



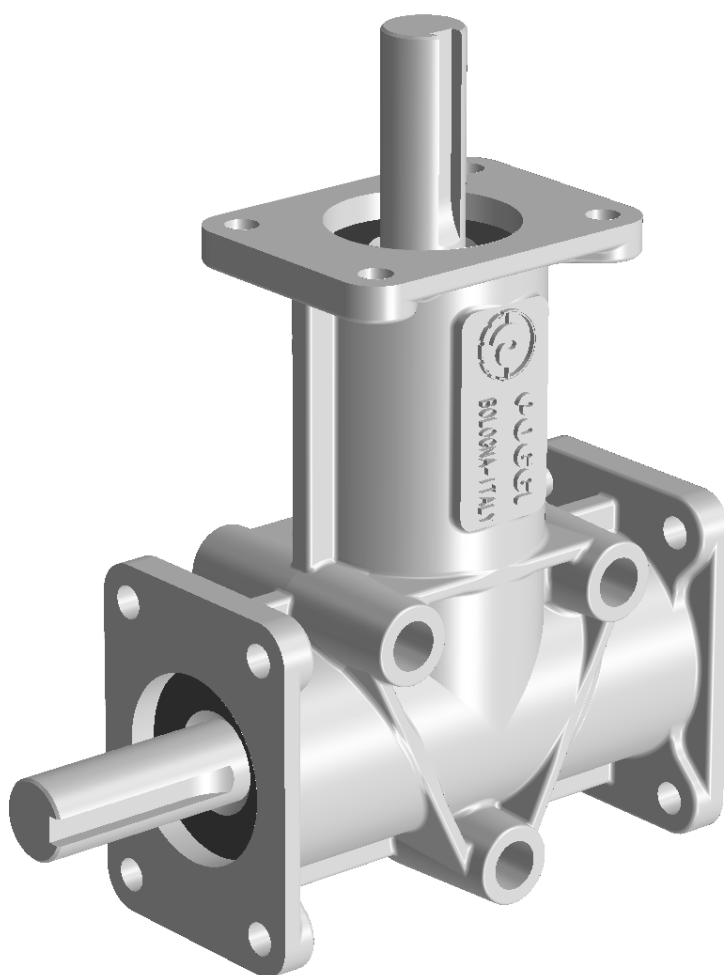
Rinvii angolari serie 4000

Series 4000 right angle gearboxes

Kegelradgetriebe Serie 4000

Renvois d'angle série 4000

Reenvíos de ángulo serie 4000





Caratteristiche generali dei rinvii angolari serie 4000

Series 4000 right angle gearboxes general design features

Produktbeschreibung der Kegelradgetriebe Serie 4000

Caractéristiques générales des renvois d'angle série 4000

Características generales de los reenvíos de ángulo serie 4000

Velocità di rotazione

I rinvii sono stati progettati per una velocità in entrata (albero A) di 1400 g/1'.

La velocità in entrata è permessa fino a 3000 giri/1' solo per brevi periodi.

I rinvii con rapporto di riduzione possono essere usati anche in moltiplica, non superando in entrata i 750 g/1' per il rapporto 1:2.

Speed of rotation

The gearboxes are engineered for an input speed (shaft A) of 1400 rpm.

The input speed is allowed up to 3000 rpm for short periods only. The gearboxes with reduction ratio can also be used as speed-up units, provided that 750 rpm in input for ratio 1:2 are not exceeded.

Drehgeschwindigkeit

Die Kegelradgetriebe sind für eine Eingangsgeschwindigkeit (Welle A) von 1400 U/min ausgelegt.

Eine Eingangs-drehzahl bis zu 3000 U/min ist nur kurzzeitig zulässig.

Bei Verwendung als Übersetzungsgetriebe soll die Eingangs-drehzahl bei $i = 1:2$ nicht höher als 750 U/min sein.

Vitesse de rotation

Les renvois ont été projetés pour une vitesse en entrée (arbre A) de 1400 tr/min.

La vitesse en entrée est permise jusqu'à 3000 tr/min. seulement pour des courtes périodes.

Les renvois avec rapport de réduction peuvent être utilisés aussi comme multiplicateurs de vitesse, ne dépassant pas en entrée les 750 tr/min. pour le rapport 1:2.

Velocidad de rotación

Se han proyectado los reenvíos para una velocidad en entrada (eje A) de 1400 r.p.m.

La velocidad en entrada se permite hasta 3000 r.p.m. sólo para breves periodos.

Los reenvíos con relación de reducción pueden utilizarse también como multiplicadores de velocidad, no superando en entrada las 750 r.p.m. para la relación 1:2.

Temperatura di esercizio
Le temperature ammissibili per un buon funzionamento dei rinvii, sono comprese fra -18°C e $+80^{\circ}\text{C}$ (0°F e 170°F).

