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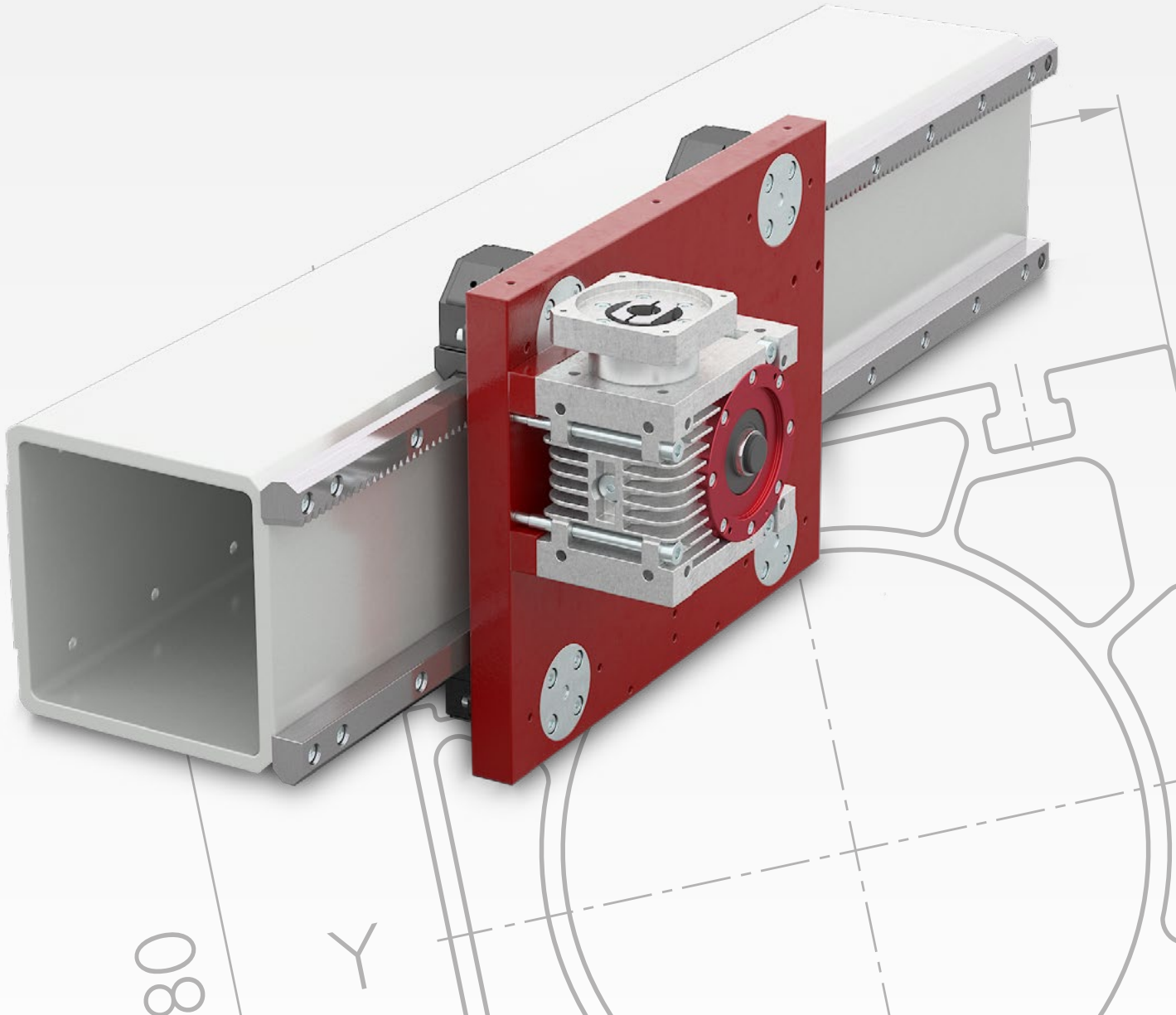
Führungssysteme mittlerer Baureihe
Systèmes de guidage série moyenne
Guideway system for medium duty applications



Führungssysteme mittlerer Baureihe
Systèmes de guidage série moyenne
Guideway system for medium duty applications

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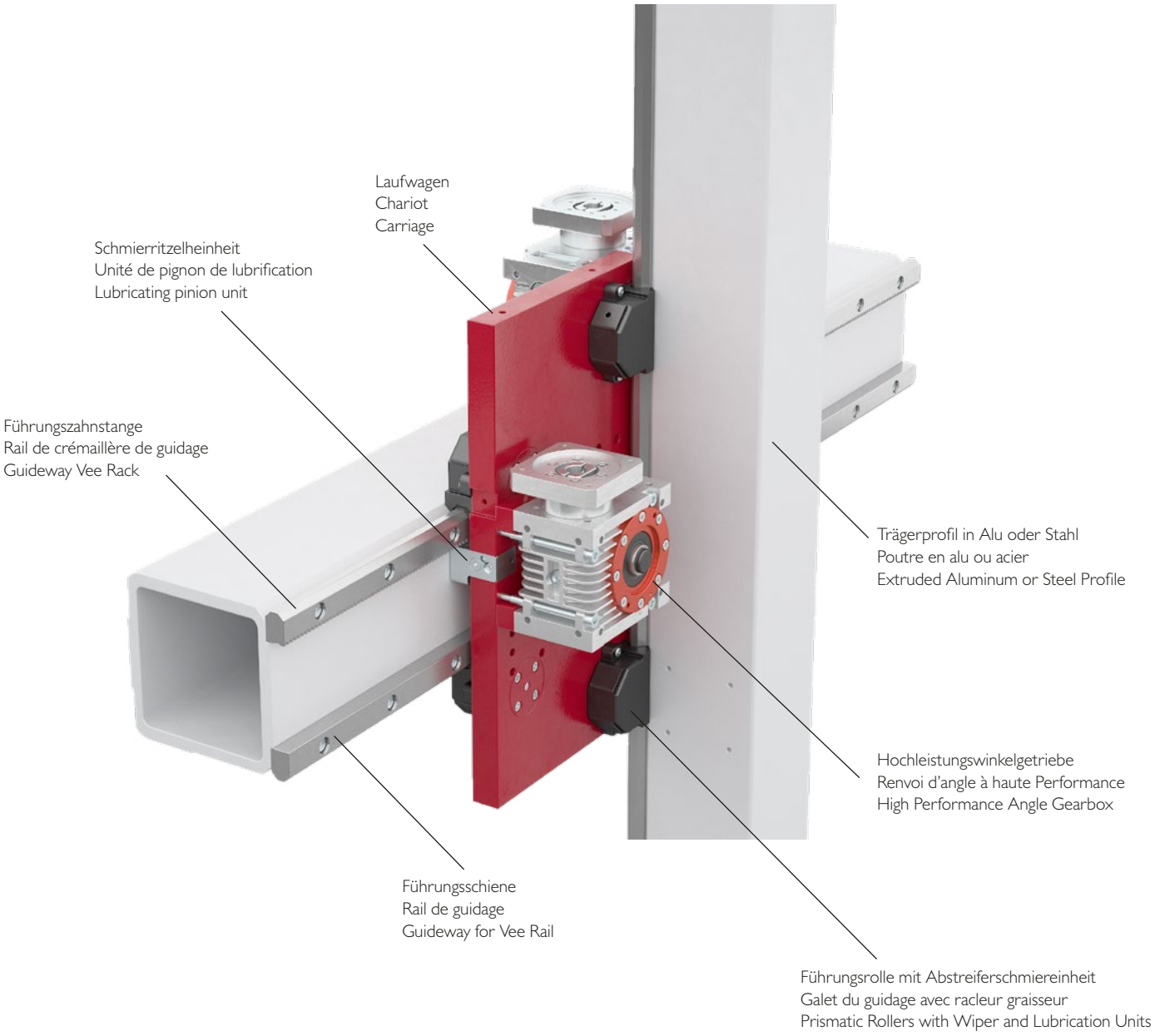
Baukasten
Le systeme modulaire
The modular system

Die Längsführungen und Antriebssysteme sind in 4 Baugrössen lieferbar. Innerhalb der Baugrösse sind die Elemente beliebig kombinier- und austauschbar.

Les guidages linéaires et les systèmes d'entraînement sont livrables en 4 tailles de fabrication.
Les éléments de la même taille peuvent être combinés ou échangés à volonté.

The linear guideways and drive systems can be supplied in 4 sizes. Within each size the elements can be combined and exchanged to meet requirements.

Baugrösse	15	20	25	35

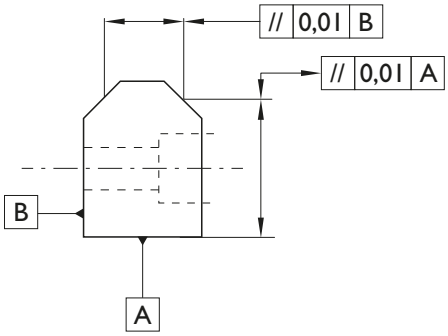


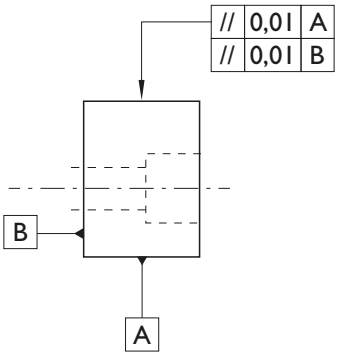
Genauigkeit
Précision
Accuracy

Führungen
Die Genauigkeit des Führungssystems setzt sich aus der Grundgenauigkeit der Führungs-, Rollen und Antriebselemente zusammen. Die Härte der Führungsbahnen beträgt 60-62HRC. Bei den rostfreien Schienen 56-58HRC.

Guidage linéaire
La précision du système de guidage repose sur la précision de base des éléments de guidage, de roulement et d'entraînement. Les surfaces de guidage sont trempées 60-62HRC. Les rails en inox 56-58HRC.

Linear Guideway
The accuracy of the guideway system is built up from the basic quality of the guide, roller and drive elements.The guiding surfaces of carbon steel guideways are hardened to 60-62HRC. The guiding surfaces of stainless steel guideways are hardened to 56-58HRC.





Rollen
Die Rollen sind als zweireihige Schrägkugellager mit einem Druckwinkel von 25° und beidseitigen RSR-Dichtscheiben und einer Lebensdauerfettfüllung in der Toleranzklasse PN hergestellt. Die Rollen sind lieferbar mit normaler und eingeengter Lagerluft, mit zentrischem und exzentrischem Bolzen und in einer rostfreien Ausführung.

Galets
Les galets sont réalisés en classe de tolérance PN. Ils se composent de roulements à billes à contacte oblique ayant un angle de pression de 25°, joints d'étanchéité RSR sur les deux côtés. Les galets sont livrables avec un jeu de palier normal ou restreint, ainsi qu'avec un axe centrique ou excentrique et en version inoxydable.

Rollers
The rollers are dual-row angular contact ball-bearings with a 25° pressure angle with RSR seals and are sealed for life. The rollers are manufactured to the PN tolerance class. The rollers can be supplied with normal or pre-loaded bearing clearances, with concentric or eccentric centers. They are also available in stainless steel.

Baugrösse/Taille/Size	Ga [µm] ①	Ga [µm] ②
15	+14 / +31	+5 / +13
20	+15 / +33	+5 / +13
25	+19 / +38	+8 / +16
35	+21 / +43	+7 / +15

① Normale axiale Lagerluft
② Eingeengte axiale Lagerluft

① Jeu de palier normale
② Jeu de palier restreint

① Normal bearing clearance
② Preloaded bearing clearance

Antriebselemente
Die Verzahnungen sind für den normalen Anwendungsfall feinstverzahnt. Für höhere Beanspruchungen und grössere Genauigkeit sind sie gehärtet und geschliffen.

Eléments d'entraînement
Les dentures ont un taillage de précision pour une utilisation normale. Pour répondre à des sollicitations plus élevées, elles sont trempées et rectifiées.

Drive elements
Racks are supplied in various sizes to meet the required application. For high precision and high torque applications, the racks are hardened and ground.

Quality	fp [mm]	Fp [mm]	p [mm]		
weich, soft Quality 7h25	0.008	0.05	0/– 0.02	feinstverzahnt taillée à précision precision cut	
hart, trempé Quality 6h23	0.006	0.03	0/– 0.01	gehärtet und geschliffen trempée et rectifiée hardened and ground	56 – 58HRC

fp [mm]:
Teilungs-Einzelabweichung
Erreur individuelle de pas
Adjacent pitch error

Fp [1000 mm]:
Teilungs-Gesamtabweichung
Erreur totale de pas
Cumulative pitch error

p [mm]:
Ablängtoleranz
Tolérance de coupe par rapport au pas
Pitch tolerance of cut

Vorspannung
Précharge
Preload

Die Spieleinstellung und Vorspannung der Rollen erfolgt über die Exzenter der Führungs- und Laufrollen der Typenreihe

FR.., FR..A, FR..R bzw.
LR.., LR..A, LR..R.

Die Typenreihe **FR..Z, FR..ZA** und **LR..Z** sind in zentrischer Ausführung. Bei den Exzenterrollen sind die Innenbolzen mit drei Bohrungen versehen die in genauer Position zum Exzenter sind.

Le réglage du jeu et de la précontrainte des galets se fait par l'intermédiaire des excentriques des galets de guidage et de roulement de la série

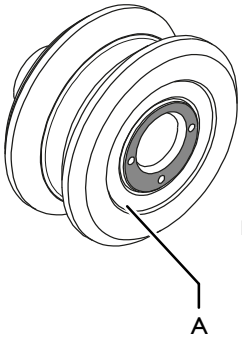
FR.., FR..A, FR..R, resp.
LR.., LR..A, LR..R.

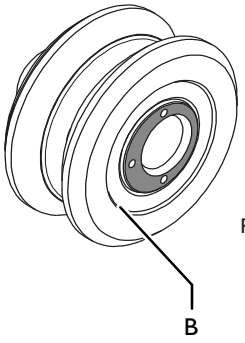
Les séries **FR..Z, FR..ZA** et **LR..Z** sont en version concentrique. Sur les galets excentriques, les axes interiéurs sont pourvus de trois alésages exactement positionnés par rapport a l'excentrique.

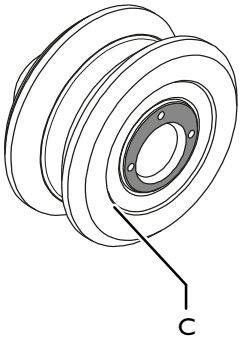
The rollers with eccentric hubs are used to adjust backlash and set pre-tension across rollers.

FR.., FR..A, FR..R or
LR.., LR..A, LR..R.

The **FR..Z, FR..ZA** and **LR..Z** series are the concentric models. The eccentric rollers are three holes for adjustment via spanner wrench and secured with a center bolt.







Befinden sich die Rolle in der Nullage ergeben sich für das Zahnspiel die Standardwerte 0.05 mm Flankenspiel.

Für Präzisionsmaschinen und Anwendungen mit erhöhten Anforderungen an Steifigkeit stehen Rollen der Typreihe **FR..A, FR..ZA und LR..A** mit eingeengtem Axialspiel zur Verfügung. Die Steifigkeit eines System wird weitgehend beeinflusst durch Wahl der Rollen und Vorspannung des Systems.

Reibung
Die Rollenführungen haben einen sehr niedrigen Reibungs-koeffizient. Durch Abstreifer auf den Schienen wird dieser Wert leicht erhöht.

Si le rouleau se trouve en position zéro, il en résulte pour les dents, des valeurs standard de 0.05 mm de jeu sur les flancs.

Pour les machines de précision et des applications avec une demande de rigidité elevée, il existe des galets de la serie **FR..A, FR..ZA** et **LR..A** à jeu axial réduit. La rigidité d'un système dépend largement du choix des galets et de la précontrainte du systeme.

Frottement
Les guidages à galets ont un très faible coefficient de frottement. Des racleurs montés sur les rails augmentent légèrement cette valeur.

If a roller is located in its zero position, the rack and pinion backlash will be the standard value of 0.05 mm flank clearance.

For precision machinery and applications with increased stiffness requirements there are rollers available of the **FR..A, FR..ZA** and **LR..A** series with pre-loaded bearings. The stiffness of the system is thereby largely determined by the selection of the rollers and the pre-tensioning of the system.

Friction
The roller guides have a very low coefficient of friction.This value is slightly increased by fitting wipers to the rails.

$\mu = 0.01 - 0.03$

Korrisionsbeständigkeit
Version résistant à la corrosion
Corrosion resistant design

Korrosionsbeständigkeit:
Die Elemente der Typenreihe mit der Nachbezeichnung **..R** werden in rostfreier Ausführung geliefert.

FR..R Führungsrolle
LR..R Laufrolle
FS..R Führungsschiene
FZ..R Führungszahnstange
LS..R Laufschiene
LZ..R Laufzahnstange

Rostfreie Trägerprofile können auf Anfrage geliefert werden.

Résistance à la corrosion
Les éléments de la gamme portant la designation additionnelle **..R** sont fabriqués en version inoxydable.

FR..R Galets de guidage
LR..R Galets de roulement
FS..R Rails de guidage
FZ..R Rails crémaillères de guidage
LS..R Rails de roulement
LZ..R Rails crémaillères de roulement

Des profils inoxydables peuvent être livrées sur demande.

Corrosion resistance
Elements of the series with the suffix **..R** are available in stainless steel.

FR..R Guideway rollers
LR..R Flat rollers
FS..R Prismatic guideways
FZ..R Guideway vee racks
LS..R Guideway flat rails
LZ..R Guideway racks

Stainless beams can be supplied on request.

Schmierung
Lubrification
Lubrication

Eine ausreichende Schmierung ist ebenso wichtig wie die korrekte Wahl der Baugrösse und der Montage des Führungssystems.

Eine ausreichende und im Vorfeld der Konstruktion geplante Schmierung reduziert Reibung und Abnützung und vemindert Passungsrost. Tribokorrosion ist immer ein Anzeichen für nicht ausreichende Schmierung. Bei den Führungssystemen ist bezüglich Schmierung folgendes zu unterscheiden:

Rollen
Rollen sind mit Mobilux EP2 erstbefettet.
Die Schmierung ist ausgelegt für die Erreichung des vollen Verfahrweges von 100 000 km.

Schienen
Zur Schmierung der Laufbahnen der Führungs- und Laufschienen sollten die Abstreif- und Schmierungseinheiten verwendet werden (Fig.①).

Ein geöltes Ritzel schmiert die Laufbahnen.
Nach Bedarf wird der seitlich angebrachte Schmiernippel zur Nachschmierung benutzt.

Nachschmierung ist erforderlich im Rahmen der normalen Anlagewartung und der Einsatzbedingungen, spätestens wenn sich erste Spuren von Tribokorrosion zeigen (rötliche Verfärbung der Laufbahnen).

Mit dem nachfüllbaren autonomen Schmierstoffspender und Kolbenverteiler steht ein automatisches Nachschmiersystem von mehreren Abstreif- und Schmiereinheiten zur Verfügung (Fig.②).

Eine Nachschmierung wird alle 100km oder 150h empfohlen.

Kennzeichnung Schmiernippel: roter Ring

Une lubrification suffisante est tout aussi importante que le choix correct de la taille du systeme de guidage et le montage.

Une lubrification suffisante lors de l'étude réduit le frottement et l'usure, empêchant ainsi la formation de la rouille de contact. La tribocorrosion est toujours un signe de lubrification insuffisante. En ce qui concerne la lubrification sur les systèmes de guidage, il faut distinguer ce qui suit:

Galets
La lubrification initiale des galets se fait avec Mobilux EP2. La lubrification est calculée pour une durée de 100 000 km.

Rails
Pour graisser les glissières et les rails de guidage et de roulement, il faut utiliser les unités de racleur et de lubrification (fig.①).

Un pignon huilé lubrifie les glissières. Suivant les besoins, on utilise pour la relubrification le graisseur monté sur un côté.

Une bonne lubrification permet d'augmenter la durée de vie d'un système. Par contre il est impératif de graisser au huile lors de l'apparition des premières traces de tribocorrossion (décoloration rougeâtre des glissières).

Un distributeur de lubrifiant autonome et rechargeable permet une relubrification automatique de plusieurs unités de racleur et de lubrification (fig.②).

Un regraissage est recommandé tous les 100km ou 150h.

Identification du graisseur: bague rouge

Sufficient lubrication is as important as the correct selection of the size of the guideway system or proper assembly.

Lubrication that is correctly chosen and supplied at the beginning of the design reduces friction and prevents tribocorrosion. Tribocorrosion is always an indication of insuffcient lubrication. The following guideway system lubrication guidelines must be observed:

Rollers
The roller bearings are initially greased with Mobilux EP2. The lubrication is designed to last for the full displacement path of 100 000 km.

Rails
For the lubrication of the guideway surfaces, the wiper and lubrication units should be used (Fig.①).

An oiled pinion lubricates the guideway surfaces. When necessary, the lube nipple fitted to one side is used for re-filling the oil reservoir.

Re-lubrication is necessary at regular intervals to protect the integrity of the components. This interval should be determined based on application conditions, and at a minimum when guideway surfaces become dry.

Automatic lubrication systems are available to lubricate multiple guideway and rack surfaces. (Fig.②).

When re-lubricating manually, an interval of 100km or 150 hours is recommended.

