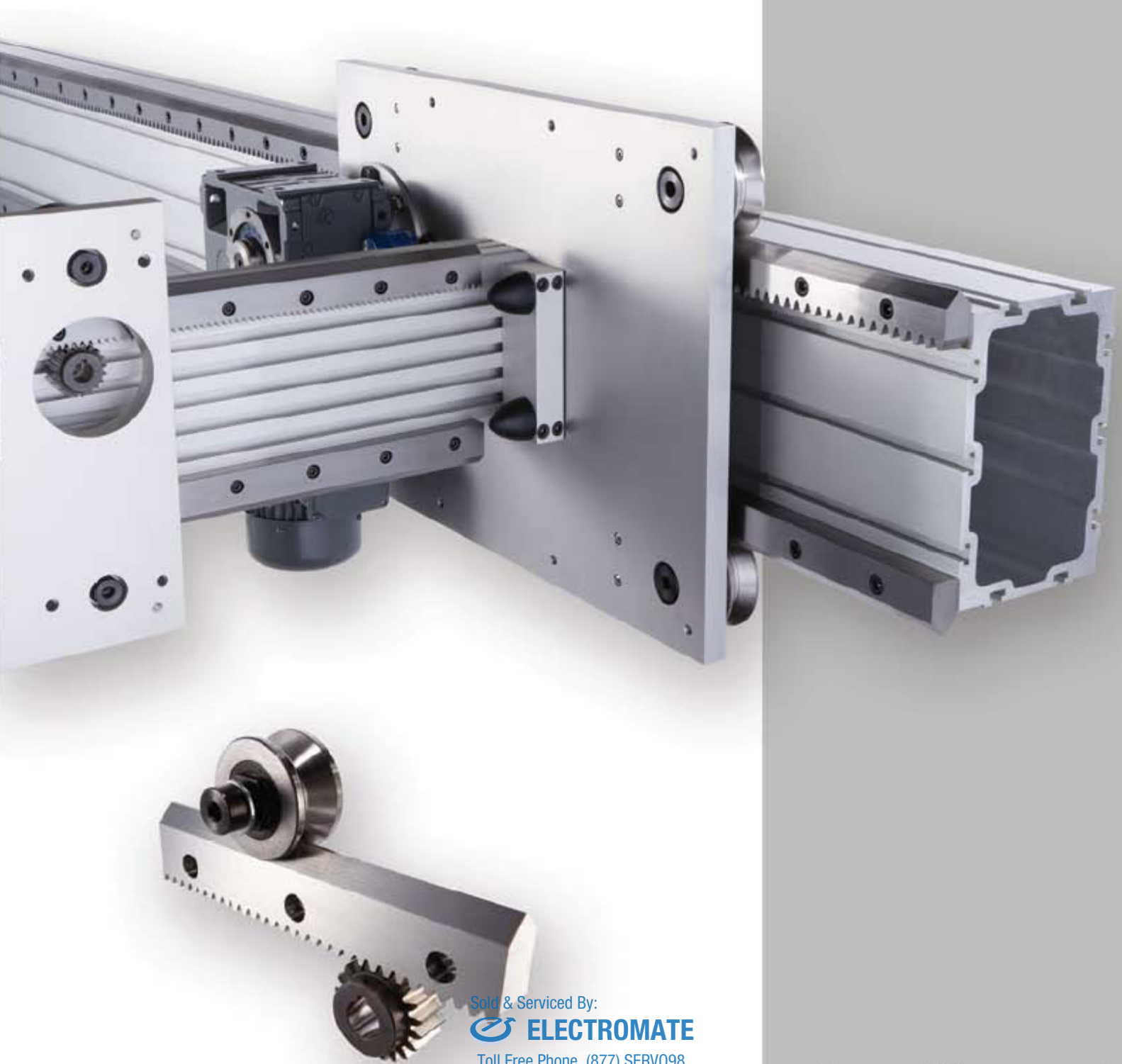


HDS2

Heavy Duty
Slide System



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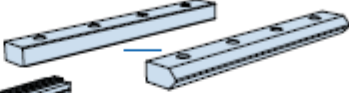
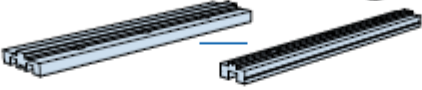

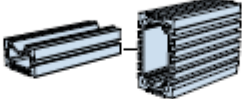
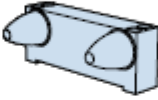
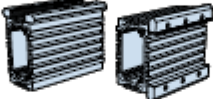

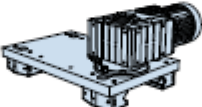

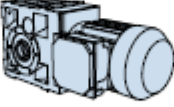
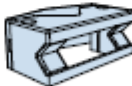

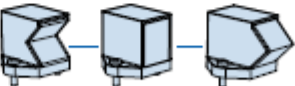





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Introduction

HepcoMotion® HDS2 Heavy Duty Slide System, available from Bishop-Wisecarver, retains the best features from the previous HDS product line, and incorporates them in a greatly expanded range. Many new components have been added including larger bearings with increased load capacity, two sizes of construction beam, single edge V slides and flat track, as well as a range of drive options. All this, with an option for stainless steel or corrosion resistant components, enables the HDS2 range to offer a solution for most customers' applications.

Customers can choose from low cost commercial slides for general use or high precision ground slides to suit applications where accuracy and smoothness are key requirements.

Customers can save design and manufacturing time by specifying ready mounted systems complete with rack driven carriages, safe in the knowledge that everything has been designed and tested by one of the world's leading specialists in linear technology.



2D & 3D CAD files available

Features and Benefits

- Low cost **commercial, precision** ground and **stainless steel systems** available
- **Spur** or **helical rack** & pinion options for ease of driving
- **Unique wiping action** expels dirt and debris in harsh environments
- Available as assembled units or in component form, providing **maximum flexibility** of design
- Versatile construction beams for multiple design options
- System capacities up to **68kN**
- Can operate without lubrication, ideal for food machinery and clean applications
- Slides and tracks available in one piece up to **4 meters long**, saves on assembly time
- Long lengths comprising replaceable segments, reduces downtime in the event of damage
- Flat tracks overcome necessity for parallel installation
- **Simple** alignment facility to achieve parallelism of V

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- Works in any plane and orientation for unrestricted use in machine construction

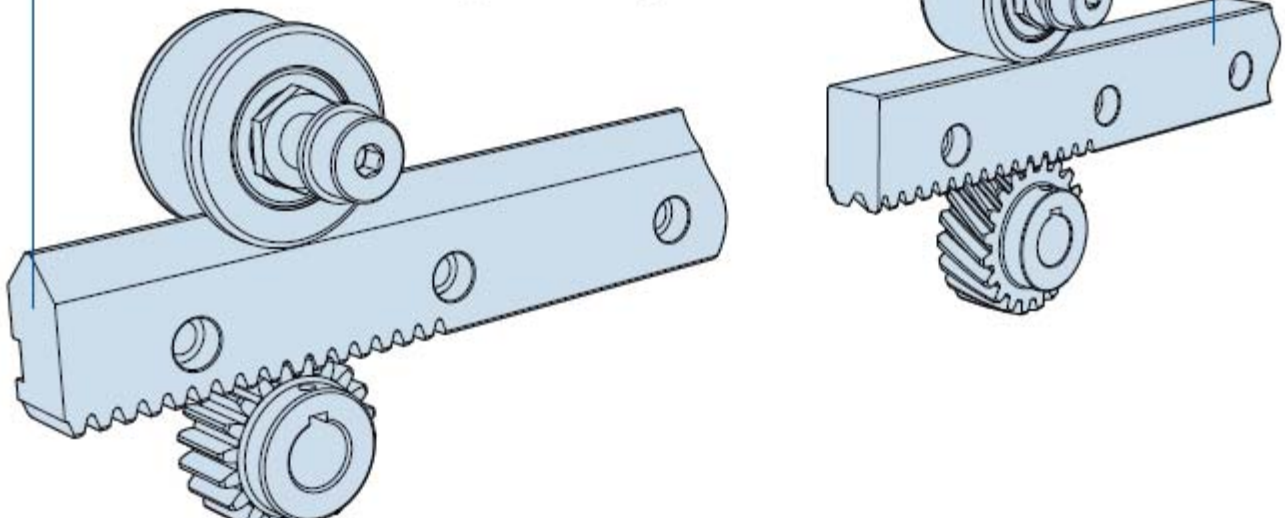
System Composition

The HDS2 system comprises a versatile family of slides, flat tracks, construction beams and other components, which will meet the requirements of the most demanding applications.

□2 to 7 provide an overview of the comprehensive HDS2 system. The slides and flat tracks may be attached to a suitable section, or they may be used in conjunction with back plates to give a ready made support profile. Slides and flat tracks can also be fitted to construction beams in many positions to provide a versatile all-in-one guide, drive and construction element.

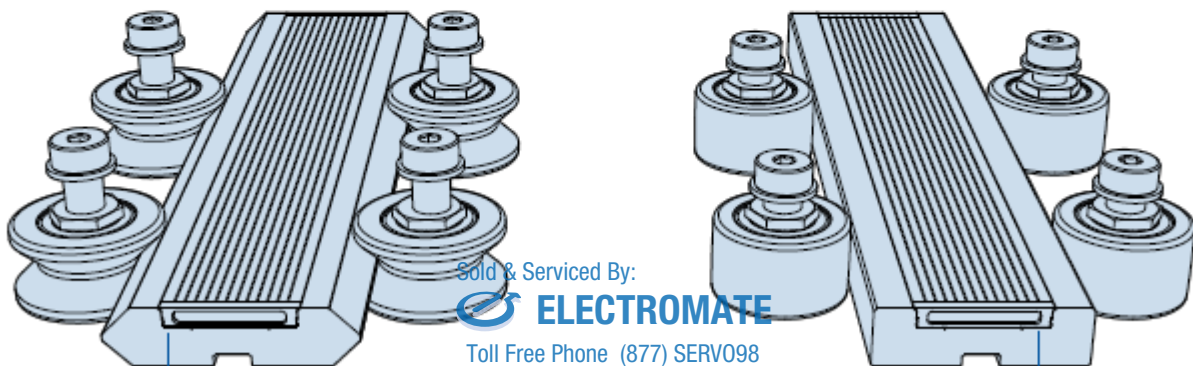
* Single Edge V Slide / Single Edge Flat Track □14 & 45 •

- *• Precision ground, low cost commercial, and stainless steel versions available
- *• Available up to 4 meters long, unlimited lengths achieved by butting
- *• Optional long lengths comprising replaceable short segments
- *• Deep hardened running faces for maximum wear resistance
- *• Unhardened center allows customizing
- *• Spur and helical rack cut options provide means of driving
- *• Optional keyway for location and alignment via key or dowel pins
- *• Narrow rail with register face for convenience of spacing apart
- *• Common V angle allows many bearing / slide combinations
- *• Attractive corrosion inhibiting finish on all unground faces



* Double Edge V Slide / Double Edge Flat Track □15 & 45 •

- *• One piece construction with built in parallelism
- *• Precision ground, low cost commercial, and stainless steel versions available
- *• Available up to 4 meters long, unlimited lengths achieved by butting
- *• Optional long lengths comprising replaceable short segments
- *• Deep hardened running faces for maximum wear resistance
- *• Unhardened center allows customizing
- *• Lightened center with attractive debris cover
- *• Keyway for location and alignment via key or dowel pins
- *• Common V angle allows many bearing / slide combinations
- *• Attractive corrosion inhibiting finish on all unground faces



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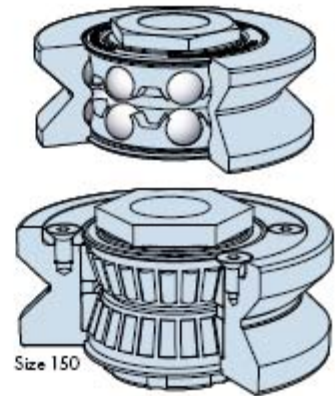
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* V Bearings / Track Rollers □18-21 ●

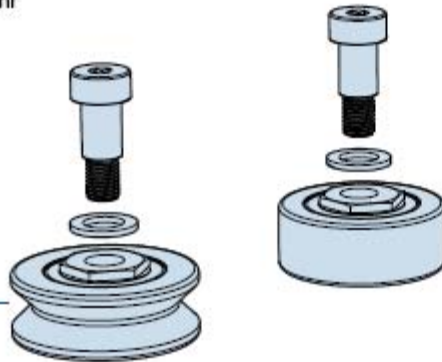
Bearing & Roller common features □18-21

- *● Special raceway conformity and low radial clearance, for slide applications
- *● Double row bearings for tolerance of debris and high load capacity
- *● Load capacity up to **50kN** each
- *● Can be installed and removed without disengaging the carriage
- *● Nitrile sealed for lifetime lubrication, inhibits ingress of liquids and contaminants
- *● All options available in stainless steel
- Permits out of parallel installation
- Crowned contact face to overcome misalignment



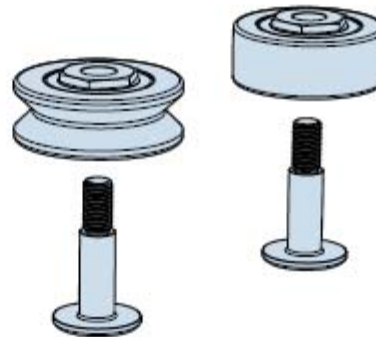
Through hole fixing

- Bolt lengths to suit plate thickness from 7 to 40mm
- Concentric (fixed) or eccentric (adjustable) studs
- Can be installed and removed without carriage disengagement



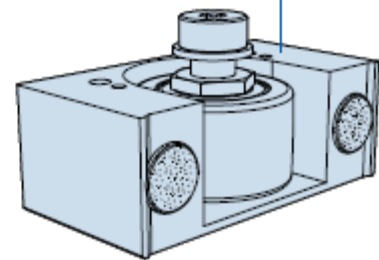
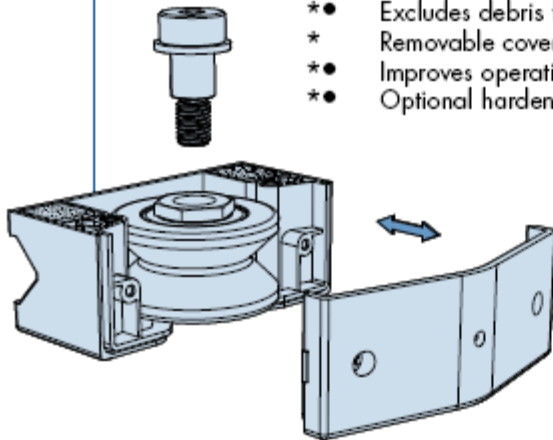
Blind hole fixing

- For mounting into thick plates or where access to opposite side is restricted
- Concentric (fixed) or eccentric (adjustable) studs
- Can be installed and removed without removing slide



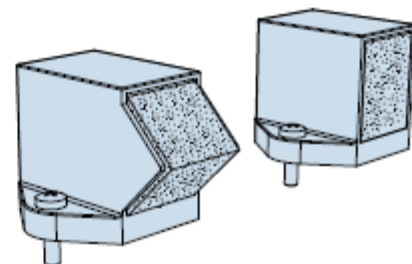
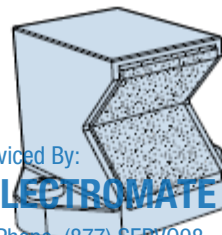
* V Bearing Cap Wiper / Roller Cap Wiper □32-33 ●

- *● Lubricates contact faces reducing wear
- *● In many cases re-lubrication is unnecessary
- *● Excludes debris from bearing contact faces
- * Removable cover allows adjustment of system without disassembly
- *● Improves operational safety
- *● Optional hardened stainless steel scraper



Lubricators □34

- Lubricates systems - increasing load and life
- Lightly sprung felt wiper ensures low friction
- Versions to fit slide, track, V bearing and track rollers
- Blind and through hole fixing



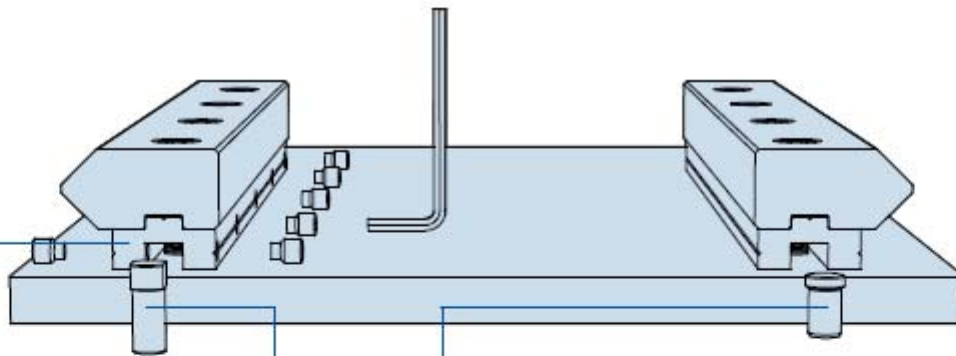
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* Low Narrow / Low Wide Back Plates □16-17 ●

- *● Strong construction in light weight aluminum
- *● Profiles to suit single and double edge slides
- * Adjustable alignment option to obtain parallelism of the system
- *● Easily incorporated into customer's design

- *● Will attach to T-slot positions of construction beams
- *● Key locations for attachment of slide and for mounting
- *● Supplied clear anodized
- *● Manufactured to precision extrusion tolerances

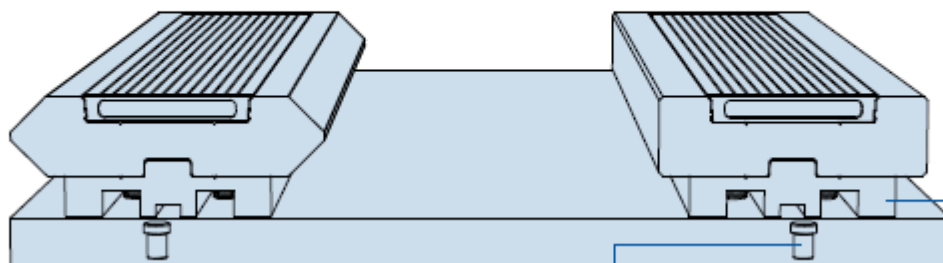


Back plate alignment dowel



- Adjustable alignment in conjunction with jacking screw, ensures parallelism between slides or tracks

Back plate location dowel

- Simple means of location and alignment, provides datum location



Back plate location dowel

- *● Spaces V slide and flat track away from mounting surface to allow the use of bearings, rollers and cap wipers
- *● Male key for location on V slide and flat tracks
- *● Female keyway for location using customer own key section or dowel pins
- High wide  & high narrow  back plates available □16-17 to suit slides with bearing blocks □39

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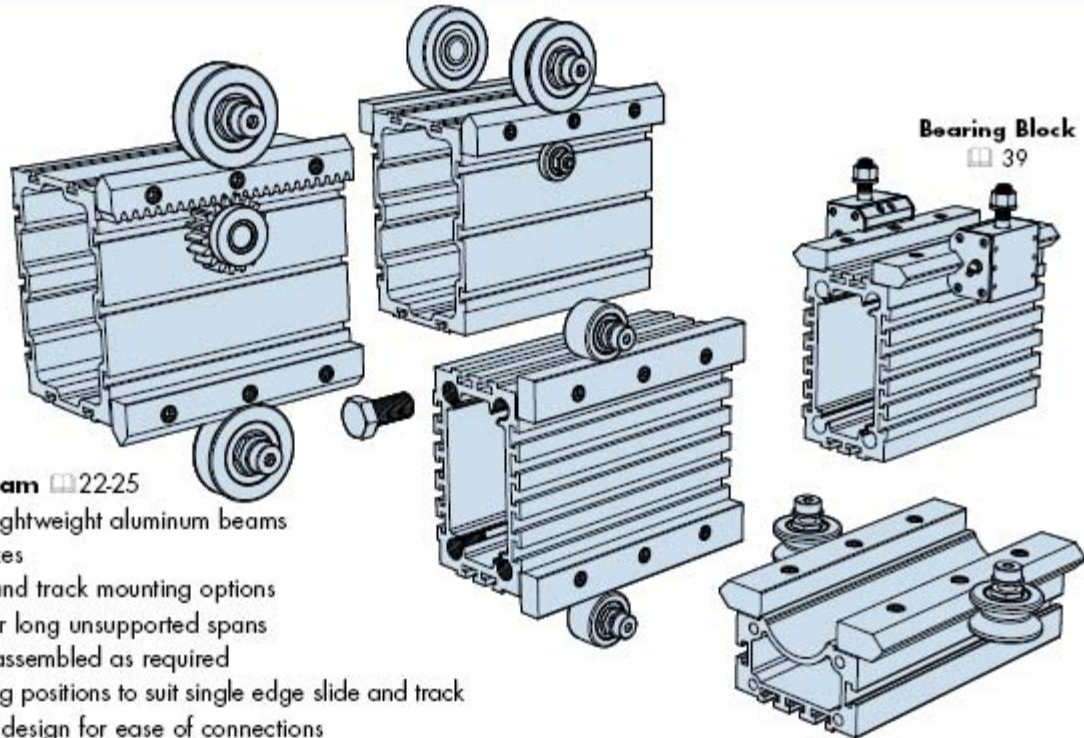
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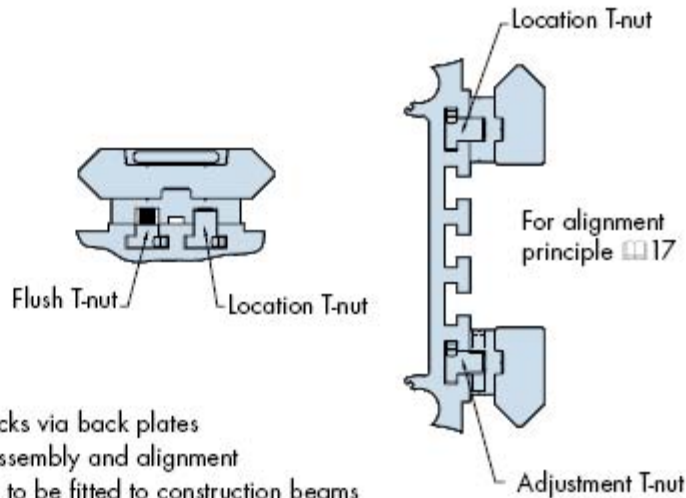
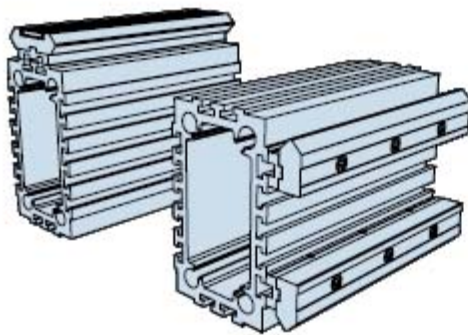
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System Composition



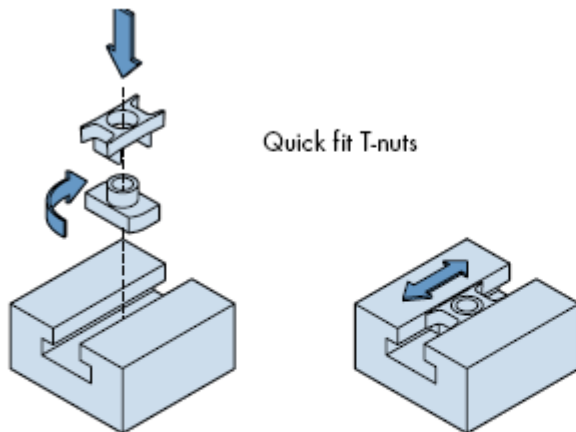
Construction Beam □22-25

- High strength lightweight aluminum beams
- Three useful sizes
- Multiple slide and track mounting options
- Stiff sections for long unsupported spans
- Supplied fully assembled as required
- Corner mounting positions to suit single edge slide and track
- Common T-slot design for ease of connections
- Plastic T-slot cover and metal end covers available



T-Slot Fixing □16,17 & 25

- Multiple T-slot positions for attaching slides and tracks via back plates
- Use of location and adjustment T-nuts for ease of assembly and alignment
- Enables the use of double edge slide and flat track to be fitted to construction beams



T-Nuts □38

- Simple means of attaching components
- Plastic or spring retainer prevents loss of position
- Location type fits into the back plate keyway
- Adjustment type for ease of alignment
- Multiple thread sizes are available



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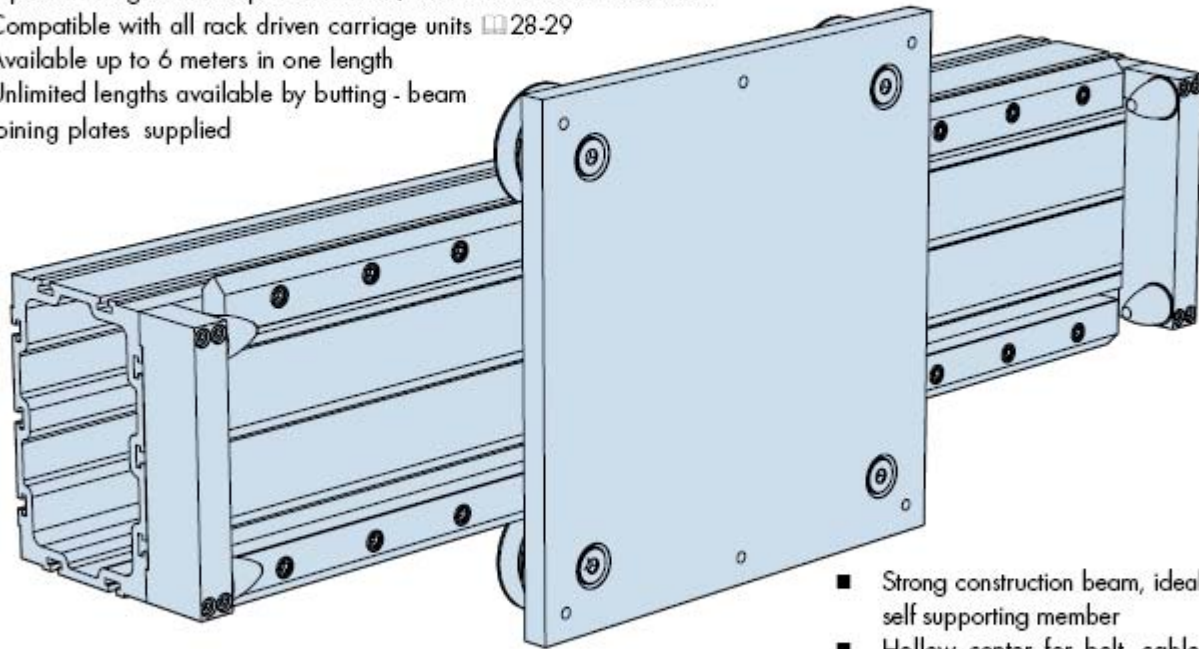
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System Composition

The HDS2 range has been greatly extended to include assembled carriages, three sizes of construction beam, larger capacity bearings and a host of improved features. This also provides flexibility for many sizes and types of heavy duty components to be interchanged in order to achieve a comprehensive combination of space and performance possibilities.