Operating temperature

The permissible temperatures for trouble-free running of gearboxes should be kept within -18°C and $+80^{\circ}\text{C}$ (0°F and 170°F).

Betriebstemperaturen

Die Getriebe sind ausgelegt für Betriebstemperaturen von: -18°C bis $+80^{\circ}\text{C}$ (0°F bis 170°F).

Température de fonctionnement

Les températures admissibles pour un bon fonctionnement des renvois oscillent entre -18°C et $+80^{\circ}\text{C}$ (0°F et 170°F).

Temperatura de funcionamiento

Las temperaturas admisibles para un buen funcionamiento de los reenvíos oscilan entre -18°C y $+80^{\circ}\text{C}$ (0°F y 170°F).

Durata

I rinvii, se utilizzati rispettando le velocità di rotazione e le temperature di esercizio indicate, sono progettati per una durata media di 10000 ore.

Service life

Right angle gearboxes, if used by respecting the recommended rotation speeds and operating temperatures, are designed for an average operating life of approx. 10000 hours.

Lebensdauer

Die Kegelradgetriebe, bei Beachtung der empfohlenen Drehzahlen und Betriebstemperaturen, sind für eine durchschnittliche Lebensdauer von ca. 10.000 Stunden gestaltet.

Durée

Les renvois d'angle, s'ils sont utilisés en respectant les vitesses de rotation et les températures de fonctionnement indiquées, sont projetés pour une durée moyenne de 10000 heures.

Duración

Los reenvíos de ángulo, si se utilizan respetando las velocidades de rotación y las temperaturas de funcionamiento indicadas, son proyectados para una duración media de 10000 horas.

Rumorosità

Le lavorazioni, il montaggio ed il controllo accurato ci permettono di contenere la rumorosità dei rinvii angolari anche alle massime velocità.

Noise level

The processes, the accurate mounting and the accurate checks allow us to keep a low operating noise level, even at high rotation speeds.

Laufruhe

Durch sehr sorgfältige Bearbeitungen, Montage und Prüfung wird auch bei den höchsten Drehzahlen unserer Kegelradgetriebe ein geräuscharmer Lauf erreicht.

Bruit

Les usinages, le montage et le contrôle soignés nous permettent de limiter le bruit des renvois d'angle même aux vitesses maximum.

Rumorosidad

Los mecanizados, el montaje y el control esmerado nos permiten contener la rumorosidad de los reenvíos de ángulo, hasta a las máximas velocidades.

Giochi angolari

Il gioco angolare riscontrabile tra i denti degli ingranaggi è compreso fra i 15' ed i 30' per tutti i rinvii normali di magazzino.

Backlash

The measurable backlash between the gear teeth ranges from 15' to 30' for all stock gearboxes.

Winkelspiel

Das normale Winkelspiel zwischen den Getriebezähnen liegt bei 15' bis 30' bei allen Standard-Kegelradgetrieben.

Jeux angulaires

Le jeu angulaire vérifiable entre les engrenages est compris entre 15' y 30'.

Juegos angulares

El juego angular cotejable está comprendido entre los 15' y 30' para todos los reenvíos de stock.

Lubrificazione

I rinvii vengono forniti già equipaggiati di lubrificante. I rinvii serie 4000 sono lubrificati con olio di tipo sintetico. Trattandosi di lubrificazione a vita, non sono necessari rabbocchi o sostituzioni per tutto il periodo medio di vita previsto del rinvio.

Lubrication

All units are factory filled with lubricant. The series 4000 gearboxes are lubricated with synthetic oil. Being life lubricated they do not require any periodical oil replenishment or change during all gearbox average lifetime.

Schmierung

Alle Kegelradgetriebe werden mit Schmiermittel schon geliefert. Alle Kegelradgetriebe der Serie 4000 sind mit Synthetiköl als Lebensdauer-schmierung versehen. Da es sich um lebenslange Schmierungsdauer handelt, sind Nachfüllungen oder Ölwechsel für die gesamte Durchschnittslebensdauer des Kegelradgetriebes nicht notwendig.

Lubrification

Les renvois sont livrés déjà équipés de lubrifiant. Les renvois série 4000 sont lubrifiés par huile synthétique. Comme il s'agit d'une lubrification à vie, il n'est pas nécessaire de faire des remplissages ou de remplacer l'huile pour toute la durée moyenne de la vie prévue.

Lubricación

Los reenvíos se suministran ya equipados de lubricante. Los reenvíos serie 4000 son lubricados con aceite sintético. Ya que se trata de lubricación de por vida, no es necesario rellenar o reemplazar el aceite para toda la duración media de la vida prevista para el reenvío.

Installazione

Per la particolare forma costruttiva, i rinvii possono essere montati in qualsiasi posizione. L'unica precauzione richiesta è di segnalare un eventuale montaggio con un albero in posizione verticale al fine di verificare l'opportuna lubrificazione.