Identification of grease nipple: red ring

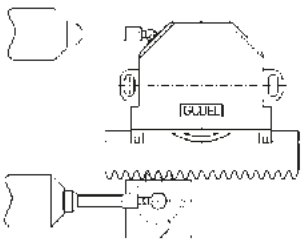


Fig. ①

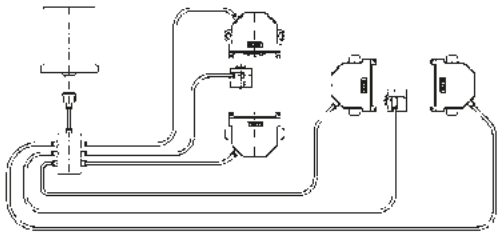


Fig. ②

Verzahnung
Ritzel und Zahnstange sind regelmässig zu Warten und mit einem Haftfett nachzuschmieren. Auf Anfrage ist eine Schmierritzeleinheit erhältlich. Das Schmierritzell lässt sich manuell oder über ein automatisches Schmiersystem mit Öl nachschmieren.

Eine Nachschmierung wird alle 100km oder 150h empfohlen.

Kennzeichnung Schmiernippel: roter Ring

Denture
Le pignon et la crémaillère doivent faire l'objet d'un entretien régulier, et seront regraissés avec de la graisse haute pression. Sur demande une unité de lubrification de pignon peut être fourni. Le pignon de lubrification peut se faire manuellement ou par un système automatique.

Un regraissage est recommandé tous les 100km ou 150h.

Identification du graisseur: bague rouge

Gear teeth
The pinion and the rack must be maintained regularly, and be relubricated with an adhesive grease. On request a lubricating pinion unit is available. The lubricating pinion can either be manually or automatically lubricated.

When re-lubricating manually, an interval of 100km or 150 hours is recommended.

Identification of grease nipple: red ring

Tragfähigkeit und Lebensdauer
Capacité de charge et durée de vie
Load capacity and service life

Auswahl der Baugrösse

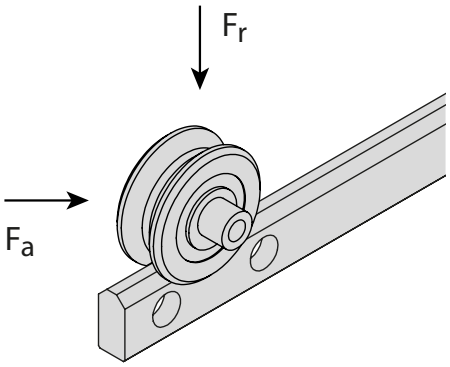
Die Angaben erlauben eine Grobselektion der Baugrössen des Führungssystems. Die Cw-Werte sind in dieser Tabelle für eine nominelle Lebensdauer von 10^7 m (10 000 km) angegeben und beziehen sich auf eine Rolle bei rein radialer oder axialer Belastung. Bei den Masstabellen der Rollen sind die Werte für C_{0w} zusätzlich angegeben. Im Falle von kombinierten Axial- und Radiallasten und Stössen sind die Berechnungsangaben auf Seite 52 zu berücksichtigen oder ein Berechnungsnachweis beim Lieferanten anzufordern.

Sélection dimensionelle

Les indications permettent de procéder à une sélection dimensionelle du système de guidage. Les valeurs Cw sont mentionnées dans ce tableau pour une durée de vie nominale de 10^7 (10 000 km), et se rapportent à un galet sollicité de manière purement radiale ou axiale. En outre, les valeurs pour C_{0w} sont indiquées dans les tableaux dimensionnels des galets. En cas des charges combinées et de chocs, il faudra tenir compte des calculs présentés sur la page 52, ou bien demander une confirmation à nos ingénieurs.

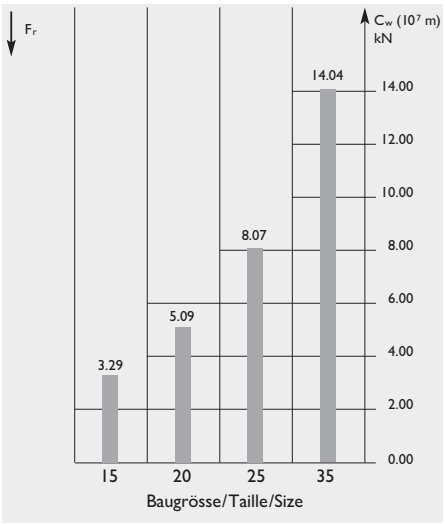
Size selection

This data allows for a rough selection of the size of the required guideway system. The Cw values are listed in this table for a nominal service life of 10^7 m (10 000 km), and refer to a roller with pure radial or axial loading. In the dimensional tables for the rollers, the values for C_{0w} are also given. In cases of combined loading and shock, the calculation data on Page 52 must be consulted, or a calculation verification can be requested from the manufacturer.

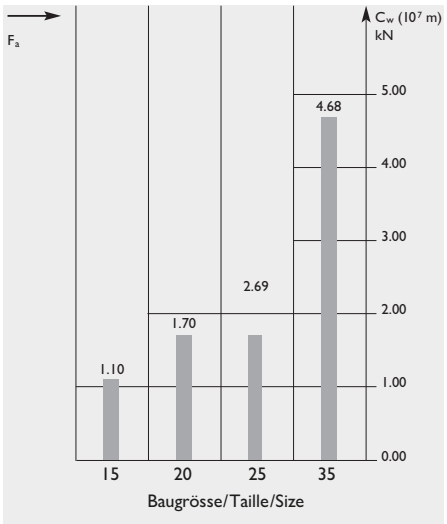


Baugrösse Taille Size	Getriebe Réducteur Gearbox	Seite Page
15	HPG 045	21
20	HPG 045	29
25	HPG 060	37
35	HPG 090	45

Radial force F_r for Ls 10 000 km



Axial force F_a for Ls 10 000 km



Antriebskräfte und Momente
Forces de traction et couples
Drive forces and torques

Nach erfolgter Wahl der Baugrösse muss die Verzahnung der Führungssysteme auf die geforderten Antriebskräfte und Momente überprüft werden. Die Verzahnungen sind in weicher sowie gehärteter und geschliffener Ausführung lieferbar.

Die angegebenen Werte haben Gültigkeit bei guter Schmierung, stossfreiem Betrieb und stabiler Lagerung.

Ein anwendungsspezifischer Sicherheitsfaktor fs 1.0 bis 4.0 ist nach Erfahrung zu berücksichtigen. Empfehlung fs > 1.5

Die Längskraft F_N ist in Abhängigkeit von der Zähnezahl z des Ritzels angegeben.

Après avoir sélectionné la taille, il faut également contrôler la denture des systèmes de guidage, en ce qui concerne les forces de traction et les couples appliqués. Les dentures peuvent être livrées aussi bien en version non-trempée qu'en version trempée et rectifiée.

Les valeurs indiquées sont des valeurs obtenues en fonctionnement sans chocs, avec lubrification et montage rigide du pignon.

Un facteur de sécurité spécifique à l'application fs 1,0 à 4,0 doit être pris en compte en fonction de l'expérience. Recommandation fs > 1.5

La force de traction F_N est indiquée en fonction du nombre de dents z du pignon.

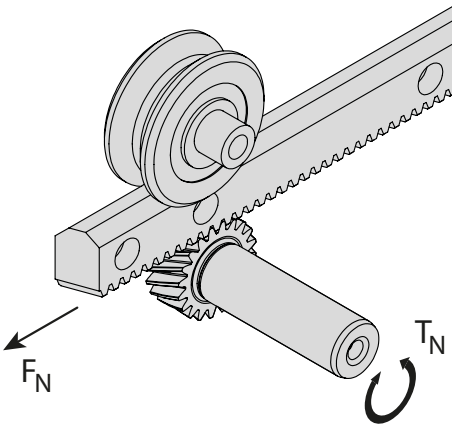
After selecting the rack, the gear teeth of the guideway system must be checked for compatibility with the required drive forces and torques. The rack can be supplied precision cut or hardened and ground.

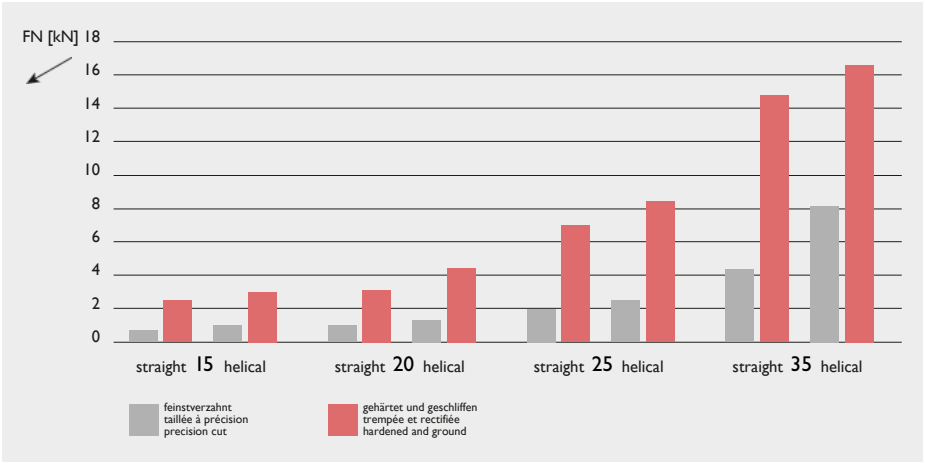
The values given are for shock-free operation, good lubrication and stiff arrangement of the pinion.

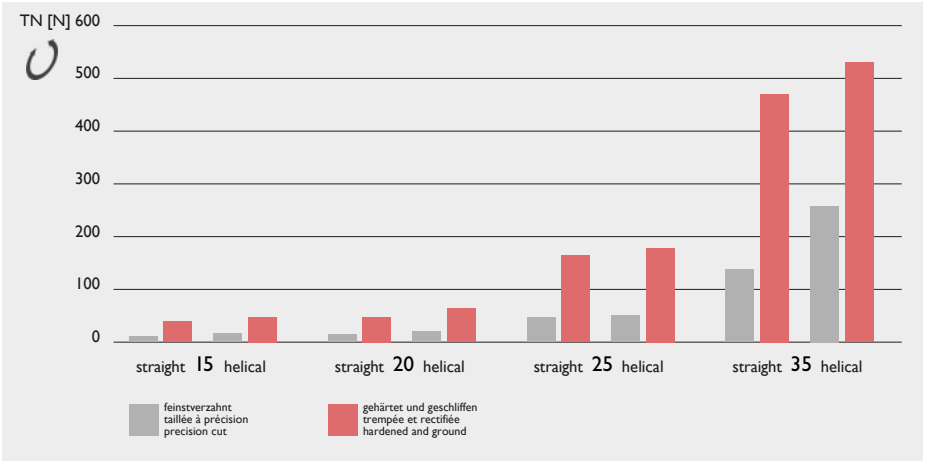
A safety factor for tooth root stress SF ≥ 1.4 and a safety factor for Hertzian stress SH ≥ 1.0 is taken into account.

An application-specific safety factor fs 1.0 to 4.0 must be taken into account according to experience. Recommendation fs > 1.5

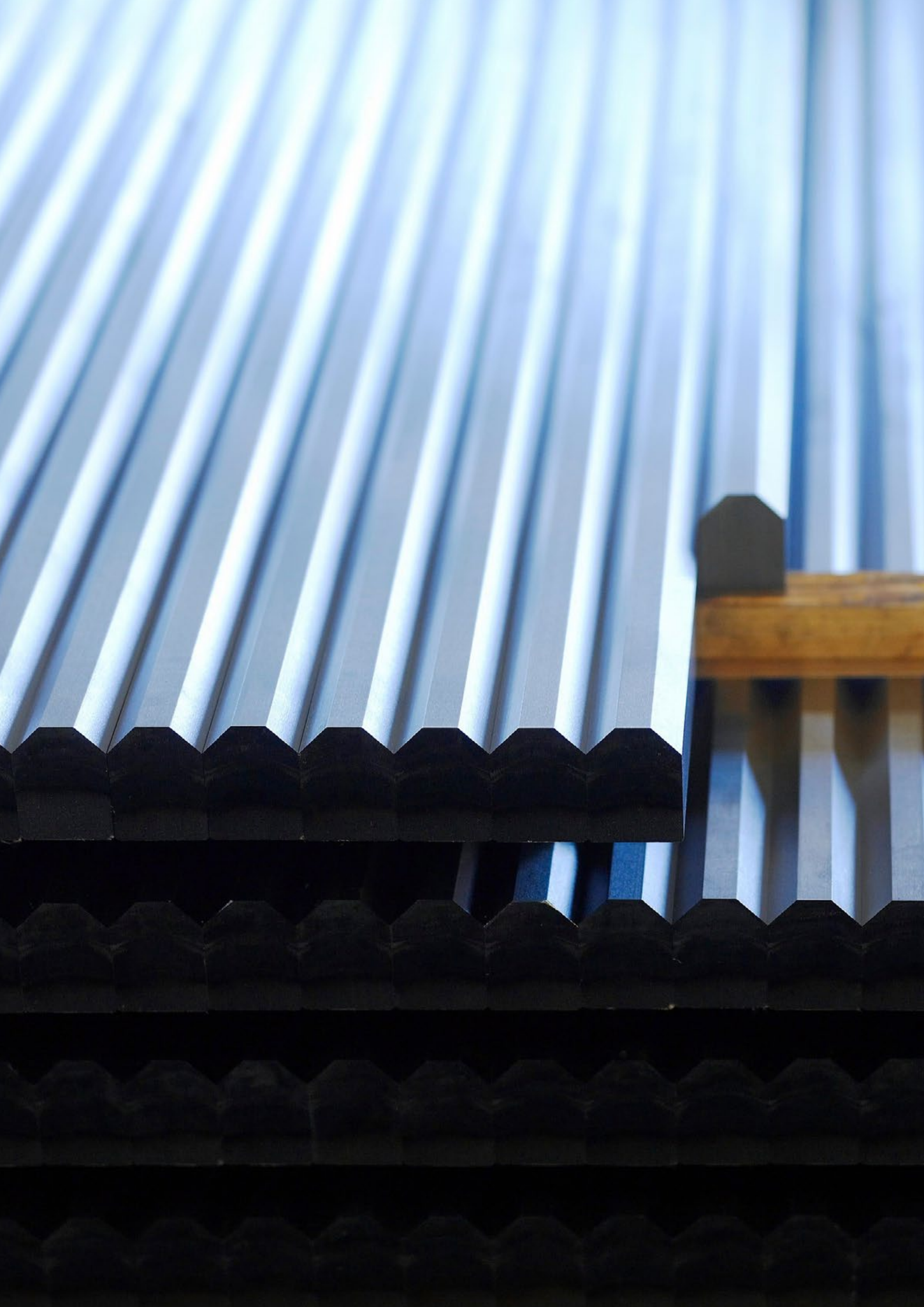
The traction force F_N is related to the number of teeth z of the pinion.







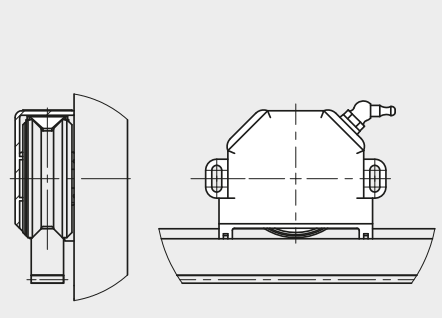
Bei Schrägverzahnung Schrägungswinkel 19° 31’42”
Pour denture hélicoïdale angle d'hélice 19° 31’42”
For helical toothing helix angle 19° 31’42”



Technische Datenblätter
Fiches techniques
Technical Data Sheets

GÜDEL

15
Baugrösse
Taille
Size

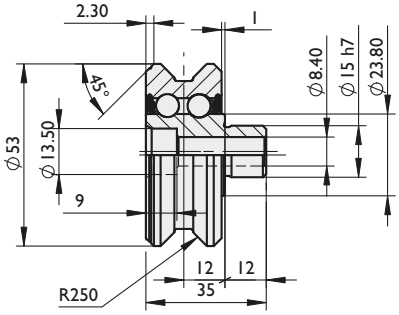


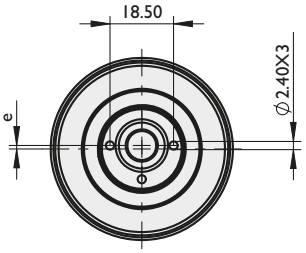
Mounting dimensions

Führungsrolle

Galet de guidage

Roller for vee rails





DIN 912 8.8
M6x35

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
FR 15	900715	1 mm	+14/+31	100Cr6	1.3505	0.25	6800	3340	9000
FR 15 A	900716	1 mm	+5/+13	100Cr6	1.3505	0.25	6800	3340	9000
FR 15 Z	900717	0 mm	+14/+31	100Cr6	1.3505	0.25	6800	3340	9000
FR 15 ZA	900719	0 mm	+5/+13	100Cr6	1.3505	0.25	6800	3340	9000
FR 15 R	900718	1 mm	+14/+31	X46Cr13	1.4034	0.25	5100	2490	9000

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

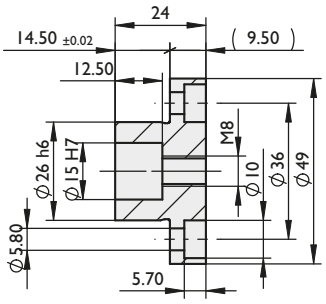
verzinkt

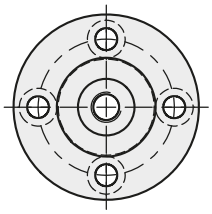
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M5x16

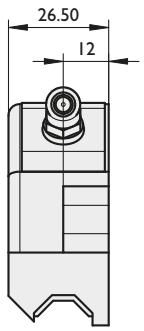
Type	Part No.	Mat.		m [kg]
SP 15	902016	C45E	1.1191	0.15
SPE 15	902041	C45E	1.1191	0.11

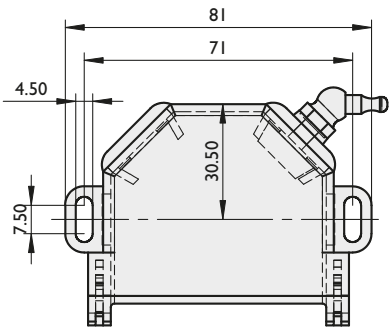
Page 46

Abstreifer-Schmiereinheit

Racleur graisseur

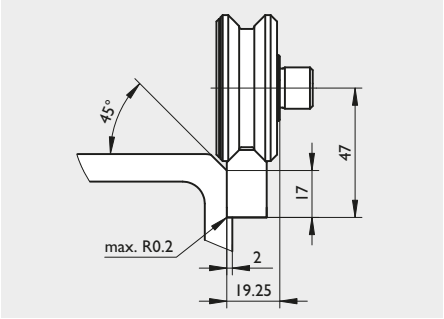
Wiper and Lubrication Unit





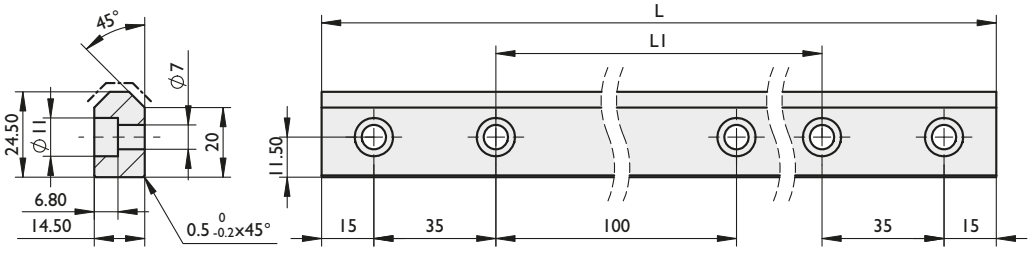
DIN 912 8.8
M4x18

Type	Part No.	Mat.	m [kg]
RA 15	900041	PA-6/POM	0.03



Mounting dimensions

Führungsschiene | Rail de guidage | Guideway for vee rail



Type	Part No.	L	L_1	f	Mat.		m [kg]
FSV 150	905315	1200	1100	0.55 ±0.15	58CrMoV4	1.7792	3.00
	905316	600	500	0.55 ±0.15	58CrMoV4	1.7792	1.50
FSV 150 R	905991	600	500	0.55 ±0.1	X42Cr13	1.2083	1.50

DIN 912 8.8
M6x16

Führungszahnstange | Rail de crémaillère de guidage | Guideway vee rack

Fig. ①

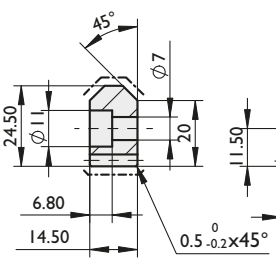
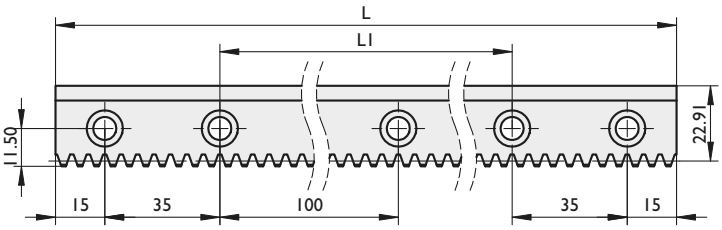


