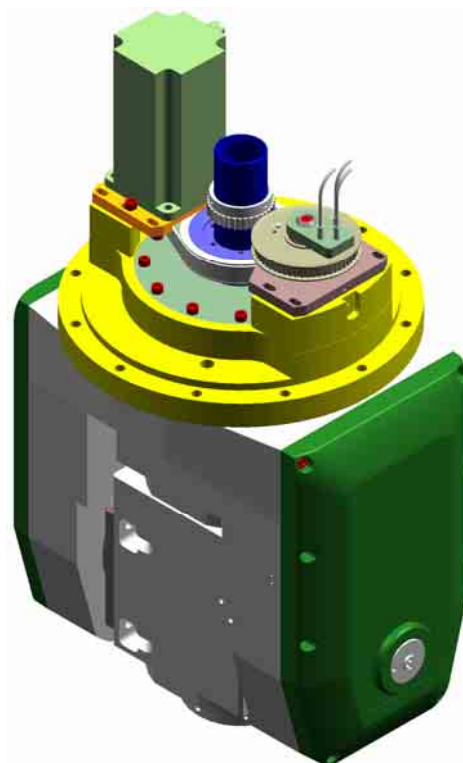
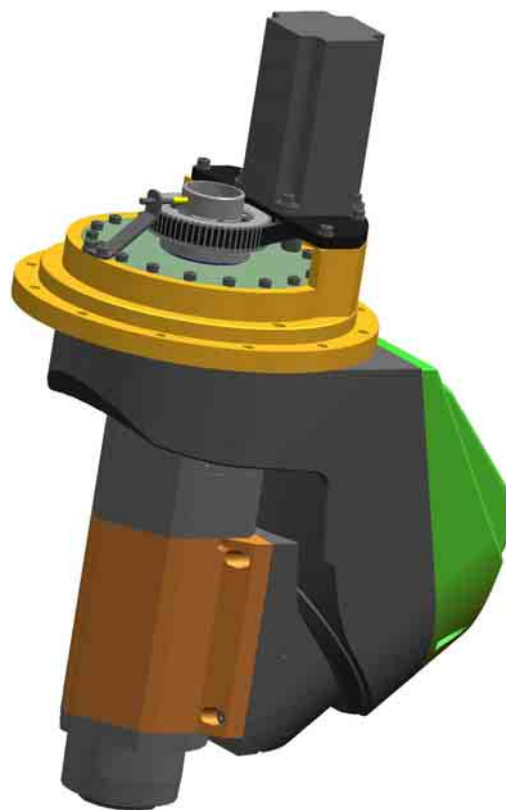


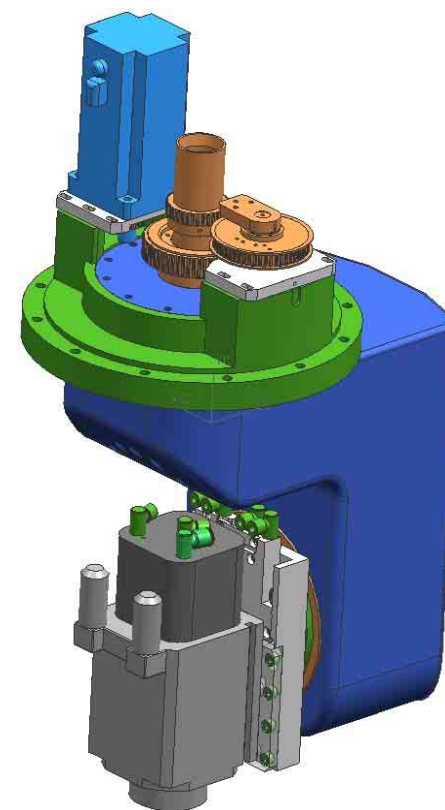
HS 653



HS 652



HS 550



HS 450

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HS 653 A / HS 653

HS 653 A with ES 789 (Long Nose) Electro-Spindle
HS 653 with ES 779 (Short Nose) Electro-Spindle

available servomotors:

YASKAWA

SIEMENS (Resolver)

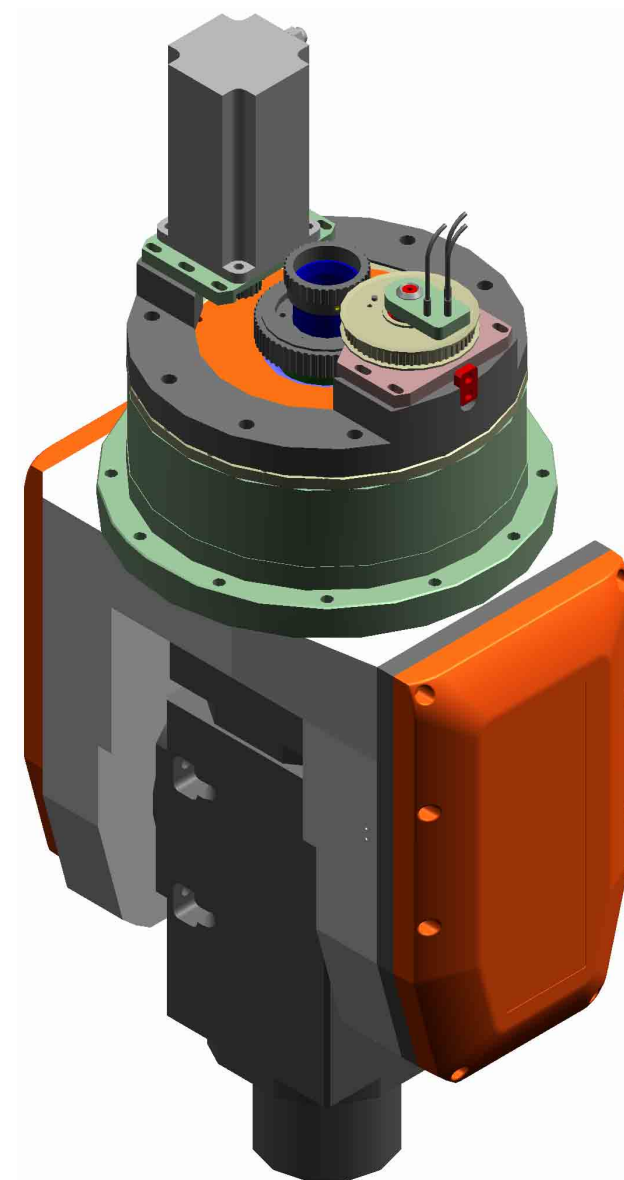
SIEMENS EnDat (Encoder)

FANUC

on request:

Direct Encoders

Brakes on the axes



HSD S.p.a.

SPIEL < 0,04 mm Positionsabweichung der Achsen, nachdem 400 mm vom Drehpunkt (Abb.1, Position [1]) eine Kraft von 30 kg angewandt wurde.	BACKLASH < 0,04 mm <i>The difference that the application of a force of 30kg at 400 mm from the centre of rotation (Fig.1, Position [1]) makes to the position of the axes.</i>	GIOCO < 0,04 mm Differenza di posizione degli assi, dopo aver applicato una forza di 30 kg a 400 mm dal centro di rotazione (fig.1, posizione [1]).
POSITIONIERUNG < 0,1 mm <ul style="list-style-type: none"> Die Spindel in eine horizontale Position bringen (Abb.1, Position [1]); Einen Komparator 400 mm von der Achse C positionieren und nullen; Die Achse A um 180° drehen (entgegengesetzte Position: Abb.1, Position [5]); Die Achse A um 180° drehen (Ausgangsposition); Die Abweichung unter den beiden Maßen kontrollieren. 	POSITIONING ACCURACY < 0,1 mm <ul style="list-style-type: none"> Move the electrospindle in Horizontal position (Fig.1, Position [1]); Position a comparator at 400mm from the C-Axe and set the zero; Rotate the A-Axe of 180° (opposite position: Fig.1, Position [5]); Rotate the C-Axe of 180° (back to the initial position); Check the difference (variance) between the two measurements. 	POSIZIONAMENTO < 0,1 mm <ul style="list-style-type: none"> Si porta il mandrino in posizione orizzontale (fig.1, posizione [1]); Si posiziona un comparatore a 400 mm dall'Asse C, e si azzerà; Si ruota l'Asse A di 180° (posizione opposta: fig.1, posizione [5]); Si ruota l'Asse C di 180° (si torna in posizione di partenza); Si verifica lo scostamento fra le due misure.
WIEDERHOLBARKEIT < 0,02 mm <ul style="list-style-type: none"> Befestigen Sie einen Meßuhr mit magnetischem Fuß im Abstand von 400mm zur C-Achse (Abbildung 1, Pos. [1]); Bewegen Sie die Achsen A und C bis zur neuen Position und fahren Sie wieder auf Pos. [1] zurück; Lesen Sie die Messuhr ab. 	REPEATABILITY < 0,02 mm <ul style="list-style-type: none"> Position a comparator at 400mm from the C-Axe and set the zero (Fig.1, Position [1]); Move A and C axes to a new position, and then return them back to Position [1]; Check the difference (variance) between the two measurements. 	RIPETIBILITÀ < 0,02 mm <ul style="list-style-type: none"> Azzerare un comparatore a 400 mm dall'Asse C (fig.1, posizione [1]); Muovere gli assi A e C fino ad una nuova posizione, e tornare poi in posizione [1]; Leggere la misura del comparatore.
MITTIGKEITSABWEICHUNG ACHSE C < 0,03 mm Bei am Stift positioniertem Komparator die max. Exzentrizität über die ganze Drehung der Achse C messen (Abb.1, Position [3]).	C AXIS ECCENTRICITY < 0,03 mm <i>Check the maximum eccentricity on the whole rotation of the C-Axe with the comparator positioned on the gauge pin (Fig.1, Position [3]).</i>	ECCENTRICITÀ ASSE C < 0,03 mm Con il comparatore posizionato sulla spina (fig.1, posizione [3]), si rileva la massima eccentricità sull'intera rotazione dell'Asse C.
RECHTWINKLIGKEIT DER ACHSEN < 0,004° Toleranzwinkel zwischen den Achsen A und C.	AXIS SQUARENESS < 0,004° <i>The angle of tolerance between the A and C axes.</i>	ORTOGONALITÀ ASSI < 0,004° Angolo di tolleranza tra gli assi A e C.
EBENHEIT ACHSE A < 0,1 mm Die maximale Abweichung zwischen den Nullstellungspositionen [1] und [5] und den Positionen [2], [3] und [4] messen (Abb.1).	A-AXE - FLATNESS < 0,1 mm <i>Measure the maximum difference (variance) between the zero positions [1] and [5] with reference to the positions [2], [3] and [4] (Fig.1).</i>	PLANARITÀ ASSE A < 0,1 mm Si misura il massimo scostamento tra le posizioni di azzeramento [1] e [5] e le posizioni [2], [3] e [4] (fig.1).
SEITENSTEIFIGKEIT < 0,4 µ / N Bewegung (in Mikrometer) pro Newton Kraft, angewandt wie in Abb.2 gezeigt. Die (für die Maßnahme gewählte) Richtung verursacht die schlechtere Situation.	STIFFNESS < 0,4 µ / N <i>Movement (measured in micron) for each Newton of force applied as shown in Fig.2. The direction (chosen for the measure) causes the worse situation.</i>	RIGIDEZZA < 0,4 µ / N Spostamento in micron per ogni Newton di forza applicato, come mostrato in fig.2. La direzione scelta per la misura e mostrata in fig.2 è la più sfavorevole.

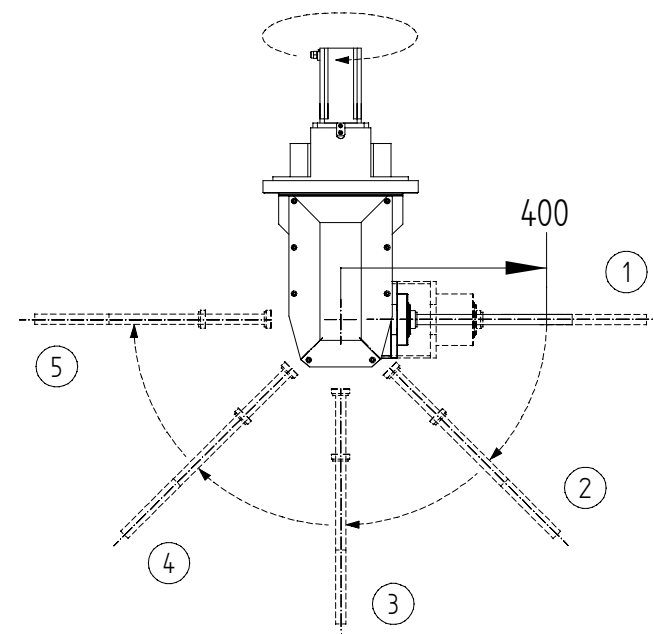


Abb.1 / Fig.1

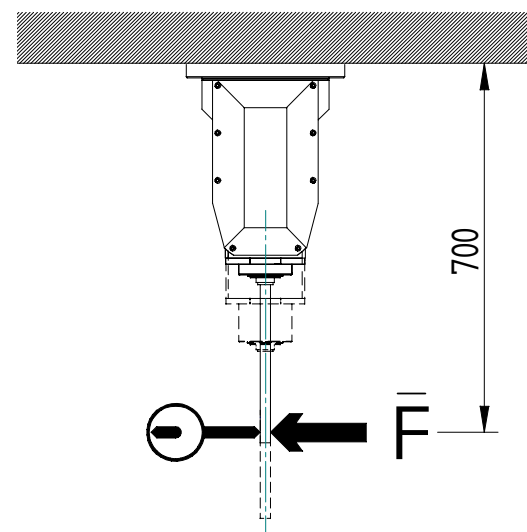


Abb.2 / Fig.2

HS 653

- mit Direktem Encoder und Bremsen auf den Äxten
- with Direct Encoders and Brakes on the axes
- con encoder diretti e freni sugli assi



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betragt Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH04
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm
 Bremsdrehmoment: 600 Nm
 Encoder Sinusförmig 1 V_{pp}, 1024 Impulse/U

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betragt Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 400 Nm
 Hochstdrehmoment des unetige Arbeit: 620 Nm
 Bremsdrehmoment: 600 Nm
 Encoder Sinusförmig 1 V_{pp}, 1024 Impulse/U

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~195 kg
 mit ES 789 : ~200 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH04
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm
 Braking torque: 600 Nm
 Sine encoder 1 V_{pp}, 1024 pulse/rev

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 400 Nm
 Torque under discontinuous working conditions: 620 Nm
 Braking torque: 600 Nm
 Sine encoder 1 V_{pp}, 1024 pulse/rev

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~195 kg
 with ES 789 : ~200 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: YASKAWA SGMPH04
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm
 Coppia di frenatura: 600 Nm
 Encoder sinusoidale 1 V_{pp}, 1024 impulsi/giro

ASSE "C":

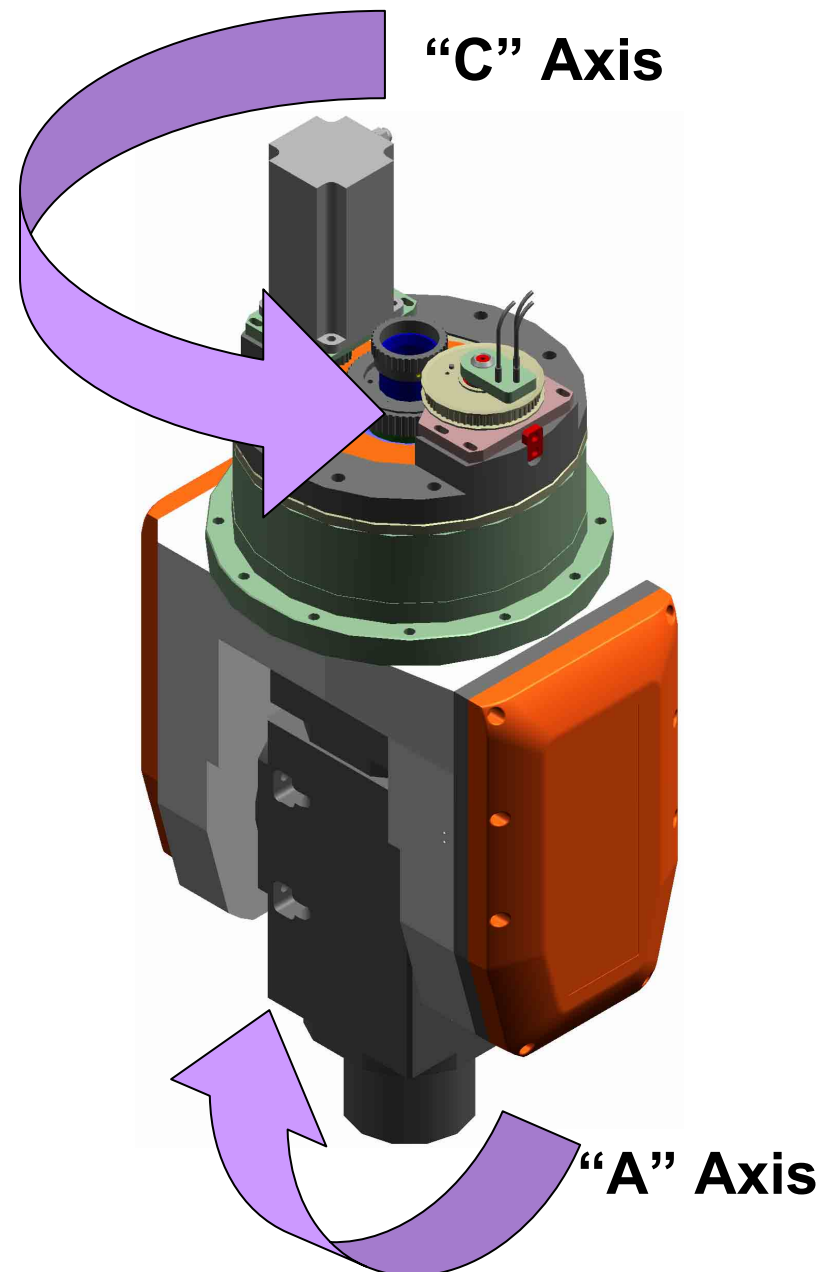
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: YASKAWA SGMAH08
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 400 Nm
 Coppia massima di lavoro discontinuo: 620 Nm
 Coppia di frenatura: 600 Nm
 Encoder sinusoidale 1 V_{pp}, 1024 impulsi/giro

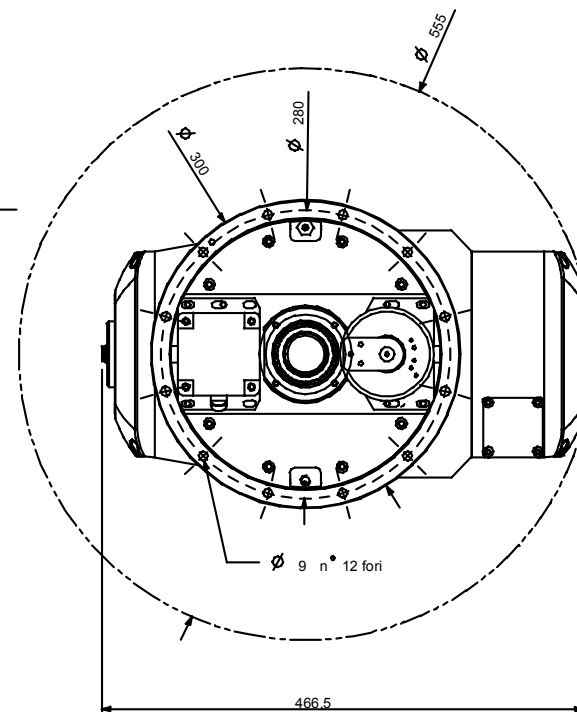
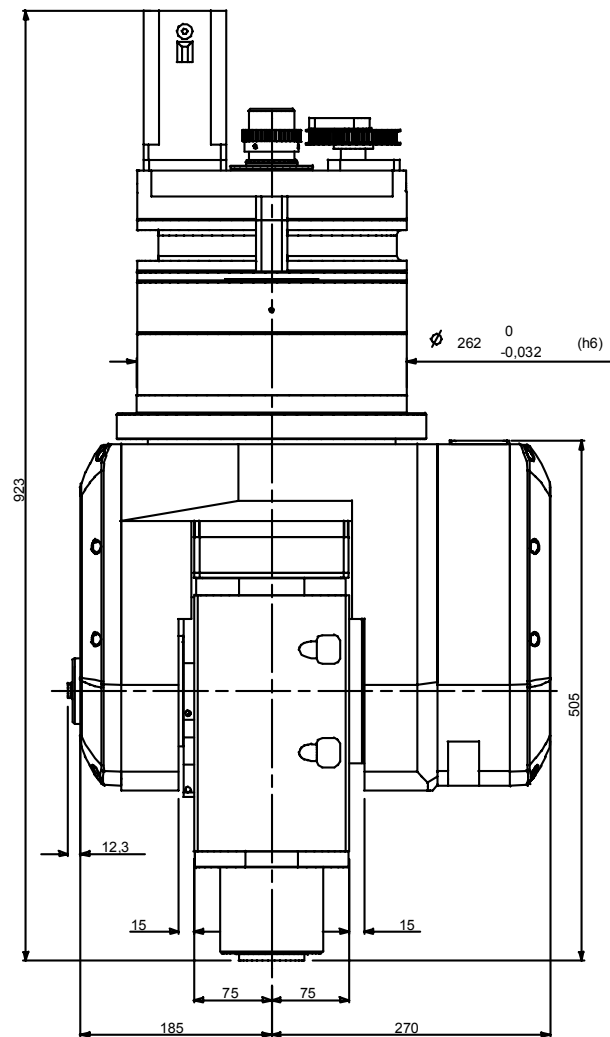
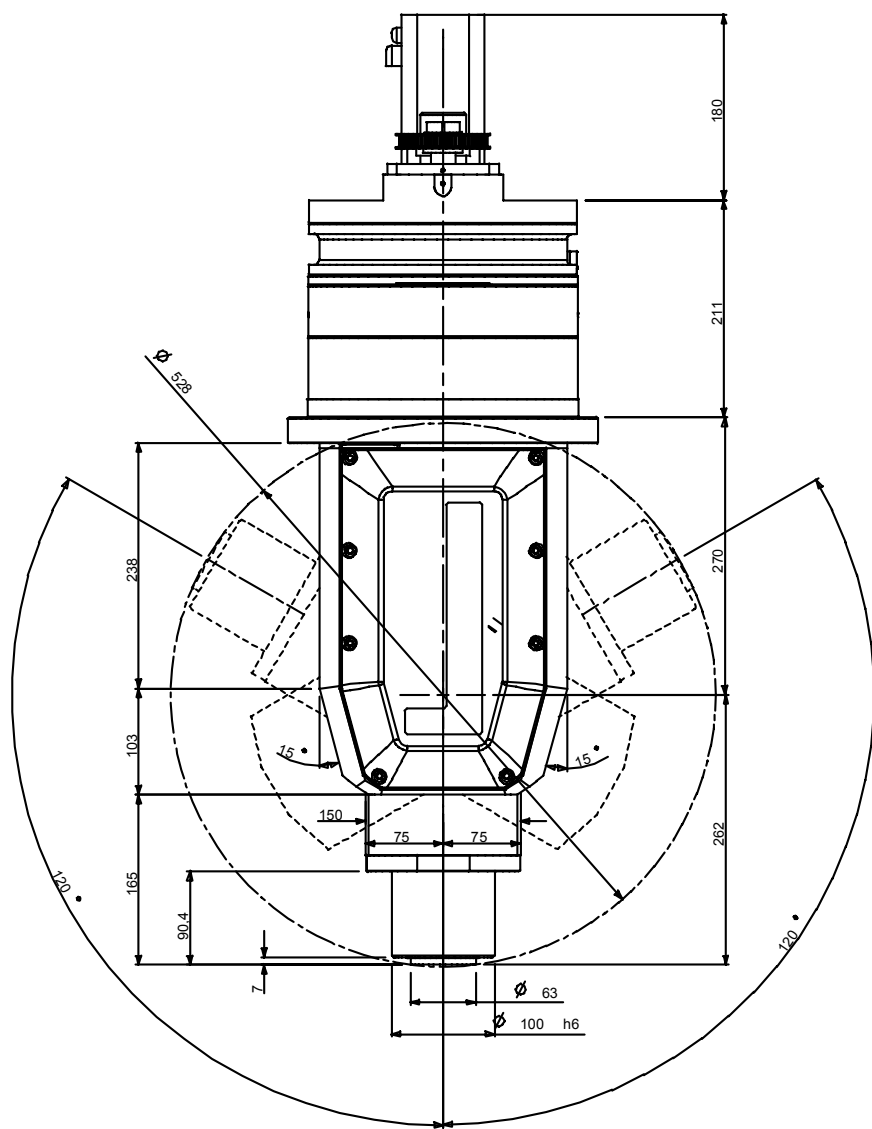
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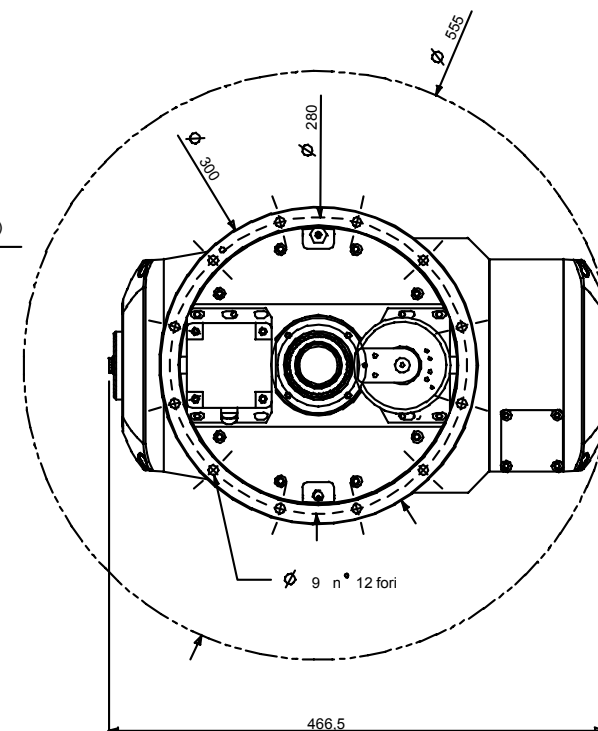
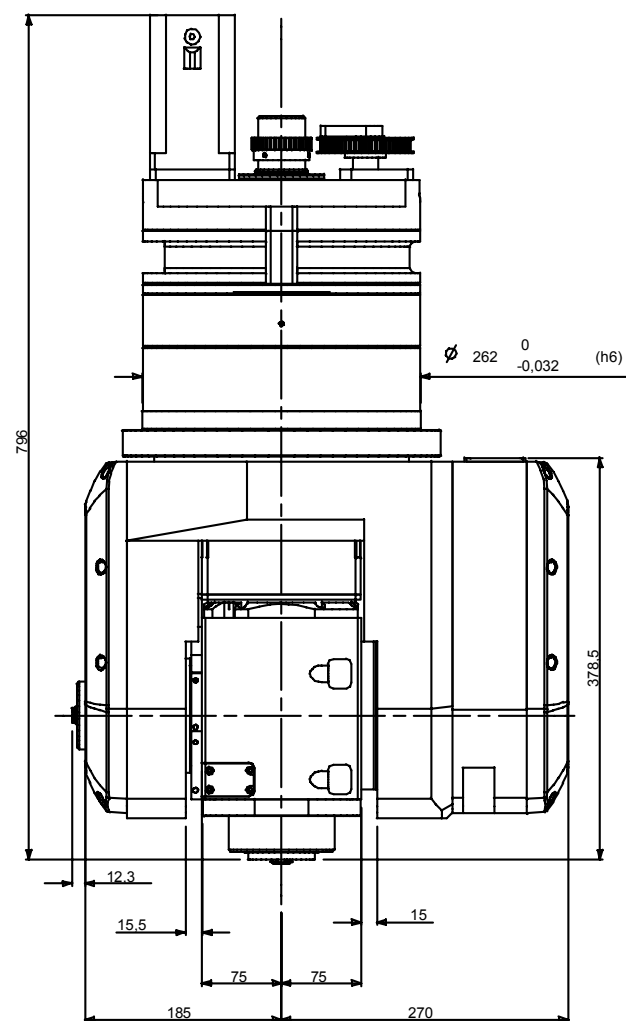
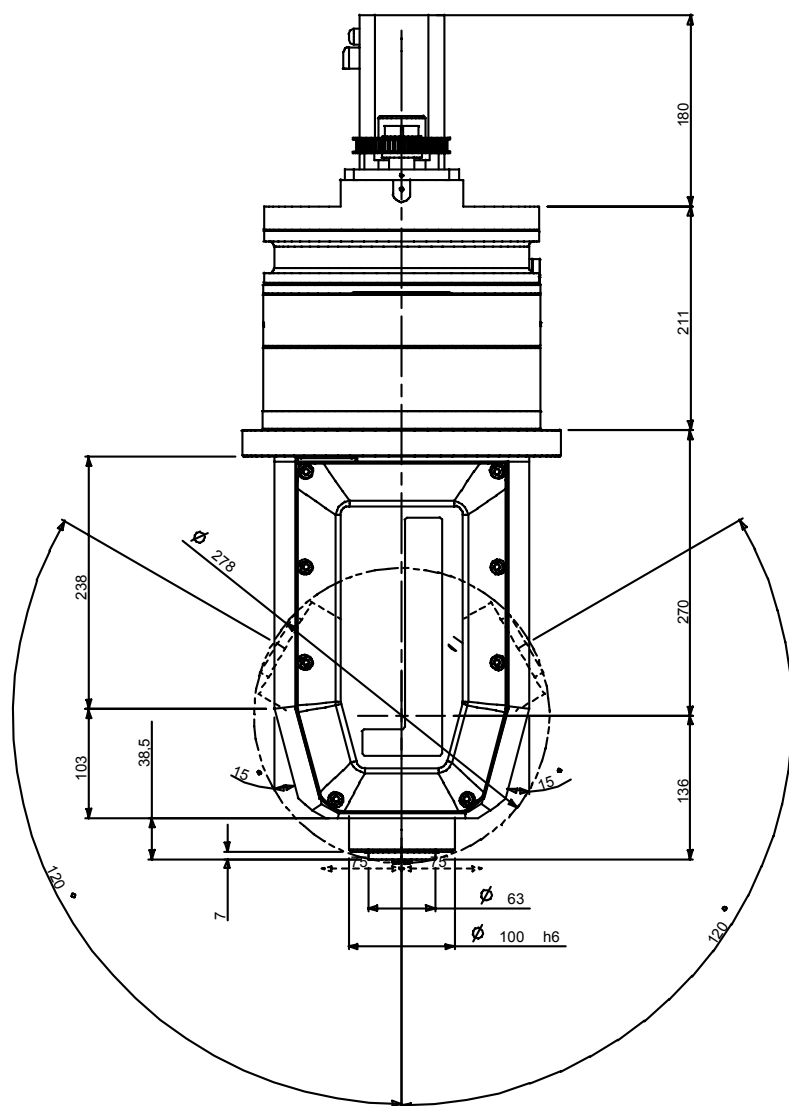
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~195 kg
 con ES 789 : ~200 kg







HS653 with BRAKES and DIRECT ENCODERS + ES779

Drawing code: 5530H0197

HS 653

- mit Bremsen auf den Äxten
- with Brakes on the axes
- con freni sugli assi



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betragt Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH04
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetelige Arbeit: 450 Nm
 Bremsdrehmoment: 600 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betragt Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 400 Nm
 Hochstdrehmoment des unetelige Arbeit: 620 Nm
 Bremsdrehmoment: 600 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~193 kg
 mit ES 789 : ~198 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH04
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm
 Braking torque: 600 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 400 Nm
 Torque under discontinuous working conditions: 620 Nm
 Braking torque: 600 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~193 kg
 with ES 789 : ~198 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: YASKAWA SGMPH04
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm
 Coppia di frenatura: 600 Nm

ASSE "C":

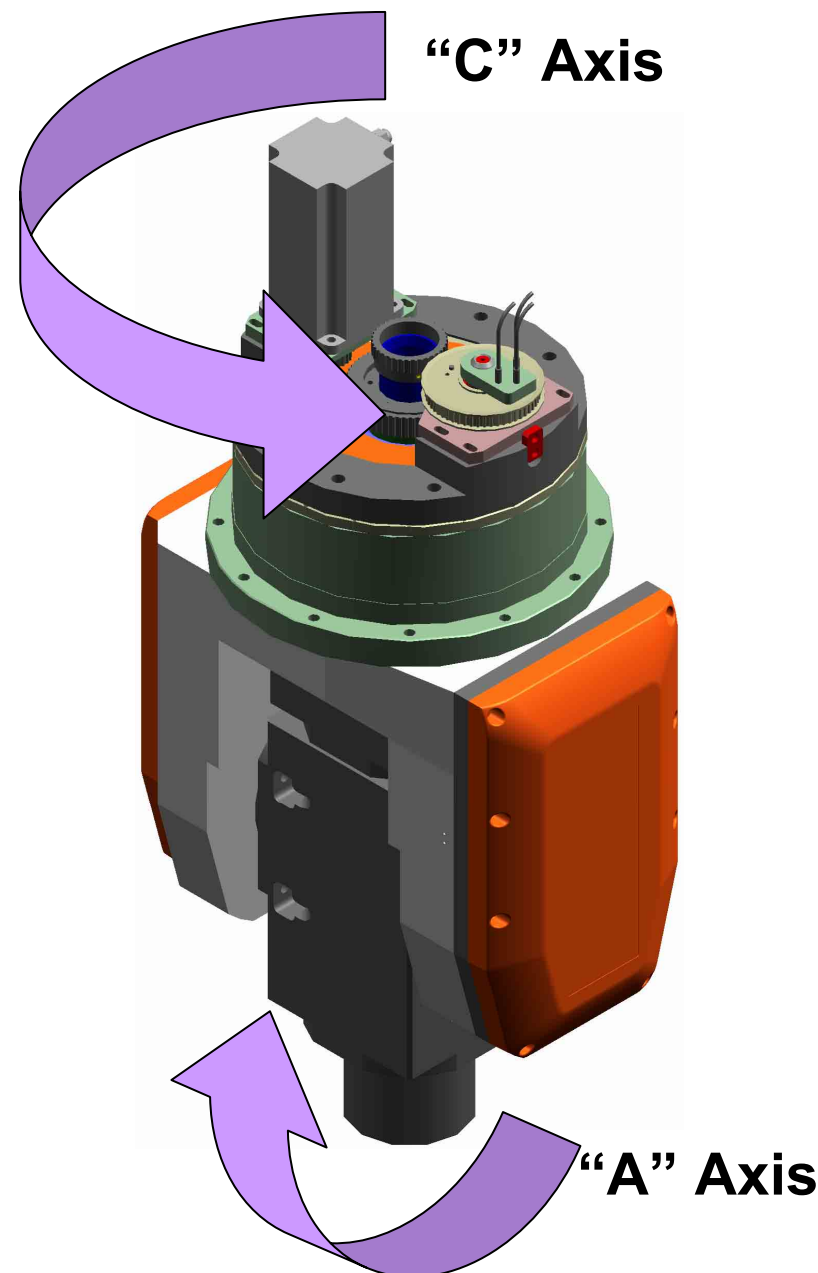
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: YASKAWA SGMAH08
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 400 Nm
 Coppia massima di lavoro discontinuo: 620 Nm
 Coppia di frenatura: 600 Nm

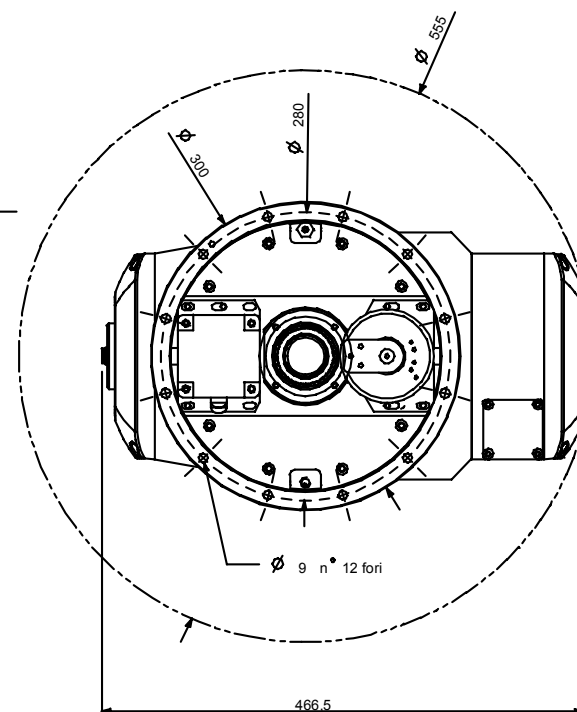
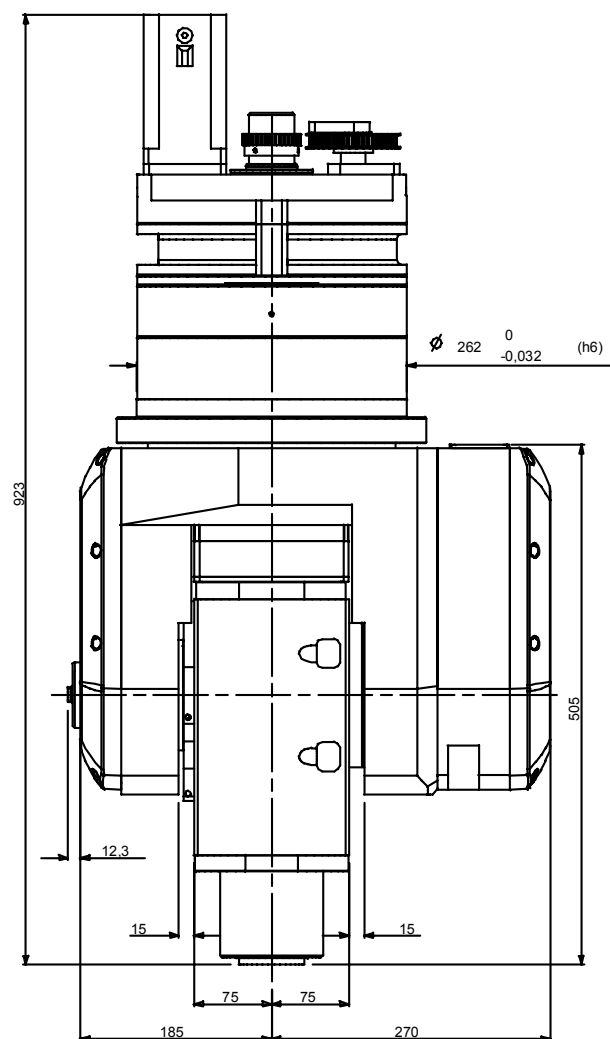
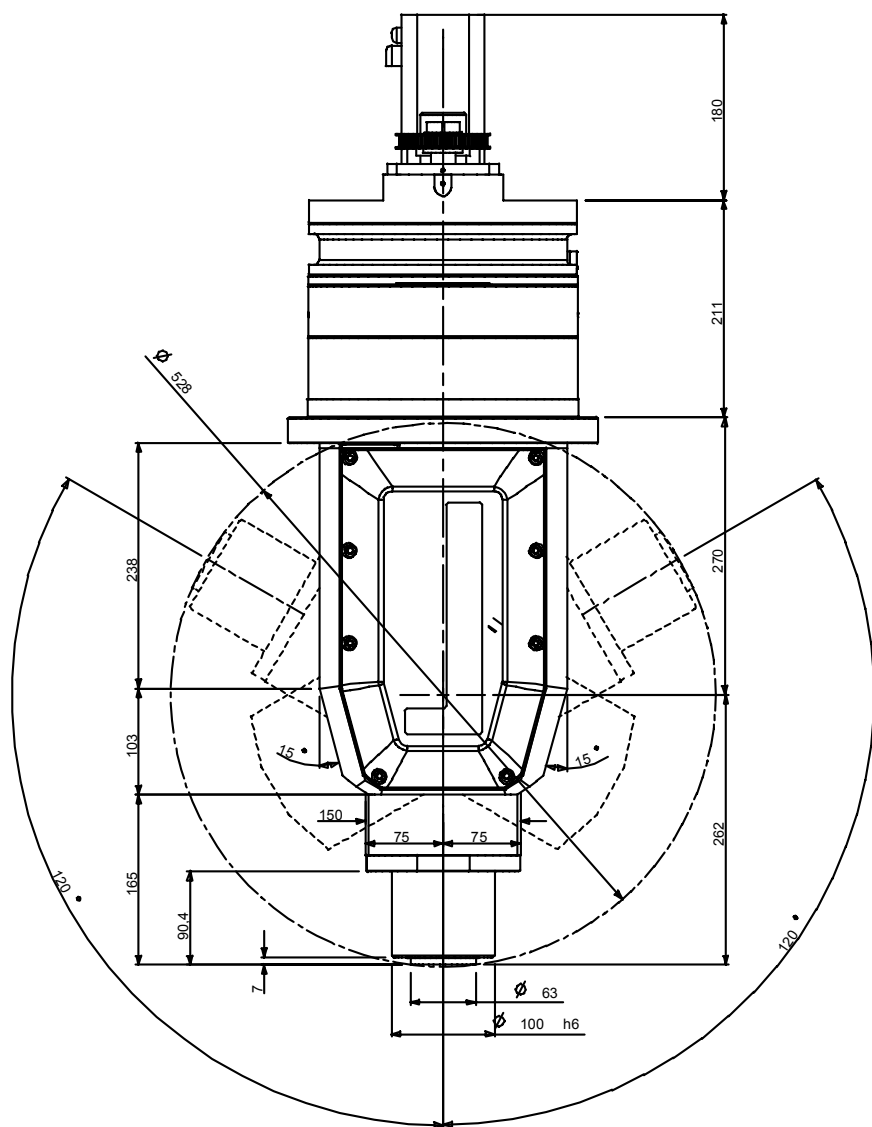
ELETTROMANDRINI DISPONIBILI :

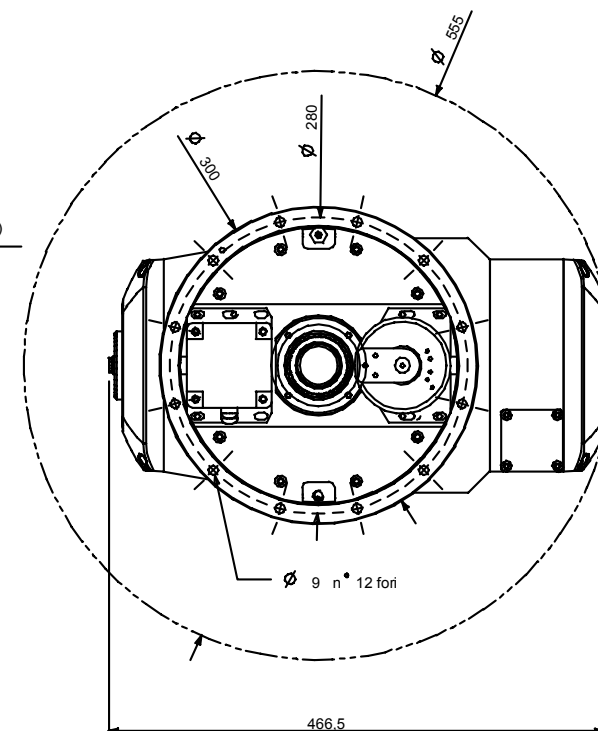
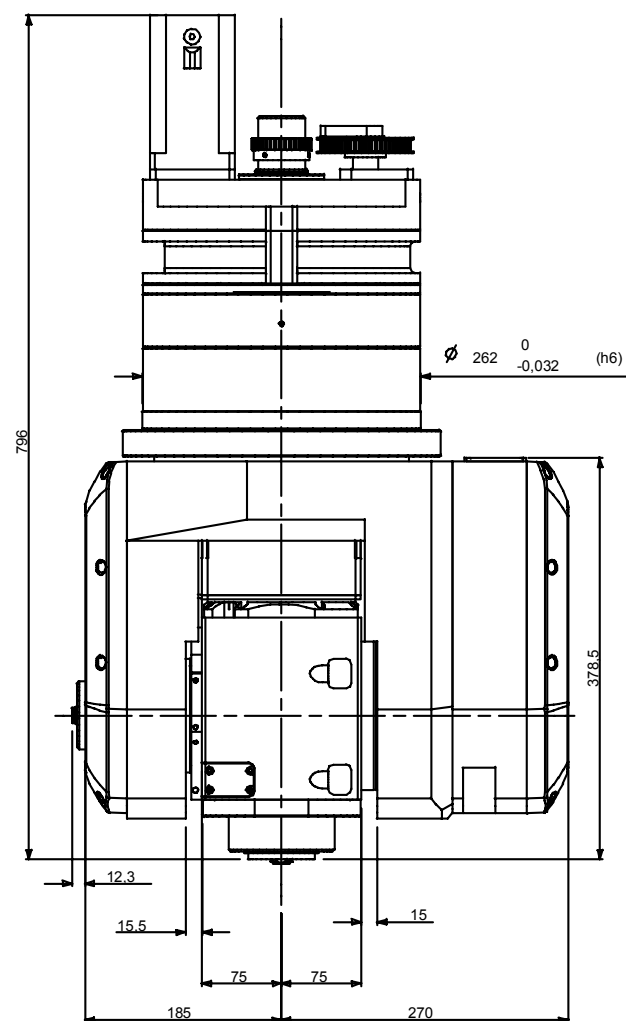
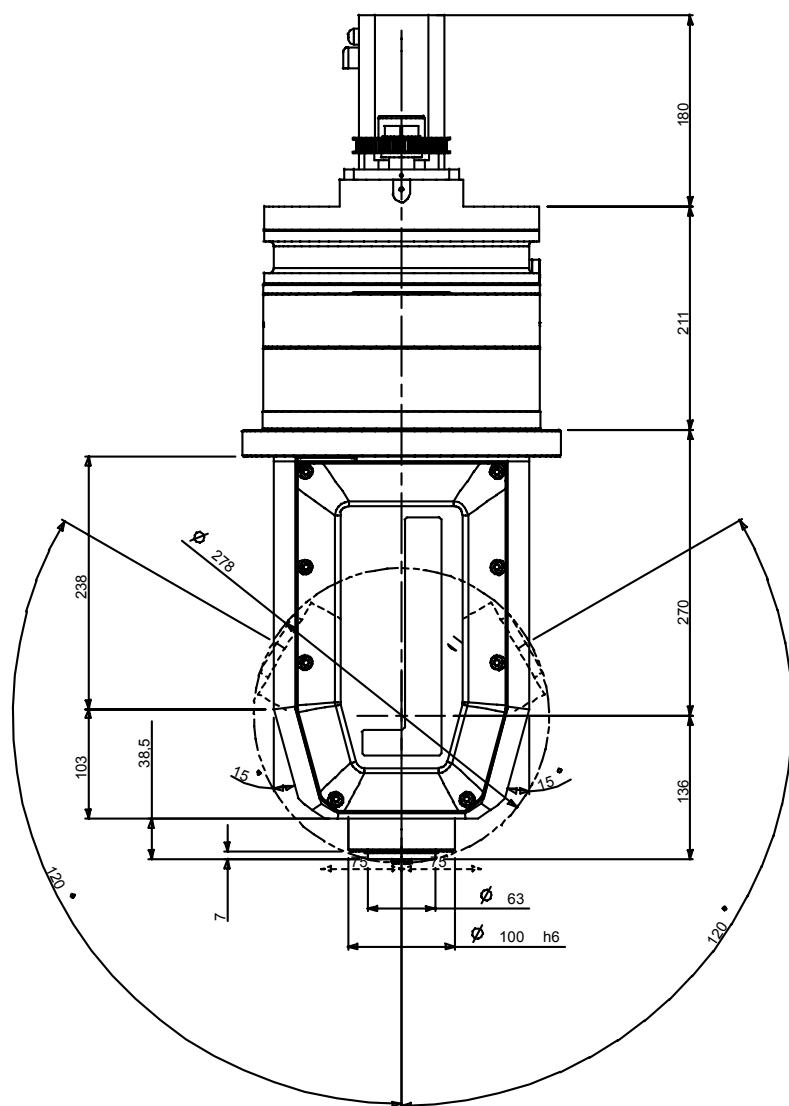
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~193 kg
 con ES 789 : ~198 kg