Assembled Beams with Carriages [24-25](#)

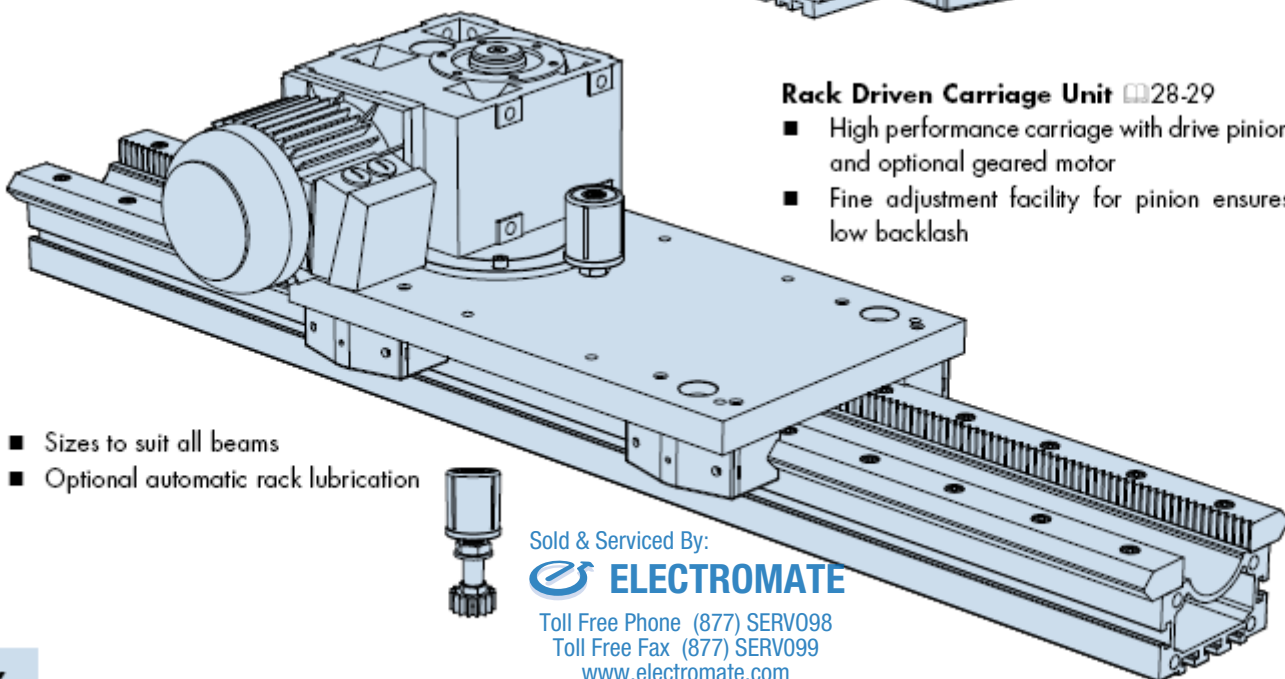
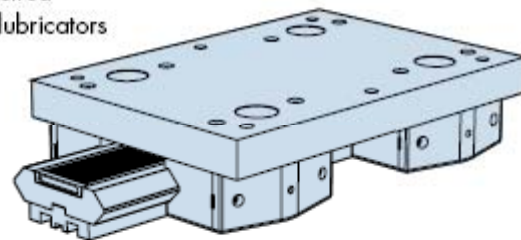
- Fully assembled factory built beam with ready adjusted carriage
- Available for all opposing corner mounted V slide options for all sizes of beam
- Optional integrated bumper units with / without access for drive belt
- Compatible with all rack driven carriage units [28-29](#)
- Available up to 6 meters in one length
- Unlimited lengths available by butting - beam joining plates supplied



- Strong construction beam, ideal as self supporting member
- Hollow center for belt, cable or chain return

Carriages [26-27](#)

- Factory adjusted to double edge slide or beam assembly as required
- Available with bearings only, or with addition of cap wipers or lubricators
- Hardened stainless steel scrapers available for cap wipers
- Tapped holes in convenient positions for attachment purposes
- Compatible with both precision ground and commercial slides
- Corrosion resistant options available on all sizes



Rack Driven Carriage Unit [28-29](#)

- High performance carriage with drive pinion and optional geared motor
- Fine adjustment facility for pinion ensures low backlash

- Sizes to suit all beams
- Optional automatic rack lubrication



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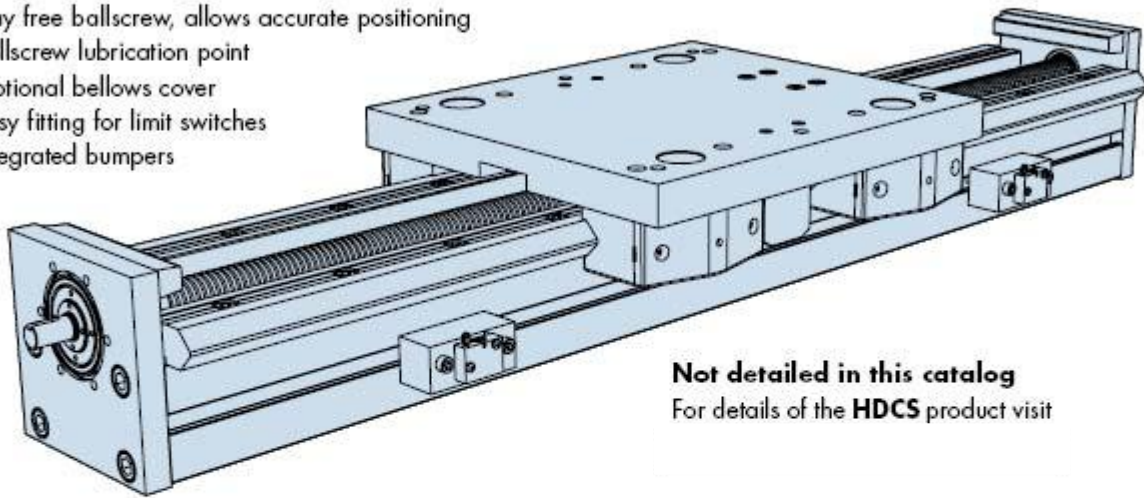
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System Composition

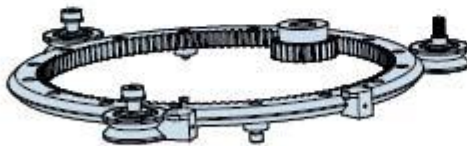
HDCS - Heavy Duty Compact Screw Driven Unit

- High performance linear transmission
- High capacity, high precision
- Compact high strength aluminum beam
- Play free ballscrew, allows accurate positioning
- Ballscrew lubrication point
- Optional bellows cover
- Easy fitting for limit switches
- Integrated bumpers

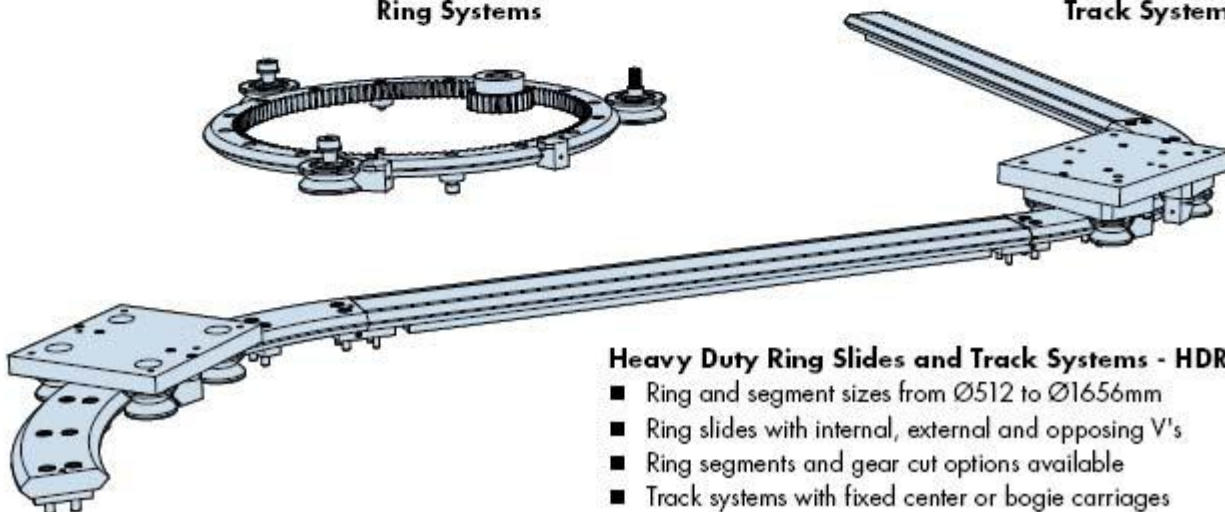


Not detailed in this catalog
For details of the **HDCS** product visit

Ring Systems



Track Systems



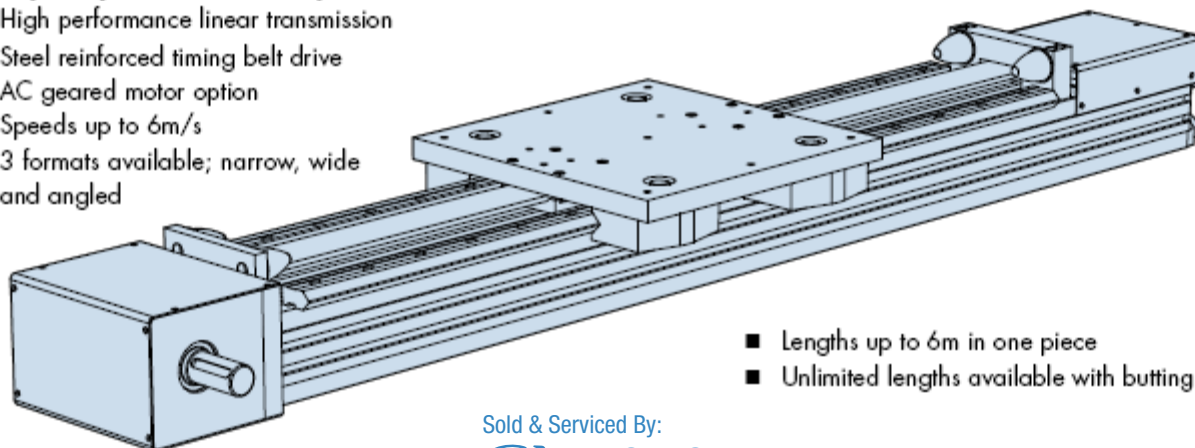
Heavy Duty Ring Slides and Track Systems - HDRT

- Ring and segment sizes from $\varnothing 512$ to $\varnothing 1656$ mm
- Ring slides with internal, external and opposing V's
- Ring segments and gear cut options available
- Track systems with fixed center or bogie carriages

Not detailed in this catalog. For details of the **HDRT** product visit

Heavy Duty Driven Linear System - HDLS

- High performance linear transmission
- Steel reinforced timing belt drive
- AC geared motor option
- Speeds up to 6m/s
- 3 formats available; narrow, wide and angled



- Lengths up to 6m in one piece
- Unlimited lengths available with butting

Not detailed in this catalog. For details of the **HDLS** product visit

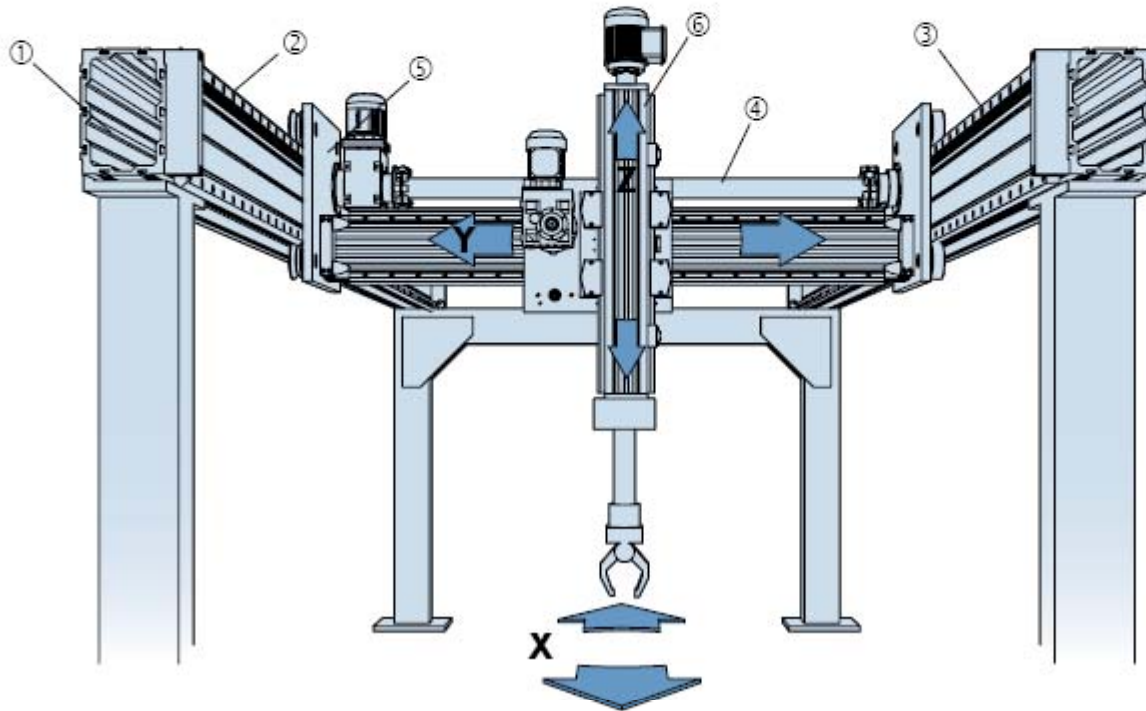
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Application Examples

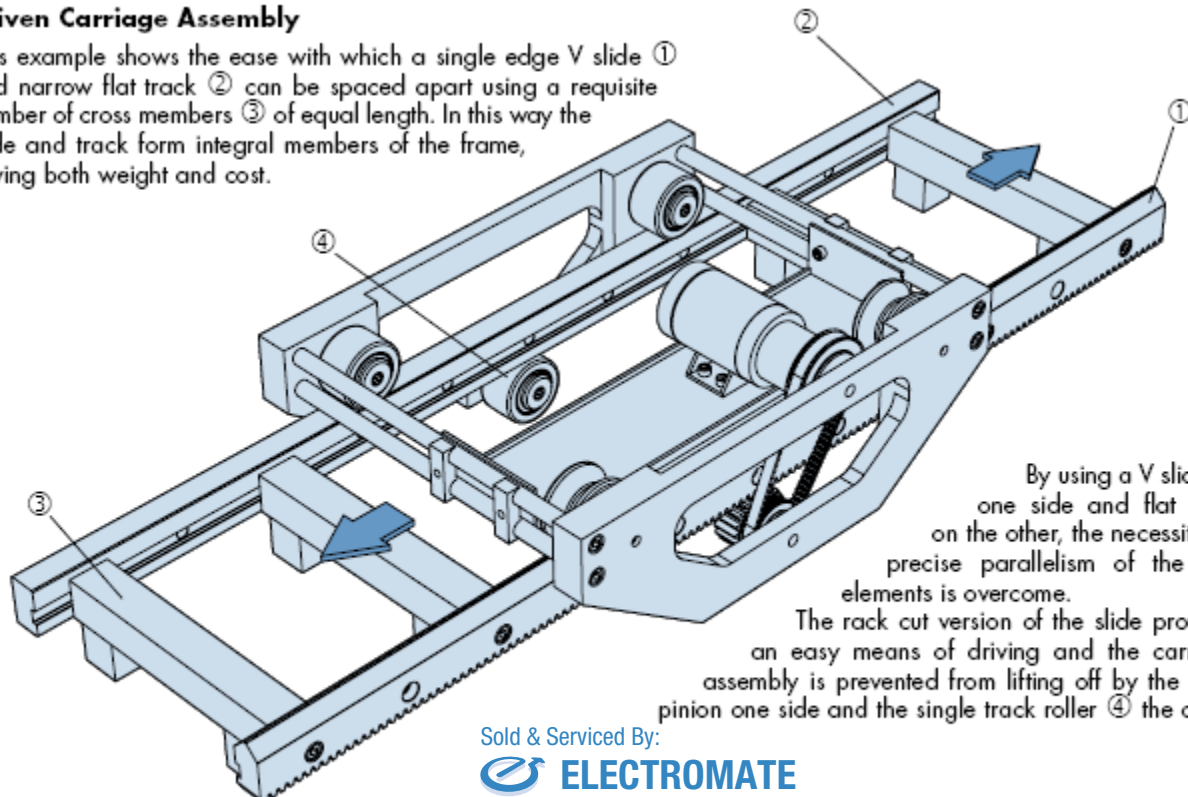
Gantry Robot

The HDS2 system contains all the major components to produce high capacity gantry systems such as that shown below. The extreme rigidity of the construction beams ① allow for long unsupported spans up to 6m depending on load. The use of V slides ② on one side of the X axis and flat tracks ③ on the other makes allowances for the variation in parallelism between the two beams. The common drive shaft ④ allows for the Y axis to be driven from both X axis beams, via the integrated racks on both the V slide and flat track. The ends of the Y axis beam have been tapped to allow direct connection into the driven carriages ⑤ on the X axis. Both X and Y axis beams have been fitted with bumper units for end of stroke protection. The Z axis incorporates an HDCS unit ⑥, which is driven via a ballscrew. This provides both the precision and capacity required for this type of application.



Driven Carriage Assembly

This example shows the ease with which a single edge V slide ① and narrow flat track ② can be spaced apart using a requisite number of cross members ③ of equal length. In this way the slide and track form integral members of the frame, saving both weight and cost.



By using a V slide on one side and flat track on the other, the necessity for precise parallelism of the two elements is overcome.

The rack cut version of the slide provides an easy means of driving and the carriage assembly is prevented from lifting off by the drive pinion one side and the single track roller ④ the other.

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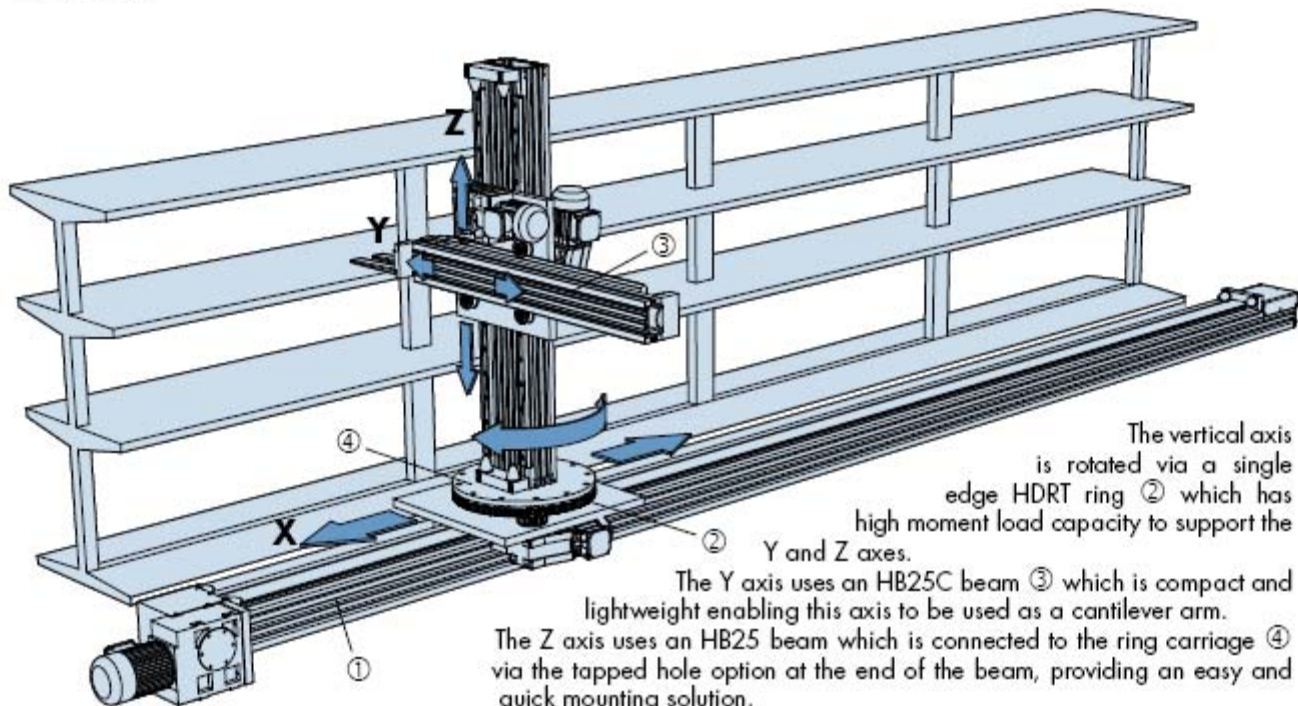
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Application Examples

Pick and Place Application

This example shows a four axis pick and place system using a combination of HDS2, HDLS and HDRT parts. HDLS and HDRT are related products featured on page 7 and detailed in separate catalogs. The X axis comprises the HDLS unit ① which is driven via a steel reinforced timing belt and incorporates an HB25 beam. It is ideally suited to high speed applications of this nature.