Fig. ②



Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
FZV 15	905115	1200	1100	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	2.80
	905116	600	500	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	1.40
FZV 15G	905060	1200	1100	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	2.80
	905061	600	500	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	1.40
FZV 15R	905996	600	500	0.55 ±0.1	1.5915	5.0	②	X42Cr13	1.2083	1.40

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

Führungszahnstange schrägverzahnt | Rails de crémaillère de guidage à denture oblique | Helical guideway vee rack

Fig. ①

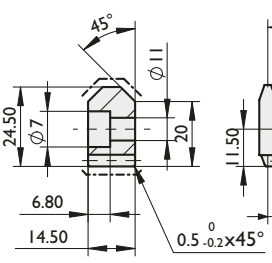
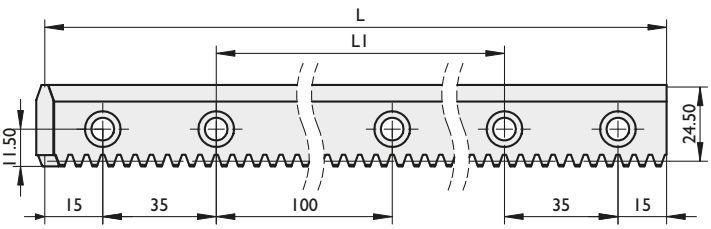


Fig. ②



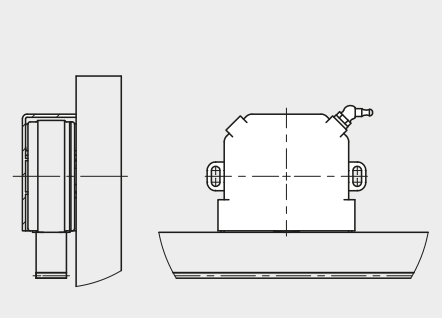
Type	Part No.	L	L_1	f	m_n	p_t	Fig.	Mat.		m [kg]
FZVA 15	905215	1200	1100	0.55 ±0.15	1.5	5.0	①	58CrMoV4	1.7792	2.80
	905216	600	500	0.55 ±0.15	1.5	5.0	①	58CrMoV4	1.7792	1.40
FZVA 15G	905260	1200	1100	0.55 ±0.15	1.5	5.0	②	58CrMoV4	1.7792	2.80
	905261	600	500	0.55 ±0.15	1.5	5.0	②	58CrMoV4	1.7792	1.40

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_t: Transverse pitch [mm]

15
Baugrösse
Taille
Size

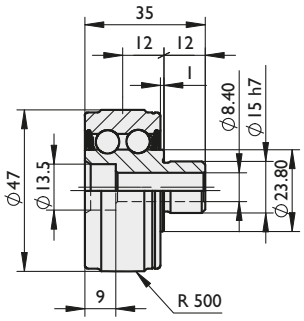


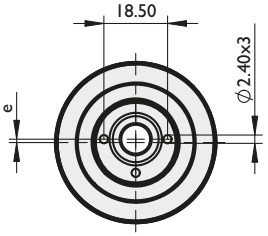
Mounting dimensions

Laufrolle

Galet de roulement

Flat Roller





DIN 912 8.8
M8x35

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
LR 15	900815	1 mm	+14/+31	100Cr6	1.3505	0.18	6800	3280	9000
LR 15 A	900816	1 mm	+5/+13	100Cr6	1.3505	0.18	6100	3280	9000
LR 15 Z	900817	0 mm	+14/+31	100Cr6	1.3505	0.18	6800	3280	9000
LR 15 R	900818	1 mm	+14/+31	X46Cr13	1.4034	0.18	5100	2450	9000

G_a Internal axial clearance C_w Distance 10⁷m

Befestigungsflansch

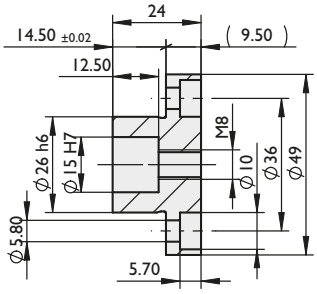
verzinkt

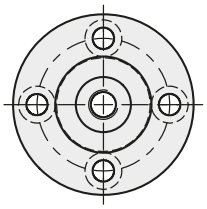
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M5x16

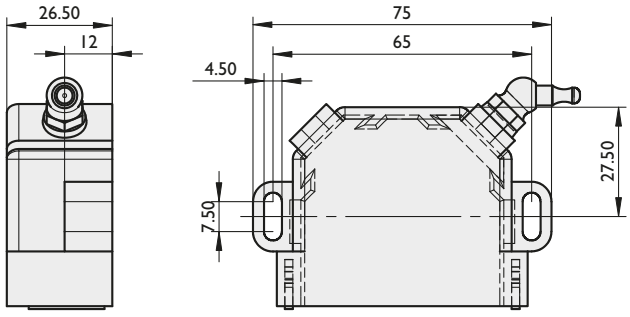
Type	Part No.	Mat.		m [kg]
SP 15	902016	C45E	1.1191	0.15
SPE 15	902041	C45E	1.1191	0.11

Page 46

Abstreifer-Schmiereinheit

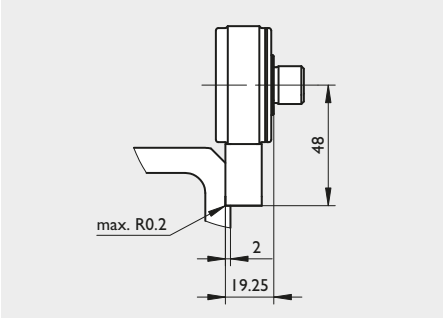
Racleur graisseur

Wiper and Lubrication Unit



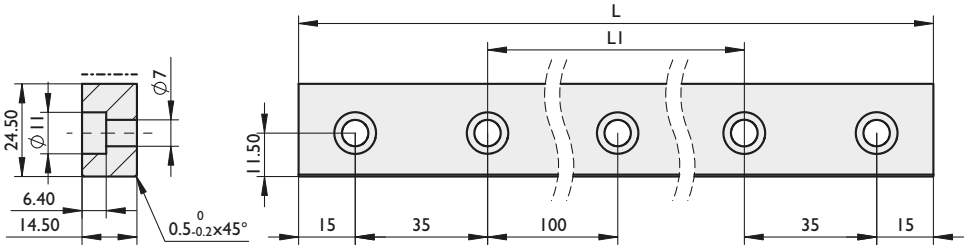
DIN 912 8.8
M4x18

Type	Part No.	Mat.	m [kg]
RAL 15	900046	PA-6/POM	0.03



Mounting dimensions

Laufschiene | Rail de roulement | Guideway flat rail



Type	Part No.	L	L_1	f	Mat.		m [kg]
LSV 150	905615	1200	1100	0.55 ±0.15	58CrMoV4	1.7792	3.24
	905616	600	500	0.55 ±0.15	58CrMoV4	1.7792	1.62
LSV 150 R	905001	600	500	0.55 ±0.1	X42Cr13	1.2083	1.62

DIN 912 8.8
M6x16

Laufzahnstange | Rail crémaillère de roulement | Guideway rack

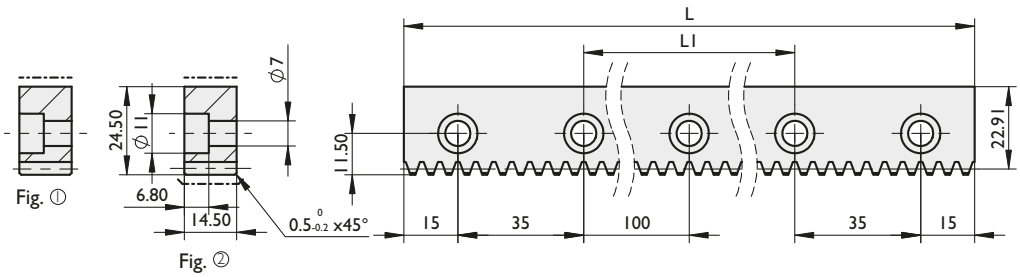


Fig. ①

Fig. ②

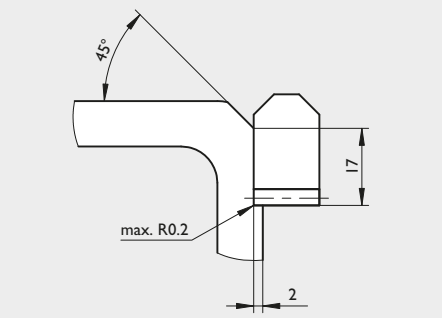
Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
LZV 15	905415	1200	1100	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	3.00
	905416	600	500	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	1.50
LZV 15G	905063	1200	1100	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	3.00
	905065	600	500	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	1.50
LZV 15R	905006	600	500	0.55 ±0.1	1.5915	5.0	②	X42Cr13	1.2083	1.50

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

15
Baugrösse
Taille
Size



Mounting dimensions

Trägerprofil in Stahl mit Führungen

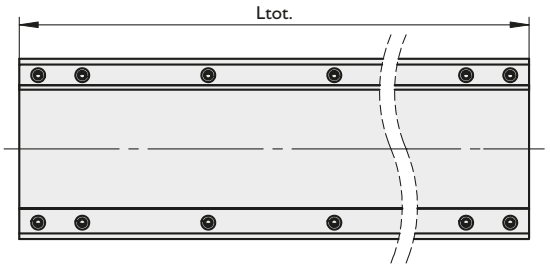
Die Profile sind sandgestrahlt, grundiert und bearbeitet zur Aufnahme der Schienen. Die Führungen werden gemäss Bestellbeispiel spezifiert. Die Portale werden mit montierten Schienen geliefert. Auf Anfrage werden sie mit 2-Komponentenfarbe lackiert.

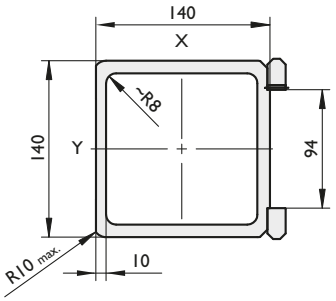
Poutre en acier avec rails

Poutre sablé avec peinture d'après. Usinée pour réception des rails. Livrée avec ses rails montés selon exemple de commande. Sur demande peinture en 2 composants.

Tubular Steel Profile with Guideways

The profiles are sandblasted, primed and machined to carry the rails. The profiles are supplied with mounted guideways. On request the profiles are painted with 2 coats of semi-gloss paint.





Type	Mat.		m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z② [cm⁴]
LP 140/140-15	S355J2H	1.0576	39.6	45.2	1400	1660	1400	1550	2250

① Without guideways ② With guideways

Option: On request fixing holes on front sides

Bestellbeispiel

Exemple de commande

Ordering example

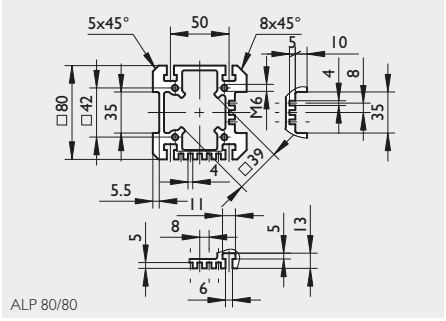
Type	LP 140/140-15	FZV 15 / FSV 150	2400 mm	–	RAL 3006
Spezifikation der Schienen gemäss Seiten 15, 17			Länge,	Option: Stirnseitiges Bohrbild nur auf Bestellung	Option: Farblackierung
Sélection des rails selon page 15, 17			Longueur	Sur demande trous de fixation aux extremités	Peinture en 2 composants
Selection of guideways according to page 15, 17			Length	On request fixing holes on front sides	Paint Color Code

Die gesamte Schienenlänge L_{tot} sollte wenn möglich aus der Summe der Teillängen der Elemente gebildet werden.

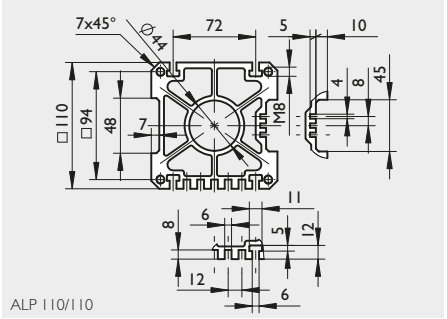
$L_{tot} = n_1 \cdot 1200 + n_2 \cdot 600$

La longueur totale L_{tot} des rails devait être la somme des longueurs individuelles des rails.

Overall length L_{tot} of the guideways should be the sum of each length of the elements.



ALP 80/80



ALP 110/110

Mounting dimensions

Trägerprofil in Alu mit Führungen

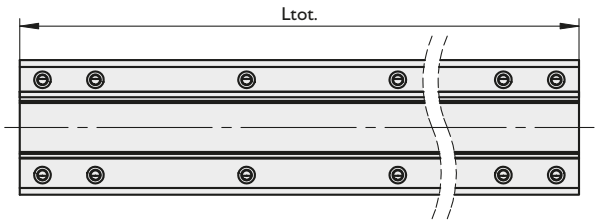
Gezogen und bearbeitet zur Aufnahme der Führungsschienen. Die Profile werden mit montierten Schienen geliefert. Auf Wunsch können sie eloxiert werden.

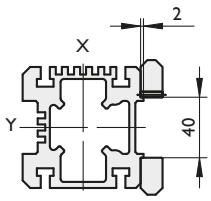
Poutre en alu avec rails

Profils filés et usiné pour réception des rails. Livré avec ses rails montés. Sur demande anodisé.

Tubular alum profiles with guideways

Extruded and machined. The profiles are supplied with mounted guideways. On request, the profiles can be anodized.

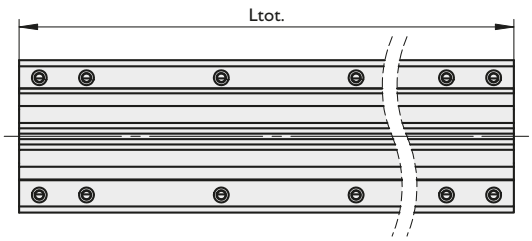


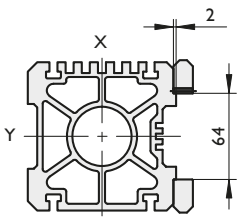


Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z② [cm⁴]
ALP 80/80-15	EN AW-6060	6.8	12.4	179	279	181	227	79

① Without guideways ② With guideways

Option: On request fixing holes on front sides





Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 110/110-15	EN AW-6060	12.3	17.9	606	788	609	705	341

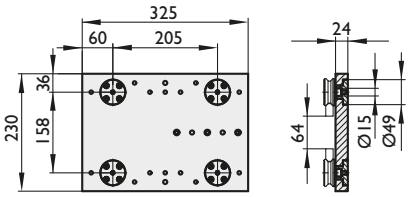
① Without guideways ② With guideways

Option: On request fixing holes on front sides

15
Baugrösse
Taille
Size

Laufwagen | Chariot | Carriage

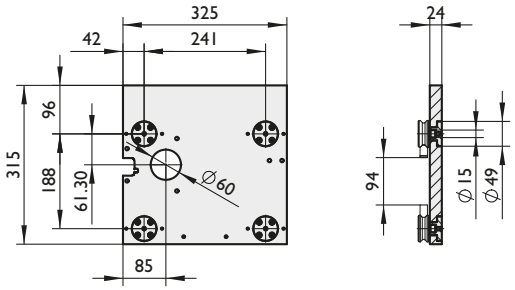
I-Axis
→ y



Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 15.0	0159290	EN AW-5083	4.5	ALP 110/110-15	–

I-Axis
→ y

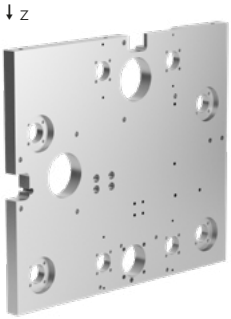


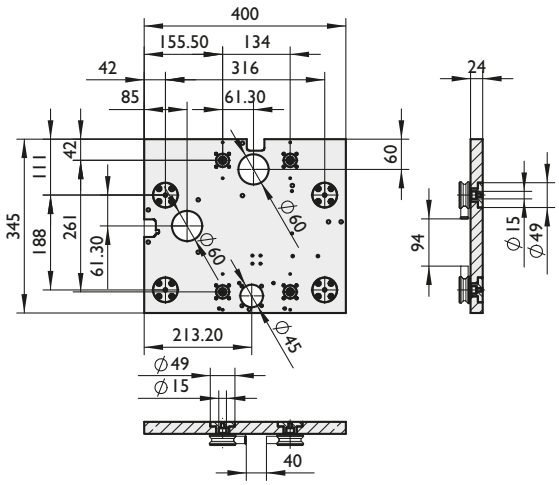
Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 15.1	0111083	EN AW-5083	6.1	LP 140/140-15	–

For fitting of worm gear unit HPG045

2-Axis
→ y ↓ z

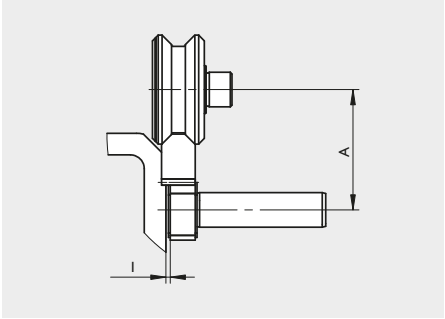


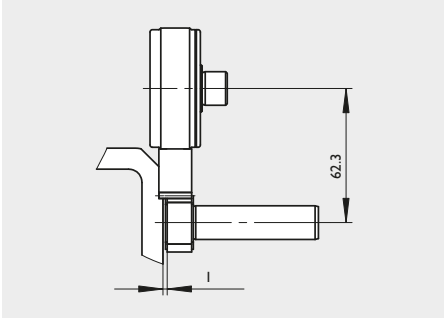


Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 15.2	0108066	EN AW-5083	7.7	LP 140/140-15	LP 140/140-15

For fitting of worm gear unit HPG045





GÜDEL

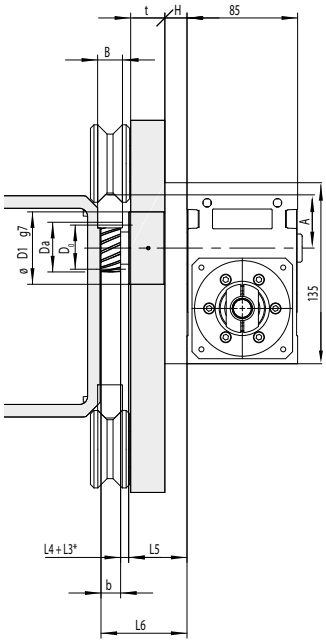
Hochleistungswinkelgetriebe

Renvoi d'angle à haute Performance

High Performance Angle Gearbox

Type HPG045

Detailinformationen und Konfigurationsmöglichkeiten finden Sie in unserem Katalog für Hochleistungswinkelgetriebe.
Vous trouverez des informations détaillées et des possibilités de configuration dans notre catalogue pour réducteur roue et vis à haute performance.
Detailed information and configuration options can be found in our catalog for high-performance angle gearboxes.



Example Code for Size 15:

Type	Size	Configuration		Ratio	Precision Grades	Pinion Part No.	Request of Output Flange		Assem-bly	Spacer Elements	
		Input	Output				L6	L5			
HPG	045	C	1	5	PS	10378802	59	43	–	19	Motor

default for this size
see gearbox catalog
values from table on this page

Wellenritzel

Pignon avec arbre

Pinion with shaft

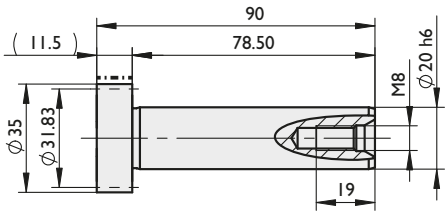


Fig. ①

Typ	Part No.	m_n	p_n	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_I	t	*L3	L4	L5	L6	H
WR 15	900915	1.5915	5	20	35	31.83	31.83	16MnCr5	0.25	61.3	11.5	14.5	60	24	4.5	0	43 53	59 69	19 29

m_n: Normal module, p_n: Normal pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hart
Quality 6f24

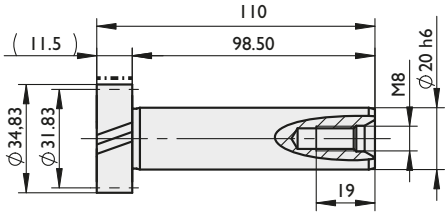


Fig. ①

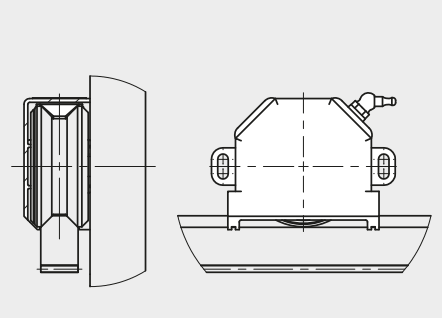
Typ	Part No.	m_n	p_t	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_I	t	*L3	L4	L5	L6	H
WRA 15	10378802	1.5	5	20	34.83	31.83	31.83	16MnCr5	0.3	61.42	11.5	14.5	60	24	4.5	0	43 53	59 69	19 29

m_n: Normal module, p_t: Transverse pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hart
Quality 6f24

Further drive pinions can be found in our rack and pinions catalog on our homepage.