HS 653

- standard Version mit Servomotoren YASKAWA
- standard YASKAWA version
- versione standard con servomotori YASKAWA



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betragt Drehung Achse: Max. $\pm 120^\circ$

Servomotor: YASKAWA SGMPH04

Max. Geschwindigkeit Dauerbetrieb:
 49,5°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:
 82,5°/sec (5000 rpm)

Drehmoment an der Achse in Dauerbetrieb:
 300 Nm

Hochstdrehmoment des unetige Arbeit:
 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betragt Drehung Achse: Max. $\pm 213^\circ$

Servomotor: YASKAWA SGMAH08

Max. Geschwindigkeit Dauerbetrieb:
 49,5°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:
 82,5°/sec (5000 rpm)

Drehmoment an der Achse in Dauerbetrieb:
 400 Nm

Hochstdrehmoment des unetige Arbeit:
 620 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~133 kg

mit ES 789 : ~138 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$

Servomotor: YASKAWA SGMPH04

Maximum continous work speed:
 49,5°/sec (3000 rpm)

Maximum continous positioning speed:
 82,5°/sec (5000 rpm)

Axis torque under continuous work:
 300 Nm

Torque under discontinuous working conditions:
 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$

Servomotor: YASKAWA SGMAH08

Maximum continous work speed:
 49,5°/sec (3000 rpm)

Maximum continous positioning speed:
 82,5°/sec (5000 rpm)

Axis torque under continuous work:
 400 Nm

Torque under discontinuous working conditions:
 620 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~133 kg

with ES 789 : ~138 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$

Servomotore: YASKAWA SGMPH04

Velocità massima di lavoro continuo:
 49,5°/sec (3000 rpm)

Velocità massima di posizionamento:
 82,5°/sec (5000 rpm)

Coppia massima di lavoro continuo:
 300 Nm

Coppia massima di lavoro discontinuo:
 450 Nm

ASSE "C":

Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$

Servomotore: YASKAWA SGMAH08

Velocità massima di lavoro continuo:
 49,5°/sec (3000 rpm)

Velocità massima di posizionamento:
 82,5°/sec (5000 rpm)

Coppia massima di lavoro continuo:
 400 Nm

Coppia massima di lavoro discontinuo:
 620 Nm

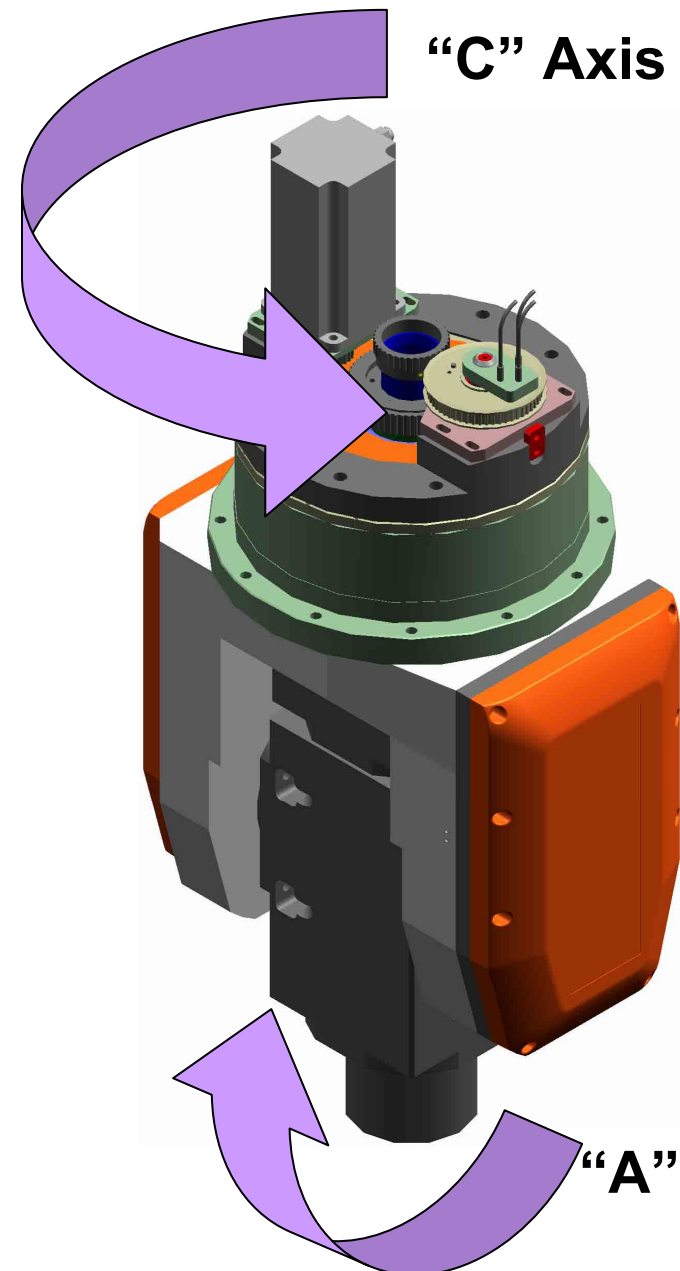
ELETTROMANDRINI DISPONIBILI :

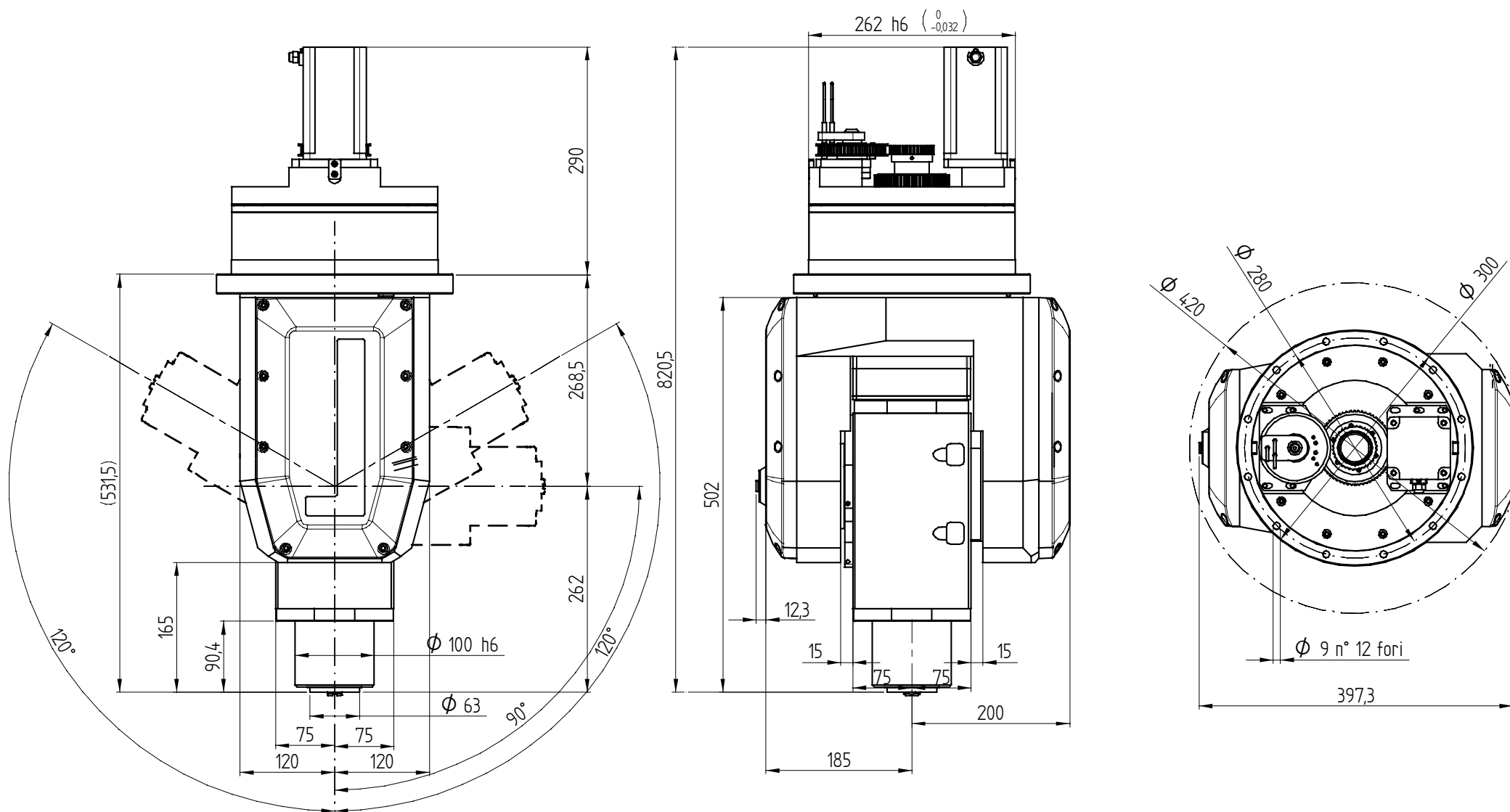
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

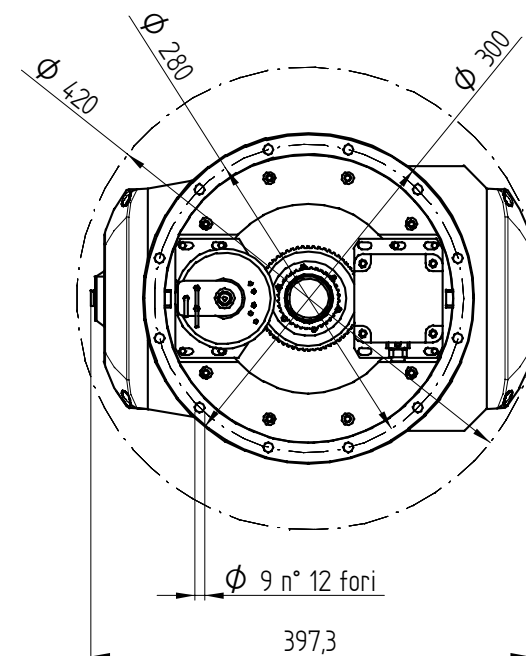
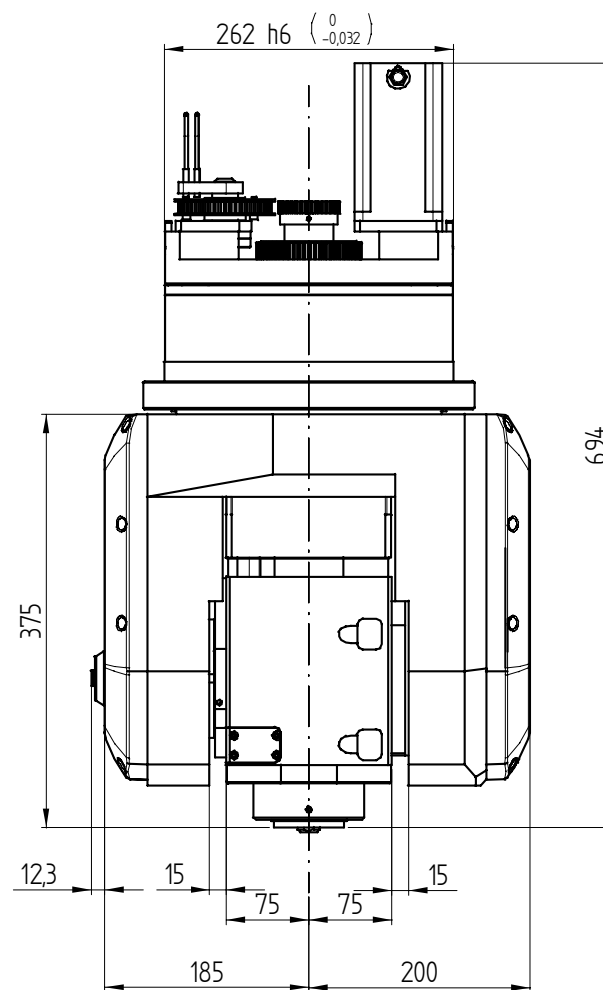
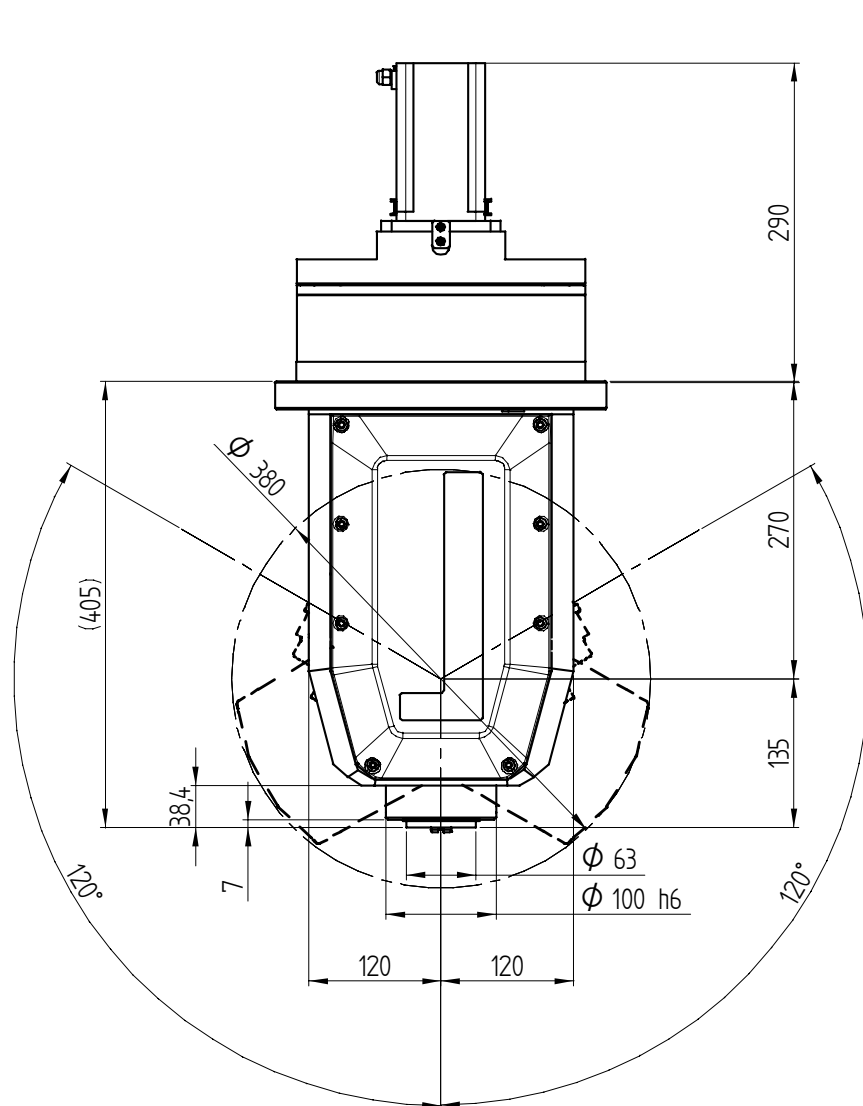
MASSE :

con ES 779 : ~133 kg

con ES 789 : ~138 kg







HS 653

standard Version mit Servomotoren SIEMENS oder FANUC
 : standard SIEMENS or FANUC version
 : versione standard con servomotori SIEMENS o FANUC



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$

Servomotoren:

Siemens 1FK7040-5 (Resolver)
 Siemens 1FK7040-5Ak71 (Encoder)
 Fanuc ALFA2/5000is

Max. Geschwindigkeit Dauerbetrieb:
 49,5°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:
 82,5°/sec (5000 rpm)

Drehmoment an der Achse in Dauerbetrieb:
 300 Nm

Hochstdrehmoment des un stetige Arbeit:
 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$

Servomotoren:

Siemens 1FK7040-5 (Resolver)
 Siemens 1FK7040-5Ak71 (Encoder)
 Fanuc ALFA2/5000is

Max. Geschwindigkeit Dauerbetrieb:
 49,5°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:
 82,5°/sec (5000 rpm)

Drehmoment an der Achse in Dauerbetrieb:
 400 Nm

Hochstdrehmoment des un stetige Arbeit:
 620 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 789 : ~152 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$

Servomotors:

Siemens 1FK7040-5 (Resolver)
 Siemens 1FK7040-5Ak71 (Encoder)
 Fanuc ALFA2/5000is

Maximum continous work speed:
 49,5°/sec (3000 rpm)

Maximum continous positioning speed:
 82,5°/sec (5000 rpm)

Axis torque under continuous work:
 300 Nm

Torque under discontinuous working conditions:
 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$

Servomotors:

Siemens 1FK7040-5 (Resolver)
 Siemens 1FK7040-5Ak71 (Encoder)
 Fanuc ALFA2/5000is

Maximum continous work speed:
 49,5°/sec (3000 rpm)

Maximum continous positioning speed:
 82,5°/sec (5000 rpm)

Axis torque under continuous work:
 400 Nm

Torque under discontinuous working conditions:
 620 Nm

AVAILABLE ELECTROSPINDLES :

ES 789 HSK F63 Liquid Cooling

MASS :

with ES 789 : ~152 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$

Servomotori:

Siemens 1FK7040-5 (Resolver)
 Siemens 1FK7040-5Ak71 (Encoder)
 Fanuc ALFA2/5000is

Velocità massima di lavoro continuo:
 49,5°/sec (3000 rpm)

Velocità massima di posizionamento:
 82,5°/sec (5000 rpm)

Coppia massima di lavoro continuo:
 300 Nm

Coppia massima di lavoro discontinuo:
 450 Nm

ASSE "C":

Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$

Servomotori:

Siemens 1FK7040-5 (Resolver)
 Siemens 1FK7040-5Ak71 (Encoder)
 Fanuc ALFA2/5000is

Velocità massima di lavoro continuo:
 49,5°/sec (3000 rpm)

Velocità massima di posizionamento:
 82,5°/sec (5000 rpm)

Coppia massima di lavoro continuo:
 400 Nm

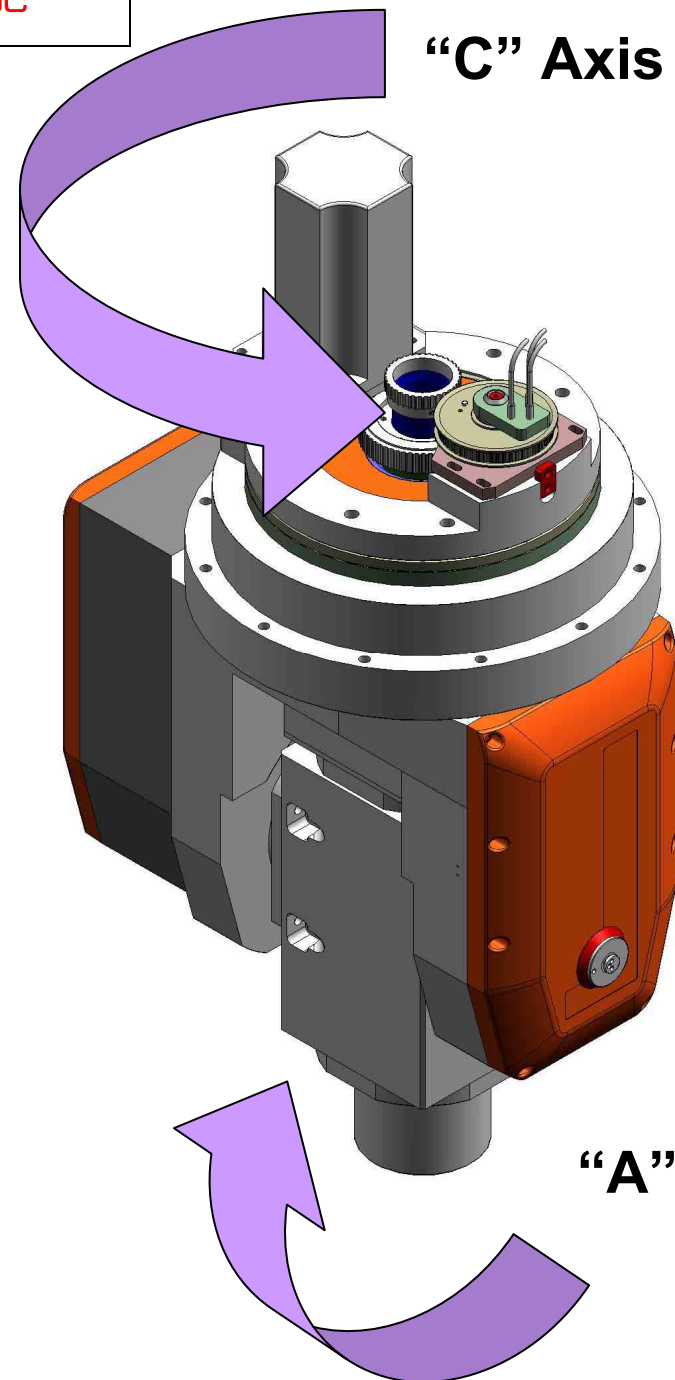
Coppia massima di lavoro discontinuo:
 620 Nm

ELETTROMANDRINI DISPONIBILI :

ES 789 HSK F63 Raffreddato a Liquido

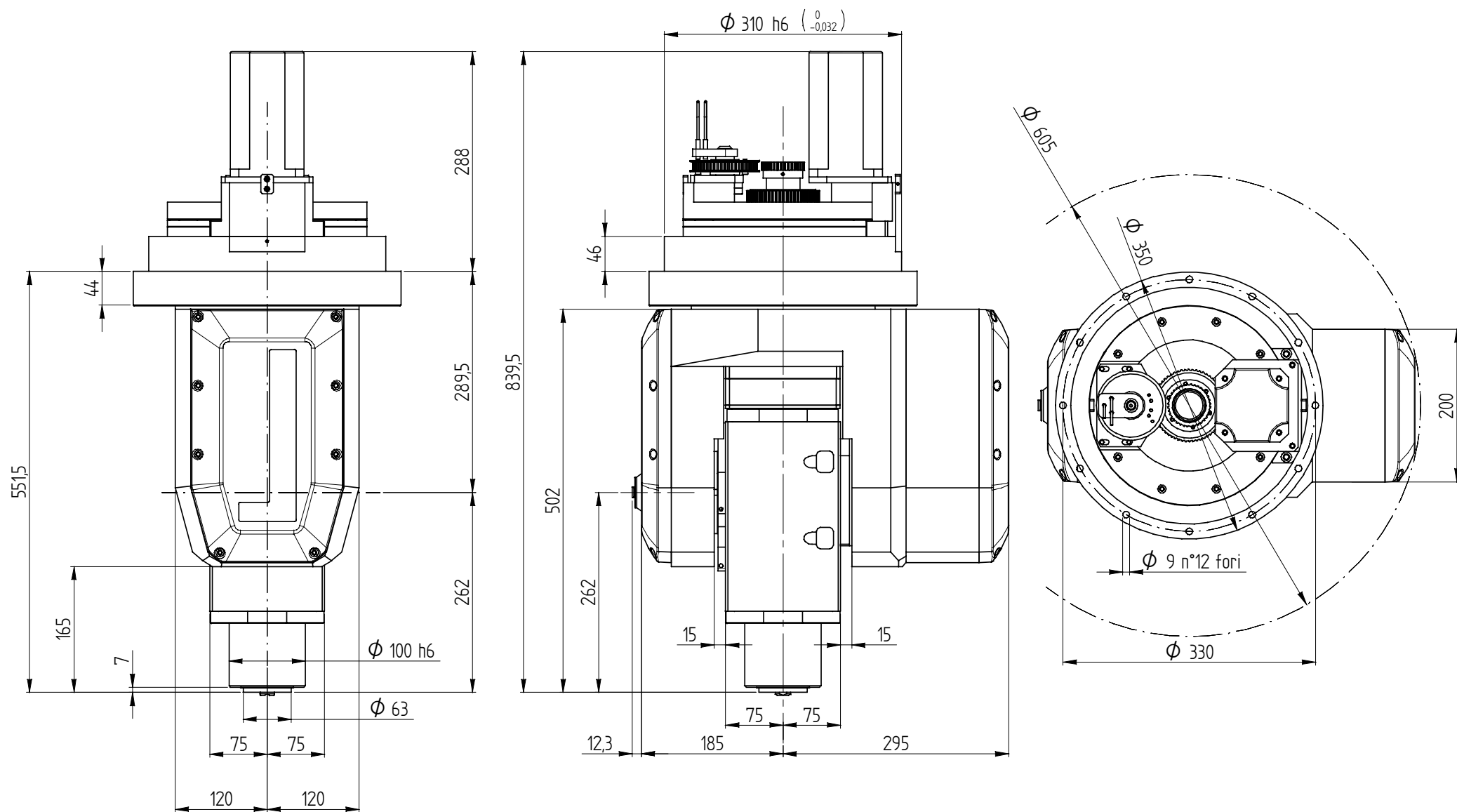
MASSE :

con ES 789 : ~152 kg



"C" Axis

"A" Axis



HS653A Standard Siemens or Fanuc Version + ES789

Drawing code: 5530H0234

HS 652 A / HS 652

HS 652 A with ES 789 (Long Nose) Electro-Spindle
HS 652 with ES 779 (Short Nose) Electro-Spindle

available servomotors:

YASKAWA

INDRAMAT

SIEMENS (Resolver)

SIEMENS EnDat (Encoder)

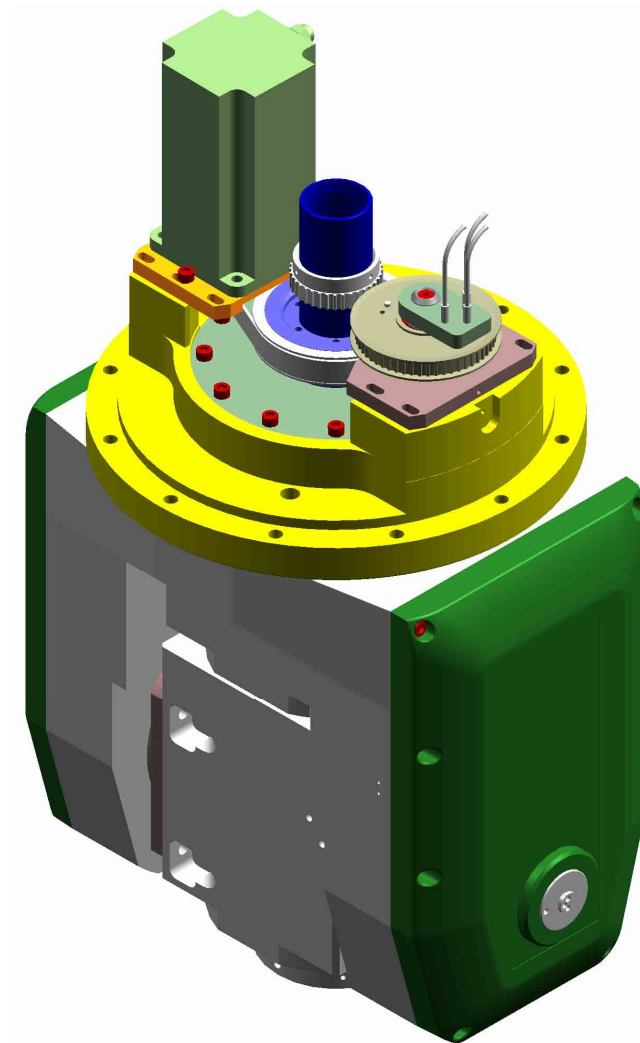
FANUC

on request:

YASKAWA servomotors with brakes

Direct Encoders

Slip Ring on the "C" Axis



SPIEL < 0,04 mm Positionsabweichung der Achsen, nachdem 400 mm vom Drehpunkt (Abb.1, Position [1]) eine Kraft von 30 kg angewandt wurde.	BACKLASH < 0,04 mm <i>The difference that the application of a force of 30kg at 400 mm from the centre of rotation (Fig.1, Position [1]) makes to the position of the axes.</i>	GIOCO < 0,04 mm Differenza di posizione degli assi, dopo aver applicato una forza di 30 kg a 400 mm dal centro di rotazione (fig.1, posizione [1]).
POSITIONIERUNG < 0,1 mm <ul style="list-style-type: none"> Die Spindel in eine horizontale Position bringen (Abb.1, Position [1]); Einen Komparator 400 mm von der Achse C positionieren und nullen; Die Achse A um 180° drehen (entgegengesetzte Position: Abb.1, Position [5]); Die Achse A um 180° drehen (Ausgangsposition); Die Abweichung unter den beiden Maßen kontrollieren. 	POSITIONING ACCURACY < 0,1 mm <ul style="list-style-type: none"> Move the electrospindle in Horizontal position (Fig.1, Position [1]); Position a comparator at 400mm from the C-Axe and set the zero; Rotate the A-Axe of 180° (opposite position: Fig.1, Position [5]); Rotate the C-Axe of 180° (back to the initial position); Check the difference (variance) between the two measurements. 	POSIZIONAMENTO < 0,1 mm <ul style="list-style-type: none"> Si porta il mandrino in posizione orizzontale (fig.1, posizione [1]); Si posiziona un comparatore a 400 mm dall'Asse C, e si azzerà; Si ruota l'Asse A di 180° (posizione opposta: fig.1, posizione [5]); Si ruota l'Asse C di 180° (si torna in posizione di partenza); Si verifica lo scostamento fra le due misure.
WIEDERHOLBARKEIT < 0,02 mm <ul style="list-style-type: none"> Befestigen Sie einen Meßuhr mit magnetischem Fuß im Abstand von 400mm zur C-Achse (Abbildung 1, Pos. [1]); Bewegen Sie die Achsen A und C bis zur neuen Position und fahren Sie wieder auf Pos. [1] zurück; Lesen Sie die Messuhr ab. 	REPEATABILITY < 0,02 mm <ul style="list-style-type: none"> Position a comparator at 400mm from the C-Axe and set the zero (Fig.1, Position [1]); Move A and C axes to a new position, and then return them back to Position [1]; Check the difference (variance) between the two measurements. 	RIPETIBILITÀ < 0,02 mm <ul style="list-style-type: none"> Azzerare un comparatore a 400 mm dall'Asse C (fig.1, posizione [1]); Muovere gli assi A e C fino ad una nuova posizione, e tornare poi in posizione [1]; Leggere la misura del comparatore.
MITTIGKEITSABWEICHUNG ACHSE C < 0,05 mm Bei am Stift positioniertem Komparator die max. Exzentrizität über die ganze Drehung der Achse C messen (Abb.1, Position [3]).	C AXIS ECCENTRICITY < 0,05 mm <i>Check the maximum eccentricity on the whole rotation of the C-Axe with the comparator positioned on the gauge pin (Fig.1, Position [3]).</i>	ECCENTRICITÀ ASSE C < 0,05 mm Con il comparatore posizionato sulla spina (fig.1, posizione [3]), si rileva la massima eccentricità sull'intera rotazione dell'Asse C.
RECHTWINKLIGKEIT DER ACHSEN < 0,004° Toleranzwinkel zwischen den Achsen A und C.	AXIS SQUARENESS < 0,004° <i>The angle of tolerance between the A and C axes.</i>	ORTOGONALITÀ ASSI < 0,004° Angolo di tolleranza tra gli assi A e C.
EBENHEIT ACHSE A < 0,1 mm Die maximale Abweichung zwischen den Nullstellungspositionen [1] und [5] und den Positionen [2], [3] und [4] messen (Abb.1).	A-AXE - FLATNESS < 0,1 mm <i>Measure the maximum difference (variance) between the zero positions [1] and [5] with reference to the positions [2], [3] and [4] (Fig.1).</i>	PLANARITÀ ASSE A < 0,1 mm Si misura il massimo scostamento tra le posizioni di azzeramento [1] e [5] e le posizioni [2], [3] e [4] (fig.1).
SEITENSTEIFIGKEIT < 1 µ / N Bewegung (in Mikrometer) pro Newton Kraft, angewandt wie in Abb.2 gezeigt. Die (für die Maßnahme gewählte) Richtung verursacht die schlechtere Situation.	STIFFNESS < 1 µ / N <i>Movement (measured in micron) for each Newton of force applied as shown in Fig.2. The direction (chosen for the measure) causes the worse situation.</i>	RIGIDEZZA < 1 µ / N Spostamento in micron per ogni Newton di forza applicato, come mostrato in fig.2. La direzione scelta per la misura e mostrata in fig.2 è la più sfavorevole.

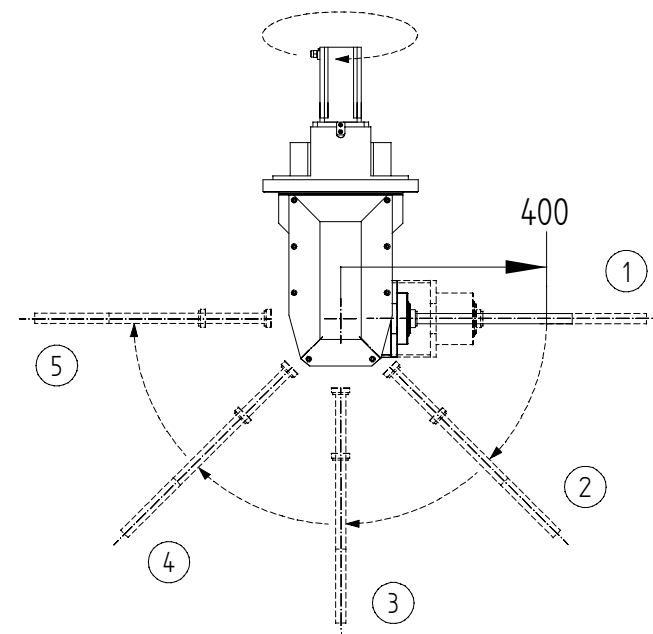


Abb.1 / Fig.1

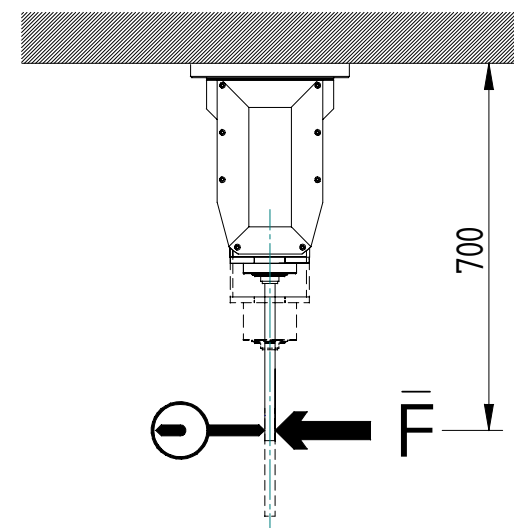


Abb.2 / Fig.2

HS 652

- mit Bremsen in die Servomotoren
- with Brakes into the servomotors
- con freni nei servomotori



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betragt Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH02
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 230 Nm
 Hochstdrehmoment des unetstige Arbeit: 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betragt Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH07
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetstige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~115 kg
 mit ES 789 : ~120 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH02
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 230 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH07
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~115 kg
 with ES 789 : ~120 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: YASKAWA SGMPH02
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 230 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C":

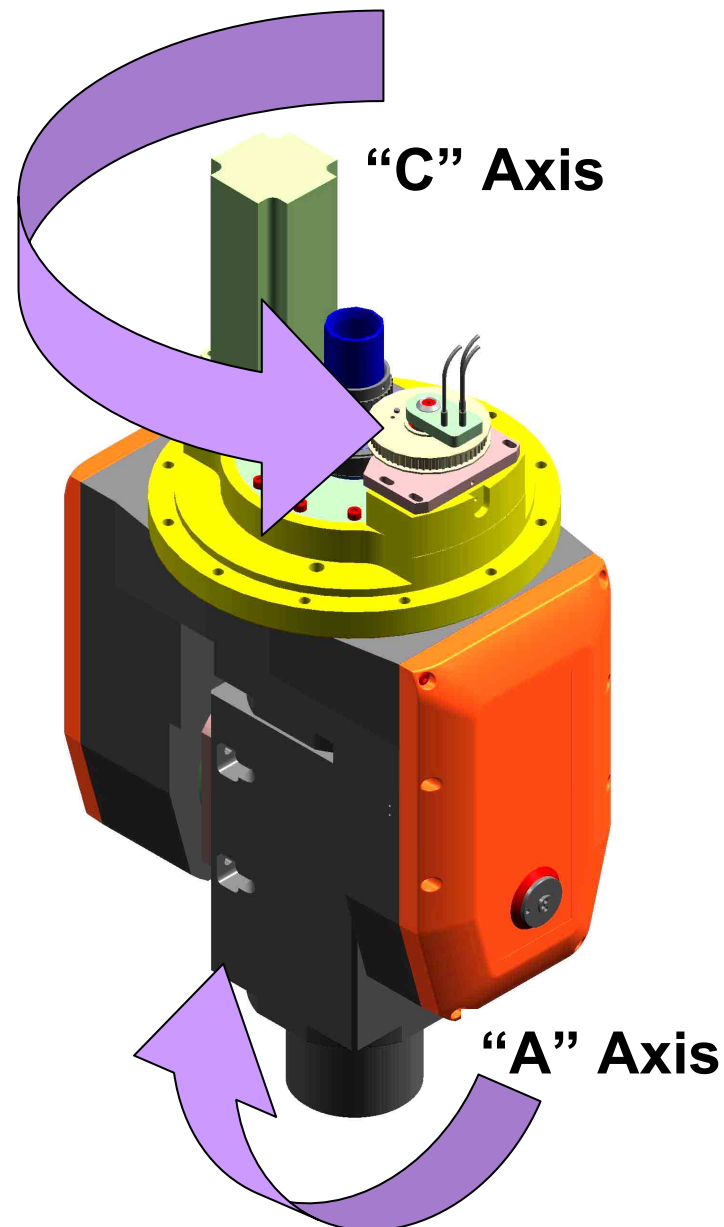
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: YASKAWA SGMAH07
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

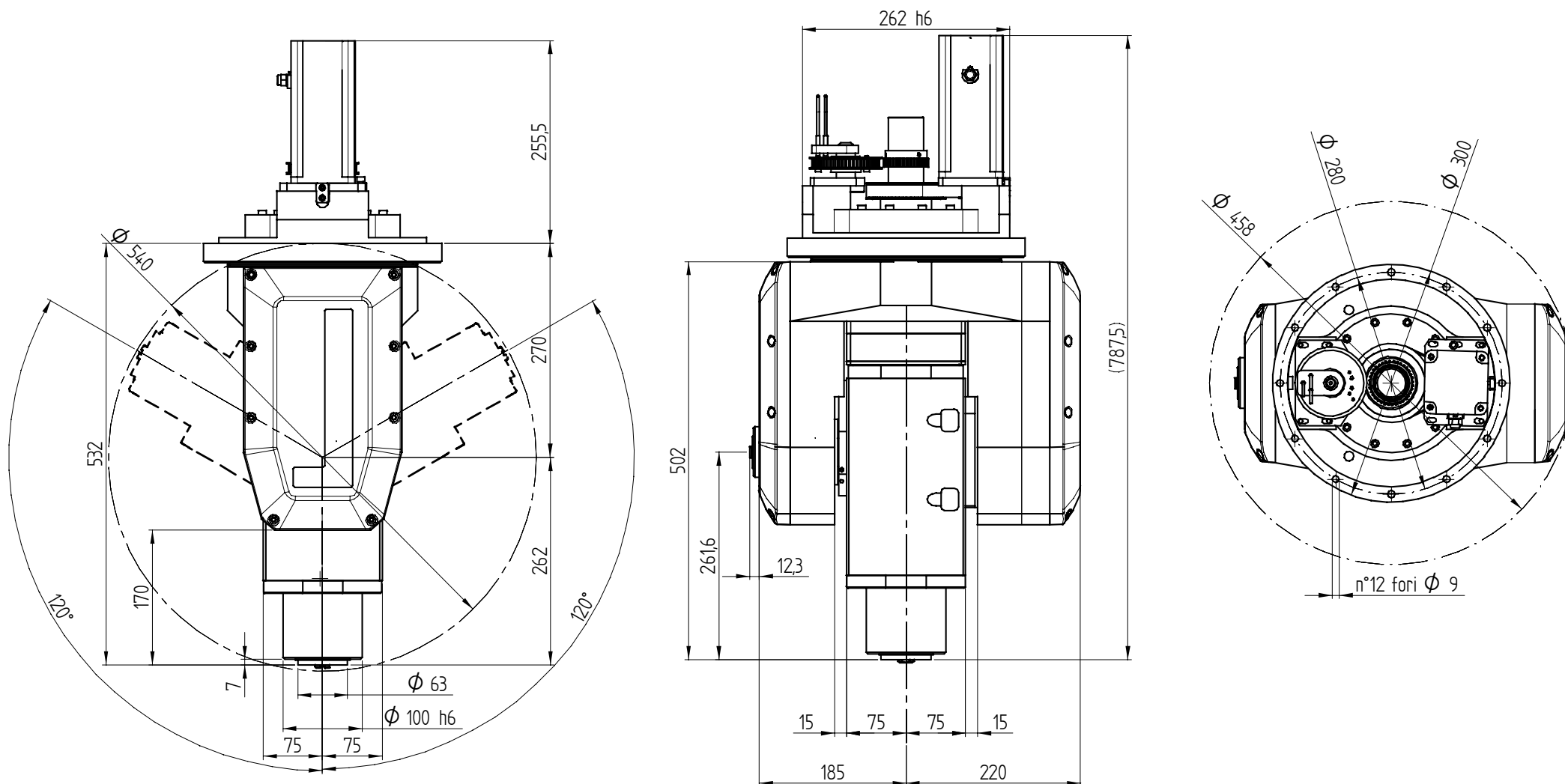
ELETTROMANDRINI DISPONIBILI :