Installation

Thanks to the construction shape, the mounting of gearboxes is allowed in any position. The only requested caution is to advise a possible mounting with a shaft in vertical position, in order to provide the proper lubrication.

Installation

Aufgrund ihrer Bauform können die Kegelradgetriebe in jeder Position montiert werden. Es ist jedoch darauf zu achten, dass Sie uns mitteilen, wenn die Welle in vertikaler Position montiert wird, um die passende Schmierung bereit zu stellen.

Installation

Grâce à la particulière forme de construction, les renvois peuvent être montés dans n'importe quelle position. La seule précaution demandée est de signaler un éventuel montage ayant un arbre en position verticale, à fin de vérifier l'adéquade lubrification.

Instalación

Gracias a la forma peculiar de construcción, se pueden montar los reenvíos en cualquier posición. La única precaución necesaria es de señalar un montaje eventual que tenga un eje en posición vertical, a fin de comprobar la adecuada lubricación.

Note

Qualora servano rinvii angolari per velocità maggiori, per funzionamenti in condizioni particolari di temperatura o con giochi angolari ridotti, vogliate interpellare il nostro Ufficio Tecnico.

Notes

Should you require gearboxes for higher speeds, for unusual operating temperatures or with reduced backlash, please consult our Technical Department.

Notizen

Sollten Kegelradgetriebe für höhere Geschwindigkeiten, für Sondertemperaturbedingungen oder mit reduziertem Winkelspiel notwendig sein, wenden Sie sich bitte an unsere technische Abteilung.

Notes

S'il est nécessaire d'avoir des renvois pour des vitesses supérieures ou pour fonctionnements à des températures spéciales, veuillez nous consulter.

Notas

En caso de necesidad para reenvíos con velocidades superiores o para funcionamientos con temperaturas especiales, les rogamos consulten.



Componenti dei rinvii angolari serie 4000

Components of Series 4000 right angle gearboxes

Bestandteile der Kegelradgetriebe Serie 4000

Composants des renvois d'angle série 4000

Componentes de los reenvíos de ángulo serie 4000

Corpo

Il carter del rinvio è di tipo monoblocco compatto ed è costruito in lega leggera. Le mostrine, la basetta con i fori passanti ed i centraggi di guida ne permettono il montaggio in qualsiasi posizione.

Coppie coniche

Gli ingranaggi sono a dentatura conica spirooidale GLEASON costruiti in acciaio legato, cementati e temperati e garantiscono un buon funzionamento in entrambi i sensi di marcia.

Alberi

Gli alberi sono costruiti in acciaio bonificato, fatta eccezione per i rinvii con rapporto di riduzione, dove gli alberi in entrata (albero A) sono in acciaio legato, cementati e rettificati.

Cuscinetti

La rotazione degli alberi avviene su cuscinetti a sfere largamente dimensionati. I cuscinetti utilizzati nei rinvii sono di prima scelta e delle migliori marche.

Anelli di tenuta

Per particolari applicazioni sono fornibili a richiesta rinvii con anelli di tenuta speciali, come ad esempio anelli in VITON® per alte temperature.

Housing

The gearbox housing is compact and made of light alloy. The fixing flanges with threaded holes, and other guides allow the mounting in any position.

Bevel gears

The gears are made as a spiral toothing GLEASON system, made of alloy steel hardened and tempered and they guarantee a good operation in both directions of rotation.

Shafts

Shafts are made of hardened and tempered steel. Exceptions are gearboxes with reduction ratio, where input shafts (shaft A) are made of alloy steel hardened, tempered and ground.

Bearings

All shafts are rotating on generously sized and high quality ball bearings of first class brands.

Oil seals

For special applications, on request we can supply right angle gearboxes with special oil seals, like for example VITON® seals for high temperatures.

Gehäuse

Die allseitig bearbeiteten Einzelblock-Gehäuse aus einer Aluminium-Legierung mit vielen Befestigungs- und Gewindebohrungen gewährleisten einen problemlosen An- und Einbau in jeder beliebigen Lage.

Kegelräder

Die GLEASON-spiralverzahnten Kegelräder, die aus Einsatzstahl gehärtet und gelappt sind, gewährleisten einen guten Betrieb in beiden Drehrichtungen.

Wellen

Die Wellen bestehen aus vergütetem Stahl, mit Ausnahme der Kegelradgetriebe mit reduzierter Übersetzung, wobei die Eingangswellen (Welle A) aus gehärtetem und geschliffenem Einsatzstahl sind.

Kugellager

Die verwendeten Kugellager sind sehr reichlich dimensioniert. Zur Wellenlagerung werden Qualitäts-Kugellager eingesetzt.

Wellendichtringe

Für besondere Anwendungen können, auf Anfrage, Kegelradgetriebe mit Sonderdichtungsringen, wie zum Beispiel VITON®, Ringe für hohe Temperaturen, geliefert werden.