20
Baugrösse
Taille
Size

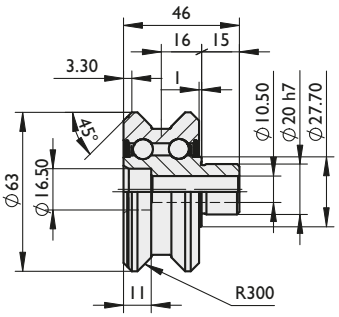


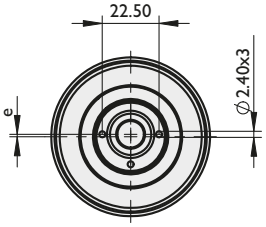
Mounting dimensions

Führungsrolle

Galet de guidage

Roller for vee rails





DIN 912 8.8
M10x50

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
FR 20	900720	1 mm	+15/+33	100Cr6	1.3505	0.50	9500	4730	7000
FR 20 A	900721	1 mm	+5/+13	100Cr6	1.3505	0.50	9500	4730	7000
FR 20 Z	900722	0 mm	+15/+33	100Cr6	1.3505	0.50	9500	4730	7000
FR 20 ZA	900724	0 mm	+5/+13	100Cr6	1.3505	0.50	9500	4730	7000
FR 20 R	900723	1 mm	+6/+23	X46Cr13	1.4034	0.50	7100	3550	7000

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

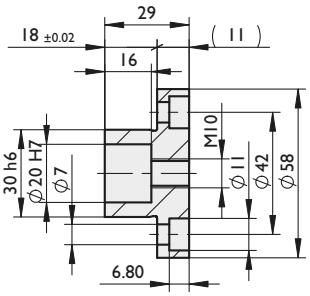
verzinkt

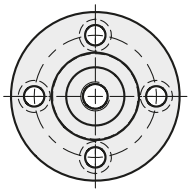
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M6x16

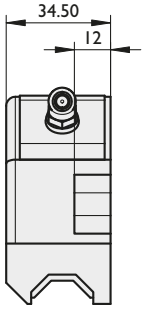
Type	Part No.	Mat.		m [kg]
SP 20	902021	C45E	1.1191	0.25
SPE 20	902042	C45E	1.1191	0.18

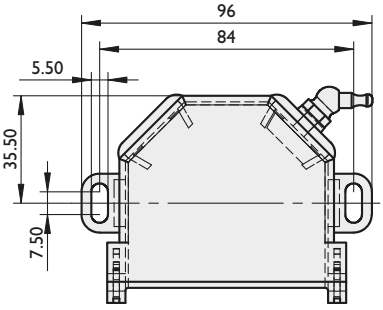
Page 46

Abstreifer-Schmiereinheit

Racleur graisseur

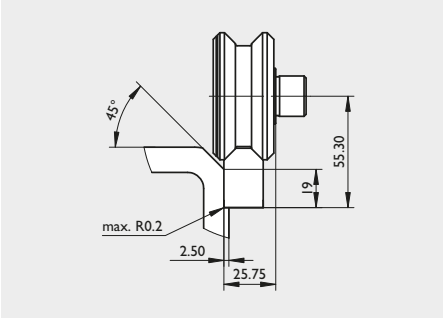
Wiper and Lubrication Unit





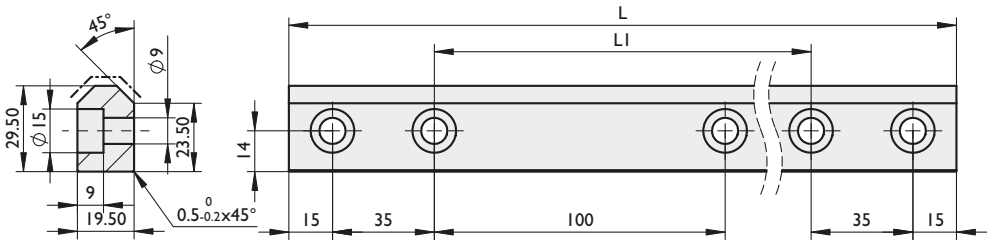
DIN 912 8.8
M5x20

Type	Part No.	Mat.	m [kg]
RA 20	900042	PA-6/POM	0.04



Mounting dimensions

Führungsschiene | Rail de guidage | Guideway for vee rail



Type	Part No.	L	L_1	f	Mat.		m [kg]
FSV 200	905320	1200	1100	0.55 ±0.15	58CrMoV4	1.7792	4.80
	905321	600	500	0.55 ±0.15	58CrMoV4	1.7792	2.40
FSV 200 R	905992	600	500	0.55 ±0.1	X46Cr13	1.2083	2.40

DIN 912 8.8
M8x20

Führungszahnstange | Rail de crémaillère de guidage | Guideway vee rack

Fig. ①

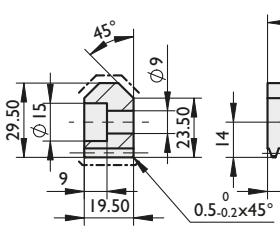
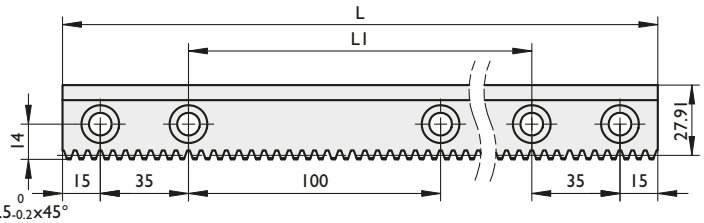


Fig. ②



Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
FZV 20	905120	1200	1100	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	4.5
	905121	600	500	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	2.25
FZV 20 G	905070	1200	1100	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	4.5
	905071	600	500	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	2.25
FZV 20 R	905997	600	500	0.55 ±0.1	1.5915	5.0	②	X42Cr13	1.2083	2.25

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

Führungszahnstange schrägverzahnt | Rails de crémaillère de guidage à denture oblique | Helical guideway vee rack

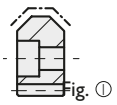
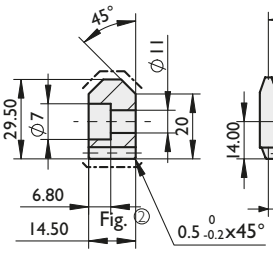
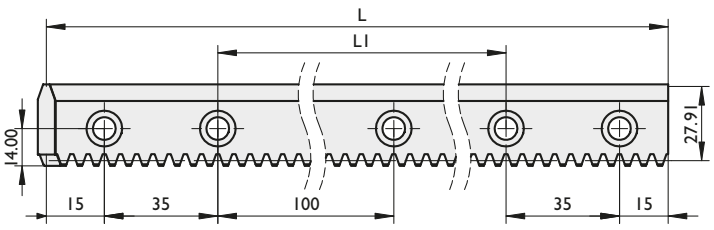


Fig. ①





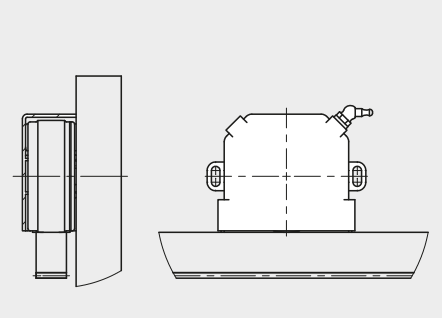
Type	Part No.	L	L_1	f	m_n	p_t	Fig.	Mat.		m [kg]
FZVA 20	905220	1200	1100	0.55 ±0.15	1.5	5.0	①	58CrMoV4	1.7792	4.50
	905221	600	500	0.55 ±0.15	1.5	5.0	①	58CrMoV4	1.7792	2.25
FZVA 20G	905270	1200	1100	0.55 ±0.15	1.5	5.0	②	58CrMoV4	1.7792	4.50
	905271	600	500	0.55 ±0.15	1.5	5.0	②	58CrMoV4	1.7792	2.25

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_t: Transverse pitch [mm]

20
Baugrösse
Taille
Size

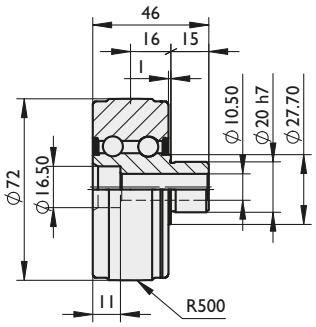


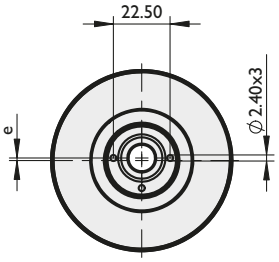
Mounting dimensions

Laufrolle

Galet de roulement

Flat Roller





DIN 912 8.8
M10x50

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
LR 20	900820	1 mm	+15/+33	100Cr6	1.3505	0.70	9500	5090	7000
LR 20 A	900821	1 mm	+5/+13	100Cr6	1.3505	0.70	9500	5090	7000
LR 20 Z	900822	0 mm	+15/+33	100Cr6	1.3505	0.70	9500	5090	7000
LR 20 R	900823	1 mm	+15/+33	X46Cr13	1.4034	0.70	7100	3810	7000

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

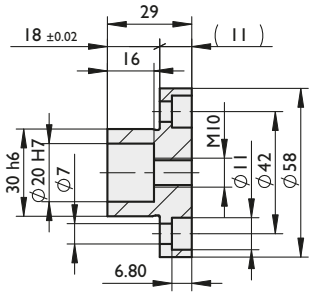
verzinkt

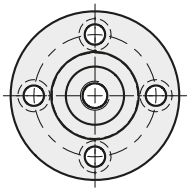
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M6x16

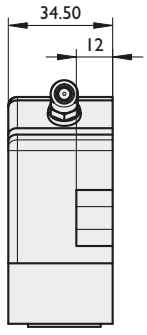
Type	Part No.	Mat.		m [kg]
SP 20	902021	C45E	1.1191	0.25
SPE 20	902042	C45E	1.1191	0.18

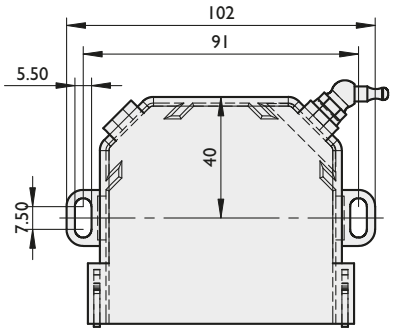
Page 46

Abstreifer-Schmiereinheit

Racleur graisseur

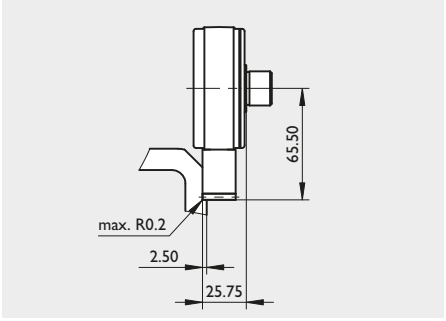
Wiper and Lubrication Unit





DIN 912 8.8
M5x20

Type	Part No.	Mat.	m [kg]
RAL 20	900047	PA-6/POM	0.04

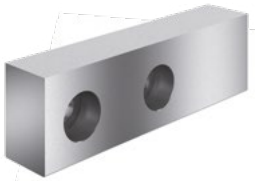


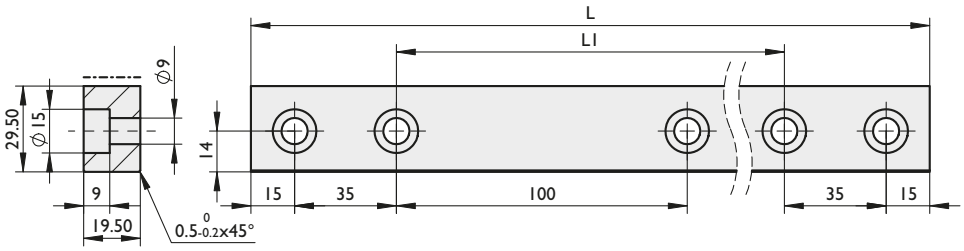
Mounting dimensions

Laufschiene

Rail de roulement

Guideway flat rail





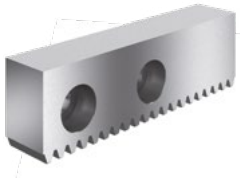
Type	Part No.	L	L_1	f	Mat.		m [kg]
LSV 200	905620	1200	1100	0.55 ±0.15	58CrMoV4	1.7792	5.20
	905621	600	500	0.55 ±0.15	58CrMoV4	1.7792	2.60
LSV 200 R	905002	600	500	0.55 ±0.1	X42Cr13	1.2083	2.60

DIN 912 8.8
M8x20

Laufzahnstange

Rail crémaillère de roulement

Guideway rack



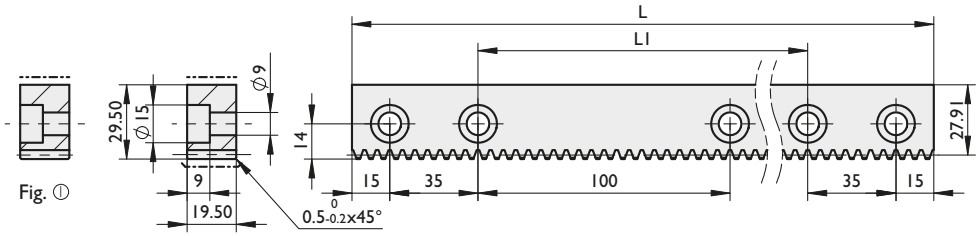


Fig. ①

Fig. ②

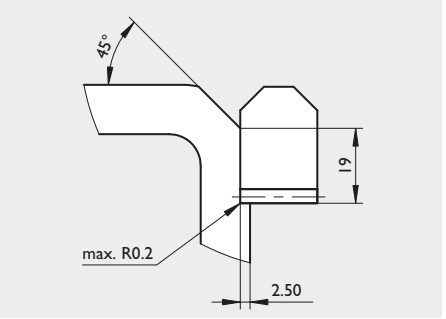
Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
LZV 20	905420	1200	1100	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	4.80
	905421	600	500	0.55 ±0.15	1.5915	5.0	①	58CrMoV4	1.7792	2.40
LZV 20G	905073	1200	1100	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	4.80
	905074	600	500	0.55 ±0.15	1.5915	5.0	②	58CrMoV4	1.7792	2.40
LZV 20R	905007	600	500	0.55 ±0.1	1.5915	5.0	②	X42Cr13	1.2083	2.40

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

20
Baugrösse
Taille
Size



Mounting dimensions

Trägerprofil in Stahl mit Führungen

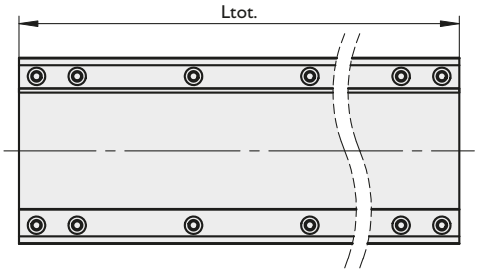
Die Profile sind sandgestrahlt, grundiert und bearbeitet zur Aufnahme der Schienen. Die Führungen werden gemäss Bestellbeispiel spezifiert. Die Portale werden mit montierten Schienen geliefert. Auf Anfrage werden sie mit 2-Komponentenfarbe lackiert.

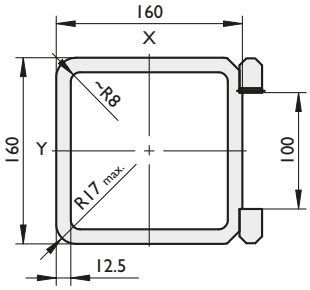
Poutre en acier avec rails

Poutre sablé avec peinture d'après. Usinée pour réception des rails. Livrée avec ses rails montés selon exemple de commande. Sur demande peinture en 2 composants.

Tubular Steel Profile with Guideways

The profiles are sandblasted, primed and machined to carry the rails. The profiles are supplied with mounted guideways. On request the profiles are painted with 2 coats of semi-gloss paint.





Type	Mat.		m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z② [cm⁴]
LP 160/160-20	S355J2H	1.0576	55.4	61.9	2500	3048	2500	2884	4011

① Without guideways ② With guideways

Bestellbeispiel

Exemple de commande

Ordering example

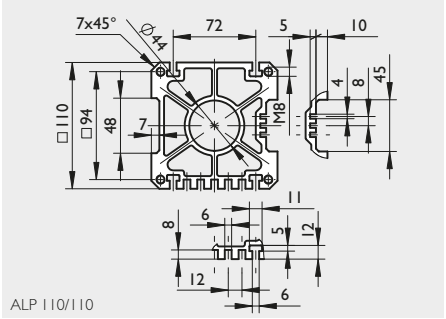
Type	LP 160/160-20	FZV 20 / FSV 200	3000 mm	–	RAL 2004
Spezifikation der Schienen gemäss Seiten 23, 25			Länge,	Option: Stirnseitiges Bohrbild nur auf Bestellung	Option: Farblackierung
Sélection des rails selon page 23, 25			Longueur	Sur demande trous de fixation aux extremités	Peinture en 2 composants
Selection of guideways according to page 23, 25			Length	On request fixing holes on front sides	Semi-gloss paint

Die gesamte Schienenlänge L_{tot} sollte wenn möglich aus der Summe der Teillängen der Elemente gebildet werden.

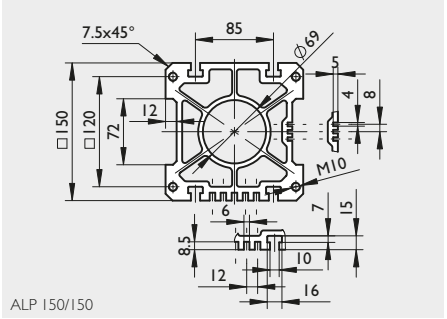
La longueur totale L_{tot} des rails devait être la somme des longueurs individuelles des rails.

Overall length L_{tot} of the guideways should be the sum of each length of the elements.

$L_{tot} = n_1 \cdot 1200 + n_2 \cdot 600$



ALP 110/110



ALP 150/150

Mounting dimensions

Trägerprofil in Alu mit Führungen

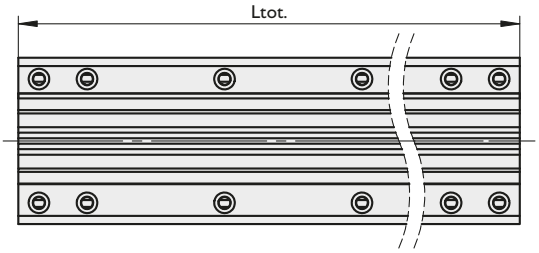
Gezogen und bearbeitet zur Aufnahme der Führungsschienen. Die Profile werden mit montierten Schienen geliefert. Auf Wunsch können sie eloxiert werden.

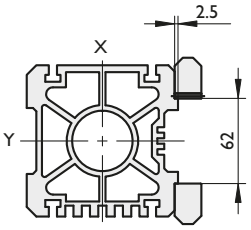
Poutre en alu avec rails

Profils filés et usiné pour réception des rails. Livré avec ses rails montés. Sur demande anodisé.

Tubular alum profiles with guideways

Extruded and machined. The profiles are supplied with mounted guideways. On request, the profiles can be anodized.