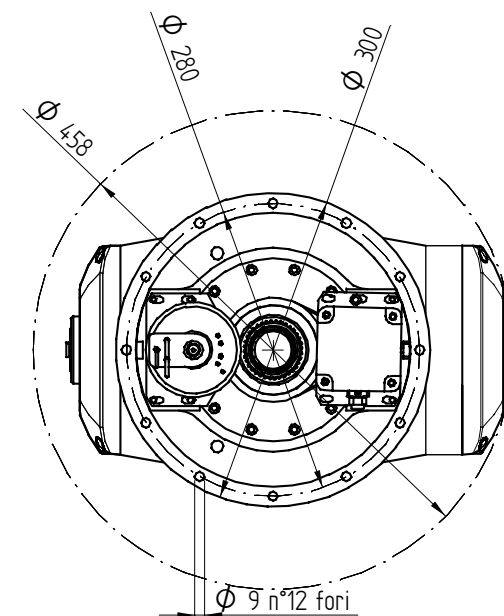
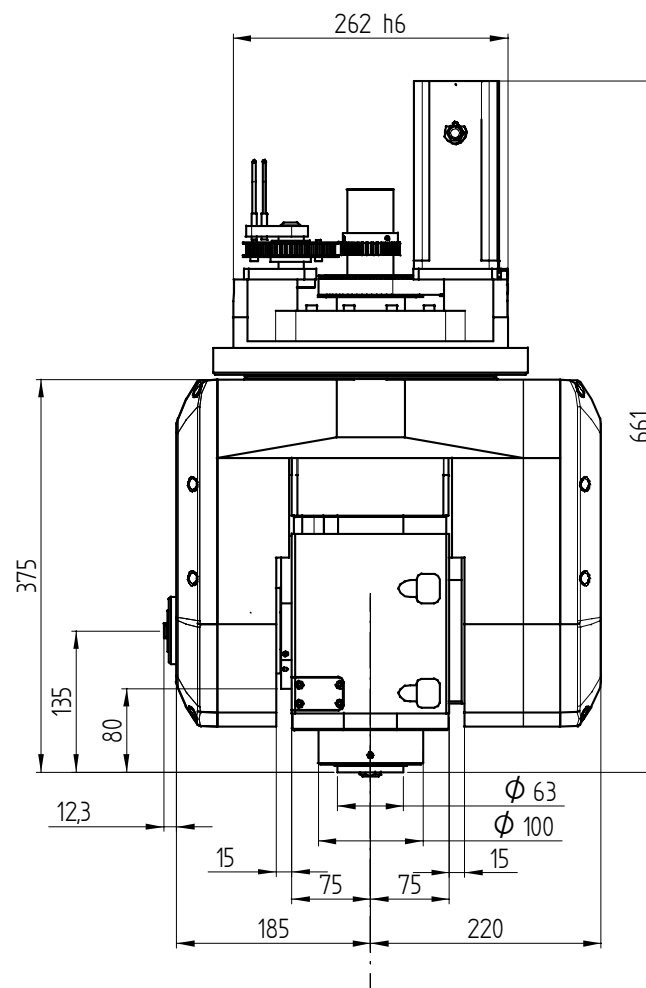
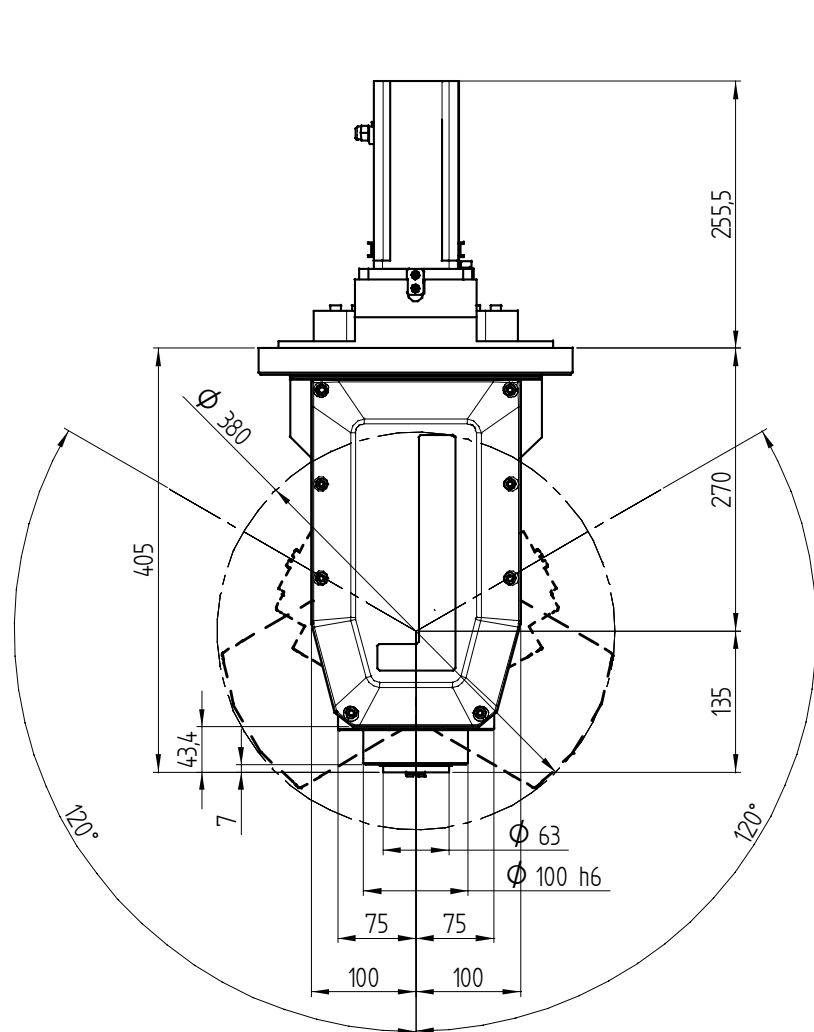
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~115 kg
 con ES 789 : ~120 kg







HS 652

- mit Direktem Encoder und Servomotoren YASKAWA
- *Direct Encoders, YASKAWA servomotors*
- Encoder Diretti, servomotori YASKAWA



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH02
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 230 Nm
 Hochstdrehmoment des unetstige Arbeit: 450 Nm
 Encoder Sinusförmig 1 V_{pp}, 5000 Impulse/U

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetstige Arbeit: 450 Nm
 Encoder Sinusförmig 1 V_{pp}, 5000 Impulse/U

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~128 kg
 mit ES 789 : ~133 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH02
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 230 Nm
 Torque under discontinuous working conditions: 450 Nm
 Sine encoder 1 V_{pp}, 5000 pulse/rev

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm
 Sine encoder 1 V_{pp}, 5000 pulse/rev

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~128 kg
 with ES 789 : ~133 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: YASKAWA SGMPH02
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 230 Nm
 Coppia massima di lavoro discontinuo: 450 Nm
 Encoder sinusoidale 1 V_{pp}, 5000 impulsi/giro

ASSE "C":

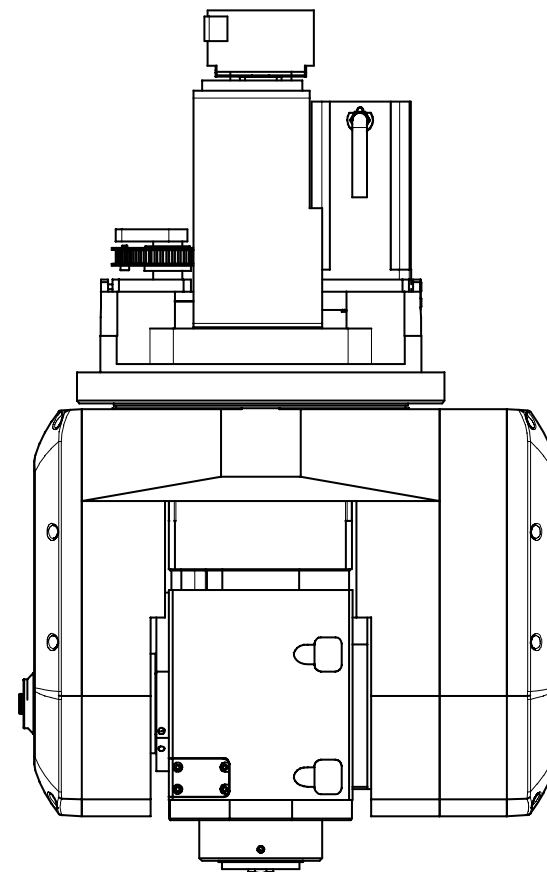
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: YASKAWA SGMAH08
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm
 Encoder sinusoidale 1 V_{pp}, 5000 impulsi/giro

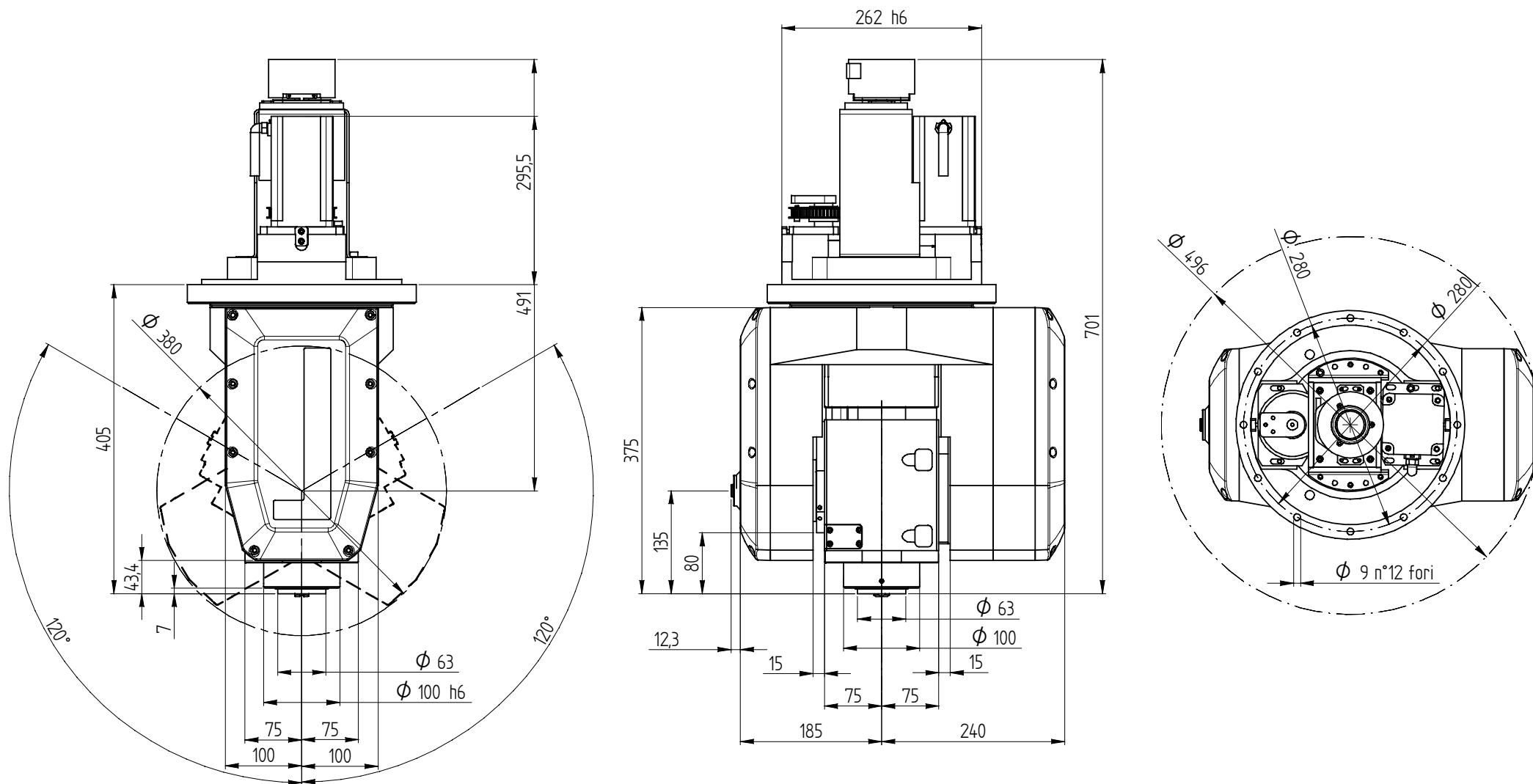
ELETTROMANDRINI DISPONIBILI :

ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~128 kg
 con ES 789 : ~133 kg





HS 652

- mit Direktem Encoder und Servomotoren Siemens EnDat
- *Direct Encoders, Siemens EnDat servomotors*
- Encoder Diretti, servomotori Siemens EnDat



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm
 Encoder Sinusförmig 1 V_{pp}, 5000 Impulse/U

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm
 Encoder Sinusförmig 1 V_{pp}, 5000 Impulse/U

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~143 kg
 mit ES 789 : ~148 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm
 Sine encoder 1 V_{pp}, 5000 pulse/rev

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm
 Sine encoder 1 V_{pp}, 5000 pulse/rev

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~143 kg
 with ES 789 : ~148 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: SIEMENS 1FK7040-5AK71
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm
 Encoder sinusoidale 1 V_{pp}, 5000 impulsi/giro

ASSE "C":

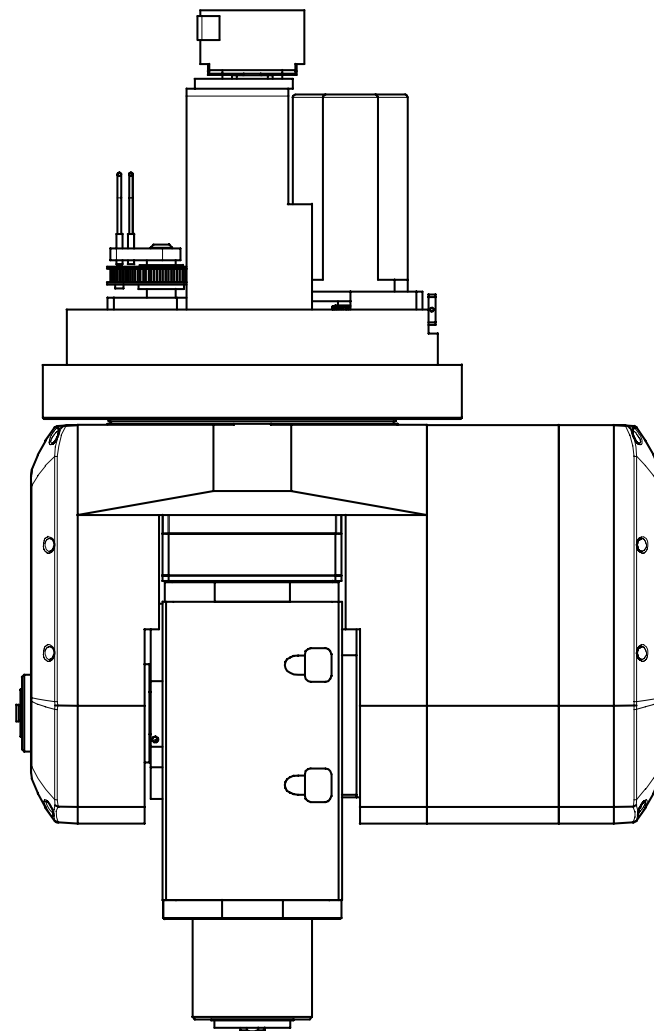
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: SIEMENS 1FK7040-5AK71
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm
 Encoder sinusoidale 1 V_{pp}, 5000 impulsi/giro

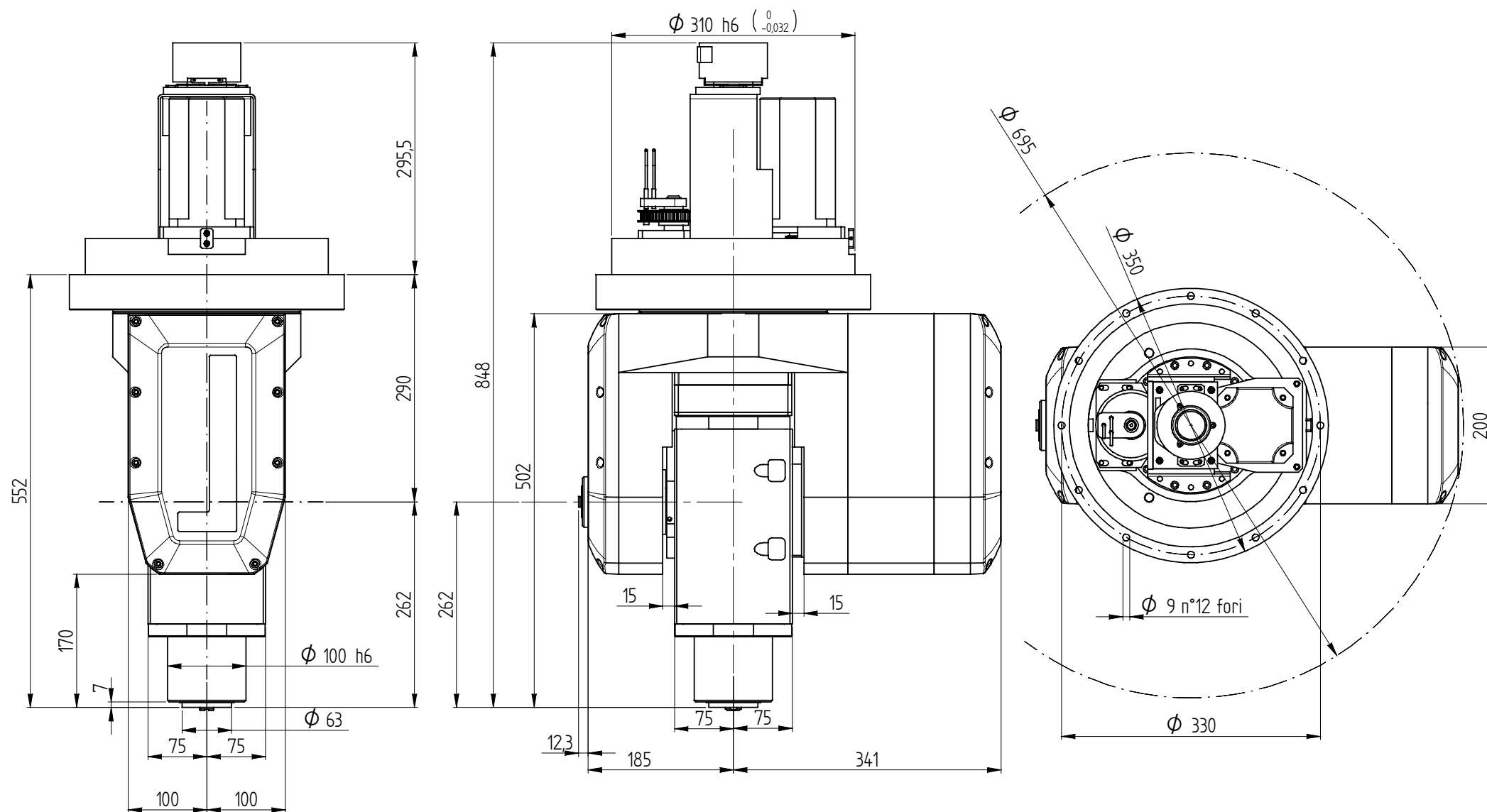
ELETTROMANDRINI DISPONIBILI :

ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~143 kg
 con ES 789 : ~148 kg





HS 652

- mit "Slip-Ring" und Servomotoren YASKAWA
- "Slip-Ring" and YASKAWA servomotors
- "Slip-Ring" e servomotori YASKAWA



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betragt Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH02
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 230 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm

ACHSE "C": Unbegrenzt Folge

Servomotor: YASKAWA SGMAH08
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~138kg
 mit ES 789 : ~143 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMPH02
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 230 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS: Endless Rotation

Servomotor: YASKAWA SGMAH08
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~138 kg
 with ES 789 : ~143 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: YASKAWA SGMPH02
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 230 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C": Rotazione illimitata

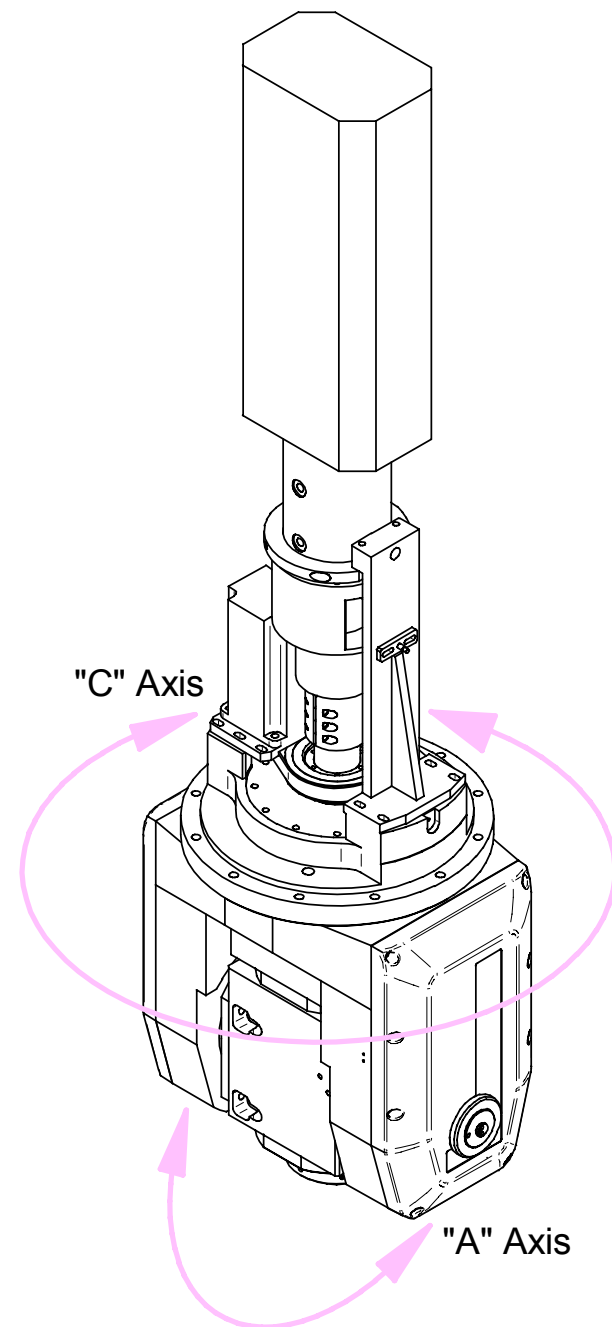
Servomotore: YASKAWA SGMAH08
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

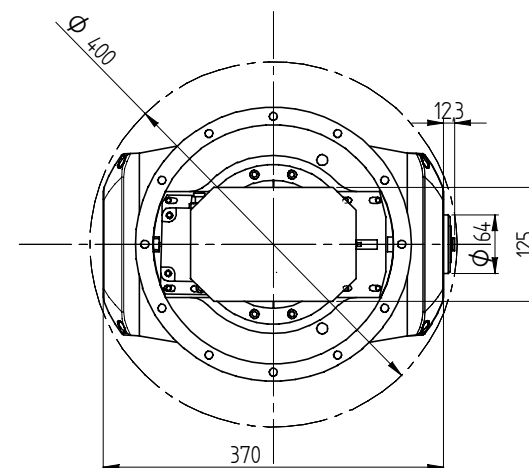
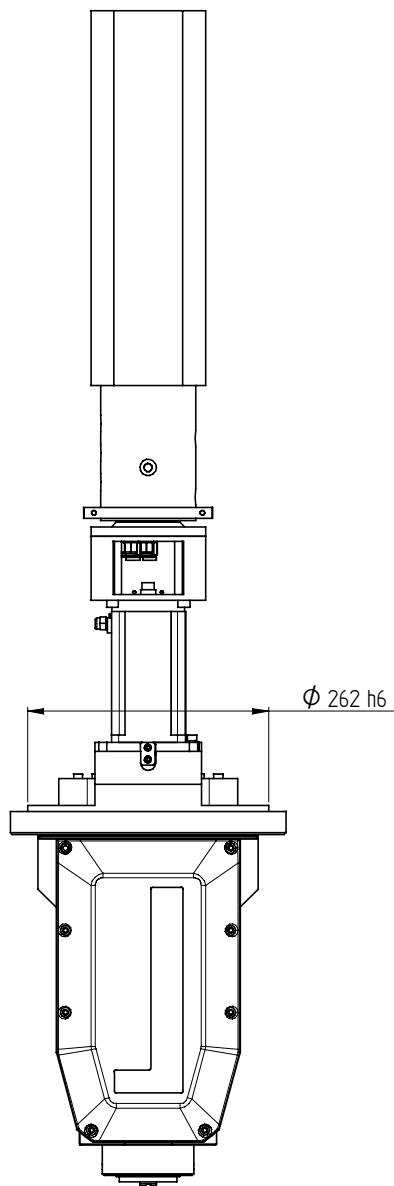
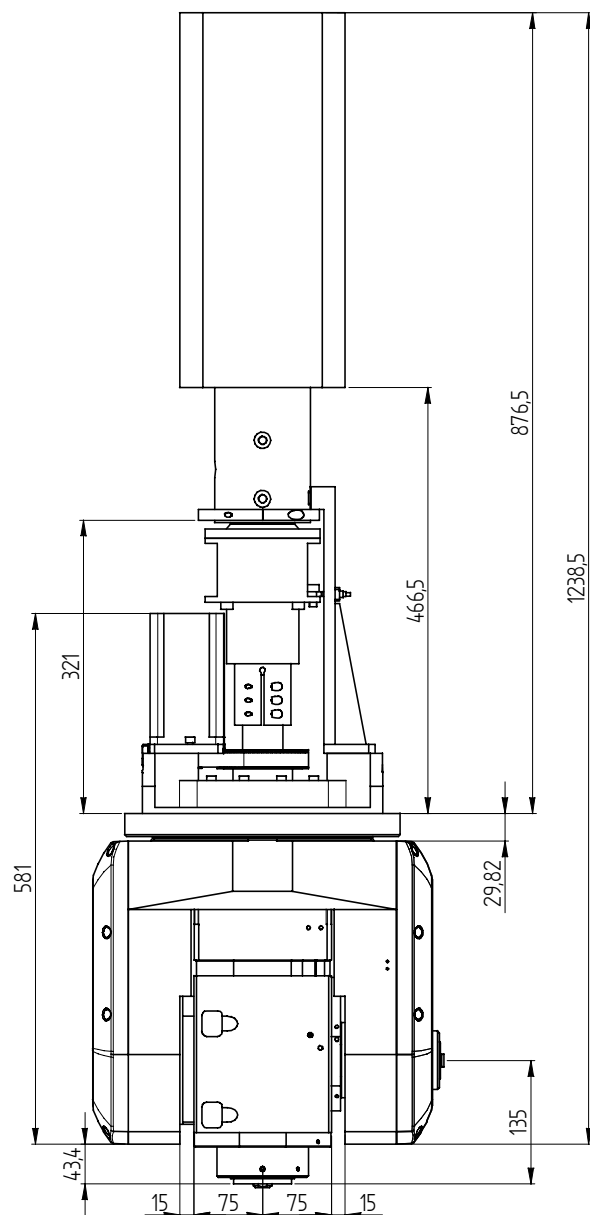
ELETTROMANDRINI DISPONIBILI :

ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~138 kg
 con ES 789 : ~143 kg





HS 652

- standard Version mit Servomotoren YASKAWA
- standard YASKAWA version
- versione standard con servomotori YASKAWA



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMFH02
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 230 Nm
 Hochstdrehmoment des un stetige Arbeit: 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des un stetige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~113 kg
 mit ES 789 : ~118 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: YASKAWA SGMFH02
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 230 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: YASKAWA SGMAH08
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~113 kg
 with ES 789 : ~118 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: YASKAWA SGMFH02
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 230 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C":

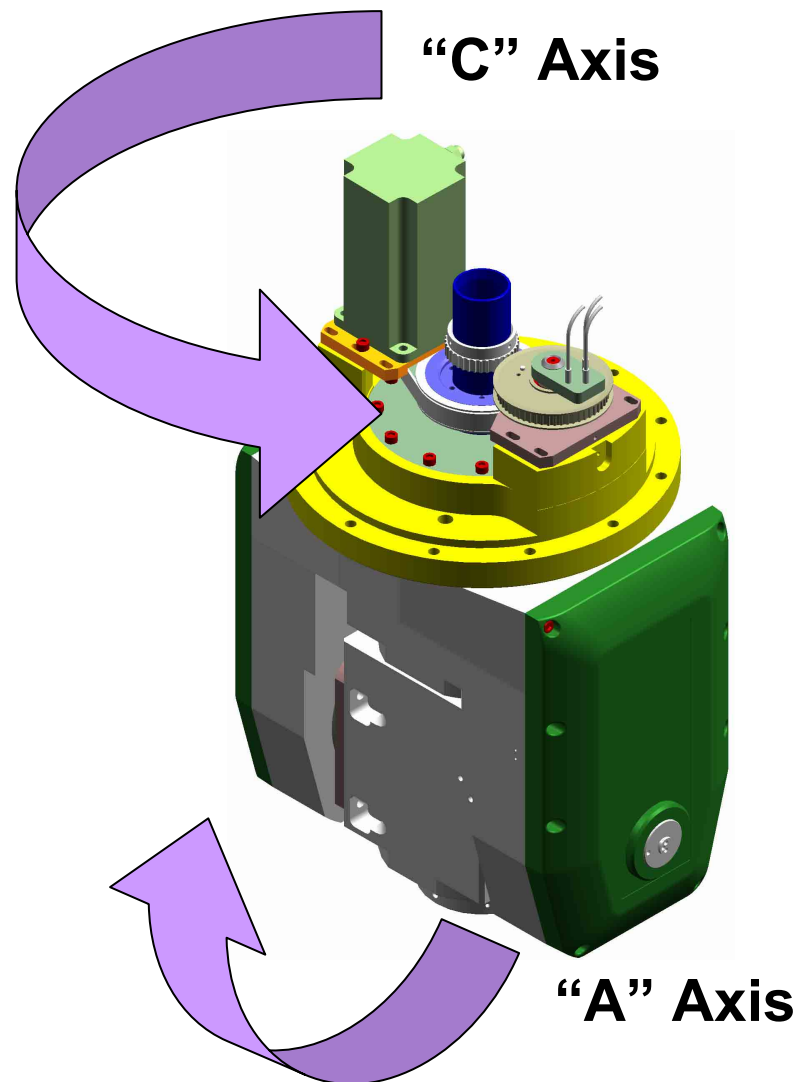
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: YASKAWA SGMAH08
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

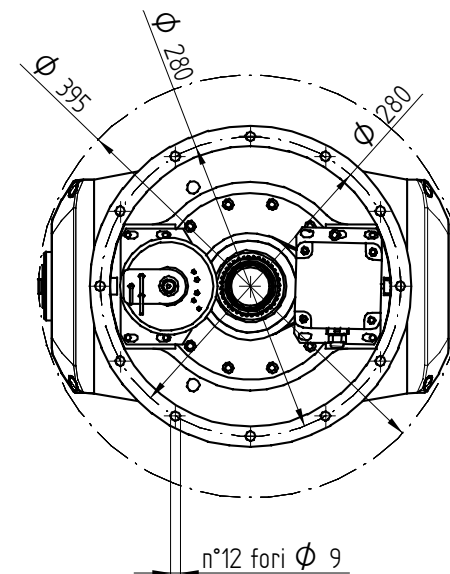
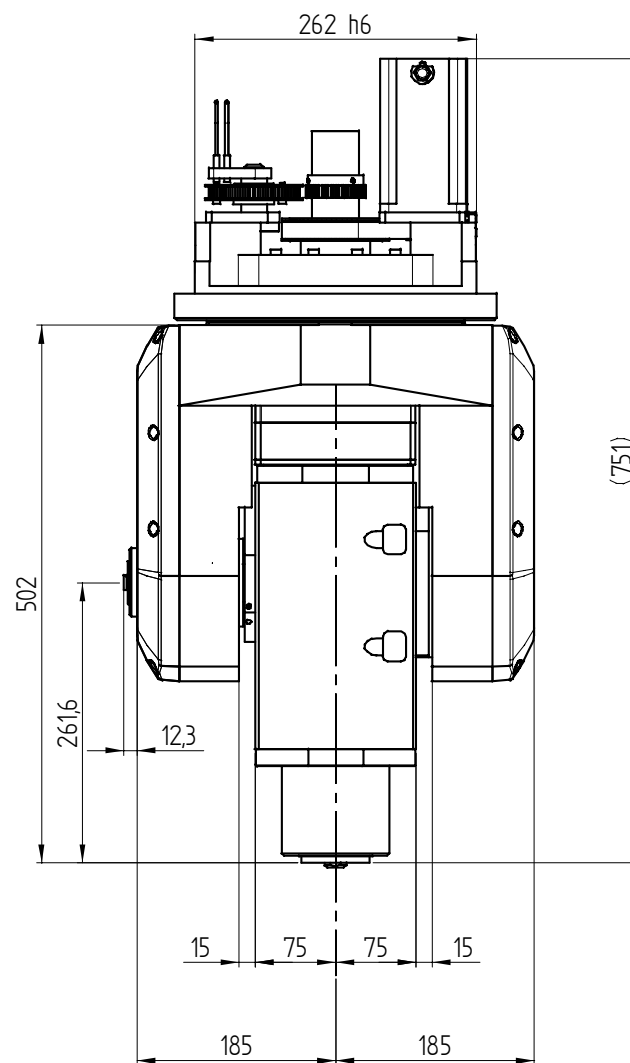
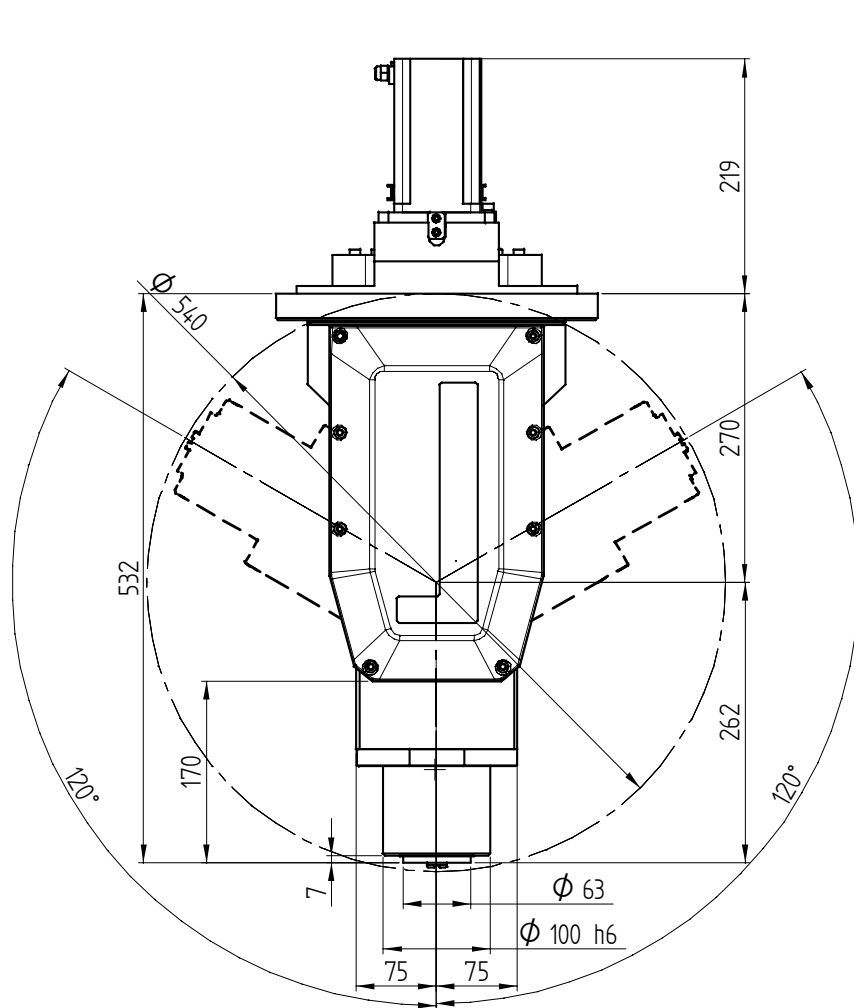
ELETTROMANDRINI DISPONIBILI :

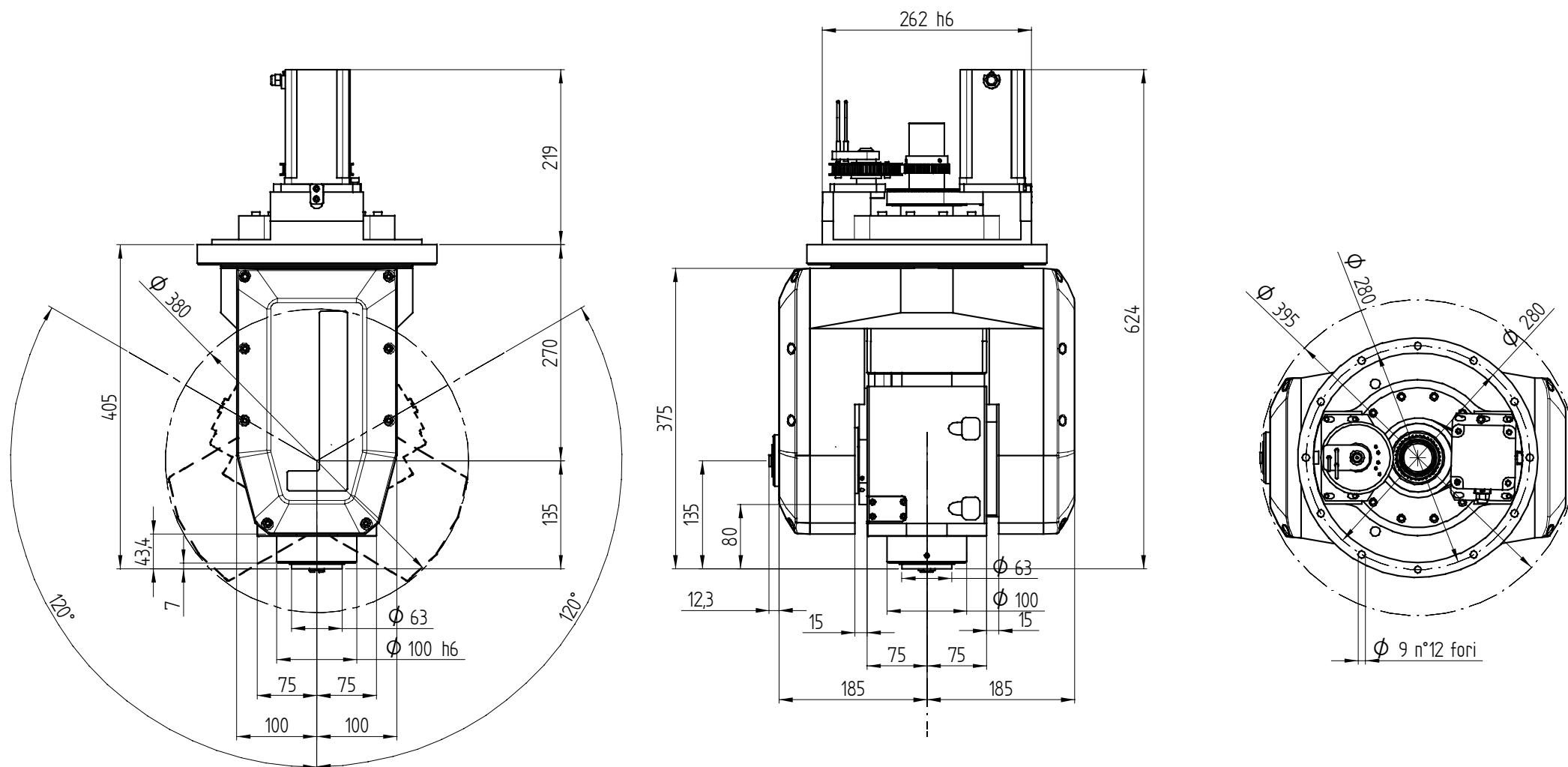
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~113 kg
 con ES 789 : ~118 kg







HS 652

- standard Version mit Servomotoren INDRAMAT
- standard INDRAMAT version
- versione standard con servomotori INDRAMAT



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: INDRAMAT MMD022A
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 220 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: INDRAMAT MMD082A
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 74°/sec (4500 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~115 kg
 mit ES 789 : ~120 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: INDRAMAT MMD022A
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 220 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: INDRAMAT MMD082A
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 74°/sec (4500 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~115 kg
 with ES 789 : ~120 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: INDRAMAT MMD022A
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 220 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C":

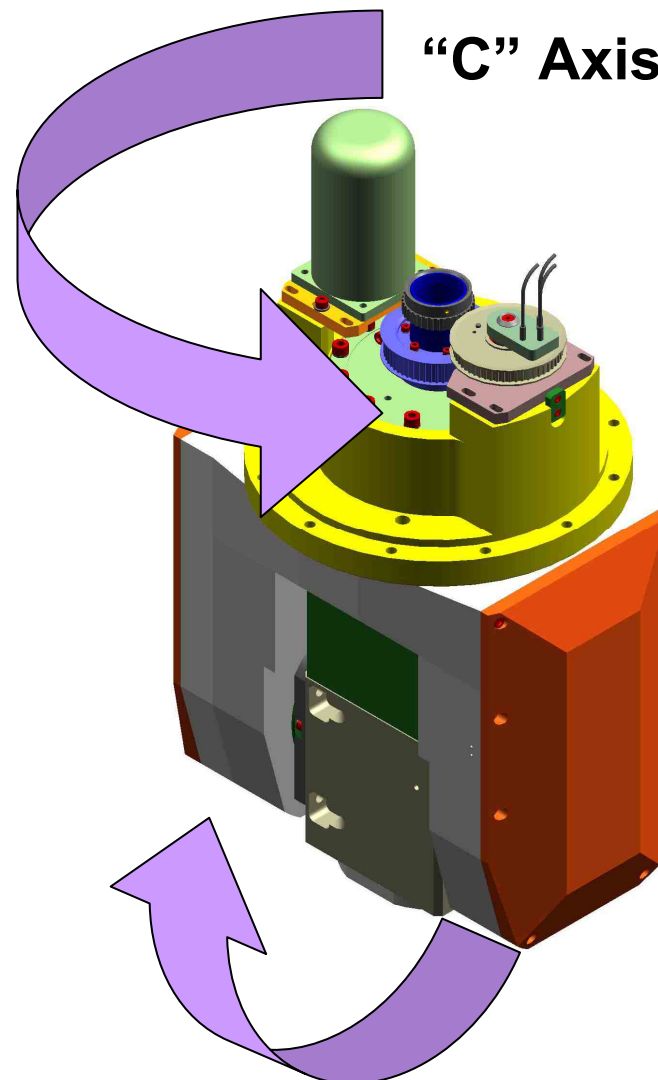
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: INDRAMAT MMD082A
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 74°/sec (4500 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ELETTROMANDRINI DISPONIBILI :

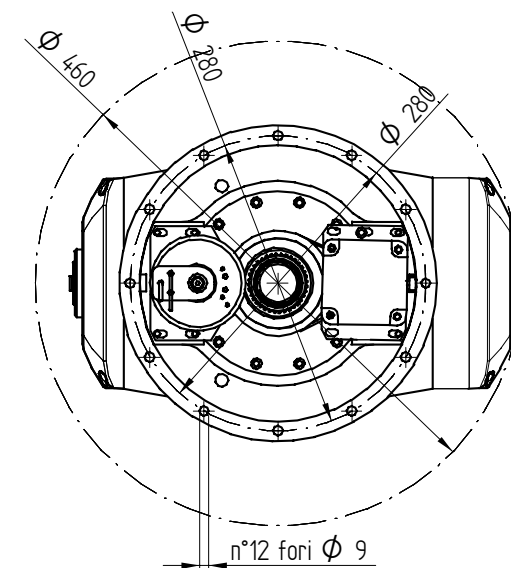
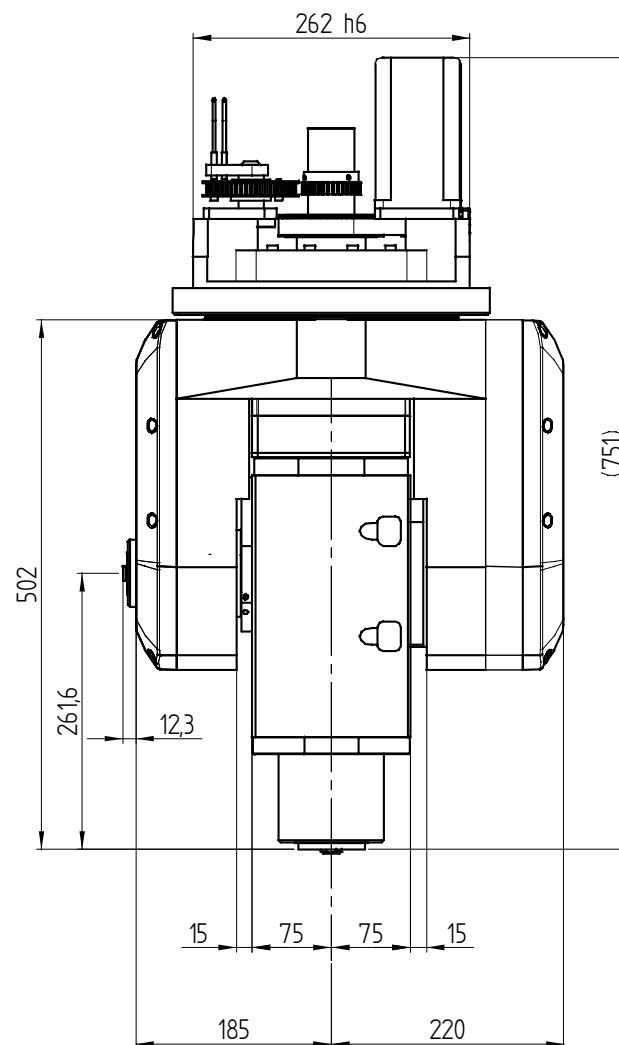
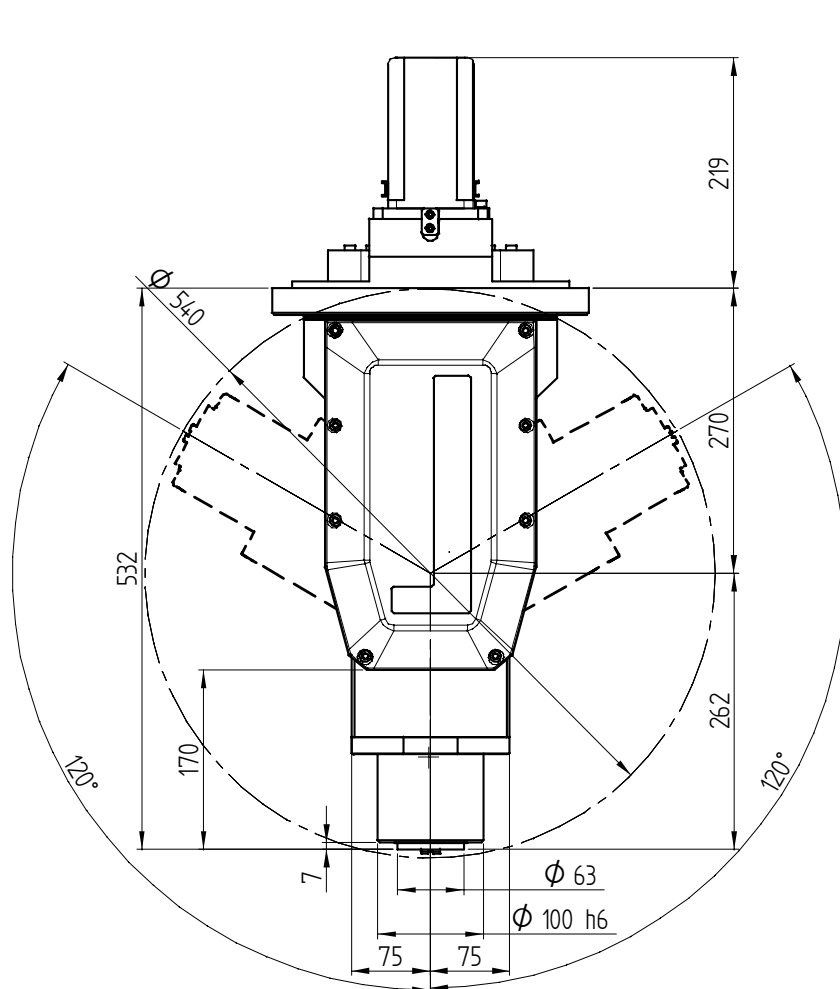
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