Cable Tensioning Application

This example shows 8 x THJR95 V bearings ① mounted on a special carriage plate supporting the cable clamp. The widely spaced pairs of bearings give very high moment load capacity, with the inner set providing additional capacity at the point of greatest load. The outermost bearings on one side are the concentric type, the rest are the eccentric type. This allows the system to be adjusted such that all bearings share the load equally. The bearings run on single edge V slides ② spaced wide apart on a custom built back plate which provides high moment load capacity in the other direction.

Bishop-Wisecarver can provide parts to customer drawings such as the back plate and carriage shown in this application. This allows customers to receive fully built assemblies, with factory set bearings.

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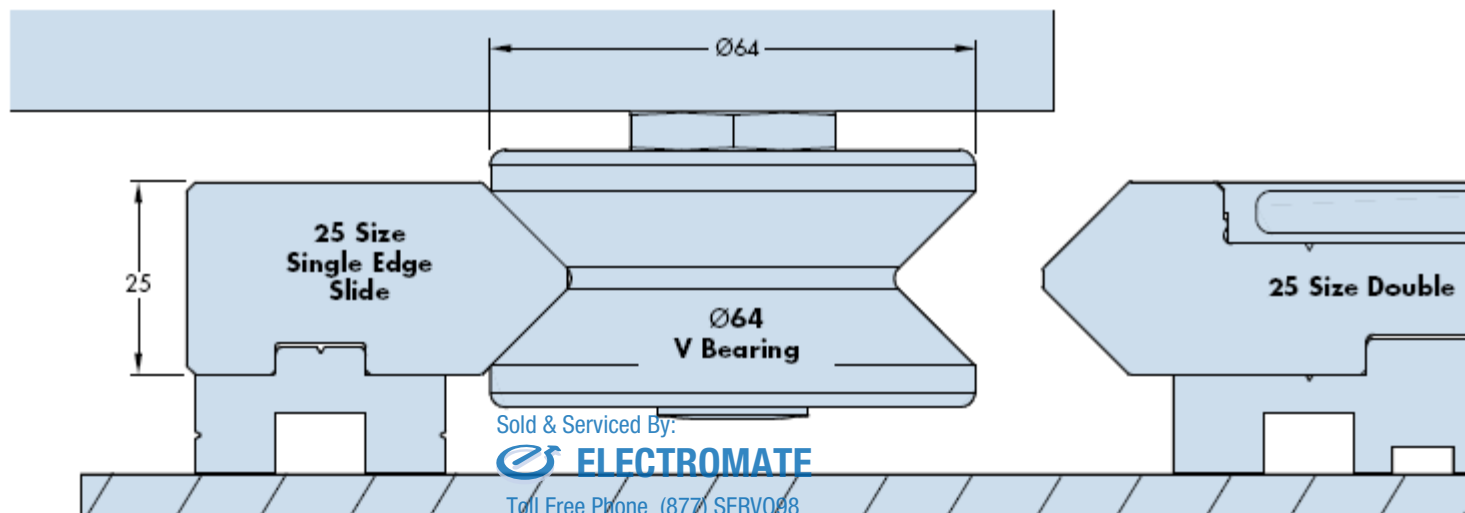
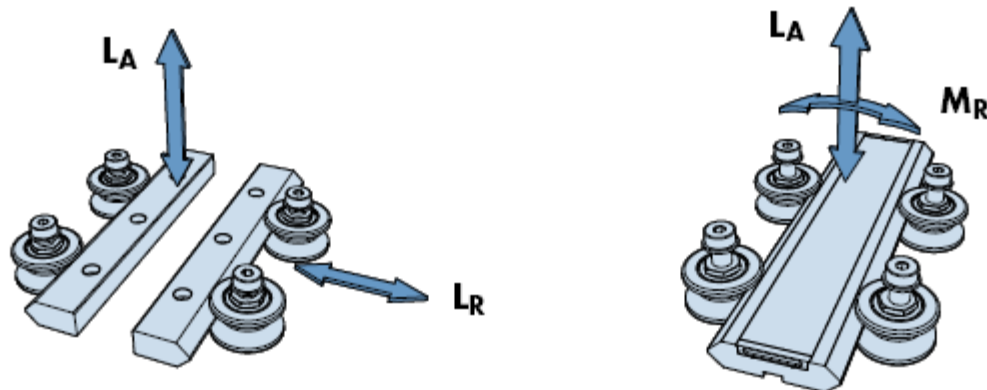
Full Size Illustrations For Initial Selection

Full size illustrations of the basic V slide systems and flat track systems and load capacities are shown on this and the following three pages as a guide to facilitate initial selection. Once a choice has been made, customers should refer to individual component pages for dimensions and to 42-44 for comprehensive details on load and life. Combinations other than shown in this section are possible. Please refer to the Mix & Match tables on 46-47. A wide range of other components complementary to the V slide systems and flat track systems are illustrated on the system composition 2-7 cross referenced to the relevant component pages.

Please note that bearing cap wipers and roller cap wipers are not shown on the illustrations. These will increase the space required very slightly 32.

| Slide | | Bearing | | System Load (Lubricated) | | |
|----------------|--------------|---------|-----------|--------------------------|----------------|----------------|
| Size & Type | Part No. | Ø | Part No. | L _A | L _R | M _R |
| 25 Single Edge | C/P/SS HSS25 | 64 | B/THJR64 | 10,000N | 16,000N | Variable |
| 25 Single Edge | C/P/SS HSS25 | 95 | B/THJR95 | 28,000N | 40,000N | Variable |
| 25 Single Edge | C/P/SS HSS25 | 120 | B/THJR120 | 40,000N | 60,000N | Variable |
| 25 Double Edge | C/P/SS HSD25 | 64 | B/THJR64 | 10,000N | 16,000N | 450Nm |
| 25 Double Edge | C/P/SS HSD25 | 95 | B/THJR95 | 28,000N | 40,000N | 1280Nm |
| 25 Double Edge | C/P/SS HSD25 | 120 | B/THJR120 | 40,000N | 60,000N | 1820Nm |
| 33 Single Edge | C/P/SS HSS33 | 128 | B/THJR128 | 40,000N | 60,000N | Variable |
| 33 Single Edge | C/P/SS HSS33 | 150 | B/THJR150 | 68,000N | 100,000N | Variable |

Load capacities apply to steel systems. Stainless steel systems load capacities are 25% lower.



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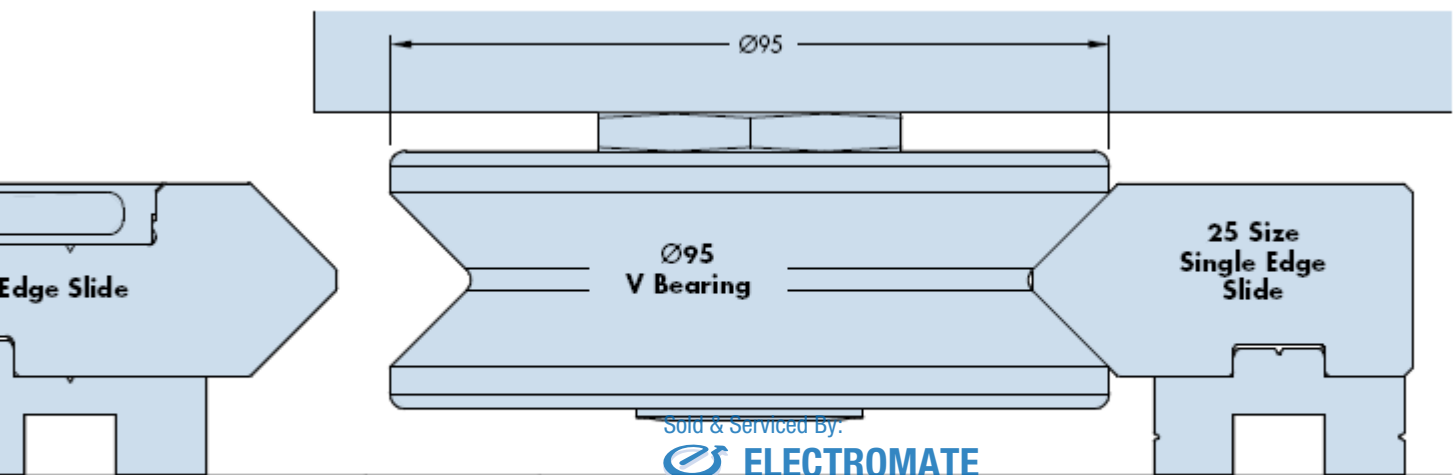
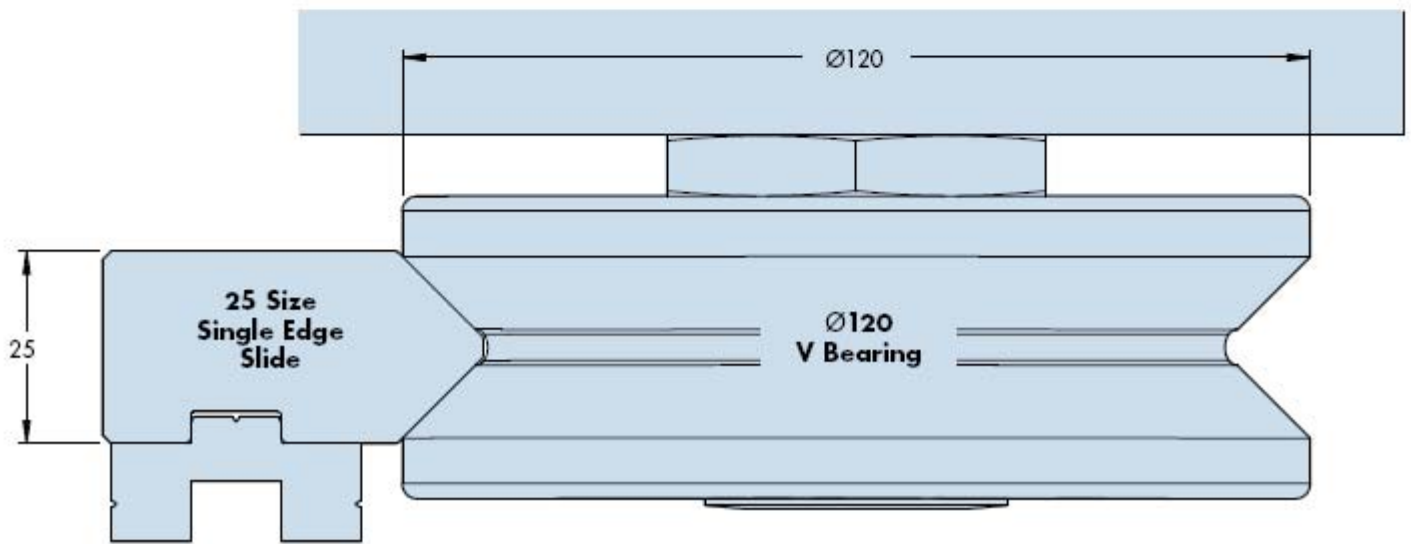
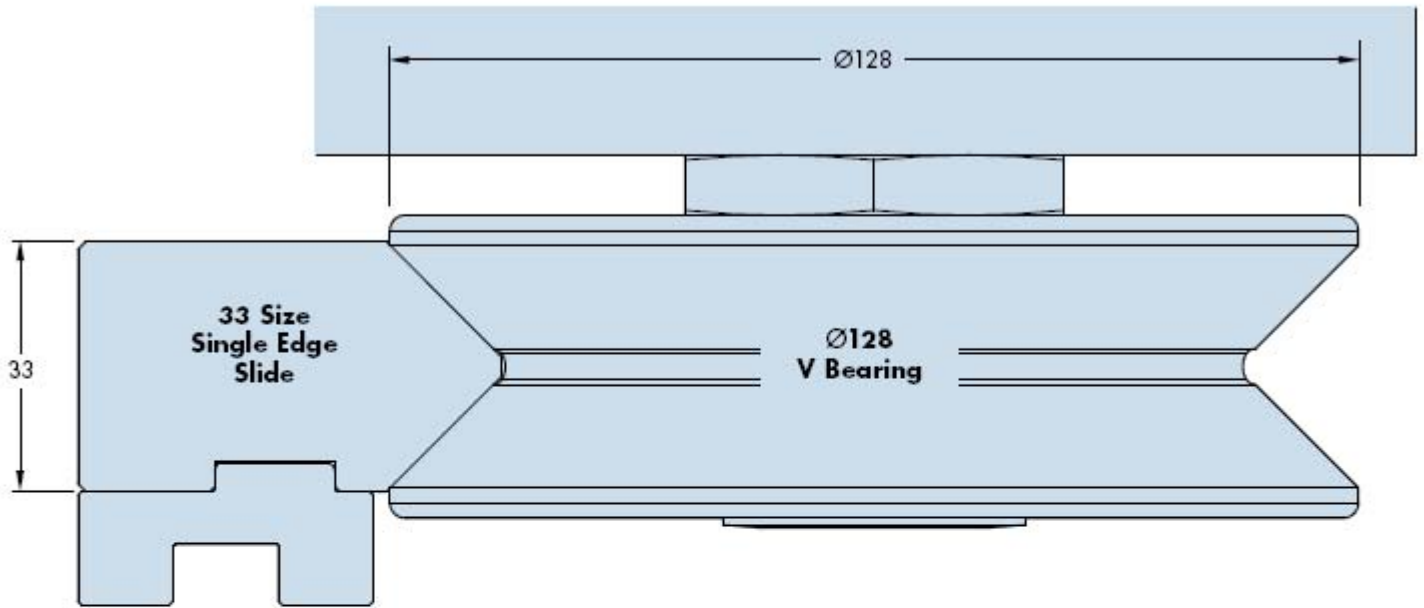
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Full Size Illustrations For Initial Selection



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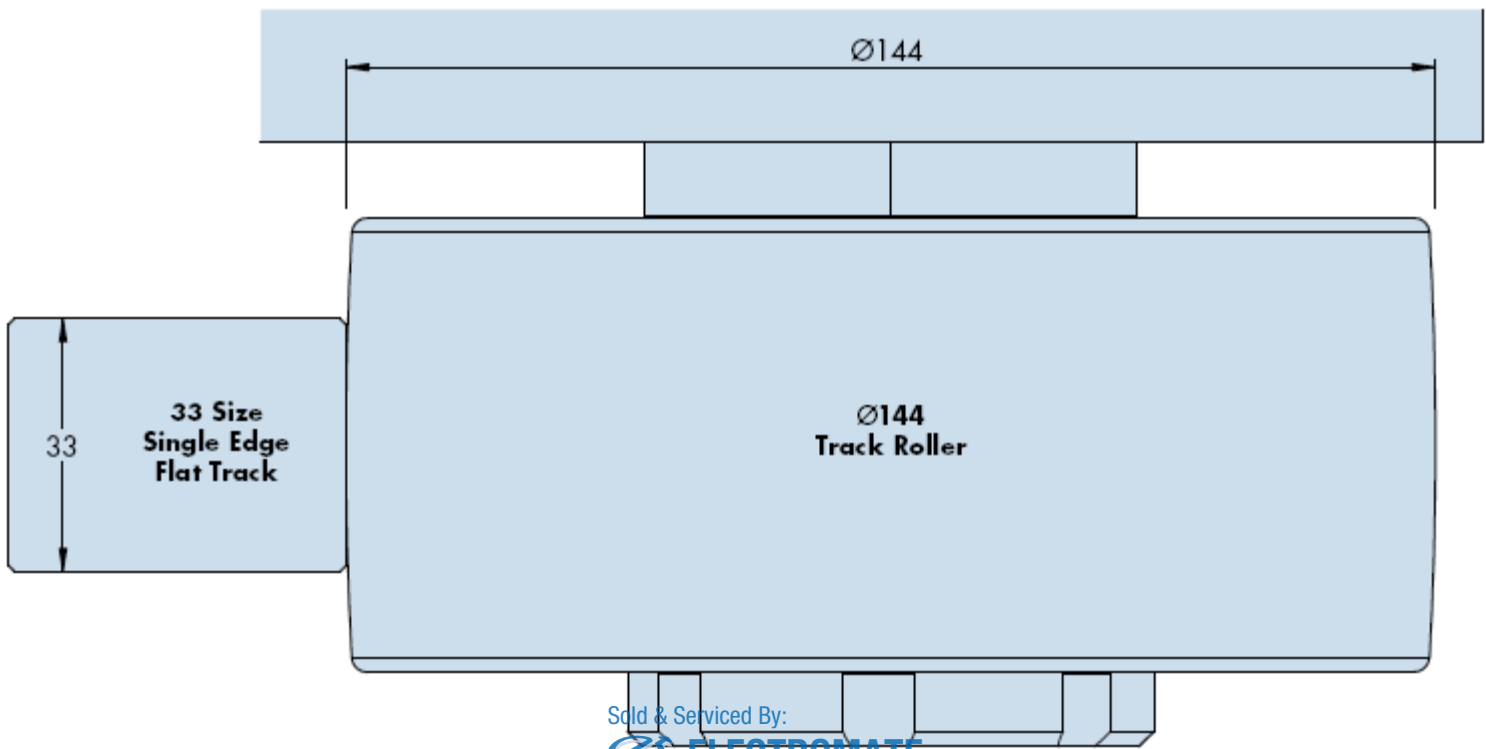
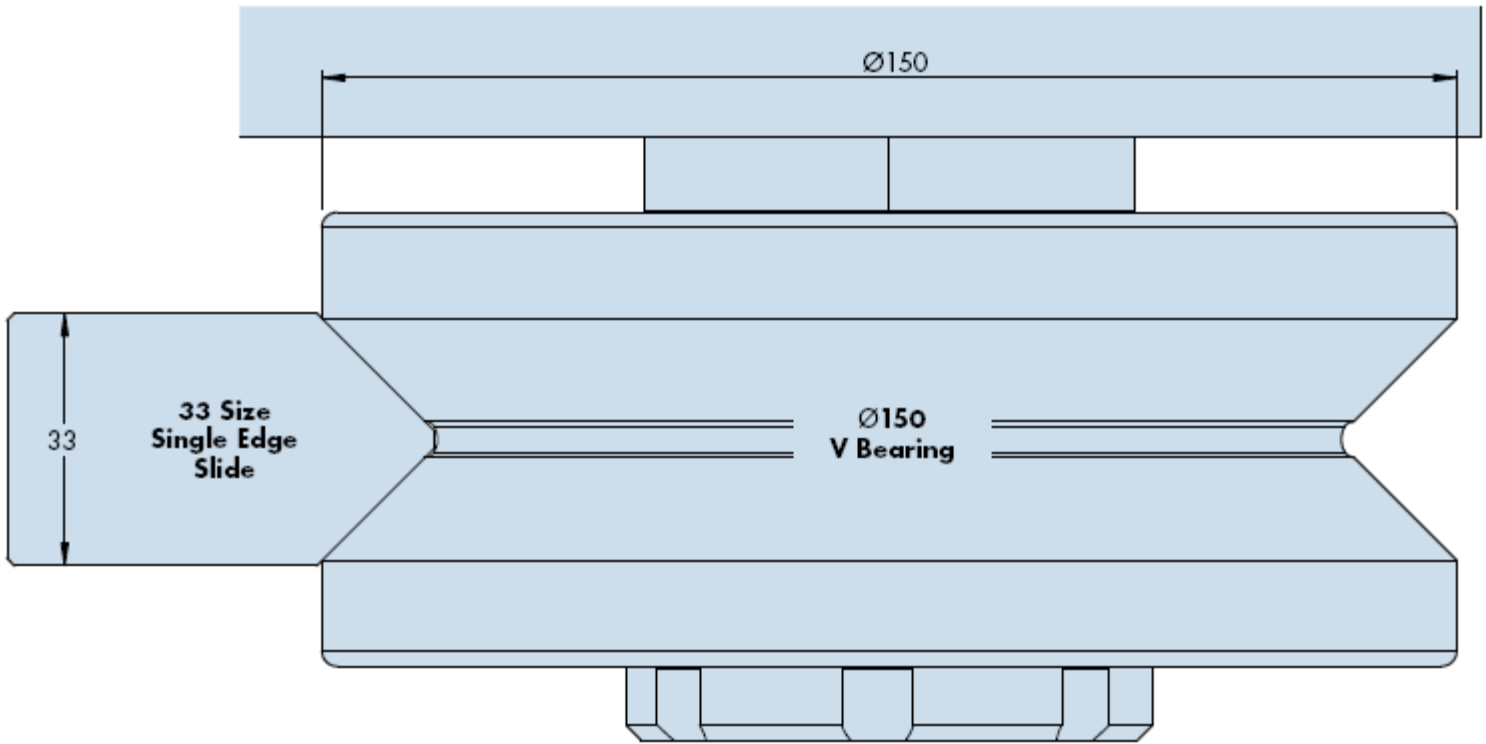


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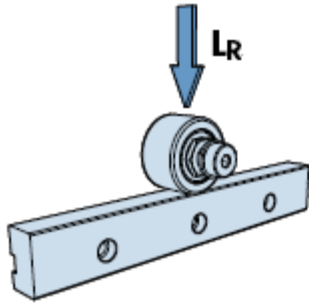


