	50 Hz	60 Hz
E1S10M G KE	4.5	5.4	0.013	29.0	29.7	/	3.7	4.6
E1S10M H KE	5.5	7	0.016	33.4	34.0	/	3.7	4.6
E1S10M I KE	7	8.5	0.019	37.2	37.9	/	3.6	4.5
E1S10L L KE	9	11	0.022	41.7	42.4	/	3.6	4.5
E1S11M AS KE	10	12.5	0.024	45.6	46.3	50.9	4.9	5.9
E1S11M B KE	11.5	14	0.027	51.8	52.5	57.1	4.8	5.8

VANTAGGI REGOLAZIONE "KE"

Il sistema "KE" prevede l'utilizzo combinato di un particolare compound e di un regolatore elettronico con cui si possono ovviare gli inconvenienti tipici di un regolazione esclusivamente compound o elettronica. Il regolatore elettronico possiede un tempo di risposta all'inserimento del carico opportunamente ritardato per consentire al compound di agire durante il transitorio. Dopo questo intervallo di tempo, il regolatore elettronico rientra in funzione correggendo la tensione d'uscita. Il generatore è in grado di funzionare sia con la sola regolazione compound che con la sola regolazione elettronica, aumentando il grado d'affidabilità della macchina in caso di guasto di uno dei due sistemi di regolazione.

ADVANTAGES OF THE "KE" REGULATION

The "KE" system, envisaging the combined use of a particular compound and an electronic regulation, solves the typical inconveniences of an exclusively compound or electronic regulation. The electronic regulator has an ad-hoc delayed load insertion time to allow the compound to act during the transient voltage dip. After that period of time, the electronic regulation resumes the operations by correcting the output voltage. The generator can operate with both the compound regulation alone and the electronic regulation alone, increasing the reliability of the machine in case of failure of one of the two systems.

VENTAJAS DE LA REGULACIÓN "KE"

El sistema "KE" previene el uso combinado de un particular compound y de un regulador electrónico que pueden resolver los inconvenientes típicos de una regulación exclusivamente compound o electrónica. El regulador electrónico posee un tiempo de respuesta a la aplicación de la carga oportunamente retardado para permitir que el compound actúe durante el transitorio. Transcurrido este intervalo de tiempo, el regulador electrónico se vuelve a poner en funcionamiento corrigiendo la tensión de salida. El generador puede funcionar sólo con la regulación compound así como sólo con la regulación electrónica, aumentando el grado de confiabilidad de la máquina en caso de falla de uno de los dos sistemas de regulación.

E1S

CARATTERISTICHE TECNICHE TECHNICAL DETAILS CARACTERÍSTICAS TÉCNICAS

TENSIONI

Collegamento triangolo/stella standard 230/400V, 50 Hz e 277/480V, 60 Hz. A richiesta tensioni speciali a 50Hz o 60Hz.

PRECISIONE DELLA TENSIONE

È del $\pm 4\%$ da vuoto a pieno carico, $\cos\phi = 0.8$ con velocità di rotazione costante.

CORRENTE DI CORTO CIRCUITO

La corrente permanente in caso di corto circuito trifase simmetrico è superiore a tre volte la corrente nominale.

SOVRACCARICHI

Si accetta un sovraccarico del 10% per 1 ora ogni 6 ore. Il sovraccarico breve può essere anche molto elevato (3 volte la corrente nominale).

AVVIAMENTO DI MOTORI ASINCRONI

È possibile avviare 1 HP per ogni KVA del generatore.

FUNZIONAMENTO MONOFASE

Con collegamento a stella, sulla fase rinforzata (fase bianca) è possibile ottenere una potenza pari al 60% della nominale su E1S10 ed E1S11 e pari a 40% della nominale su E1S13. Con collegamento a triangolo, sulla fase rinforzata è possibile ottenere una potenza pari a 65% della nominale.

VOLTAGE

Standard 230/400V, 50 Hz and 277/480V, 60 Hz with delta/star connection. Special voltage at 50Hz or 60Hz on request.

VOLTAGE ACCURACY

$\pm 4\%$ from no load to full load, $\cos\phi = 0.8$ at constant rotation speed.

SHORT CIRCUIT CURRENT

In case of short circuit the permanent current exceeds rated current by three times.

OVERLOAD

10% overload for one hour every 6 hours is accepted. Short overloads can be very high (three times the rated current).

ASYNCHRONOUS MOTORS STARTING

1 HP per KVA of the generator can be started.

SINGLE PHASE OPERATION

The single-phase output on the reinforced phase (white phase) with star connection is 60% of the three phase rated power for E1S10 and E1S11, whereas for E1S13 is 40%. With delta connection the single phase output on the reinforced phase is 65%.

TENSIONES

Estándar 230/400V, 50 Hz y 277/480V, 60 Hz con conexión estrella/triángulo. Tensiones especiales a 50Hz o 60Hz bajo pedido.

PRECISIÓN DE LA TENSIÓN

Es del $\pm 4\%$ de vacío a plena carga, $\cos\phi = 0.8$ con velocidad de rotación constante.

CORRIENTE DE CORTO CIRCUITO

La corriente permanente, en caso de corto circuito trifásico simétrico, es tres veces superior a la corriente nominal.

SOBRECARGAS

Se acepta una sobrecarga del 10% por 1 hora cada 6 horas. La sobrecarga breve puede ser muy elevada (3 veces la corriente nominal).

ARRANQUE DE MOTORES ASÍNCRONOS

Es posible arrancar 1 HP por cada KVA del generador.

FUNCIÓNAMIENTO MONOFÁSICO

La potencia monofásica que el alternador puede entregar sobre la fase reforzada (fase blanca) en la conexión en estrella es del 60% del valor nominal trifásico para las series E1S10 y E1S11 y del 40% para la serie E1S13. Con conexión en triángulo la potencia monofásica sobre la fase reforzada es del 65% del valor nominal trifásico.

FORMA D'ONDA DELLA TENSIONE D'USCITA

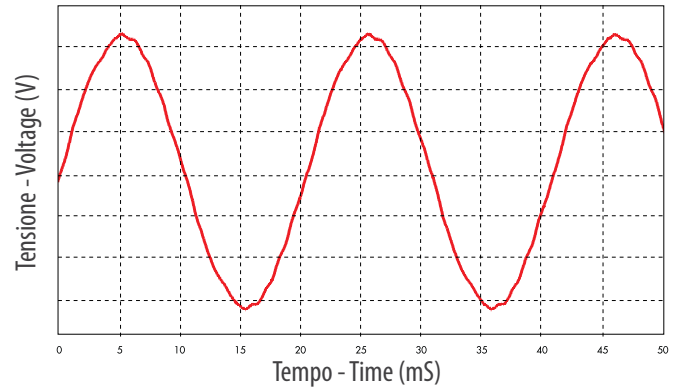
Il basso contenuto armonico (<5%) permette di alimentare qualsiasi tipo di carico compresi quelli distortenti.

OUTPUT VOLTAGE WAVE FORM

The low harmonic content (<5%) allows supplying any type of load, including distorting loads.

FORMA DE ONDA DE LA TENSIÓN DE SALIDA

El bajo contenido armónico (<5%) permite alimentar cualquier tipo de carga, incluso no lineales.

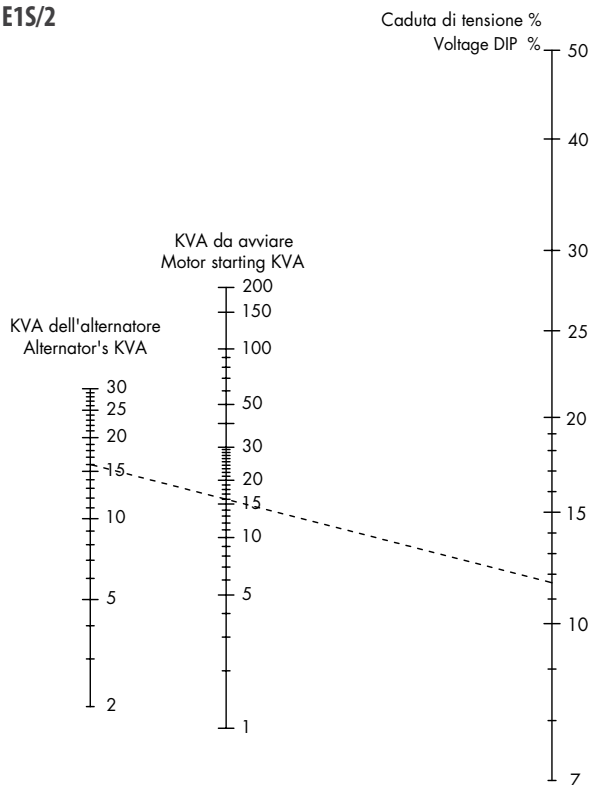


CADUTA DI TENSIONE TRANSITORIA (A VELOCITA' NOMINALE) ALL'AVVIAMENTO DI MOTORI ASINCRONI

TRANSIENT VOLTAGE DIP (AT RATED SPEED) WHEN ASYNCHRONOUS MOTORS ARE STARTED

CAÍDA DE TENSIÓN TRANSITORIA (A VELOCIDAD NOMINAL) AL ARRANQUE DE LOS MOTORES ASÍNCRONOS

E1S/2

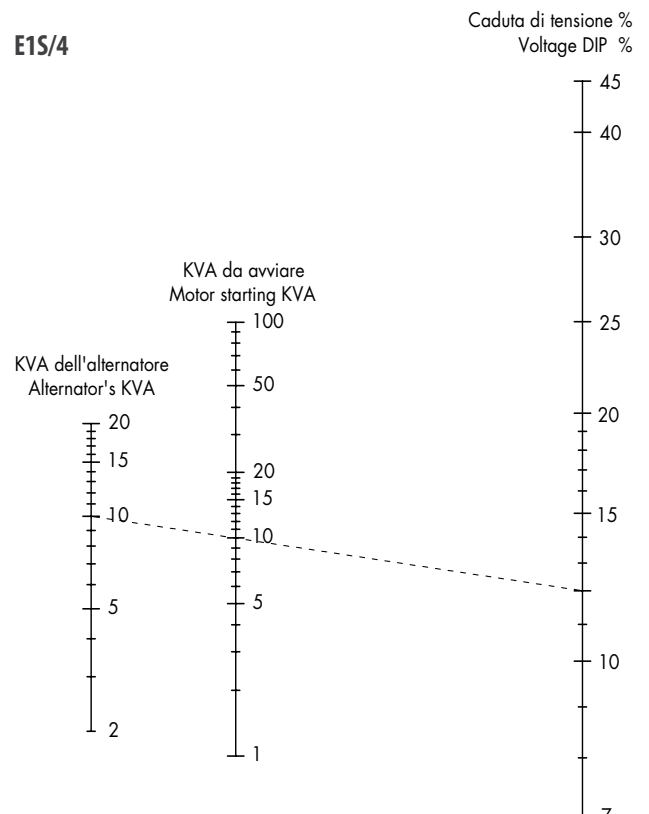


Esempio: nell'avviamento di un motore che assorbe allo spunto 16 KVA con un generatore da 16 KVA ci sarà una caduta di tensione del 11,5 %.

Example: 16 KVA starting load with 16 KVA alternator will give approx. a 11.5% voltage dip.

Ejemplo: en la puesta en marcha de un motor eléctrico que absorbe en el arranque 16 KVA, con un generador de 16 KVA se tendrá una caída de tensión del 11.5%.

E1S/4



Esempio: nell'avviamento di un motore che assorbe allo spunto 10 KVA con un generatore da 10 KVA ci sarà una caduta di tensione del 12 %.

Example: 10 KVA starting load with 10 KVA alternator will give approx. a 12% voltage dip.

Ejemplo: en la puesta en marcha de un motor eléctrico que absorbe en el arranque 10 KVA, con un generador de 10 KVA se tendrá una caída de tensión del 12%.

QUADRI PER ACCESSORI
PANELS FOR ACCESSORIES
CUADROS PARA ACCESORIOS

È possibile installare varie combinazioni di accessori tra i quali prese schuko e CEE, breaker, voltmetro a led, magnetotermico, differenziale, su quadri posteriori (per le serie E1S10) o quadri superiori (per le serie E1S10-E1S11). Su quest'ultimi le prese sono montate a sinistra nella versione standard o a destra, su richiesta.

Per i modelli E1S13 gli accessori sono montati su un quadro in lamiera dotato di quattro antivibranti.

It is possible equipped with different combinations of accessories, including Schuko and CEE sockets protected by breakers or magneto-thermic switch, led voltmeter, earth leakage breaker, rear panels (for E1S10 series) or top panels (for E1S10-E1S11 series). On top panels sockets are mounted on left side on standard version or on right side on request.

In the E1S13 range the accessories are mounted on a top plate panel equipped with vibrating dampers.

Es posible alojar varias combinaciones de accesorios, como por ejemplo las tomas Schuko y CEE, breaker, voltímetro a LED, magneto-térmico, diferencial, sobre cuadros traseros (para la gama E1S10) o cuadros superiores (para las gamas E1S10-E1S11). En los últimos las tomas están en lado izquierdo en la versión estándar o derecho, a pedido.

En los modelos E1S13 los accesorios han sido montados en un cuadro de chapa con cuatro soportes antivibratorios.