Corps

Le corps du renvoi est en une seule pièce compacte et fabriquée en alliage léger. Les brides, la petite base avec les trous débouchants et les centrages de guide permettent le montage dans n'importe quelle position.

Couples coniques

Les engrenages ont la denture hélicoïdale GLEASON et ils sont fabriqués en alliage d'acier, cimentés et trempés et ils garantissent un bon fonctionnement dans les deux sens de rotation.

Arbres

Les arbres sont fabriqués en acier trempé et revenu, à l'exception des renvois avec rapport de réduction, où les arbres en entrée (arbre A) sont en acier allié, cimentés et rectifiés.

Roulements

La rotation des arbres se fait sur des roulements à billes largement dimensionnés. Les roulements utilisés dans les renvois sont de la meilleure qualité et des marques les plus connues.

Bagues d'étanchéité

Pour des applications particulières, sur demande nous pouvons livrer des renvois avec des bagues d'étanchéité spéciales, comme par exemple les bagues en VITON® pour les hautes températures.

Cárter

El carter del reenvío es de tipo monobloque compacto y fabricado en aleación ligera. Las bridas, la patilla con orificios pasantes y los centros de guía permiten el montaje en cualquier posición.

Pares cónicos

Los engranajes son de dentado cónico helicoidal GLEASON fabricados en acero aleado, cementados y templados y garantizan un buen funcionamiento en los dos sentidos de rotación.

Ejes

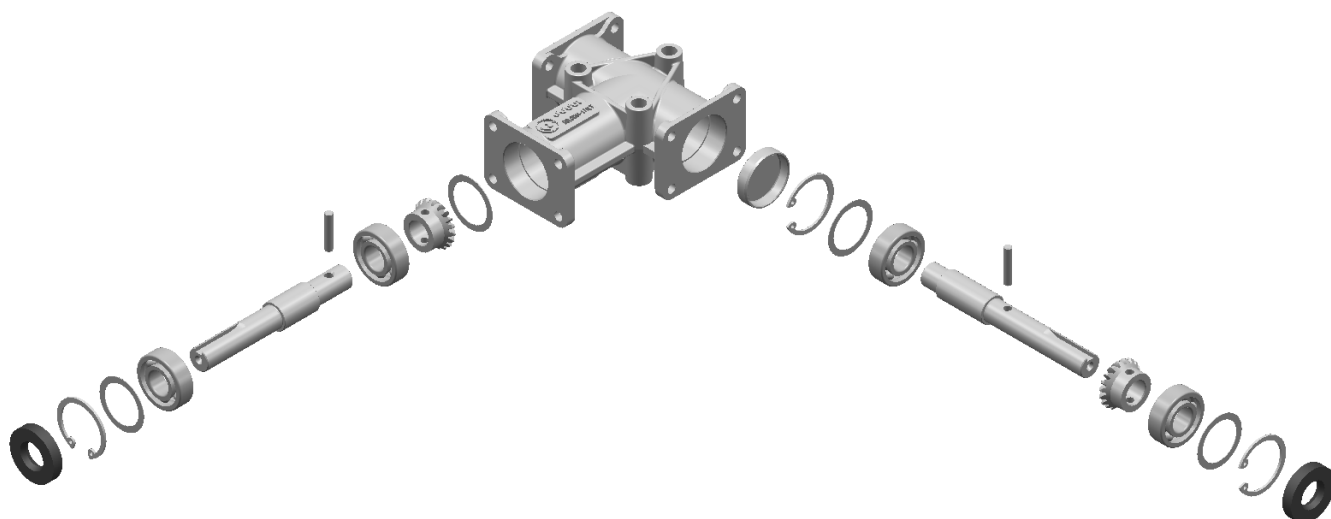
Los ejes son construidos en acero afinado y templado. Representan una excepción los reenvíos con relación de reducción, en los que los ejes en entrada (eje A) son fabricados en acero aleado, cementados y rectificados.

Rodamientos

La rotación de los ejes se efectúa sobre rodamientos de bolas muy dimensionados. Los rodamientos utilizados en los reenvíos son de primera calidad y de las mejores marcas.

Retenes de aceite

Para aplicaciones especiales, bajo consulta se entregan reenvíos con retenes especiales, como por ejemplo los retenes de VITON® para las temperaturas elevadas.