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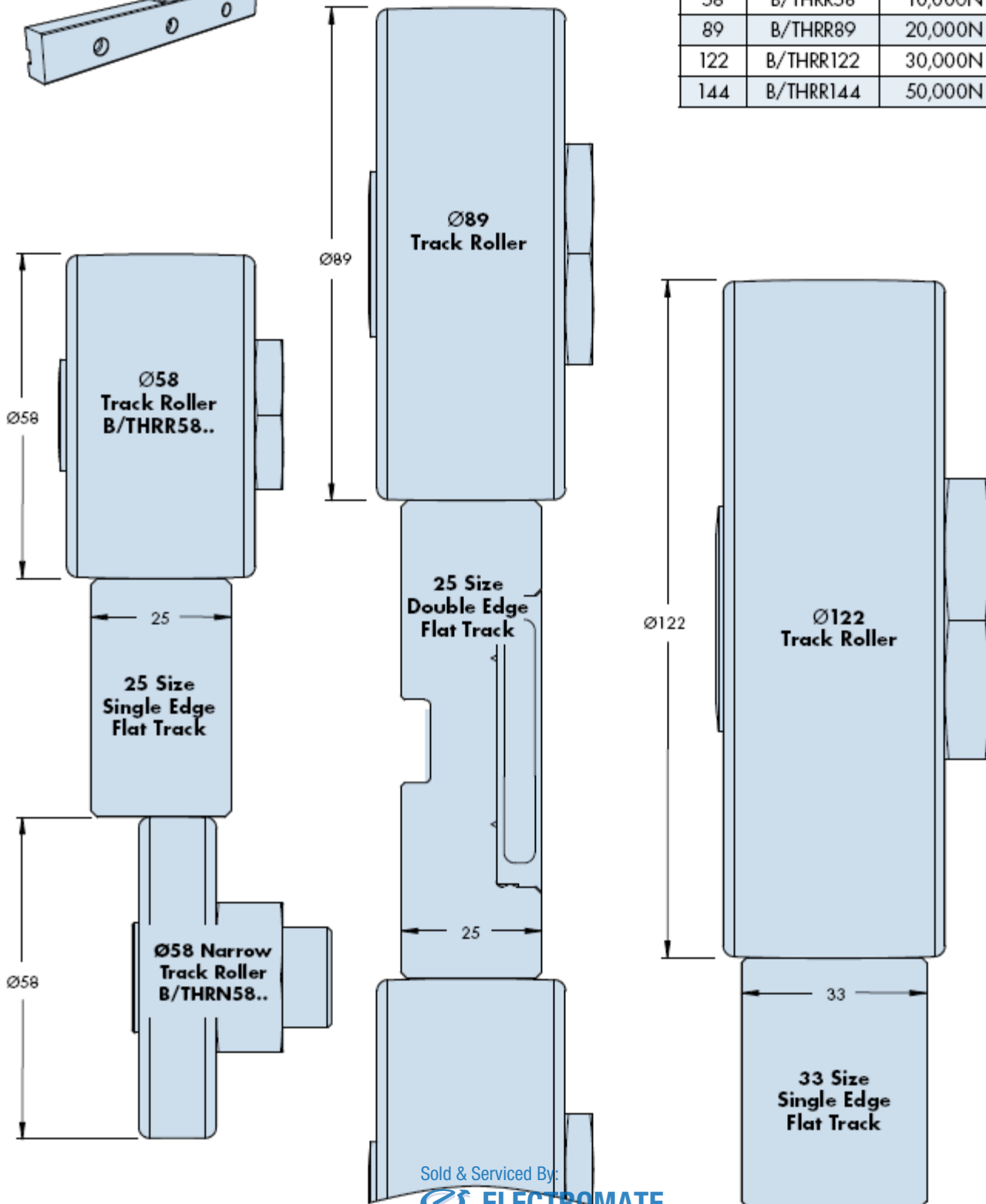
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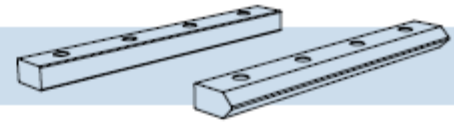
| Track Roller | | Load Capacity |
|--------------|-----------|----------------|
| Ø | Part No. | L _R |
| 58 | B/THRN58 | 5,000N |
| 58 | B/THRR58 | 10,000N |
| 89 | B/THRR89 | 20,000N |
| 122 | B/THRR122 | 30,000N |
| 144 | B/THRR144 | 50,000N |



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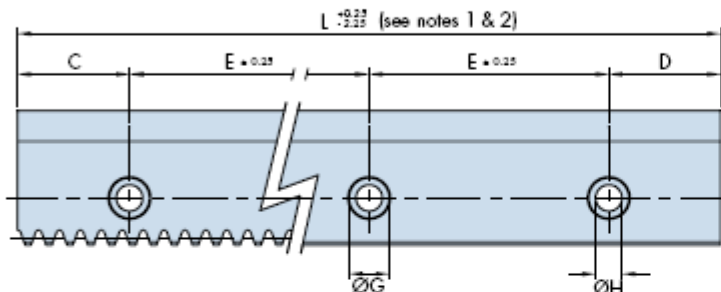
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V Slides & Flat Tracks

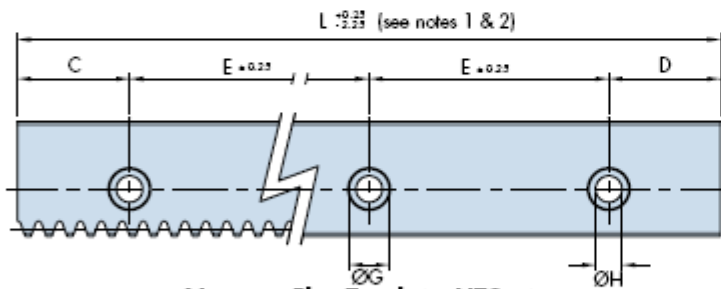


HDS2 V slides and flat tracks are manufactured from high quality bearing steel, hardened on the wearing surfaces. Other areas are left soft for customizing. All sizes are available in precision ground, commercial and stainless steel grades. The precision and stainless steel grades are ground on the wearing surfaces and mounting face to provide accuracy and smooth operation. The commercial grade is etched on the wearing surfaces to aid lubrication retention and is suitable for many applications. Single edge slides and tracks are available with a spur or helical rack cut into the rear face. These are also available with a keyway for use with back plates or dowel pins.

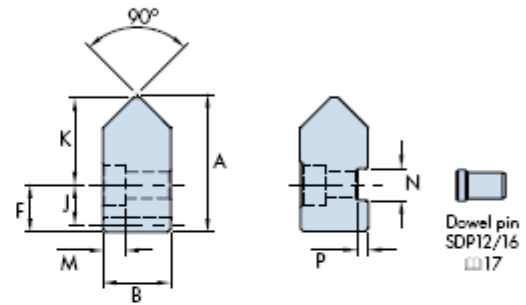
Popular options available on request: Non-standard lengths and holes, butt jointed profiles of unlimited length*2, □45 - Matched and replaceable short butted sets, □45 - Hardened racks*5



Single Edge V Slide (...HSS...)



Narrow Flat Track (...HTS...)



Plain version

Keyway version

Dowel pin SDP12/16 □17

Dowel pin SDP12/16 □17

| Part Number | A | B | C | D | E | F | G | H | J | | | | K | L | M | N | P | kg/m ~ |
|-------------|------|------|----|----|-----|------|----|----|-------------|------|------|------|------|------|------|----|-----|--------|
| | | | | | | | | | Rack Module | | | | | | | | | |
| | | | | | | | | | 2.5 | 3 | 4 | 5 | | | | | | |
| CHSS 25 | 51.7 | 25.4 | 43 | 43 | 90 | 17.7 | 15 | 10 | 15.1 | 14.6 | - | - | 32.7 | 4046 | 8.5 | 12 | 4.2 | 8 |
| SS/PHSS 25 | 51.2 | 25 | 43 | 43 | 90 | 17.5 | 15 | 10 | 15.1 | 14.6 | - | - | 32.5 | 4046 | 8.5 | 12 | 4 | 8 |
| CHSS 33 | 57.7 | 33.4 | 58 | 58 | 120 | 26.2 | 20 | 14 | - | - | 22.1 | 21.1 | 30.2 | 3956 | 12.7 | 16 | 4.2 | 12.3 |
| SS/PHSS 33 | 57.2 | 33 | 58 | 58 | 120 | 26 | 20 | 14 | - | - | 22.1 | 21.1 | 30 | 3956 | 12.5 | 16 | 4 | 12.3 |
| CHTS 25 | 43.1 | 25.4 | 43 | 43 | 90 | 17.7 | 15 | 10 | 15.1 | 14.6 | - | - | 25.4 | 4046 | 8.5 | 12 | 4.2 | 7.7 |
| SS/PHTS 25 | 42.7 | 25 | 43 | 43 | 90 | 17.5 | 15 | 10 | 15.1 | 14.6 | - | - | 25.2 | 4046 | 8.5 | 12 | 4 | 7.7 |
| CHTS 33 | 44.7 | 33.4 | 58 | 58 | 120 | 26.2 | 20 | 14 | - | - | 22.1 | 21.1 | 18.5 | 3956 | 12.7 | 16 | 4.2 | 11.7 |
| SS/PHTS 33 | 44.2 | 33 | 58 | 58 | 120 | 26 | 20 | 14 | - | - | 22.1 | 21.1 | 18.3 | 3956 | 12.5 | 16 | 4 | 11.7 |

| Rack Type & Module Availability | | | | | |
|---------------------------------|-------------|-------|-------|-------|-------|
| Module | Rack Type*4 | HSS25 | HTS25 | HSS33 | HTS33 |
| 2.5 | Spur | ✓ | ✓ | x | x |
| 2.5 | Helical | ✓ | ✓ | x | x |
| 3 | Spur | ✓ | ✓ | x | x |
| 4 | Helical | x | x | ✓ | ✓ |
| 5 | Spur | x | x | ✓ | ✓ |

✓ = Standard x = Not available

Helical racks are not available for SS versions

| Type % | Precision / Stainless steel | Commercial Grade | Type % | Precision / Stainless Steel | Commercial Grade |
|----------|-----------------------------|------------------|----------|-----------------------------|------------------|
| ..HSS... | | | ..HSD... | | |
| ..HTS... | | | ..HTD... | | |

✓ Indicates surfaces which are precision ground

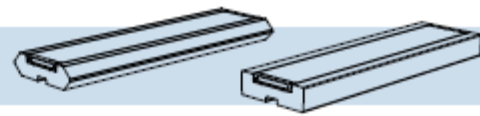
Notes:

- Any length of slide up to 4046mm long can be supplied in one piece, but for optimum price and delivery, slide lengths should be specified with C and D dimensions as shown in the above table.
- Butt-jointed slides of unlimited length are available. The hole pitch will be maintained across the joint. See installation details □45.
- Tooth pitch positions relative to the hole pitch may vary between components. Customers using rack cut profiles in parallel should ensure that one drive pinion can be adjusted relative to the other in order to compensate. Rack cut profiles to a regulated or matched tooth position are available on request.
- Helical racks have a left handed helix angle of 30 degrees.
- Hardened racks are available on request. ..HSS/HTS25 with module 3 racks are supplied with hardened rack as standard.
- Commercial V slides and flat tracks are manufactured to ± 0.05 tolerance on width and ± 0.1 tolerance on thickness. Precision and stainless steel versions are manufactured to ± 0.025 on both width and thickness. Finish generally to N5.

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V Slides & Flat Tracks

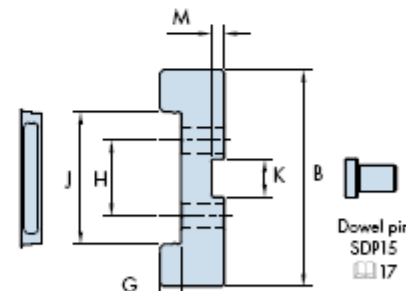
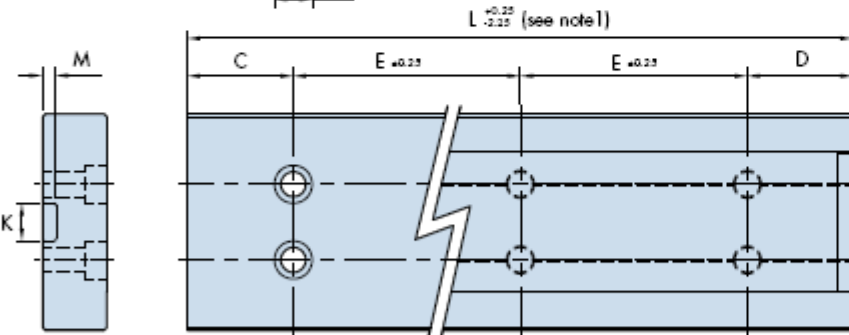
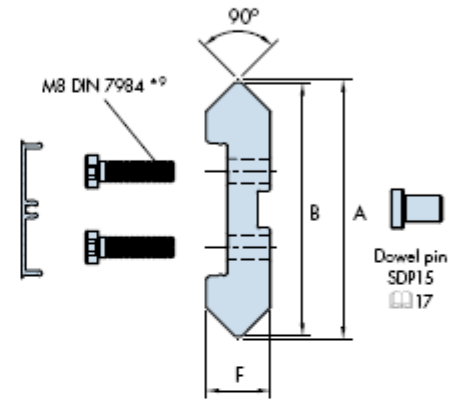
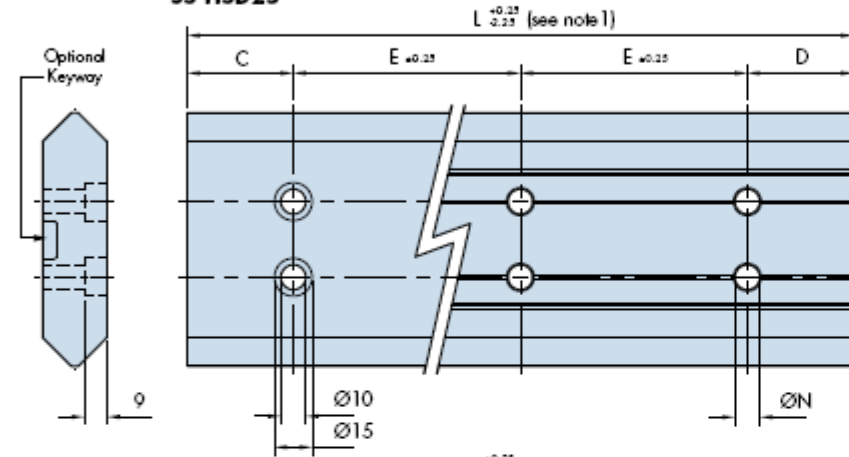


Double edge slides and wide flat tracks have built in parallelism for ease of setting. Both are supplied with flush fitting plastic covers and end caps to prevent entrapment of debris. Double edge slides and wide flat tracks are supplied with a keyway for locating to a key register, dowel pins or back plates. Stainless steel versions are available and have a slightly different design, without the central recess or plastic cover and with mounting holes and counterbores to suit M8 cap head screws to DIN912.

**Stainless Steel
SS HSD25**

Double Edge V Slide (...HSD...)

**Standard
P/C HSD25**



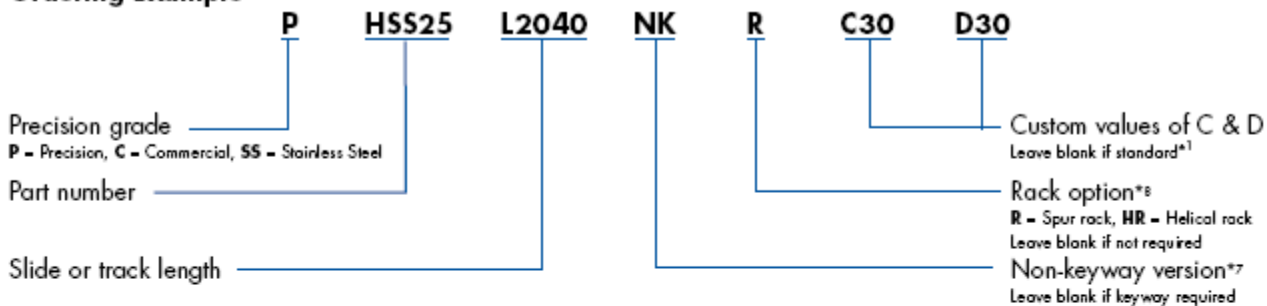
**Stainless Steel
SS HTD25**

Wide Flat Track (...HTD...)

**Standard
P/C HTD25**

| Part Number | A | B | C | D | E | F | G | H | J | K | L | M | N | kg/m ~ |
|-------------|-------|-------|----|----|----|------|-----|----|------|----|------|------|----|--------|
| CHSD 25 | 103 | 100.4 | 43 | 43 | 90 | 25.4 | 8.2 | 30 | 52.6 | 15 | 4046 | 5.35 | 10 | 13.5 |
| SS/PHSD 25 | 102.4 | 100 | 43 | 43 | 90 | 25 | 8 | 30 | 52.6 | 15 | 4046 | 5.15 | 10 | 13.5 |
| CHTD 25 | - | 85.8 | 43 | 43 | 90 | 25.4 | 8.2 | 30 | 52.6 | 15 | 4046 | 5.35 | 10 | 12.5 |
| SS/PHTD 25 | - | 85.4 | 43 | 43 | 90 | 25 | 8 | 30 | 52.6 | 15 | 4046 | 5.15 | 10 | 12.5 |

Ordering Example

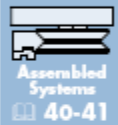


Notes:

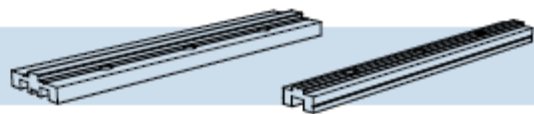
- Single edge slides & flat tracks for corner mounting to beams should be ordered without keyway 'NK' 24. The keyway version is useful for customers' own location requirements and is necessary when using back plates 16 & 25.
- HSS & HTS 25 slide and flat tracks have an option of 2.5 or 3 module spur rack. 2.5 module rack is supplied as standard when 'R' is added to the part number. If 3 module rack is required add 3 after 'R' to confirm size required. Helical racks are not available for stainless steel slides or flat tracks.
- M8 low head cap screws are available in the following lengths: 20mm (part no. FS8-20) for use without back plate, 40mm (part no. FS8-40) for use with low back plates, and 60mm (part no. FS8-60) for use with high back plates. HSS and HTS slides and tracks can use widely available standard M8 and M12 cap screws.

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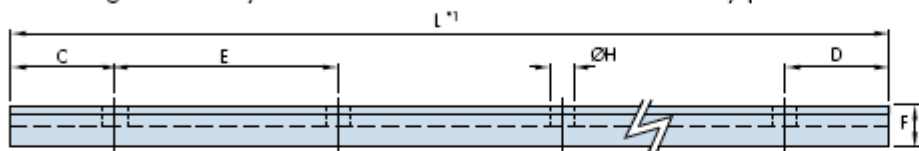
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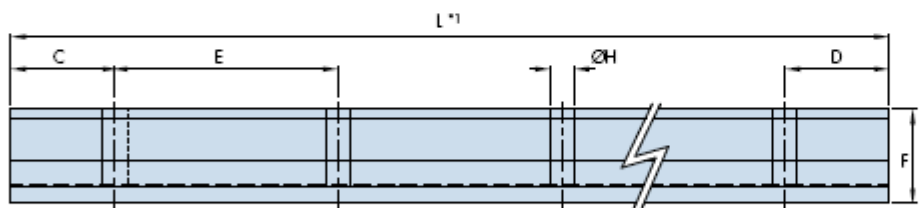
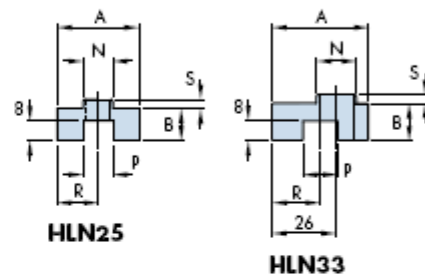
Back Plates



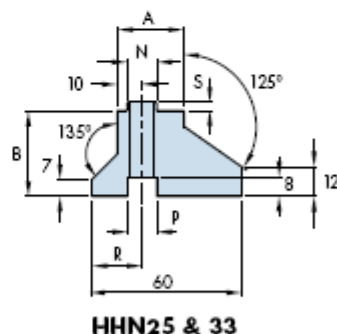
HDS2 back plates are designed to space the V slides and flat tracks off the mounting surface, providing clearance to accommodate the V bearings and track rollers plus their respective lubrication devices $\square 47$. They may be used either within the customer's own machine design or in conjunction with the construction beams $\square 25$. The male key section is designed to locate in the optional keyway of the slide and flat tracks while the female keyway section(s) are designed to locate either with the customer's own key section or with dowel pins. The HHN25 and HLN narrow type back plates may be ordered with a jacking screw alignment facility to enable one slide or track to be set exactly parallel to another within a system (see opposite).



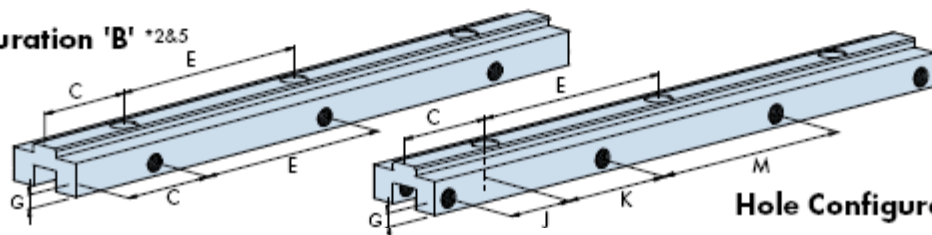
Low Narrow Back Plate



High Narrow Back Plate



Hole Configuration 'B' *2&5



Hole Configuration 'A' *2&5

| Part Number | For Use With | | | A | B | C | D | E | F | G ⁴ | H | J ⁴ | K ⁴ | L | M ⁴ | N | P | R | S | kg/m |
|-------------|--------------|--------|--|----|------|----|----|-----|------|----------------|----|----------------|----------------|------|----------------|----|----|------|-----|------|
| | | | | | | | | | | | | | | | | | | | | |
| HLN 25 | HSS 25 | HTS 25 | | 33 | 13 | *1 | *1 | 90 | 16.6 | 5 | 10 | 35 | 45 | 6026 | 90 | 12 | 12 | 16.5 | 3.6 | 1.0 |
| HLN 33 | HSS 33 | HTS 33 | | 39 | 15 | *1 | *1 | 120 | 18.6 | 5 | 14 | 50 | 60 | 5996 | 120 | 16 | 14 | 19.5 | 3.6 | 1.6 |
| HLW 25 | HSD 25 | HTD 25 | | 66 | 13 | *1 | *1 | 90 | 17.7 | - | 10 | - | - | 6026 | - | 15 | 12 | 33 | 4.7 | 2.25 |
| HHN 25 | HSS 25 | HTS 25 | | 27 | 34.5 | *1 | *1 | 90 | 38.1 | 5 | 10 | 35 | 45 | 6026 | 90 | 12 | 12 | 20 | 3.6 | 3.8 |
| HHN 33 | HSS 33 | HTS 33 | | 27 | 30.8 | *1 | *1 | 120 | 34.4 | 5 | 14 | 50 | 60 | 5996 | 120 | 16 | 14 | 21 | 3.6 | 3.7 |
| HHW 25 | HSD 25 | HTD 25 | | 54 | 34.5 | *1 | *1 | 90 | 39.2 | - | 10 | - | - | 6026 | - | 15 | 12 | 35 | 4.7 | 5.3 |

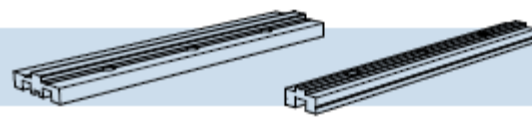
Notes

- Overall lengths ('L' dimension) should be ordered to correspond with the length of slide or track ensuring that 'C' & 'D' dimensions also correspond. Back plate lengths up to 6026mm are available in one piece to suit butted matched sets $\square 45$.
- HLN back plates will be supplied with tapped holes and M8 dog point socket set screws to ISO 4028 for customers requiring the jacking screw alignment facility. Hole configuration 'B' denotes jacking screw positions corresponding with fixing hole positions, necessary when used in conjunction with the construction beams (see figure 1). Hole configuration 'A' denotes jacking screw positions midway between fixing hole positions and is for general use where customers provide their own center key section or use alignment dowel pins SDPA as shown in figure 2.
- Holes for dowel pins should be reamed to a tolerance K6. Dowel pin head \varnothing tolerance for engagement with keyway is m6.
- Dimensions G, J, K and M only apply for back plates supplied with either type 'A' or type 'B' hole configurations.
- Type 'B' hole configuration is only available for the HLN25 and HHN25 back plates. Type 'A' hole configurations are available for all narrow type back plates.



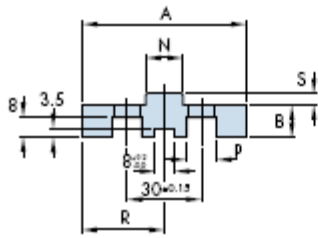
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Back Plates

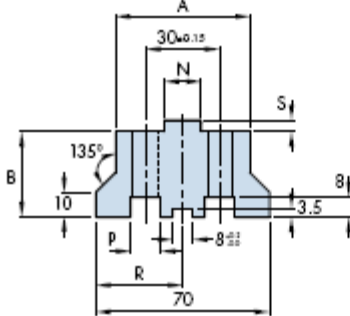


Mounting surfaces and location faces are manufactured to precision extrusion tolerances and are adequate for most applications. Back plates are manufactured from high strength aluminum and are supplied clear anodized. Compatibility of back plates with the various sizes and types of slide, tracks, bearings and lubricators can be found on 46 & 47.