E1X/2

ALTERNATORI TRIFASE 2 POLI SENZA SPAZZOLE CON REGOLAZIONE ELETTRONICA
 2 POLES THREE-PHASE BRUSHLESS ALTERNATORS WITH ELECTRONIC REGULATION
 ALTERNADORES TRIFÁSICOS 2 POLOS SIN ESCOBILLAS Y REGULACIÓN ELECTRÓNICA

TIPO - TYPE	50 Hz - 3000 giri/1' - $\cos\phi = 0,8$					60 Hz - 3600 giri/1' - $\cos\phi = 0,8$				
	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power	
		4/4	3/4	kW	Hp		4/4	3/4	kW	Hp
E1X13S A/2	8	80.2	80.4	8.0	10.7	10	80.6	80.7	9.9	13.3
E1X13S B/2	10	81.5	81.6	9.8	13.2	12.5	82.0	82.3	12.2	16.4
E1X13S C/2	12.5	83.1	83.3	12.0	16.1	15	83.4	83.5	14.4	19.3
E1X13M D/2	16	85.0	85.3	15.1	20.2	19.5	85.5	85.7	18.2	24.5
E1X13M E/2	22	86.0	86.2	20.5	27.4	26	86.2	86.4	24.1	32.4

TIPO - TYPE	Potenza resa - Rating kVA		Mom.di inerzia Mom. of inertia (J) (kgm ²)		Peso - Weight (kg)		Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz	B3/B14	B2 SAE	B3/B14	B2SAE	50 Hz	60 Hz
E1X13S A/2	8	10	0.057	0.055	56.6	60.7	3.5	4.2
E1X13S B/2	10	12.5	0.062	0.06	61.9	66	4.0	4.8
E1X13S C/2	12.5	15	0.068	0.067	68.9	73	4.5	5.4
E1X13M D/2	16	19.5	0.081	0.082	85.9	90	5.0	6.0
E1X13M E/2	22	26	0.091	0.092	96.9	101	6.1	7.3

TIPO - TYPE	Potenza resa Rating kVA		ρ_{cc}	Reattanze e costanti di tempo / Reactances and time constants							Resistenza avv. princ. a 20°C Main winding resistance at 20°C
	50 Hz	60 Hz		Xd%	X'd%	X''d%	Xq%	T'do	T'd	T''do	
								(ms)	(ms)	(ms)	
E1X13S A/2	8	10	0.44	370	32	13.0	220	310	27	7.5	1.53
E1X13S B/2	10	12.5	0.42	390	33	12.0	230	320	27	7.9	1.07
E1X13S C/2	12.5	15	0.43	380	31	11.5	235	360	29	8.5	0.69
E1X13M D/2	16	19.5	0.42	385	30	10.0	230	390	30	8.8	0.43
E1X13M E/2	22	26	0.40	415	32	10.5	250	410	32	8.8	0.33



E1X/4

ALTERNATORI TRIFASE 4 POLI SENZA SPAZZOLE CON REGOLAZIONE ELETTRONICA
 4 POLES THREE-PHASE BRUSHLESS ALTERNATORS WITH ELECTRONIC REGULATION
 ALTERNADORES TRIFÁSICOS 4 POLOS SIN ESCOBILLAS Y REGULACIÓN ELECTRÓNICA

TIPO - TYPE	50 Hz - 1500 giri/1' - $\cos\varphi = 0,8$					60 Hz - 1800 giri/1' - $\cos\varphi = 0,8$				
	Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power		Potenza resa Rating kVA	Rendimento % Efficiency %		Potenza assorbita Driving power	
		4/4	3/4	kW	Hp		4/4	3/4	kW	Hp
E1X13S A/4	6.5	80.9	81.0	6.4	8.6	8	81.0	81.3	7.9	10.6
E1X13S B/4	8	82.8	83.0	7.7	10.4	10	83.0	83.3	9.6	12.9
E1X13S C/4	10	84.4	84.5	9.5	12.7	12	84.6	85.0	11.3	15.2
E1X13M E/4	14	85.5	86.0	13.1	17.6	17	86.0	86.2	15.8	21.2
E1X13M F/4	16	86.0	86.4	14.9	20	19	86.4	86.5	17.6	23.6

TIPO - TYPE	Potenza resa - Rating kVA		Mom.di inerzia Mom. of inertia (J) (kgm ²)		Peso - Weight (kg)		Volume aria Air volume (m ³ /1')	
	50 Hz	60 Hz	B3/B14	B2 SAE	B3/B14	B2 SAE	50 Hz	60 Hz
E1X13S A/4	6.5	8	0.060	0.06	59.4	63.5	2.6	3.2
E1X13S B/4	8	10	0.066	0.066	65.8	69.9	2.8	3.5
E1X13S C/4	10	12	0.072	0.073	72.4	76.5	3.2	3.7
E1X13M E/4	14	17	0.088	0.091	91.9	96.0	4.0	4.7
E1X13M F/4	16	19	0.091	0.094	95.9	100	4.5	5.1

TIPO - TYPE	Potenza resa Rating kVA		pcc	Reattanze e costanti di tempo / Reactances and time constants							Resistenza avv. princ. a 20°C Main winding resistance at 20°C
	50 Hz	60 Hz		Xd%	X'd%	X''d%	Xq%	T'do	T'd	T''do	
								(ms)	(ms)	(ms)	
E1X13S A/4	6.5	8	0.76	239	21	10.0	125	296	26	5	2.36
E1X13S B/4	8	10	0.78	246	21	9.0	130	320	27	5	1.77
E1X13S C/4	10	12	0.81	220	18	7.6	119	335	27	5	1.35
E1X13M E/4	14	17	0.80	242	19	7.3	135	394	31	6	0.69
E1X13M F/4	16	19	0.76	260	20	7.7	140	402	31	6	0.64

E1X

CARATTERISTICHE TECNICHE TECHNICAL DETAILS CARACTERÍSTICAS TÉCNICAS

TENSIONI

Gli alternatori E1X sono dotati di avvolgimento a 12 terminali che permette di ottenere tensioni di funzionamento come riportato qui sotto. A richiesta tensioni speciali a 50Hz o 60Hz.

AVVOLGIMENTO

A doppio strato con passo raccorciato 2/3 (fattore di raccorciamento = 0,866) per garantire un basso contenuto armonico.

PRECISIONE DELLA TENSIONE

E' del $\pm 1\%$ da vuoto a pieno carico con $\cos\phi$ variabile tra 0,8 ed 1 e con velocità di rotazione costante.

CORRENTE DI CORTO CIRCUITO

La corrente permanente in caso di corto circuito trifase simmetrico è superiore al 250% della corrente nominale.

SOVRACCARICHI

Si accetta normalmente un sovraccarico del 10% per 1 ora ogni 6 ore. Il sovraccarico breve può essere anche molto elevato (3 volte la corrente nominale).

AVVIAMENTO DI MOTORI ASINCRONI

È possibile avviare 1 HP per ogni KVA del generatore.

FUNZIONAMENTO MONOFASE

E' possibile alimentare un carico monofase con una potenza pari al 40% della potenza nominale trifase se si utilizza una sola fase con collegamento a stella, oppure pari al 65% della potenza nominale trifase se si utilizza un collegamento a triangolo.

VOLTAGE

E1X alternators are equipped with a 12 terminal winding leading to an operating voltages as reported here below. Special voltage at 50Hz or 60Hz on request.

WINDING

Double layer with shortened 2/3 pitch (shortening factor=0,866) to ensure low harmonic content.

VOLTAGE ACCURACY

$\pm 1\%$ from no load to full load with $\cos\phi$ ranging from 0.8 to 1 and constant rotation speed.

SHORT CIRCUIT CURRENT

In case of three-phase symmetric short circuit, the permanent current exceeds the rated current by 250%.

OVERLOAD

10% overload for 1 hour every 6 hours is normally accepted. Short overloads can be very high (3 times the rated current).

ASYNCHRONOUS MOTOR STARTING

1 HP per KVA of the generator can be started.

SINGLE-PHASE OPERATING

The single-phase output power is 40% of the three-phase rated power when using just one phase with a Y connection or 65% of the three-phase rated power when using a delta connection.

TENSIONES

Los alternadores E1X han sido dotados de devanados con 12 terminales, que permiten obtener tensiones de funcionamiento como se indica abajo. Tensiones especiales a 50Hz o 60Hz bajo pedido.

DEVANADO

A doble capa con paso acortado 2/3 (factor de acortamiento = 0,866) para garantizar un bajo contenido armónico.

PRECISIÓN DE LA TENSIONÍ

Es del $\pm 1\%$ de vacío a plena carga con $\cos\phi$ variable entre 0,8 y 1 y con velocidad de rotación constante.

CORRIENTE DE CORTO CIRCUITO

La corriente permanente en caso de corto circuito trifásico simétrico es superior del 250% respecto a la corriente nominal.

SOBRECARGAS

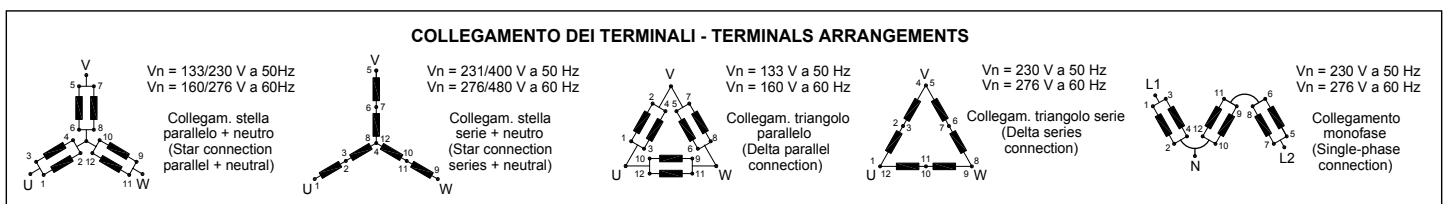
Se acepta normalmente una sobrecarga del 10% por 1 hora cada 6 horas. La sobrecarga breve puede ser muy elevada (3 veces la corriente nominal).

ARRANQUE DE MOTORES ASÍNCRONOS

Es posible arrancar 1 HP por cada KVA del generador.

FUNCIÓNAMIENTO MONOFÁSICO

Es posible suministrar cargas monofásicas con potencia igual al 40% de la potencia nominal trifásica si se utiliza una sola fase con conexión en estrella, o igual al 65% de la potencia nominal trifásica si se utiliza una conexión en triángulo.



REGOLAZIONE ELETTRONICA

La serie E1X è dotata di regolatore elettronico HVR11 di ultima generazione. Tutte le regolazioni vengono effettuate tramite trimmer multi-giri che permettono settaggi molto precisi.

Le principali caratteristiche del regolatore sono:

- Regolazione della tensione di uscita entro il limite del $\pm 1\%$
- Regolazione per il controllo della stabilità per garantire la migliore risposta dinamica a ogni situazione (tipo di motore di trascinamento o taglia dell'alternatore)
- Regolazione del livello di intervento della protezione di bassa frequenza.
- Regolazione del settaggio della protezione di sovraeccitazione causata da carichi anomali
- Entrata per potenziometro remoto
- Possibilità di funzionamento a 50Hz o 60Hz.

REGOLAZIONE "KE"

Su richiesta è possibile avere il sistema "KE" che prevede l'utilizzo combinato di un particolare compound e di un regolatore elettronico. Il regolatore elettronico possiede un tempo di risposta all'inserimento del carico opportunamente ritardato per consentire al compound di agire durante il transitorio. Dopo questo intervallo di tempo, il regolatore elettronico rientra in funzione correggendo la tensione d'uscita. Il generatore è in grado di funzionare sia con la sola regolazione compound che con la sola regolazione elettronica.

ELECTRONIC REGULATION

The E1X series is equipped with the last generation of the HVR11 electronic regulation. All adjustments are made with multi-turn trimmers that allow an extremely accurate setting.

The main features of the regulator are:

- Output voltage adjustment within the limit of $\pm 1\%$
- Stability control adjustment to guarantee the best dynamic response for any situation (type of drive motor or alternator size)
- Adjustment of the low frequency protection
- Adjustment of the over-excitation protection setting caused by abnormal loads
- Remote potentiometer inlet
- 50Hz or 60Hz working possibility.

"KE" REGULATION

On request the "KE" system is available, that envisages the combined use of a particular compound and an electronic regulation. The electronic regulator has an ad-hoc delayed load insertion time to allow the compound to act during the transient voltage dip. After that period of time, the electronic regulation resumes the operations by correcting the output voltage. The generator can operate with both the compound regulation alone and the electronic regulation alone.

REGULACIÓN ELECTRÓNICA

La serie E1X ha sido dotada de regulador electrónico HVR11 de última generación. Todas las regulaciones se efectúan a través de trimmer multi-vueltas que permiten ajustes muy precisos.

Las características principales del regulador son:

- Regulación de la tensión de salida contenida en el $\pm 1\%$
- Regulación del control de estabilidad para garantizar la mejor respuesta dinámica bajo cualquier situación (tipo de motor primario o de generador)
- Regulación del nivel de intervención de la protección de baja frecuencia
- Regulación del valor del umbral de sobre-excitación causada por cargas anómalas
- Entrada para potenciómetro remoto
- Posibilidad de funcionamiento a 50Hz o 60Hz.

REGULACIÓN "KE"

Bajo pedido es posible tener el sistema "KE" que prevee el uso combinado de un particular compound y de un regulador electrónico. El regulador electrónico posee un tiempo de respuesta a la aplicación de la carga oportunamente retardado para permitir que el compound actúe durante el transitorio. Transcurrido este intervalo de tiempo, el regulador electrónico se vuelve a poner en funcionamiento corrigiendo la tensión de salida. El generador puede funcionar sólo con la regulación compound así como sólo con la regulación electrónica.

FORMA D'ONDA DELLA TENSIONE

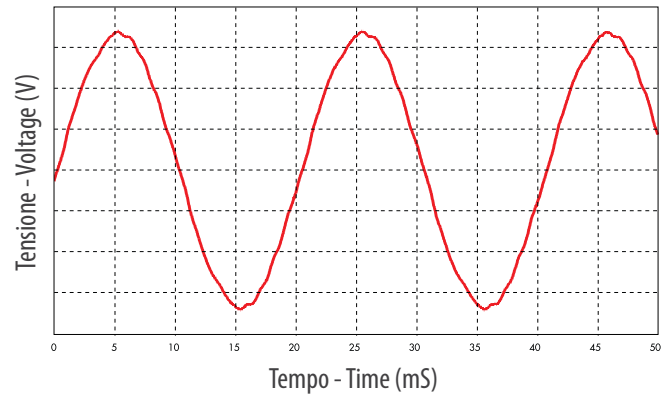
La forma d'onda della tensione, concatenata a vuoto o con un carico trifase equilibrato e non deformante, è sinusoidale con un contenuto armonico inferiore al 4%.

VOLTAGE WAVE FORM

The wave form of the no-load line voltage or applying a balanced linear three-phase load is sinusoidal with an harmonic residual less than 4%.

FORMA DE ONDA DE LA TENSIÓN

La forma de onda de la tensión, en vacío o con carga trifásica equilibrada lineal, es sinusoidal con contenido armónico inferior al 4%.