Prestazioni dei rinvii angolari serie 4000

Performances of series 4000 right angle gearboxes

Leistung der Kegelradgetriebe Serie 4000

Performances des renvois d'angle série 4000

Prestaciones de los reenvíos de ángulo serie 4000

Velocità albero d'uscita g/1' ** Speed of the output shaft rpm ** Geschwindigkeit der Ausgangswelle U/min ** Vitesse de l'arbre en sortie tr/min. ** Velocidad eje de salida r.p.m. **	Rapporto Ratio Übersetzung Rapport Relación	Articolo - Article - Typ - Article - Artículo							
		4000 - 4002		4008 - 4011		4030 - 4031		4032 - 4033	
		Potenza max in entrata	Coppia max in uscita	Potenza max in entrata	Coppia max in uscita	Potenza max in entrata	Coppia max in uscita	Potenza max in entrata	Coppia max in uscita
		Maximum input power	Maximum output torque	Maximum input power	Maximum output torque	Maximum input power	Maximum output torque	Maximum input power	Maximum output torque
		höchste Eingangsantriebskraft	höchstes Abtriebsdrehmoment am Ausgang	höchste Eingangsantriebskraft	höchstes Abtriebsdrehmoment am Ausgang	höchste Eingangsantriebskraft	höchstes Abtriebsdrehmoment am Ausgang	höchste Eingangsantriebskraft	höchstes Abtriebsdrehmoment am Ausgang
		Puissance maxi. en entrée	Couple maxi. en sortie	Puissance maxi. en entrée	Couple maxi. en sortie	Puissance maxi. en entrée	Couple maxi. en sortie	Puissance maxi. en entrée	Couple maxi. en sortie
		Potencia max. en entrada	Par máximo de salida	Potencia max. en entrada	Par máximo de salida	Potencia max. en entrada	Par máximo de salida	Potencia max. en entrada	Par máximo de salida
		kW	Nm	kW	Nm	kW	Nm	kW	Nm
50	1 : 1	0,02	3,50	0,05	10,00	0,18	35,00	0,31	60,00
100	1 : 1	0,03	3,00	0,10	9,50	0,34	32,00	0,61	58,00
200	1 : 1	0,06	2,80	0,20	9,50	0,64	30,50	1,17	56,00
400	1 : 1	0,11	2,60	0,38	9,00	1,22	29,00	2,18	52,00
700	1 : 1	0,18	2,50	0,65	8,80	2,09	28,50	3,37	46,00
1400	1 : 1	0,35	2,40	1,29	8,80	3,99	27,20	6,45	44,00
2000	1 : 1	0,31	1,50	1,15	5,50	3,77	18,00	7,33	35,00
3000	1 : 1	0,38	1,20	1,26	4,00	4,71	15,00	7,54	24,00
50	1 : 2	0,02	3,00	0,04	8,00	0,14	26,00	0,26	50,00
100	1 : 2	0,03	2,50	0,07	7,00	0,25	24,00	0,46	44,00
200	1 : 2	0,05	2,20	0,14	6,80	0,46	22,00	0,90	43,00
400	1 : 2	0,09	2,10	0,29	6,80	0,88	21,00	1,72	41,00
700	1 : 2	0,15	2,00	0,50	6,80	1,47	20,00	3,00	40,90
1400	1 : 2	0,18	1,20	0,66	4,50	2,35	16,00	3,67	25,00

1 kgm = 9,8 Nm

Per i rinvii angolari con più di 2 vie, la coppia indicata va distribuita in uguale misura tra gli alberi in uscita.

For gearboxes having more than 2 ways, the torque must be equally distributed on the output shafts.

Bei den Kegelradgetrieben mit mehr als zwei Wegen soll das Drehmoment gleichermaßen an die Antriebswellen verteilt werden.

Pour les renvois d'angle ayant plus de 2 voies, le couple indiqué doit être distribué de la même mesure sur les arbres en sortie.

Para los reenvíos con más de 2 vías, el par indicado tiene que ser distribuido de la misma manera sobre los ejes de salida.

**** Le velocità in entrata (albero A) oltre i 1400 g/1' sono permesse solo per brevi periodi. Per lavoro continuativo prego consultare l'ufficio tecnico.**

** Input speeds (shaft A) above 1400 rpm are allowed for short times only. In case of continuous duty please consult us.

** Eingangsdrehzahlen über 1400 U/min sind nur kurzzeitig zulässig. Bei Dauerbetrieb bitte rückfragen.

** Les vitesses en entrée (arbre A) qui dépassent 1400 tr/min. ne sont permises que pour des courtes périodes. Pour un fonctionnement continu veuillez nous consulter.

** Las velocidades en entrada (eje A) superiores a 1400 r.p.m. sólo se permiten para breves períodos. Para un funcionamiento duradero les rogamos consulten.



Lubrificazione dei rinvii angolari serie 4000

Lubrication of Series 4000 right angle gearboxes

Schmierung der Kegelradgetriebe Serie 4000

Lubrification des renvois d'angle série 4000

Lubricación de los reenvíos de ángulo serie 4000

Quantità di lubrificante contenuta nei rinvii angolari serie 4000

Lubricant contents of series 4000 right angle gearboxes

Ölmenge in den Kegelradgetrieben Serie 4000

Quantité de lubrifiant contenue dans les renvois d'angle série 4000

Cantidad de lubricante contenida en los reenvíos de ángulo serie 4000

Articolo - Article - Typ - Article - Artículo	g
4000	20
4002	20
4008	60
4011	60

Articolo - Article - Typ - Article - Artículo	g
4030	180
4031	200
4032	300
4033	300

L'olio contenuto nei rinvii è di tipo AGIP BLASIA S150 ma può essere utilizzato uno di quelli riportati nella tabella sottostante. Qualora si dovesse aggiungere o cambiare l'olio contenuto nel rinvio, si raccomanda di sostituirlo totalmente.