Low Wide Back Plate



HLW25



HHW25 High Wide Back Plate

Alignment procedure

It is normal to use one adjustable slide/track and back plate element in conjunction with one non-adjustable element. The non-adjustable element should be located onto a key, dowel pins, or otherwise set adequately straight for the application and bolted down tight.

Where the construction beams are used, the non-adjustable element should be located by means of location T-nuts types 'L' and the adjustable element by means of the alignment T-nuts type 'A'. (for T-nut details 38).

For applications not requiring a construction beam, the adjustable element should be located onto a reduced width key section or dowel pins type SDPA midway between hole centers. The hole in the mounting surface for fixing should be spotted and drilled from the back plate to ensure even clearance around the screws.

The adjustable element should be set parallel to the non-adjustable element at the end hole positions, with the jacking screws set for even clearance around the fixing screws, and the end screws tightened down. Working outward from the center of the element and with all but the end screws fully retracted, each jacking screw should be progressively jacked in to influence the elements parallel with the corresponding position on the opposing element, then both jacking screws locked and the corresponding fixing screw tightened down. Depending upon available hole clearances, it is possible to bend an element up to 1mm pro-rata per meter.

Alignment principle for use with beam Hole configuration 'B' *2

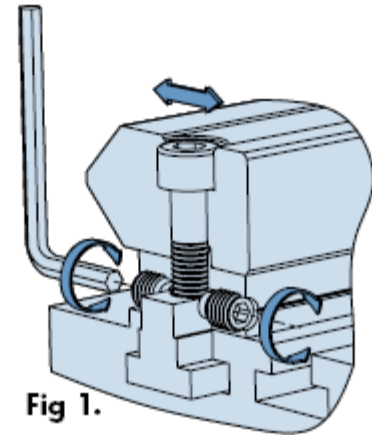


Fig 1.

General alignment principle Hole configuration 'A' *2

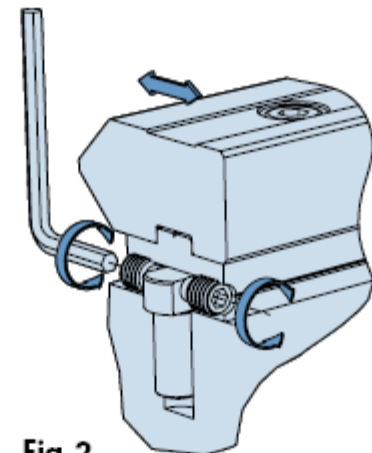
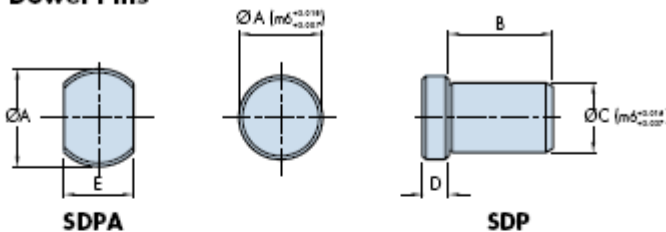


Fig 2.

Dowel Pins

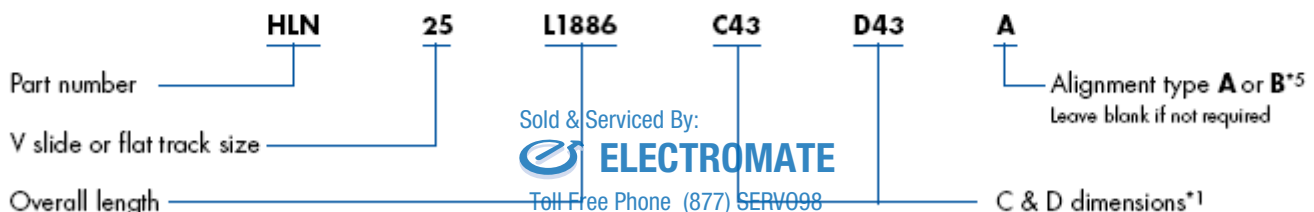


Stainless steel dowel pins are available, prefix the part number with SS. Example - SS SDP 8

| Part Number | ØA*3 | B | ØC*3 | D | E |
|-------------|------|----|------|------|----|
| SDP8 | 8 | 8 | 6 | 2.75 | - |
| SDP12 | 12 | 15 | 10 | 3.75 | - |
| SDP14 | 14 | 15 | 12 | 3.75 | - |
| SDP15 | 15 | 15 | 10 | 4.75 | - |
| SDP16 | 16 | 15 | 12 | 3.75 | - |
| SDPA14 | 14 | 20 | 10 | 7.5 | 10 |
| SDPA16 | 16 | 20 | 12 | 7.5 | 12 |



Ordering Example for Back Plates



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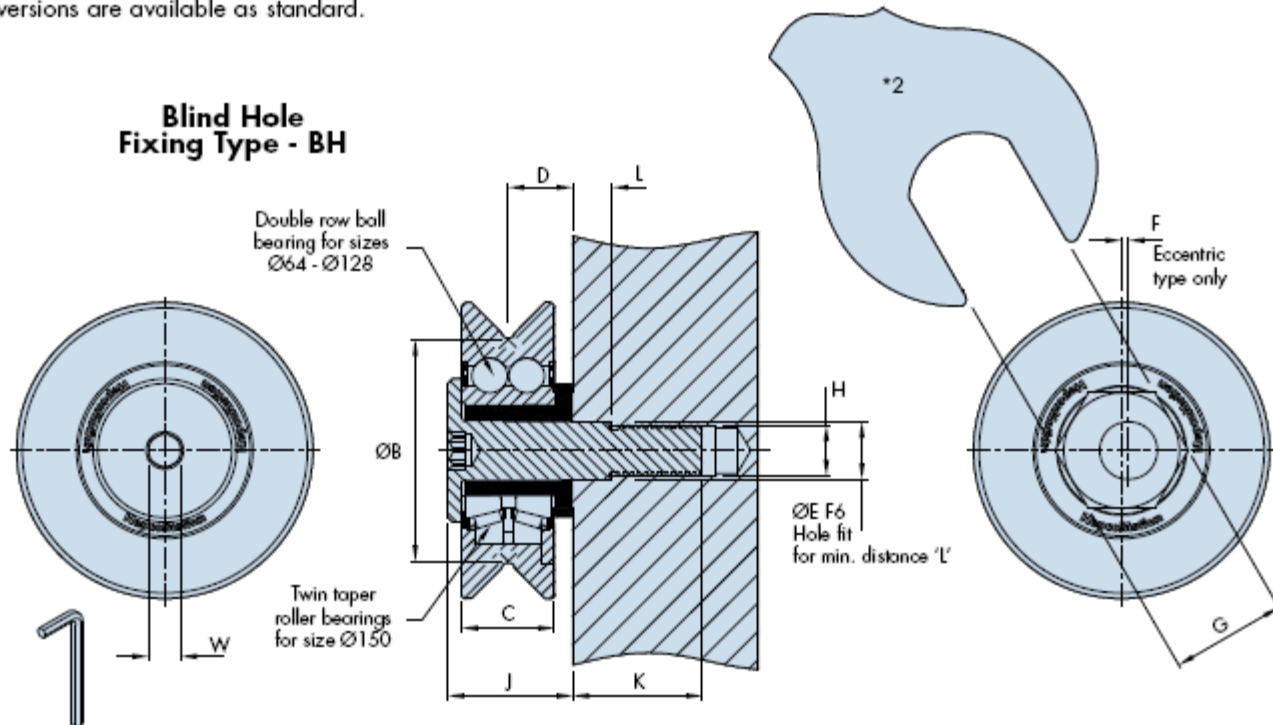


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V Bearings



HJR bearings use double row ball bearings on sizes 64 to 128 and twin taper roller bearings on size 150. These provide high axial and radial load capacity. The design allows for easy assembly, and bearings can be removed from a system with a single screw. Each bearing has a chemically blackened, high tensile steel journal and bushing and is available in concentric and eccentric (adjustable) forms. Each bearing is available with either a blind or through hole fixing. Stainless steel versions are available as standard.



| Part Number | | For Use With V Slide | | ØB ±0.015 | C | D | ØE F6 | F | G | H | J | K | L |
|-------------|-----|----------------------|--------|--------------|----|----|----------|------|----|-----|----|----|------|
| | ØA | | | | | | | | | | | | |
| BHJR.. | 64 | HSS 25 | HSD 25 | 41 | 34 | 22 | 16 | 1.25 | 27 | M10 | 44 | 26 | 10 |
| THJR.. | 64 | HSS 25 | HSD 25 | 41 | 34 | 22 | 16 | 1.25 | 27 | M12 | - | - | - |
| BHJR.. | 95 | HSS 25 | HSD 25 | 72 | 34 | 22 | 20 | 2 | 40 | M16 | 44 | 41 | 11.5 |
| THJR.. | 95 | HSS 25 | HSD 25 | 72 | 34 | 22 | 20 | 2 | 40 | M16 | - | - | - |
| BHJR.. | 120 | HSS 25 | HSD 25 | 96 | 40 | 28 | 25 | 3 | 50 | M24 | 54 | 56 | 17 |
| THJR.. | 120 | HSS 25 | HSD 25 | 96 | 40 | 28 | 25 | 3 | 50 | M24 | - | - | - |
| BHJR.. | 128 | HSS 33 | - | 96 | 40 | 28 | 25 | 3 | 50 | M24 | 54 | 56 | 17 |
| THJR.. | 128 | HSS 33 | - | 96 | 40 | 28 | 25 | 3 | 50 | M24 | - | - | - |
| BHJR.. | 150 | HSS 33 | - | 118 | 60 | 40 | 38 | 2 | 65 | M36 | 80 | 70 | 20 |
| THJR.. | 150 | HSS 33 | - | 118 | 60 | 40 | 38 | 2 | 65 | M36 | - | - | - |

Mounting Plate Screw Lengths

| Part Number | T ¹ | |
|----------------|----------------|------|
| | min | max |
| THJR 64 ... 12 | 6.5 | 12.5 |
| THJR 64 ... 17 | 11.5 | 17.5 |
| THJR 64 ... 22 | 16.5 | 22.5 |
| THJR 64 ... 27 | 21.5 | 27.5 |
| THJR 95 ... 16 | 9 | 16 |
| THJR 95 ... 22 | 16 | 22 |
| THJR 95 ... 27 | 21 | 27 |
| THJR 95 ... 32 | 26 | 32 |

| Part Number | T ¹ | |
|-----------------|----------------|-----|
| | min | max |
| THJR 120 ... 17 | 6.5 | 17 |
| THJR 120 ... 27 | 16.5 | 27 |
| THJR 120 ... 37 | 26.5 | 37 |
| THJR 128 ... 17 | 6.5 | 17 |
| THJR 128 ... 27 | 16.5 | 27 |
| THJR 128 ... 37 | 26.5 | 37 |
| THJR 150 ... 25 | 6.5 | 25 |
| THJR 150 ... 40 | 21.5 | 40 |

Notes:

- When using THJR bearings, the part number must be selected to suit the required plate thickness, T. Choose from the tables above.
- Adjustment tools for V bearing and track rollers are available. Please order part number AT54 for HJR64, AT95 for HJR95, AT128 for HJR120/HJR128, and AT150 for HJR150.

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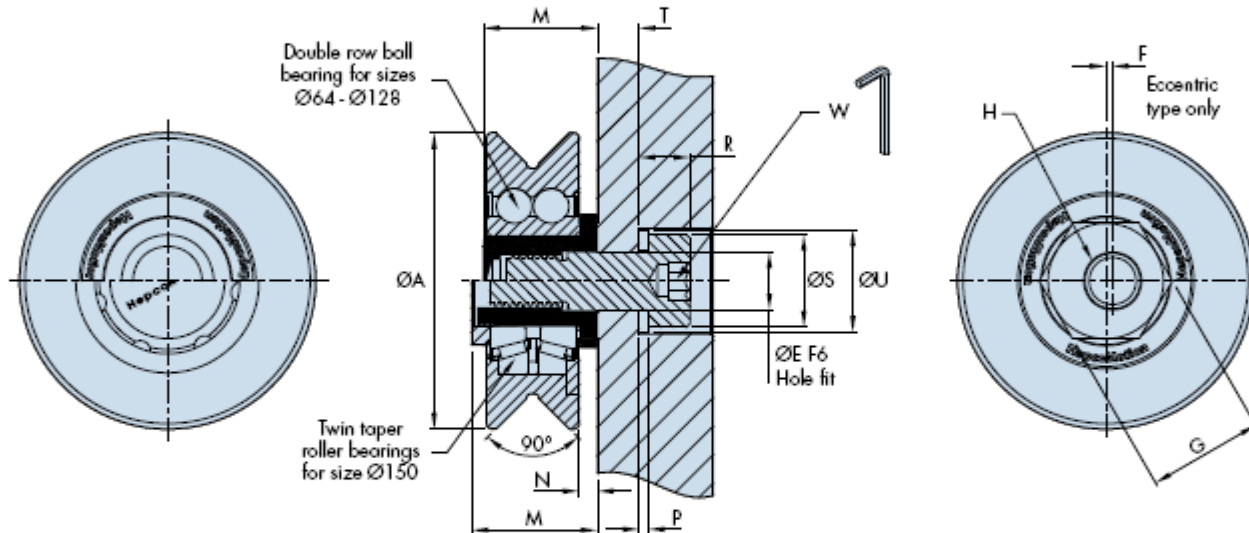
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All bearings are greased for life and incorporate nitrile seals to inhibit ingress of liquids and contaminants. Customers are strongly recommended to provide lubrication to the interface between the bearings and the slide by specifying cap wipers or lubricators which contact the V of the slide or the bearing. This lubrication greatly increases the load capacity and life.

Through Hole Fixing Type - TH



| M | N | P | R | ØS | ØU | W | kg~ | Max Working Load Capacity ³ | | Bearing Static (Co) & Dynamic (C) Radial Load Capacities ⁴ | |
|----|----|-----|------|----|----|----|------|----------------------------------------|------------|-----------------------------------------------------------------------|---------|
| | | | | | | | | Axial (N) | Radial (N) | Co (N) | C (N) |
| - | 5 | - | - | - | - | 10 | 0.65 | 2,500 | 8,000 | 12,899 | 21,373 |
| 40 | 5 | 2.5 | 13.5 | 24 | 28 | 8 | 0.65 | 2,500 | 8,000 | 12,899 | 21,373 |
| - | 5 | - | - | - | - | 12 | 1.45 | 7,000 | 20,000 | 29,340 | 41,823 |
| 40 | 5 | 3 | 17 | 30 | 34 | 10 | 1.45 | 7,000 | 20,000 | 29,340 | 41,823 |
| - | 8 | - | - | - | - | 14 | 3.0 | 10,000 | 30,000 | 43,200 | 63,830 |
| 50 | 8 | 4 | 22 | 40 | 44 | 14 | 3.0 | 10,000 | 30,000 | 43,200 | 63,830 |
| - | 8 | - | - | - | - | 14 | 3.0 | 10,000 | 30,000 | 43,200 | 63,830 |
| 50 | 8 | 4 | 22 | 40 | 44 | 14 | 3.0 | 10,000 | 30,000 | 43,200 | 63,830 |
| - | 10 | - | - | - | - | 19 | 7.5 | 17,000 | 50,000 | 218,000 | 150,018 |
| 80 | 10 | 5 | 33 | 60 | 66 | 22 | 7.5 | 17,000 | 50,000 | 218,000 | 150,018 |

Ordering Example

SS = Stainless steel option, Leave blank if not required,^{3&5}
THJR = Through hole
BHJR = Blind hole
95 = Bearing diameter
C = Journal type: E = Eccentric, C = Concentric
NS = Nitrile seals
16 = Plate thickness¹ and tables left. Leave blank for BHJR.

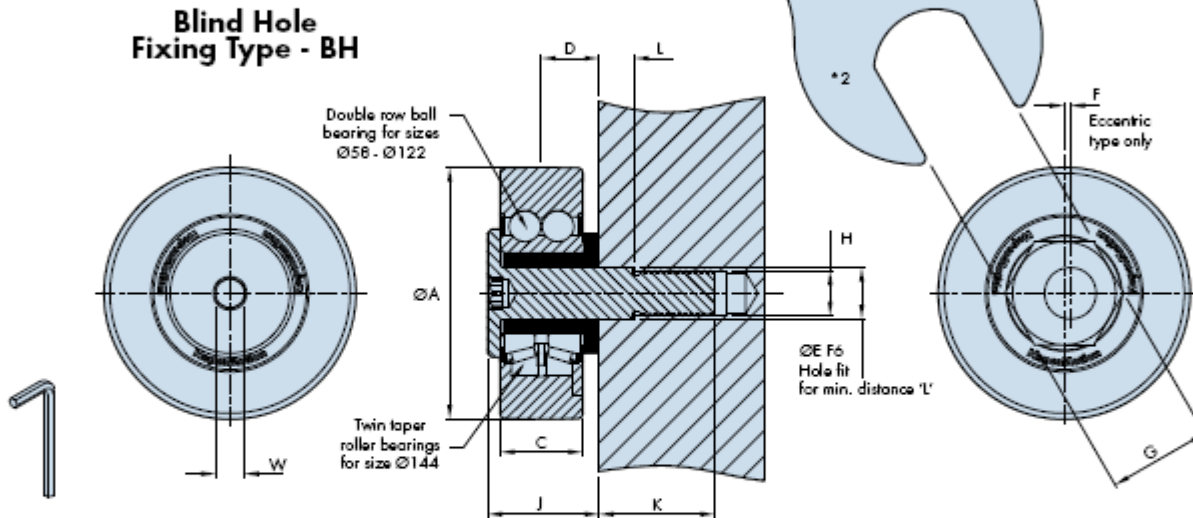
Notes:

- Load capacities stated assume lubrication at the bearing/slide interface. Stainless steel versions have a 25% lower capacity.
- The quoted static and dynamic load capacities are based on industry standard calculations. These do not accurately reflect performance, and are only provided for comparison with other systems. Please use Max Working Load figures and the Load/Life calculations on 42-44 to determine system performance.
- SS versions of the size 150 bearing contains a steel twin taper roller bearing protected by nitrile seals.

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HRR track rollers use double row ball bearings on sizes 58 to 122 and twin roller bearings on size 144. These provide high radial load capacity. The design allows for easy assembly, and track rollers can be removed from a system with a single screw. Each track roller has a chemically blackened, high tensile steel journal and bushing and is available in concentric and eccentric (adjustable) forms. Each track roller is available with either a blind or though hole fixing. Stainless steel versions are available as standard.



| Part Number | | For Use With Flat Track | | C | D | ØE F6 | F | G | H | J | K |
|-------------|-----|-------------------------|--------|----|----|-------|------|----|-----|----|----|
| | ØA | | | | | | | | | | |
| BHRR.. | 58 | HTS 25 | HTD 25 | 34 | 22 | 16 | 1.25 | 27 | M10 | 44 | 26 |
| THRR.. | 58 | HTS 25 | HTD 25 | 34 | 22 | 16 | 1.25 | 27 | M12 | - | - |
| BHRR.. | 89 | HTS 25 | HTD 25 | 34 | 22 | 20 | 2 | 40 | M16 | 44 | 41 |
| THRR.. | 89 | HTS 25 | HTD 25 | 34 | 22 | 20 | 2 | 40 | M16 | - | - |
| BHRR.. | 122 | HTS 33 | - | 40 | 28 | 28 | 3 | 50 | M24 | 54 | 56 |
| THRR.. | 122 | HTS 33 | - | 40 | 28 | 28 | 3 | 50 | M24 | - | - |
| BHRR.. | 144 | HTS 33 | - | 60 | 40 | 38 | 2 | 65 | M36 | 80 | 70 |
| THRR.. | 144 | HTS 33 | - | 60 | 40 | 38 | 2 | 65 | M36 | - | - |

Mounting Plate Screw Lengths

| Part Number | T ¹ | |
|----------------|----------------|------|
| | min | max |
| THRR 58 ... 12 | 6.5 | 12.5 |
| THRR 58 ... 17 | 11.5 | 17.5 |
| THRR 58 ... 22 | 16.5 | 22.5 |
| THRR 58 ... 27 | 21.5 | 27.5 |
| THRR 89 ... 16 | 9 | 16 |
| THRR 89 ... 22 | 16 | 22 |
| THRR 89 ... 27 | 21 | 27 |
| THRR 89 ... 32 | 26 | 32 |

| Part Number | T ¹ | |
|-----------------|----------------|-----|
| | min | max |
| THRR 122 ... 17 | 6.5 | 17 |
| THRR 122 ... 27 | 16.5 | 27 |
| THRR 122 ... 37 | 26.5 | 37 |
| THRR 144 ... 25 | 6.5 | 25 |
| THRR 144 ... 40 | 21.5 | 40 |

Notes:

- When using THRR track rollers, the part number must be selected to suit the required plate thickness, T. Choose from the tables above.
- Adjustment tools for V bearing and track rollers are available. Please order part number AT54 for HRR58, AT95 for HRR89, AT128 for HRR122, and AT150 for HRR144.
- Load capacities stated are for steel bearings. Stainless steel versions have a 25% lower capacity.
- With THRN58 a washer is supplied. Fixing screw lengths depend on application and are not included. Use M10 screws in material condition 8.8 or stronger.
- The quoted static and dynamic load capacities are based on industry standard calculations. These do not accurately reflect performance, and are only provided for comparison with other systems. Please use Max Working Load figures and the Load/Life calculations on 42-44 to determine system performance.
- The narrow track roller is designed to bear on the back face of single edge slides or flat tracks as illustrated opposite. It is specifically intended for use with 25 size V slides and flat tracks in conjunction with either 64 or 95 size bearings and their track roller equivalents. Most other combinations can also be accommodated by using a spacer liner. The top face of either the narrow or standard wide track roller.
- SS versions of the size 144 track roller contain a steel twin taper roller bearing protected by nitrile seals.

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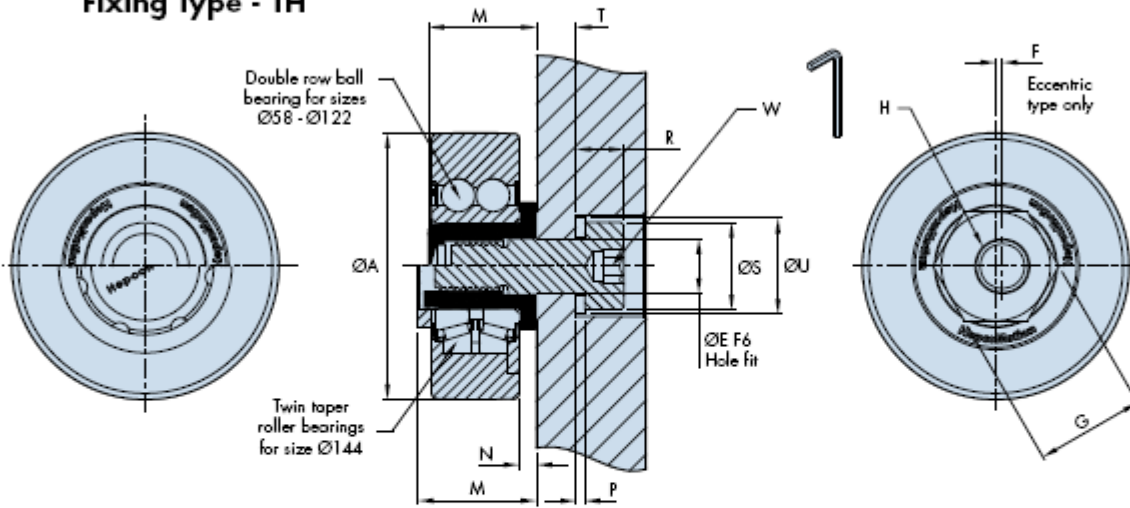
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Track Rollers

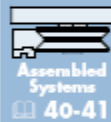


All track rollers are greased for life and incorporate nitrile seals to inhibit ingress of liquids and contaminants. Customers are strongly recommended to provide lubrication to the interface between the track roller and the flat track by specifying roller cap wipers or lubricators which contact the surface of the flat track or the track roller.