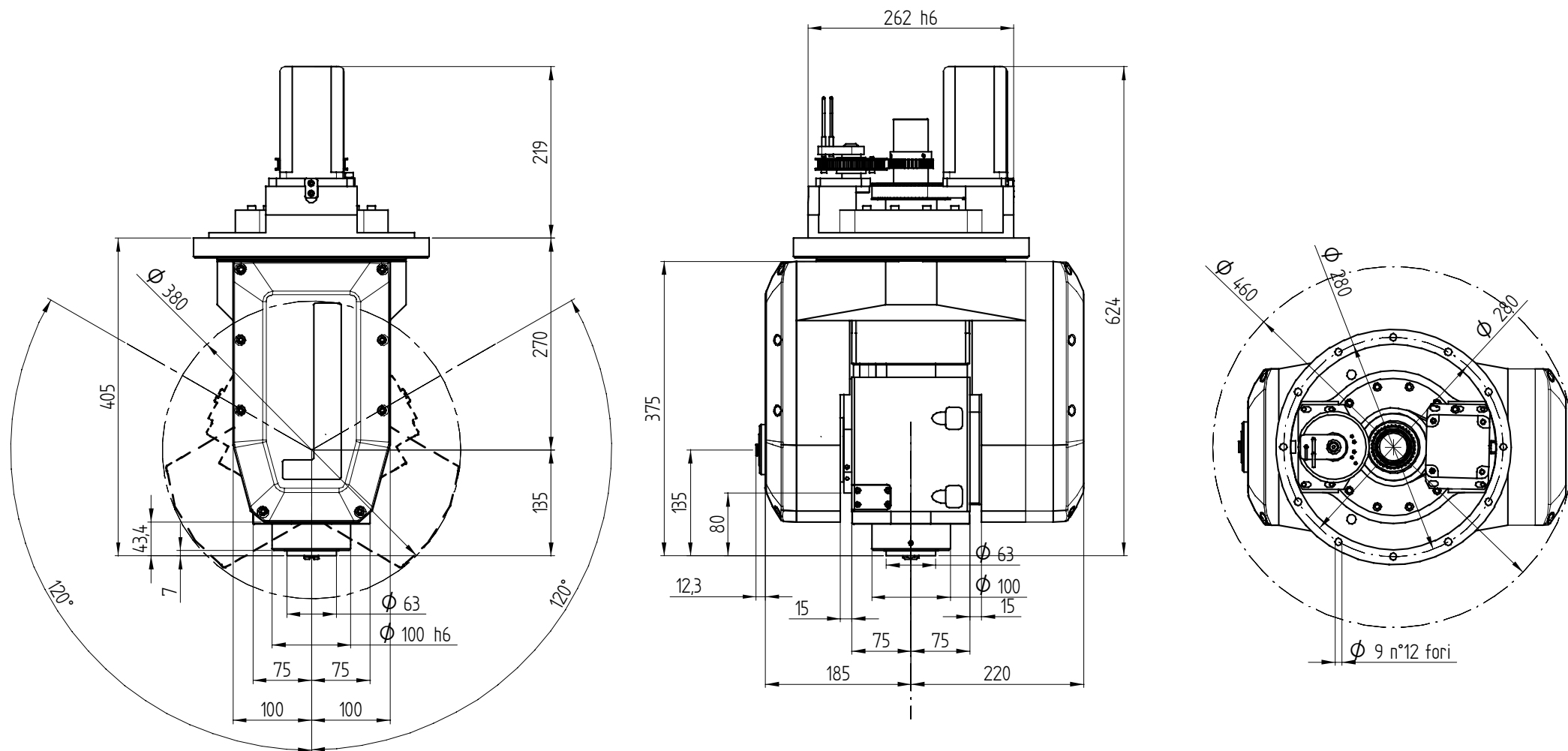
MASSE :

con ES 779 : ~115 kg
 con ES 789 : ~120 kg



"A" Axis





HS 652

- standard Version mit Servomotoren SIEMENS (Resolver)
- standard SIEMENS (Resolver) version
- versione standard con servomotori SIEMENS (Resolver)



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: SIEMENS 1FK7040-5
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des un stetige Arbeit: 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: SIEMENS 1FK7040-5
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des un stetige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~126 kg
 mit ES 789 : ~131 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: SIEMENS 1FK7040-5
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: SIEMENS 1FK7040-5
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~126 kg
 with ES 789 : ~131 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: SIEMENS 1FK7040-5
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C":

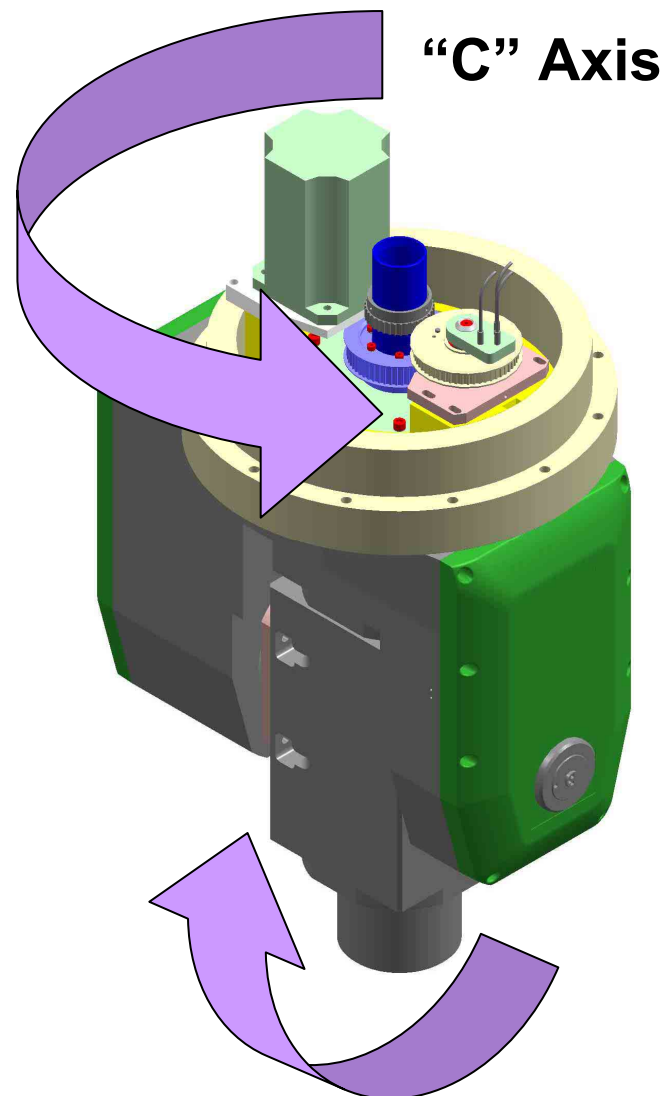
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: SIEMENS 1FK7040-5
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ELETTROMANDRINI DISPONIBILI :

ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

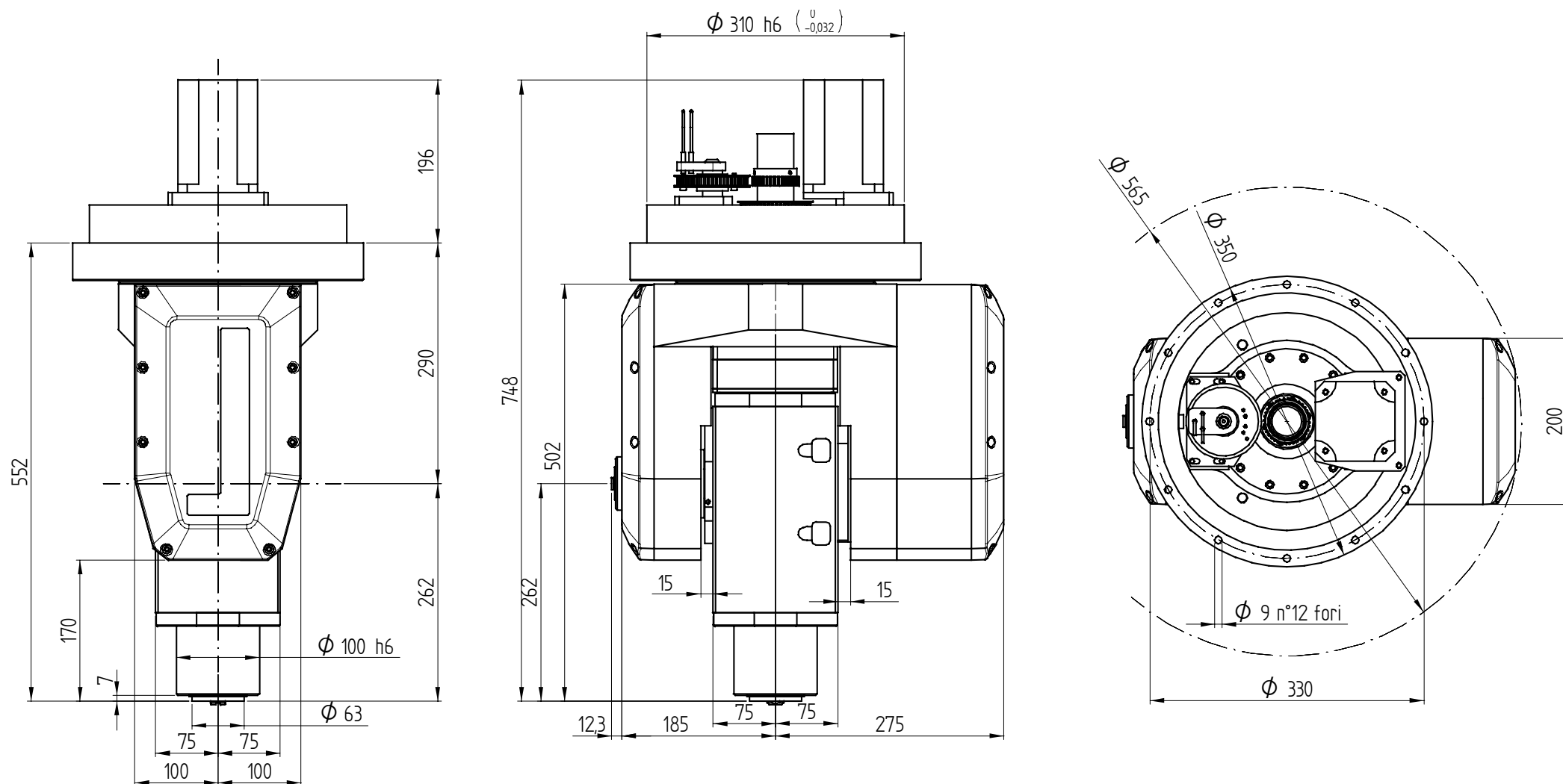
MASSE :

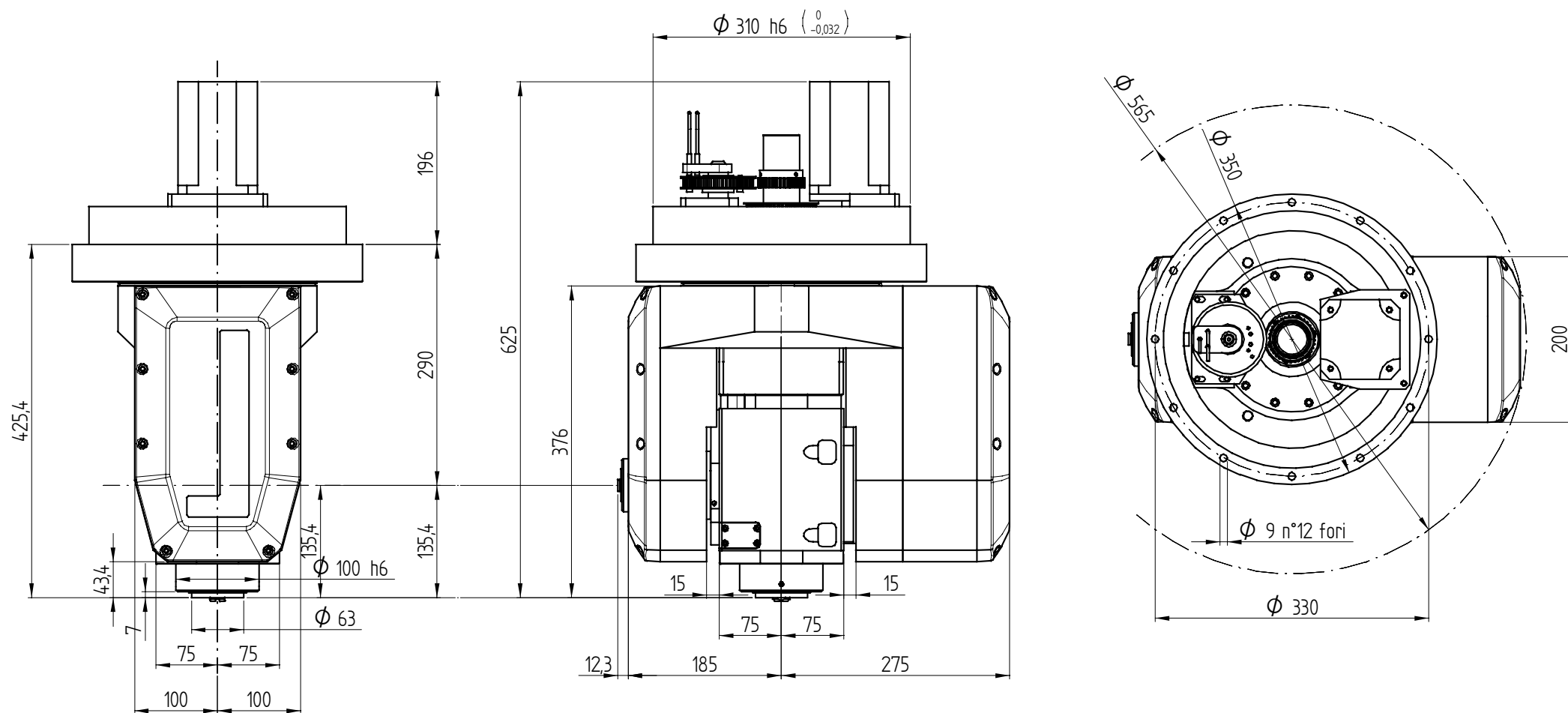
con ES 779 : ~126 kg
 con ES 789 : ~131 kg



"C" Axis

"A" Axis





HS 652

- standard Version mit Servomotoren SIEMENS (Encoder)
- standard SIEMENS (Encoder) version
- versione standard con servomotori SIEMENS (Encoder)



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetstige Arbeit: 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetstige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~128 kg
 mit ES 789 : ~133 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: SIEMENS 1FK7040-5AK71
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~128 kg
 with ES 789 : ~133 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: SIEMENS 1FK7040-5AK71
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C":

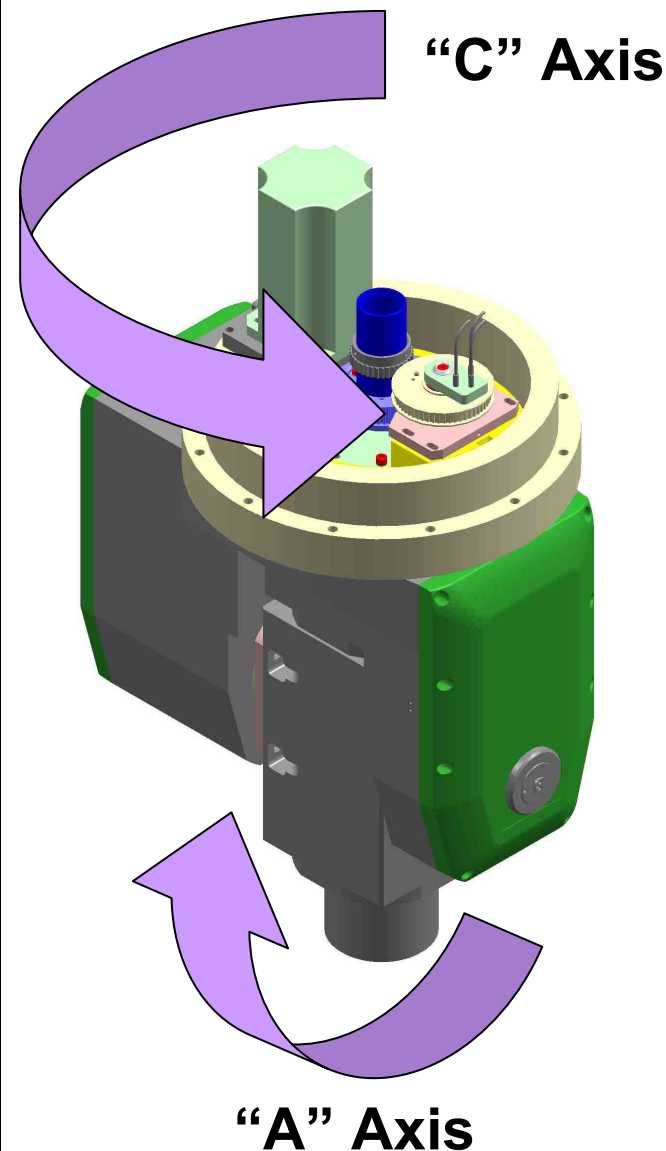
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: SIEMENS 1FK7040-5AK71
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

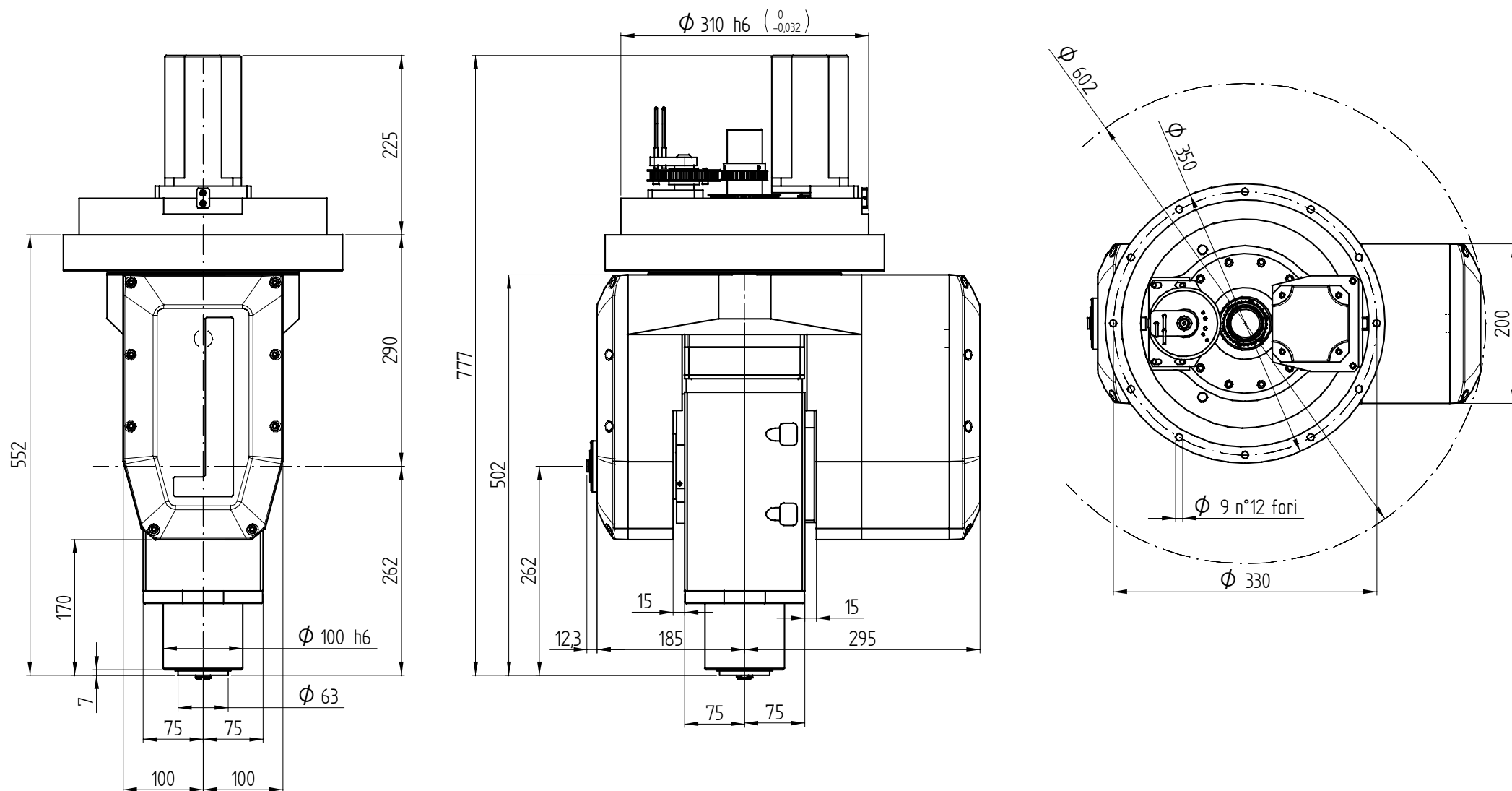
ELETTROMANDRINI DISPONIBILI :

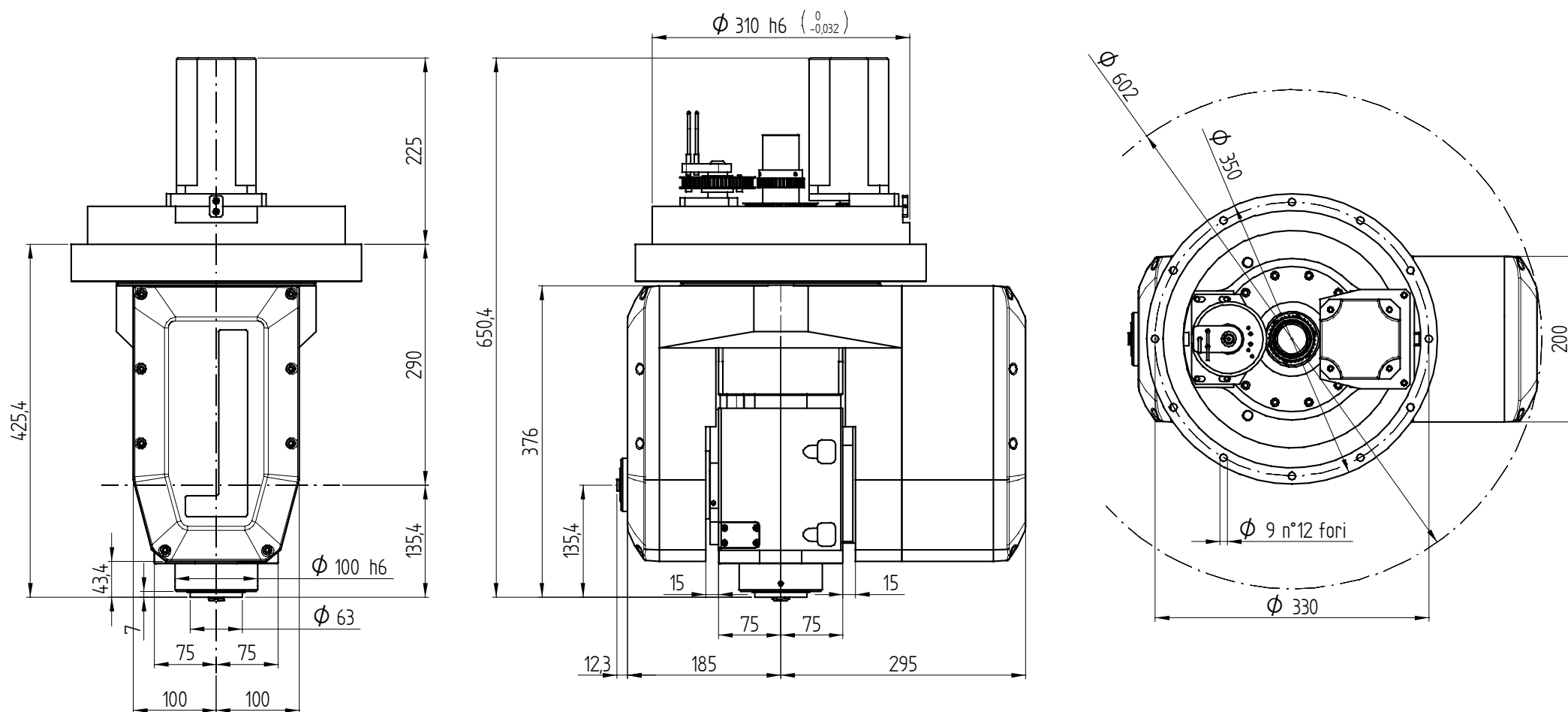
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

MASSE :

con ES 779 : ~128 kg
 con ES 789 : ~133 kg







HS 652

- standard Version mit Servomotoren FANUC
- standard FANUC version
- versione standard con servomotori FANUC



ACHSE "A":

Mechanische Drehung Achse: Max. $\pm 125^\circ$
 Betrag Drehung Achse: Max. $\pm 120^\circ$
 Servomotor: ALFA2/5000is
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betrag Drehung Achse: Max. $\pm 213^\circ$
 Servomotor: ALFA2/5000is
 Max. Geschwindigkeit Dauerbetrieb: 49,5°/sec (3000 rpm)
 Max. Positionierungsgeschwindigkeit: 82,5°/sec (5000 rpm)
 Drehmoment an der Achse in Dauerbetrieb: 300 Nm
 Hochstdrehmoment des unetige Arbeit: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 789 HSK F63 Flüssigkeitsgekühlt

MASSE :

mit ES 779 : ~128 kg
 mit ES 789 : ~133 kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 125^\circ$
 Recommended axis rotation: Max. $\pm 120^\circ$
 Servomotor: ALFA2/5000is
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$
 Servomotor: ALFA2/5000is
 Maximum continous work speed: 49,5°/sec (3000 rpm)
 Maximum continous positioning speed: 82,5°/sec (5000 rpm)
 Axis torque under continuous work: 300 Nm
 Torque under discontinuous working conditions: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 789 HSK F63 Liquid Cooling

MASS :

with ES 779 : ~128 kg
 with ES 789 : ~133 kg



ASSE "A":

Max. rotazione meccanica asse: $\pm 125^\circ$
 Max. rotazione raccomandata asse: $\pm 120^\circ$
 Servomotore: ALFA2/5000is
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

ASSE "C":

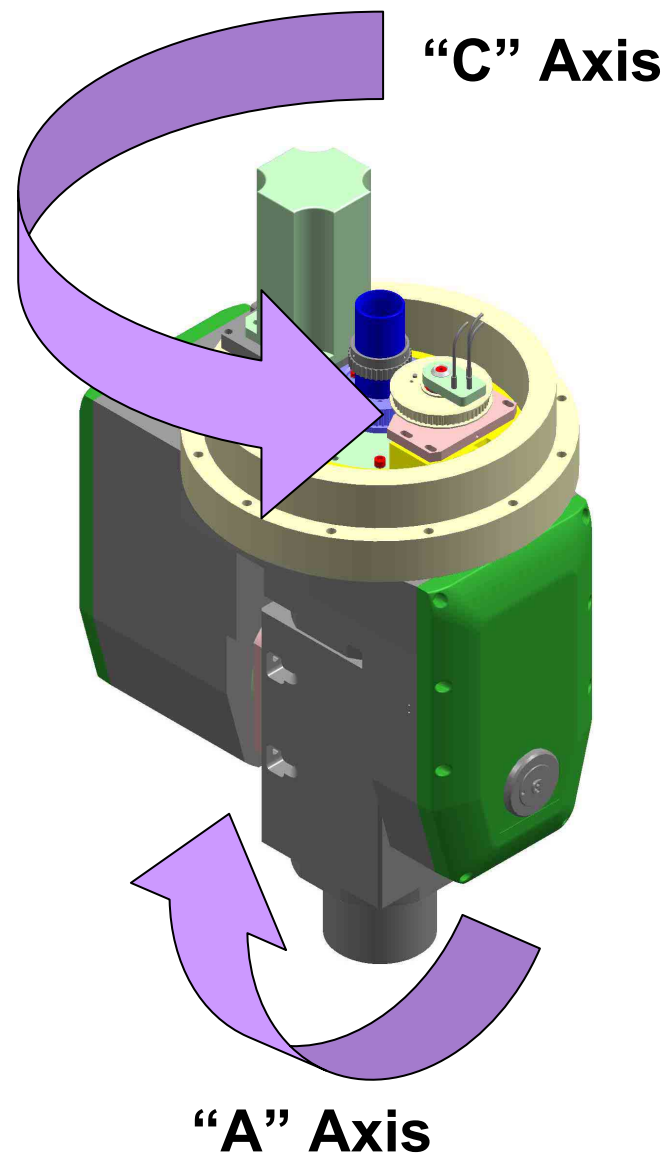
Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$
 Servomotore: ALFA2/5000is
 Velocità massima di lavoro continuo: 49,5°/sec (3000 rpm)
 Velocità massima di posizionamento: 82,5°/sec (5000 rpm)
 Coppia massima di lavoro continuo: 300 Nm
 Coppia massima di lavoro discontinuo: 450 Nm

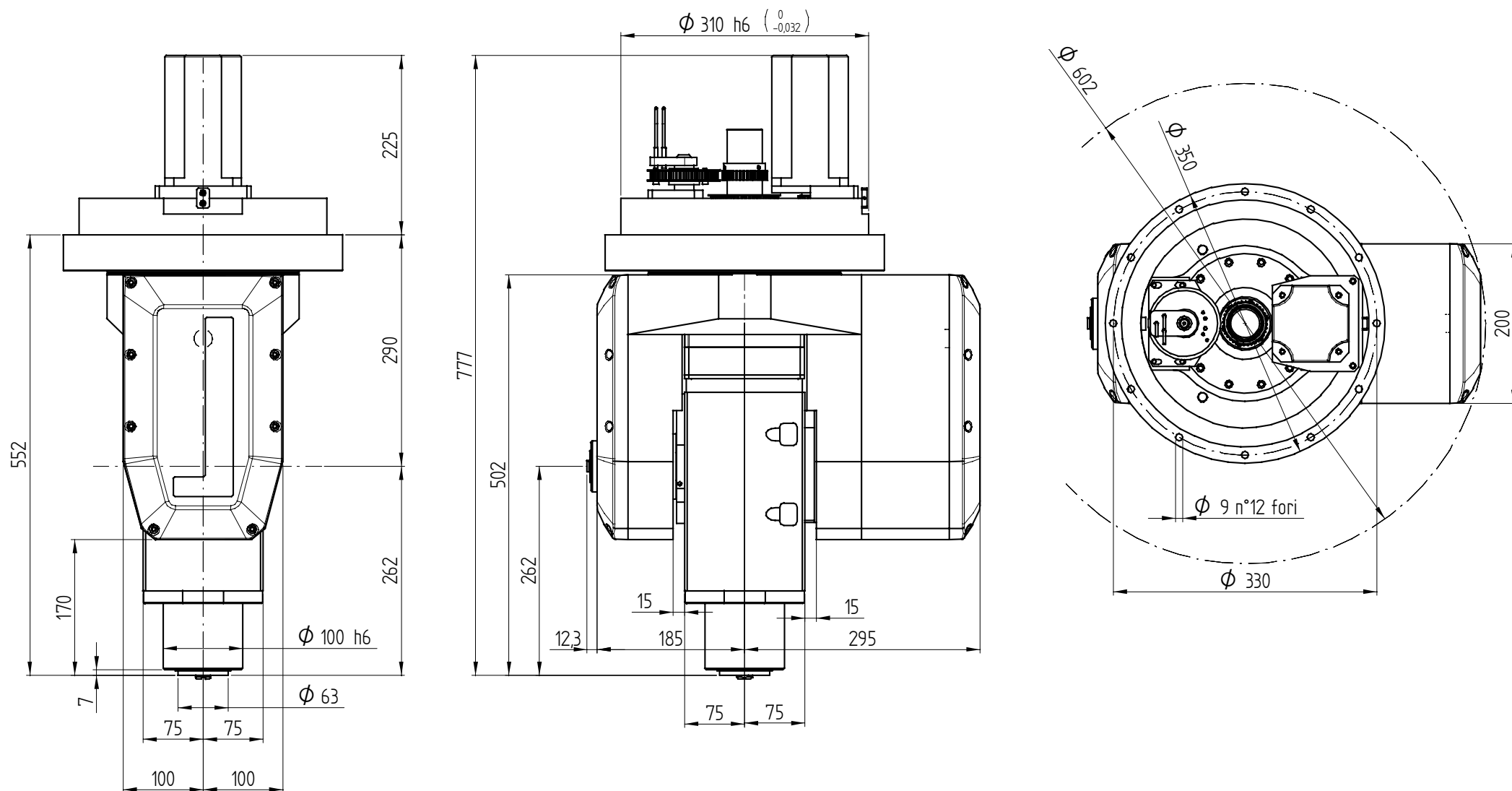
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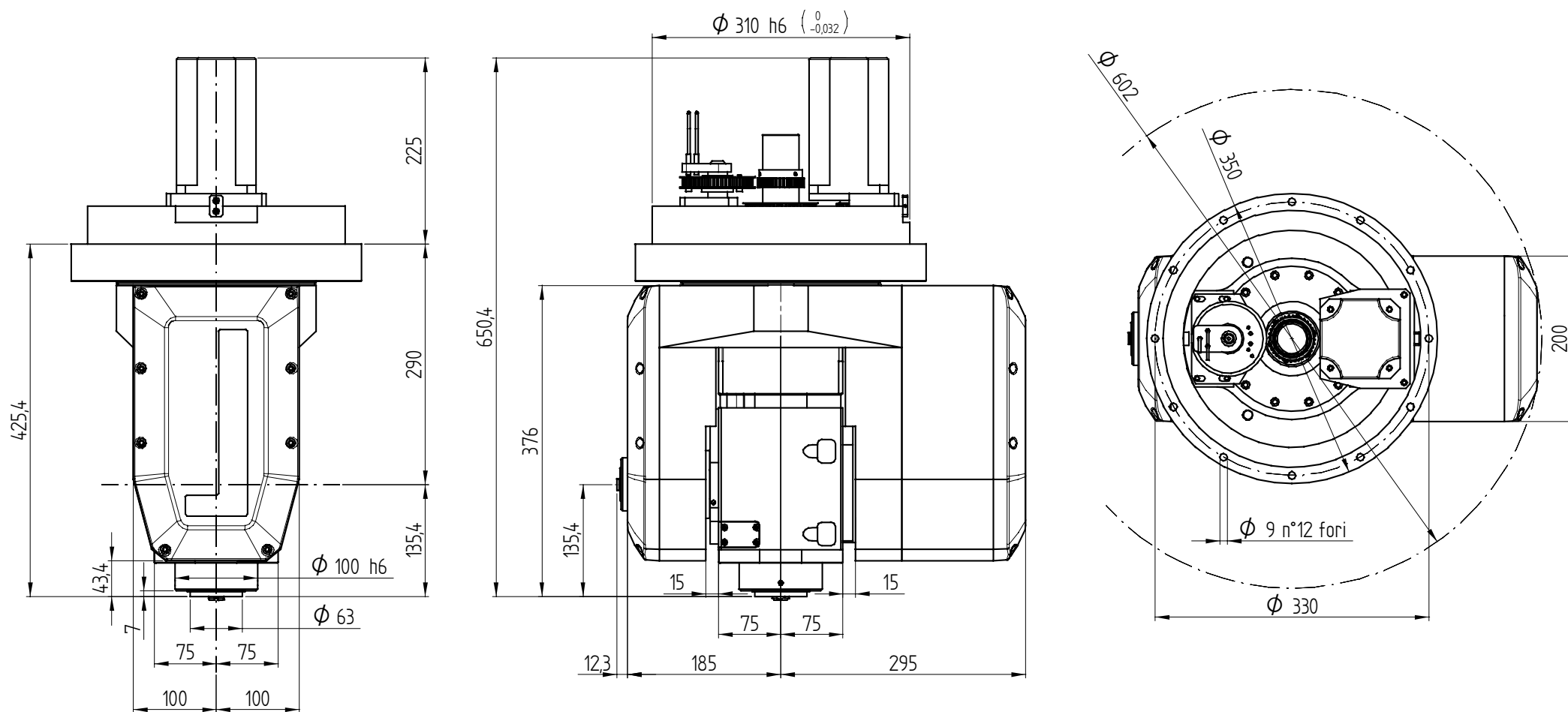
ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 789 HSK F63 Raffreddato a Liquido

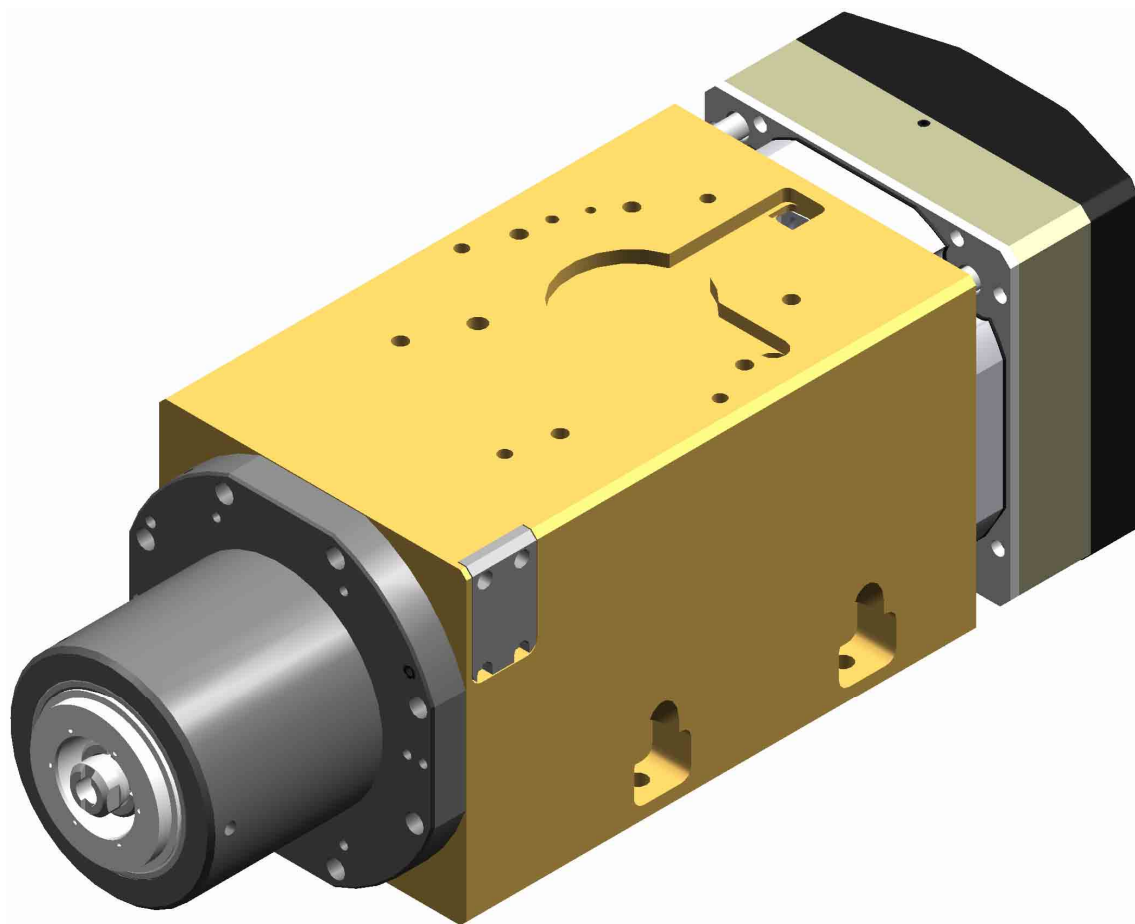
MASSE :

con ES 779 : ~128 kg
 con ES 789 : ~133 kg





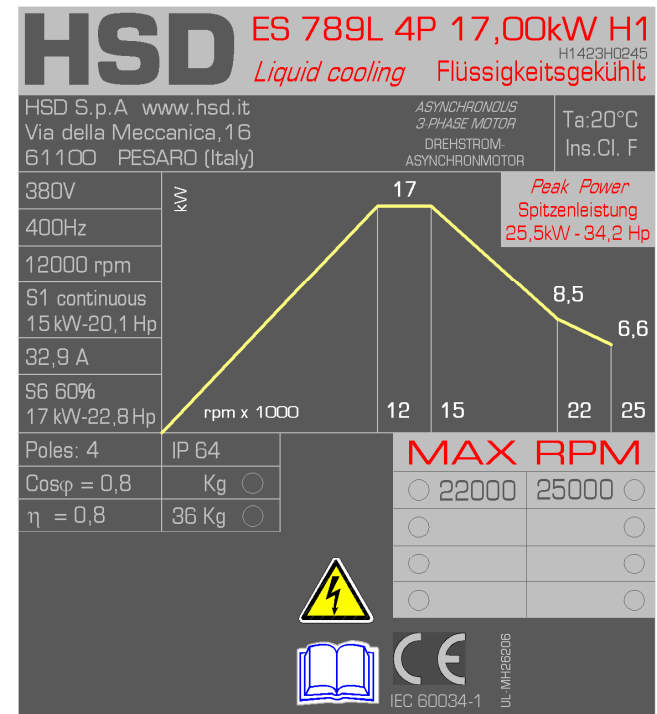
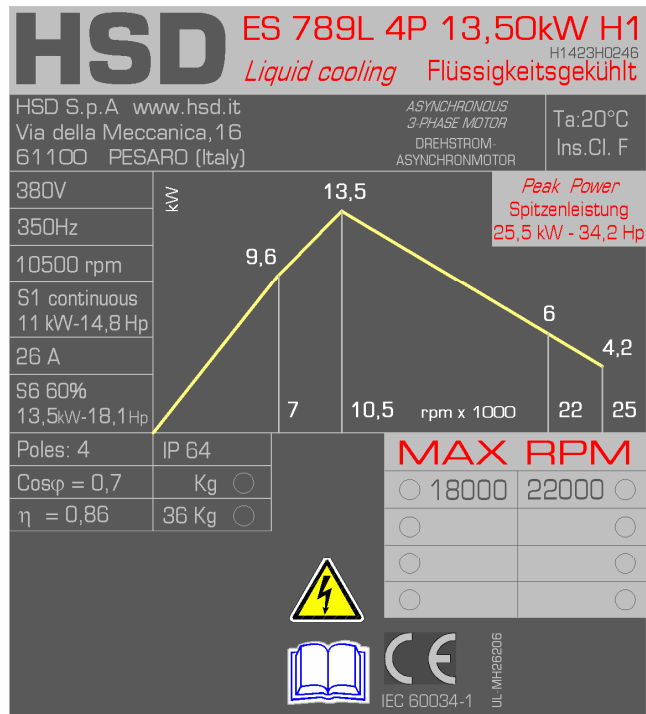




Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
11 kW	13,5 kW	H1423H0246
15 kW	17 kW	H1423H0245
16 kW	18 kW	H1423H0211
15 kW	18 kW	H1423H0228

ES 789



H1423H0246 Rev.00 (SP.120.150.49)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380												
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	233	350	733	833												
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	7000	10500	22000	25000												
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont								
Potenza nominale	Nennleistung	Rated power	kW	8	9,6	11	13,5	5	6	3,5	4,2								
Coppia nominale	Neindrehmoment	Rated torque	Nm	10,9	13,1	10	12,3	2,2	2,6	1,3	1,6								
Corrente nominale	Nennstrom	Rated current	A	27,5	33	26	32,5	13,3	16	9,5	11								
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η										0,86							
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ										0,7							
Numero di poli	Polzahl	Number of poles										4							
Classe di isolamento	Isolierklasse	Insulation class										F							
Tipo di raffreddamento	Kühlungstyp	Type of cooling										Raffreddamento a liquido / Flüssigkeit / Liquid cooling							
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg									36							

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

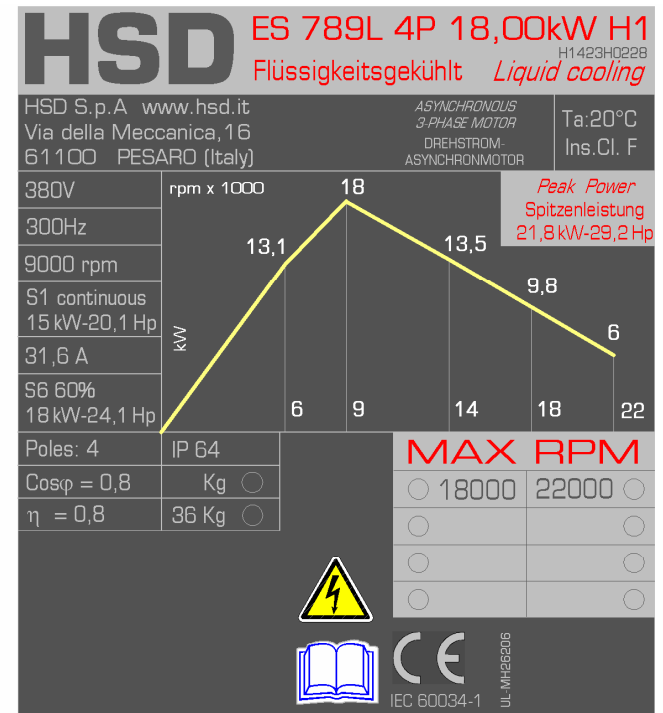
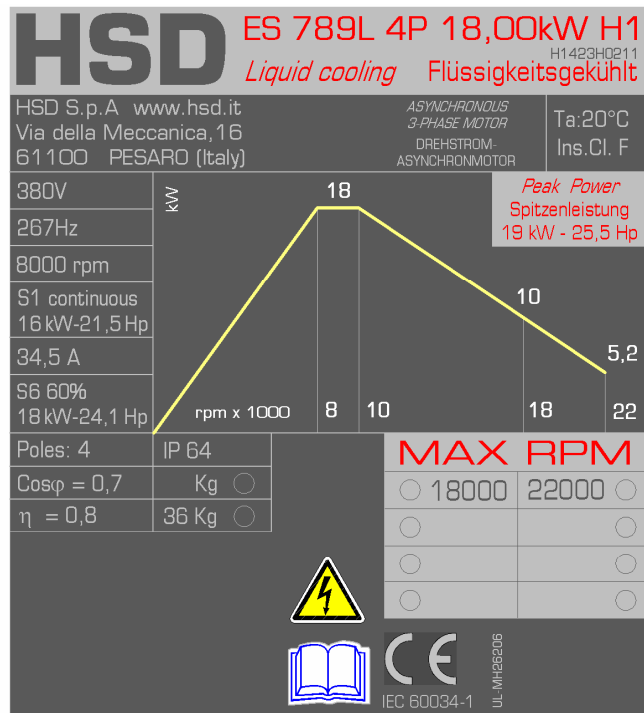
ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
HSK F63 HSK F63	CERAMICI / KERAMIK / CERAMIC CRONIDUR / CHROMEX	ACCIAIO / STAHL / STEEL CERAMICI / KERAMIK / CERAMIC	22000rpm 25000rpm