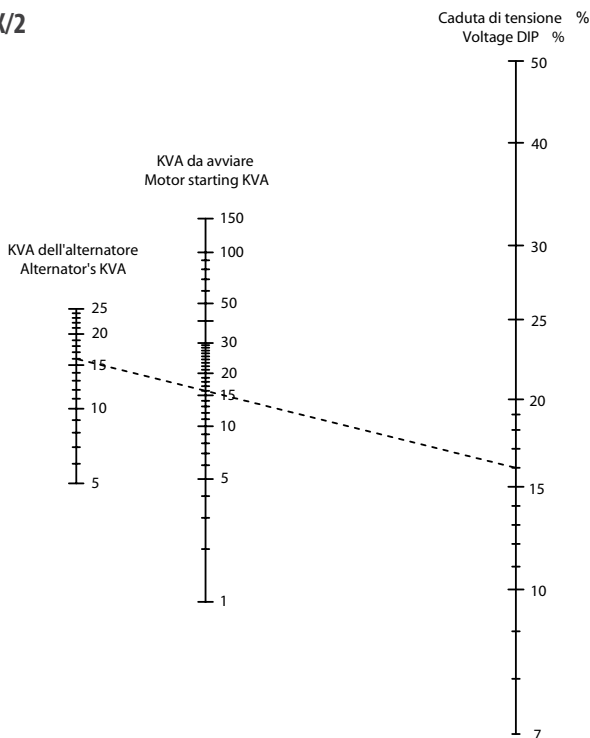


CADUTA DI TENSIONE TRANSITORIA (A VELOCITA' NOMINALE) ALL'AVVIAMENTO DI MOTORI ASINCRONI

TRANSIENT VOLTAGE DIP (AT RATED SPEED) WHEN ASYNCHRONOUS MOTORS ARE STARTED

CAÍDA DE TENSÓN TRANSITORIA (A VELOCIDAD NOMINAL) AL ARRANQUE DE LOS MOTORES ASÍNCRONOS

E1X/2

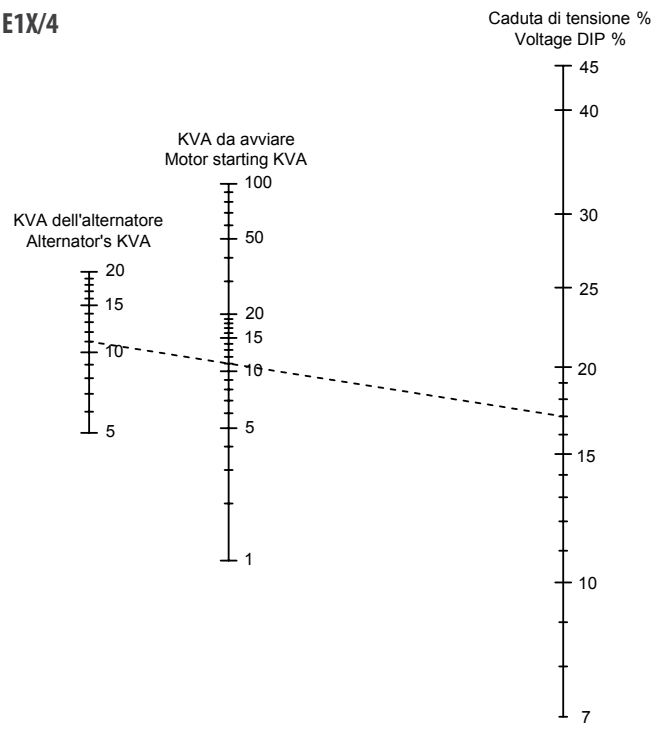


Esempio: nell'avviamento di un motore che assorbe allo spunto 16 KVA con un generatore da 16 KVA ci sarà una caduta di tensione del 16% circa.

Example: 16 KVA starting load with 16 KVA alternators gives approx. 16% dip.

Ejemplo: en la puesta en marcha de un motor eléctrico que absorbe en el arranque 16 KVA, con un generador de 16 KVA se tendrá una caída de tensión del 16%.

E1X/4



Esempio: nell'avviamento di un motore che assorbe allo spunto 11 KVA con un generatore da 11 KVA ci sarà una caduta di tensione del 17% circa.

Example: 11 KVA starting load with 11 KVA alternators gives approx. 17% dip.

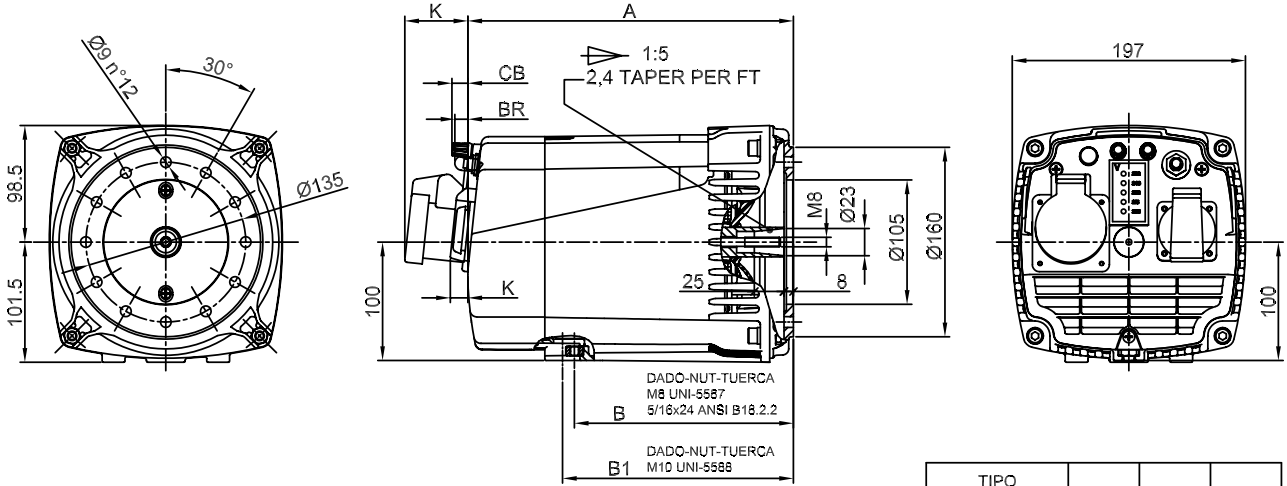
Ejemplo: en la puesta en marcha de un motor eléctrico que absorbe en el arranque 11 KVA, con un generador de 11 KVA se tendrá una caída de tensión del 17%.



DIMENSIONI DI INGOMBRO
DIMENSIONS
DIMENSIONES

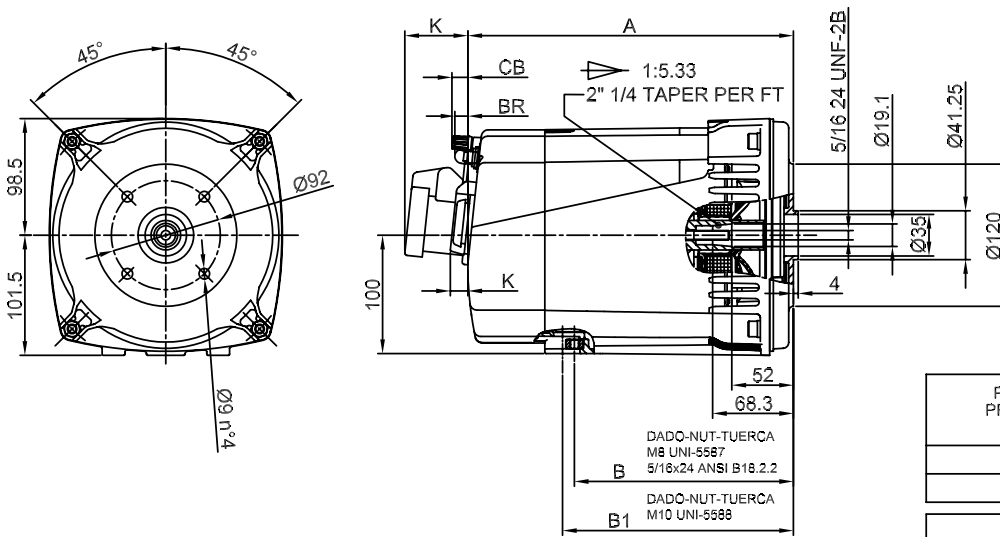
SP10

FORMA FORM FORME B9 C.23



TIPO TYPE TYP	A	B	B1
SP10 S	275	185	195
SP10 M	303	213	223

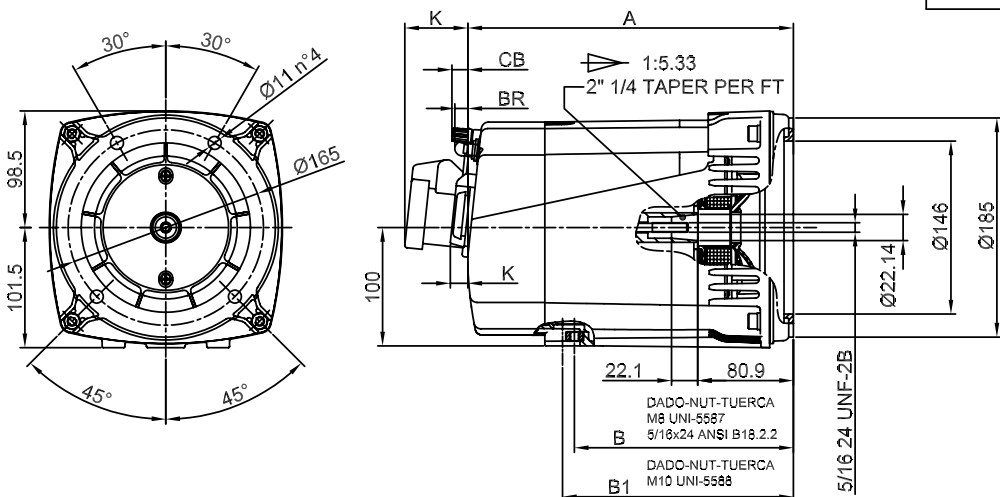
FORMA FORM FORME J609a



PRESE - SOCKETS PRISES - ENCHUFES STECKDOESEN	K
SCHUKO	15
CEE	53

BREAKER	BR
	11

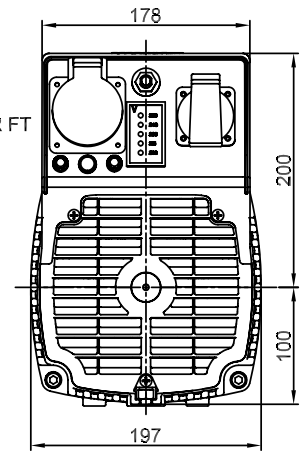
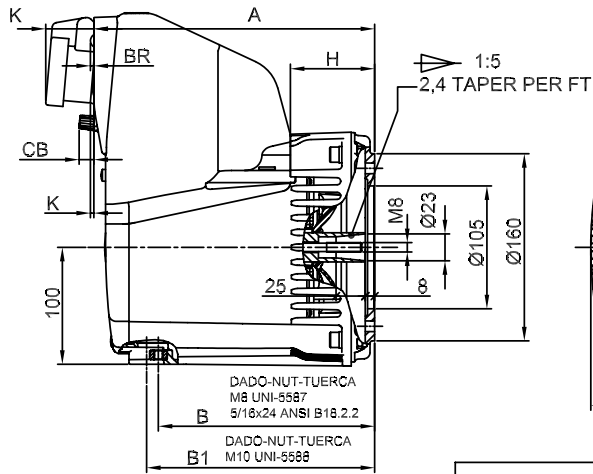
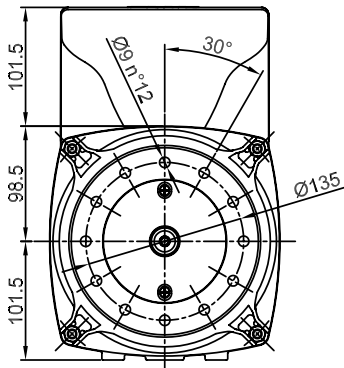
FORMA FORM FORME J609b



CARICA BATTERIE-BATTERY CHARGING CHARGE BATTERIE-BATTERIELADER CARGADOR DE BATERIAS	CB
	13.5

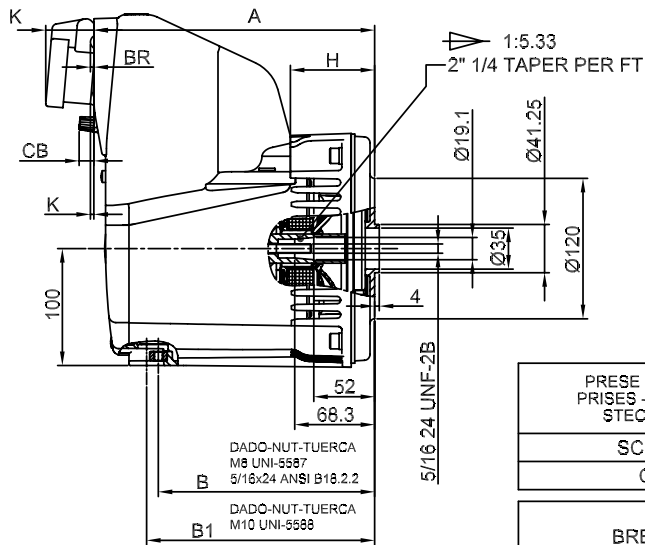
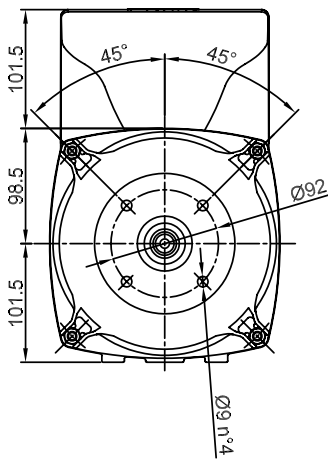
SP10