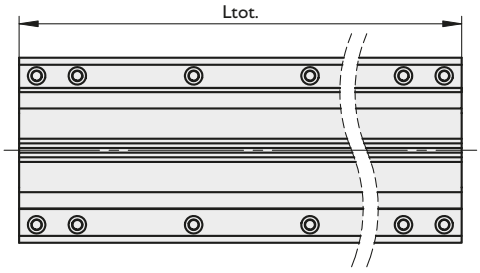


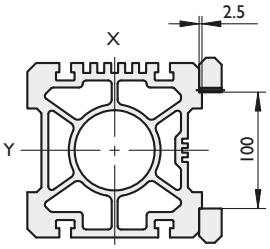


Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 110/110-20	EN AW-6060	12.3	21.3	606	922	609	763	341

① Without guideways ② With guideways

Option: On request fixing holes on front sides





Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 150/150-20	EN AW-6060	23.0	32.0	2080	2640	2270	2560	1250

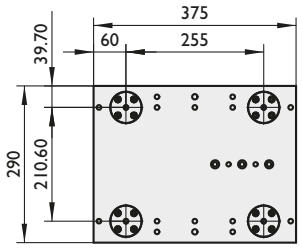
① Without guideways ② With guideways

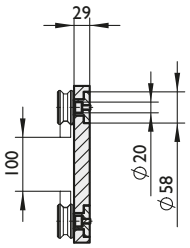
Option: On request fixing holes on front sides

20
Baugrösse
Taille
Size

Laufwagen | Chariot | Carriage

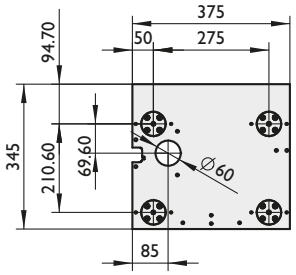
1-Axis
→ y

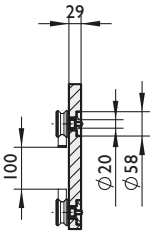




				Trägerprofil | Poutre | Profile	
Type	**Part No.**	**Mat.**	**m [kg]**	**→ y**	**↓ z**
WP 20.0	0161193	EN AW-5083	7.9	LP 160/90-20	–
				LP 160/160-20	–
				ALP 150/150-20	–

1-Axis
→ y

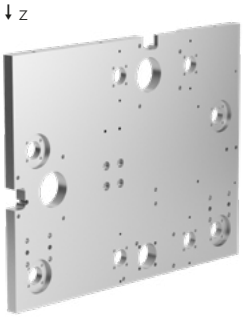


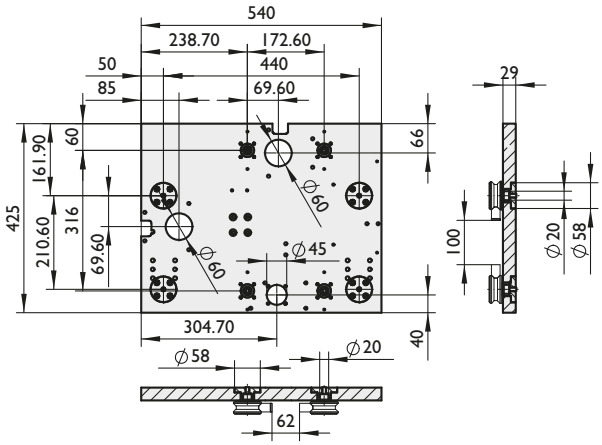


				Trägerprofil | Poutre | Profile	
Type	**Part No.**	**Mat.**	**m [kg]**	**→ y**	**↓ z**
WP 20.1	0111091	EN AW-5083	9.3	LP 160/90-20	–
				LP 160/160-20	–
				ALP 150/150-20	–

For fitting of worm gear unit HPG045

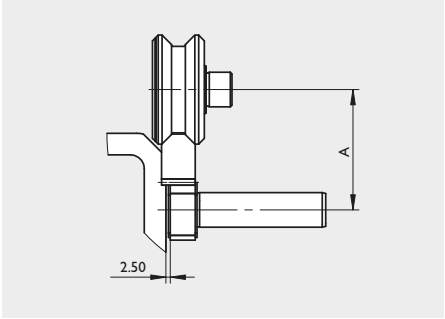
2-Axis
→ y ↓ z

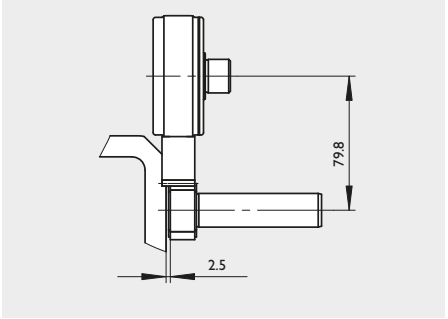




				Trägerprofil | Poutre | Profile	
Type	**Part No.**	**Mat.**	**m [kg]**	**→ y**	**↓ z**
WP 20.2	0122892	EN AW-5083	16.1	LP 160/90-20	ALP 110/110-20
				LP 160/160-20	ALP 110/110-20

For fitting of worm gear unit HPG045





GÜDEL

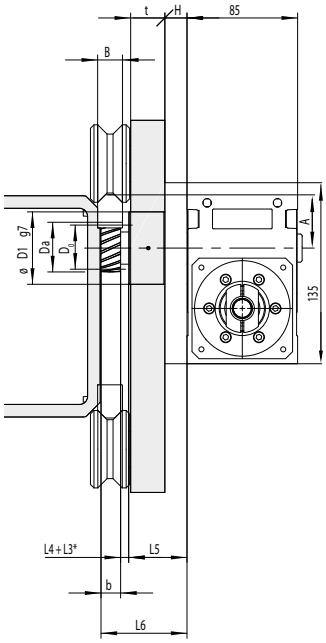
Hochleistungswinkelgetriebe

Renvoi d'angle à haute Performance

High Performance Angle Gearbox

Type HPG045

Detailinformationen und Konfigurationsmöglichkeiten finden Sie in unserem Katalog für Hochleistungswinkelgetriebe.
Vous trouverez des informations détaillées et des possibilités de configuration dans notre catalogue pour réducteur roue et vis à haute performance.
Detailed information and configuration options can be found in our catalog for high-performance angle gearboxes.



Example Code for Size 20:

Type	Size	Configuration		Ratio	Precision Grades	Pinion Part No.	Request of Output Flange		Assem-bly	Spacer Elements	
		Input	Output				L6	L5			
HPG	045	C	I	5	PS	10378803	59	43	–	19	Motor

default for this size
see gearbox catalog
values from table on this page

Wellenritzel

Pignon avec arbre

Pinion with shaft

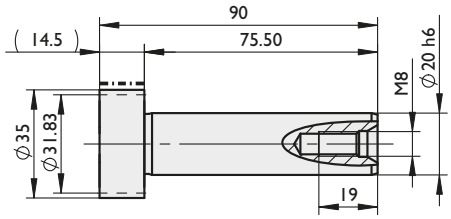


Fig. ①

Typ	Part No.	m_n	p_n	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_1	t	*L3	L4	L5	L6	H
WR 20	900920	1.5915	5	20	35	31.83	31.83	16MnCr5	0.27	69.6	14.5	19.5	60	29	11.5	0	43 53	59 69	19 29

m_n: Normal module, p_n: Normal pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hard
Quality 6f24

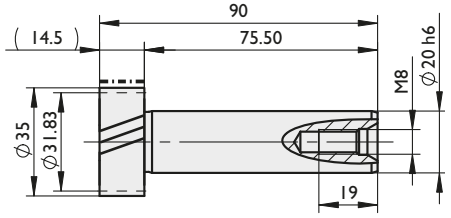


Fig. ①

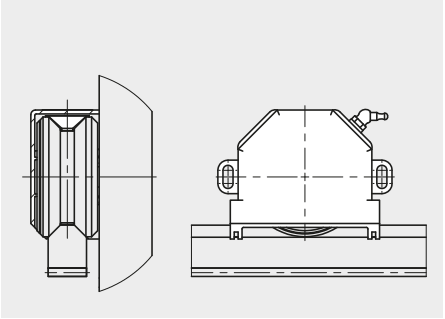
Typ	Part No.	m_n	p_t	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_1	t	*L3	L4	L5	L6	H
WRA 20	10378803	1.5	5	20	34.83	31.83	31.83	16MnCr5	0.32	69.72	14.5	19.5	60	29	11.5	0	43 53	59 69	19 29

m_n: Normal module, p_t: Transverse pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hard
Quality 6f24

Further drive pinions can be found in our rack and pinions catalog on our homepage.

25
Baugrösse
Taille
Size

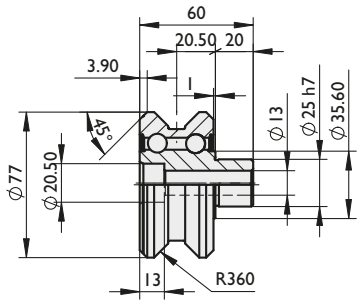


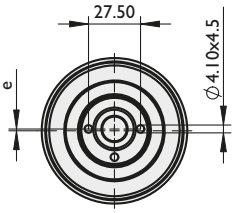
Mounting dimensions

Führungsrolle

Galet de guidage

Roller for vee rails





DIN 912 8.8
M12x60

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
FR 25	900725	1 mm	+19/+38	100Cr6	1.3505	1.1	15000	7560	5600
FR 25 A	900726	1 mm	+8/+16	100Cr6	1.3505	1.1	15000	7560	5600
FR 25 Z	900727	0 mm	+19/+38	100Cr6	1.3505	1.1	15000	7560	5600
FR 25 ZA	900729	0 mm	+8/+16	100Cr6	1.3505	1.1	15000	7560	5600
FR 25 R	900728	1 mm	+19/+38	X46Cr13	1.4034	1.1	11000	5680	5600

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

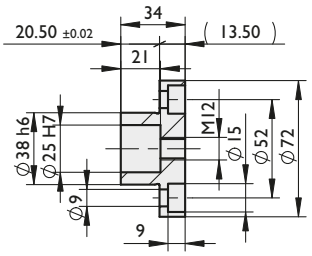
verzinkt

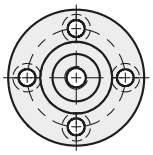
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M8x20

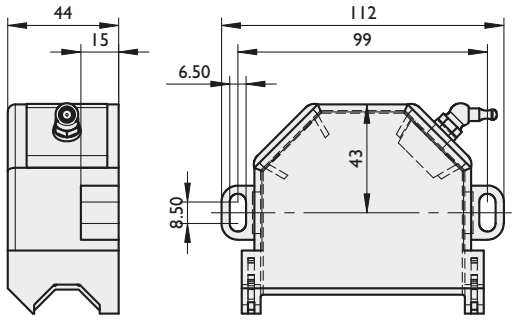
Type	Part No.	Mat.		m [kg]
SP 25	902026	C45E	1.1191	0.5
SPE 25	902043	C45E	1.1191	0.32

Page 46

Abstreifer-Schmiereinheit

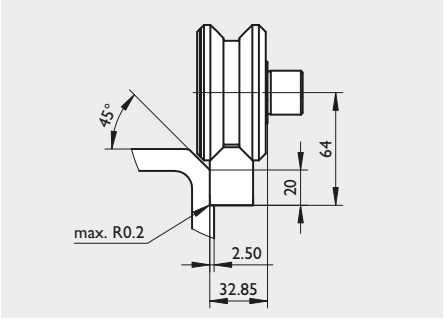
Racleur graisseur

Wiper and Lubrication Unit



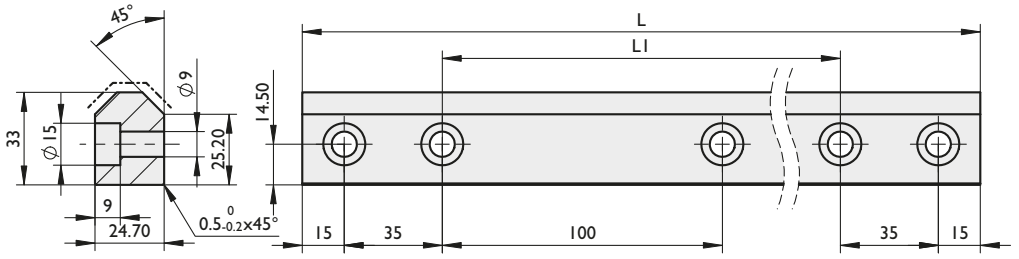
DIN 912 8.8
M6x25

Type	Part No.	Mat.	m [kg]
RA 25	900043	PA-6/POM	0.06



Mounting dimensions

Führungsschiene | Rail de guidage | Guideway for vee rail



Type	Part No.	L	L_1	f	Mat.		m [kg]
FSV 250	905325	1200	1100	0.65 ±0.15	58CrMoV4	1.7792	6.80
	905327	600	500	0.65 ±0.15	58CrMoV4	1.7792	3.40
FSV 250 R	905993	600	500	0.5 ±0.1	X42Cr13	1.2083	3.40

DIN 912 8.8
M8x25

Führungszahnstange | Rail de crémaillère de guidage | Guideway vee rack

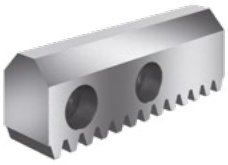


Fig. ①

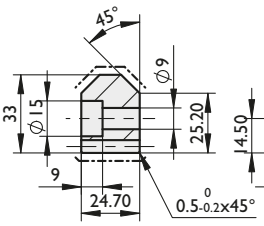
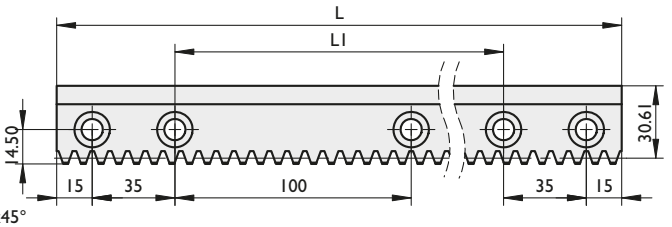


Fig. ②



Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
FZV 25	905125	1200	1100	0.65 ±0.15	2.3873	7.5	①	58CrMoV4	1.7792	6.20
	905127	600	500	0.65 ±0.15	2.3873	7.5	①	58CrMoV4	1.7792	3.10
FZV 25 G	905075	1200	1100	0.65 ±0.15	2.3873	7.5	②	58CrMoV4	1.7792	6.20
	905076	600	500	0.65 ±0.15	2.3873	7.5	②	58CrMoV4	1.7792	3.10
FZV 25 R	905998	600	600	0.5 ±0.1	2.3873	7.5	②	X42Cr13	1.2083	3.10

① soft Quality 7h25
② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

Führungszahnstange schrägverzahnt | Rails de crémaillère de guidage à denture oblique | Helical guideway vee rack

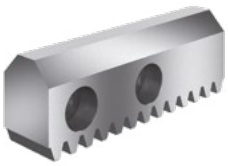


Fig. ①

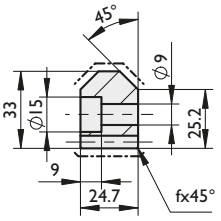
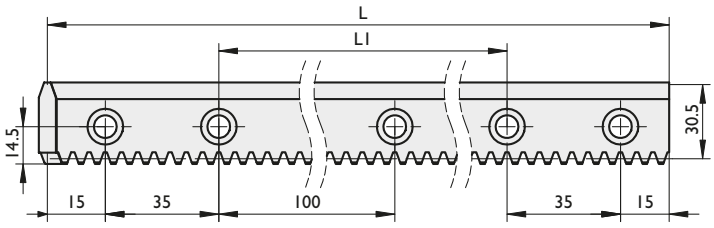


Fig. ②

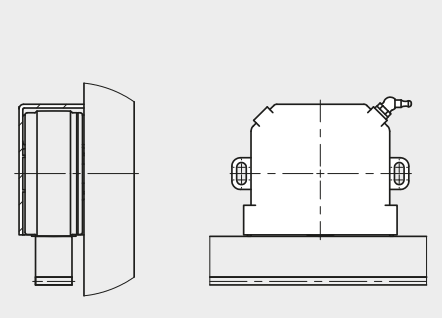


Type	Part No.	L	L_1	f	m_n	p_t	Fig.	Mat.		m [kg]
FZVA 25	905225	1200	1100	0.65 ±0.15	2.5	8.33	①	58CrMoV4	1.7792	6.2
	905227	600	500	0.65 ±0.15	2.5	8.33	①	58CrMoV4	1.7792	3.1
FZVA 25G	905275	1200	1100	0.65 ±0.15	2.5	8.33	②	58CrMoV4	1.7792	6.2
	905276	600	500	0.65 ±0.15	2.5	8.33	②	58CrMoV4	1.7792	3.1

① soft Quality 7h25
② hard Quality 6h23

m_n: Normal module, p_t: Transverse pitch [mm]

25
Baugrösse
Taille
Size

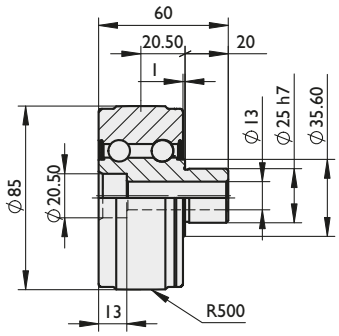


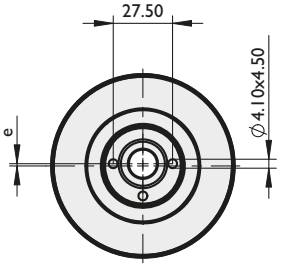
Mounting dimensions

Laufrolle

Galet de roulement

Flat Roller





DIN 912 8.8
M12x60

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
LR 25	900825	1 mm	+19/+38	100Cr6	1.3505	1.1	15000	8070	5600
LR 25 A	900826	1 mm	+8/+16	100Cr6	1.3505	1.1	15000	8070	5600
LR 25 Z	900827	0 mm	+19/+38	100Cr6	1.3505	1.1	15000	8070	5600
LR 25 R	900828	1 mm	+19/+38	X46Cr13	1.4034	1.1	11000	6060	5600

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

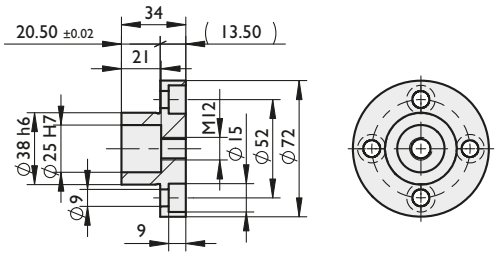
verzinkt

Bride de fixation

galvanisé

Mounting Flange

galvanized



DIN 912 8.8
M8x20

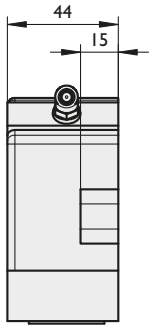
Type	Part No.	Mat.		m [kg]
SP 25	902026	C45E	1.1191	0.5
SPE 25	902043	C45E	1.1191	0.32

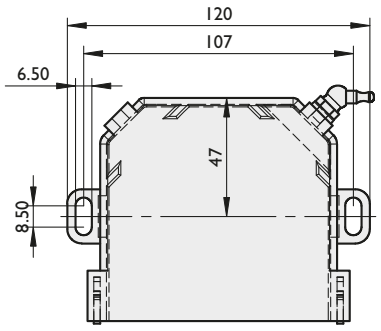
Page 46

Abstreifer-Schmiereinheit

Racleur graisseur

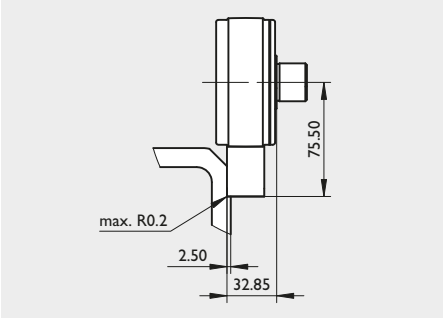
Wiper and Lubrication Unit





DIN 912 8.8
M6x25

Type	Part No.	Mat.	m [kg]
RAL 25	900048	PA-6/POM	0.06

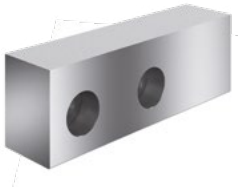


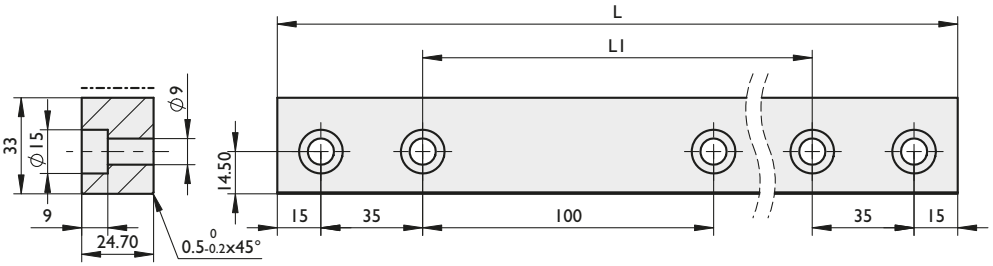
Mounting dimensions

Laufschiene

Rail de roulement

Guideway flat rail





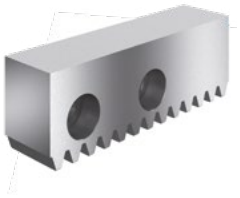
Type	Part No.	L	L_1	f	Mat.		m [kg]
LSV 250	905625	1200	1100	0.65 ±0.15	58CrMoV4	1.7792	7.40
	905627	600	500	0.65 ±0.15	58CrMoV4	1.7792	3.70
LSV 250 R	905003	600	500	0.5 ±0.1	X42Cr13	1.2083	3.70

DIN 912 8.8
M8x25

Laufzahnstange

Rail crémaillère de roulement

Guideway rack



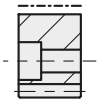


Fig. ①

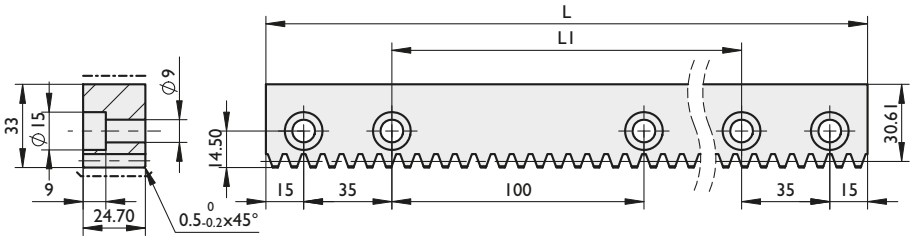


Fig. ②

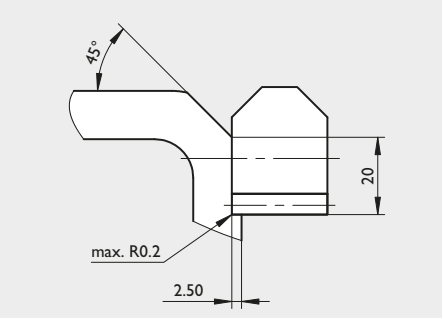
Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
LZV 25	905425	1200	1100	0.65 ±0.15	2.3873	7.5	①	58CrMoV4	1.7792	6.80
	905427	600	500	0.65 ±0.15	2.3873	7.5	①	58CrMoV4	1.7792	3.40
LZV 25G	905078	1200	1100	0.65 ±0.15	2.3873	7.5	②	58CrMoV4	1.7792	6.80
	905080	600	500	0.65 ±0.15	2.3873	7.5	②	58CrMoV4	1.7792	3.40
LZV 25R	905008	600	500	0.5 ±0.1	2.3873	7.5	②	X42Cr13	1.2083	3.40

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

25
Baugrösse
Taille
Size



Mounting dimensions

Trägerprofil in Stahl mit Führungen

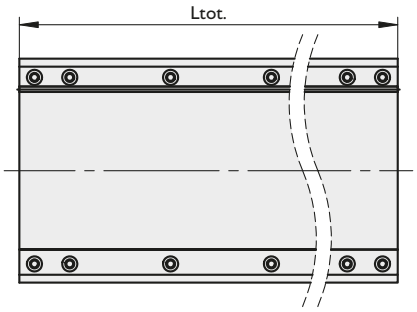
Die Profile sind sandgestrahlt, grundiert und bearbeitet zur Aufnahme der Schienen. Die Führungen werden gemäss Bestellbeispiel spezifiert. Die Portale werden mit montierten Schienen geliefert. Auf Anfrage werden sie mit 2-Komponentenfarbe lackiert.