H1423H0245 Rev.00 (SP.120.150.45)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380												
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	733	833												
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	22000	25000												
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont								
Potenza nominale	Nennleistung	Rated power	kW	15	17	15	17	7	8,5	5,5	6,6								
Coppia nominale	Neindrehmoment	Rated torque	Nm	12	13,5	9,6	10,8	3	3,6	2,1	2,5								
Corrente nominale	Nennstrom	Rated current	A	34	38	34	38	16,5	20	15,9	18,8								
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η										0,8							
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ										0,8							
Numero di poli	Polzahl	Number of poles										4							
Classe di isolamento	Isolierklasse	Insulation class										F							
Tipo di raffreddamento	Kühlungstyp	Type of cooling										Raffreddamento a liquido / Flüssigkeit / Liquid cooling							
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg									36							

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
HSK F63 HSK F63	CERAMICI / KERAMIK / CERAMIC CRONIDUR / CHROMEX	ACCIAIO / STAHL / STEEL CERAMICI / KERAMIK / CERAMIC	22000rpm 25000rpm



H1423H0211 Rev.01 (2120H0120)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380												
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	267	333	600	733												
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	8000	10000	18000	22000												
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont								
Potenza nominale	Nennleistung	Rated power	kW	16	18	16	18	8	10	4,3	5,2								
Coppia nominale	Nennmoment	Rated torque	Nm	19	21,5	15,3	17,2	4,2	5,3	1,9	2,3								
Corrente nominale	Nennstrom	Rated current	A	34,5	45	34,5	45	18	26	8	11								
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η										0,8							
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ										0,7							
Numero di poli	Polzahl	Number of poles										4							
Classe di isolamento	Isolierklasse	Insulation class										F							
Tipo di raffreddamento	Kühlungstyp	Type of cooling																	
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg																

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

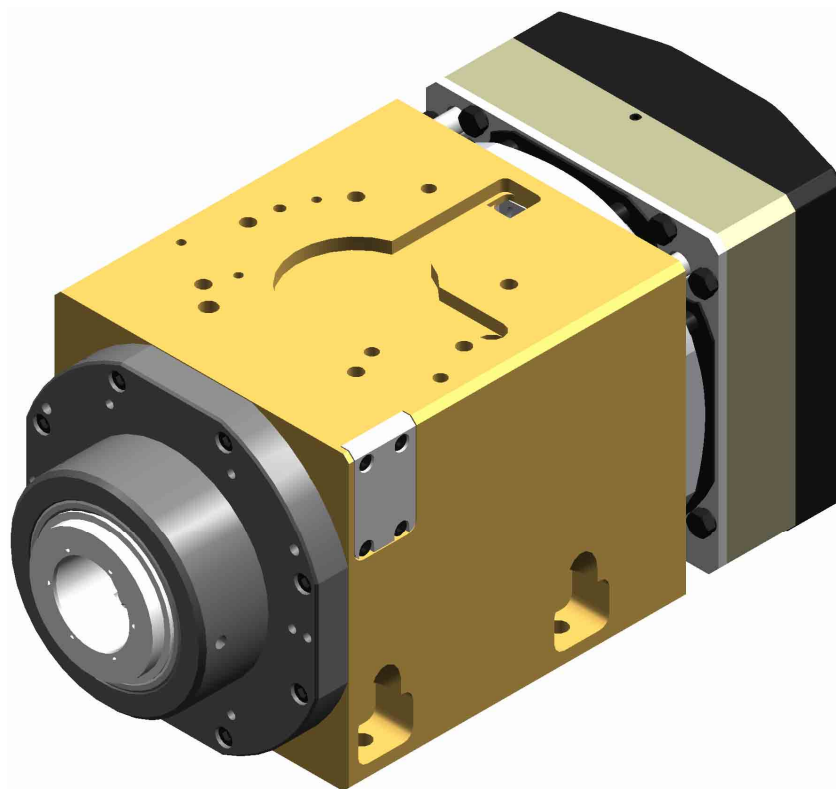
ATTACCO PORTAUTENSILE	CUSCINETTI ANTERIORI	CUSCINETTI POSTERIORI	VELOCITÀ MASSIMA
WERKZEUGHALTER	VORDERE LAGER	HINTERE LAGER	MAX. DREHZAHL
TOOL HOLDER	FRONT BEARINGS	REAR BEARINGS	MAX SPEED
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	18000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	22000rpm

H1423H0228 Rev.01 (SP.120.150.4E)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	255	380	380	380	380											
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	200	300	467	600	733											
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	6000	9000	14000	18000	22000											
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont								
Potenza nominale	Nennleistung	Rated power	kW	12	13,1	15	18	12	13,5	9	9,8	5,5	6						
Coppia nominale	Nennmoment	Rated torque	Nm	19,1	20,9	15,9	19,1	8,2	9,2	4,8	5,2	2,4	2,6						
Corrente nominale	Nennstrom	Rated current	A	36,8	41,3	31,6	38,7	29,1	32,8	24,3	26,4	16,2	17,6						
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η												0,8					
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ												0,8					
Numero di poli	Polzahl	Number of poles												4					
Classe di isolamento	Isolierklasse	Insulation class												F					
Tipo di raffreddamento	Kühlungstyp	Type of cooling																	
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg																

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

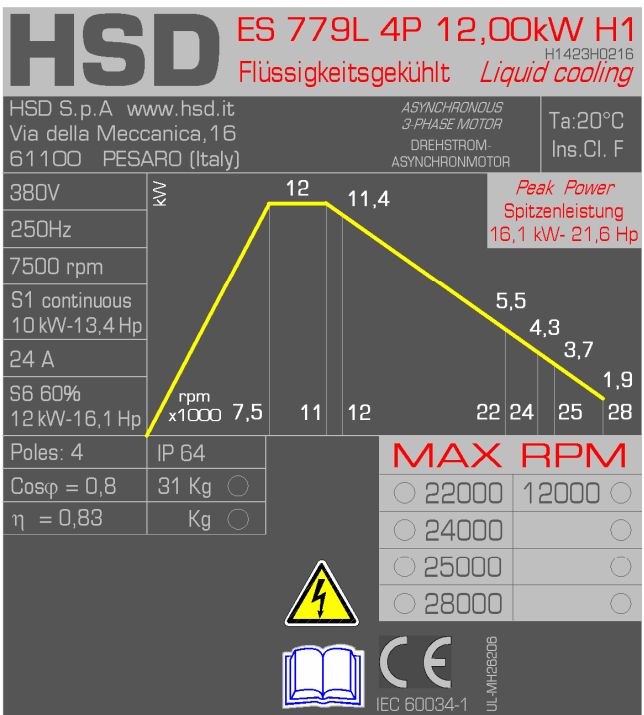
ATTACCO PORTAUTENSILE	CUSCINETTI ANTERIORI	CUSCINETTI POSTERIORI	VELOCITÀ MASSIMA
WERKZEUGHALTER	VORDERE LAGER	HINTERE LAGER	MAX. DREHZAHL
TOOL HOLDER	FRONT BEARINGS	REAR BEARINGS	MAX SPEED
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	18000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	22000rpm



Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
10 kW	12 kW	H1423H0212
10 kW	12 kW	H1423H0216
12 kW	13 kW	H1423H0240

ES 779

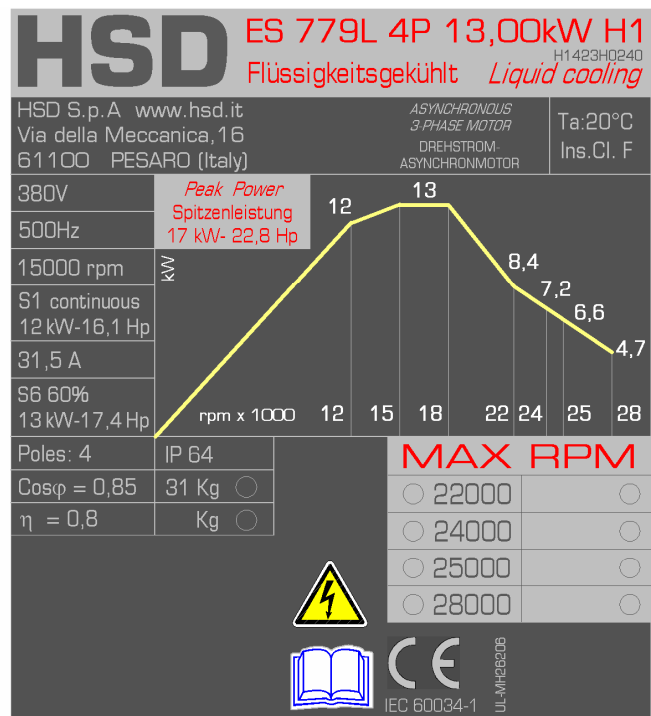


H1423H0216 Rev.02 (SP.120.080.45)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V				380	380	380	380	380	380	380	380	
Frequenza nominale	Nennfrequenz	Rated frequency	Hz				250	367	400	733	800	833	933	933	
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm				7500	11000	12000	22000	24000	25000	28000	28000	
Tipo di servizio	Betriebsart	Duty type			S1 cont.	S6 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%	S1 cont. 60%
Potenza nominale	Nennleistung	Rated power	kW		10	12	10	12	9,5	11,4	4,6	5,5	3,6	4,3	3,1
Coppia nominale	Nendrehmoment	Rated torque	Nm		12,7	15,3	8,7	10,4	7,6	9,1	2	2,4	1,4	1,7	1,2
Corrente nominale	Nennstrom	Rated current	A		24	29	22,6	27,1	21,5	25,8	13,6	16,3	10	12	8,5
Rendimento nominale η _p	Nennwirkungsgrad η _p	Rated efficiency η _p									0,83				
Fattore di potenza cos φ _p	Leistungsfaktor cos φ _p	Power factor cos φ _p									0,8				
Numero di poli	Polzahl	Number of poles									4				
Classe di isolamento	Isolierklasse	Insulation class									F				
Tipo di raffreddamento	Kühlungstyp	Type of cooling									<i>Raffreddamento a liquido / Flüssigkeit / Liquid cooling</i>				
Peso versione NASO CORTO	Gewicht Version KURZE NASE	Weight of SHORT NOSE variant	kg								31				

[(*) fornita da inverter]	[(*) von Inverter geliefert]	[(*) from inverter]
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ATTACCO PORTAUTENSILE	CUSCINETTI ANTERIORI	CUSCINETTI POSTERIORI	VELOCITÀ MASSIMA
WERKZEUGHALTER	VORDERE LAGER	Hintere Lager	MAX. DREHZAHL
TOOL HOLDER	FRONT BEARINGS	REAR BEARINGS	MAX SPEED
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	22000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	25000rpm
HSK E40 - F50	ACCIAIO / STAHL / STEEL	ACCIAIO / STAHL / STEEL	12000rpm
HSK E40 - F50	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
HSK E40 - F50	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm



H1423H0240 Rev.00 (SP.120.80.44.Par)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	310	380	380	380	380	380	380	380						
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	600	733	800	833	933							
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	18000	22000	24000	25000	28000							
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont	S1 cont	S6 60% cont						
Potenza nominale	Nennleistung	Rated power	kW	10	12	12	13	12	13	7	8,4	6,7	7,2	5	6,6	4,6	4,7
Coppia nominale	Nennrehmoment	Rated torque	Nm	8	9,6	7,6	8,2	6,4	6,9	3	3,7	2,7	2,9	1,8	2,5	1,6	1,6
Corrente nominale	Nennstrom	Rated current	A	31	37,5	31,5	34,1	31	33,6	20	24	18,6	20	13,7	18	12	12,5
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η		0,8													
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ		0,85													
Numero di poli	Polzahl	Number of poles		4													
Classe di isolamento	Isolierklasse	Insulation class		F													
Tipo di raffreddamento	Kühlungstyp	Type of cooling		Raffreddamento a liquido / Flüssigkeit / Liquid cooling													
Peso versione NASO CORTO	Gewicht Version KURZE NASE	Weight of SHORT NOSE variant	kg	31													

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

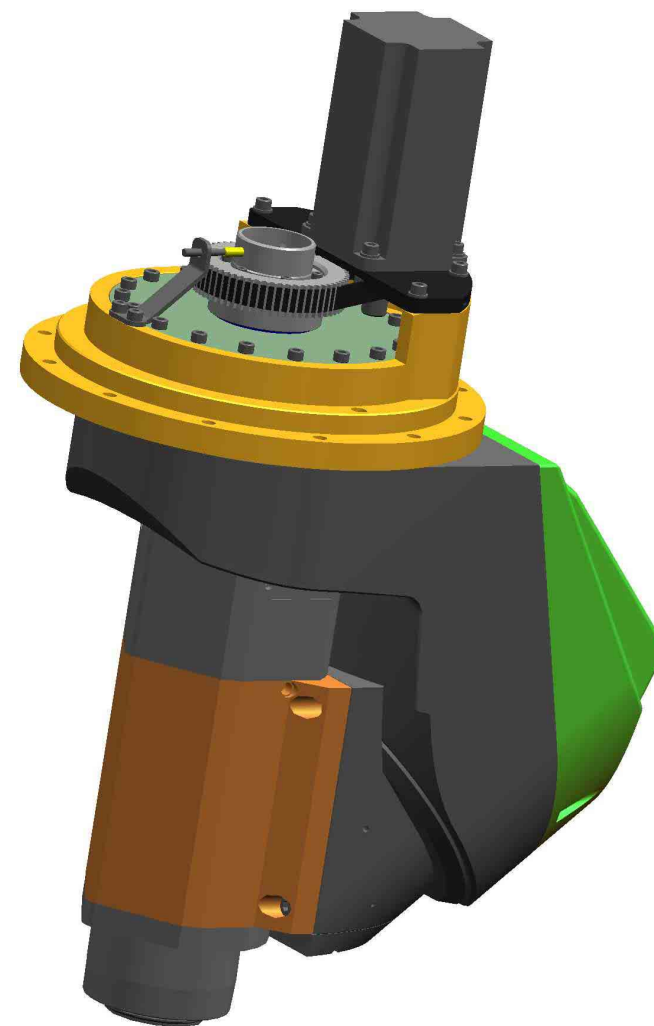
ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	22000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	25000rpm
HSK E40 - F50	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
HSK E40 - F50	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm

HS 550 / HS 545

HS 550 with 50° "A" Axis
HS 545 with 45° "A" Axis

with YASKAWA servomotors

Slip-Ring on the "A" Axis
second Slip-Ring on the "C" Axis on request



SPIEL < 0,04 mm Positionsabweichung der Achsen, nachdem 400 mm vom Drehpunkt (Abb.1, Position [1]) eine Kraft von 30 kg angewandt wurde.	BACKLASH < 0,04 mm <i>The difference that the application of a force of 30kg at 400 mm from the centre of rotation (Fig.1, Position [1]) makes to the position of the axes.</i>	GIOCO < 0,04 mm Differenza di posizione degli assi, dopo aver applicato una forza di 30 kg a 400 mm dal centro di rotazione (fig.1, posizione [1]).
POSITIONIERUNG < 0,1 mm <ul style="list-style-type: none"> Die Spindel in eine horizontale Position bringen (Abb.1, Position [1]); Einen Komparator 400 mm von der Achse C positionieren und nullen; Die Achse A drehen (entgegengesetzte Position: Abb.1, Position [3]); Die Achse A um 180° drehen (Ausgangsposition); Die Abweichung unter den beiden Maßen kontrollieren. 	POSITIONING ACCURACY < 0,1 mm <ul style="list-style-type: none"> Move the electrospindle in Horizontal position (Fig.1, Position [1]); Position a comparator at 400mm from the C-Axe and set the zero; Rotate the A-Axe till opposite position: Fig.1, Position [3]; Rotate the C-Axe of 180° (back to the initial position); Check the difference (variance) between the two measurements. 	POSIZIONAMENTO < 0,1 mm <ul style="list-style-type: none"> Si porta il mandrino in posizione orizzontale (fig.1, posizione [1]); Si posiziona un comparatore a 400 mm dall'Asse C, e si azzerà; Si ruota l'Asse A fino alla posizione orizzontale opposta (fig.1, posizione [3]); Si ruota l'Asse C di 180° (si torna in posizione di partenza); Si verifica lo scostamento fra le due misure.
WIEDERHOLBARKEIT < 0,02 mm <ul style="list-style-type: none"> Befestigen Sie einen Meßuhr mit magnetischem Fuß im Abstand von 400mm zur C-Achse (Abbildung 1, Pos. [1]); Bewegen Sie die Achsen A und C bis zur neuen Position und fahren Sie wieder auf Pos. [1] zurück; Lesen Sie die Messuhr ab. 	REPEATABILITY < 0,02 mm <ul style="list-style-type: none"> Position a comparator at 400mm from the C-Axe and set the zero (Fig.1, Position [1]); Move A and C axes to a new position, and then return them back to Position [1]; Check the difference (variance) between the two measurements. 	RIPETIBILITÀ < 0,02 mm <ul style="list-style-type: none"> Azzerare un comparatore a 400 mm dall'Asse C (fig.1, posizione [1]); Muovere gli assi A e C fino ad una nuova posizione, e tornare poi in posizione [1]; Leggere la misura del comparatore.
MITTIGKEITSABWEICHUNG ACHSE C < 0,05 mm Bei am Stift positioniertem Komparator die max. Exzentrizität über die ganze Drehung der Achse C messen (Abb.1, Position [2]).	C AXIS ECCENTRICITY < 0,05 mm <i>Check the maximum eccentricity on the whole rotation of the C-Axe with the comparator positioned on the gauge pin (Fig.1, Position [2]).</i>	ECCENTRICITÀ ASSE C < 0,05 mm Con il comparatore posizionato sulla spina (fig.1, posizione [2]), si rileva la massima eccentricità sull'intera rotazione dell'Asse C.
SEITENSTEIFIGKEIT < 0,4 µ / N Bewegung (in Mikrometer) pro Newton Kraft, angewandt wie in Abb.2 gezeigt. Die (für die Maßnahme gewählte) Richtung verursacht die schlechtere Situation.	STIFFNESS < 0,4 µ / N <i>Movement (measured in micron) for each Newton of force applied as shown in Fig.2. The direction (chosen for the measure) causes the worse situation.</i>	RIGIDEZZA < 0,4 µ / N Spostamento in micron per ogni Newton di forza applicato, come mostrato in fig.2. La direzione scelta per la misura e mostrata in fig.2 è la più sfavorevole.

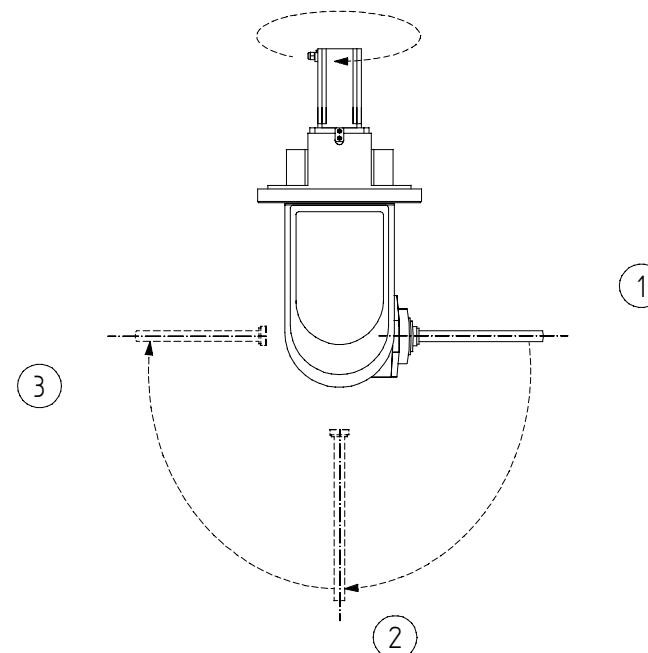


Abb.1 / Fig.1

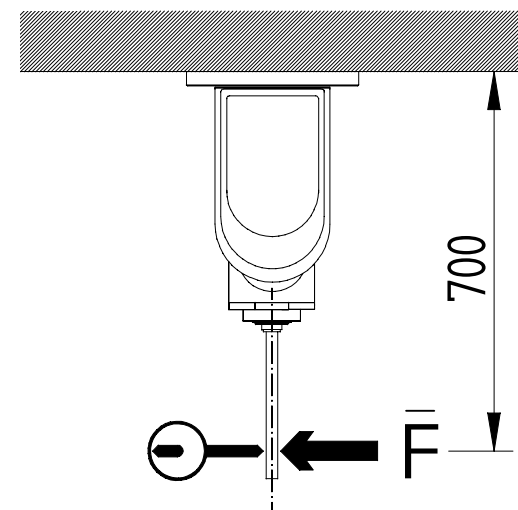


Abb.2 / Fig.2

HS 550

- Fräskopf mit 50° Achse
- 50° Axis - two axis unit
- Unità a due assi a 50°



ACHSE "A":

Unbegrenzte ununterbrochene Drehung
("Slip Ring")
Servomotor: YASKAWA SGMPH02
Max. Geschwindigkeit Dauerbetrieb:
49,5°/sec (3000 rpm)
Max. Positionierungsgeschwindigkeit:
82,5°/sec (5000 rpm)
Drehmoment an der Achse in Dauerbetrieb:
230 Nm
Coppia massima di lavoro discontinuo:
450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
Beträgt Drehung Achse: Max. $\pm 213^\circ$
On request : Unbegrenzte ununterbrochene Drehung
("Slip Ring")
Servomotor: YASKAWA SGMAH07
Max. Geschwindigkeit Dauerbetrieb:
49,5°/sec (3000 rpm)
Max. Positionierungsgeschwindigkeit:
82,5°/sec (5000 rpm)
Drehmoment an der Achse in Dauerbetrieb:
400 Nm
Coppia massima di lavoro discontinuo:
620 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 360 HSK F63 Flüssigkeitsgekühlt

MASSE :

with "Slip-Ring" on "A" Axis only : ~100 kg
with "Slip-Ring" on both Axes : ~115 kg



"A" AXIS:

Unlimited continuous rotation ("Slip Ring")
Servomotor: YASKAWA SGMPH02
Maximum continuous work speed:
49,5°/sec (3000 rpm)
Maximum continuous positioning speed:
82,5°/sec (5000 rpm)
Axis torque under continuous work:
230 Nm
Torque under discontinuous working conditions:
450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
Recommended axis rotation: Max. $\pm 213^\circ$
On request : Unlimited continuous rotation
("Slip Ring")
Servomotor: YASKAWA SGMAH07
Maximum continuous work speed:
49,5°/sec (3000 rpm)
Maximum continuous positioning speed:
82,5°/sec (5000 rpm)
Axis torque under continuous work:
400 Nm
Torque under discontinuous working conditions:
620 Nm

AVAILABLE ELECTROSPINDLES :

ES 360 HSK F63 Liquid Cooling

MASS :

with "Slip-Ring" on "A" Axis only : ~100 kg
with "Slip-Ring" on both Axes : ~115 kg



ASSE "A":

Rotazione continua illimitata ("Slip Ring")
Servomotore: YASKAWA SGMPH02
Velocità massima di lavoro continuo:
49,5°/sec (3000 rpm)
Velocità massima di posizionamento:
82,5°/sec (5000 rpm)
Coppia massima di lavoro continuo:
230 Nm
Coppia massima di lavoro discontinuo:
450 Nm

ASSE "C":

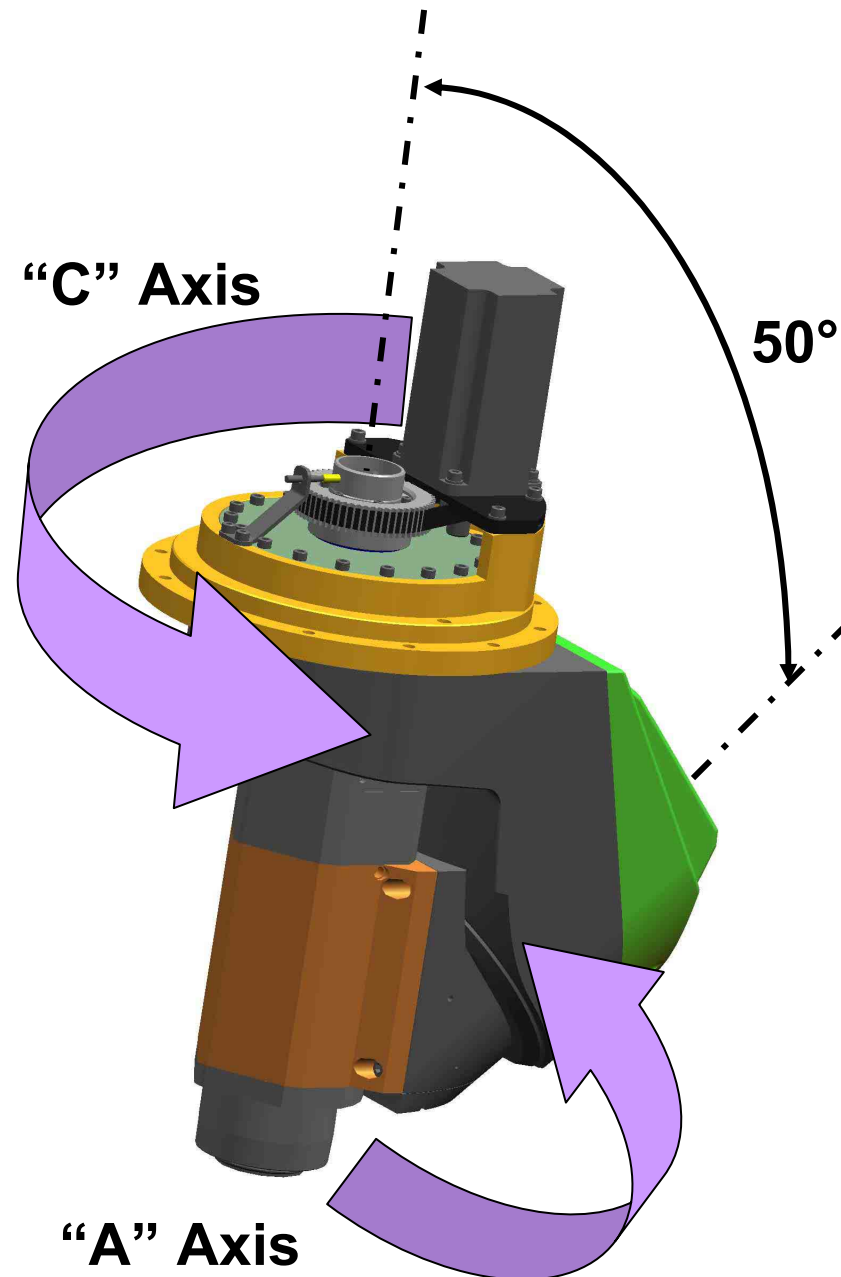
Max. rotazione meccanica asse: $\pm 220^\circ$
Max. rotazione raccomandata asse: $\pm 213^\circ$
A richiesta : Rotazione continua illimitata
("Slip Ring")
Servomotore: YASKAWA SGMAH07
Velocità massima di lavoro continuo:
49,5°/sec (3000 rpm)
Velocità massima di posizionamento:
82,5°/sec (5000 rpm)
Coppia massima di lavoro continuo:
400 Nm
Coppia massima di lavoro discontinuo:
620 Nm

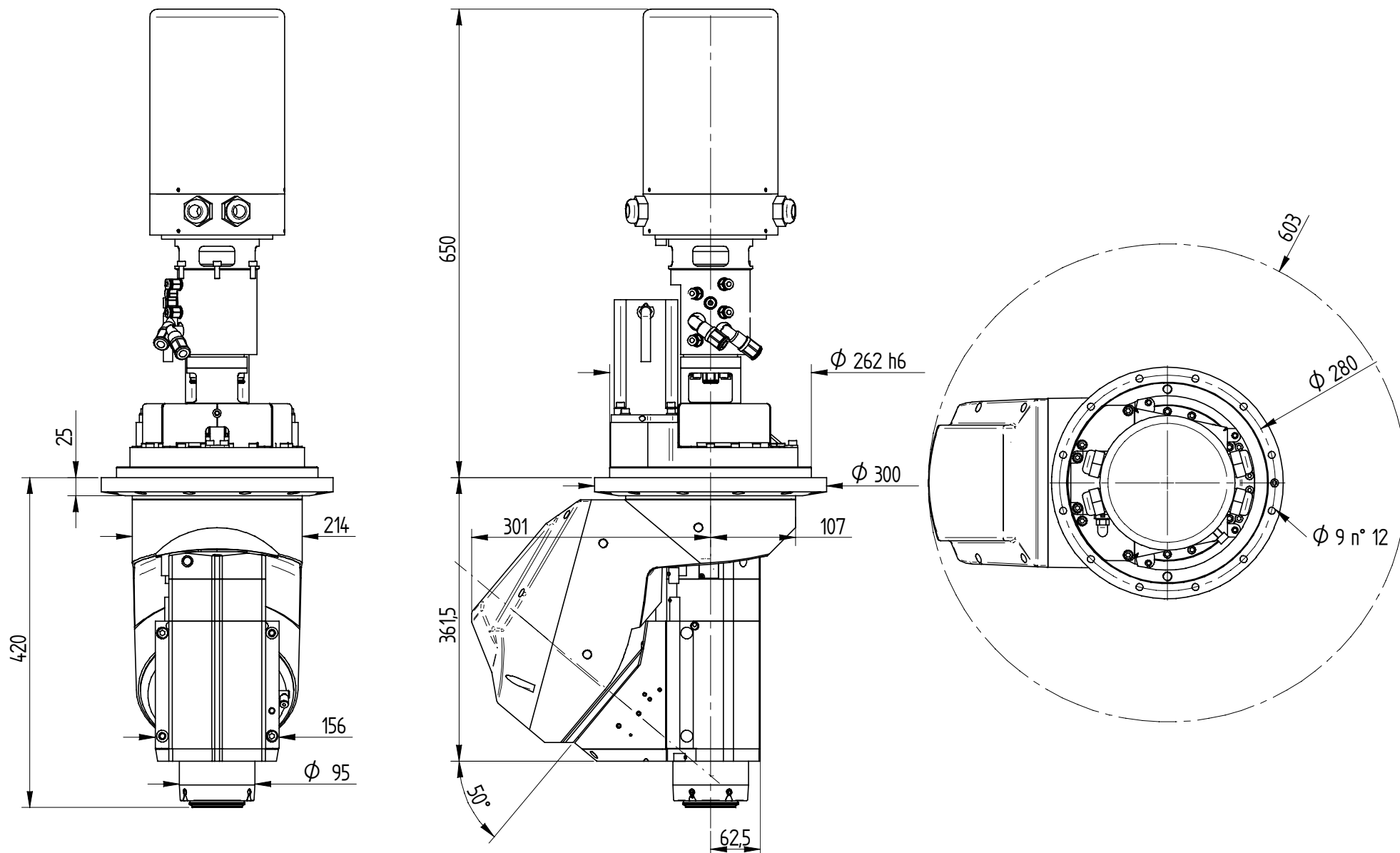
ELETTROMANDRINI DISPONIBILI :

ES 360 HSK F63 Raffreddato a Liquido

MASSA :

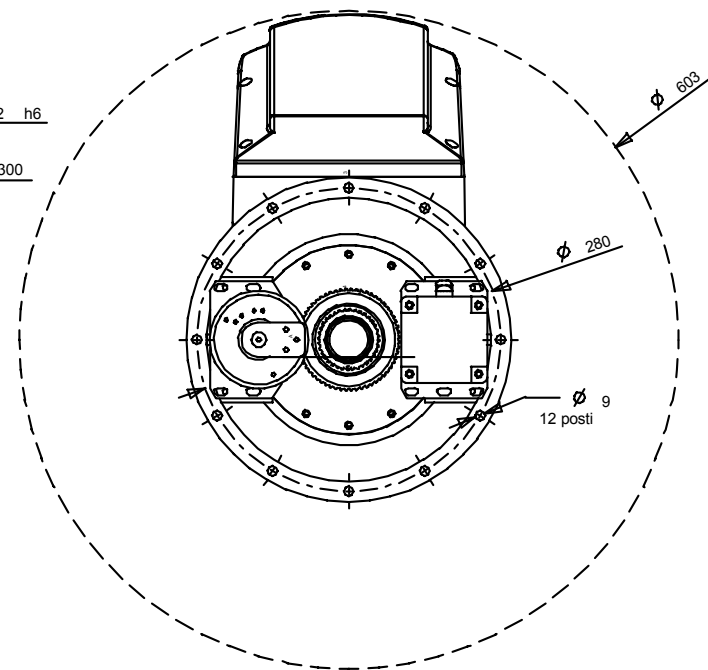
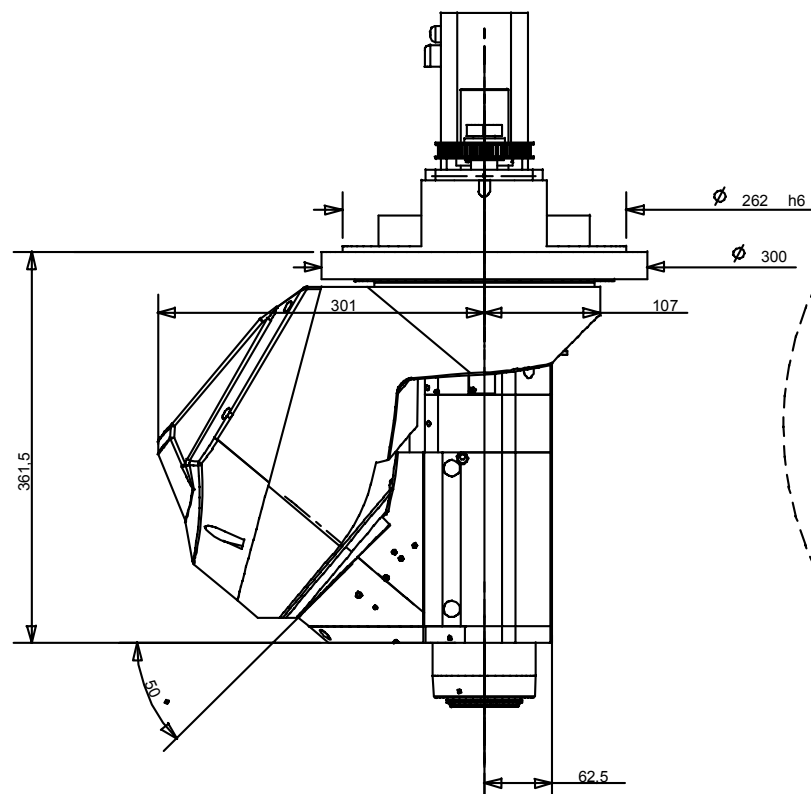
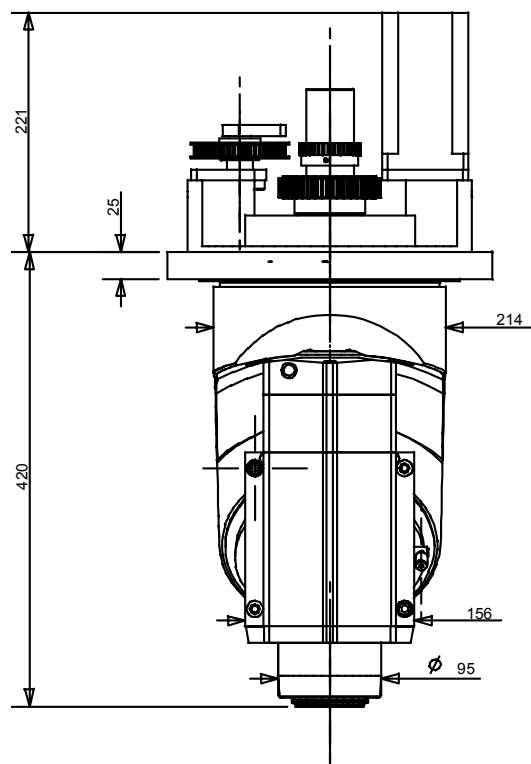
con "Slip-Ring" sul solo Asse "A" : ~100 kg
con "Slip-Ring" su entrambi gli Assi : ~115 kg





HS550 SR + ES360

Drawing code: 5530H0205-SR



HS 545

- Fräskopf mit 45° Achse
- 45° Axis - two axis unit
- Unità a due assi a 45°



ACHSE "A":

Unbegrenzte ununterbrochene Drehung
("Slip Ring")
Servomotor: YASKAWA SGMPH02
Max. Geschwindigkeit Dauerbetrieb:
49,5°/sec (3000 rpm)
Max. Positionierungsgeschwindigkeit:
82,5°/sec (5000 rpm)
Drehmoment an der Achse in Dauerbetrieb:
230 Nm
Coppia massima di lavoro discontinuo:
450 Nm

ACHSE "C":

Mechanische Drehung Achse: Max. $\pm 220^\circ$
Beträgt Drehung Achse: Max. $\pm 213^\circ$
On request :
Unbegrenzte ununterbrochene Drehung
("Slip Ring")
Servomotor: YASKAWA SGMAH07
Max. Geschwindigkeit Dauerbetrieb:
49,5°/sec (3000 rpm)
Max. Positionierungsgeschwindigkeit:
82,5°/sec (5000 rpm)
Drehmoment an der Achse in Dauerbetrieb:
400 Nm
Coppia massima di lavoro discontinuo:
620 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 360 HSK F63 Flüssigkeitsgekühlt

MASSE :

with "Slip-Ring" on "A" Axis only : ~100 kg
with "Slip-Ring" on both Axes : ~115 kg



"A" AXIS:

Unlimited continuous rotation ("Slip Ring")
Servomotor: YASKAWA SGMPH02
Maximum continuous work speed:
49,5°/sec (3000 rpm)
Maximum continuous positioning speed:
82,5°/sec (5000 rpm)
Axis torque under continuous work:
230 Nm
Torque under discontinuous working conditions:
450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
Recommended axis rotation: Max. $\pm 213^\circ$
On request : Unlimited continuous rotation
("Slip Ring")
Servomotor: YASKAWA SGMAH07
Maximum continuous work speed:
49,5°/sec (3000 rpm)
Maximum continuous positioning speed:
82,5°/sec (5000 rpm)
Axis torque under continuous work:
400 Nm
Torque under discontinuous working conditions:
620 Nm

AVAILABLE ELECTROSPINDLES :

ES 360 HSK F63 Liquid Cooling

MASS :

with "Slip-Ring" on "A" Axis only : ~100 kg
with "Slip-Ring" on both Axes : ~115 kg



ASSE "A":

Rotazione continua illimitata ("Slip Ring")
Servomotore: YASKAWA SGMPH02
Velocità massima di lavoro continuo:
49,5°/sec (3000 rpm)
Velocità massima di posizionamento:
82,5°/sec (5000 rpm)
Coppia massima di lavoro continuo:
230 Nm
Coppia massima di lavoro discontinuo:
450 Nm

ASSE "C":

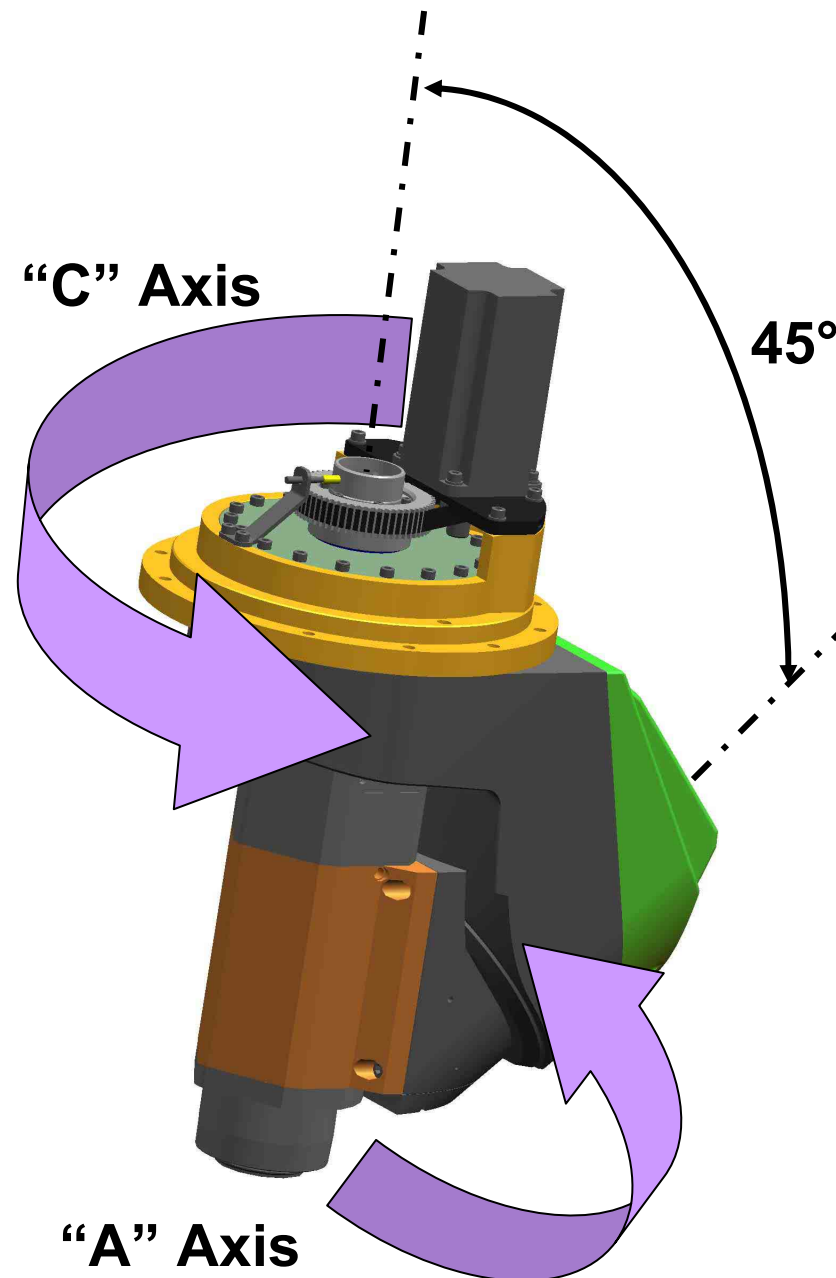
Max. rotazione meccanica asse: $\pm 220^\circ$
Max. rotazione raccomandata asse: $\pm 213^\circ$
A richiesta : Rotazione continua illimitata
("Slip Ring")
Servomotore: YASKAWA SGMAH07
Velocità massima di lavoro continuo:
49,5°/sec (3000 rpm)
Velocità massima di posizionamento:
82,5°/sec (5000 rpm)
Coppia massima di lavoro continuo:
400 Nm
Coppia massima di lavoro discontinuo:
620 Nm

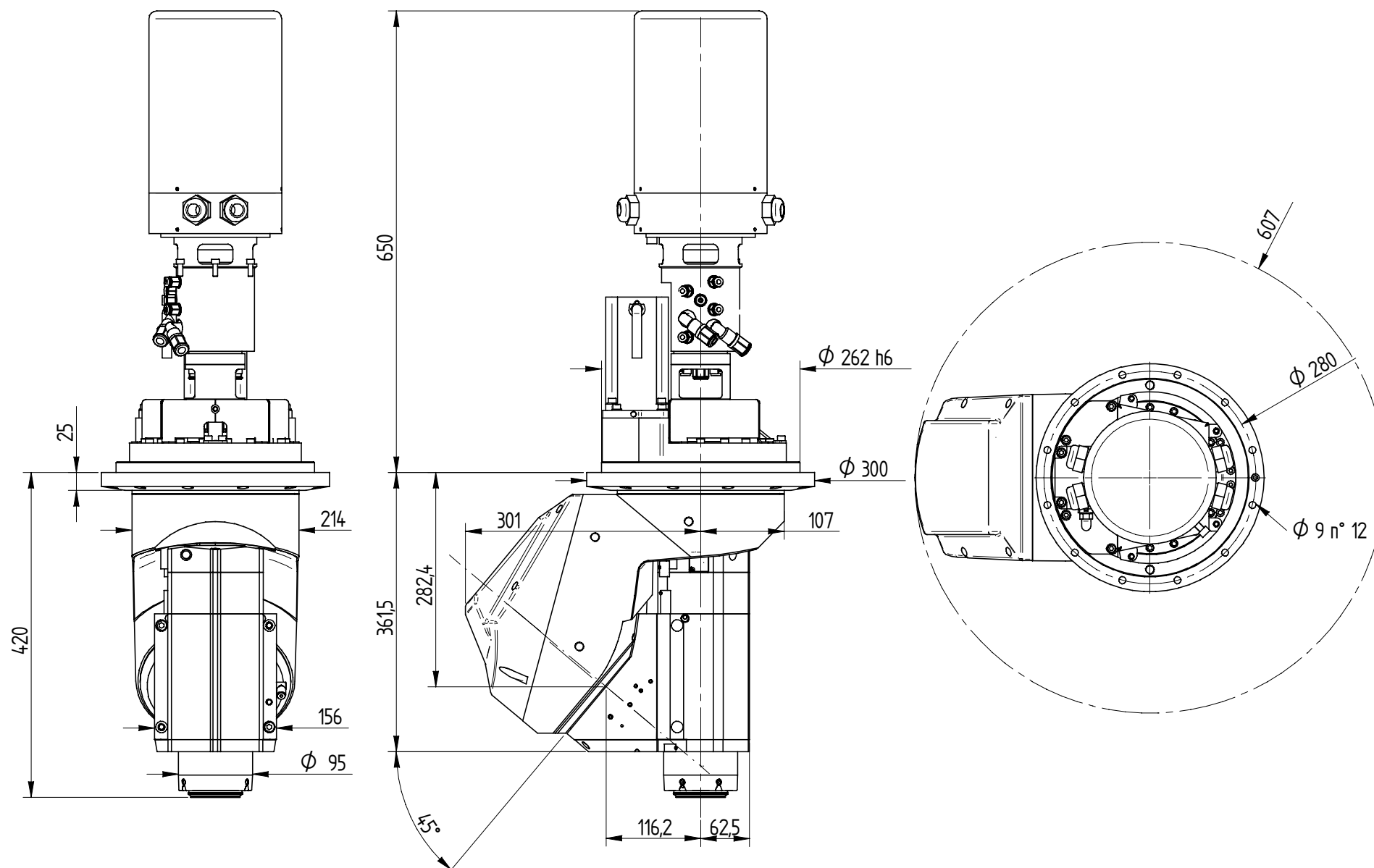
ELETTROMANDRINI DISPONIBILI :