The oil contained in our right angle gearboxes is type AGIP BLASIA S150 but it can be replaced by one of those as listed in the table below. In case of need to add or change the oil, we recommend to replace it completely.

In den Kegelradgetrieben befindet sich AGIP BLASIA S 150 Öl; alternativ können auch die in der unten stehenden Tabelle genannten Öle verwendet werden. Falls ein Schmierstoffwechsel notwendig sein sollte, empfehlen wir einen gesamten Austausch.

L'huile contenue dans les renvois d'angle est le type AGIP BLASIA S150 mais elle peut être remplacée par l'une des huiles indiquées dans le tableau ci-dessous. S'il est nécessaire d'ajouter ou de remplacer l'huile contenue dans le renvoi, nous recommandons de la remplacer complètement.

El aceite contenido en los reenvíos es el tipo AGIP BLASIA S150 pero es posible utilizar uno de los aceites indicados en la tabla abajo. En caso sea preciso añadir o reemplazar el aceite contenido en el reenvío, recomendamos reemplazarlo totalmente.

Tabella degli oli consigliati

Table of recommended oils

Tabelle der empfohlenen Schmiermittel

Tableau des huiles conseillées

Tabla de los aceites recomendados

Produttore Manufacturer Hersteller Producteur Fabricante	AGIP	BP	ESSO	GULF	MOBIL	SHELL
Sigla olio Oil type Öl Typ Type d'huile Type de aceite	BLASIA S150	ENERGOL SGR 150	SPARTAN SEP 150	SYNTETIC GEAR LUBRICANT	GLYGOYLE 22	TIVELA WA



Scelta dei rinvii angolari serie 4000

Selection of series 4000 right angle gearboxes

Kegelradgetriebeauswahl Serie 4000

Choix des renvois d'angle série 4000

Selección de los reenvíos de ángulo serie 4000

Parametri fondamentali per la scelta dei rinvii.

Basic parameters for gear-boxes selection.

Grundparameter für die Getriebeauswahl.

Paramètres fondamentaux pour le choix des renvois.

Parámetros fundamentales para la selección de los reenvíos.

Per una corretta scelta dei rinvii angolari si dovranno considerare le condizioni di impiego in cui i rinvii verranno effettivamente utilizzati.

All actual working conditions for each specific application must be determined for correct selection.

Um die richtigen Getriebe auszuwählen, muss man die Betriebsanwendungsbedingungen bzw. folgende Grundparameter berücksichtigen.

Pour le choix correct des renvois d'angle il faudra prendre en considération les conditions d'emploi effectives.

Para la selección correcta de los reenvíos de ángulo, es necesario determinar las condiciones efectivas de utilización.

Dati - Data - Angaben - Données - Datos			
P = Potenza motore Motor power Motorleistung Puissance moteur Potencia motor	(kW) (kW) (kW) (kW) (kW)	n1 = Velocità di rotazione dell'albero d'entrata A Speed of input shaft A Geschwindigkeit an der Eingangswelle A Vitesse arbre en entrée A Velocidad eje en entrada A	(g/1') (Rpm) (U/min) (Tr/min) (R.p.m.)
Pc = Potenza corretta Design power Berechnungsleistung Puissance corrigée Potencia corregida	(kW) (kW) (kW) (kW) (kW)	n2 = Velocità di rotazione dell'albero d'uscita Speed of output shaft Geschwindigkeit an der Ausgangswelle Vitesse arbre en sortie Velocidad eje en salida	(g/1') (Rpm) (U/min) (Tr/min) (R.p.m.)
Mt2 = Coppia in uscita Output shaft torque Antriebsdrehmoment an der Ausgangswelle Couple de sortie Par en salida	(Nm) (Nm) (Nm) (Nm) (Nm)	Fs = Fattore di servizio Service factor Belastungsfaktor Facteur de service Factor de servicio	

Fattore di servizio Fs

Service factors Fs

Belastungsfaktor Fs

Facteurs de service Fs

Factores de servicio Fs

Tipo di carico Load type Belastungsart Type de charge Tipo de carga	Ore giornaliere di funzionamento Hours per day duty - Betriebsstunden pro Tag - Heures de fonctionnement par jour - Horas diarias de funcionamiento			
	< 3	3 ÷ 8	> 8 ÷ 12	> 12 ÷ 24
Uniforme Uniform Gleichmäßige Belastung Régulière Uniforme	0,70	0,90	1,00	1,30
Con urti deboli Light shocks Mit leichten Stoßbelastungen À-coups modérés Con choques débiles	0,90	1,00	1,30	1,80
Con urti forti Heavy shocks Mit schweren Stoßbelastung À-coups importants Con choques fuertes	1,30	1,60	1,80	2,30