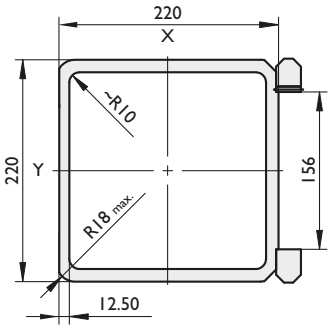
Poutre en acier avec rails

Poutre sablé avec peinture d'après. Usinée pour réception des rails. Livrée avec ses rails montés selon exemple de commande. Sur demande peinture en 2 composants.

Tubular Steel Profile with Guideways

The profiles are sandblasted, primed and machined to carry the rails. The profiles are supplied with mounted guideways. On request the profiles are painted with 2 coats of semi-gloss paint.





Type	Mat.		m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
LP 220/220-25	S355J2H	1.0576	75.5	88.3	7250	8576	7250	8151	11168

① Without guideways ② With guideways

Bestellbeispiel

Exemple de commande

Ordering example

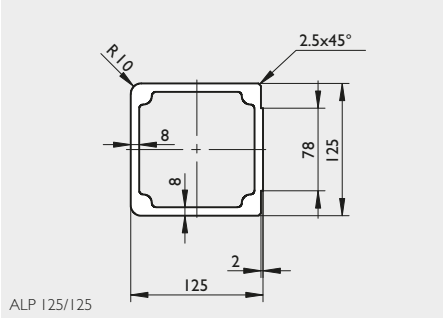
Type	ALP 150/150-25	FZ 25 G / FS 250	3600 mm	–	–
Spezifikation der Schienen gemäss Seiten 31, 33				Option: Stirnseitiges Bohrbild nur auf Bestellung	Option: Farblackierung
Sélection des rails selon page 31, 33				Sur demande trous de fixation aux extremités	Peinture en 2 composants
Selection of guideways according to page 31, 33				On request fixing holes on front sides	Semi-gloss paint

Die gesamte Schienenlänge L_{tot} sollte wenn möglich aus der Summe der Teillängen der Elemente gebildet werden.

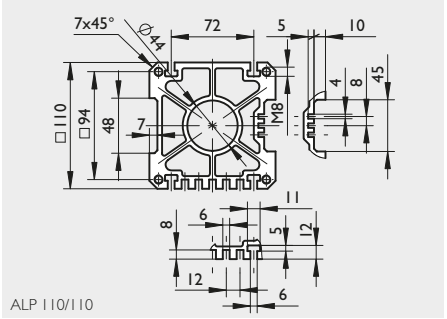
La longueur totale L_{tot} des rails devait être la somme des longueurs individuelles des rails.

Overall length L_{tot} of the guideways should be the sum of each length of the elements.

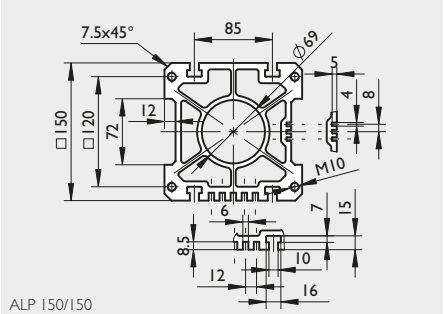
$L_{tot} = n_1 \cdot 1200 + n_2 \cdot 600$



ALP 125/125



ALP 110/110



ALP 150/150

Mounting dimensions

Trägerprofil in Alu mit Führungen

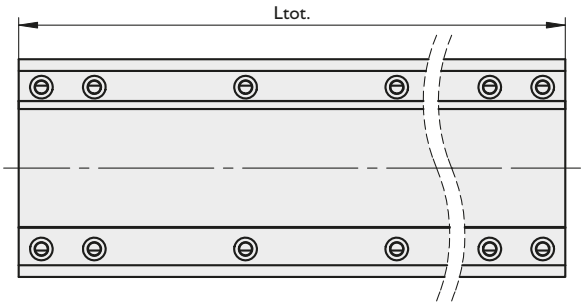
Gezogen und bearbeitet zur Aufnahme der Führungsschienen. Die Profile werden mit montierten Schienen geliefert. Auf Wunsch können sie eloxiert werden.

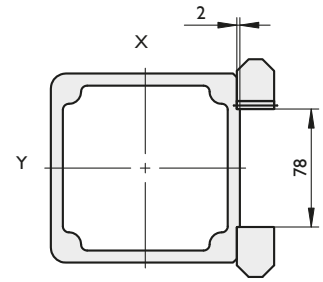
Poutre en alu avec rails

Profils filés et usiné pour réception des rails. Livré avec ses rails montés. Sur demande anodisé.

Tubular alum profiles with guideways

Extruded and machined. The profiles are supplied with mounted guideways. On request, the profiles can be anodized.

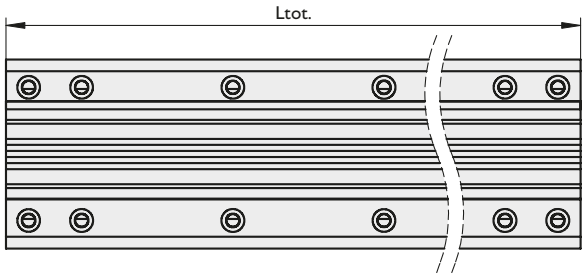


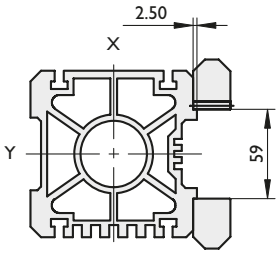


Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 125/125-25	EN AW-6060	11.2	23	936	1370	947	1510	1281

① Without guideways ② With guideways

Option: On request fixing holes on front sides

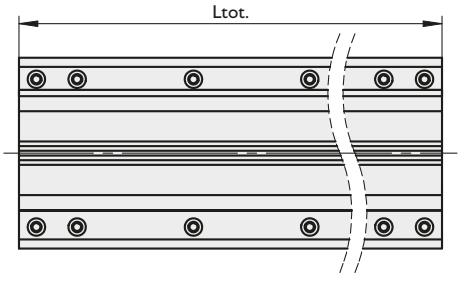


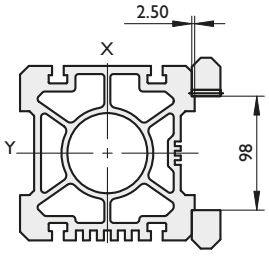


Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 110/110-25	EN AW-6060	12.3	25.1	606	1070	609	822	341

① Without guideways ② With guideways

Option: On request fixing holes on front sides





Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 150/150-25	EN AW-6060	23.0	35.7	2080	2930	2270	2700	1250

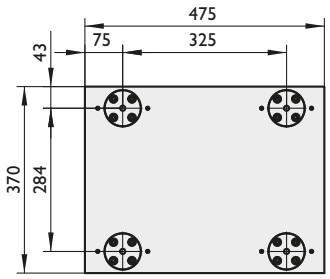
① Without guideways ② With guideways

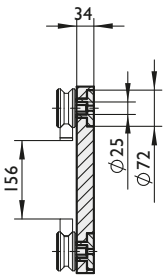
Option: On request fixing holes on front sides

25
Baugrösse
Taille
Size

Laufwagen | Chariot | Carriage

I-Axis
→ y

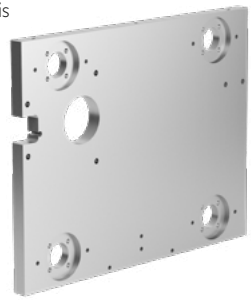


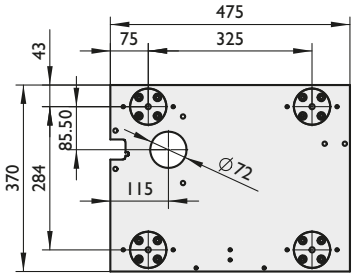


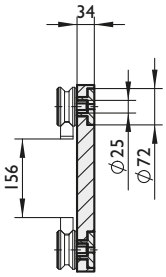
Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 25.0	0100942	EN AW-5083	15.2	LP 220/120-25	–
				LP 220/220-25	–

I-Axis
→ y





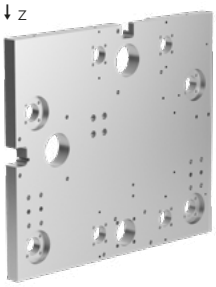


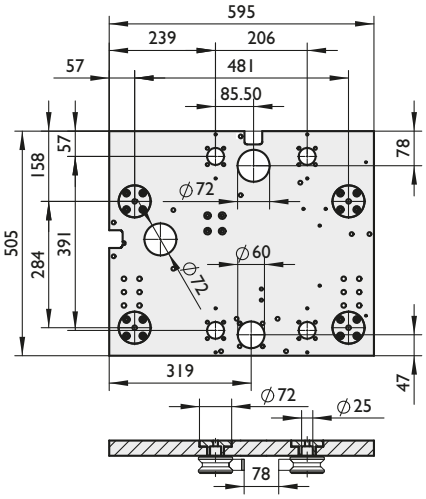
Trägerprofil | Poutre | Profile

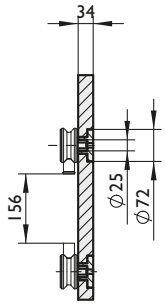
Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 25.1	0109558	EN AW-5083	14.7	LP 220/120-25	–
				LP 220/220-25	–

For fitting of worm gear unit HPG060

2-Axis
→ y ↓ z



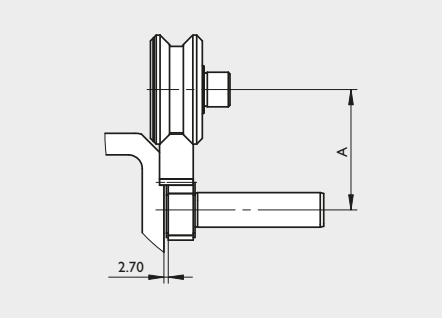


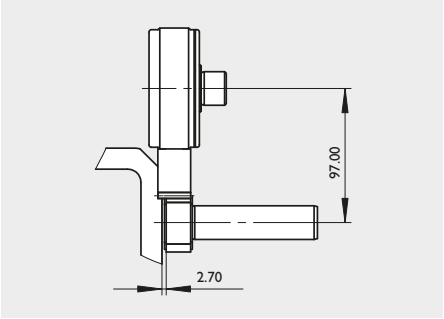


Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 25.2	0120801	EN AW-5083	24.3	LP 220/120-25	ALP 125/125-25
				LP 220/220-25	ALP 125/125-25

For fitting of worm gear unit HPG060





GÜDEL

Hochleistungswinkelgetriebe

Renvoi d'angle à haute Performance

High Performance Angle Gearbox

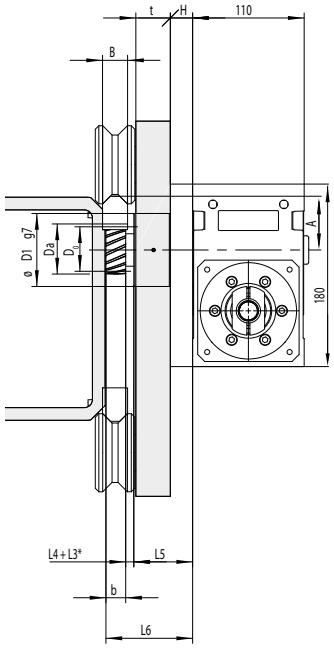
Type HPG060

Detailinformationen und Konfigurationsmöglichkeiten finden Sie in unserem Katalog für Hochleistungswinkelgetriebe.
Vous trouverez des informations détaillées et des possibilités de configuration dans notre catalogue pour réducteur roue et vis à haute performance.
Detailed information and configuration options can be found in our catalog for high-performance angle gearboxes.

Example Code for Size 25:

Type	Size	Configuration		Ratio	Precision Grades	Pinion Part No.	Request of Output Flange		Assem-bly	Spacer Elements	
		Input	Output				L6	L5			
HPG	060	C	I	5	PS	0124602	80.5	53	–	19	Motor

default for this size
see gearbox catalog
values from table on this page



Wellenritzel

Pignon avec arbre

Pinion with shaft

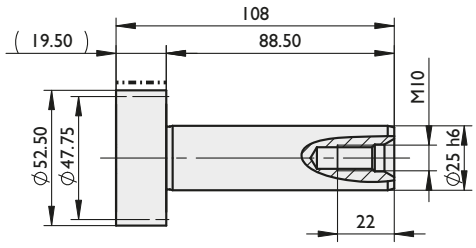


Fig. ①

Typ	Part No.	m_n	p_n	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_I	t	*L3	L4	L5	L6	H
WR 25	900925	2.3873	7.5	20	52.5	47.75	47.75	16MnCr5	0.55	85.5	19.5	24.7	60	34	8	0	53 58	80.5 85.5	19 24

m_n: Normal module, p_n: Normal pitch [mm], z: Number of teeth, D_V: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hard
Quality 6f24

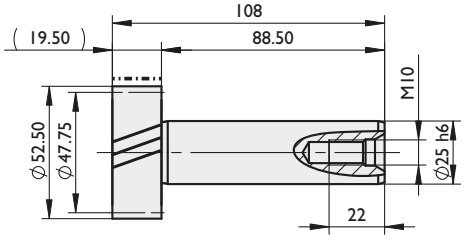


Fig. ①

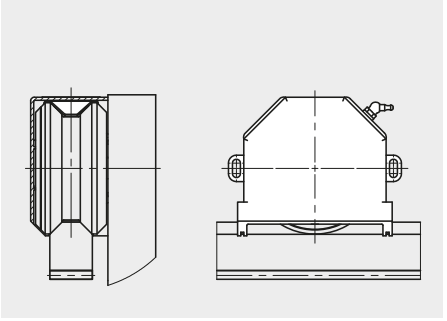
Typ	Part No.	m_n	p_t	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_I	t	*L3	L4	L5	L6	H
WRA 25	0124602	2.5	8.33	16	47.44	42	44	16MnCr5	0.55	75.5	19.5	24.7	72	34	8	0	53 58	80.5 85.5	19 24

m_n: Normal module, p_t: Transverse pitch [mm], z: Number of teeth, D_V: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hard
Quality 6f24

Further drive pinions can be found in our rack and pinions catalog on our homepage.

35
Baugrösse
Taille
Size

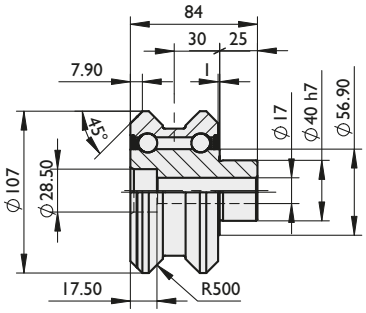


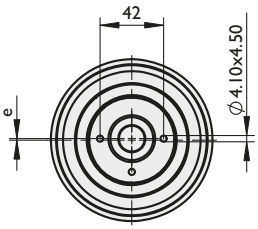
Mounting dimensions

Führungsrolle

Galet de guidage

Roller for vee rails





DIN 912 8.8
M16x80

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
FR 35	900735	1 mm	+21/+43	100Cr6	1.3505	2.8	32000	13940	3600
FR 35 A	900736	1 mm	+7/+15	100Cr6	1.3505	2.8	32000	13940	3600
FR 35 Z	900737	0 mm	+21/+43	100Cr6	1.3505	2.8	32000	13940	3600
FR 35 ZA	900739	0 mm	+7/+15	100Cr6	1.3505	2.8	32000	13940	3600
FR 35 R	900738	1 mm	+21/+43	X46Cr13	1.4034	2.8	24000	10430	3600

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

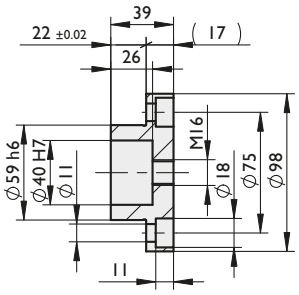
verzinkt

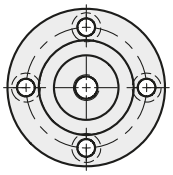
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M10x25

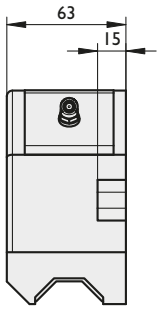
Type	Part No.	Mat.		m [kg]
SP 35	902036	C45E	1.1191	1.10
SPE 35	902044	C45E	1.1191	0.78

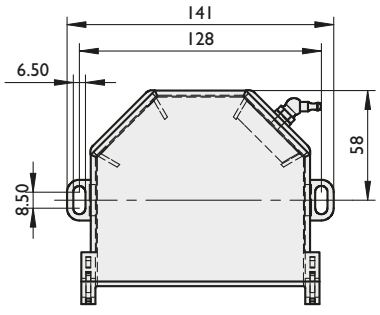
Page 46

Abstreifer-Schmiereinheit

Racleur graisseur

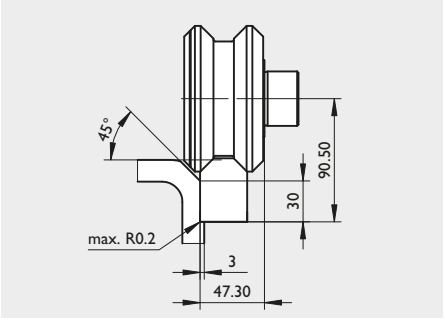
Wiper and Lubrication Unit





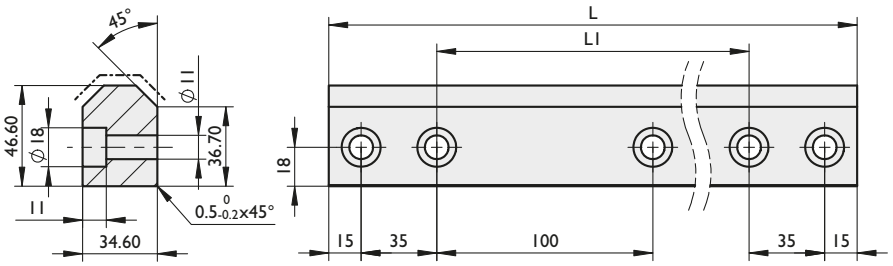
DIN 912 8.8
M6x25

Type	Part No.	Mat.	m [kg]
RA 35	900044	PA-6/POM	0.10



Mounting dimensions

Führungsschiene | Rail de guidage | Guideway for vee rail



Type	Part No.	L	L_1	f	Mat.		m [kg]
FSV 350	905335	1200	1100	0.65 ±0.15	58CrMoV4	1.7792	13.70
	905337	600	500	0.65 ±0.15	58CrMoV4	1.7792	6.85
FSV 350 R	905994	600	500	0.5 ±0.1	X42Cr13	1.2083	6.85


DIN 912 8.8
M10x35

Führungszahnstange | Rail de crémaillère de guidage | Guideway vee rack

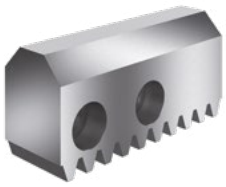



Fig. ①

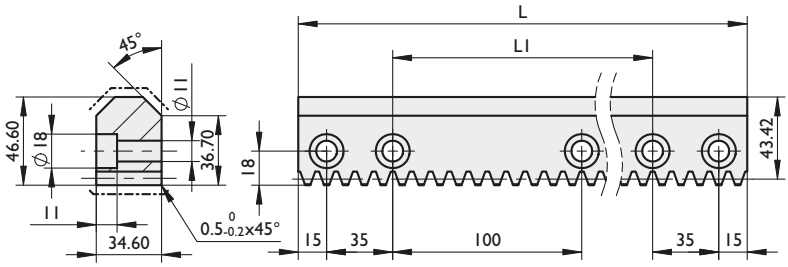


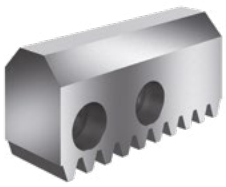
Fig. ②

Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
FZV 35	905135	1200	1100	0.65 ±0.15	3.1831	10.0	①	58CrMoV4	1.7792	12.6
	905137	600	500	0.65 ±0.15	3.1831	10.0	①	58CrMoV4	1.7792	6.30
FZV 35 G	905085	1200	1100	0.65 ±0.15	3.1831	10.0	②	58CrMoV4	1.7792	12.6
	905086	600	500	0.65 ±0.15	3.1831	10.0	②	58CrMoV4	1.7792	6.3
FZV 35 R	905999	600	500	0.5 ±0.1	3.1831	10.0	②	X42Cr13	1.2083	6.3