FORMA FORM FORME B9 C.23



TIPO TYPE TYP	A	B	B1	H
SP10 S	240	185	195	72
SP10 M	268	213	223	100

FORMA FORM FORME J609a

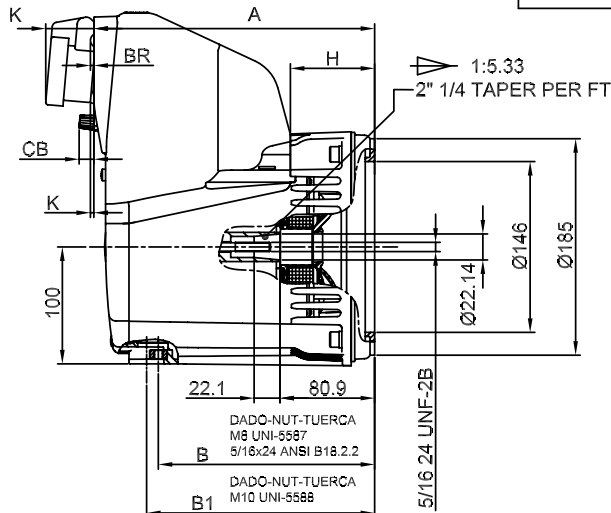
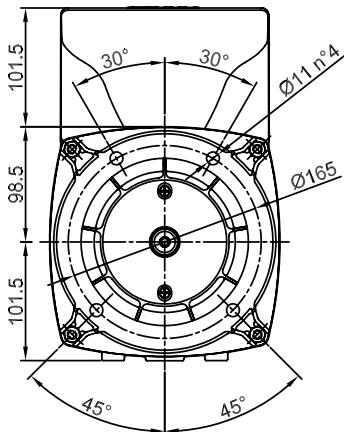


PRESE - SOCKETS PRISES - ENCHUFES STECKDOSEN	K
SCHUKO	3
CEE	42

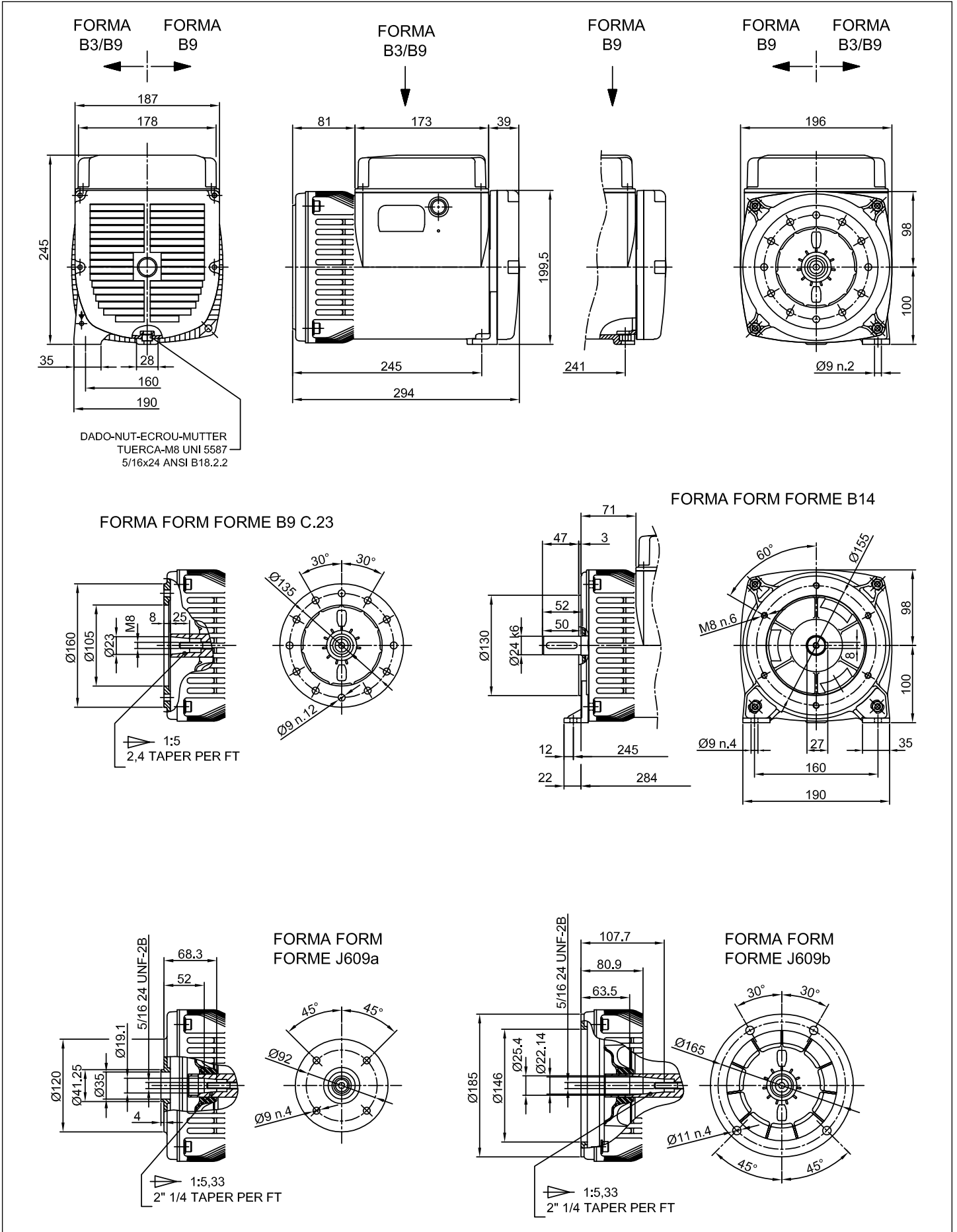
BREAKER	BR
	3

CARICA BATTERIE-BATTERY CHARGING CHARGE BATTERIE-BATTERIELADER CARGADOR DE BATERIAS	CB
	13

FORMA FORM FORME J609b

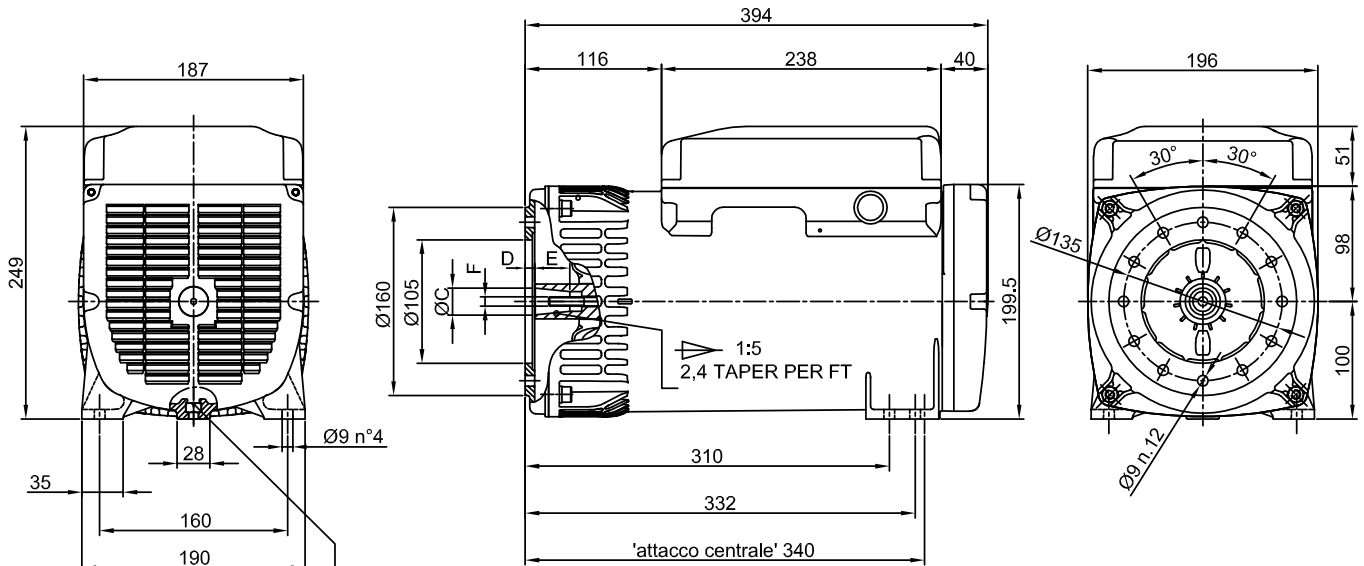


E1C10S



E1C10M

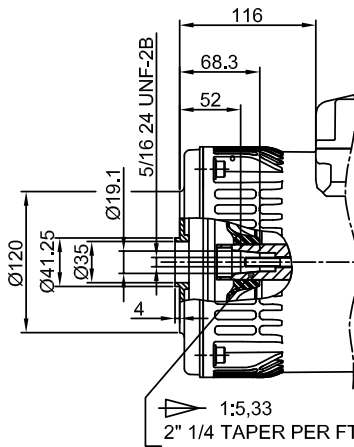
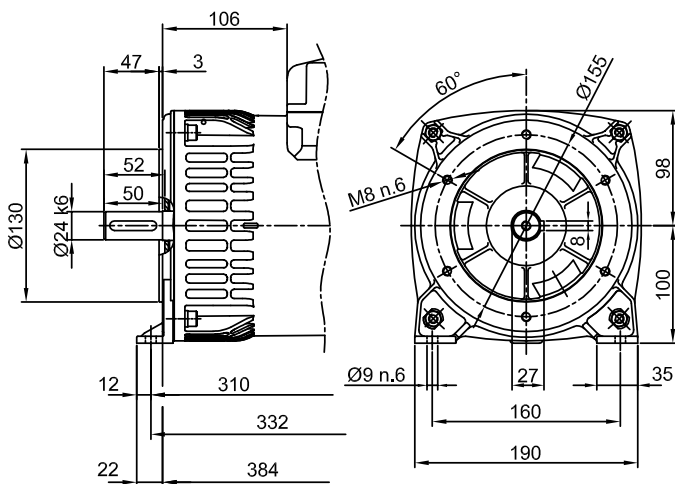
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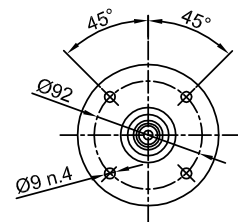
DADO-NUT-ECROU-MUTTER
TUERCA-M8 UNI 5587
5/16x24 ANSI B18.2.2

FORMA FORM FORME FORMA	ØC	D	E	F
cono Ø23	Ø23	8	25	M8
cono Ø30	Ø30	16	30	M14x1.5

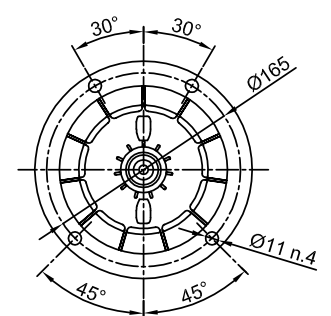
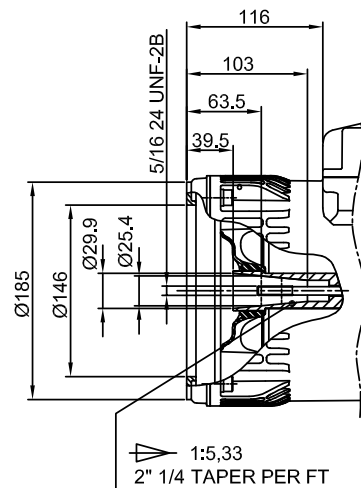
FORMA FORM FORME B3/B14



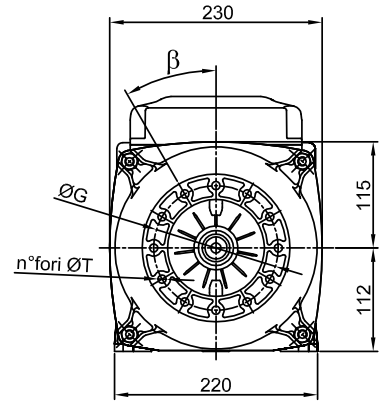
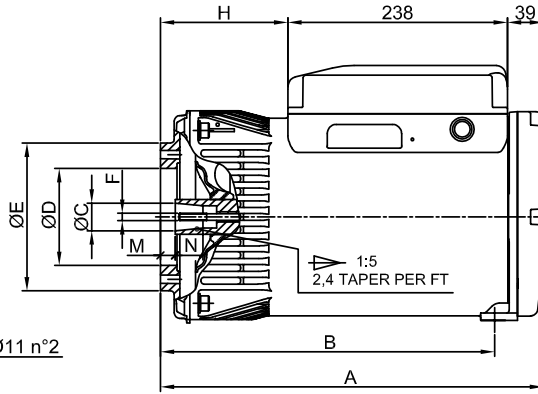
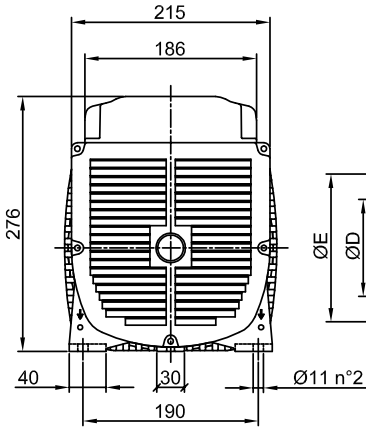
FORMA FORM FORME J609a



FORMA FORM FORME J609b



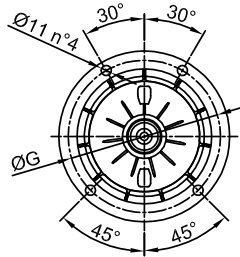
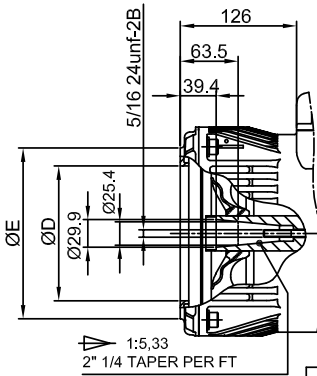
FORMA FORM B3/B9



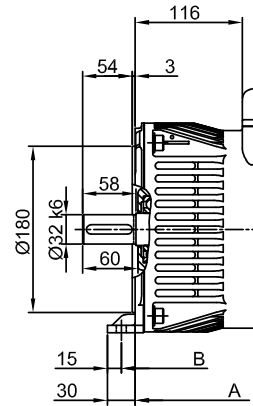
FORMA FORM	A	B
B3B9 cono Ø23 Ø30	415	362
B3B9 cono Ø38	398.5	345.5
J609b	403	350
B3/B14	393	355
MD35 - LOMB. STD	443	390