Esempio

P = 2,21 kW
n1 = 1400 g/1'
n2 = 1400 g/1'
Fs = 1,6 (5 ore al giorno con grossi carichi pulsanti)

Example

P = 2,21 kW
n1 = 1400 rpm
n2 = 1400 rpm
Fs = 1,6 (5 hours per day duty, with heavy pulsating loads)

Beispiel

P = 2,21 kW
n1 = 1400 U/min
n2 = 1400 U/min
Fs = 1,6 (5 Stunden täglich mit schweren Stoßbelastungen)

Exemple

P = 2,21 kW
n1 = 1400 tr/min
n2 = 1400 tr/min
Fs = 1,6 (5 heures par jour avec charges lourdes intermittentes)

Ejemplo

P = 2,21 kW
n1 = 1400 r.p.m.
n2 = 1400 r.p.m.
Fs = 1,6 (5 horas diarias con cargas importantes y intermitentes)

Calcolare la potenza corretta con la seguente formula:

Calculation of design power by the following formula:

Die korrekte Leistung mit folgender Formel berechnen:

Calculer la puissance corrigée par la formule suivante:

Calcular la potencia corregida por medio de la fórmula siguiente:

$$P_c = P \cdot F_s = 2,21 \cdot 1,6 = 3,54 \text{ kW}$$



Scelta dei rinvii angolari serie 4000

Selection of series 4000 right angle gearboxes

Kegelradgetriebeauswahl Serie 4000

Choix des renvois d'angle série 4000

Selección de los reenvíos de ángulo serie 4000

Calcolare la coppia in uscita con la seguente formula:

Calculation of output shaft torque by the following formula:

Das Antriebsdrehmoment an der Ausgangswelle wird mit folgender Formel berechnet:

Calculer le couple de sortie par la formule suivante:

Calcular el par en salida por medio de la fórmula siguiente:

$$M_{t2} = 9550 \cdot \frac{P_c}{n_2} = 9550 \cdot \frac{3,54}{1400} = 24,1 \text{ Nm}$$

A questo punto, consultando la tabella delle prestazioni, occorre scegliere un rinvio che abbia la coppia max in uscita uguale o superiore alla coppia appena calcolata; nel nostro caso il rinvio più adatto è l'articolo 4030, che ha una coppia max in uscita di 27,2 Nm.

At this stage, consulting the performance table, the choice must be for a gearbox having a max. output shaft equal to or higher than the torque just calculated; in our case, the most suitable gearbox is type 4030, having a max. output torque of 27,2 Nm.

Anhand der Leistungsparameter sollte ein Kegelradgetriebe gewählt werden, dessen maximale Ausgangsleistung größer oder gleich der berechneten Leistung ist; in vorliegender Tabelle wäre das geeignete Modell der Typ 4030, das eine maximale Ausgangsleistung von 27,2 Nm hat.

Maintenant, en consultant le tableau des performances, il faut choisir un renvoi ayant le couple max. en sortie égal ou supérieur au couple que l'on vient de calculer; dans notre cas, le renvoi le plus approprié est l'article 4030 qui a un couple max. de sortie de 27,2 Nm.

Ahora, consultando la tabla de las prestaciones, es necesario seleccionar un reenvío con un par max. de salida igual o superior al par que acabamos de calcular; en nuestro caso el reenvío más idóneo es el artículo 4030 que tiene un par max. de salida de 27,2 Nm.

Carichi massimi applicabili agli alberi

Shaft loading capacity

Max. zulässige Belastungen an den Wellen

Charges max. applicables aux arbres

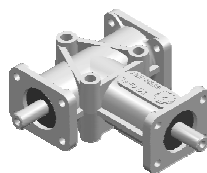
Cargas máx. aplicables a los ejes

Articolo Article Typ Article Artículo	Carico radiale (N) Overhung load (N) Radialbelastung (N) Charge radiale (N) Carga radial (N)	Carico assiale (N) Thrust load (N) Axialbelastung (N) Charge axiale (N) Carga axial (N)
4000 4002	60	20
4008 4011	140	50

Articolo Article Typ Article Artículo	Carico radiale (N) Overhung load (N) Radialbelastung (N) Charge radiale (N) Carga radial (N)	Carico assiale (N) Thrust load (N) Axialbelastung (N) Charge axiale (N) Carga axial (N)
4030 4031	300	80
4032 4033	400	80



Rinvio angolare a 2 vie
 2-way right angle gearbox
 Zweiweg-Kegelradgetriebe
 Renvoi d'angle à 2 voies
 Reenvío de ángulo con 2 vías