Through Hole Fixing Type - TH

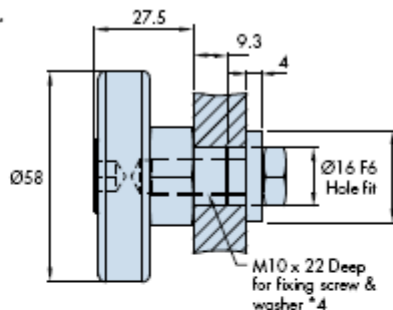
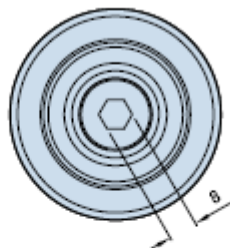
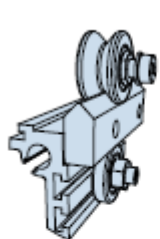


| L | M | N | P | R | ØS | ØU | W | kg~ | Max Working Radial Load Capacity*3 (N) | Static (Co) & Dynamic (C) Radial Load Capacities*5 | |
|------|----|----|-----|------|----|----|----|------|----------------------------------------|----------------------------------------------------|---------|
| | | | | | | | | | | Co (N) | C (N) |
| 10 | - | 5 | - | - | - | - | 10 | 0.63 | 10,000 | 13,271 | 21,989 |
| - | 40 | 5 | 2.5 | 13.5 | 24 | 28 | 8 | 0.63 | 10,000 | 13,271 | 21,989 |
| 11.5 | - | 5 | - | - | - | - | 12 | 1.4 | 20,000 | 30,185 | 43,025 |
| - | 40 | 5 | 3 | 17 | 30 | 34 | 10 | 1.4 | 20,000 | 30,185 | 43,025 |
| 17 | - | 8 | - | - | - | - | 14 | 2.9 | 30,000 | 48,535 | 65,970 |
| - | 50 | 8 | 4 | 22 | 40 | 44 | 14 | 2.9 | 30,000 | 48,535 | 65,970 |
| 20 | - | 10 | - | - | - | - | 19 | 7.3 | 80,000 | 218,000 | 150,018 |
| - | 80 | 10 | 5 | 29 | 60 | 66 | 22 | 7.3 | 80,000 | 218,000 | 150,018 |

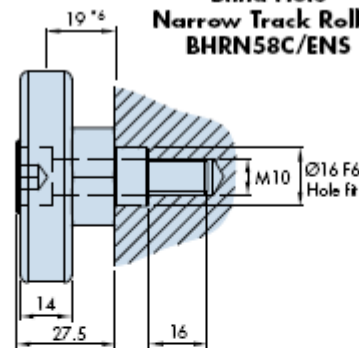


Narrow track rollers incorporate a single row ball bearing, and have a different mounting design. Maximum working load capacity is 5kN. They are ideally suited to captivate a system by running on the rear face of a single edge slide or track. See example below.

Through Hole Narrow Track Roller THRN58C/ENS



Blind Hole Narrow Track Roller BHRN58C/ENS



Ordering Example

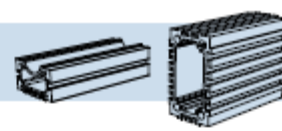
SS = Stainless steel option, Leave blank if not required,^{3&7}
THRR = Through hole
BHRR = Blind hole
89 = Bearing diameter
C = Journal type
NS = Nitrile seals
16 = Plate thickness¹ and tables left. Leave blank for BHRR


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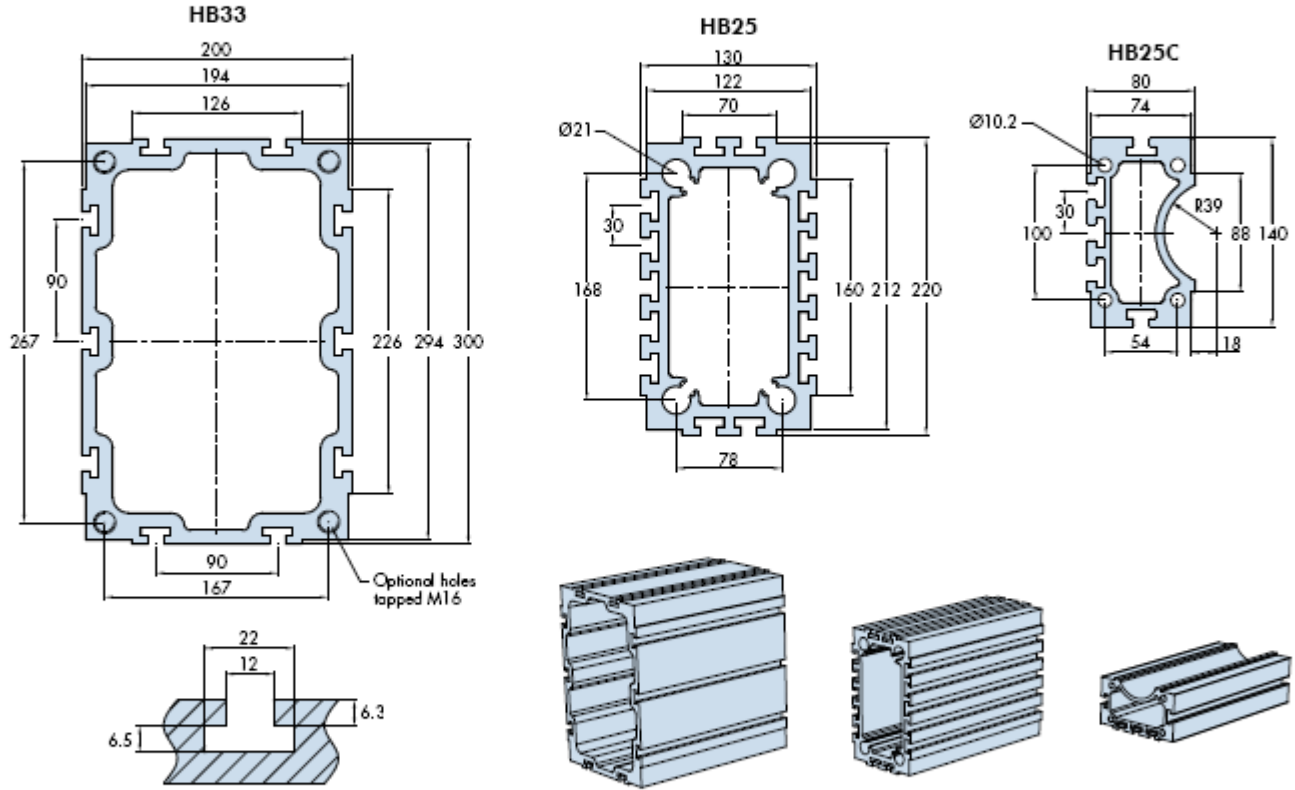
Journal type: **E** = Eccentric
C = Concentric

Construction Beams




The design of construction beams enables slides and flat tracks to be factory assembled directly to the corner faces of the beam or to be mounted at the many T-slot positions in conjunction with back plates and T-nuts 24&25. Very high stiffness allows the beams to be used as self supporting construction elements.

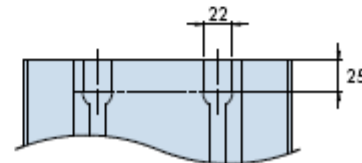
The recess in the HB25C beam has been designed to accommodate a screw drive. Beams are manufactured from high strength aluminum alloy to precision extrusion tolerances and are supplied clear anodized. Beam deflection can be calculated using simple beam theory requiring second moment of inertia figures which are given in the table below. For further details of calculations please visit



General T-slot details

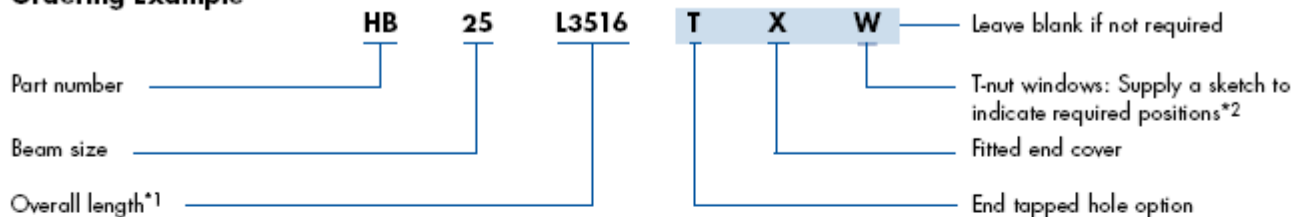
| Beam | Second Moment Of Inertia | |  |
|--------|--------------------------|--------------------|-------------------------------------------------------------------------------------|
| | Vertical X-X | Horizontal Y-Y | |
| HB 25C | 2.8×10^7 | 10.2×10^7 | 11.3kg/m |
| HB 25 | 4.7×10^7 | 1.8×10^7 | 24kg/m |
| HB 33 | 16.9×10^7 | 8.4×10^7 | 37.5kg/m |

Beam second moment of inertia figures are stated in mm⁴.



General T-slot Window Details*2

Ordering Example



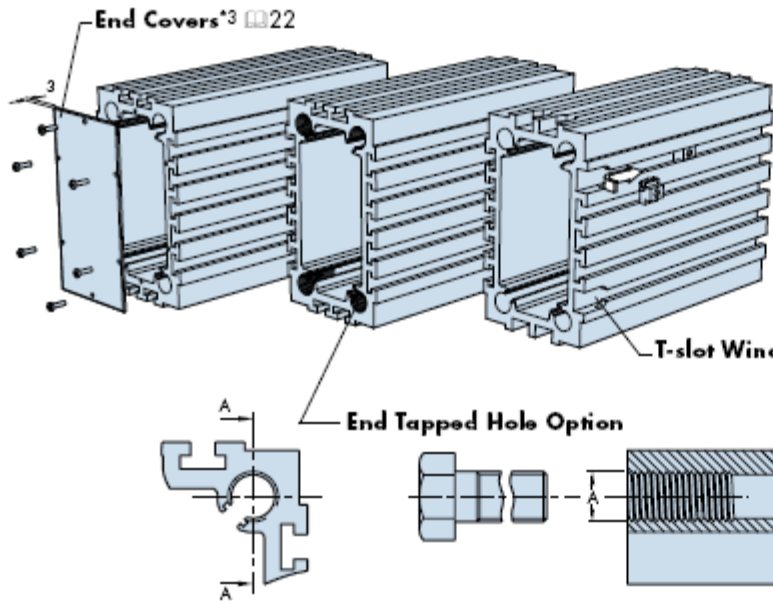
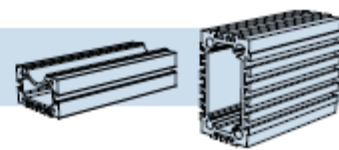
Notes:

- Beams are cut to customer's length requirements with machine finished ends. They may be requested matched in length and should be ordered minimum 5mm longer than the corresponding slides or tracks. Beams are available in one piece up to 6m long. Special high strength joining systems can be readily supplied to achieve beams of unlimited length. Customers attaching carriage plates or other components directly to the ends of the beam which require a higher than normal squareness are requested to specify this requirement when ordering.
- Where access to beam end will be blocked, customers using high strength T-nuts 38 can specify T-nut windows at either end of any T-slot to enable nuts to be inserted. Supply a sketch to indicate required positions.
- Fitted aluminum end covers are supplied clear anodized and are secured via pan head screw DIN7985. Covers are not compatible with end tapped hole option.
- Plastic T-slot cover compatible with all construction beams is available. Please specify the number required and length.
Example; 14 x TC12 L3000.

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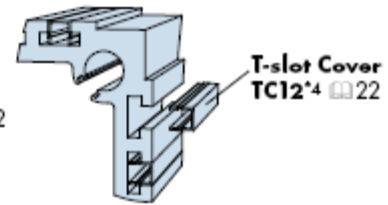
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Construction Beam Options



Construction beam options apply to all sizes of beam.

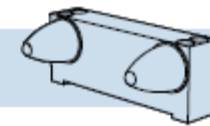
End tapped holes can be used to secure beams directly to carriages 22, or to fit cross members and other items to the end of the beam*1.



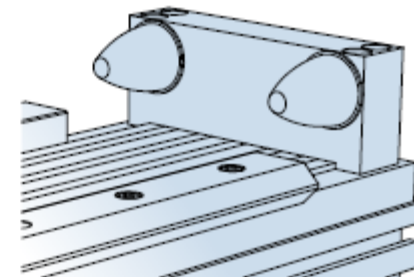
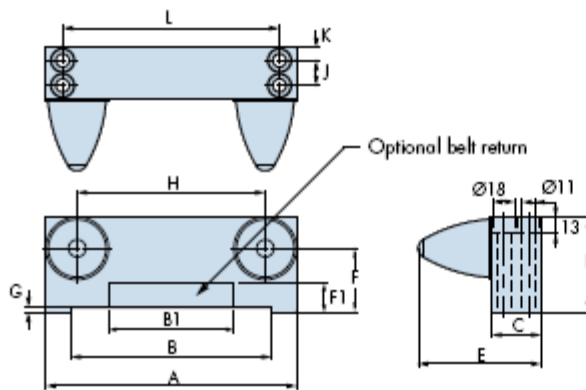
| Beam | A |
|-------|---------------|
| HB25C | M12 x 24 Deep |
| HB25 | M24 x 50 Deep |
| HB33 | M16 x 40 Deep |



Bumper Units



Bumper units are available for the three sizes of construction beam. Made from high strength aluminum and clear anodized, the bumper unit is fitted with rubber end stops in line with the assembled carriage 26-29. Alternative design bumper units can be supplied with access for a belt return as supplied on HDLS driven systems 27.



| Part Number | For Use With | A | B | B1 | C | D | E | F | F1 | G | H | J | K | L | kg~ |
|-------------|--------------|-----|-----|-----|----|----|----|----|----|---|-----|----|----|-----|------|
| BU 25C | HB 25C | 140 | 88 | 55 | 40 | 76 | 98 | 51 | 32 | 4 | 90 | 20 | 10 | 115 | 0.52 |
| BU 25N | HB 25N | 156 | 70 | 55 | 40 | 76 | 98 | 51 | 40 | 4 | 106 | 20 | 10 | 83 | 0.57 |
| BU 25W | HB 25W | 200 | 160 | 80 | 40 | 76 | 98 | 51 | 40 | 4 | 150 | 20 | 10 | 173 | 0.69 |
| BU 33N | HB 33N | 195 | 126 | 80 | 40 | 82 | 98 | 57 | 40 | 4 | 146 | 20 | 10 | 170 | 0.73 |
| BU 33W | HB 33W | 294 | 226 | 110 | 40 | 82 | 98 | 57 | 40 | 4 | 244 | 20 | 10 | 270 | 1.03 |

Ordering Example

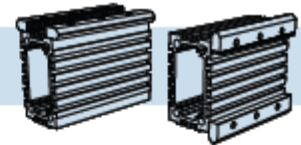


Notes:

- Bumper units are designed to fit directly to construction beams. Holes should be drilled and tapped into the beam. Positions are given by dimensions L & J. Holes should be drilled and tapped into the beam.
- Dimensions B1 & F1 refer to access for a belt return, available with optional BU, BR.

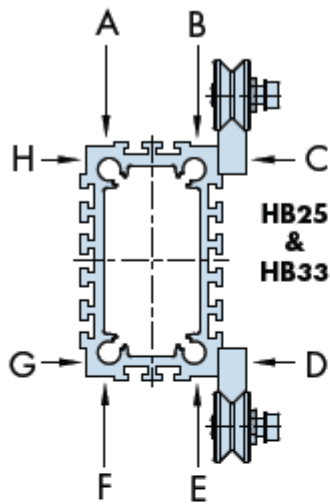
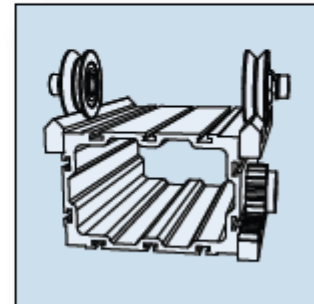
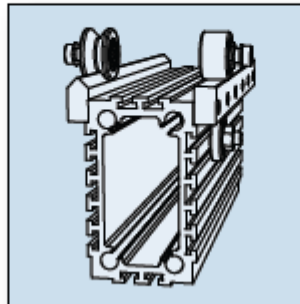
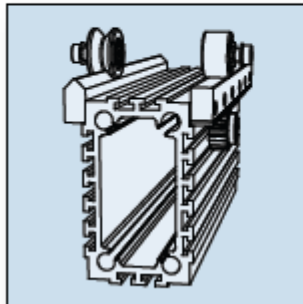
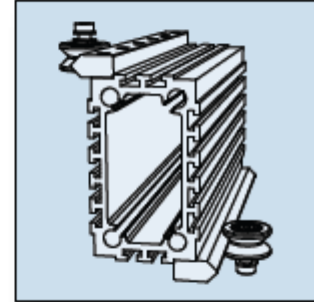
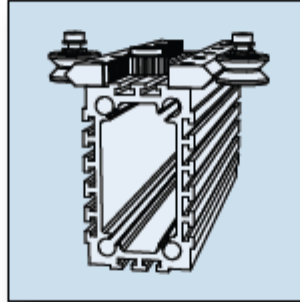
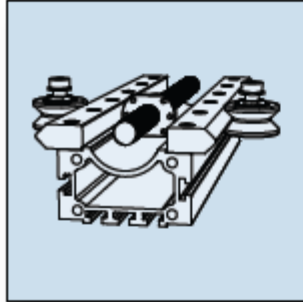
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Corner Mounted Slides & Tracks

Below are shown a selection of varied ways single edge V slides and narrow flat tracks can be used when mounted to the corner faces of the construction beams. Slides and tracks should be specified without a keyway. Corner face mounting has the advantage of being lower in cost compared to T-slot mounting due to the back plate and T-nuts not being required. A range of assembled carriages [□26-29](#) are available to suit all corner mounted slide options. These will be factory adjusted to the beam unit if specified in the ordering details below. Bumper units for end of stroke protection are available [□23](#).



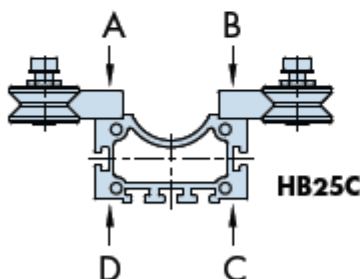
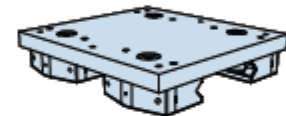
Ordering Example *1&3

List the components required and bracket those to be factory assembled, specifying the mounting positions on the construction beam as relevant. See drawing for construction beam mounting positions. Where slides or tracks are ordered shorter than the length of the beam, it will be assumed that the required position is equal distance from both ends of the beam unless otherwise stated.

Example

- 1 x HB25 L4051
- 1 x CHSS25NK L4046 - Assembled position C
- 1 x CHSS25NK L4046 - Assembled position D

Mounted Carriage (optional)
1 x AU6425WCW [□26-27](#)



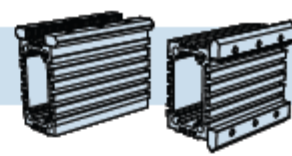
The table below identifies the available options for corner mounted slides and tracks when fitted to construction beams, also [□46](#).

| Beam | Single Edge Slide And Flat Track | | | |
|---------------------------------|----------------------------------|-------|-------|-------|
| | HSS25 | HTS25 | HSS33 | HTS33 |
| HB 25C | ✓ | ✓ | ✗ | ✗ |
| HB 25 | ✓ | ✓ | ✗ | ✗ |
| HB 33 | ✓ ⁴ | ✓ | ✓ | ✓ |
| ✓ = Standard ✗ = Not compatible | | | | |

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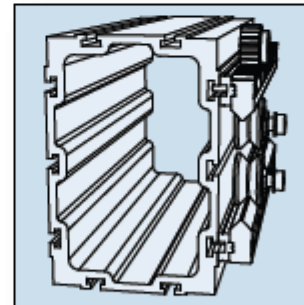
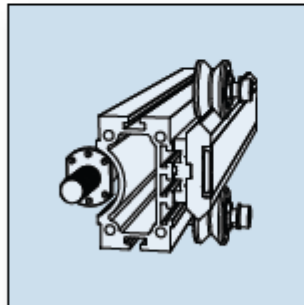
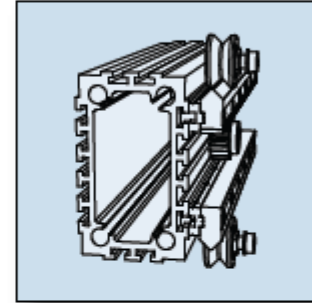
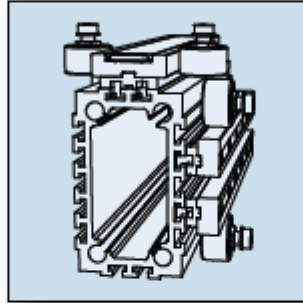
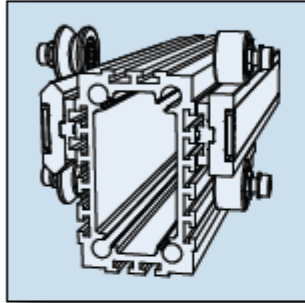
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T-Slot Mounted Slides & Tracks

Below is shown a selection of the varied ways slides and flat tracks can be used when mounted to the T-slot positions of the construction beams. Single edge slides and narrow flat tracks should be specified with a keyway. T-slot mounting has the advantage that one element can be set parallel to another by means of the alignment facility whether they are mounted on the same beam or on separate beams in parallel [17](#).

The T-slot mounting method can also accommodate the double edge slides and wide flat tracks (except on HB33 beam). For compatibility of slides and tracks with particular back plates, see [47](#).



Slides
[14-15](#)

Back Plates
[16-17](#)

Bearings
[18-21](#)

Beams
[22-23](#)

Assembled Systems
[40-41](#)

Assembled Carriages
[26-27](#)

Rock Driven Carriages
[28-29](#)

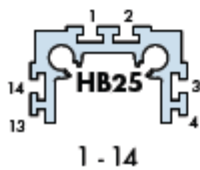
Lubrication
[32-34](#)

T-Nuts
[38](#)

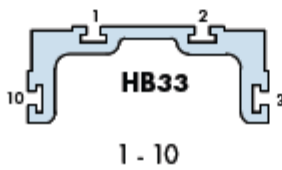
Technical
[42-45](#)

Mix & Match
[46](#)

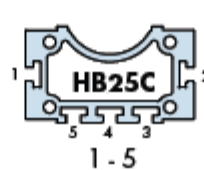
T-slot Designation



1 - 14

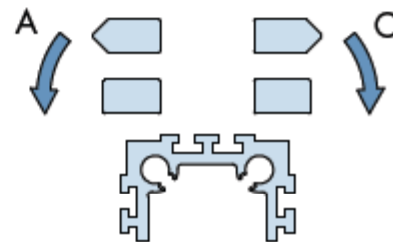


1 - 10

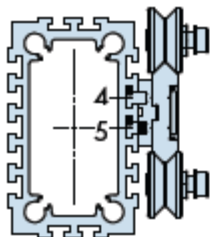


1 - 5

Orientation Designation*2



Ordering Example



1 x HB25 L3961

1 x CHSD25 L3956

1 x HLW25 L3956

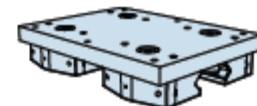
44 x HTN25L

44 x HTN25



Assembled position 4/5

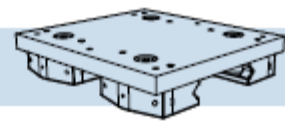
Optional mounted carriage (T-slot mounted double edge slide only) [26 & 27](#)
1 x AU9525DCW



Notes: (See also notes page 22)

- Beams with corner mounted slides and tracks should be ordered factory assembled which ensures best parallelism between linear elements.
- Where single edge slides and narrow flat tracks are to be T-slot mounted, please state orientation required ('C' clockwise or 'A' counter-clockwise see drawing above) after T-slot position. Example: 1 x CHSS25 L4051 position 4 A.
- Butt-jointed slides and tracks will be fitted for requirements in excess of 4046mm long (hole pitches at the joint may vary [45](#)). Unless specified by the customer, Bishop-Wisecarver will determine the individual lengths to make up a matched butted set with the minimum number of joints. Joints will be offset to one another where slides or tracks are mounted in parallel on the same beam. This will ensure best running condition across the joints.
- Cap wipers are not compatible with this option.