FORMA FORM	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø23	Ø23	Ø105	Ø160	M8	Ø135	138	8	25	12	Ø9	30°
cono Ø30	Ø30	Ø105	Ø160	M14x1.5	Ø135	138	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	121.5	5	30	4	Ø11	β/2 45°

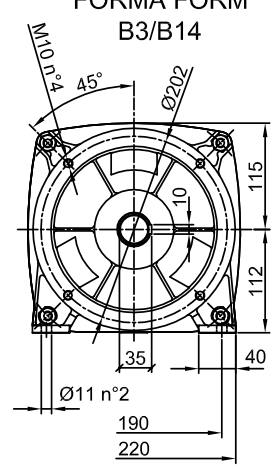
FORMA FORM J609b



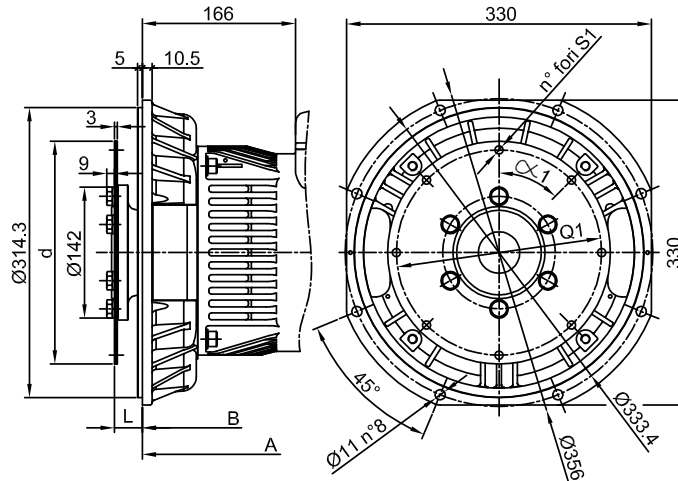
FORMA FORM	ØD	ØE	ØG
J609b	Ø146	Ø185	Ø165
	Ø163.6	Ø219	Ø196.85
	Ø177.8		



FORMA FORM B3/B14



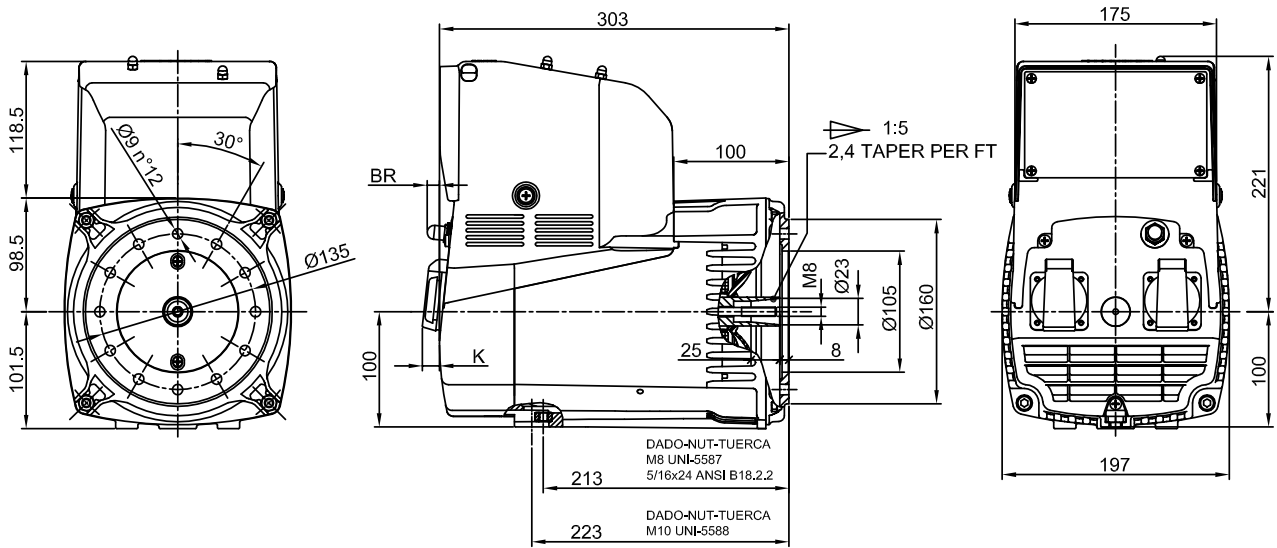
FORMA FORM MD35 SAE5



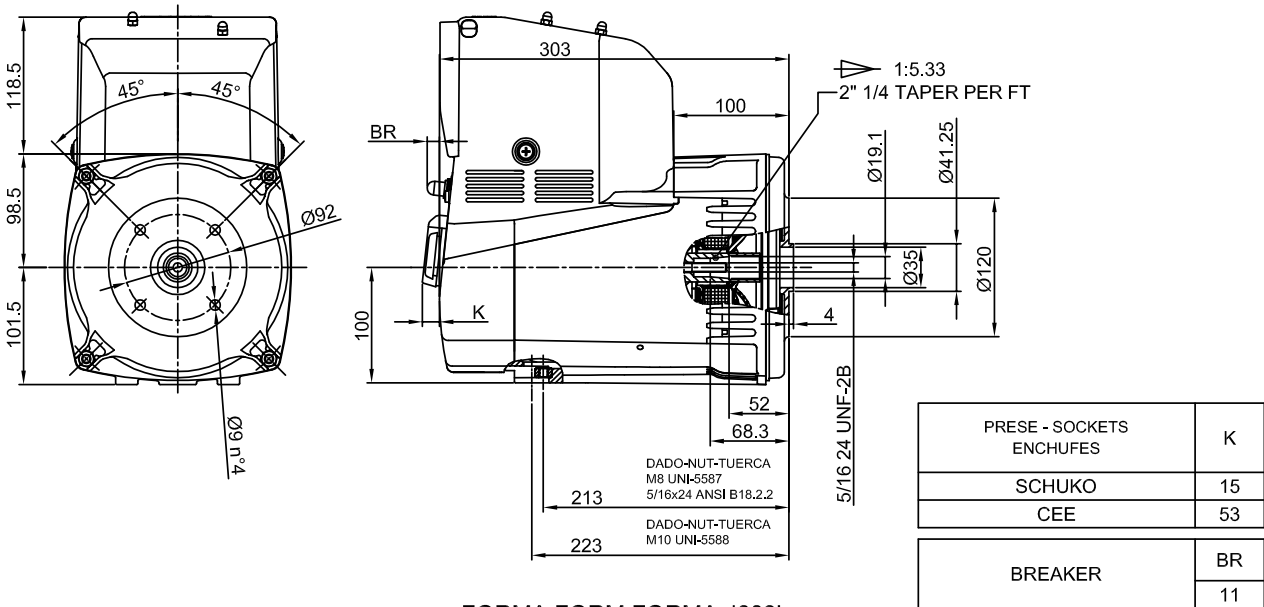
SAE N.	GIUNTI A DISCO - COUPLING DISCS- JUNTA A DISCOS					
	L	d	Q1	n. fori	S1	α1
6 1/2	30.2	215.9	200	6	9	60°
7 1/2	30.2	241.3	222.25	8	9	45°

SPE10

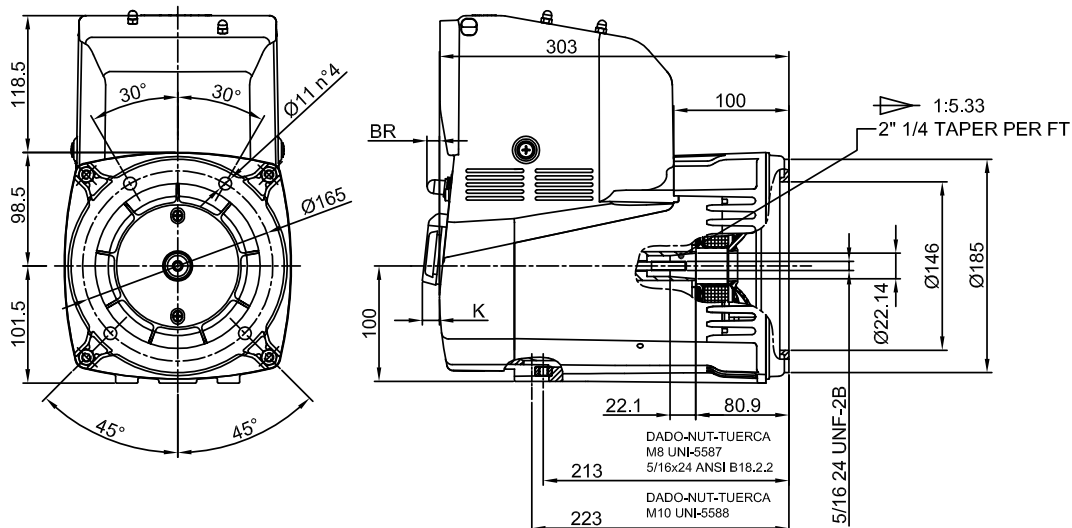
FORMA FORM FORMA B9



FORMA FORM FORMA J609a

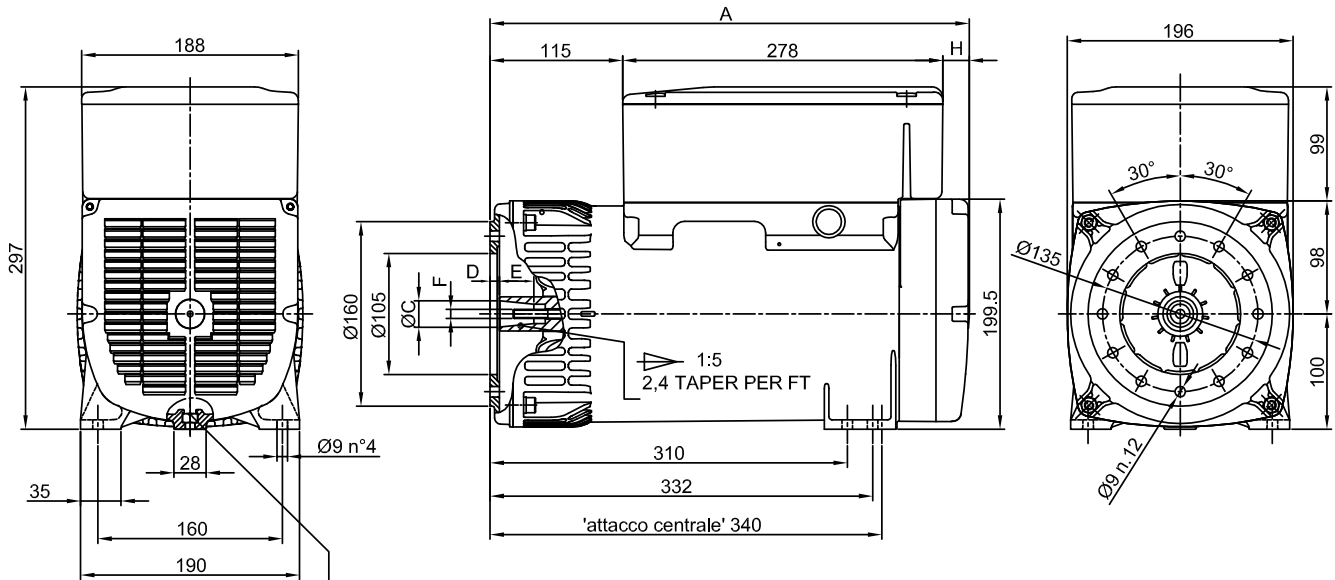


FORMA FORM FORMA J609b



E1E10-E1S10

FORMA FORM FORME B3/B9

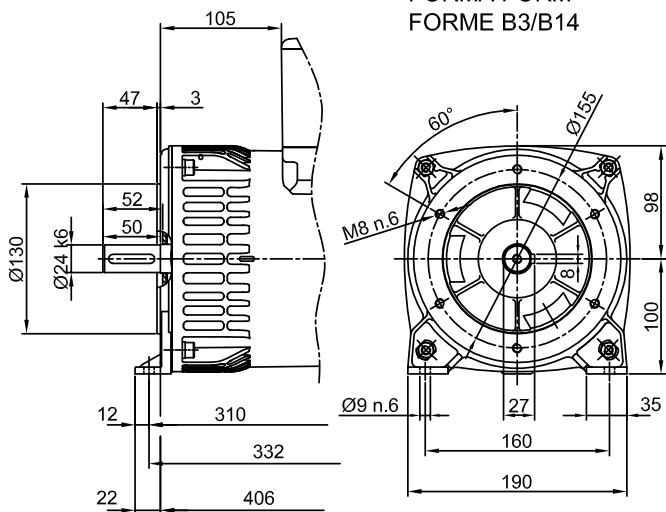


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TUERCA-M8 UNI 5587
5/16x24 ANSI B18.2.2

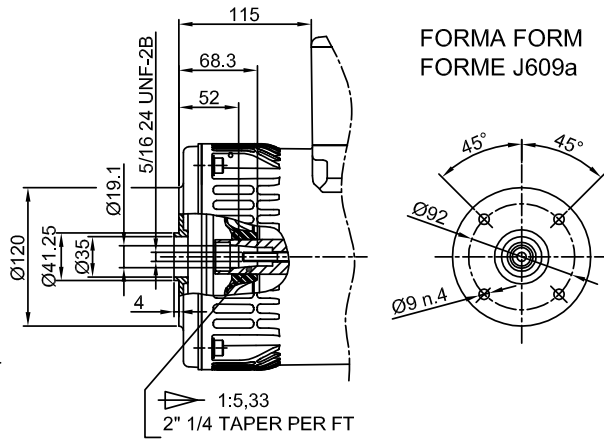
TIPO TYPE TYP	A	H
E1S10M - E1E10M	394	1
E1S10L - E1E10L	416	23