4000

D. 1

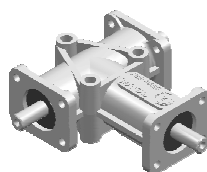
D. 2

Peso	
Weight	
Gewicht	
Poids	
Peso	

kg 0,30

Rapporto Ratio Übersetzung Rapport Relación	Disp. Disp. Dreh. Disp. Disp.	Codice Item number Codierung Code Código	Descrizione Designation Bezeichnung Désignation Referencia
1 : 1	1	184000111	4000 R 1 : 1 D1
1 : 1	2	184000112	4000 R 1 : 1 D2
1 : 2	1	184000121	4000 R 1 : 2 D1
1 : 2	2	184000122	4000 R 1 : 2 D2

Rinvio angolare a 3 vie
 3-way right angle gearbox
 Dreiweg-Kegelradgetriebe
 Renvoi d'angle à 3 voies
 Reenvío de ángulo con 3 vías



4002

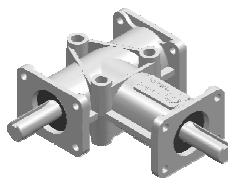
D. 1/2

Peso Weight Gewicht Poids Peso	kg 0,30
---	----------------

Rapporto Ratio Übersetzung Rapport Relación	Disp. Disp. Dreh. Disp. Disp.	Codice Item number Codierung Code Código	Descrizione Designation Bezeichnung Désignation Referencia
1 : 1	1/2	184002111	4002 R 1 : 1 D1/2
1 : 2	1/2	184002121	4002 R 1 : 2 D1/2



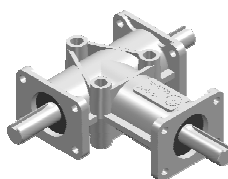
Rinvio angolare a 2 vie
 2-way right angle gearbox
 Zweiweg-Kegelradgetriebe
 Renvoi d'angle à 2 voies
 Reenvío de ángulo con 2 vías



4011

Technical drawing of the 2-way right angle gearbox (model 4011) showing front and side views with dimensions. The front view shows a circular input shaft with diameter $\varnothing 35$ H7 (N.3) and a 5mm keyway. The output shaft has a diameter of $\varnothing 62$ (N.4 + 4 + 4) and a 52mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ and a 5mm keyway. The side view shows a 125mm total height, a 35mm distance from the top to the mounting flange, and a 90mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view also shows a 104mm distance from the center to the mounting flange and a 139mm distance from the center to the mounting flange. The output shaft has a diameter of $\varnothing 8.2$ (N.3) and a 48mm distance from the center to the mounting flange. The mounting flange has a diameter of $\varnothing 15$ f7. The side view	
---	--

Rinvio angolare a 3 vie
 3-way right angle gearbox
 Dreiweg-Kegelradgetriebe
 Renvoi d'angle à 3 voies
 Reenvío de ángulo con 3 vías



4008

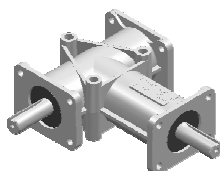
D. 1/2

Peso Weight Gewicht Poids Peso	kg 1,20
---	----------------

Rapporto Ratio Übersetzung Rapport Relación	Disp. Disp. Dreh. Disp.	Codice Item number Codierung Code Código	Descrizione Designation Bezeichnung Désignation Referencia
1 : 1	1/2	184008111	4008 R 1 : 1 D1/2
1 : 2	1/2	184008121	4008 R 1 : 2 D1/2



Rinvio angolare a 2 vie
 2-way right angle gearbox
 Zweiweg-Kegelradgetriebe
 Renvoi d'angle à 2 voies
 Reenvío de ángulo con 2 vías



4030

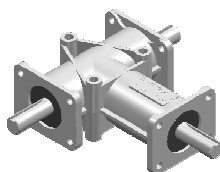
D. 1

D. 2

Peso Weight Gewicht Poids Peso	kg 3,50
---	----------------

Rapporto Ratio Übersetzung Rapport Relación	Disp. Disp. Dreh. Disp.	Codice Item number Codierung Code Código	Descrizione Designation Bezeichnung Désignation Referencia
1 : 1	1	184030111	4030 R 1 : 1 D1
1 : 1	2	184030112	4030 R 1 : 1 D2
1 : 2	1	184030121	4030 R 1 : 2 D1
1 : 2	2	184030122	4030 R 1 : 2 D2

Rinvio angolare a 3 vie
 3-way right angle gearbox
 Dreiweg-Kegelradgetriebe
 Renvoi d'angle à 3 voies
 Reenvío de ángulo con 3 vías



4031

D. 1/2

Peso Weight Gewicht Poids Peso	kg 3,50
---	----------------

Rapporto Ratio Übersetzung Rapport Relación	Disp. Disp. Dreh. Disp.	Codice Item number Codierung Code Código	Descrizione Designation Bezeichnung Désignation Referencia
1 : 1	1/2	184031111	4031 R 1 : 1 D1/2
1 : 2	1/2	184031121	4031 R 1 : 2 D1/2