ES 360 HSK F63 Raffreddato a Liquido

MASSA :

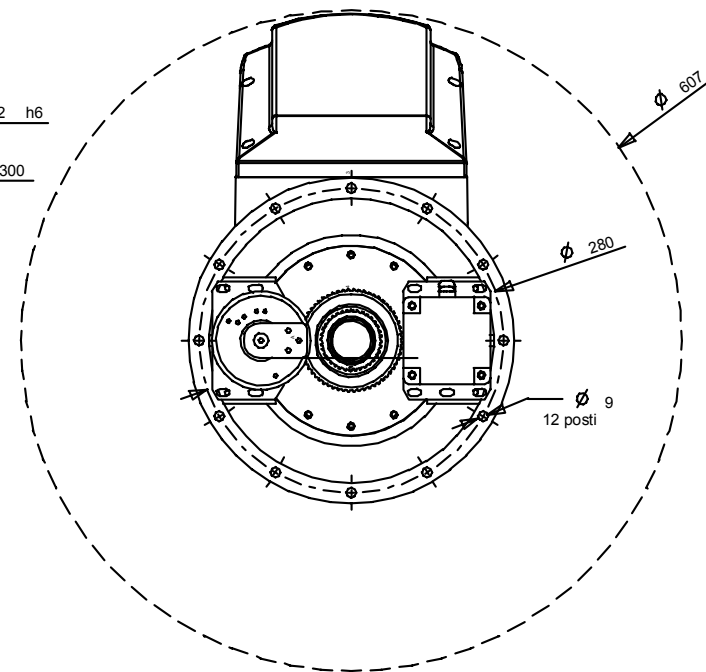
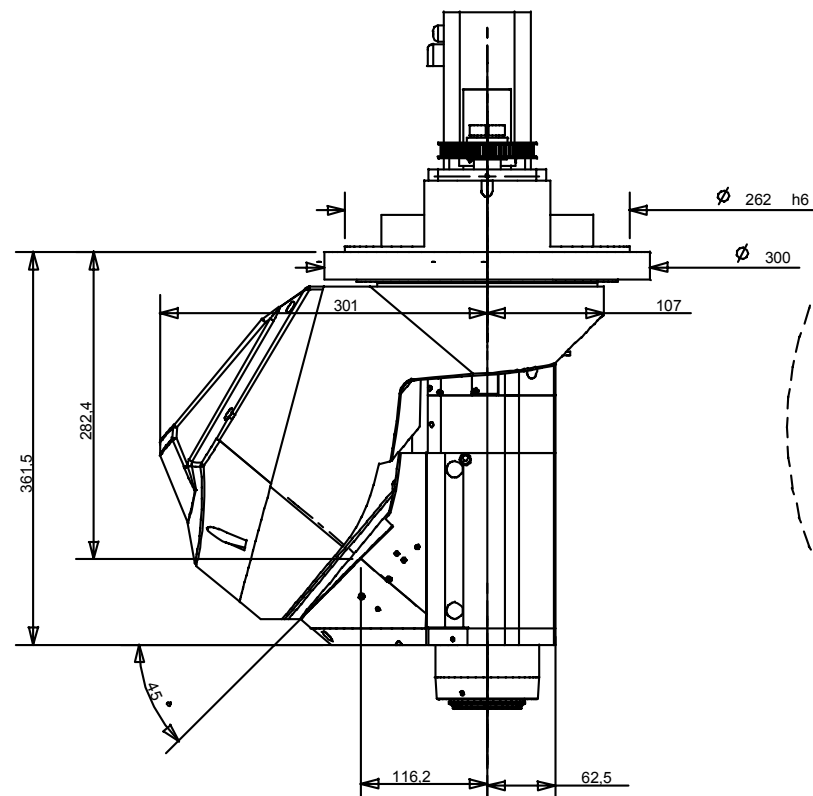
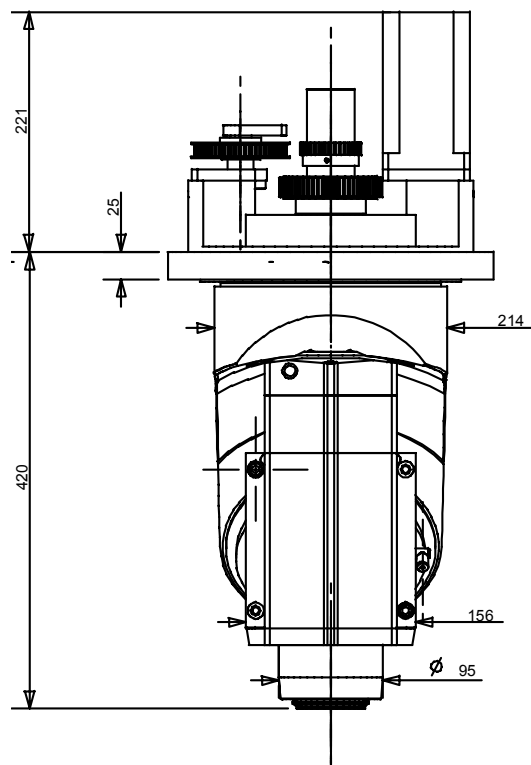
con "Slip-Ring" sul solo Asse "A" : ~100 kg
con "Slip-Ring" su entrambi gli Assi : ~115 kg

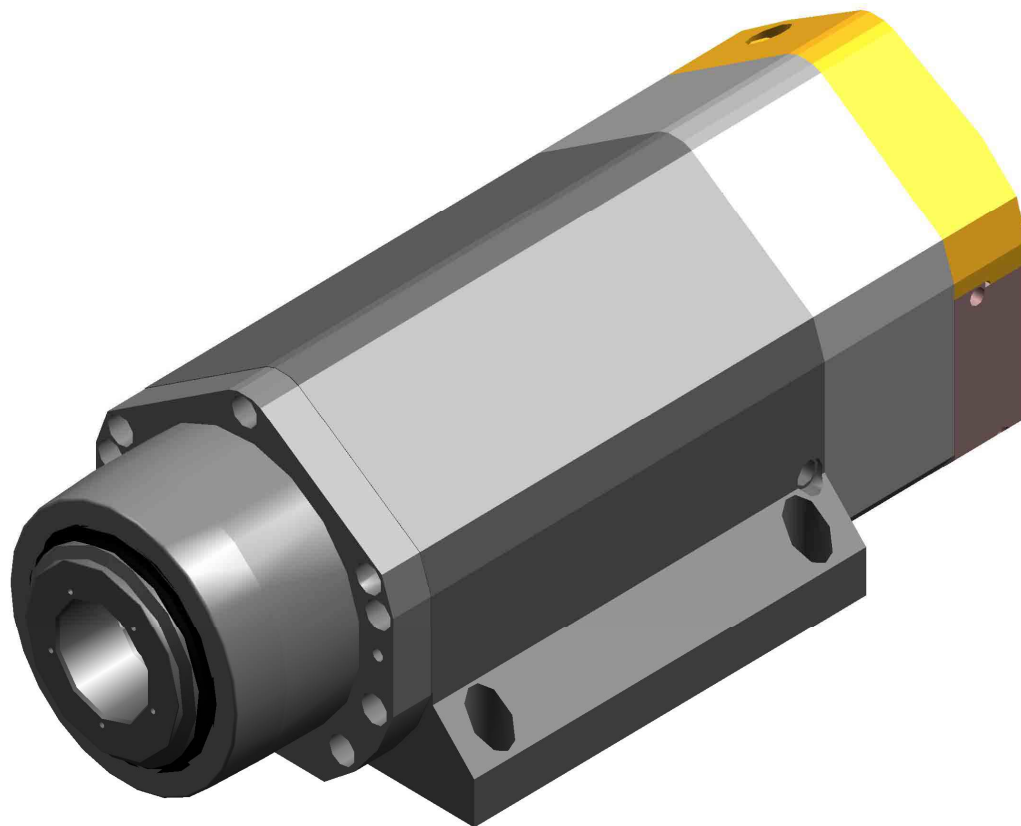




HS545 SR + ES360

Drawing code: 5530H0200-SR

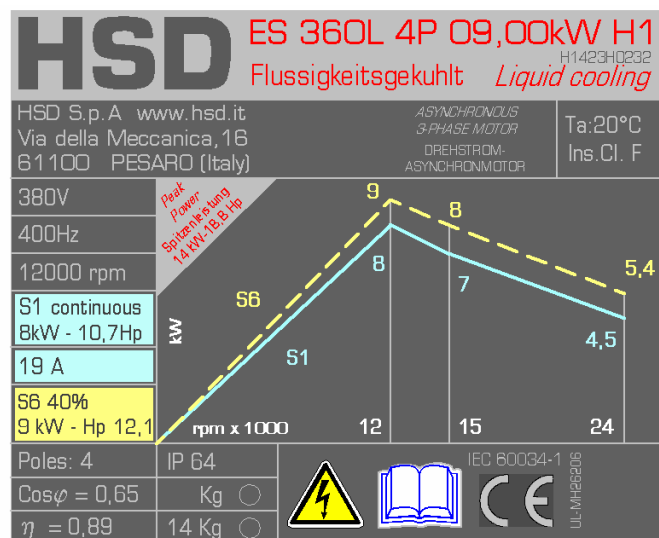




Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
8,0 kW	9,0 kW	H1423H0232

ES 360



H1423H0232 Rev.02 (SP 90.100.4C)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	800
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	24000
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 40%	S1 cont
Potenza nominale	Nennleistung	Rated power	kW	8	9	7
Coppia nominale	Nenn Drehmoment	Rated torque	Nm	6,4	7,2	4,5
Corrente nominale	Nennstrom	Rated current	A	19	20,7	15,5
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η			0,89	
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ			0,65	
Momento polare d'inerzia	Polar moment of inertia	Trägheitsmoment	kg mm²		1380	
Numero di poli	Polzahl	Number of poles			4	
Classe di isolamento	Isolierklasse	Insulation class			F	
Classe IP	IP Klasse	IP class			64	
Tipo di raffreddamento	Kühlungstyp	Type of cooling			Raffreddamento a liquido / / Flüssigkeit / Liquid cooling	
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg		~ 14	

[(*) fornita da inverter]

[(*) von Inverter geliefert]

[(*) from inverter]

HS 450 / HS 450 F

HS 450 with 363 : 1 reduction ratio

HS 450 F with 242 : 1 reduction ratio

available servomotors:

YASKAWA

INDRAMAT

available electrospindles:

ES 325 HSK E25

ES 326 HSK E25

ES 350 HSK E40 F50

ES 779 ISO 30

ES 779 HSK E40 F50

ES 779 HSK F63

ES 915 ISO 30 NC Air Cooling

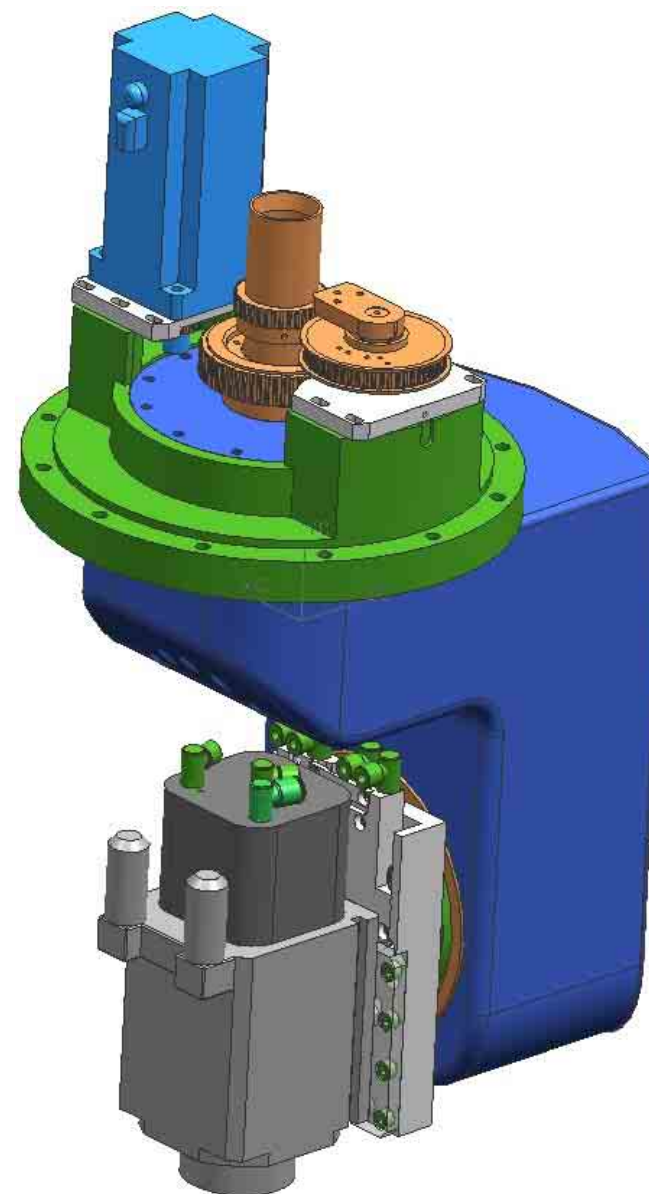
ES 915 ISO 30 NL Air Cooling

ES 915 ISO 30 NC Liquid Cooling

ES 915 ISO 30 NL Liquid Cooling

ES 915 HSK F63 NC Liquid Cooling

ES 915 HSK F63 NL Liquid Cooling



HSD S.p.a.

SPIEL < 0,04 mm Positionsabweichung der Achsen, nachdem 400 mm vom Drehpunkt (Abb.1, Position [1]) eine Kraft von 30 kg angewandt wurde.	BACKLASH < 0,04 mm <i>The difference that the application of a force of 30kg at 400 mm from the centre of rotation (Fig.1, Position [1]) makes to the position of the axes.</i>	GIOCO < 0,04 mm Differenza di posizione degli assi, dopo aver applicato una forza di 30 kg a 400 mm dal centro di rotazione (fig.1, posizione [1]).
POSITIONIERUNG < 0,1 mm <ul style="list-style-type: none"> Die Spindel in eine horizontale Position bringen (Abb.1, Position [1]); Einen Komparator 400 mm von der Achse C positionieren und nullen; Die Achse A um 180° drehen (entgegengesetzte Position: Abb.1, Position [5]); Die Achse A um 180° drehen (Ausgangsposition); Die Abweichung unter den beiden Maßen kontrollieren. 	POSITIONING ACCURACY < 0,1 mm <ul style="list-style-type: none"> Move the electrospindle in Horizontal position (Fig.1, Position [1]); Position a comparator at 400mm from the C-Axe and set the zero; Rotate the A-Axe of 180° (opposite position: Fig.1, Position [5]); Rotate the C-Axe of 180° (back to the initial position); Check the difference (variance) between the two measurements. 	POSIZIONAMENTO < 0,1 mm <ul style="list-style-type: none"> Si porta il mandrino in posizione orizzontale (fig.1, posizione [1]); Si posiziona un comparatore a 400 mm dall'Asse C, e si azzerà; Si ruota l'Asse A di 180° (posizione opposta: fig.1, posizione [5]); Si ruota l'Asse C di 180° (si torna in posizione di partenza); Si verifica lo scostamento fra le due misure.
WIEDERHOLBARKEIT < 0,02 mm <ul style="list-style-type: none"> Befestigen Sie einen Meßuhr mit magnetischem Fuß im Abstand von 400mm zur C-Achse (Abbildung 1, Pos. [1]); Bewegen Sie die Achsen A und C bis zur neuen Position und fahren Sie wieder auf Pos. [1] zurück; Lesen Sie die Messuhr ab. 	REPEATABILITY < 0,02 mm <ul style="list-style-type: none"> Position a comparator at 400mm from the C-Axe and set the zero (Fig.1, Position [1]); Move A and C axes to a new position, and then return them back to Position [1]; Check the difference (variance) between the two measurements. 	RIPETIBILITÀ < 0,02 mm <ul style="list-style-type: none"> Azzerare un comparatore a 400 mm dall'Asse C (fig.1, posizione [1]); Muovere gli assi A e C fino ad una nuova posizione, e tornare poi in posizione [1]; Leggere la misura del comparatore.
MITTIGKEITSABWEICHUNG ACHSE C < 0,05 mm Bei am Stift positioniertem Komparator die max. Exzentrizität über die ganze Drehung der Achse C messen (Abb.1, Position [3]).	C AXIS ECCENTRICITY < 0,05 mm <i>Check the maximum eccentricity on the whole rotation of the C-Axe with the comparator positioned on the gauge pin (Fig.1, Position [3]).</i>	ECCENTRICITÀ ASSE C < 0,05 mm Con il comparatore posizionato sulla spina (fig.1, posizione [3]), si rileva la massima eccentricità sull'intera rotazione dell'Asse C.
RECHTWINKLIGKEIT DER ACHSEN < 0,004° Toleranzwinkel zwischen den Achsen A und C.	AXIS SQUARENESS < 0,004° <i>The angle of tolerance between the A and C axes.</i>	ORTOGONALITÀ ASSI < 0,004° Angolo di tolleranza tra gli assi A e C.
EBENHEIT ACHSE A < 0,1 mm Die maximale Abweichung zwischen den Nullstellungspositionen [1] und [5] und den Positionen [2], [3] und [4] messen (Abb.1).	A-AXE – FLATNESS < 0,1 mm <i>Measure the maximum difference (variance) between the zero positions [1] and [5] with reference to the positions [2], [3] and [4] (Fig.1).</i>	PLANARITÀ ASSE A < 0,1 mm Si misura il massimo scostamento tra le posizioni di azzeramento [1] e [5] e le posizioni [2], [3] e [4] (fig.1).
SEITENSTEIFIGKEIT < 1 µ / N Bewegung (in Mikrometer) pro Newton Kraft, angewandt wie in Abb.2 gezeigt. Die (für die Maßnahme gewählte) Richtung verursacht die schlechtere Situation.	STIFFNESS < 1 µ / N <i>Movement (measured in micron) for each Newton of force applied as shown in Fig.2. The direction (chosen for the measure) causes the worse situation.</i>	RIGIDEZZA < 1 µ / N Spostamento in micron per ogni Newton di forza applicato, come mostrato in fig.2. La direzione scelta per la misura e mostrata in fig.2 è la più sfavorevole.

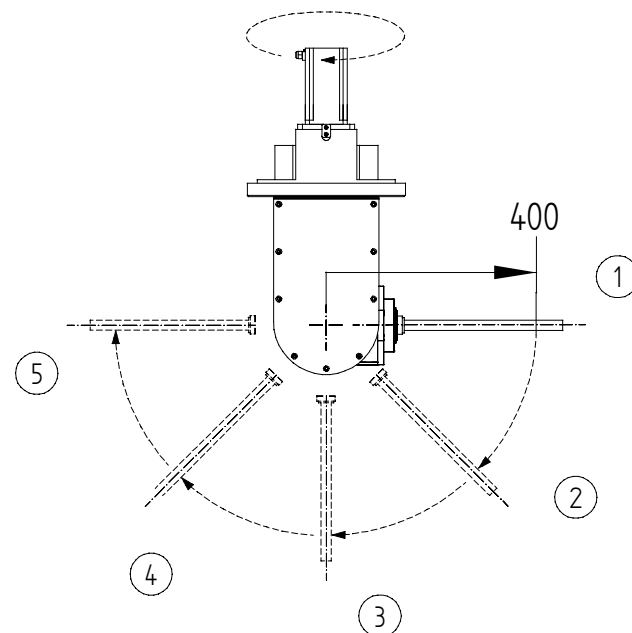


Abb.1 / Fig.1

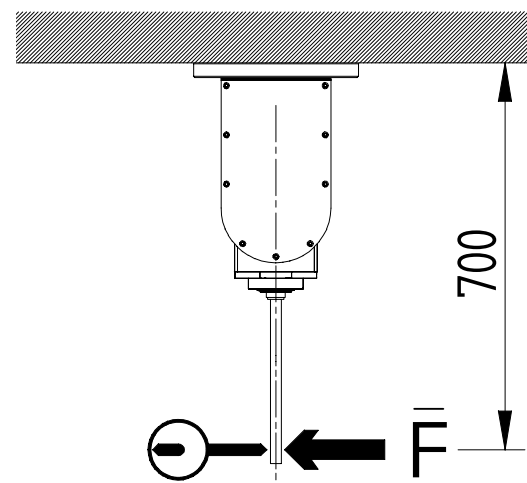


Abb.2 / Fig.2

HS 450

- standard Version (363 : 1)
- standard version (363 : 1)
- versione standard (363 : 1)



ACHSE A:

Mechanische Drehung Achse: Max. $\pm 135^\circ$
Beträgt Drehung Achse: Max. $\pm 130^\circ$

Max. Geschwindigkeit Dauerbetrieb:
YASKAWA SGMPH04: 49,5°/sec (3000 rpm)
INDRAMAT MMD042A: 49,5°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:
YASKAWA SGMPH04: 82,5°/sec (5000 rpm)
INDRAMAT MMD042A: 82,5°/sec (5000 rpm)

Drehmoment an der Achse in Dauerbetrieb:
YASKAWA SGMPH04: 300 Nm
INDRAMAT MMD042A: 300 Nm

Coppia massima di lavoro discontinuo:
YASKAWA SGMPH04: 450 Nm
INDRAMAT MMD042A: 450 Nm

ACHSE C:

Mechanische Drehung Achse: Max. $\pm 220^\circ$
Beträgt Drehung Achse: Max. $\pm 213^\circ$

Max. Geschwindigkeit Dauerbetrieb:
YASKAWA SGMAH07: 49,5°/sec (3000 rpm)
INDRAMAT MMD082A: 49,5°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:
YASKAWA SGMAH07: 82,5°/sec (5000 rpm)
INDRAMAT MMD082A: 74°/sec (4500 rpm)

Drehmoment an der Achse in Dauerbetrieb:
YASKAWA SGMAH07: 300 Nm
INDRAMAT MMD082A: 300 Nm

Coppia massima di lavoro discontinuo:
YASKAWA SGMAH07: 450 Nm
INDRAMAT MMD082A: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 325 HSK E25 Flüssigkeitsgekühlt
ES 326 HSK E25 Flüssigkeitsgekühlt
ES 350 HSK E40 F50 Flüssigkeitsgekühlt
ES 779 ISO 30 Flüssigkeitsgekühlt
ES 779 HSK F50 Flüssigkeitsgekühlt
ES 779 HSK F63 Flüssigkeitsgekühlt
ES 915 ISO 30 NC Luftgekühlt
ES 915 ISO 30 NL Luftgekühlt
ES 915 ISO 30 NC Flüssigkeitsgekühlt
ES 915 ISO 30 NL Flüssigkeitsgekühlt
ES 915 HSK F63 NC Flüssigkeitsgekühlt
ES 915 HSK F63 NL Flüssigkeitsgekühlt

MASSE : ~100kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 135^\circ$
Recommended axis rotation: Max. $\pm 130^\circ$

Maximum continous work speed:
YASKAWA SGMPH04: 49,5°/sec (3000 rpm)
INDRAMAT MMD042A: 49,5°/sec (3000 rpm)

Maximum continous positioning speed:
YASKAWA SGMPH04: 82,5°/sec (5000 rpm)
INDRAMAT MMD042A: 82,5°/sec (5000 rpm)

Axis torque under continuous work:
YASKAWA SGMPH04: 300 Nm
INDRAMAT MMD042A: 300 Nm

Torque under discontinuous working conditions:
YASKAWA SGMPH04: 450 Nm
INDRAMAT MMD042A: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
Recommended axis rotation: Max. $\pm 213^\circ$

Maximum continous work speed:
YASKAWA SGMAH07: 49,5°/sec (3000 rpm)
INDRAMAT MMD082A: 49,5°/sec (3000 rpm)

Maximum continous positioning speed:
YASKAWA SGMAH07: 82,5°/sec (5000 rpm)
INDRAMAT MMD082A: 74°/sec (4500 rpm)

Axis torque under continuous work:
YASKAWA SGMAH07: 300 Nm
INDRAMAT MMD082A: 300 Nm

Torque under discontinuous working conditions:
YASKAWA SGMAH07: 450 Nm
INDRAMAT MMD082A: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 325 HSK E25 Liquid Cooling
ES 326 HSK E25 Liquid Cooling
ES 350 HSK E40 F50 Liquid Cooling
ES 779 ISO 30 Liquid Cooling
ES 779 HSK F50 Liquid Cooling
ES 779 HSK F63 Liquid Cooling
ES 915 ISO 30 NC Air Cooling
ES 915 ISO 30 NL Air Cooling
ES 915 ISO 30 NC Liquid Cooling
ES 915 ISO 30 NL Liquid Cooling
ES 915 HSK F63 NC Liquid Cooling
ES 915 HSK F63 NL Liquid Cooling

MASS : ~100kg



ASSE A:

Max. rotazione meccanica asse: $\pm 135^\circ$
Max. rotazione raccomandata asse: $\pm 130^\circ$

Velocità massima di lavoro continuo:
YASKAWA SGMPH04: 49,5°/sec (3000 rpm)
INDRAMAT MMD042A: 49,5°/sec (3000 rpm)

Velocità massima di posizionamento:
YASKAWA SGMPH04: 82,5°/sec (5000 rpm)
INDRAMAT MMD042A: 82,5°/sec (5000 rpm)

Coppia massima di lavoro continuo:
YASKAWA SGMPH04: 300 Nm
INDRAMAT MMD042A: 300 Nm

Coppia massima di lavoro discontinuo:
YASKAWA SGMPH04: 450 Nm
INDRAMAT MMD042A: 450 Nm

ASSE C:

Max. rotazione meccanica asse: $\pm 220^\circ$
Max. rotazione raccomandata asse: $\pm 213^\circ$

Velocità massima di lavoro continuo:
YASKAWA SGMAH07: 49,5°/sec (3000 rpm)
INDRAMAT MMD082A: 49,5°/sec (3000 rpm)

Velocità massima di posizionamento:
YASKAWA SGMAH07: 82,5°/sec (5000 rpm)
INDRAMAT MMD082A: 74°/sec (4500 rpm)

Coppia massima di lavoro continuo:
YASKAWA SGMAH07: 300 Nm
INDRAMAT MMD082A: 300 Nm

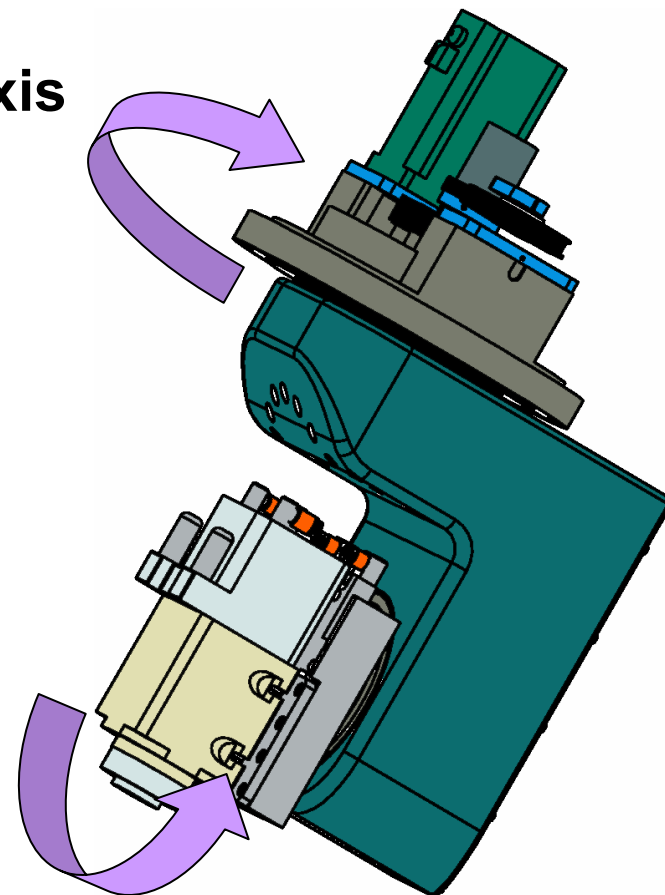
Coppia massima di lavoro discontinuo:
YASKAWA SGMAH07: 450 Nm
INDRAMAT MMD082A: 450 Nm

ELETTROMANDRINI DISPONIBILI

ES 325 HSK E25 Raffreddato a Liquido
ES 326 HSK E25 Raffreddato a Liquido
ES 350 HSK E40 F50 Raffreddato a Liquido
ES 779 ISO 30 Raffreddato a Liquido
ES 779 HSK F50 Raffreddato a Liquido
ES 779 HSK F63 Raffreddato a Liquido
ES 915 ISO 30 NC Raffreddato ad Aria
ES 915 ISO 30 NL Raffreddato ad Aria
ES 915 ISO 30 NC Raffreddato a Liquido
ES 915 ISO 30 NL Raffreddato a Liquido
ES 915 HSK F63 NC Raffreddato a Liquido
ES 915 HSK F63 NL Raffreddato a Liquido

MASSA : ~100kg

“C” Axis



“A” Axis

HS 450 F

- **Schnelle Version (242 : 1)**
- **fast version (242 : 1)**
- **versione veloce (242 : 1)**



ACHSE A:

Mechanische Drehung Achse: Max. $\pm 135^\circ$
 Betragt Drehung Achse: Max. $\pm 130^\circ$

Max. Geschwindigkeit Dauerbetrieb:

YASKAWA SGMPH04: 74,25°/sec (3000 rpm)
 INDRAMAT MMD042A: 74,25°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:

YASKAWA SGMPH04: 123,75°/sec (5000 rpm)
 INDRAMAT MMD042A: 123,75°/sec (5000 rpm)

Drehmoment an der Achse in Dauerbetrieb:

YASKAWA SGMPH04: 300 Nm
 INDRAMAT MMD042A: 290 Nm

Coppia massima di lavoro discontinuo:

YASKAWA SGMPH04: 450 Nm
 INDRAMAT MMD042A: 450 Nm

ACHSE C:

Mechanische Drehung Achse: Max. $\pm 220^\circ$
 Betragt Drehung Achse: Max. $\pm 213^\circ$

Max. Geschwindigkeit Dauerbetrieb:

YASKAWA SGMAH07: 74,25°/sec (3000 rpm)
 INDRAMAT MMD082A: 74,25°/sec (3000 rpm)

Max. Positionierungsgeschwindigkeit:

YASKAWA SGMAH07: 123,75°/sec (5000 rpm)
 INDRAMAT MMD082A: 111°/sec (4500 rpm)

Drehmoment an der Achse in Dauerbetrieb:

YASKAWA SGMAH07: 300 Nm
 INDRAMAT MMD082A: 300 Nm

Coppia massima di lavoro discontinuo:

YASKAWA SGMAH07: 450 Nm
 INDRAMAT MMD082A: 450 Nm

VERFÜGBARE ELEKTROSPINDELN :

ES 325 HSK E25 Flüssigkeitsgekühlt
 ES 326 HSK E25 Flüssigkeitsgekühlt
 ES 350 HSK E40 F50 Flüssigkeitsgekühlt
 ES 779 ISO 30 Flüssigkeitsgekühlt
 ES 779 HSK F50 Flüssigkeitsgekühlt
 ES 779 HSK F63 Flüssigkeitsgekühlt
 ES 915 ISO 30 NC Luftgekühlt
 ES 915 ISO 30 NL Luftgekühlt
 ES 915 ISO 30 NC Flüssigkeitsgekühlt
 ES 915 ISO 30 NL Flüssigkeitsgekühlt
 ES 915 HSK F63 NC Flüssigkeitsgekühlt
 ES 915 HSK F63 NL Flüssigkeitsgekühlt

MASSE : ~100kg



"A" AXIS:

Mechanical axis rotation: Max. $\pm 135^\circ$
 Recommended axis rotation: Max. $\pm 130^\circ$

Maximum continous work speed:

YASKAWA SGMPH04: 74,25°/sec (3000 rpm)
 INDRAMAT MMD042A: 74,25°/sec (3000 rpm)

Maximum continous positioning speed:

YASKAWA SGMPH04: 123,75°/sec (5000 rpm)
 INDRAMAT MMD042A: 123,75°/sec (5000 rpm)

Axis torque under continuous work:

YASKAWA SGMPH04: 300 Nm
 INDRAMAT MMD042A: 290 Nm

Torque under discontinuous working conditions:

YASKAWA SGMPH04: 450 Nm
 INDRAMAT MMD042A: 450 Nm

"C" AXIS:

Mechanical axis rotation: Max. $\pm 220^\circ$
 Recommended axis rotation: Max. $\pm 213^\circ$

Maximum continous work speed:

YASKAWA SGMAH07: 74,25°/sec (3000 rpm)
 INDRAMAT MMD082A: 74,25°/sec (3000 rpm)

Maximum continous positioning speed:

YASKAWA SGMAH07: 123,75°/sec (5000 rpm)
 INDRAMAT MMD082A: 111°/sec (4500 rpm)

Axis torque under continuous work:

YASKAWA SGMAH07: 300 Nm
 INDRAMAT MMD082A: 300 Nm

Torque under discontinuous working conditions:

YASKAWA SGMAH07: 450 Nm
 INDRAMAT MMD082A: 450 Nm

AVAILABLE ELECTROSPINDLES :

ES 325 HSK E25 Liquid Cooling
 ES 326 HSK E25 Liquid Cooling
 ES 350 HSK E40 F50 Liquid Cooling
 ES 779 ISO 30 Liquid Cooling
 ES 779 HSK F50 Liquid Cooling
 ES 779 HSK F63 Liquid Cooling
 ES 915 ISO 30 NC Air Cooling
 ES 915 ISO 30 NL Air Cooling
 ES 915 ISO 30 NC Liquid Cooling
 ES 915 ISO 30 NL Liquid Cooling
 ES 915 HSK F63 NC Liquid Cooling
 ES 915 HSK F63 NL Liquid Cooling

MASS : ~100kg



ASSE A:

Max. rotazione meccanica asse: $\pm 135^\circ$
 Max. rotazione raccomandata asse: $\pm 130^\circ$

Velocità massima di lavoro continuo:

YASKAWA SGMPH04: 74,25°/sec (3000 rpm)
 INDRAMAT MMD042A: 74,25°/sec (3000 rpm)

Velocità massima di posizionamento:

YASKAWA SGMPH04: 123,75°/sec (5000 rpm)
 INDRAMAT MMD042A: 123,75°/sec (5000 rpm)

Coppia massima di lavoro continuo:

YASKAWA SGMPH04: 300 Nm
 INDRAMAT MMD042A: 290 Nm

Coppia massima di lavoro discontinuo:

YASKAWA SGMPH04: 450 Nm
 INDRAMAT MMD042A: 450 Nm

ASSE C:

Max. rotazione meccanica asse: $\pm 220^\circ$
 Max. rotazione raccomandata asse: $\pm 213^\circ$

Velocità massima di lavoro continuo:

YASKAWA SGMAH07: 74,25°/sec (3000 rpm)
 INDRAMAT MMD082A: 74,25°/sec (3000 rpm)

Velocità massima di posizionamento:

YASKAWA SGMAH07: 123,75°/sec (5000 rpm)
 INDRAMAT MMD082A: 111°/sec (4500 rpm)

Coppia massima di lavoro continuo:

YASKAWA SGMAH07: 300 Nm
 INDRAMAT MMD082A: 300 Nm

Coppia massima di lavoro discontinuo:

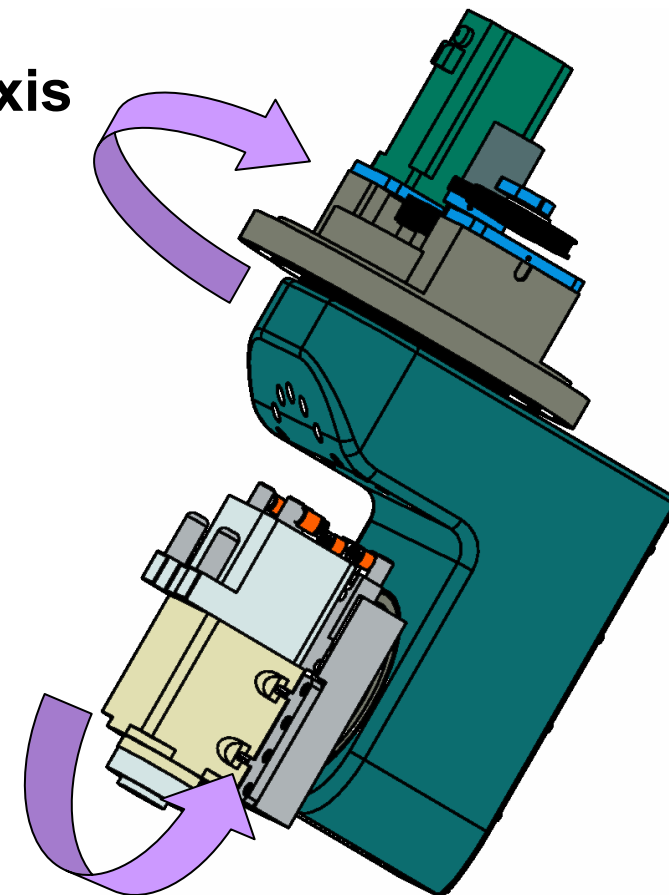
YASKAWA SGMAH07: 450 Nm
 INDRAMAT MMD082A: 450 Nm

ELETTROMANDRINI DISPONIBILI

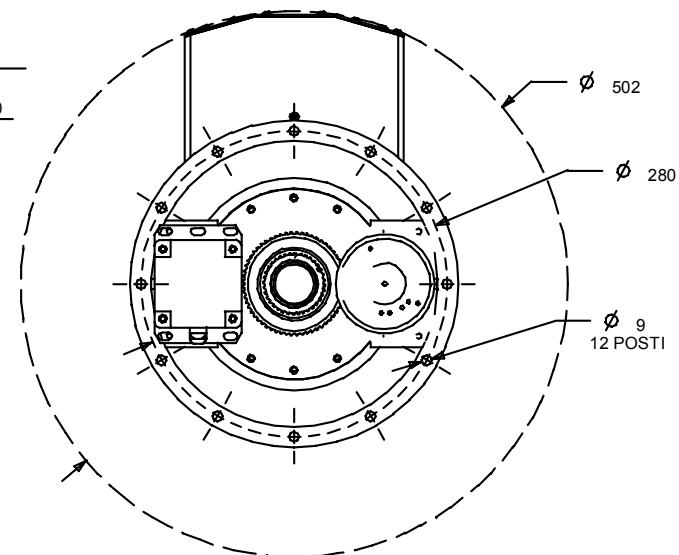
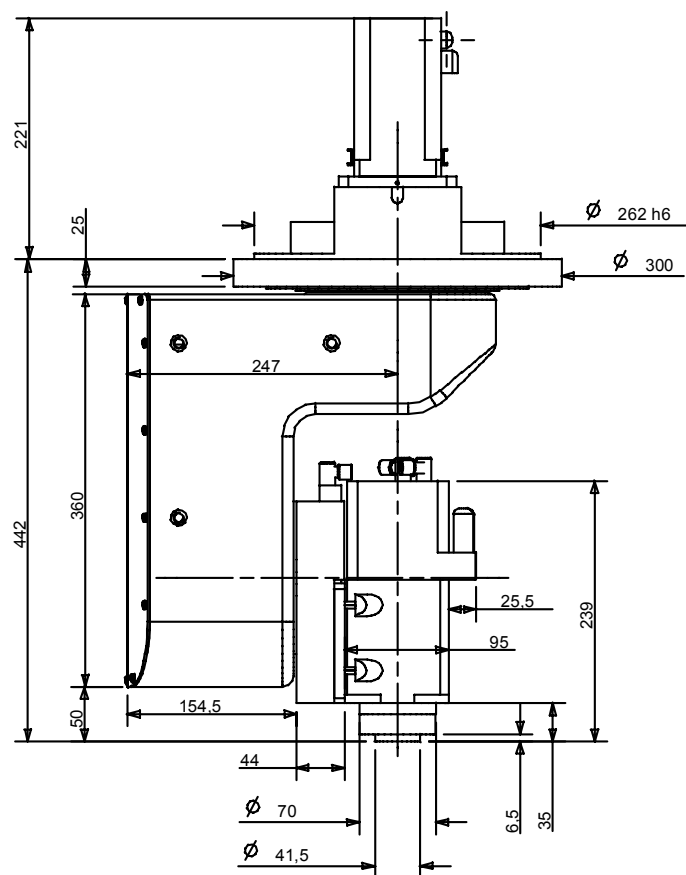
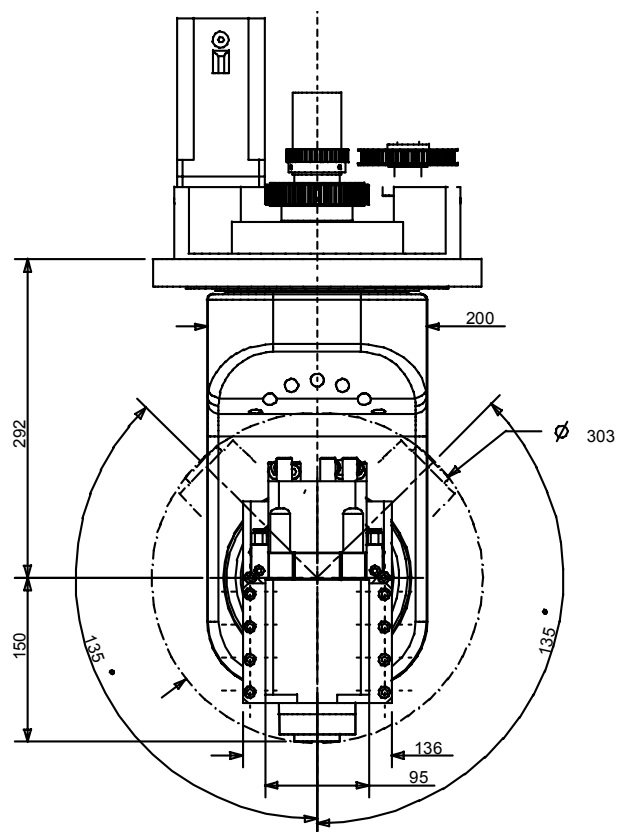
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 ES 326 HSK E25 Raffreddato a Liquido
 ES 350 HSK E40 F50 Raffreddato a Liquido
 ES 779 ISO 30 Raffreddato a Liquido
 ES 779 HSK F50 Raffreddato a Liquido
 ES 779 HSK F63 Raffreddato a Liquido
 ES 915 ISO 30 NC Raffreddato ad Aria
 ES 915 ISO 30 NL Raffreddato ad Aria
 ES 915 ISO 30 NC Raffreddato a Liquido
 ES 915 ISO 30 NL Raffreddato a Liquido
 ES 915 HSK F63 NC Raffreddato a Liquido
 ES 915 HSK F63 NL Raffreddato a Liquido

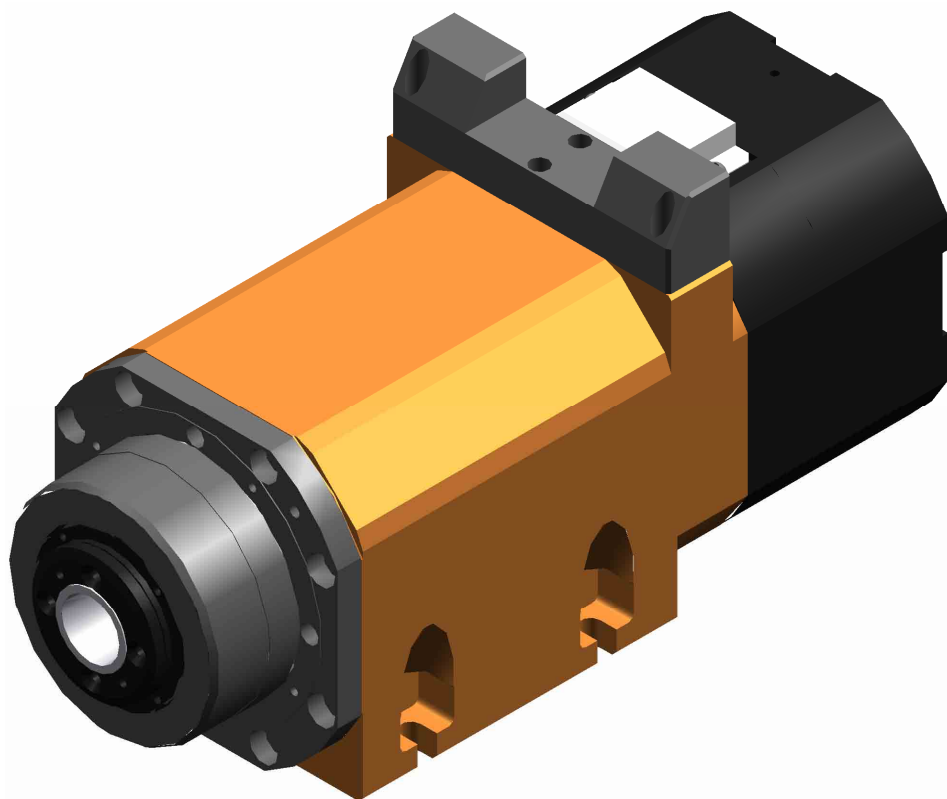
MASSA : ~100kg

“C” Axis



“A” Axis

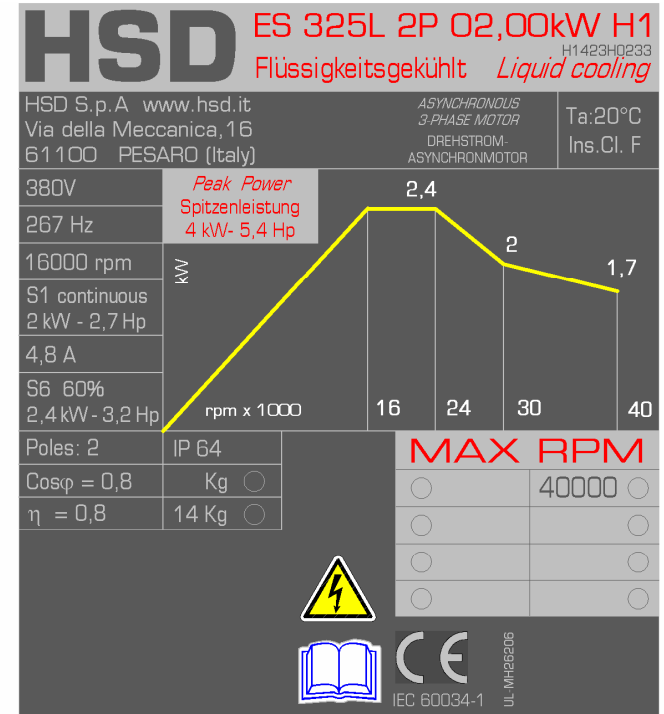
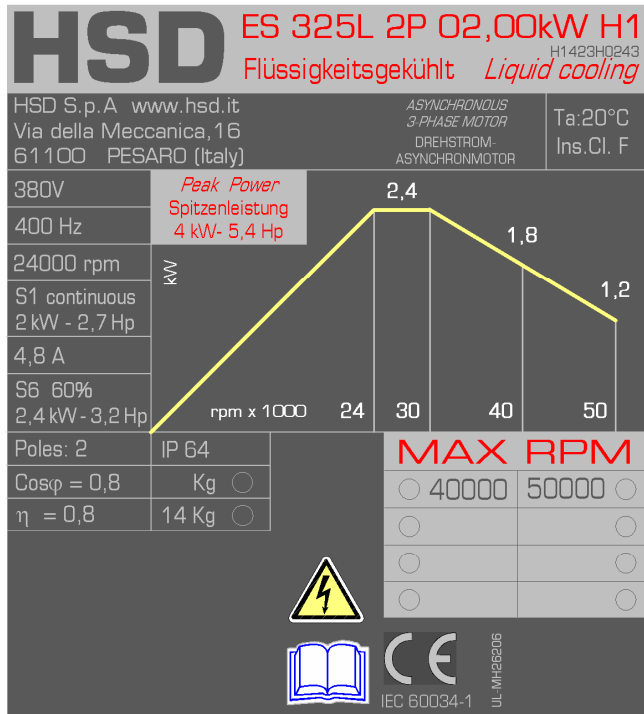




Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
2,0 kW	2,4 kW	H1423H0243
2,0 kW	2,4 kW	H1423H0233

ES 325



H1423H0243 Rev.00 (H1210H0114 / YST2076.040.23)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380								
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	667	833								
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	24000	30000	40000	50000								
Tipo di servizio	Betriebsart	Duty type		S1 cont.	S6 60% cont.	S1 cont.	S6 60% cont.	S1 cont.	S6 60% cont.						
Potenza nominale	Nennleistung	Rated power	kW	2	2,4	2	2,4	1,5	1,8	1	1,2				
Coppia nominale	Nennmoment	Rated torque	Nm	0,80	1,0	0,64	0,76	0,36	0,43	0,19	0,23				
Corrente nominale	Nennstrom	Rated current	A	5	6	4	5	3	4						
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η								0,8					
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ								0,8					
Numero di poli	Polzahl	Number of poles								2					
Classe di isolamento	Isolierklasse	Insulation class								F					
Tipo di raffreddamento	Kühlungstyp	Type of cooling								Raffreddamento a liquido / Flüssigkeit / Liquid cooling					
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg							14					

[(*) fornita da inverter]

[(*) von Inverter
geliefert]

[(*) from inverter]

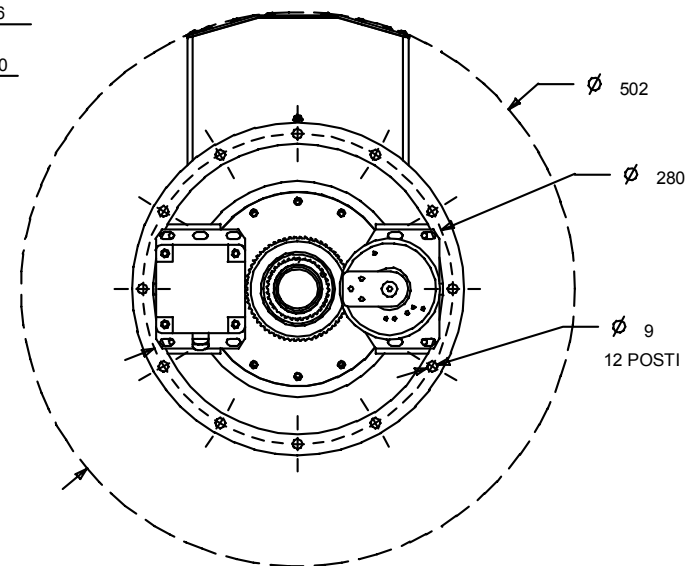
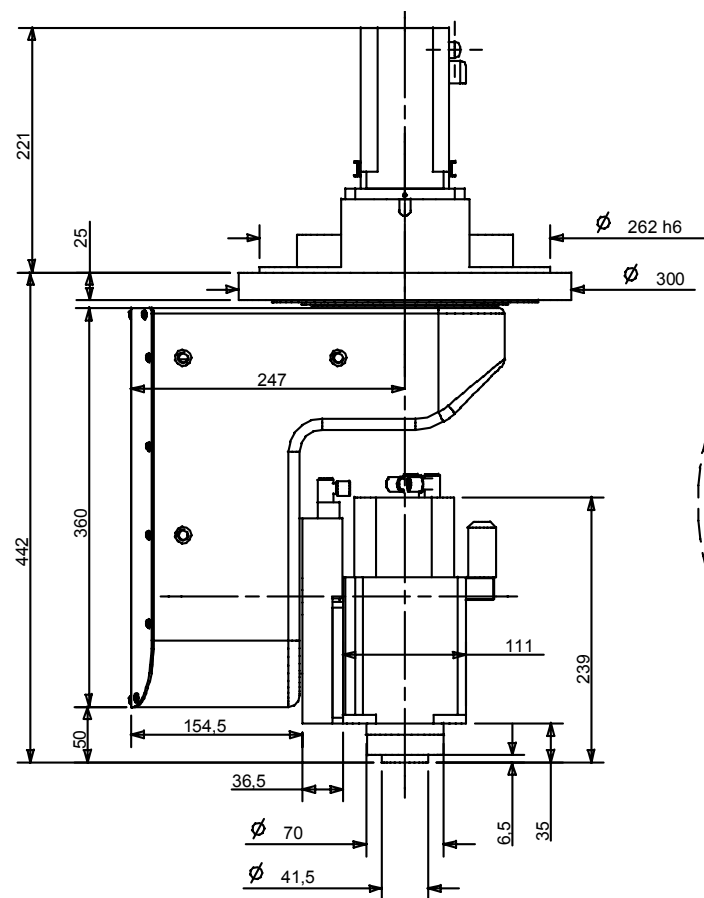
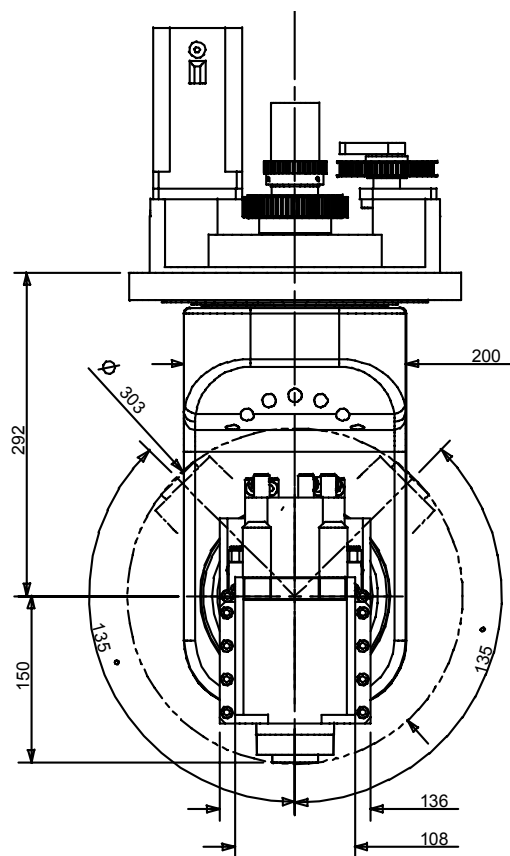
H1423H0233 Rev.02 SP.072.045.21

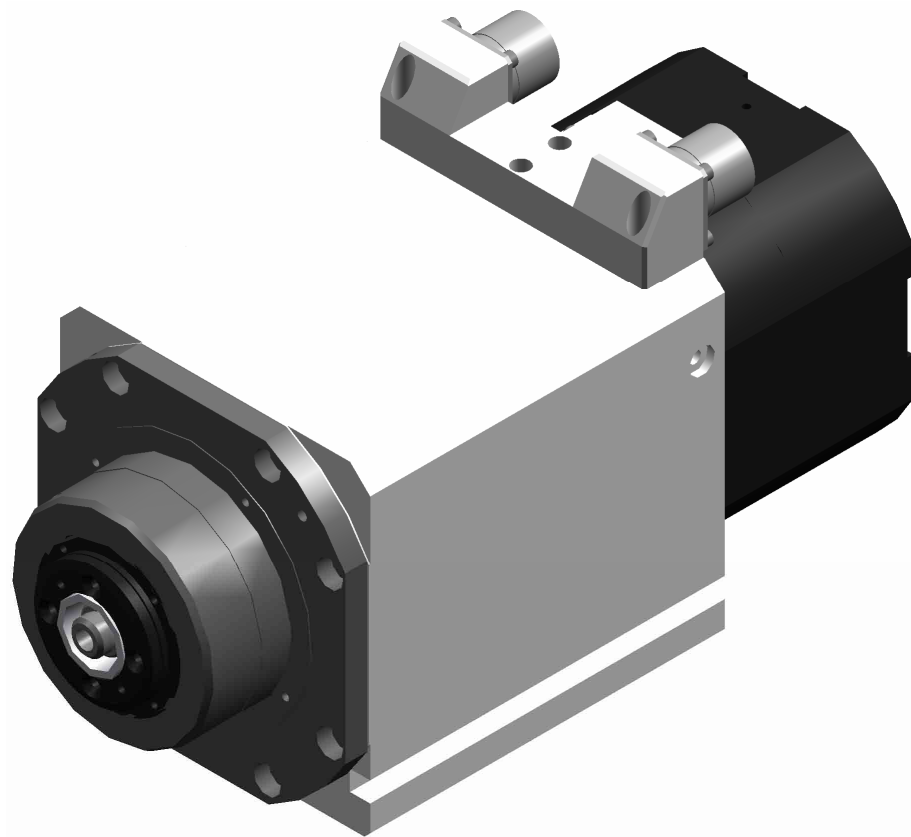
Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380								
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	267	400	500	667								
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	16000	24000	30000	40000								
Tipo di servizio	Betriebsart	Duty type		S1 cont.	S6 60% cont.	S1 cont.	S6 60% cont.	S1 cont.	S6 60% cont.						
Potenza nominale	Nennleistung	Rated power	kW	2	2,4	2	2,4	1,7	2	1,5	1,7				
Coppia nominale	Nennmoment	Rated torque	Nm	1,2	1,4	0,80	0,95	0,54	0,64	0,35	0,41				
Corrente nominale	Nennstrom	Rated current	A	4,8	5,8	4,8	5,8	4,6	5,4	4,0	4,7				
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η									0,8				
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ									0,8				
Numero di poli	Polzahl	Number of poles									2				
Classe di isolamento	Isolierklasse	Insulation class									F				
Tipo di raffreddamento	Kühlungstyp	Type of cooling									Raffreddamento a liquido / Flüssigkeit / Liquid cooling				
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg								14				

[(*) fornita da inverter]

[(*) von Inverter
geliefert]

[(*) from inverter]

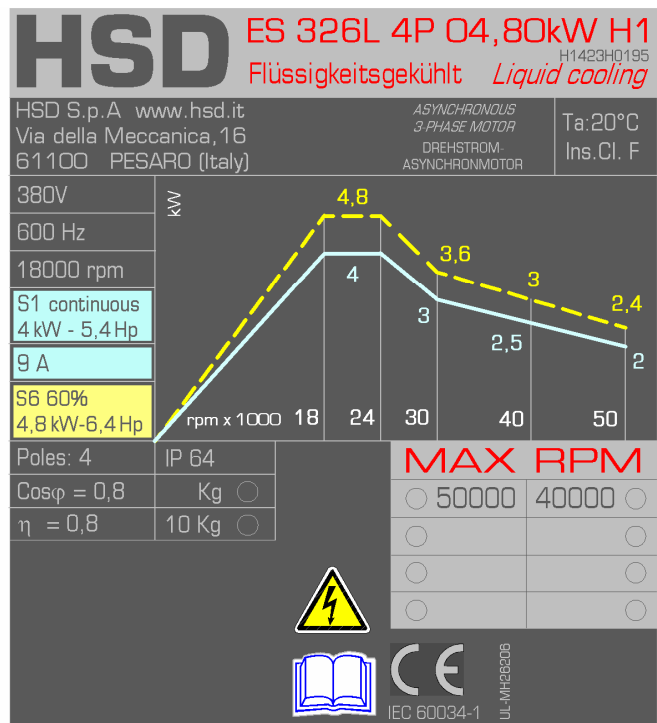




Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
4,0 kW	4,8 kW	H1423H0195

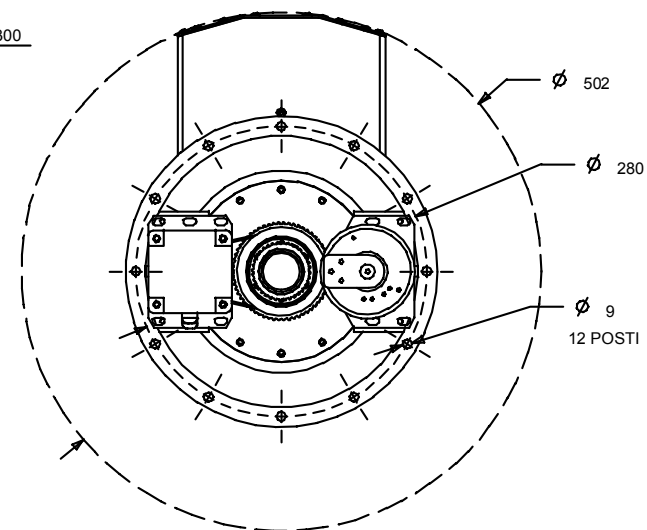
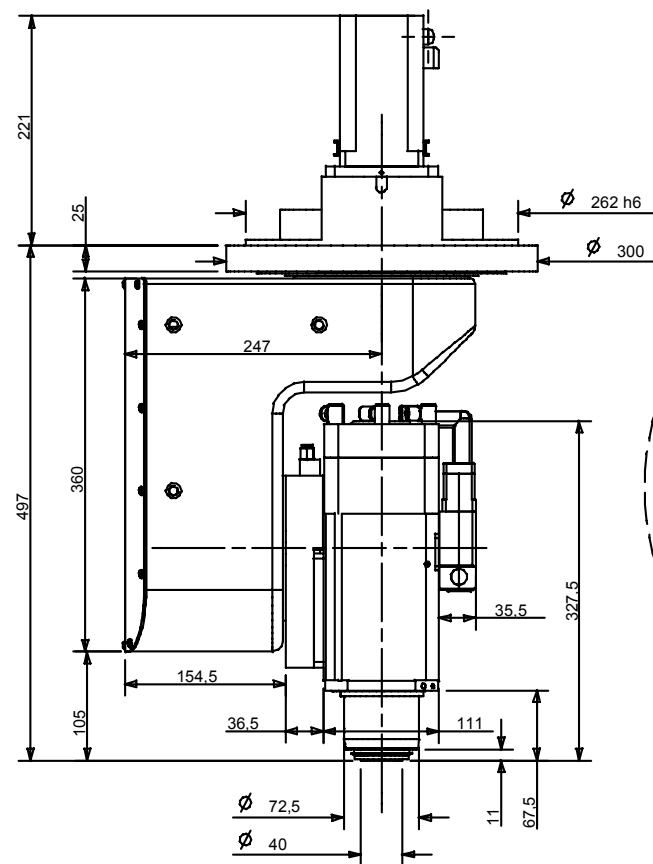
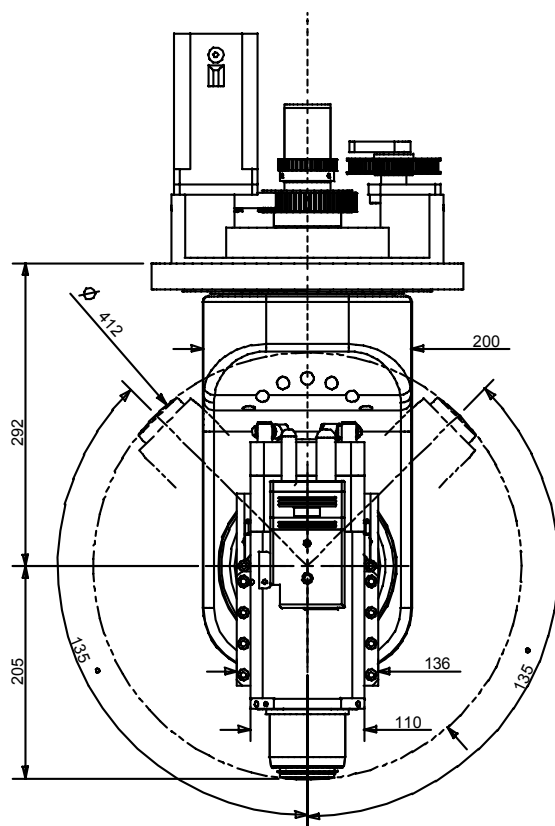
ES 326

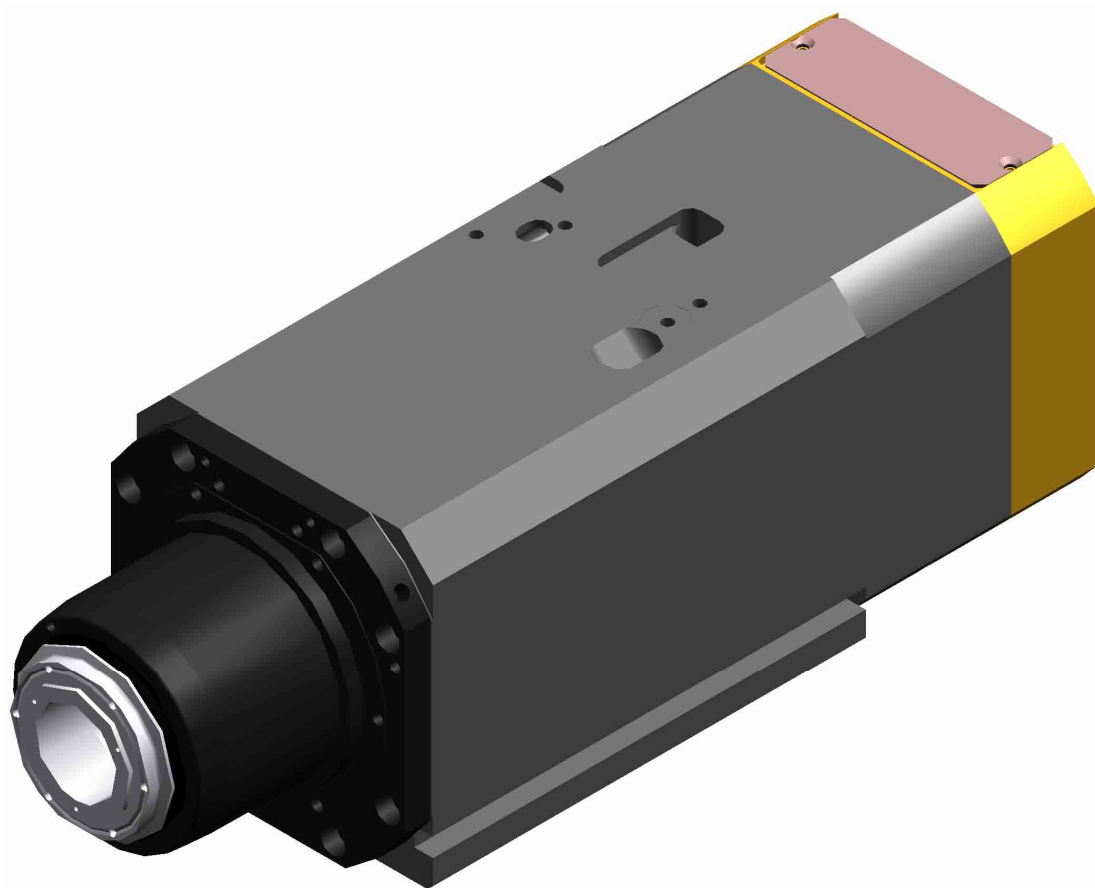


H1423H0195 Rev.01 (SP.090.045.41)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380	380										
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	600	800	1000	1333	1667										
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	18000	24000	30000	40000	50000										
Tipo di servizio	Betriebsart	Duty type		S1 cont 60%	S6 60% 4,8	S1 cont 60%	S6 60% 4,8	S1 cont 60%	S6 60% 3,6	S1 cont 60%	S6 60% 2,5	S1 cont 60%	S6 60% 3	S1 cont 60%	S6 60% 2,4			
Potenza nominale	Nennleistung	Rated power	kW	4	4,8	4	4,8	3	3,6	2,5	3	2	2,4					
Coppia nominale	Nennmoment	Rated torque	Nm	2,1	2,6	1,6	1,9	0,95	1,2	0,60	0,72	0,4	0,46					
Corrente nominale	Nennstrom	Rated current	A	9	10,8	9	10,8	7,5	8,9	6,5	7,7	5,4	6,2					
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η																
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ																
Numero di poli	Polzahl	Number of poles																
Classe di isolamento	Isolierklasse	Insulation class																
Tipo di raffreddamento	Kühlungstyp	Type of cooling																
Peso	Gewicht	Weight	kg															

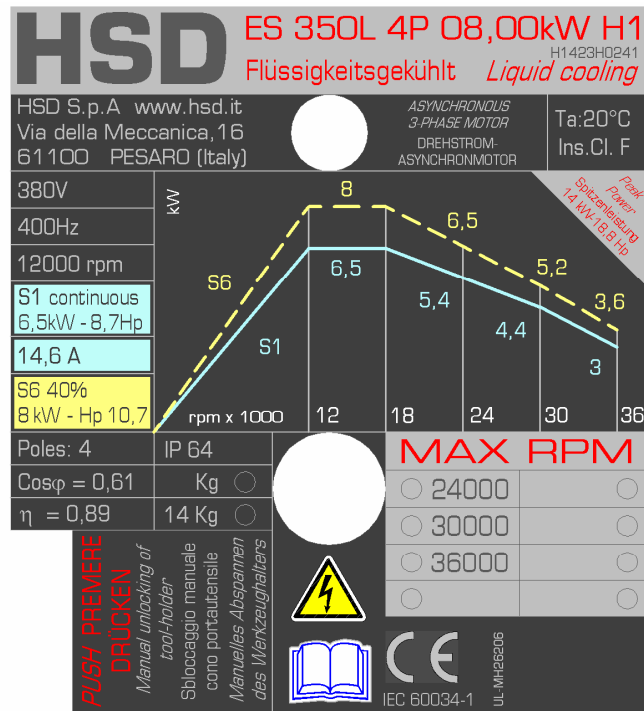
[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]



**ES 350**

Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
6,5 kW	8,0 kW	H1423H0241
8,0 kW	9,0 kW	H1423H0178

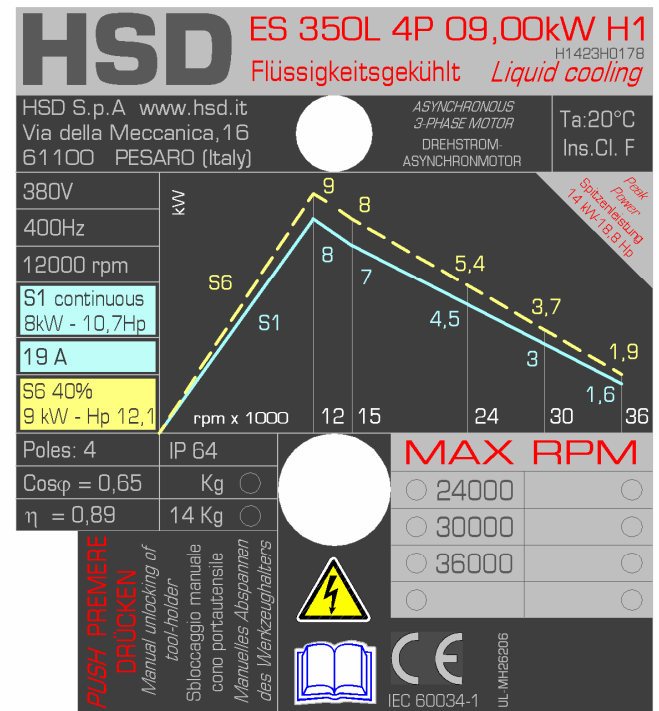


H1423H0241 Rev.01 (SP 90.100.4C.Par)

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380	380
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	600	800	1000	1200
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	18000	24000	30000	36000
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 40% cont	S1 cont	S6 40% cont	S1 cont
Potenza nominale	Nennleistung	Rated power	kW	6,5	8	6,5	8	5,4
Coppia nominale	Nennmoment	Rated torque	Nm	5,2	6,4	3,5	4,2	2,2
Corrente nominale	Nennstrom	Rated current	A	14,6	17,5	14,6	17,5	12
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η						0,89
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ						0,61
Numero di poli	Polzahl	Number of poles						4
Classe di isolamento	Isolierklasse	Insulation class						F
Tipo di raffreddamento	Kühlungstyp	Type of cooling						Raffreddamento a liquido / Flüssigkeit / Liquid cooling
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg					~ 14

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
HSK F50	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
HSK F50	CERAMICI / KERAMIK / CERAMIC	CERAMICI / KERAMIK / CERAMIC	30000rpm
HSK F50	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	36000rpm

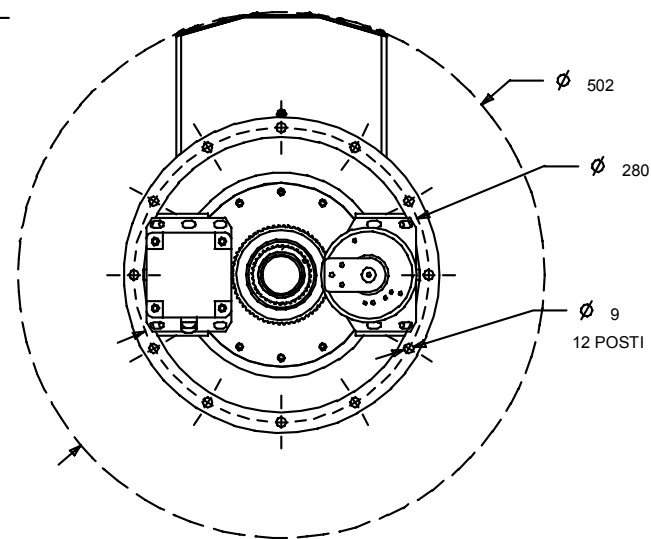
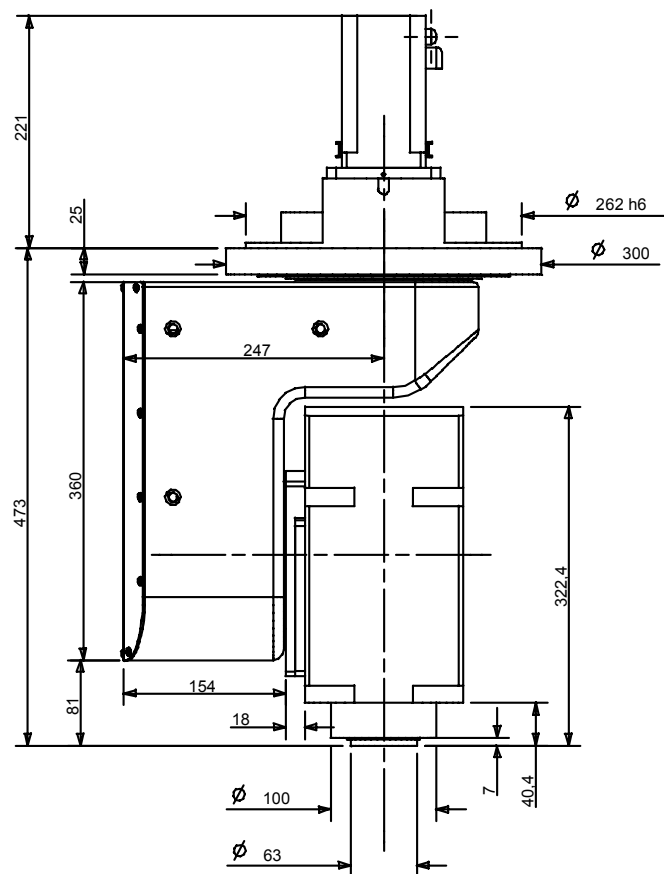
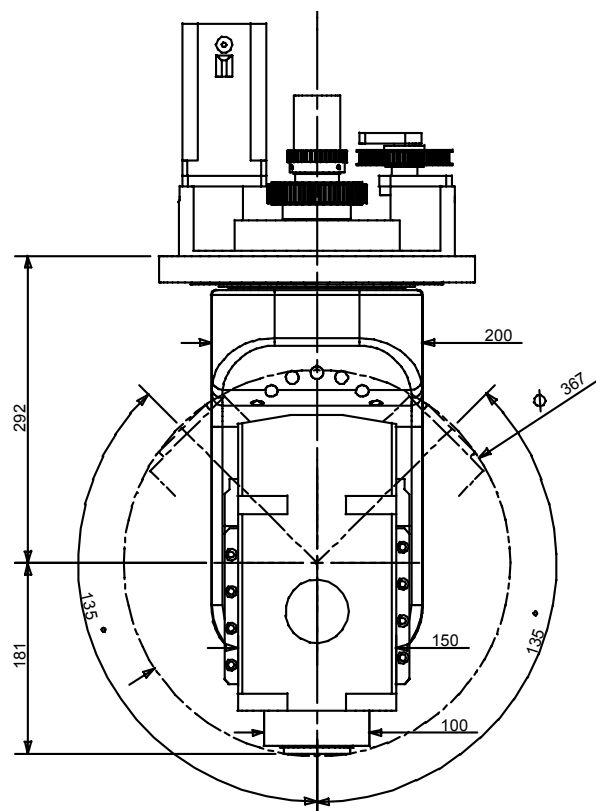


H1423H0178 Rev.01 (SP 90.100.4C)

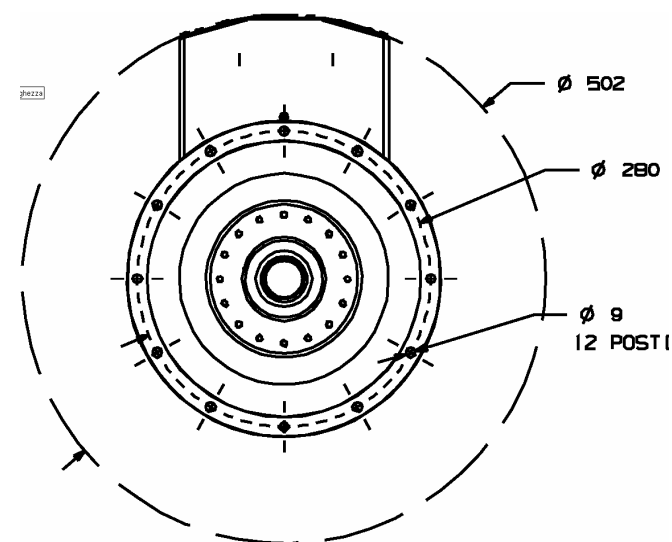
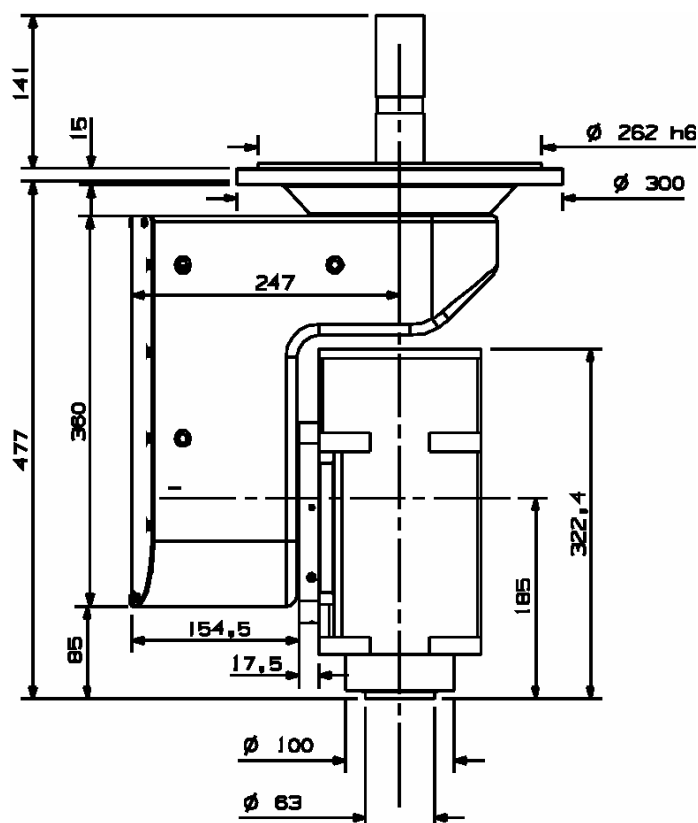
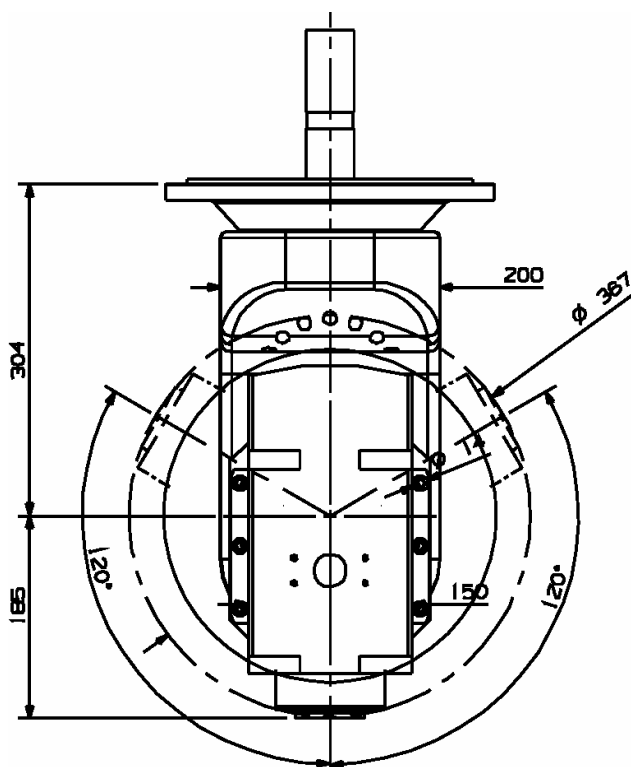
Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380	380
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	800	1000	1200
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	24000	30000	36000
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 40% cont	S1 cont	S6 40% cont	S1 cont
Potenza nominale	Nennleistung	Rated power	kW	8	9	7	8	4,5
Coppia nominale	Nennmoment	Rated torque	Nm	6,4	7,2	4,5	5,1	1,8
Corrente nominale	Nennstrom	Rated current	A	19	20,7	15,5	17,7	10
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η						0,89
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ						0,65
Numero di poli	Polzahl	Number of poles						4
Classe di isolamento	Isolierklasse	Insulation class						F
Tipo di raffreddamento	Kühlungstyp	Type of cooling						Raffreddamento a liquido / Flüssigkeit / Liquid cooling
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg					~ 14

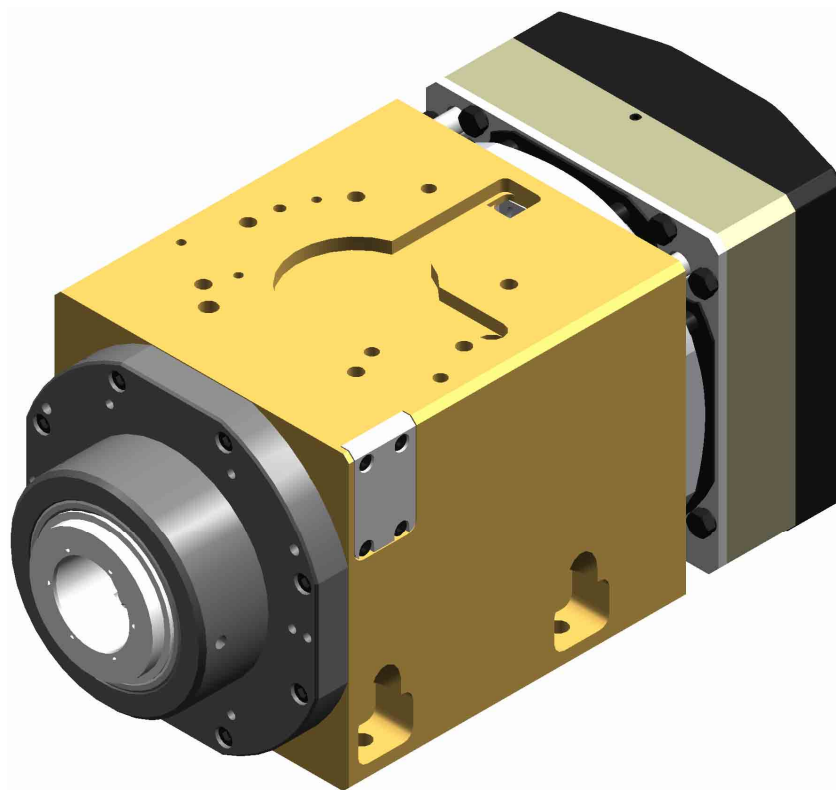
[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
HSK F50	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
HSK F50	CERAMICI / KERAMIK / CERAMIC	CERAMICI / KERAMIK / CERAMIC	30000rpm
HSK F50	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	36000rpm



Versione Monoasse (Asse "A" orizzontale)

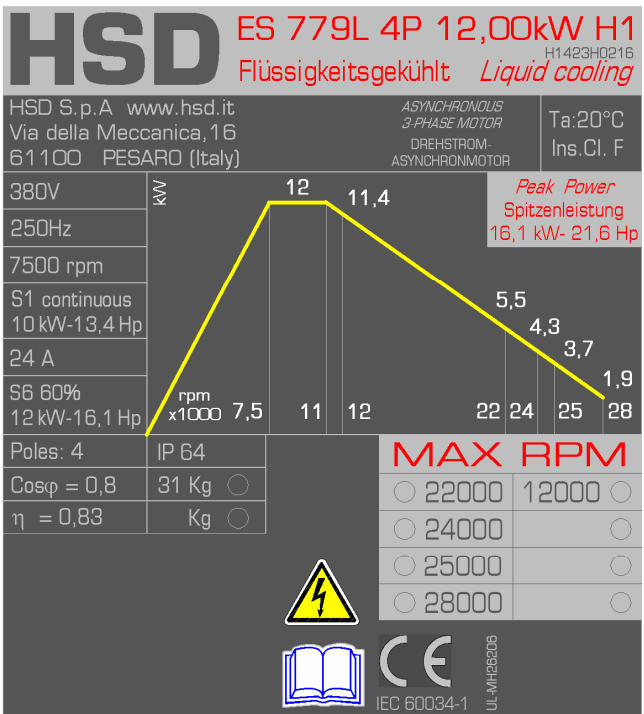




Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
10 kW	12 kW	H1423H0212
10 kW	12 kW	H1423H0216
12 kW	13 kW	H1423H0240

ES 779

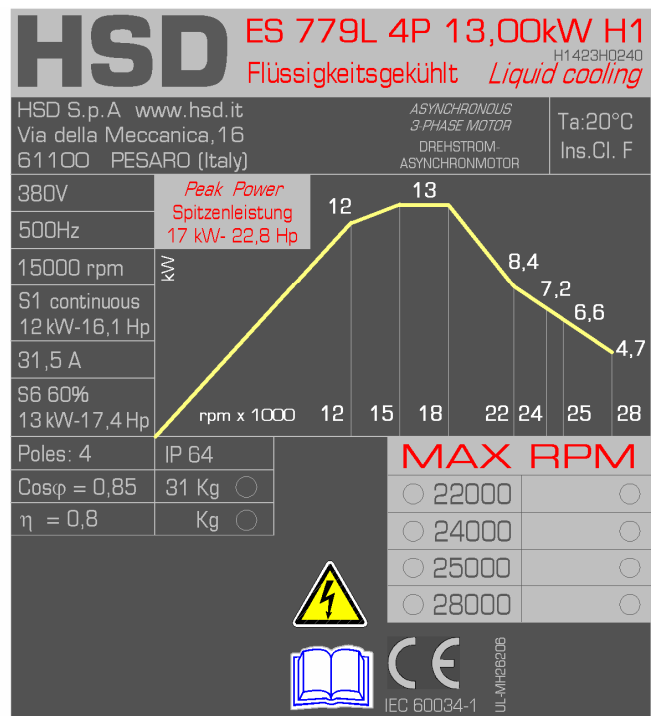


H1423H0216 Rev.02 (SP.120.080.45)

[illegible]

[(*) fornita da inverter]	[(*) von Inverter geliefert]	[(*) from inverter]
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ATTACCO PORTAUTENSILE	CUSCINETTI ANTERIORI	CUSCINETTI POSTERIORI	VELOCITÀ MASSIMA
WERKZEUGHALTER	VORDERE LAGER	REAR LAGER	MAX. DREHZAHL
TOOL HOLDER	FRONT BEARINGS	REAR BEARINGS	MAX SPEED
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	22000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	25000rpm
HSK E40 - F50	ACCIAIO / STAHL / STEEL	ACCIAIO / STAHL / STEEL	12000rpm
HSK E40 - F50	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
HSK E40 - F50	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm

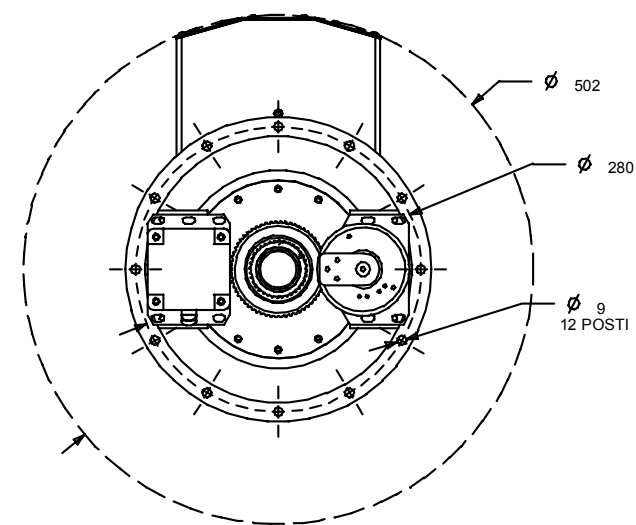
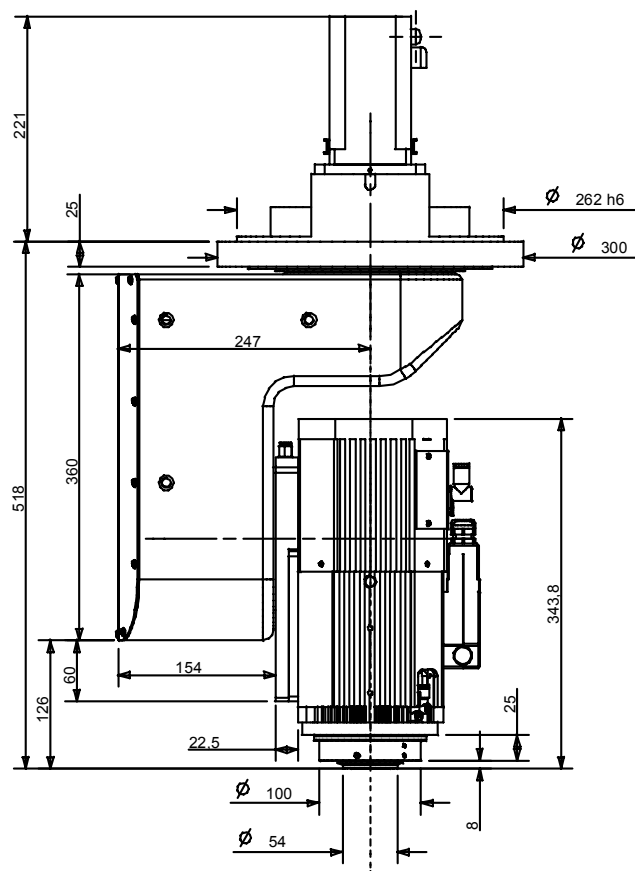
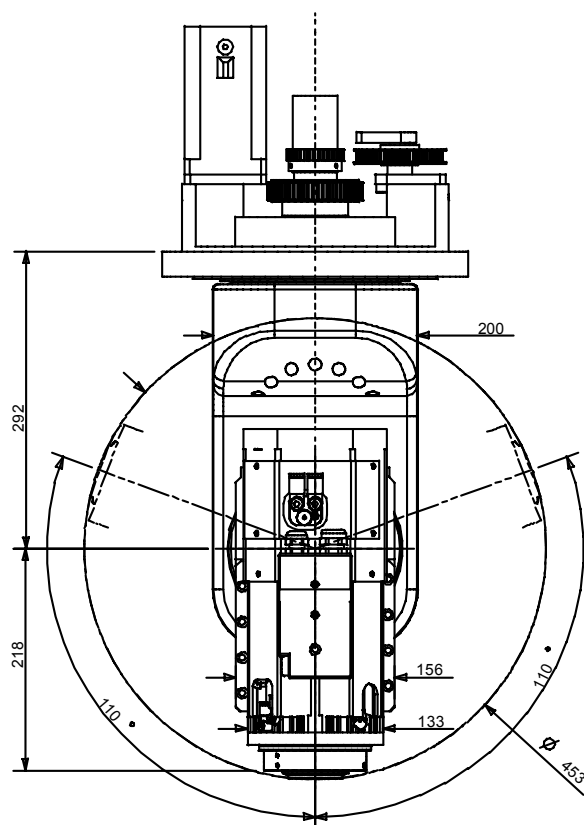