FORMA FORM FORME FORME FORM FORMA	ØC	D	E	F
cono Ø23	Ø23	8	25	M8
cono Ø30	Ø30	16	30	M14x1.5

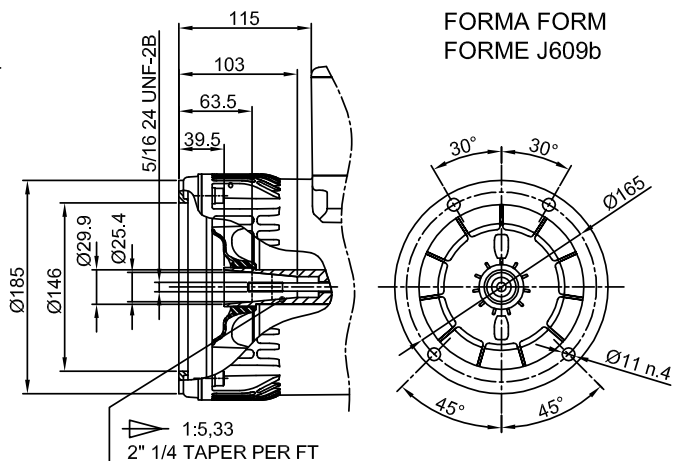
FORMA FORM
FORME B3/B14



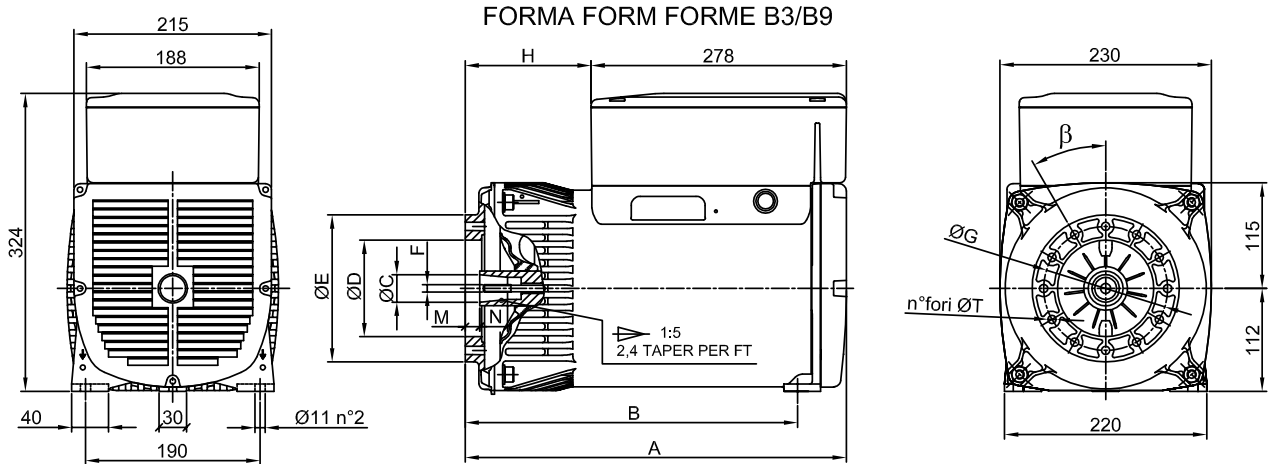
FORMA FORM
FORME J609a



FORMA FORM
FORME J609b

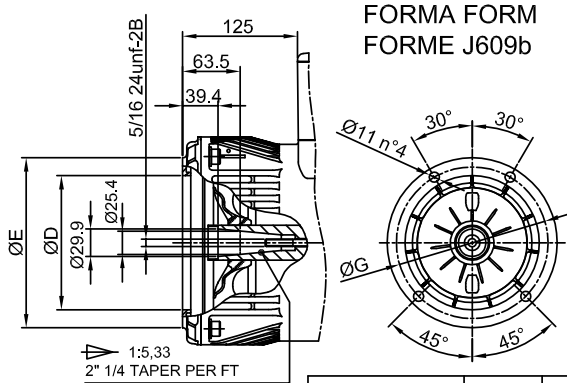


E1E11-E1S11

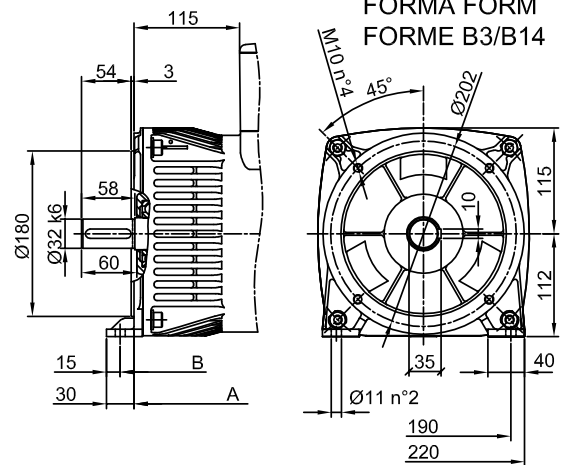


FORMA FORM FORME	A	B
B3B9 cono Ø23 Ø30	415	362
B3B9 cono Ø38	398.5	345.5
J609b	403	350
B3/B14	393	355
MD35 - LOMB. STD	443	390

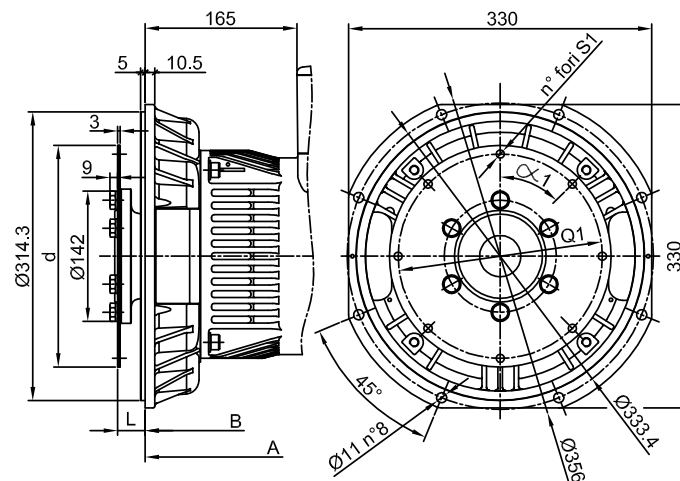
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø23	Ø23	Ø105	Ø160	M8	Ø135	137	8	25	12	Ø9	30°
cono Ø30	Ø30			M14x1.5							
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	120.5	5	30	4	Ø11	β/2 45°



FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø185	Ø165
	Ø163.6	Ø219	Ø196.85
	Ø177.8		



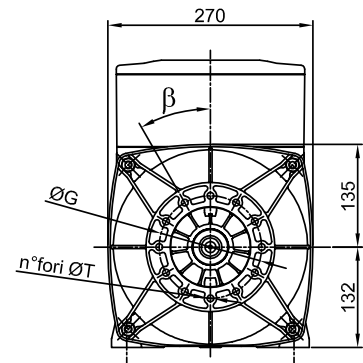
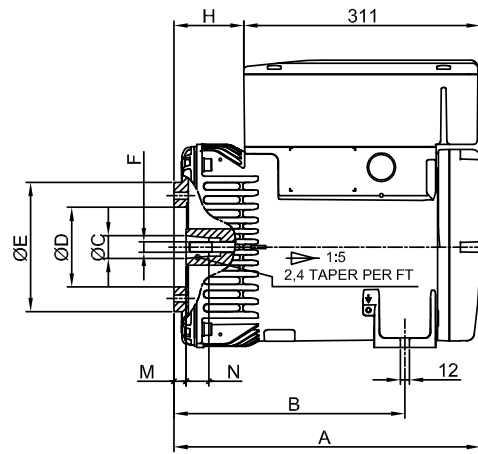
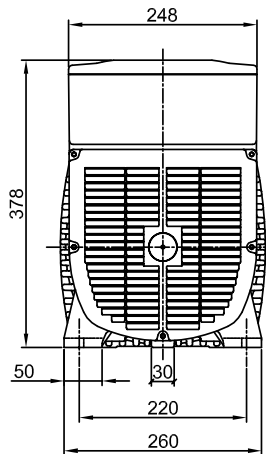
FORMA FORM FORME MD35



SAE N.	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE					
	L	d	Q1	n. fori	S1	α1
6 1/2	30.2	215.9	200	6	9	60°
7 1/2	30.2	241.3	222.25	8	9	45°

E1C13S-E1E13S-E1S13S

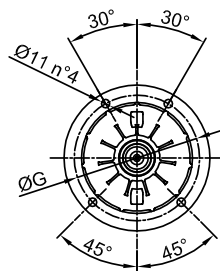
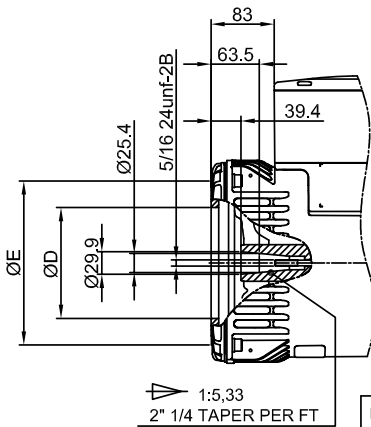
FORMA FORM FORME B3/B9



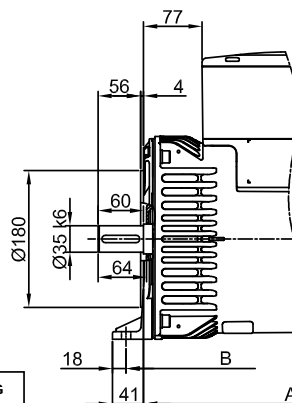
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	92	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	83	5	30	4	Ø11	β/2 45°

FORMA FORM FORME	A	B
B3B9 cono Ø30	403	304
B3B9 c.Ø38-J609b	394	295
B3/B14	388	312
MD35 - LOMB. STD	436	337

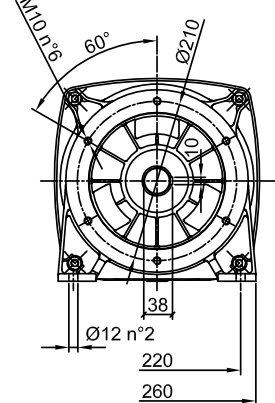
FORMA FORM FORME J609b



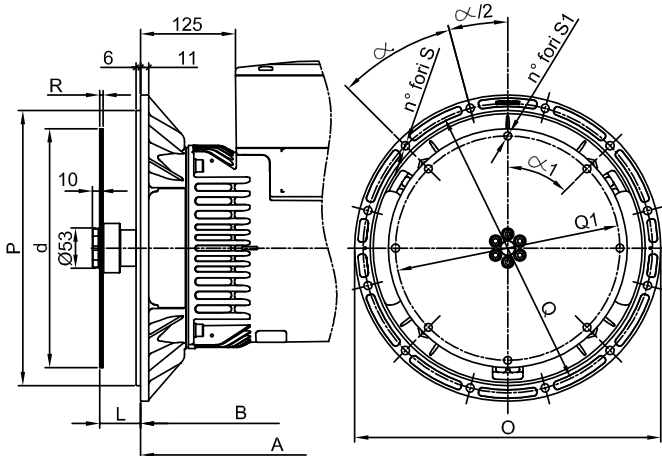
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		



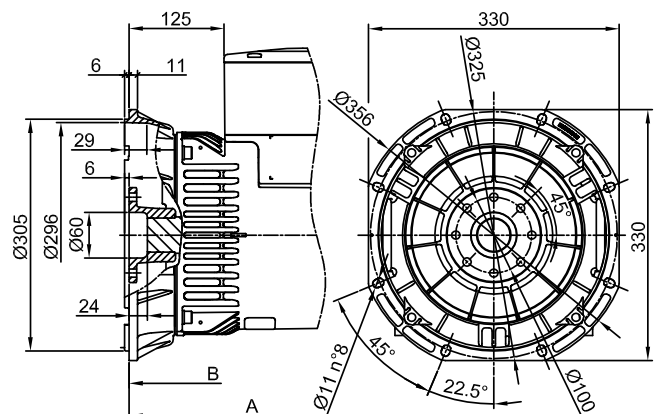
FORMA FORM FORME B3/B14



FORMA FORM FORME MD35



FORMA FORM FORME LOMBARDINI STD

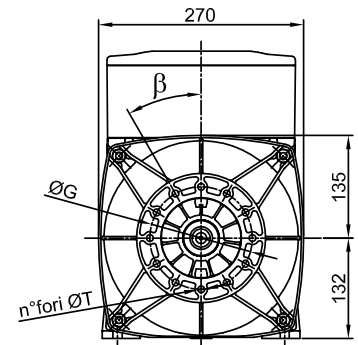
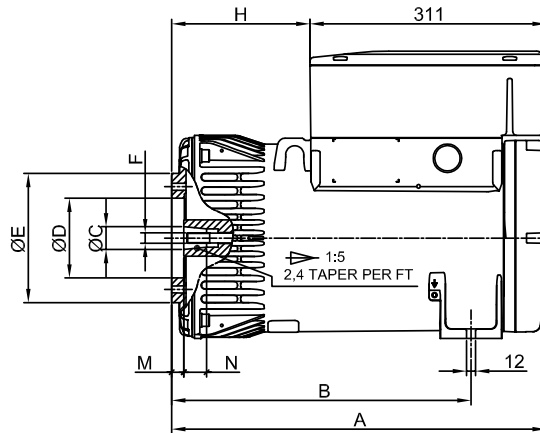
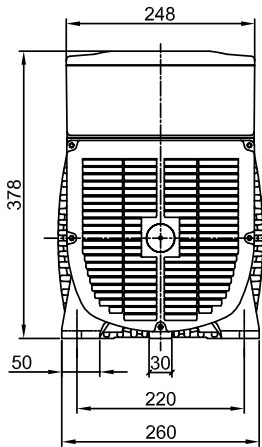


SAE N.	FLANGIE - BRIDE - FLANGE					
	O	P	Q	n. fori	S	α
5	356	314.3	333.4	8	11	45°
4	403	362	381	12		30
3	451	409.6	428.6	12		30

SAE N.	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE						
	L	d	Q1	n. fori	S1	α.1	R
6 1/2	30.2	215.9	200	6	9	60°	3
7 1/2	30.2	241.3	222.25	8	9	45°	
8	62	263.52	244.47	6	10.5	60	
10	53.8	314.32	295.27	8	10.5	45°	4.5
11 1/2	39.6	352.42	333.37	8	10.5	45°	