① soft Quality 7h25
② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

Führungszahnstange schrägverzahnt | Rails de crémaillère de guidage à denture oblique | Helical guideway vee rack



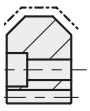


Fig. ①

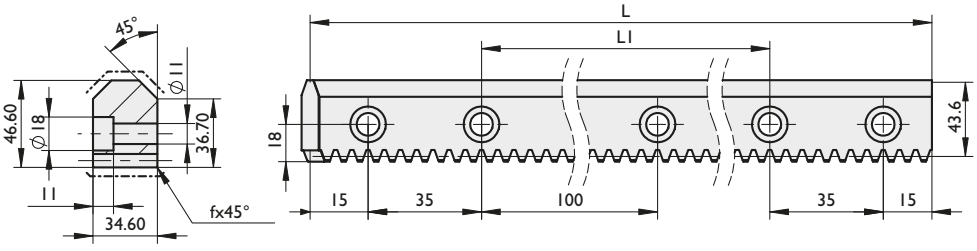


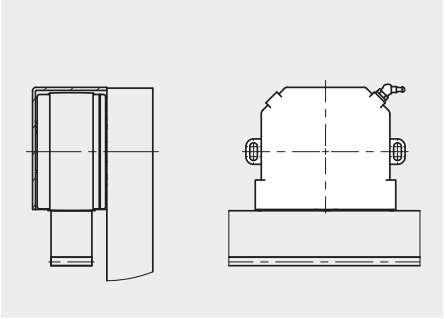
Fig. ②

Type	Part No.	L	L_1	f	m_n	p_t	Fig.	Mat.		m [kg]
FZVA 35	905235	1200	1100	0.65 ±0.15	3	10	①	58CrMoV4	1.7792	12.6
	905237	600	500	0.65 ±0.15	3	10	①	58CrMoV4	1.7792	6.3
FZVA 35G	905285	1200	1100	0.65 ±0.15	3	10	②	58CrMoV4	1.7792	12.6
	905286	600	500	0.65 ±0.15	3	10	②	58CrMoV4	1.7792	6.3

① soft Quality 7h25
② hard Quality 6h23

m_n: Normal module, p_t: Transverse pitch [mm]

35
Baugrösse
Taille
Size

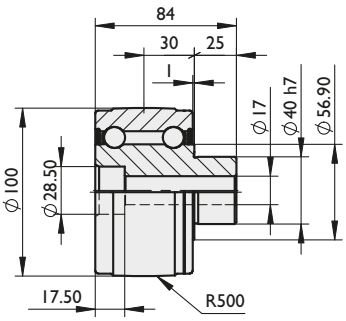


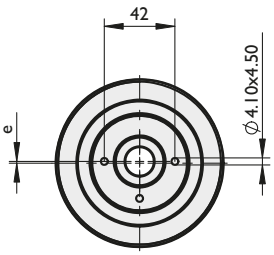
Mounting dimensions

Laufrolle

Galet de roulement

Flat Roller





DIN 912 8.8
M16x80

Type	Part No.	Excenter	G_a [µm]	Mat.		m [kg]	C_{0w} [N]	C_w [N]	n_{max} [min-1]
LR 35	900835	1 mm	+21/+43	100Cr6	1.3505	3.0	32000	14040	3600
LR 35 A	900836	1 mm	+7/+15	100Cr6	1.3505	3.0	32000	14040	3600
LR 35 Z	900837	0 mm	+21/+43	100Cr6	1.3505	3.0	32000	14040	3600
LR 35 R	900838	1 mm	+21/+43	X46Cr13	1.4034	3.0	24000	10500	3600

G_a Internal axial clearance C_w Distance 10^7m

Befestigungsflansch

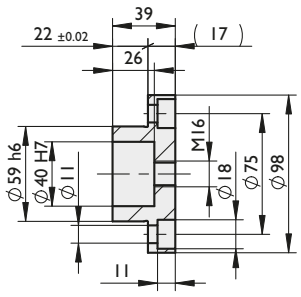
verzinkt

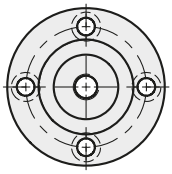
Bride de fixation

galvanisé

Mounting Flange

galvanized





DIN 912 8.8
M10x25

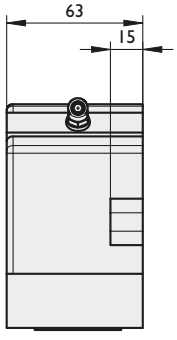
Type	Part No.	Mat.		m [kg]
SP 35	902036	C45E	1.1191	1.10
SPE 35	902044	C45E	1.1191	0.78

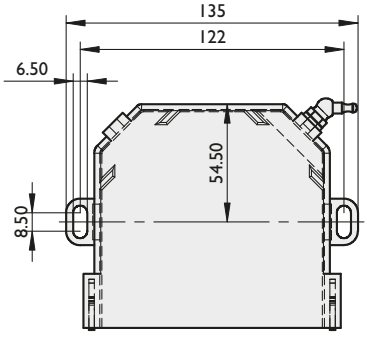
Page 46

Abstreifer-Schmiereinheit

Racleur graisseur

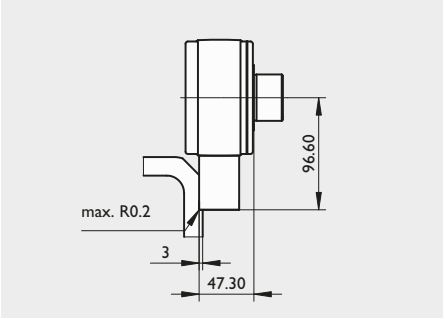
Wiper and Lubrication Unit





DIN 912 8.8
M6x25

Type	Part No.	Mat.	m [kg]
RAL 35	900049	PA-6/POM	0.10

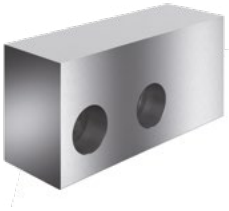


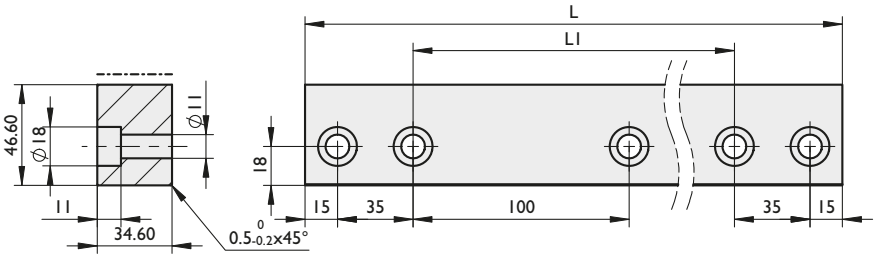
Mounting dimensions

Laufschiene

Rail de roulement

Guideway flat rail





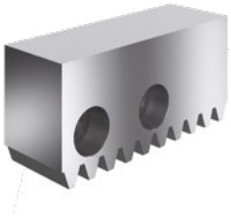
Type	Part No.	L	L_1	f	Mat.		m [kg]
LSV 350	905635	1200	1100	0.65 ±0.15	58CrMoV4	1.7792	14.60
	905637	600	500	0.65 ±0.15	58CrMoV4	1.7792	7.30
LSV 350 R	905004	600	500	0.5 ±0.1	X42Cr13	1.2083	7.30

DIN 912 8.8
M10x35

Laufzahnstange

Rail crémaillère de roulement

Guideway rack



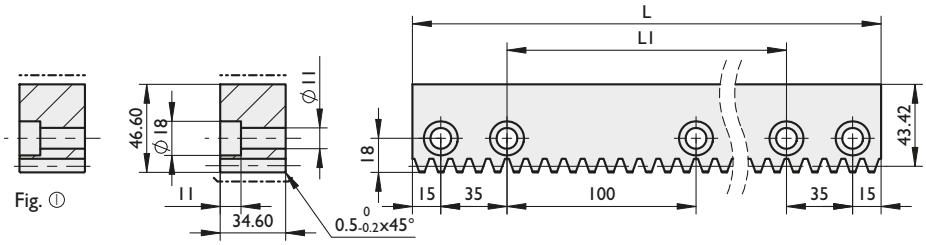


Fig. ①

Fig. ②

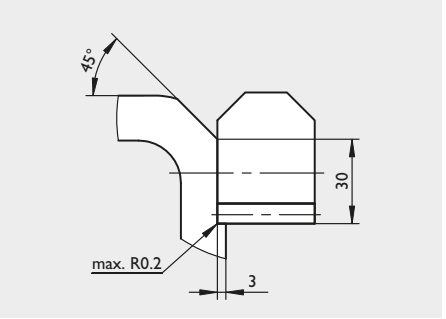
Type	Part No.	L	L_1	f	m_n	p_n	Fig.	Mat.		m [kg]
LZV 35	905435	1200	1100	0.65 ±0.15	3.1831	10.0	①	58CrMoV4	1.7792	13.60
	905437	600	500	0.65 ±0.15	3.1831	10.0	①	58CrMoV4	1.7792	6.80
LZV 35G	905088	1200	1100	0.65 ±0.15	3.1831	10.0	②	58CrMoV4	1.7792	13.60
	905090	600	500	0.65 ±0.15	3.1831	10.0	②	58CrMoV4	1.7792	6.80
LZV 35R	905009	600	500	0.5 ±0.1	3.1831	10.0	②	X42Cr13	1.2083	6.80

① soft Quality 7h25

② hard Quality 6h23

m_n: Normal module, p_n: Normal pitch [mm]

35
Baugrösse
Taille
Size



Mounting dimensions

Trägerprofil in Stahl mit Führungen

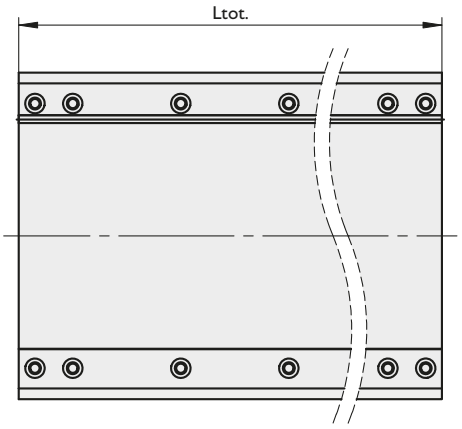
Die Profile sind sandgestrahlt, grundiert und bearbeitet zur Aufnahme der Schienen. Die Führungen werden gemäss Bestellbeispiel spezifiert. Die Portale werden mit montierten Schienen geliefert. Auf Anfrage werden sie mit 2-Komponentenfarbe lackiert.

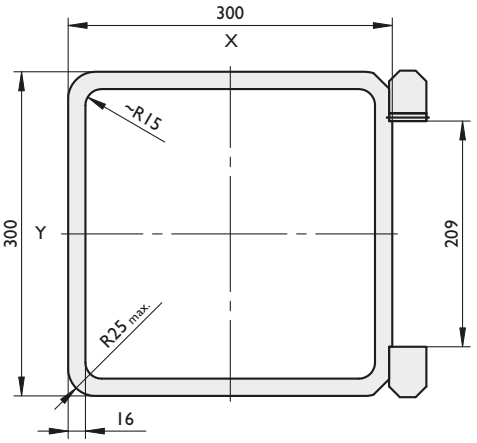
Poutre en acier avec rails

Poutre sablé avec peinture d'après. Usinée pour réception des rails. Livrée avec ses rails montés selon exemple de commande. Sur demande peinture en 2 composants.

Tubular Steel Profile with Guideways

The profiles are sandblasted, primed and machined to carry the rails. The profiles are supplied with mounted guideways. On request the profiles are painted with 2 coats of semi-gloss paint.





Type	Mat.		m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
LP 300/200-35	S355J2H	1.0570	137.4	162.7	23000	28900	23000	26900	37500

① Without guideways ② With guideways

Bestellbeispiel

Exemple de commande

Ordering example

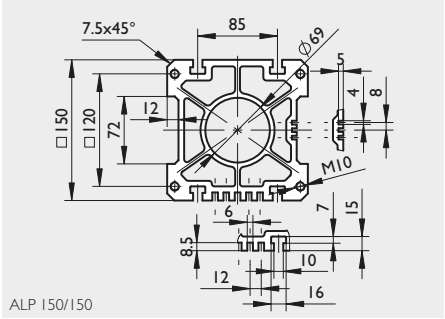
Type	LP 300/300-35 FZV 35 / FSV 350	12000 mm	–	RAL 4003
Spezifikation der Schienen gemäss Seiten 39, 41		Länge,	Option: Stirnseitiges Bohrbild nur auf Bestellung	Option: Farblackierung
Sélection des rails selon page 39, 41		Longueur	Sur demande trous de fixation aux extremités	Peinture en 2 composants
Selection of guideways according to page 39, 41		Length	On request fixing holes on front sides	Semi-gloss paint

Die gesamte Schienenlänge L_{tot} sollte wenn möglich aus der Summe der Teillängen der Elemente gebildet werden.

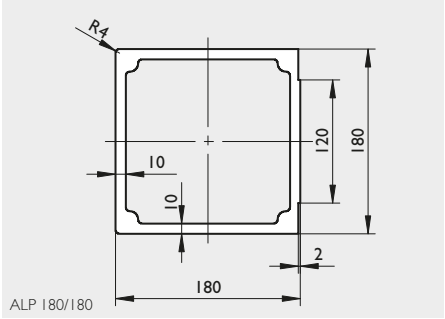
La longueur totale L_{tot} des rails devait être la somme des longueurs individuelles des rails.

Overall length L_{tot} of the guideways should be the sum of each length of the elements.

$L_{tot} = n_1 \cdot 1200 + n_2 \cdot 600$



ALP 150/150



ALP 180/180

Mounting dimensions

Trägerprofil in Alu mit Führungen

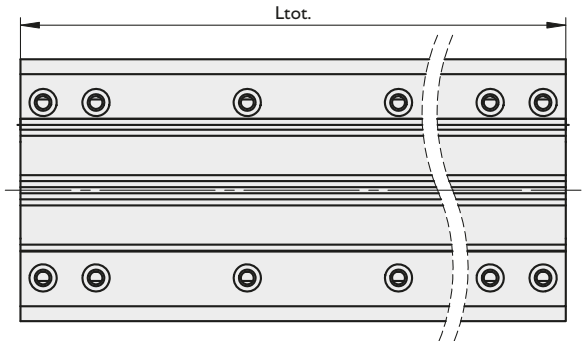
Gezogen und bearbeitet zur Aufnahme der Führungsschienen. Die Profile werden mit montierten Schienen geliefert. Auf Wunsch können sie eloxiert werden.

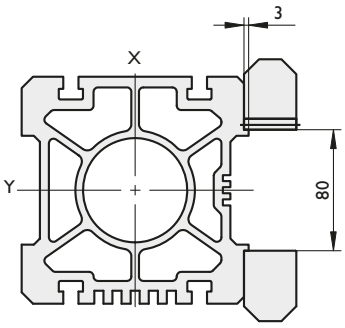
Poutre en alu avec rails

Profils filés et usiné pour réception des rails. Livré avec ses rails montés. Sur demande anodisé.

Tubular alum profiles with guideways

Extruded and machined. The profiles are supplied with mounted guideways. On request, the profiles can be anodized.

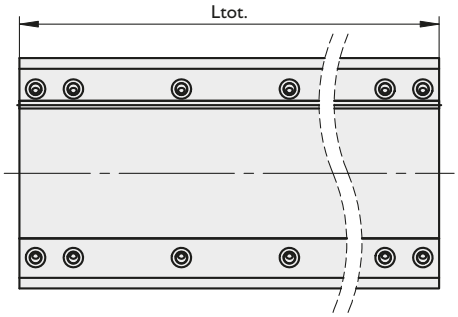


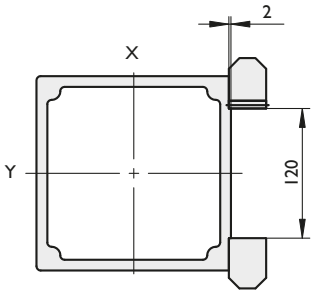


Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 150/150-35	EN AW-6060	23.0	48.3	2080	3800	2270	3030	1250

① Without guideways ② With guideways

Option: On request fixing holes on front sides





Type	Mat.	m① [kg/m]	m② [kg/m]	I_x① [cm⁴]	I_x② [cm⁴]	I_y① [cm⁴]	I_y② [cm⁴]	I_z [cm⁴]
ALP 180/180-35	EN AW-6060	17.8	43.1	3480	5450	3510	5840	4913

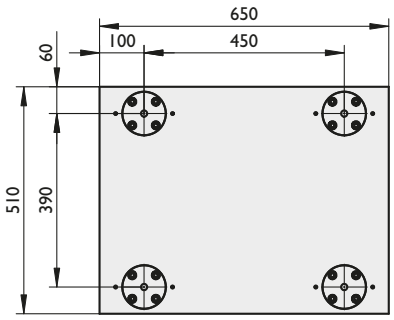
① Without guideways ② With guideways

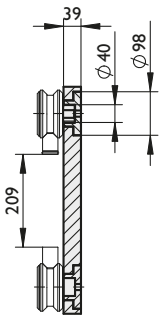
Option: On request fixing holes on front sides

35
Baugrösse
Taille
Size

Laufwagen | Chariot | Carriage

I-Axis
→ y

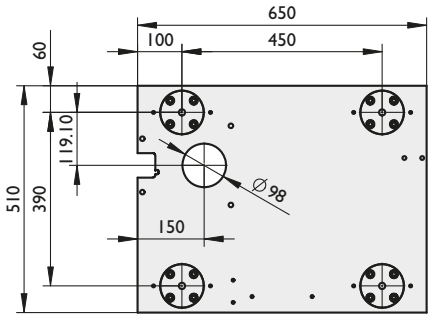


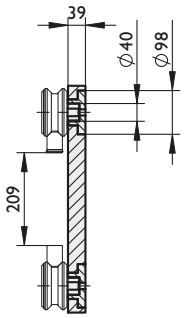


Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 35.0	0100943	EN AW-5083	32.8	LP 300/200-35	–
				LP 300/300-35	–

I-Axis
→ y



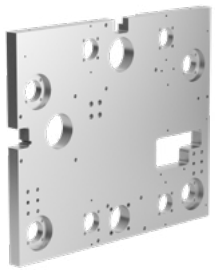


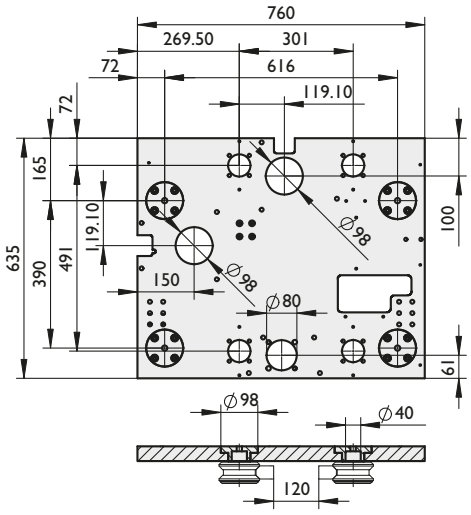
Trägerprofil | Poutre | Profile

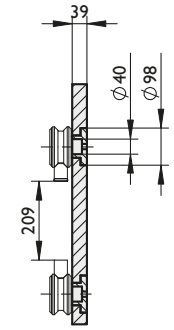
Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 35.1	0113367	EN AW-5083	31.7	LP 300/200-35	–
				LP 300/300-35	–

For fitting of worm gear unit HPG090

2-Axis
→ y ↓ z



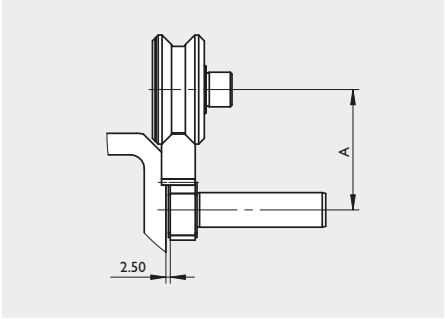


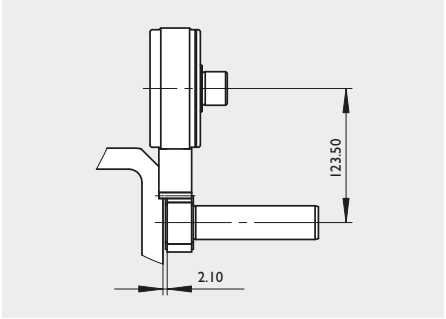


Trägerprofil | Poutre | Profile

Type	Part No.	Mat.	m [kg]	→ y	↓ z
WP 35.2	0120916	EN AW-5083	42.0	LP 300/200-35	ALP 180/180-35
				LP 300/300-35	ALP 180/180-35

For fitting of worm gear unit HPG090





GÜDEL

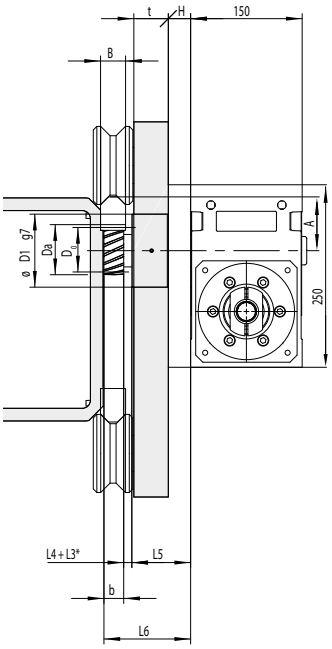
Hochleistungswinkelgetriebe

Renvoi d'angle à haute Performance

High Performance Angle Gearbox

Type HPG090

Detailinformationen und Konfigurationsmöglichkeiten finden Sie in unserem Katalog für Hochleistungswinkelgetriebe.
Vous trouverez des informations détaillées et des possibilités de configuration dans notre catalogue pour réducteur roue et vis à haute performance.
Detailed information and configuration options can be found in our catalog for high-performance angle gearboxes.