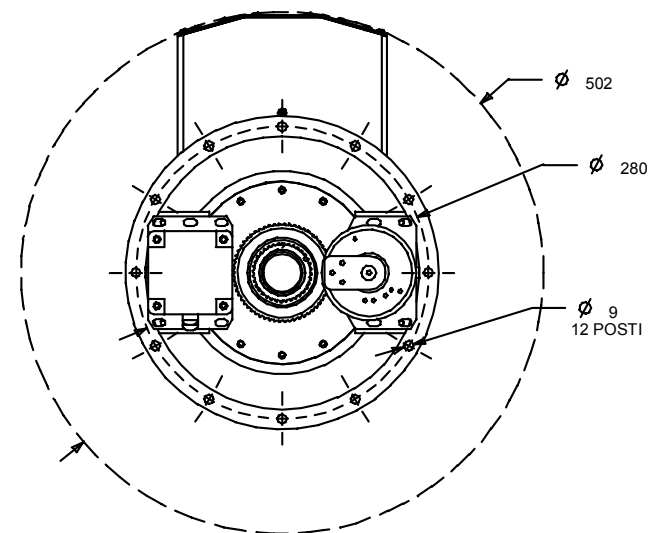
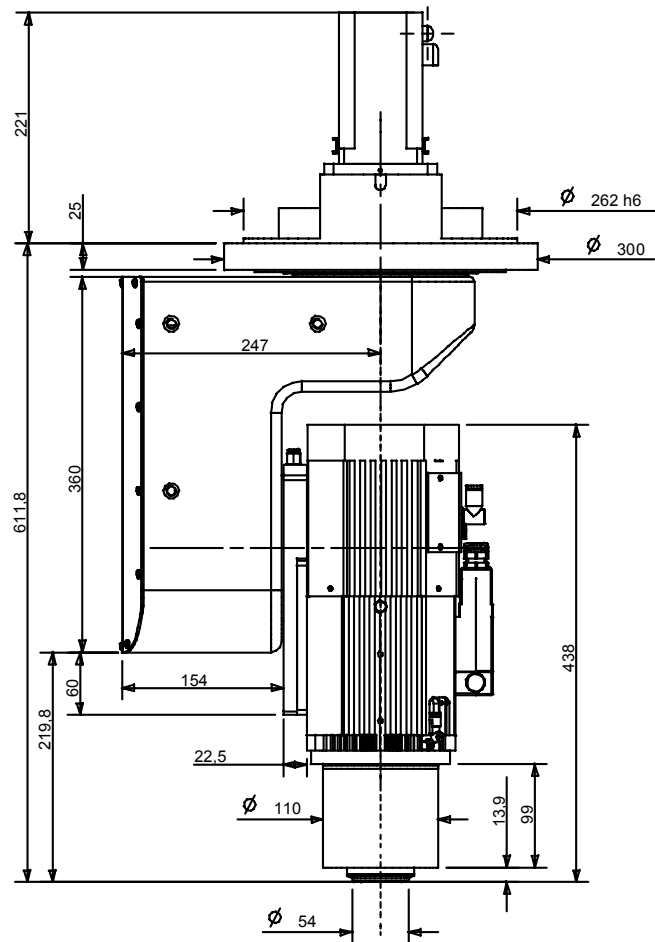
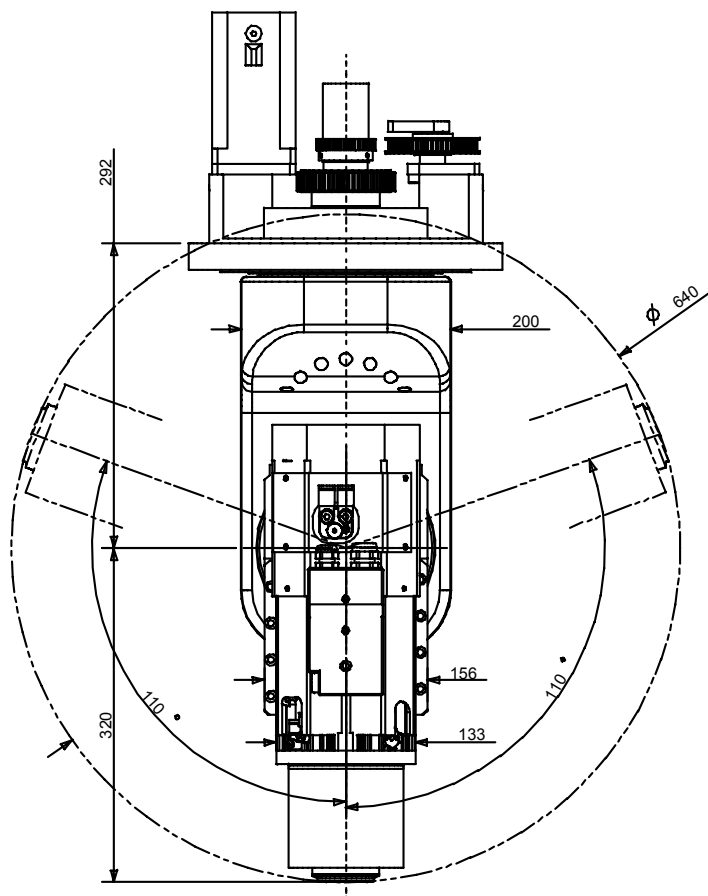
H1423H0240 Rev.00 (SP.120.80.44.Par)

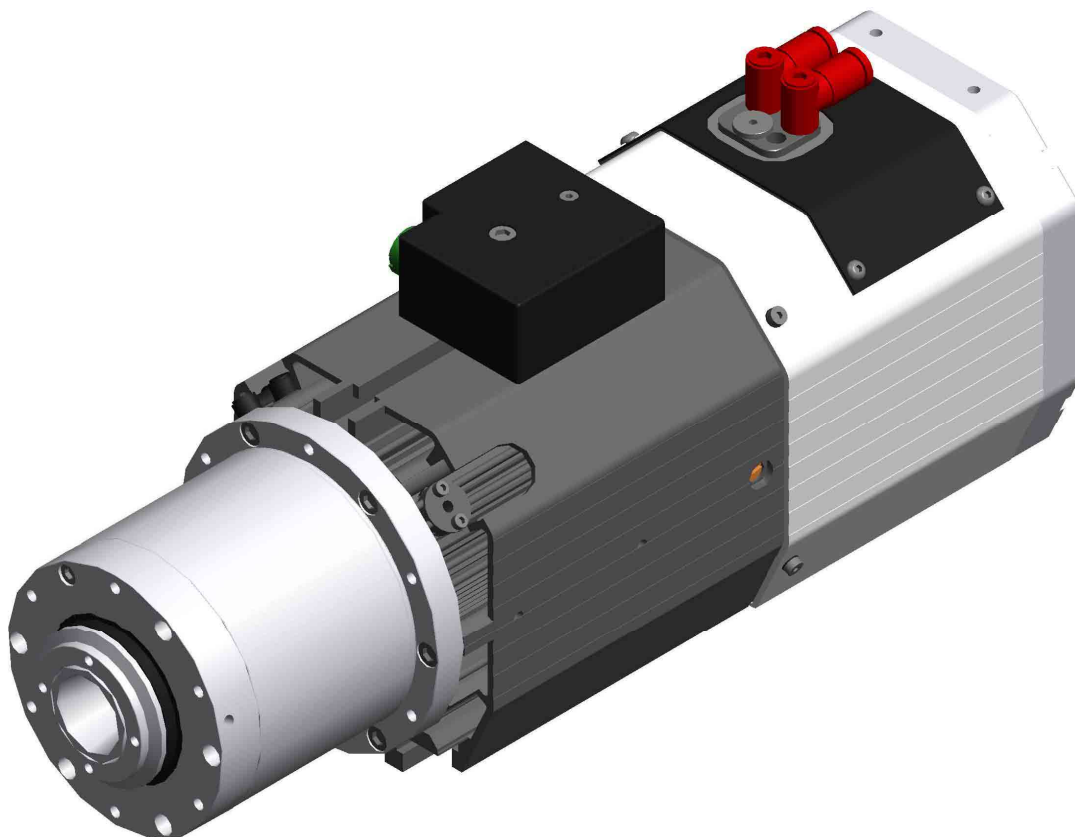
Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	310	380	380	380	380	380	380	
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	600	733	800	833	933	
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	18000	22000	24000	25000	28000	
Tipo di servizio	Betriebsart	Duty type		S1 cont S6 60%	S1 cont S6 60%	S1 cont S6 60%	S1 cont S6 60%	S1 cont S6 60%	S1 cont S6 60%	S1 cont S6 60%	
Potenza nominale	Nennleistung	Rated power	kW	10 12	12 13	12 13	7 8,4	6,7 7,2	5 6,6	4,6 4,7	
Coppia nominale	Nennrehmoment	Rated torque	Nm	8 9,6	7,6 8,2	6,4 6,9	3 3,7	2,7 2,9	1,8 2,5	1,6 1,6	
Corrente nominale	Nennstrom	Rated current	A	31 37,5	31,5 34,1	31 33,6	20 24	18,6 20	13,7 18	12 12,5	
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η									
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ									
Numero di poli	Polzahl	Number of poles									
Classe di isolamento	Isolierklasse	Insulation class									
Tipo di raffreddamento	Kühlungstyp	Type of cooling									
Peso versione NASO CORTO	Gewicht Version KURZE NASE	Weight of SHORT NOSE variant	kg								

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	22000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	25000rpm
HSK E40 - F50	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
HSK E40 - F50	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm



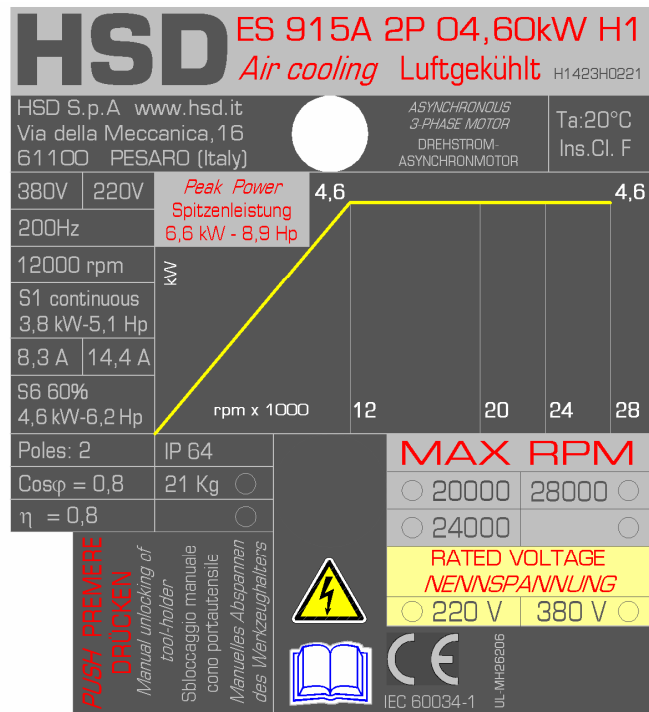




Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
3,8 kW	4,6 kW	H1423H0221
5,0 kW	6,0 kW	H1423H0206

ES 915

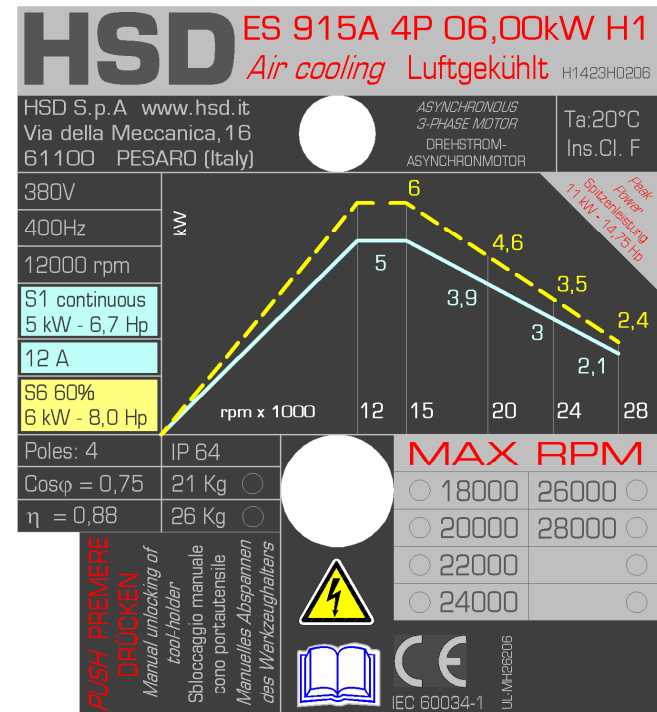


H1423H0221 Rev.02 (SP.110.70.24)

H1423H0221 Rev.02 (SP.110.70.24)			COLLEGAMENTO STELLA STERNSCHALTUNG STAR CONNECTIONS								COLLEGAMENTO TRIANGOLO DREIECKSCHALTUNG DELTA CONNECTIONS								
Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380	220	220	220	220	220	220	220	220	220	220		
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	200	333	400	466	200	333	400	466	200	333	400	466	200	333		
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	20000	24000	28000	12000	20000	24000	28000	12000	20000	24000	28000	12000	20000		
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%		
Potenza nominale	Nennleistung	Rated power	kW	3,8	4,6	3,8	4,6	3,8	4,6	3,8	4,6	3,8	4,6	3,8	4,6	3,8	4,6		
Coppia nominale	Nennmoment	Rated torque	Nm	3	3,7	1,8	2,2	1,5	1,8	1,3	1,6	3	3,7	1,8	2,2	1,5	1,8		
Corrente nominale	Nennstrom	Rated current	A	8,3	10	8,3	10	8,3	10	8,3	10	14,4	17,3	14,4	17,3	14,4	17,3		
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η						0,8											
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ						0,8											
Numero di poli	Polzahl	Number of poles						2											
Classe di isolamento	Isolierklasse	Insulation class						F											
Tipo di raffreddamento	Kühlungstyp	Type of cooling		Elettroventola / Elektrolüfter / Cooling fan															
Peso versione NASO CORTO	Gewicht Version KURZE NASE	Weight of SHORT NOSE variant	kg	~ 21															

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
ISO30	ACCIAIO / STAHL / STEEL	ACCIAIO / STAHL / STEEL	20000rpm
ISO30	CERAMIC / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
ISO30	CERAMICI / KERAMIK / CERAMIC	CERAMICI / KERAMIK / CERAMIC	24000rpm
ISO30	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm

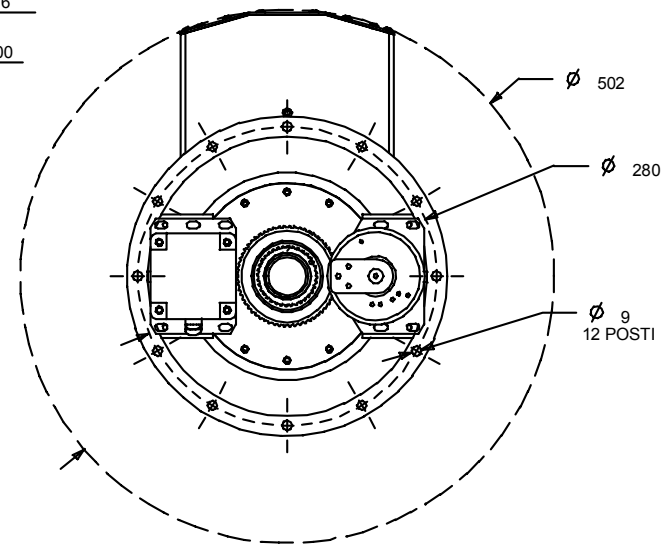
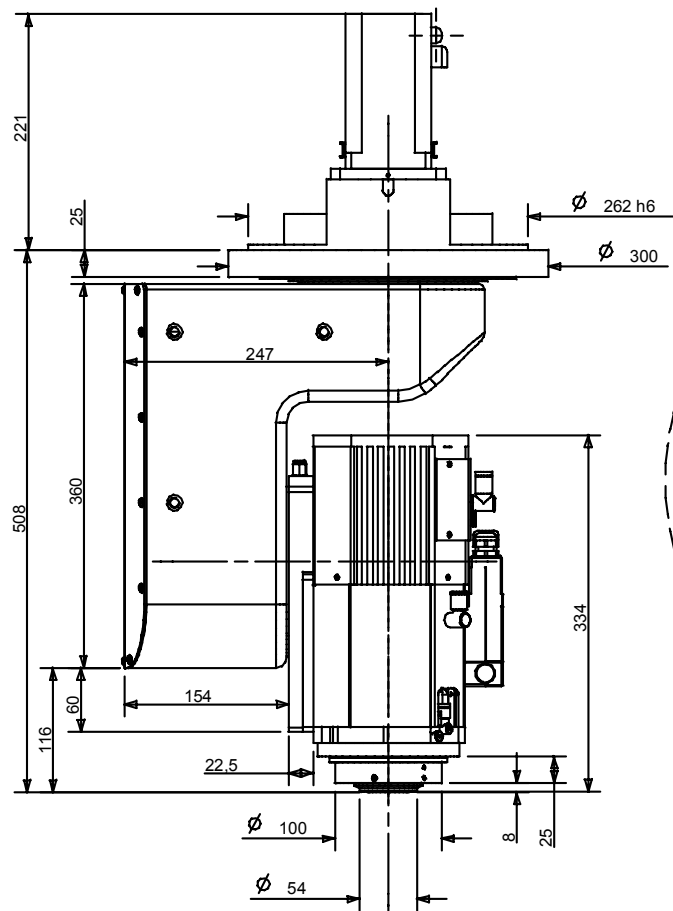
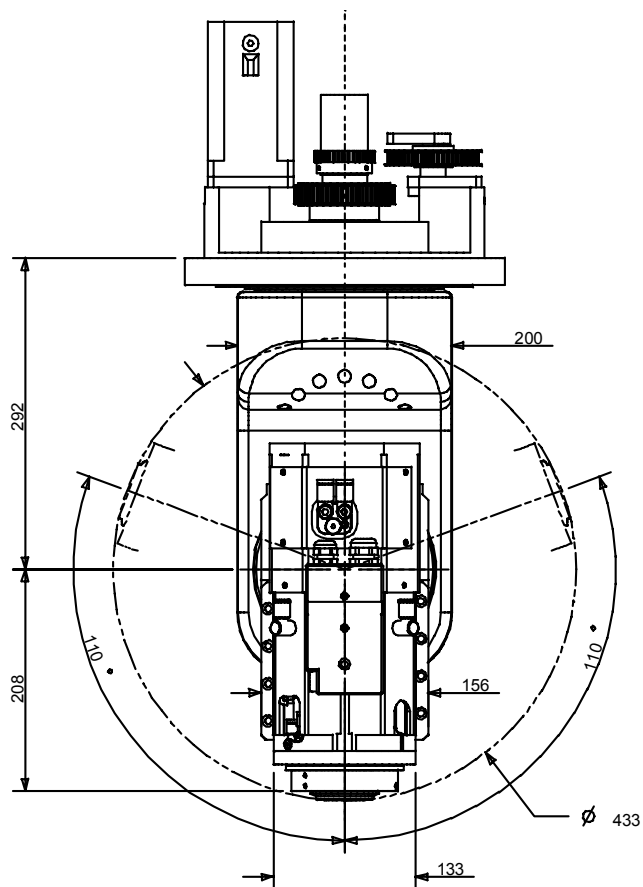


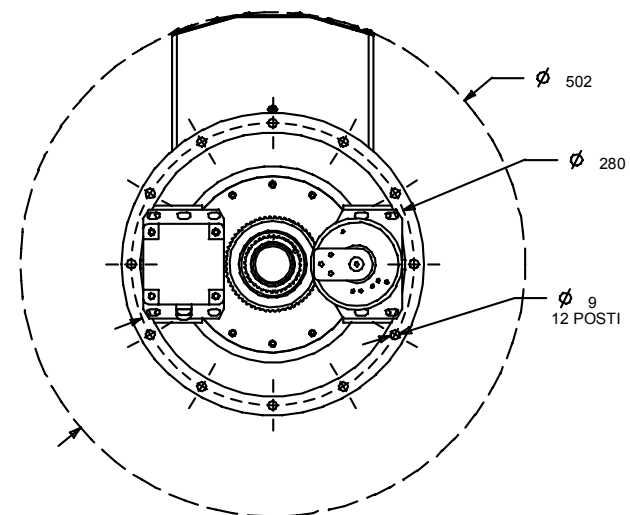
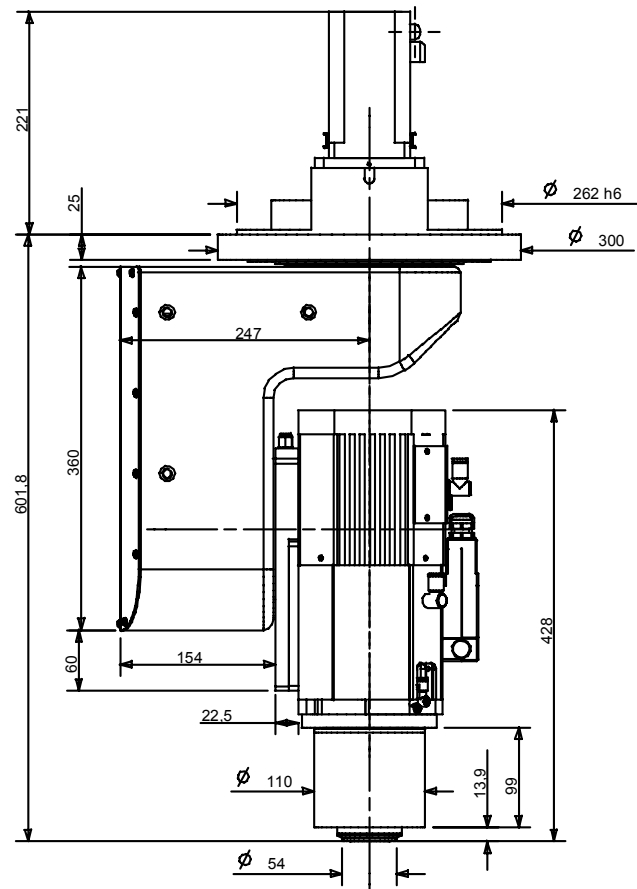
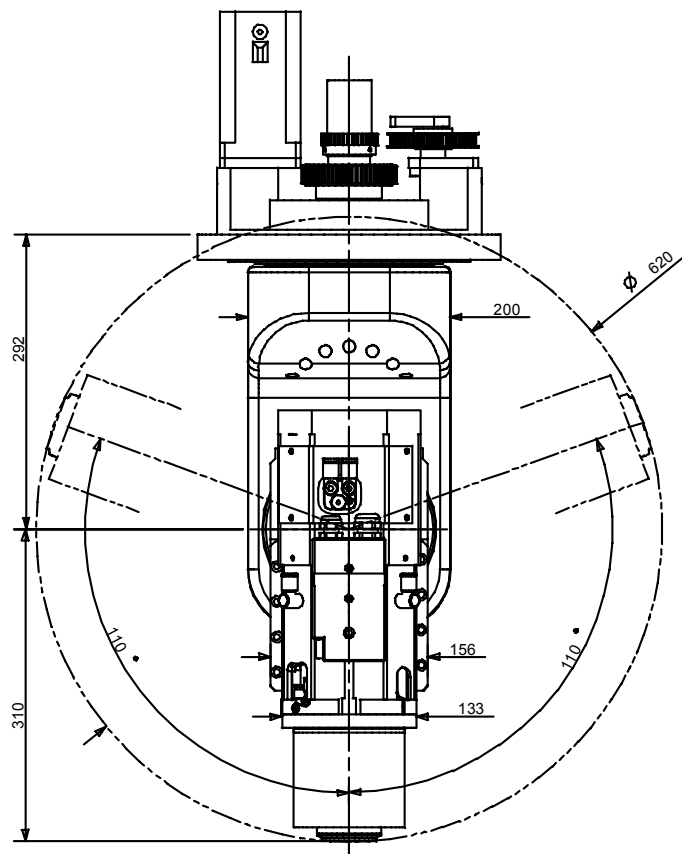
H1423H0206 Rev.01

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380	380													
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	667	800	933													
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	20000	24000	28000													
Tipo di servizio	Betriebsart	Duty type		S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%	S1 cont	S6 60%								
Potenza nominale	Nennleistung	Rated power	kW	5	6	5	6	3,9	4,6	3	3,5	2,1	2,4								
Coppia nominale	Nennmoment	Rated torque	Nm	4	4,8	3,2	3,8	1,7	2,2	1,2	1,4	0,7	0,8								
Corrente nominale	Nennstrom	Rated current	A	12	14	10,5	14	9,2	10,5	7	8	4	4,5								
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η		0,86																	
Fattore di potenza cos φ	Leistungsfaktor cos φ	Power factor cos φ		0,82																	
Numero di poli	Polzahl	Number of poles		4																	
Classe di isolamento	Isolierklasse	Insulation class		F																	
Tipo di raffreddamento	Kühlungstyp	Type of cooling		Elettroventola / Elektrolüfter / Cooling fan																	
Peso versione NASO CORTO	Gewicht Version KURZE NASE	Weight of SHORT NOSE variant	kg	~ 21																	
Peso versione NASO LUNGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg	~ 26																	

[(*) fornita da inverter] [(*) von Inverter geliefert] [(*) from inverter]

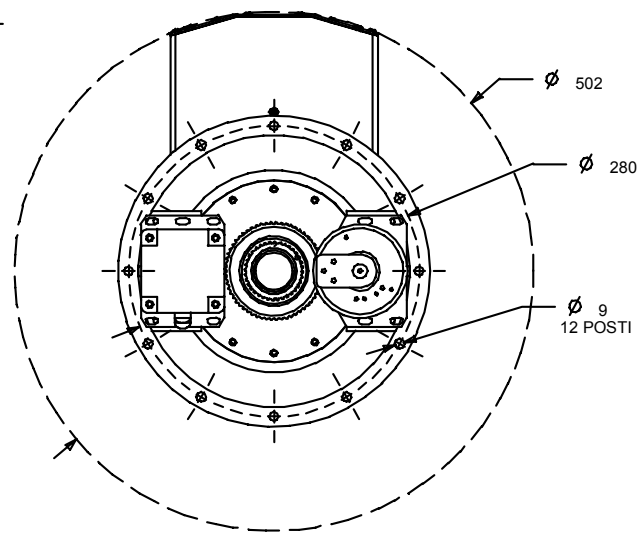
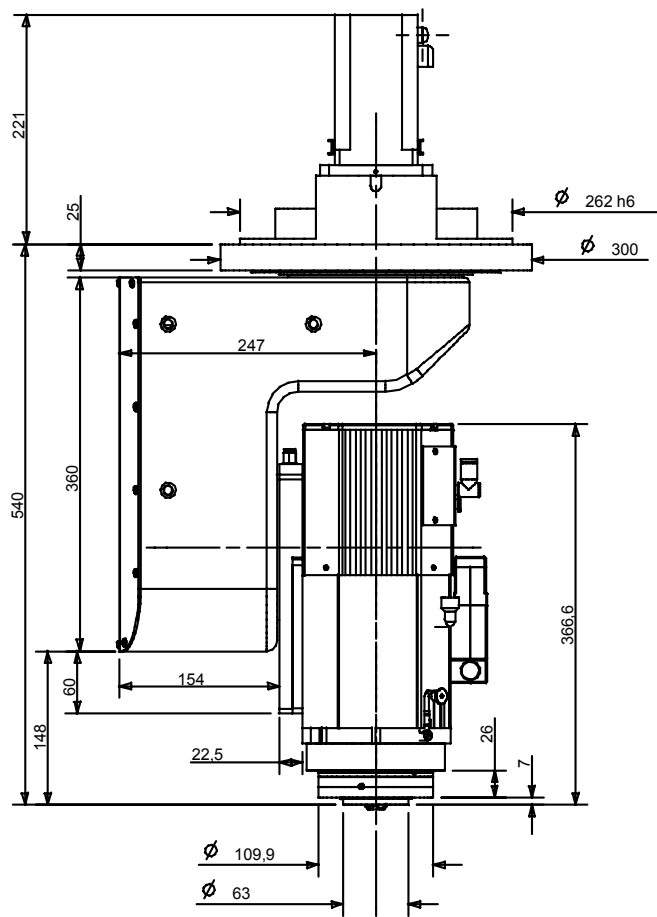
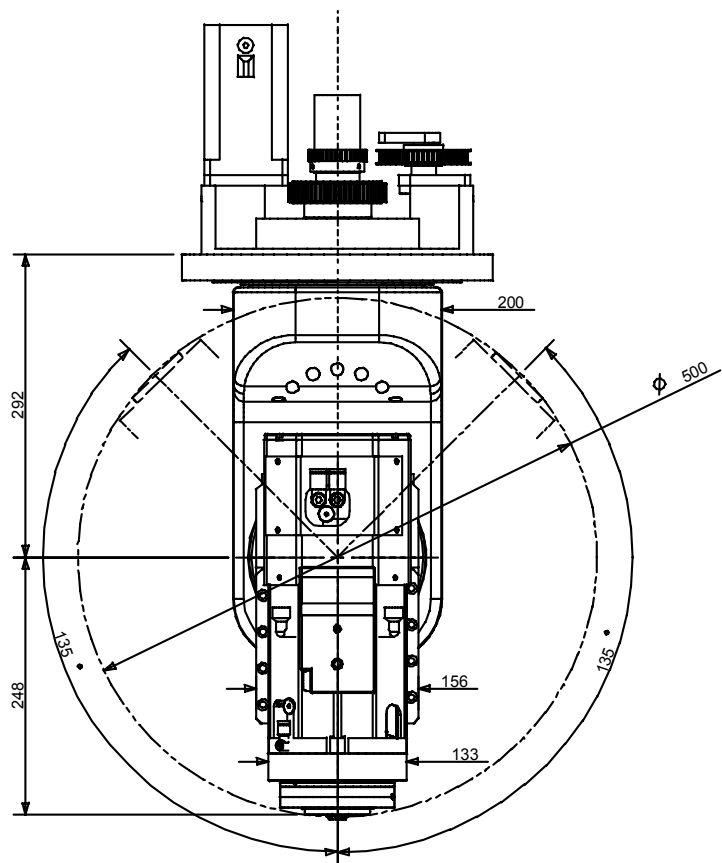
ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAHL MAX SPEED
ISO30	ACCIAIO / STAHL / STEEL	ACCIAIO / STAHL / STEEL	20000rpm
ISO30	CERAMIC / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm
ISO30	CERAMICI / KERAMIK / CERAMIC	CERAMICI / KERAMIK / CERAMIC	24000rpm
ISO30	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm
HSK F63	ACCIAIO / STAHL / STEEL	ACCIAIO / STAHL / STEEL	20000rpm
HSK F63	CERAMIC / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	24000rpm





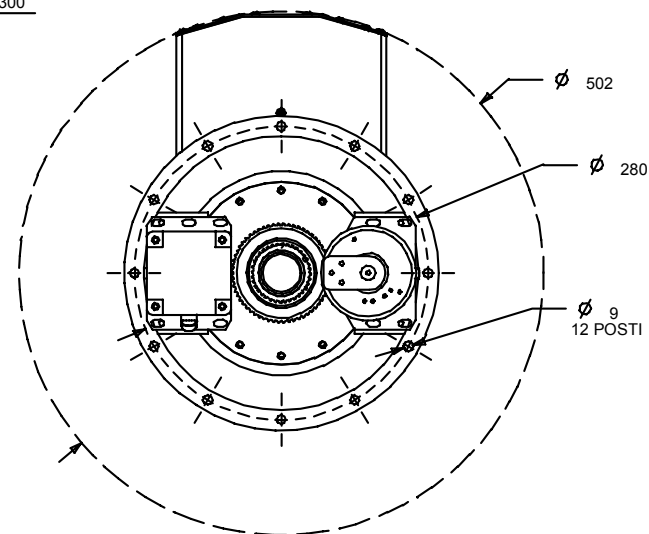
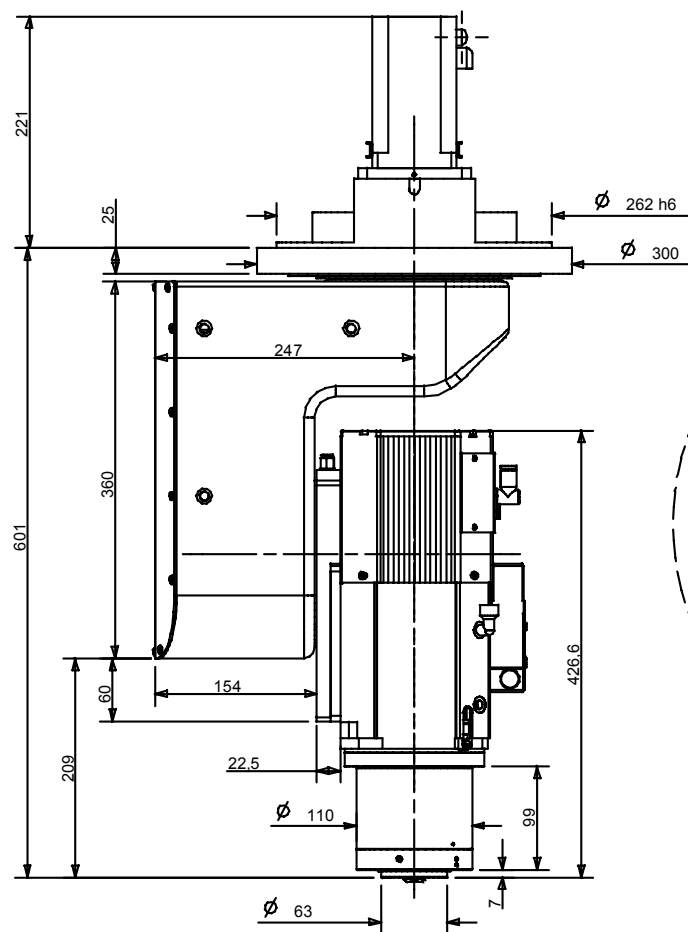
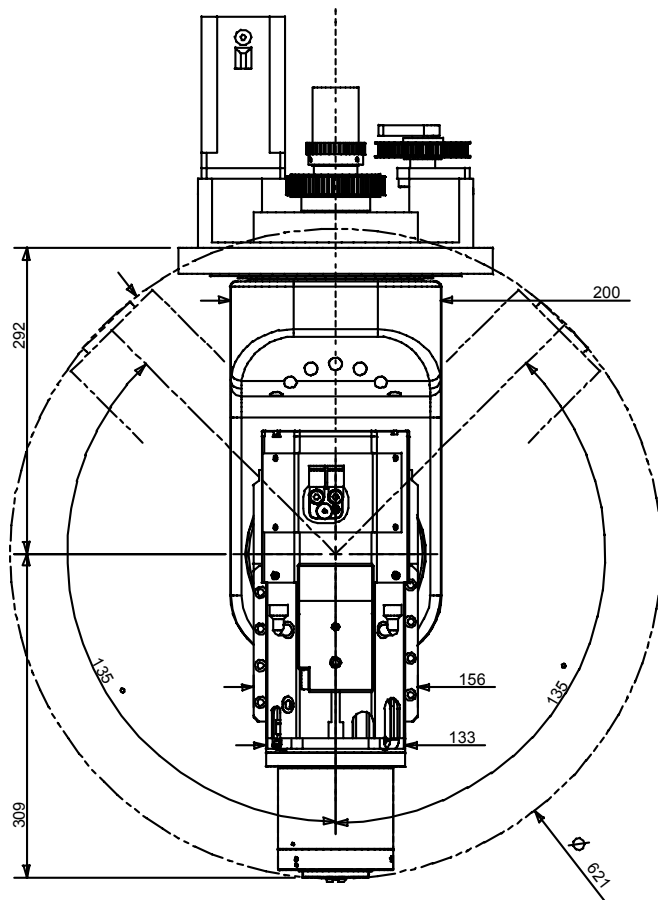
HS450 + ES915L ISO30 Long Nose Liquid Cooling

Drawing code: 5530H0161



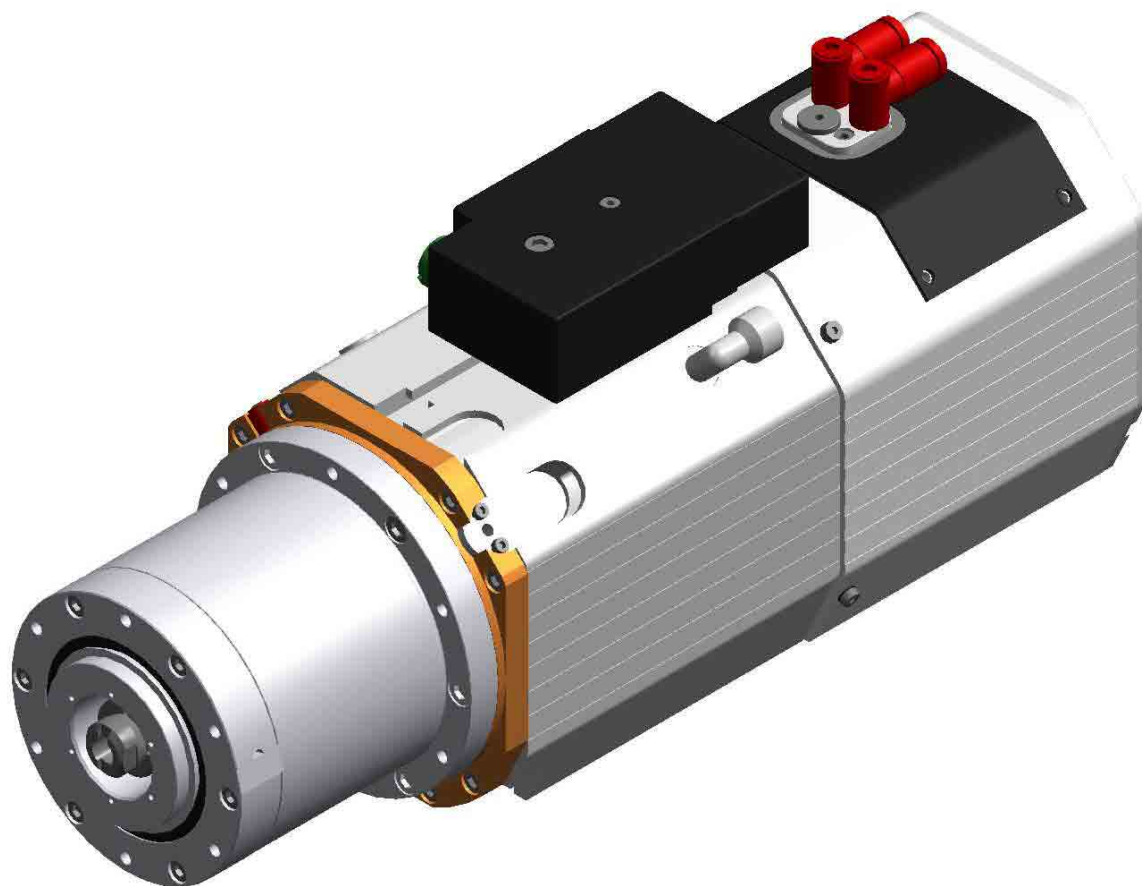
HS450 + ES915L HSK F63 Short Nose Liquid Cooling

Drawing code: 5530H0157



HS450 + ES915L HSK F63 Long Nose Liquid Cooling

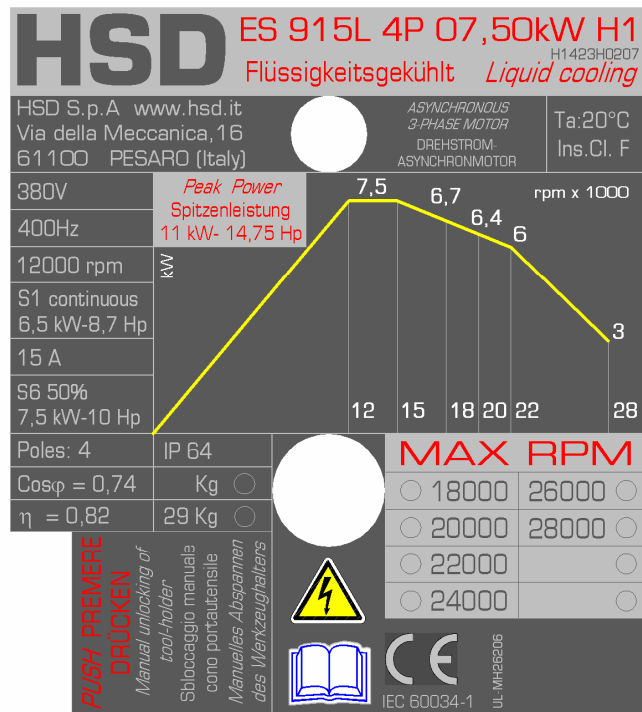
Drawing code: 5530H0158



Verfügbare Versionen
Available models
Versioni disponibili

Nennleistung <i>Rated power</i> Potenza nominale		Hinweis <i>Reference</i> Riferimento
S1 (Cont.)	S6 60%	
6,5 kW	7,5 kW	H1423H0207

ES 915 L



H1423H0207 Rev.00

Tensione nominale (*)	Nennspannung (*)	Rated voltage (*)	V	380	380	380	380	380	380	380									
Frequenza nominale	Nennfrequenz	Rated frequency	Hz	400	500	600	667	733	933										
Velocità nominale	Nominale Geschwindigkeit	Rated speed	rpm	12000	15000	18000	20000	22000	28000										
Tipo di servizio	Betriebsart	Duty type		S1 cont 6,5	S6 50% 7,5	S1 cont 6,5	S6 50% 7,5	S1 cont 6,1	S6 50% 6,7	S1 cont 5,8	S6 50% 6,4	S1 cont 5,5	S6 50% 6	S1 cont 3	S6 50% 3				
Potenza nominale	Nennleistung	Rated power	kW	6,5	7,5	6,5	7,5	6,1	6,7	5,8	6,4	5,5	6	3	3				
Coppia nominale	Nennrehmoment	Rated torque	Nm	5,2	6	4,1	4,8	3,2	3,6	2,8	3,1	2,4	2,6	1	1				
Corrente nominale	Nennstrom	Rated current	A	15	18	15	18	14	15,7	13	16	13,1	14,1	7,5	7,5				
Rendimento nominale η	Nennwirkungsgrad η	Rated efficiency η										0,82							
Fattore di potenza $\cos \varphi$	Leistungsfaktor $\cos \varphi$	Power factor $\cos \varphi$										0,74							
Numero di poli	Polzahl	Number of poles										4							
Classe di isolamento	Isolierklasse	Insulation class										F							
Tipo di raffreddamento	Kühlungstyp	Type of cooling										Raffreddamento a liquido / Flüssigkeit / Liquid cooling							
Peso versione NASO / I / INGO	Gewicht Version LANGE NASE	Weight of LONG NOSE variant	kg									~ 29							

[(*) fornita da inverter] [(**) von Inverter geliefert] [(*) from inverter]

ATTACCO PORTAUTENSILE WERKZEUGHALTER TOOL HOLDER	CUSCINETTI ANTERIORI VORDERE LAGER FRONT BEARINGS	CUSCINETTI POSTERIORI HINTERE LAGER REAR BEARINGS	VELOCITÀ MASSIMA MAX. DREHZAH MAX SPEED
HSK F63	ACCIAIO / STAHL / STEEL	ACCIAIO / STAHL / STEEL	18000rpm
HSK F63	CERAMICI / KERAMIK / CERAMIC	ACCIAIO / STAHL / STEEL	20000rpm
HSK F63	CERAMICI / KERAMIK / CERAMIC	CERAMICI / KERAMIK / CERAMIC	22000rpm
HSK F63	CRONIDUR / CHROMEX	CERAMICI / KERAMIK / CERAMIC	28000rpm

Aktualisierungsverzeichnis – Record of updates – Elenco degli aggiornamenti

Revision – Revision – Revisione	Ergänzt § – Added § – Aggiunto §	Entnommen § – Deleted § – Eliminato §	Geändert § – Changed § – Modificato §
00 (07.04.2004)	Erstausgabe – <i>First issue</i> – Prima emissione	Erstausgabe – <i>First issue</i> – Prima emissione	Erstausgabe – <i>First issue</i> – Prima emissione
01 (14.03.2005)	Generalrevision – <i>General revision</i> – Revisione generale	Generalrevision – <i>General revision</i> – Revisione generale	Generalrevision – <i>General revision</i> – Revisione generale
02 (07.07.2005)	5530H0210 (pag.72)	- - -	- - -
03 (04.11.2005)	- - -	- - -	MASSE / MASS HS653 , HS653A : <ul style="list-style-type: none"> • mit Direktem Encoder und Bremsen auf den Äxten • mit Bremsen auf den Äxten • with Direct Encoders and Brakes on the axes • with Brakes on the axes • con encoder diretti e freni sugli assi • con freni sugli assi
04 (24.11.2005)	HS700; HS652 Direct Encoders; HS652 Slip Ring; HS550 Slip Ring; HS545 Slip Ring.	- - -	- - -
05 (20.01.2006)	HS653 Siemens; HS653 Fanuc; 5530H0234.	- - -	- - -
06 (16.02.2006)	- - -	- - -	Page layout in HS700+ES790 section (pag.10); "Flatness" (english only) in the mechanical specifications pages
07 (22.02.2006)	- - -	- - -	SEITENSTEIFIGKEIT – <i>STIFFNESS</i> – RIGIDEZZA
08 (06.04.2006)	- - -	- - -	ES360 : HSK F63 (pages 57 and 60); ES360 specifications (page 63 and 64)
09 (09.05.2006)	- - -	- - -	HS700 / HS770
10 (23.05.2006)	- - -	- - -	Pages 1, 5, 6, 7.
11 (31.07.2006)	- - -	- - -	Abb. Seitensteifigkeit – <i>Stiffness pictures</i> – Figure rigidezza
12 (07.09.2006)	HS777 ; ES796 .	- - -	HS 770 brake pressure : 175 bar (previously 100 bar)
13 (17.10.2006)	- - -	HS 770 ; HS 777 (now on HSD catalogue code H5808H0007)	- - -

AUSGESTELLT VON ISSUED BY – EMESSO DA	CODE – CODE – CODICE	REVISION – REVISION – REVISIONE	GENEHMIGUNG – APPROVED BY – APPROVAZIONE
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