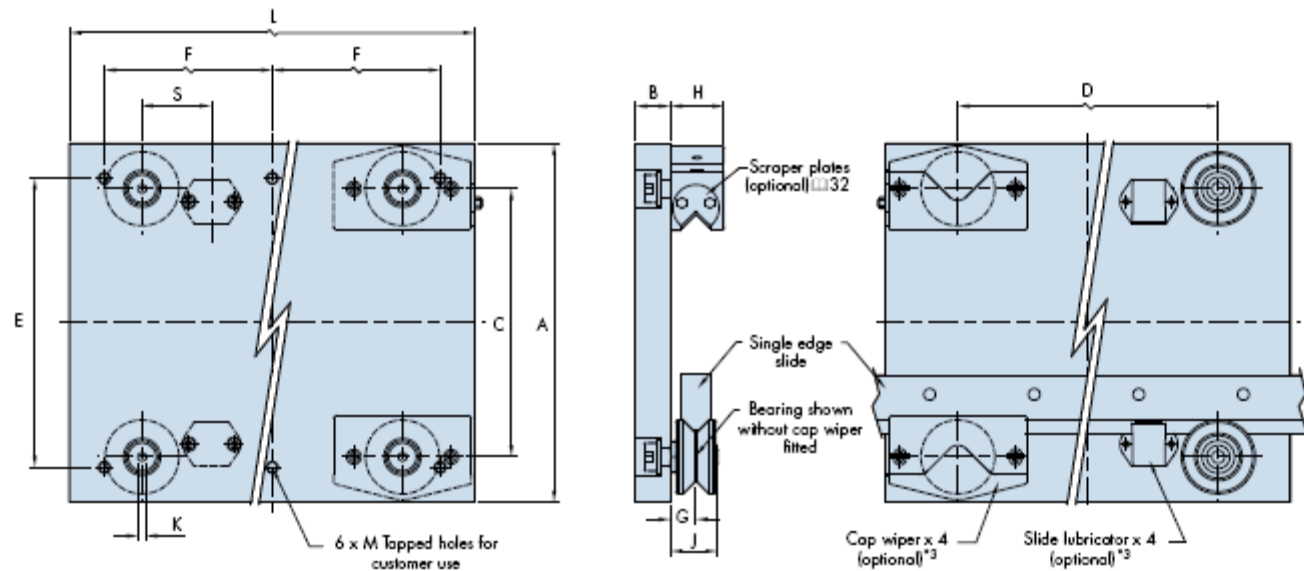
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Assembled carriages for all sizes of bearing are available to fit all sizes of beam incorporating corner mounted slides. Carriages are also available to fit double edge slides. Carriages are supplied with through hole fixing bearings to facilitate direct removal from the slide. Cap wipers [32](#) and lubricators [34](#) are available as options.

Carriage plates are fully machined from high strength aluminum alloy supplied clear anodized with tapped holes provided in convenient positions to enable other components to be attached.

Assembled carriages can be factory adjusted to suit the corresponding beam assembly [24](#). Special carriages can be readily supplied and material can be removed in unwanted areas to reduce weight.



For Assembled Carriage Load Capacities [42](#)

| Part Number | For Use With Slides | | For Use With Beam | | | Slide Position ¹ | Bearing | A | B | C | D |
|----------------|---------------------|--------|-------------------|-------|--|-----------------------------|---------|-----|----|-------|-----|
| | | | | | | | | | | | |
| AU 64 25 D... | | HSD 25 | | | | - | Ø64 | 230 | 30 | 143.7 | 205 |
| AU 64 25 C... | HSS 25 | | HB 25 C | | | AB or CD | Ø64 | 310 | 30 | 231.9 | 225 |
| AU 64 25 N... | HSS 25 | | | HB 25 | | AB or EF | Ø64 | 300 | 30 | 213.9 | 205 |
| AU 64 25 W... | HSS 25 | | | HB 25 | | CD or GH | Ø64 | 390 | 30 | 303.9 | 265 |
| AU 95 25 D... | | HSD 25 | | | | - | Ø95 | 290 | 30 | 174.7 | 230 |
| AU 95 25 C... | HSS 25 | | HB 25 C | | | AB or CD | Ø95 | 375 | 30 | 262.9 | 270 |
| AU 95 25 N... | HSS 25 | | | HB 25 | | AB or EF | Ø95 | 360 | 30 | 244.9 | 230 |
| AU 95 25 W... | HSS 25 | | | HB 25 | | CD or GH | Ø95 | 450 | 30 | 334.9 | 290 |
| AU 120 25 D... | | HSD 25 | | | | - | Ø120 | 340 | 30 | 198.7 | 235 |
| AU 120 25 C... | HSS 25 | | HB 25 C | | | AB or CD | Ø120 | 430 | 30 | 286.9 | 285 |
| AU 120 25 N... | HSS 25 | | | HB 25 | | AB or EF | Ø120 | 410 | 30 | 268.9 | 290 |
| AU 120 25 W... | HSS 25 | | | HB 25 | | CD or GH | Ø120 | 500 | 30 | 358.9 | 290 |
| AU 128 33 N... | HSS 33 | | | HB 33 | | AB or EF | Ø128 | 480 | 30 | 335.9 | 350 |
| AU 128 33 W... | HSS 33 | | | HB 33 | | CD or GH | Ø128 | 580 | 30 | 435.9 | 440 |
| AU 150 33 N... | HSS 33 | | | HB 33 | | AB or EF | Ø150 | 530 | 50 | 357.9 | 385 |
| AU 150 33 W... | HSS 33 | | | HB 33 | | CD or GH | Ø150 | 630 | 50 | 457.9 | 435 |

Notes:

- For slide position information please refer to [24](#).
- The AU12025D carriage requires high type back plate HHW25 [16-17](#).
- Access to cap wiper and lubricator fixing screws is from the top of the carriage for ease of adjustment and removal. For cap wiper and lubricator mounting hole positions please refer to [32](#) & [34](#) respectively.
- The ordering details opposite relate to assembled carriages only. For ordering details concerning beams assembled with slides and to specify the assembled carriage to be ready adjusted and mounted, please refer to [24-25](#).
- For the stainless versions, bearing assemblies and all fixing screws are in stainless steel. Carriage plates are aluminum with clear anodized finish. A special USDA approved surface treatment for increased corrosion resistance is available on request.
- This table states dimensions for precision grade slides. For assembled dimensions based on commercial grade slides add 0.2mm to dimensions N & O. Other dimensions will not be affected.

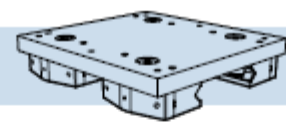
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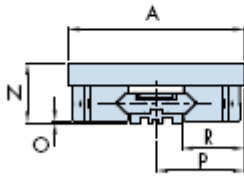
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Carriages

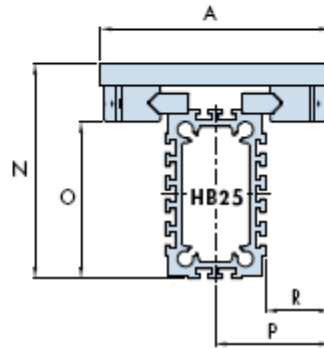


The drawings below show HDS2 carriages assembled together with beams with slides in the basic combinations possible. Cap wipers are illustrated for worst case dimensions. Bearings only or lubricators will be slightly more compact (18,19 & 34).

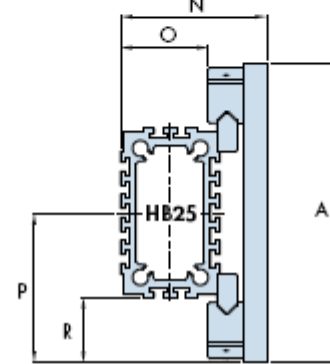
AU..D - Double edge*2



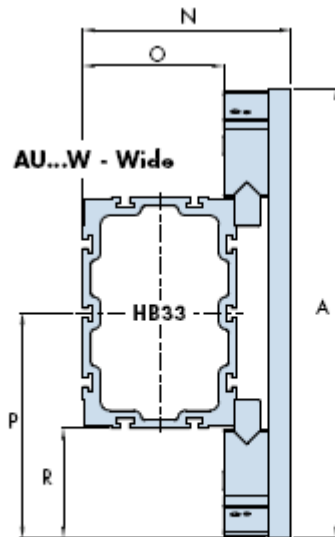
AU..N - Narrow



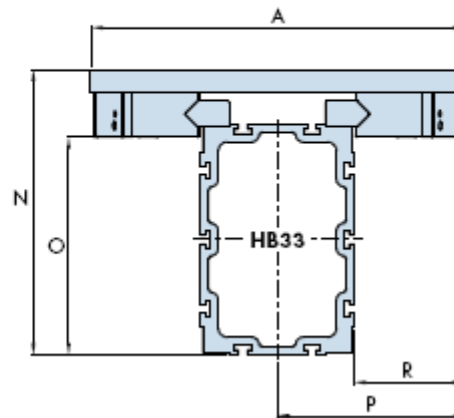
AU..W - Wide



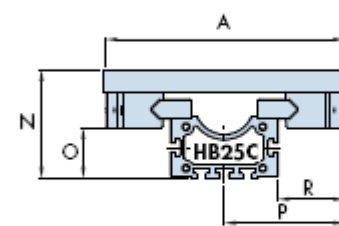
AU...W - Wide



AU...N - Narrow



AU..C - Compact



Slides
14-15

Bearings
18-21

Beams
22-23

Assembled Beams
24-25

Assembled Systems
40-41

Rock Driven Carriages
28-29

Lubrication
32-34

T-Nuts
38

Technical
42-45

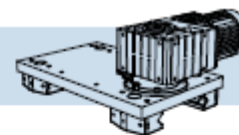
| | E | F | G | H | J | K | L | M Thread size x depth | N*6 | O*6 | P | R | S | kg |
|--|-----|-----|----|----|------|----|-----|-----------------------------|-------|-------|-------|-------|-----|------|
| | 190 | 135 | 22 | 46 | 40.5 | 8 | 330 | M10x20 | 77.5 | 1.5 | 115 | 82 | 60 | 9.0 |
| | 250 | 145 | 22 | 46 | 40.5 | 8 | 350 | M10x20 | 141.5 | 65.5 | 155 | 85 | 60 | 11.6 |
| | 240 | 135 | 22 | 46 | 40.5 | 8 | 330 | M10x20 | 280.5 | 204.5 | 150 | 85 | 60 | 10.1 |
| | 330 | 165 | 22 | 46 | 40.5 | 8 | 390 | M10x20 | 190.5 | 114.5 | 195 | 85 | 60 | 14.0 |
| | 250 | 165 | 22 | 46 | 40.5 | 10 | 390 | M10x20 | 77.5 | 1.5 | 145 | 112 | 70 | 14.7 |
| | 315 | 185 | 22 | 46 | 40.5 | 10 | 430 | M10x20 | 141.5 | 65.5 | 187.5 | 117.5 | 70 | 18.2 |
| | 300 | 165 | 22 | 46 | 40.5 | 10 | 390 | M10x20 | 280.5 | 204.5 | 180 | 115 | 70 | 16.7 |
| | 390 | 195 | 22 | 46 | 40.5 | 10 | 450 | M10x20 | 190.5 | 114.5 | 225 | 115 | 70 | 22.7 |
| | 280 | 205 | 28 | 58 | 50 | 14 | 470 | M12x20 | 105 | 17 | 170 | 135 | 84 | 28.5 |
| | 370 | 230 | 28 | 58 | 50 | 14 | 520 | M12x20 | 147.5 | 59.5 | 215 | 145 | 85 | 33.6 |
| | 350 | 235 | 28 | 58 | 50 | 14 | 530 | M12x20 | 286.5 | 198.5 | 205 | 140 | 85 | 33.1 |
| | 440 | 235 | 28 | 58 | 50 | 14 | 530 | M12x20 | 196.5 | 108.5 | 250 | 140 | 85 | 37.0 |
| | 420 | 265 | 28 | 58 | 50 | 14 | 590 | M12x20 | 370.5 | 286.5 | 240 | 140 | 100 | 39.1 |
| | 520 | 310 | 28 | 58 | 50 | 14 | 680 | M12x20 | 270.5 | 186.5 | 290 | 140 | 100 | 48.2 |
| | 470 | 300 | 40 | 85 | 80 | 22 | 660 | M16x30 | 402.5 | 267.5 | 265 | 165 | 110 | 79.8 |
| | 570 | 325 | 40 | 85 | 80 | 22 | 710 | M16x30 | 302.5 | 167.5 | 315 | 165 | 110 | 93.0 |

Ordering Example*4

SS — Stainless version*5
 Leave blank if not required
AU — Carriage type
64 — Bearing size
25C — Carriage type
LB — Slide lubricators
CW — Cap wipers
CW4S — Cap wipers + Outboard scrapers
 Leave blank if not required

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Rack Driven Carriages



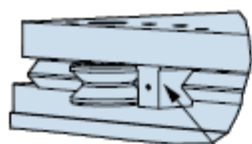
HDS2 rack driven carriages are available to suit the corner mounted options for construction beam assemblies or for other mounting arrangements with slides spaced the same distance apart □27. They are designed to engage with single edge V slides with integrated racks in precision, stainless steel and commercial grade versions. They have all the benefits of the assembled carriages □26-27 with the addition of a high performance rack and pinion drive facility.

Rack driven carriages can be supplied with an automatic lubrication device which will apply a controlled amount of grease directly to the teeth □36.

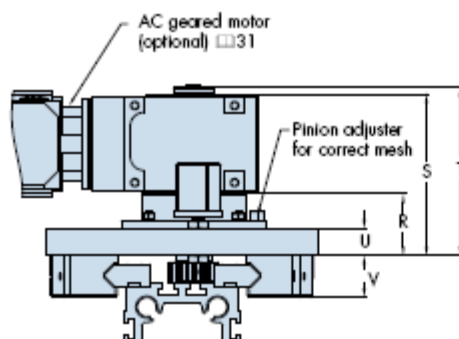
| Part Number | For Use With | | | Rack Options*1 | | | | | A | B | C | D | E |
|-----------------|--------------|-------|----------------|----------------|------|----|----|----|-----|-----|-------|-----|-------|
| | Beam | Slide | Bearing | 2.5S | 2.5H | 3S | 4H | 5S | | | | | |
| AURD 64 25 C.. | HB 25C | | HSS 25 Ø64 | ✓ | ✓ | × | × | × | 310 | 250 | 231.9 | 385 | 62.5 |
| AURD 64 25 C..3 | HB 25C | | HSS 25 Ø64 | × | × | ✓ | × | × | 310 | 250 | 231.9 | 385 | 62.5 |
| AURD 64 25 N.. | HB 25 | | HSS 25 Ø64 | ✓ | ✓ | × | × | × | 300 | 240 | 213.9 | 365 | 62.5 |
| AURD 64 25 W.. | HB 25 | | HSS 25 Ø64 | ✓ | ✓ | × | × | × | 390 | 330 | 303.9 | 425 | 62.5 |
| AURD 95 25 C.. | HB 25C | | HSS 25 Ø95 | × | ✓ | ✓ | × | × | 375 | 315 | 262.9 | 430 | 80 |
| AURD 95 25 N.. | HB 25 | | HSS 25 Ø95 | × | ✓ | ✓ | × | × | 360 | 300 | 244.9 | 390 | 80 |
| AURD 95 25 W.. | HB 25 | | HSS 25 Ø95 | × | ✓ | ✓ | × | × | 450 | 390 | 334.9 | 450 | 80 |
| AURD 120 25 C.. | HB 25C | | HSS 25 Ø120 | × | ✓ | ✓ | × | × | 430 | 370 | 286.9 | 465 | 117.5 |
| AURD 120 25 N.. | HB 25 | | HSS 25 Ø120 | × | ✓ | ✓ | × | × | 410 | 350 | 268.9 | 415 | 117.5 |
| AURD 120 25 W.. | HB 25 | | HSS 25 Ø120 | × | ✓ | ✓ | × | × | 500 | 440 | 358.9 | 415 | 117.5 |
| AURD 128 33 N.. | | HB 33 | HSS 33 Ø128 | × | × | × | ✓ | ✓ | 480 | 420 | 335.9 | 525 | 122.5 |
| AURD 128 33 W.. | | HB 33 | HSS 33 Ø128 | × | × | × | ✓ | ✓ | 580 | 520 | 435.9 | 555 | 122.5 |
| AURD 150 33 N.. | | HB 33 | HSS 33 Ø150 | × | × | × | ✓ | ✓ | 530 | 470 | 357.9 | 575 | 137.5 |
| AURD 150 33 W.. | | HB 33 | HSS 33 Ø150 | × | × | × | ✓ | ✓ | 630 | 570 | 457.9 | 675 | 137.5 |

Rack Driven Carriage Load Capacities □42

Dimensions and specification of the drive flange assembly and AC geared motor □30-31

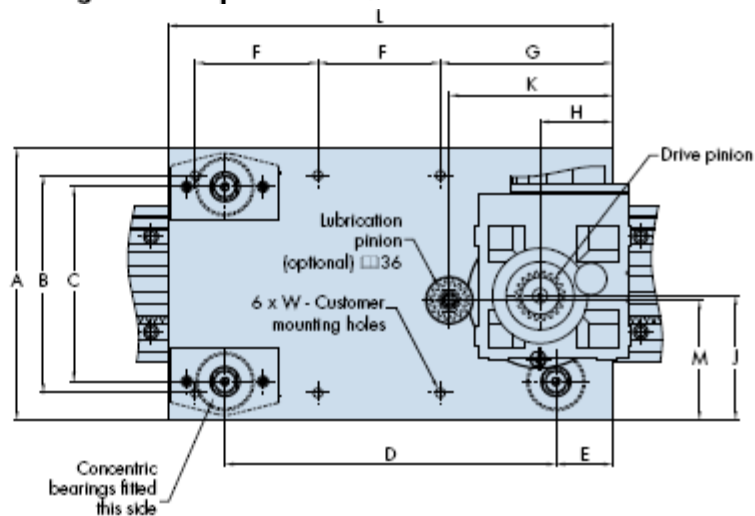


Slide lubricators x 4 (optional)*5 □34

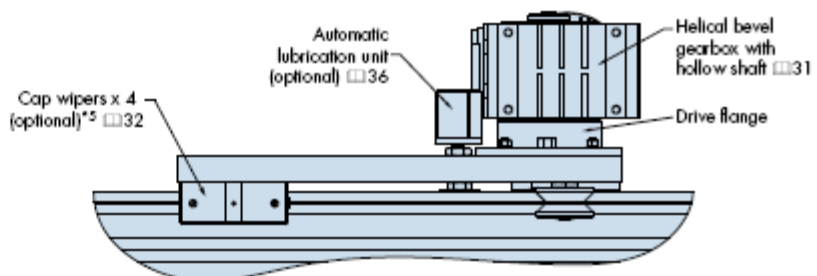


AC geared motor (optional) □31

Pinion adjuster for correct mesh



Concentric bearings fitted this side



Cap wipers x 4 (optional)*5 □32

Automatic lubrication unit (optional) □36

Helical bevel gearbox with hollow shaft □31

Drive flange

Notes:

- Module 2.5 and 4 helical racks have a left handed helix angle of 30° on HSS25HR and HSS33HR slides respectively.
- Assembled carriage weights do not include motor & gearbox, □31 for details.
- Motor mounting position 3,4,5 & 8 are not compatible with the standard mounting position of the automatic lubrication unit. Alternative positions of the lubrication unit are available.
- SS versions have all stainless steel components except carriage and drive flange body which are aluminum clear anodized (enhanced anti-corrosion finish available on application). Cap wipers are plastic. Geared motor is standard.
- For cap wiper mounting hole positions, see □32. For lubricator mounting hole positions, see □26 & 34.

Sole & Exclusive Distributors

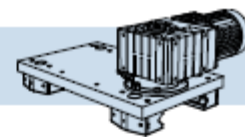
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Rack Driven Carriages



Rack driven carriages incorporate a strong drive flange assembly with micro adjustment facility to achieve correct mesh between pinion and rack $\square 30$. The standard design is for connection with supplied AC geared motors $\square 31$, this being the most economical means of achieving point-to-point linear motion. Speed and acceleration can also be controlled via an AC speed controller which Bishop-Wisecarver also supplies.