Example Code for Size 35:

Type	Size	Configuration		Ratio	Precision Grades	Pinion Part No.	Request of Output Flange		Assem-bly	Spacer Elements	
		Input	Output				L6	L5			
HPG	090	C	I	5	PS	211420	105.5	63	–	24	Motor

default for this size
see gearbox catalog
values from table on this page

Wellenritzel

Pignon avec arbre

Pinion with shaft

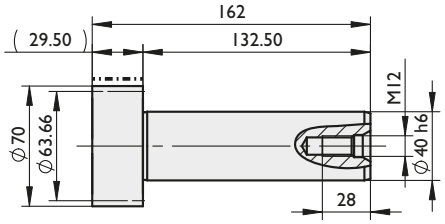


Fig. ①

Typ	Part No.	m_n	p_n	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_1	t	*L3	L4	L5	L6	H
WR 35	900935	3.1831	10	20	70	63.66	63.66	16MnCr5	1.95	119.1	29.5	34.6	98	39	12.5	0	63	105	24

m_n: Normal module, p_n: Normal pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hard
Quality 6f24

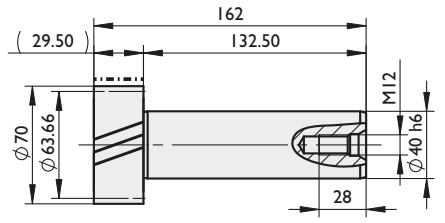


Fig. ①

Typ	Part No.	m_n	p_t	z	D_k	D_0	D_V	Mat.	m[kg]	A	b	B	D_1	t	*L3	L4	L5	L6	H
WRA 35	211420	3	10	20	69.7	63.66	63.66	16MnCr5	1.95	119.3	30	34.6	98	39	0	12.5	63 104.5	105.5 147.5	24 66

m_n: Normal module, p_t: Transverse pitch [mm], z: Number of teeth, D_v: Pitch circle diameter for design, D_0: Pitch circle diameter for calculation
*L3 for additional distance ring

hard
Quality 6f24

Further drive pinions can be found in our rack and pinions catalog on our homepage.

Zubehör
Accessoires
Accessories

Exzentrischer Befestigungsflansch

Für Montage siehe Serviceanleitung

Exzentrische Befestigungsflansche SPE können im Zusammenbau mit zentrischen Führungs- und Laufrollen **FR/LR..Z** als Alternative zu den exzentrischen Führungs- und Laufrollen **FR/LR** eingesetzt werden.

Sie werden dort angewendet, wo der Zugang zur Stirnseite der Rolle nicht gewährleistet ist und die Einstellung der Vorspannung über den exzentrischen Innenbolzen der Rolle daher nicht möglich ist.

Bride de fixation excentrique

Pour le montage, consulter les instructions d'entretien

Les brides de fixation excentriques SPE en montage avec les galets centriques **FR/LR..Z** donnent les mêmes performances que les galets excentriques **FR/LR**.

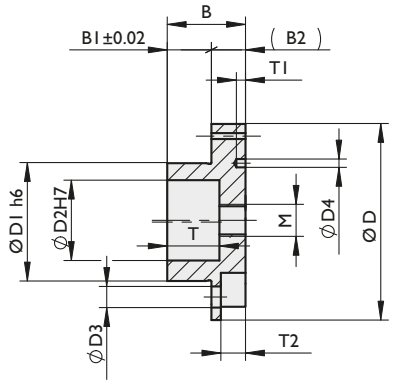
Leur sélection est dans des applications ou l'accès à la face du galet n'est pas possible et le réglage du galet par son excentrique ne peut pas être fait.

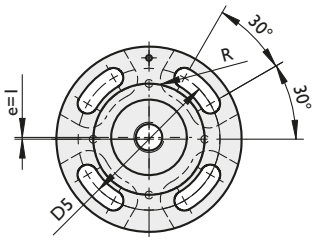
Eccentric fixing flange for roller

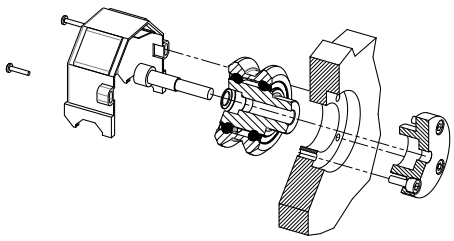
For assembly see Service manual

Eccentric mounting flanges SPE together with centric rollers **FR/LR..Z** allow the same adjustment as eccentric rollers **FR/LR**.

This combination allows adjustment of the rack and pinion backlash, and roller pre-load, from the opposite side of the roller assembly for applications where the standard adjustment features are inaccessible.

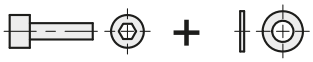






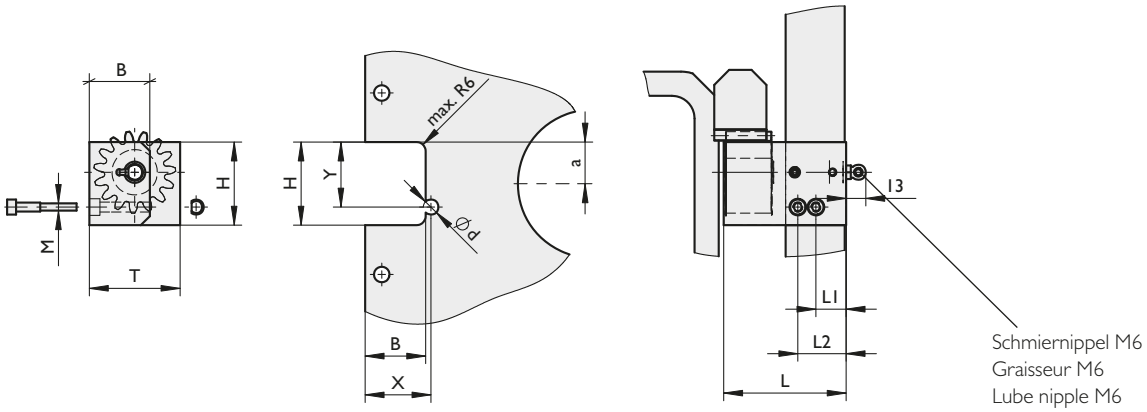
Type	Part No.	Mat.	m [kg]	B	B1	B2	D	D_1	$D_2$①	D3	D4	D5	M①	R	T	T_1	T_2
SPE 15	902041	C45E	0.11	24	14.5	9.5	49	26	15	5.3	2.6	36	8	6.5	12.5	3.0	6.3
SPE 20	902042	C45E	0.18	29	18.0	11.0	58	30	20	6.4	2.6	42	10	7.5	16.0	3.0	7.9
SPE 25	902043	C45E	0.32	34	20.5	13.5	72	38	25	8.4	4.1	52	12	9.0	21.0	4.5	9.9
SPE 35	902044	C45E	0.78	39	22.0	17.0	98	59	40	10.5	4.1	75	16	12.0	26.0	4.5	12.3

① eccentric



Type	DIN 912 8.8	DIN 125A
SPE 15	M5x16	ø10.0x1.0
SPE 20	M6x16	ø12.0x1.6
SPE 25	M8x20	ø17.0x1.6
SPE 35	M10x25	ø21.0x2.0

Schmierritzeleinheit | lubricating pinion unit | Lubricating pinion unit



Für gerade Verzahnung | Pour denture droite | For straight gear teeth

Taille/Size	Part No.	B	H +0.1/+0.3	T	a	x	y	dH8	L	L_1	L_2	M
15	902331	23	35	31	13.3	26	25	8	40.5	17.5	–	M5
20	902332	23	35	31	13.3	26	25	8	50.5	17.5	–	M5
25	902333	30	40	45	20.5	33	29	8	62.5	17.5	28.5	M5
35	902334	40	55	60	27.6	43.5	43	10	81	20	32	M6

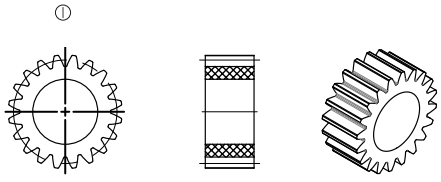
Includes lubricating pinion and lube nipple

Für schräge Verzahnung | Pour denture oblique | For helical gear teeth

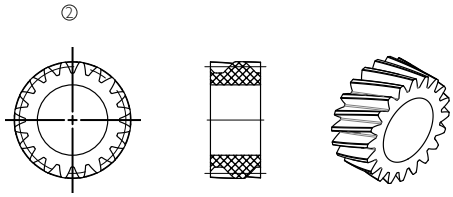
Taille/Size	Part No.	B	H +0.1/+0.3	T	a	x	y	dH8	L	L_1	L_2	M
15	10392397	23	35	31	13.3	26	25	8	40.5	17.5	–	M5
20	0919264	23	35	31	13.3	26	25	8	50.5	17.5	–	M5
25	0906837	34	45	53	22.4	36.7	34	8	66.5	17.5	28.5	M5
35	0906850	42.5	55	65	26	46	43	10	81	20	32	M6

Includes lubricating pinion and lube nipple

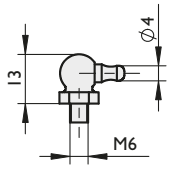
Ersatzteile/Optionen | Pièce de rechange/options | Spare parts/options



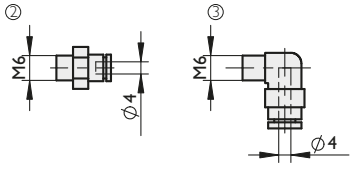
Type	Baugrösse Taille/Size	Part. No
Fig. ①	15	230801
	20	230802
	25	230803
	35	230804



Type	Baugrösse Taille/Size	Part. No
Fig. ②	15	0169070
	20	0169070
	25	230822
	35	230823



Type	Part. No
Fig. ②	0118547
Fig. ③	0118552



Only for flexible plastic tube

Zubehör
Accessoires
Accessories

Montagehilfe | Moyen d'assemblage | Mounting aid

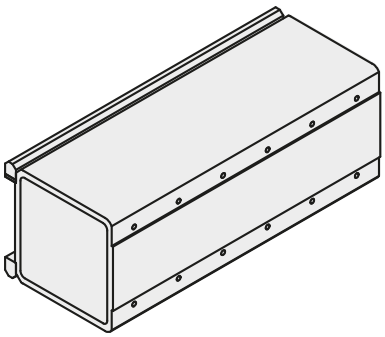
Gerade verzahnt	Denture droite	Straight tooth
Part No.	m_n	p_n
902401	1.5915	5
902402	2.3873	7.5
902404	3.1831	10

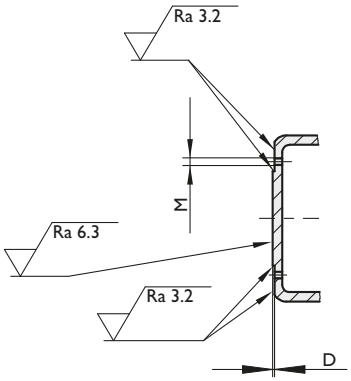
m_n = Normal module | p_n = Normal pitch

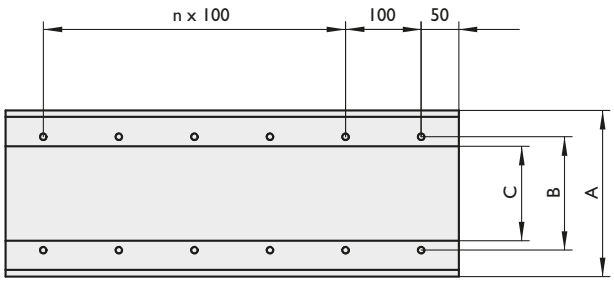
Schräg verzahnt	Dentures obliques	Helical tooth
Part No.	m_n	p_t
902280	1.5	5
902282	2.5	8.33
902283	3	10

m_n = Normal module | p_t = Transverse pitch

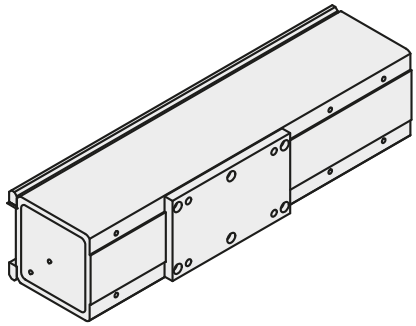
Befestigung für Ständer | Plats pour fixation des pieds | Mounting plates for column

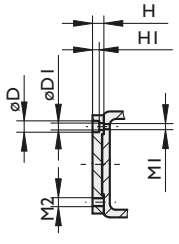


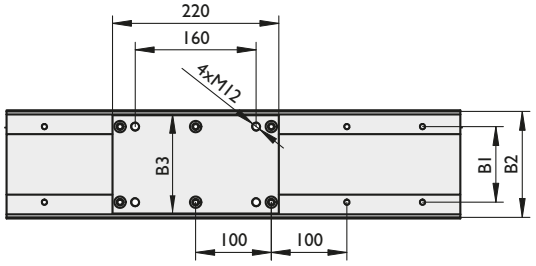




Baugrösse | Taille | Size	A	B	C	D	M
15	140	100	80-0.2/-0.6	2	M8
20	160	90	68-0.2/-0.6	2.5	M10
25	220	150	125-0.2/-0.6	2.5	M10
35	300	230	190-0.2/-0.6	3	M16





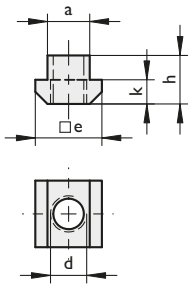


Baugrösse | Taille | Size	Part No.	B_1	B_2	B_3	øD	$øD_1$	M_1	M_2	H	H_1	m[kg]
15	0165231	100	140	130	ø15	ø9	M8	M12	15	9	2.9

T-Nutensteine (DIN 508)

Ecrous en T (DIN 508)

Tee nut (DIN 508)



Baugrösse | Taille | Size	Part No.	Mat.	a	d	e	h	k
ALP 80/80	902250	C45	6	M5	10	8	4
ALP 80/50	902250	C45	6	M5	10	8	4
ALP 110/110	902250	C45	6	M5	10	8	4
ALP 100/60	902250	C45	6	M5	10	8	4
ALP 150/80	902251	C45	8	M6	13	10	6
ALP 150/150	902252	C45	10	M8	15	12	6
ALP 200/200	902254	C45	14	M12	22	16	8
ALP 280/280	902255	C45	18	M16	28	18	10

Anschlagpuffer

Amortisseur

Shock absorber

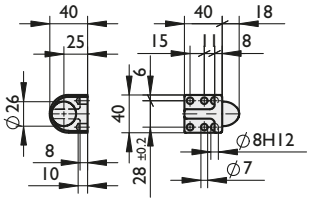


Fig. ①

Baugrösse | Taille | Size	Fig.	Part No.	m [kg]
15	①	902210	0.3

Baugrösse | Taille | Size	Fig.	Part No.	m [kg]
20	④	0926747	2.6

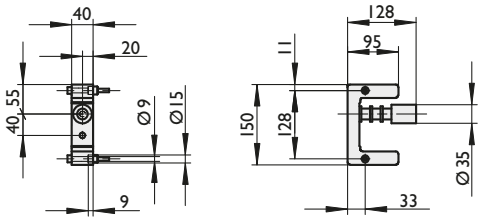


Fig. ④

Baugrösse | Taille | Size	Fig.	Part No.	B	B_1	B_2	øD	$øD_1$	$øD_2$	H	H_1	H_2	L	L_1	m[kg]
25	⑤	0926748	215	185	72.5	ø34.5	ø15	ø9	40	9	20	167.5	130	137.5
35	⑤	0926749	215	245	102.5	ø50	ø18	ø11	60	11	32.5	160	137.5	130

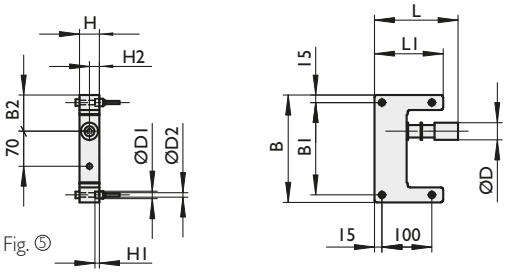


Fig. ⑤

Tragfähigkeitsberechnungen
Calculs pour capacité de charge
Size verification

Die Berechnung muss für die am stärksten belastete Rolle durchgeführt werden.

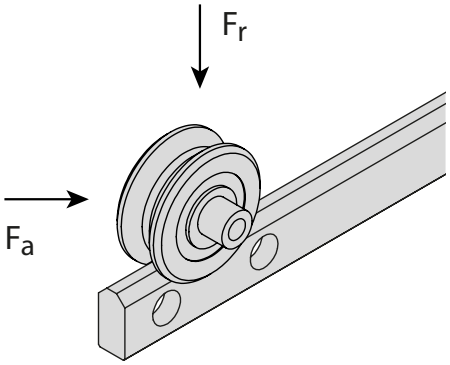
Die errechneten Werte für die Lebensdauer sind als nominelle Lebensdauer, welche 90% der Rollen erreichen, zu verstehen.

Le calcul doit être fait pour le galet le plus chargé. Les valeurs calculées sont des valeurs nominales.

90% des galets peuvent obtenir ces valeurs.

The calculation must be done for the roller under the highest load.

The life time values calculated are nominal. 90% of all rollers reach these values.



$$P = F_r + 3 \cdot F_a \quad [N]$$

$$P_w = f \cdot P \quad [N]$$

$$Ls = \left(\frac{C_w}{P_w} \right)^3 \cdot 10^7 \quad [m]$$

Mat: 100Cr6

FR	Cw [N]	LR	Cw [N]
15	3340	15	3280
20	4730	20	5090
25	7560	25	8070
35	13940	35	14040

Mat: X46Cr13

FR	Cw [N]	LR	Cw [N]
15	2490	15	2450
20	3550	20	3810
25	5680	25	6060
35	10430	35	10500

C_w: based on 10^7 meter

F_a: Äussere Axialkraft pro Rolle [N]
F_r: Äussere Radialkraft pro Rolle [N]
P: Dynamisch äquivalente Belastung [N]
P_w: Wirksame Belastung [N]
C_w: Dynamische Tragzahl [N]
Ls: Nominelle Lebensdauer in[m]
f: Betriebsfaktor (–)
ruhig: 1.0 … 1.2
mässige Stösse: 1.2 … 1.5
hohe Ansprüche: 1.5 … 2.5

F_a: Force axiale extérieur par galet [N]
F_r: Force radiale extérieur par galet [N]
P: Charge dynamique équivalente [N]
P_w: Charge effective [N]
C_w: Charge dynamique de base effective [N]
Ls: Durée de vie nominale [m]
f: Facteur de charge pour fonctionnement (–)
doux, sans choc: 1.0 … 1.2
normale: 1.2 … 1.5
avec choc et vibrations: 1.5 … 2.5

F_a: External axial force per roller [N]
F_r: External radial force per roller [N]
P: Equivalent dynamic load [N]
P_w: Effective load [N]
C_w: Effective basic dynamic load rating [N]
Ls: Nominal life time [m]
f: Service coefficient (–)
smooth: 1.0 … 1.2
moderate shocks: 1.2 … 1.5
high stress: 1.5 … 2.5

Der statische Nachweis muss auf jeden Fall durchgeführt werden. Die statische Kennzahl fs muss grösser bzw. gleich 1 sein.

Le calcul de la charge statique de base doit toujours être realisé. Le valeur fs doit être ≥ 1.

The static loading coefficient must be calculated for every application. The value fs must be ≥ 1.

$$fs = 0{,}7 \cdot \frac{C_{0w}}{f \cdot (F_r + 3 \cdot F_a)} \quad fs \geq 1$$

fs = statische Kennzahl
C_{0w} = max. zulässige statische Radialkraft [N]

fs = facteur de sécurité statique
C_{0w} = force radiale admissible max. [N]

fs = static loading coefficient
C_{0w} = max. admissible static radial force [N]

Mat: 100Cr6

FR/LR	C_{0w} [N]
15	6800
20	9500
25	15000
35	32000

Mat: X46Cr13

FR/LR	C_{0w} [N]
15	5100
20	7100
25	11000
35	24000

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Güdel worldwide

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