E1C13M-E1E13M-E1S13M

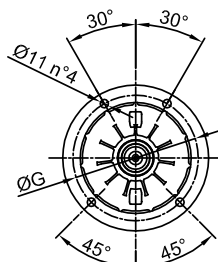
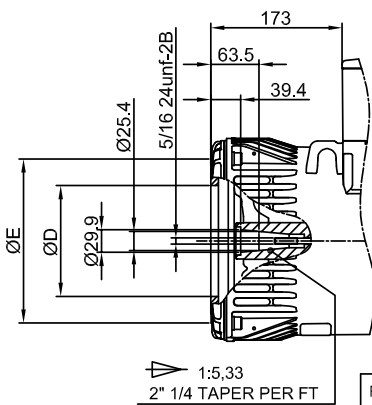
FORMA FORM FORME B3/B9



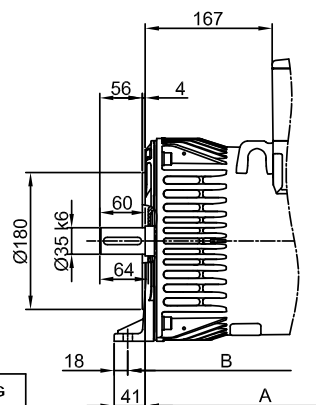
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n° fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	182	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	173	5	30	4	Ø11	β/2 45°

FORMA FORM FORME	A	B
B3B9 cono Ø30	493	394
B3B9 c.Ø38-J609b	484	385
B3/B14	478	402
MD35 - LOMB. STD	526	427

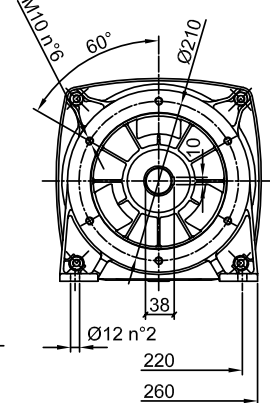
FORMA FORM FORME J609b



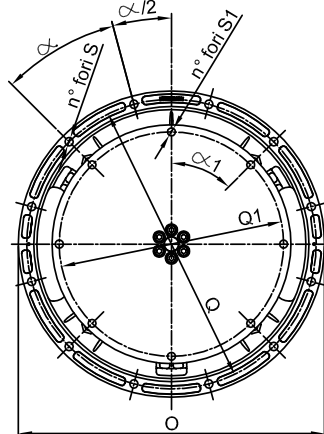
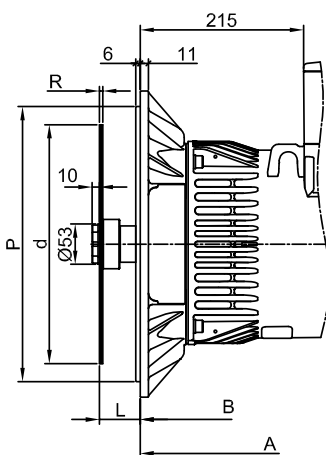
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		



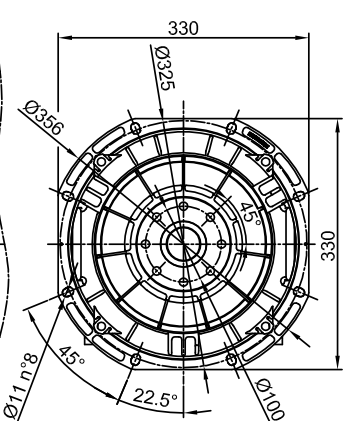
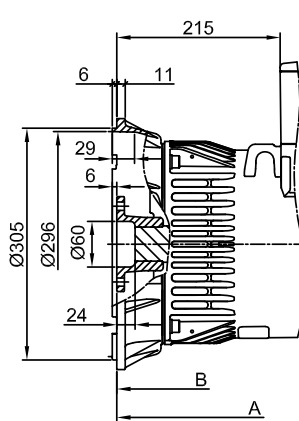
FORMA FORM FORME B3/B14



FORMA FORM FORME MD35



FORMA FORM FORME LOMBARDINI STD

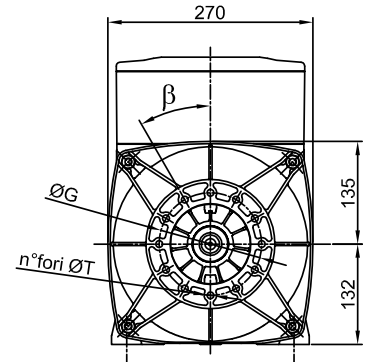
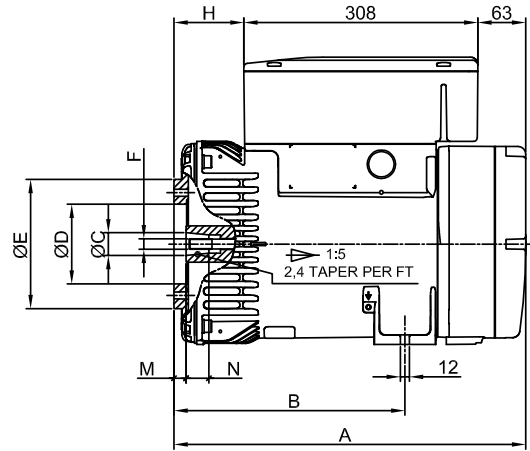
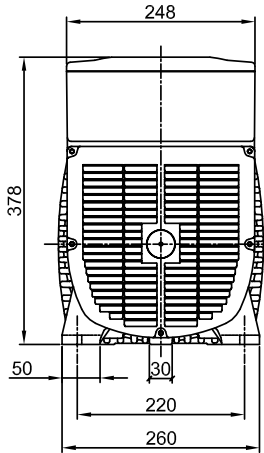


SAE N.	FLANGIE - BRIDE - FLANGE					
	O	P	Q	n. fori	S	α
5	356	314.3	333.4	8	11	45°
4	403	362	381	12		30
3	451	409.6	428.6	12		30

SAE N.	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE						
	L	d	Q1	n. fori	S1	α1	R
6 1/2	30.2	215.9	200	6	9	60°	3
7 1/2	30.2	241.3	222.25	8	9	45°	
8	62	263.52	244.47	6	10.5	60	4.5
10	53.8	314.32	295.27	8	10.5	45°	
11 1/2	39.6	352.42	333.37	8	10.5	45°	

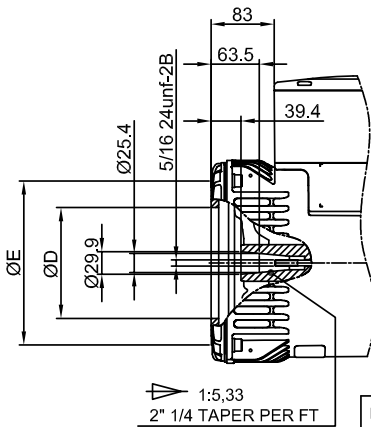
E1X13S

FORMA FORM FORME B3/B9

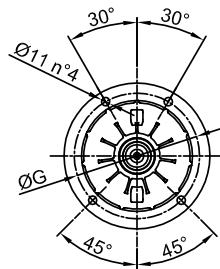


FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n°fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	92	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	83	5	30	4	Ø11	β/2 45°

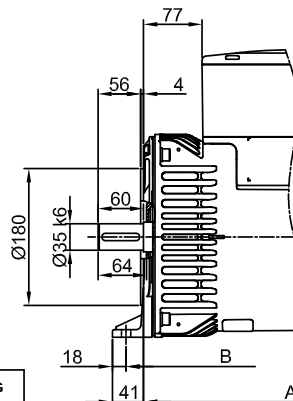
FORMA FORM FORME	A	B
B3B9 cono Ø30	463	304
B3B9 c.Ø38-J609b	454	295
B3/B14	448	312
MD35 - LOMB. STD	496	337



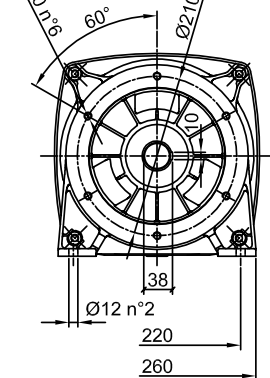
FORMA FORM FORME J609b



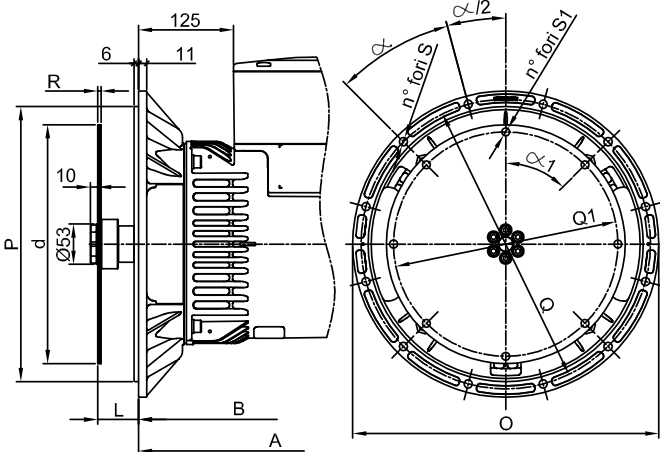
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		



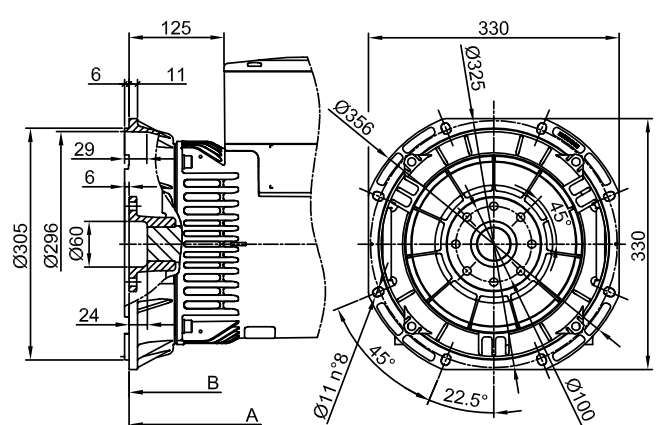
FORMA FORM FORME B3/B14



FORMA FORM FORME MD35



FORMA FORM FORME LOMBARDINI STD

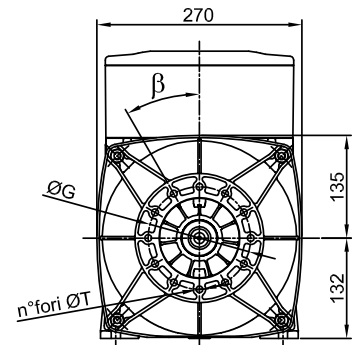
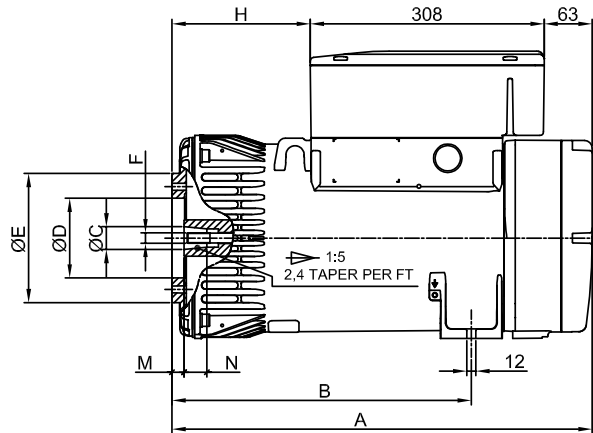
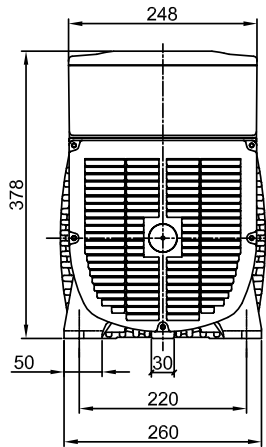


SAE N.	FLANGIE - BRIDE - FLANGE					
	O	P	Q	n. fori	S	α
5	356	314.3	333.4	8	11	45°
4	403	362	381	12		30
3	451	409.6	428.6	12		30

SAE N.	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE						
	L	d	Q1	n. fori	S1	α.1	R
6 1/2	30.2	215.9	200	6	9	60°	3
7 1/2	30.2	241.3	222.25	8	9	45°	
8	62	263.52	244.47	6	10.5	60	4.5
10	53.8	314.32	295.27	8	10.5	45°	
11 1/2	39.6	352.42	333.37	8	10.5	45°	

E1X13M

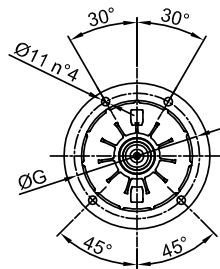
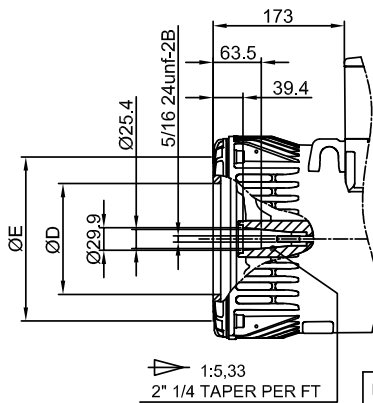
FORMA FORM FORME B3/B9



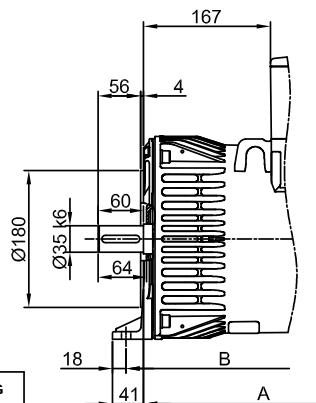
FORMA FORM FORME	ØC	ØD	ØE	F	ØG	H	M	N	n° fori	ØT	β
cono Ø30	Ø30	Ø105	Ø170	M14x1.5	Ø135	182	16	30	12	Ø9	30°
cono Ø38	Ø38	Ø125	Ø185	M18x1.5	Ø150	173	5	30	4	Ø11	β/2 45°

FORMA FORM FORME	A	B
B3B9 cono Ø30	553	394
B3B9 c.Ø38-J609b	544	385
B3/B14	538	402
MD35 - LOMB. STD	586	427

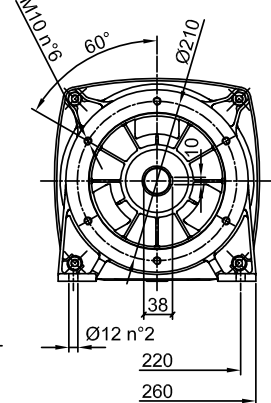
FORMA FORM FORME J609b



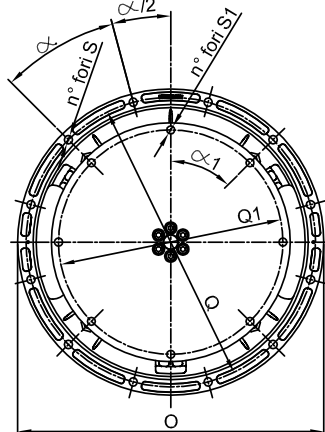
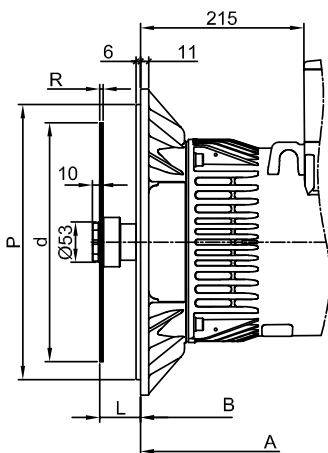
FORMA FORM FORME	ØD	ØE	ØG
J609b	Ø146	Ø192	Ø165
	Ø163.6	Ø216	Ø196.85
	Ø177.8		



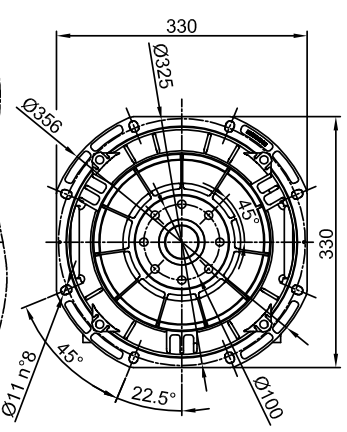
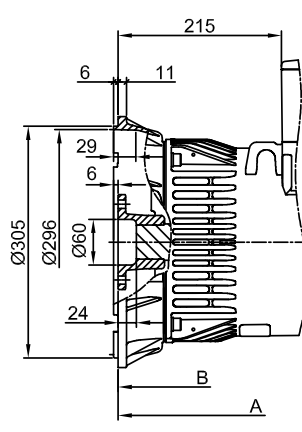
FORMA FORM FORME B3/B14



FORMA FORM FORME MD35



FORMA FORM FORME LOMBARDINI STD

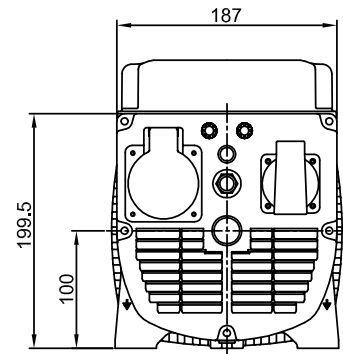
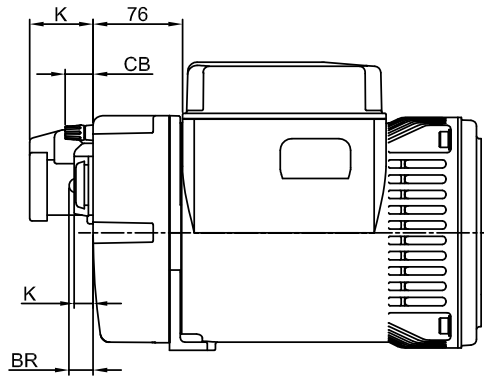


SAE N.	FLANGIE - BRIDE - FLANGE					
	O	P	Q	n. fori	S	α
5	356	314.3	333.4	8	11	45°
4	403	362	381	12		30
3	451	409.6	428.6	12		30

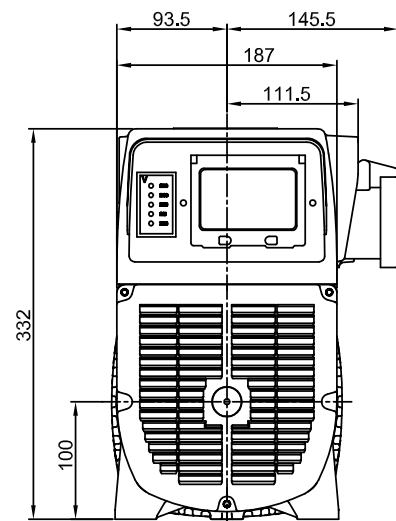
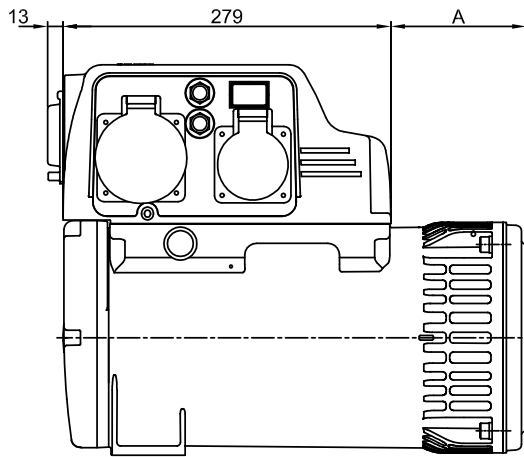
SAE N.	GIUNTI A DISCO - DISC COUPLING - ACC. DISQUE						
	L	d	Q1	n. fori	S1	α.1	R
6 1/2	30.2	215.9	200	6	9	60°	3
7 1/2	30.2	241.3	222.25	8	9	45°	
8	62	263.52	244.47	6	10.5	60	
10	53.8	314.32	295.27	8	10.5	45°	4.5
11 1/2	39.6	352.42	333.37	8	10.5	45°	

PANELS

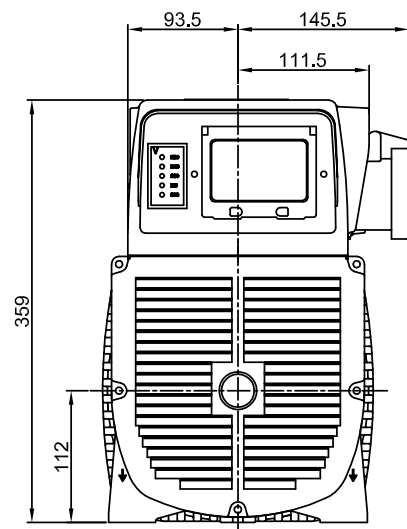
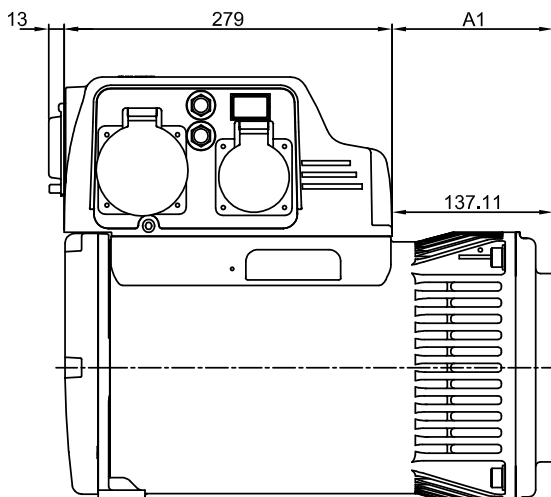
E1C10S
E1C10M



E1C10M



E1C11M

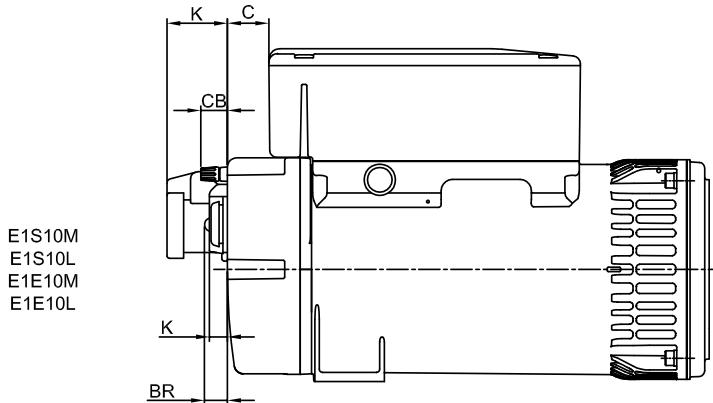


TIPO TYPE TYP	FORMA FORM FORME FORM FORMA	A
E1C10M	B3B9 cono Ø23 Ø30	115
	J609a - J609b	
	B3B14	105

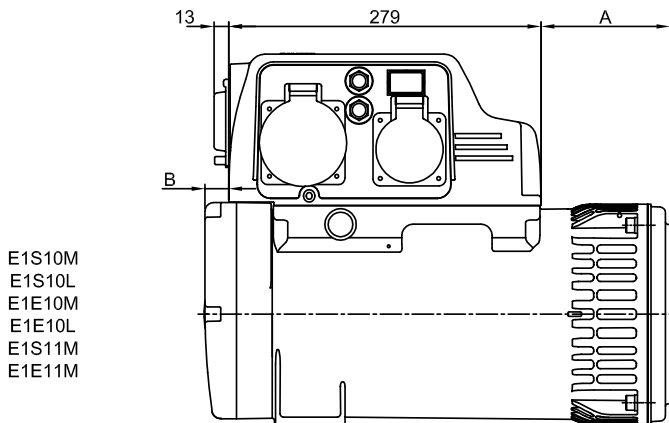
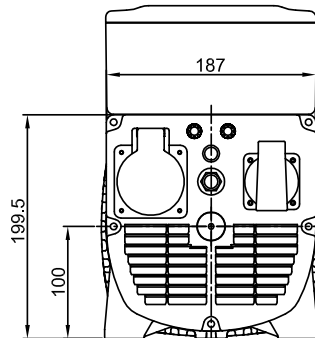
TIPO TYPE TYP	FORMA FORM FORME FORM FORMA	A1
E1C11M	B3B9 cono Ø23 Ø30	137
	B3B9 cono Ø38	120.5
	J609b	125
	B3B14	115
	MD35 - LOMB. STD	165

PRESE - SOCKETS PRISES - ENCHUFES STECKDOSEN	K
SCHUKO	16
CEE	52
BREAKER	BR
	20.5
CARICA BATTERIE-BATTERY CHARGING CHARGE BATTERIE-BATTERIELADER CARGADOR DE BATERIAS	CB
	24

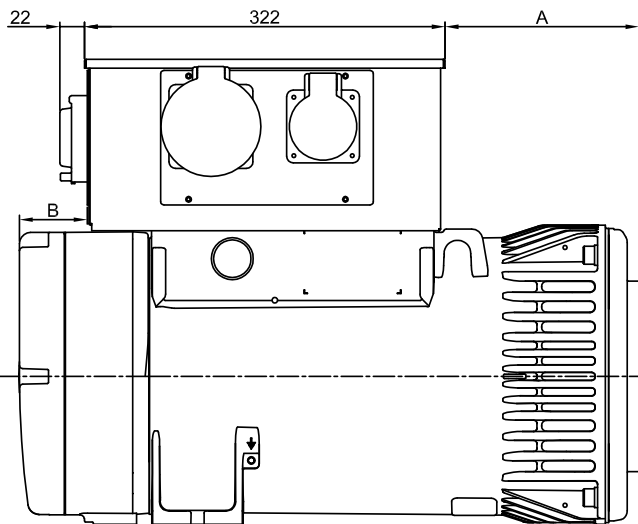
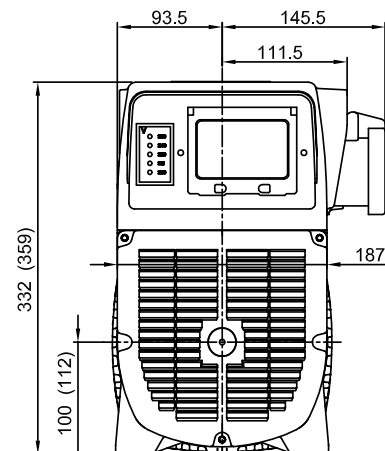
PANELS



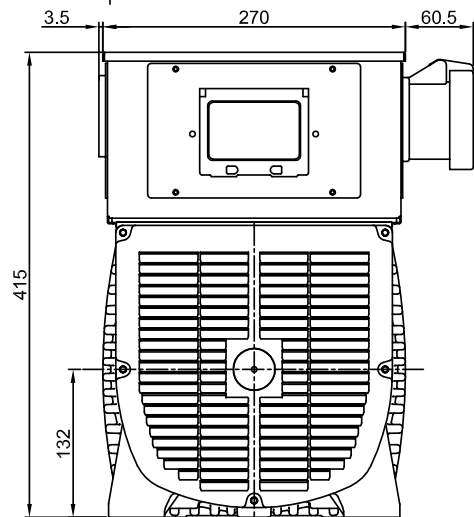
E1S10M
E1S10L
E1E10M
E1E10L



E1S10M
E1S10L
E1E10M
E1E10L
E1S11M
E1E11M



E1C13S
E1C13M
E1S13S
E1S13M
E1E13S
E1E13M
E1X13S
E1X13M



TIPO TYPE TYP	FORMA FORM FORME FORM FORMA	A	B	C
E1S10M	B3B9 cono Ø23 Ø30	115	0	37
	J609a - J609b			
	B3B14	105		
E1S10L	B3B9 cono Ø23 Ø30	115	22	59
	J609a - J609b			
	B3B14	105		

TIPO TYPE TYP	FORMA FORM FORME FORM FORMA	A
E1S11	B3B9 cono Ø23 Ø30	133.5
	B3B9 cono Ø38	117
	J609b	121.5
	B3B14	111.5
	MD35 - LOMB. STD	161.5

PRESE - SOCKETS PRISES - ENCHUFES STECKDOSEN	K
SCHUKO	16
CEE	52

BREAKER	BR
	20.5

CARICA BATTERIE-BATTERY CHARGING CHARGE BATTERIE-BATTERIELADER CARGADOR DE BATERIAS	CB
	24

TIPO TYPE TYP	FORMA FORM FORME FORM FORMA	A		B	
		'S'	'M'	E2S	E2X
E1C13S-M	B3B9 cono Ø30	83	173	0	60
E1S13S-M	B3B9 cono Ø38 - J609b	74	164		
E1X13S-M	B3B14	68	158		
	MD35 - LOMB. STD	116	206		