Modified or special drive flanges can be readily supplied to suit customer's own motor gearbox, including servo and stepper types.

| F | G | H | | J | | K | L | M | | R | | S | | T | | U | V | W Thread size x depth | kg ² |
|-----|-----|------|---------|-------|---------|-----|-------|-------|---------|------|---------|------|---------|--------|---------|----|--------|-----------------------------|-----------------|
| | | Spur | Helical | Spur | Helical | | | Spur | Helical | Spur | Helical | Spur | Helical | Spur | Helical | | | | |
| 145 | 190 | 80 | 133.5 | 137.4 | 180 | 510 | 128.5 | 131.6 | 68 | 179 | 187 | 30 | 46 | M10x20 | 18.0 | | | | |
| 145 | 190 | 90 | 138 | - | 200 | 510 | 132 | - | 69.5 | 205 | 214 | 30 | 46 | M10x20 | 18.3 | | | | |
| 135 | 190 | 80 | 137.5 | 141.4 | 180 | 490 | 132.5 | 135.6 | 68 | 179 | 187 | 30 | 46 | M10x20 | 17.2 | | | | |
| 165 | 190 | 80 | 137.5 | 141.4 | 180 | 550 | 132.5 | 135.6 | 68 | 179 | 187 | 30 | 46 | M10x20 | 22.6 | | | | |
| 185 | 200 | 90 | 170.5 | 169.9 | 200 | 590 | 164.5 | 164.1 | 69.5 | 68 | 205 | 179 | 214 | 187 | 30 | 46 | M10x20 | 26.9 | |
| 165 | 200 | 90 | 172 | 171.4 | 200 | 550 | 166 | 165.6 | 69.5 | 68 | 205 | 179 | 214 | 187 | 30 | 46 | M10x20 | 25.0 | |
| 195 | 200 | 90 | 172 | 171.4 | 200 | 610 | 166 | 165.6 | 69.5 | 68 | 205 | 179 | 214 | 187 | 30 | 46 | M10x20 | 31.2 | |
| 220 | 230 | 90 | 198 | 197.4 | 220 | 700 | 192 | 191.6 | 69.5 | 68 | 205 | 179 | 214 | 187 | 30 | 58 | M10x20 | 42.6 | |
| 195 | 230 | 90 | 197 | 196.4 | 220 | 650 | 191 | 190.6 | 69.5 | 68 | 205 | 179 | 214 | 187 | 30 | 58 | M10x20 | 39.8 | |
| 195 | 230 | 90 | 197 | 196.4 | 220 | 650 | 191 | 190.6 | 69.5 | 68 | 205 | 179 | 214 | 187 | 30 | 58 | M10x20 | 44.6 | |
| 245 | 250 | 110 | 232.5 | 228.9 | 240 | 770 | 212.5 | 210.5 | 68 | 221 | 236 | 30 | 58 | M12x20 | 52.3 | | | | |
| 260 | 250 | 110 | 232.5 | 228.9 | 240 | 800 | 212.5 | 210.5 | 68 | 221 | 236 | 30 | 58 | M12x20 | 60.0 | | | | |
| 295 | 240 | 110 | 257.5 | 253.9 | 240 | 850 | 237.5 | 235.5 | 88 | 241 | 256 | 50 | 85 | M16x30 | 101.2 | | | | |
| 345 | 240 | 110 | 257.5 | 253.9 | 240 | 950 | 237.5 | 235.5 | 88 | 241 | 256 | 50 | 85 | M16x30 | 124.7 | | | | |

Slides
 $\square 14-15$

Bearings
 $\square 18-21$

Beams
 $\square 22-23$

Assembled Beams
 $\square 24-25$

Assembled Carriages
 $\square 26-27$

Drive Flange Assembly
 $\square 30$

Pinions
 $\square 35$

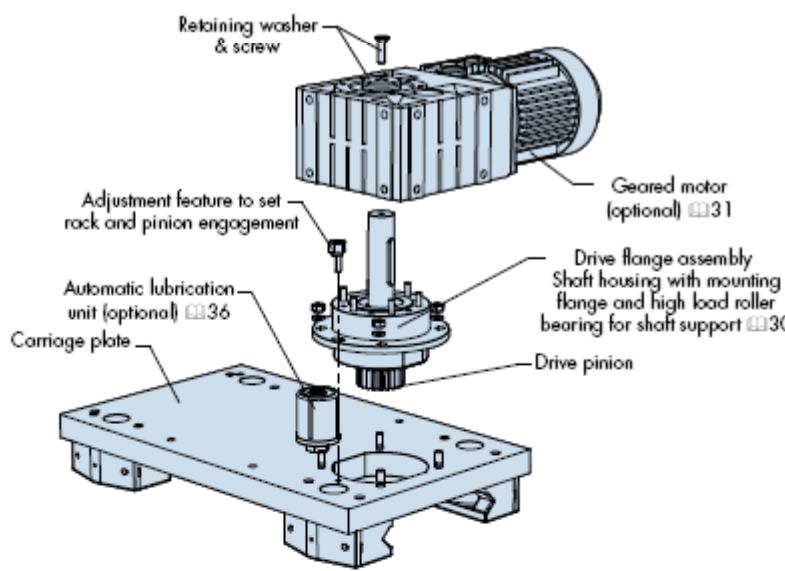
Automatic Lubrication
 $\square 36$

Lubrication
 $\square 32-34$

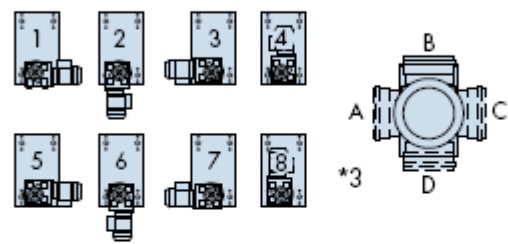
AC Geared Motor
 $\square 31$

Technical
 $\square 42-45$

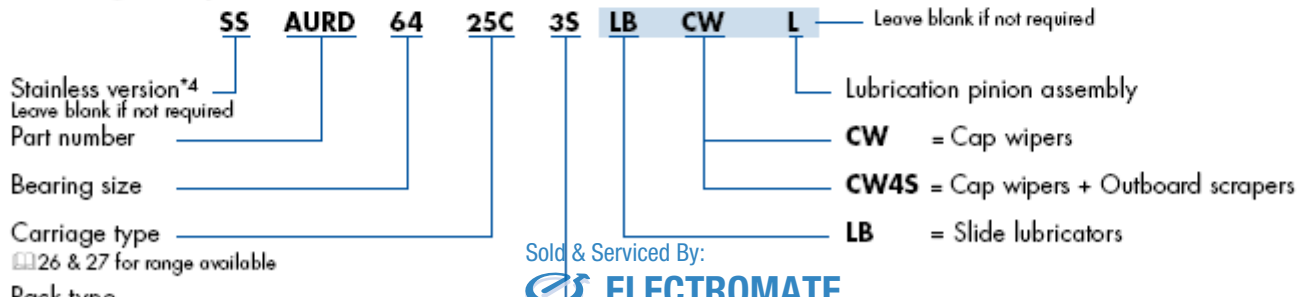
Special shape and size carriages, and carriages to suit different slide spacing, can be readily supplied.



Customers ordering rack driven carriages fitted with geared motors should specify the orientation required (1-8)^{*3}, and the terminal box position (A-D) by indicating these requirements in the ordering details for the geared motor $\square 31$.



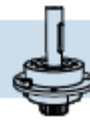
Ordering Example



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2.5S = Module 2.5 Spur, **2.5H** = Module 2.5 Helical
3S = Module 3 Spur, **4H** = Module 4 Helical, **5S** = Module 5 Spur
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Geared motor should be ordered as a separate item $\square 31$.

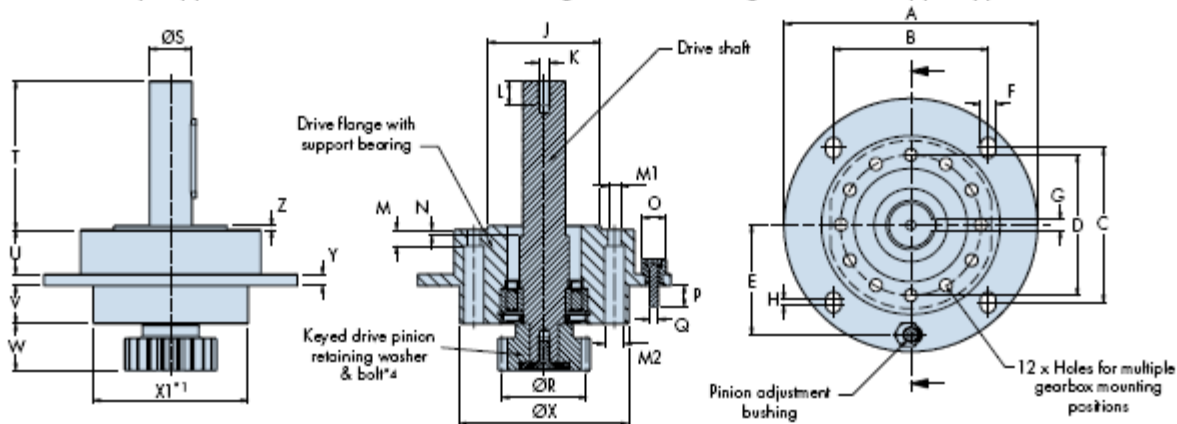
Drive Flange Assembly



Drive flange assemblies are available to suit all five rack sizes*6. They are designed to mount on the top face of the rack driven carriage and connect the drive from the geared motor to the pinion. A high capacity roller bearing is fitted to provide rigid support to both geared motor and carriage, and to withstand high radial loads*3. Axial forces, which are generated when helical rack and pinion are used, are supported by the gearbox bearings. The drive flange assembly features a unique micro adjustment facility for achieving correct mesh between pinion and rack.

The drive flange body for both stainless (SS) and standard versions is aluminum clear anodized. An enhanced anti-corrosion finish is available on application. The stainless version is supplied with stainless steel shaft, pinion and fixings, and steel roller bearing protected by nitrile seals. Pinions mod. 2.5 and 3 are keyed to the shaft and retained by screw and washer. The larger pinions mod. 4 and 5 incorporate a keyless locking bushing for secure fixing under higher loading conditions □35. Stainless pinions are supplied keyed to the shaft and retained by screw and washer. Other sizes of pinions can be readily supplied to special order*5.

The standard drive flange assembly as shown is designed to be coupled with geared motors, but modified or special drive flanges can be readily supplied to suit customer's own motor gearbox, including servo and stepper types.



| Part Number | For Use With | | | | | Rack Module *2 | No. of teeth | A | B | C | D | E | F | G | H | J | K |
|-------------|--------------|---------|---------|--------------|--------------|----------------|--------------|-----|-----|-----|-----|----|----|----|---|-----|-----|
| | Slide | Track | Bearing | Track Roller | Geared Motor | | | | | | | | | | | | |
| HDF 25S | | | | | | 2.5S | 20 | 160 | 98 | 98 | 90 | 70 | 9 | 8 | 4 | 75 | M8 |
| HDF 25H | .HSS25. | .HTS25. | .HJR64 | .HRR58 | HB 04 | 2.5H | | | | | | | | | | | |
| HDF 30S | | | .HJR95 | .HRR89 | HB 05 | 3S | | | | | | | | | | | |
| HDF 25HX | .HSS25. | .HTS25. | .HJR120 | .HRR122 | HB 04 | 2.5H | 20 | 160 | 98 | 98 | 90 | 70 | 9 | 8 | 4 | 75 | M8 |
| HDF 30SX | | | | | HB 05 | 3S | | | | | | | | | | | |
| HDF 40H | .HSS33. | .HTS33. | .HJR128 | .HRR122 | HB 06 | 4H | 24 | 220 | 130 | 130 | 120 | 92 | 13 | 12 | 8 | 100 | M12 |
| HDF 50S | | | | | HB 06 | 5S | | | | | | | | | | | |
| HDF 40HX | .HSS33. | .HTS33. | .HJR150 | .HRR144 | HB 06 | 4H | 24 | 220 | 130 | 130 | 120 | 92 | 13 | 12 | 8 | 100 | M12 |
| HDF 50SX | | | | | HB 06 | 5S | | | | | | | | | | | |

| Part Number | L | M | M1 | M2 | N | O | P | Q | R | S | T | U | V | W | X | X1 | Y | Z | kg~ |
|-------------|----|------|----|----|-----|----|----|----|--------|----|-------|------|----|------|-----|-----|---|---|-----|
| HDF 25S | 16 | 9 | 7 | 11 | 2.5 | 17 | 10 | M6 | 50 | 30 | 107.5 | 30 | 26 | 33.5 | 110 | 105 | 8 | 2 | 2.5 |
| HDF 25H | | | | | | | | | 57.74 | | | | | | | | | | |
| HDF 30S | 16 | 10.5 | 9 | 14 | 4 | 17 | 10 | M6 | 60 | 30 | 106 | 31.5 | 26 | 33.5 | 128 | 120 | 8 | 3 | 3.0 |
| HDF 25HX | 16 | 9 | 7 | 11 | 2.5 | 17 | 10 | M6 | 57.74 | 30 | 107.5 | 30 | 26 | 39.5 | 110 | 105 | 8 | 2 | 2.5 |
| HDF 30SX | 16 | 10.5 | 9 | 14 | 4 | 17 | 10 | M6 | 60 | 30 | 106 | 31.5 | 26 | 39.5 | 128 | 120 | 8 | 3 | 3.0 |
| HDF 40H | 24 | 8 | 11 | 17 | 5 | 25 | 19 | M8 | 110.85 | 40 | 145 | 30 | 10 | 60 | 150 | 142 | 8 | 3 | 7.2 |
| HDF 50S | | | | | | | | | 120 | | | | | | | | | | 8.6 |
| HDF 40HX | 24 | 28 | 11 | 17 | 5 | 25 | 19 | M8 | 110.85 | 40 | 145 | 30 | 42 | 60 | 150 | 142 | 8 | 3 | 8.0 |
| HDF 50SX | | | | | | | | | 120 | | | | | | | | | | 9.4 |

Ordering Example

SS HDF 30S 20

Stainless version*6
Leave blank if not required

Part number

Number of teeth of pinion

Rack and pinion module/type

Notes:

- X1 denotes the dimension between the parallel faces of the flange body which engages with the slot on the carriage for adjustment purposes.
- Rack and pinion module: S = spur, H = helical.
- Drive flange assemblies have a dynamic radial bearing capacity (C_r) of 38,000N for HDF25&30, and 60,500N for HDF40&50.
- Drive flange assembly shown in the drawing is for module 2.5, 3 & SS versions, module 4 & 5 use a keyless locking bushing □35.
- Customers requiring alternative pinion sizes should note that the mounting position of the drive flange assembly on the rack driven carriage □28-29 will need to be altered to compensate. Please discuss this requirement with Bishop-Wisecarver.
- Stainless version (SS): drive flange assemblies are available to suit spur racks only.



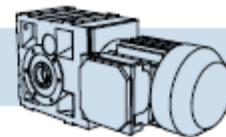
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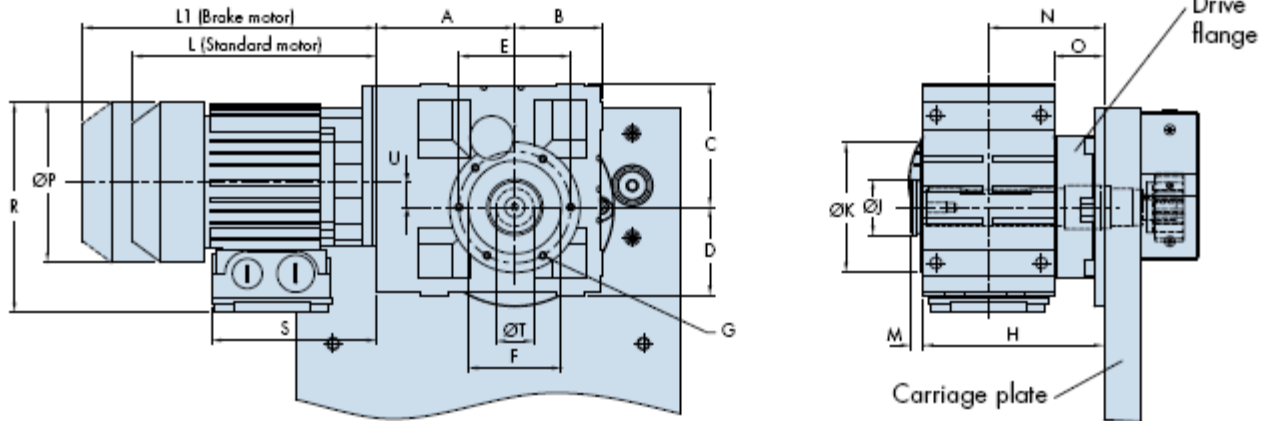
AC geared motors



Rack driven carriages can be supplied with an AC geared motor which provides a simple and low cost means of achieving point-to-point linear motion. Helical bevel gearboxes with hollow output shafts are supplied as standard. The compact design complements the rack driven carriage, and the hollow shaft allows direct connection of the drive flange assembly with maximum rigidity.

3-phase motors are available with 2 or 4 poles running at approximately 2800 & 1400rpm, respectively, and comply with IEC34-VDE530, DIN57530 and 42677. Motors are protected to IP55 and are finished in silver grey paint. Motors with alternative single and three phase windings, special finishes and an enhanced IP protection rating are available on request. The large range of motor sizes and gearbox ratios available enable ideal solutions to be specified for most applications. For requirements outside AC motor capabilities, servo motors can be directly fitted to the helical gearbox via a standard or tailored input flange.

In all cases, customers are requested to discuss their requirements with Bishop-Wisecarver for assistance in specifying the correct choice of motor and gearbox. Dimensions stated below could vary depending on the choice of motor and gearbox, and are shown for initial selection only.



| Part Number | A | B | C | D | E | F | G Thread size x depth | H | J | K | M | N | O | T ¹ | U | kg~ Gearbox only |
|-------------|-----|-----|-----|-----|-----|-----|-----------------------------|-------|----|-----|------|------|------|----------------|----|---------------------|
| HB 04 | 132 | 71 | 100 | 71 | 90 | 75 | M6x12 | 149 | 45 | 105 | 10.5 | 90.5 | 38 | 30 | 20 | 15 |
| HB 05 | 152 | 80 | 125 | 80 | 100 | 80 | M8x15 | 170.5 | 45 | 118 | 13 | 103 | 39.5 | 30 | 23 | 25 |
| HB 06 | 191 | 100 | 150 | 100 | 120 | 100 | M10x16 | 187 | 60 | 140 | 19 | 111 | 38 | 40 | 28 | 39 |

| Motor Frame Size | L | L1 | P | R | S | kg~ Motor only | | Power | | | | |
|------------------|-----|-----|-----|-------|-----|----------------|----------|------------|------------|------------|------------|-------------|
| | | | | | | 'S' Type | 'L' Type | 2 Pole 'S' | 2 Pole 'L' | 4 Pole 'S' | 4 Pole 'L' | 4 Pole 'XL' |
| 63 | 188 | 228 | 123 | 176.5 | 117 | 4.6 | 4.6 | 180 W | 250 W | 130 W | 180 W | 250 W |
| 71 | 207 | 259 | 138 | 193 | 117 | 6.3 | 6.3 | 370 W | 550 W | - | 370 W | 550 W |
| 80 | 225 | 298 | 156 | 219 | 138 | 11.0 | 11.0 | 750 W | 1100 W | - | 750 W | 1100 W |
| 90 | 276 | 346 | 176 | 234 | 141 | 12.5 | 15.2 | 1500 W | 2200 W | - | 1500 W | - |
| 100 | 309 | 388 | 196 | 254 | 148 | 22.0 | 22.0 | 3000 W | - | 2200 W | 3000 W | - |

Ordering Example

Part number **HB 05 R9.412 M80 L 4 B 1 A**

Gearbox size **R9.412**
 Gearbox ratio **M80**
 Motor frame size **L 4 B 1 A**
 Discuss this requirement with Bishop-Wisecarver

A = Terminal box position
1 = Geared motor orientation
 Leave blank if not assembled to carriage
B = Brake motor
U = Un-braked motor
 Motor poles
2 = 2 poles **4** = 4 poles
 AC motor field length
 Choose **L** (long), **S** (short) or **XL** (X long)

Notes:

- 'T' dimension refers to hollow shaft diameter for the gearbox. This can be cross referenced to 'S' dimension on 30 to aid selection of the drive flange assembly.

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Slides
14-15

Beams
22-23

Assembled Beams
24-25

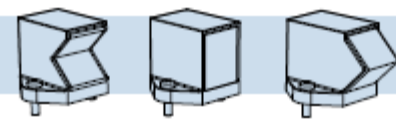
Assembled Carriages
26-27

Rack Driven Carriages
28-29

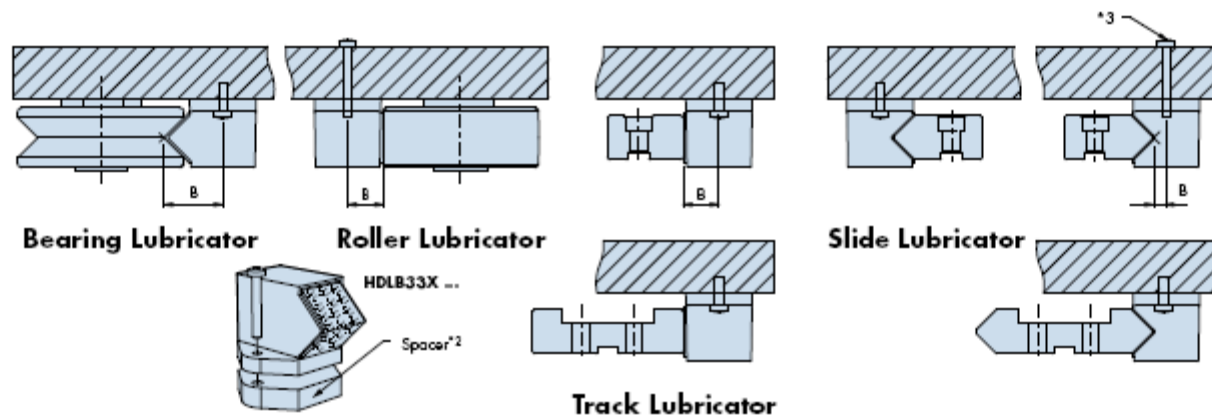
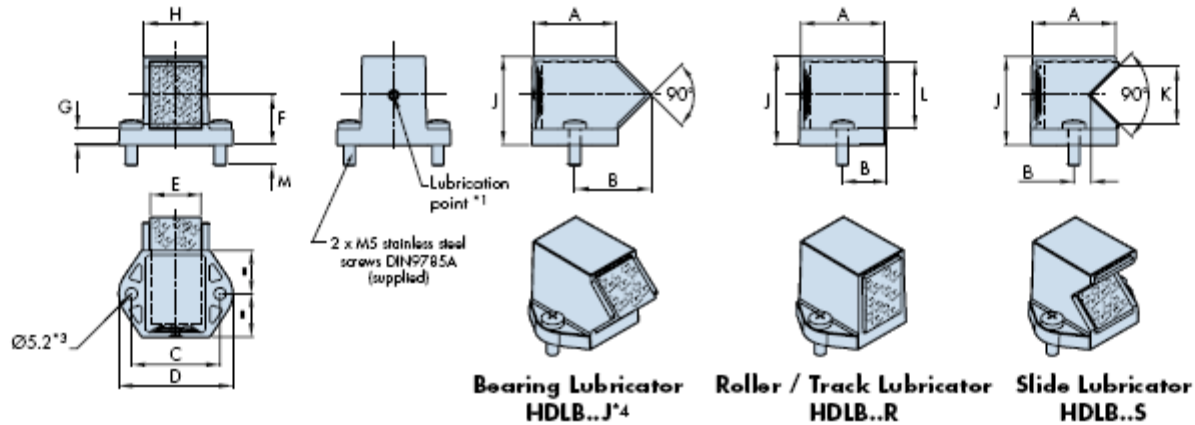
Pinions
35

Mix & Match
46

Lubricators



Lubricators provide a simple and versatile means of applying lubricant to a system, thereby increasing load capacity and extending life. Lubricators consist of an impact resistant plastic housing incorporating a spring loaded oil impregnated felt wiper. There are three types available for applying lubricant directly to either slide, flat track and track roller or V bearing. They can be sited in any convenient position to give best access for re-lubrication and can be mounted from above or below as shown.



| Part Number | A | B | C | D | E | F | G | H | J | K | L | M | kg~ |
|-------------|----|-----|----|----|----|----|----|----|----|----|----|----|------|
| HDLB 25 J | 38 | 34 | 39 | 50 | 23 | 22 | 7 | 27 | 39 | - | 30 | 5 | 0.10 |
| HDLB 25 S | 38 | 8.5 | 39 | 50 | 23 | 22 | 7 | 27 | 39 | 24 | 30 | 5 | 0.08 |
| HDLB 25 R | 38 | 21 | 39 | 50 | 23 | 22 | 7 | 27 | 39 | - | 30 | 5 | 0.09 |
| HDLB 33 J | 50 | 44 | 50 | 65 | 30 | 28 | 9 | 35 | 50 | - | 38 | 11 | 0.20 |
| HDLB 33 S | 50 | 9.9 | 50 | 65 | 30 | 28 | 9 | 35 | 50 | 33 | 38 | 11 | 0.15 |
| HDLB 33 R | 50 | 25 | 50 | 65 | 30 | 28 | 9 | 35 | 50 | - | 38 | 11 | 0.18 |
| HDLB 33X J | 50 | 44 | 50 | 65 | 30 | 40 | 21 | 35 | 62 | - | 38 | 14 | 0.28 |
| HDLB 33X S | 50 | 9.9 | 50 | 65 | 30 | 40 | 21 | 35 | 62 | 33 | 38 | 14 | 0.23 |
| HDLB 33X R | 50 | 25 | 50 | 65 | 30 | 40 | 21 | 35 | 62 | - | 38 | 14 | 0.26 |

Compatibility with mating components **46-47**

Ordering Example

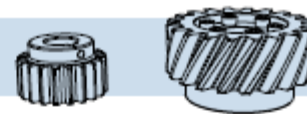


Notes

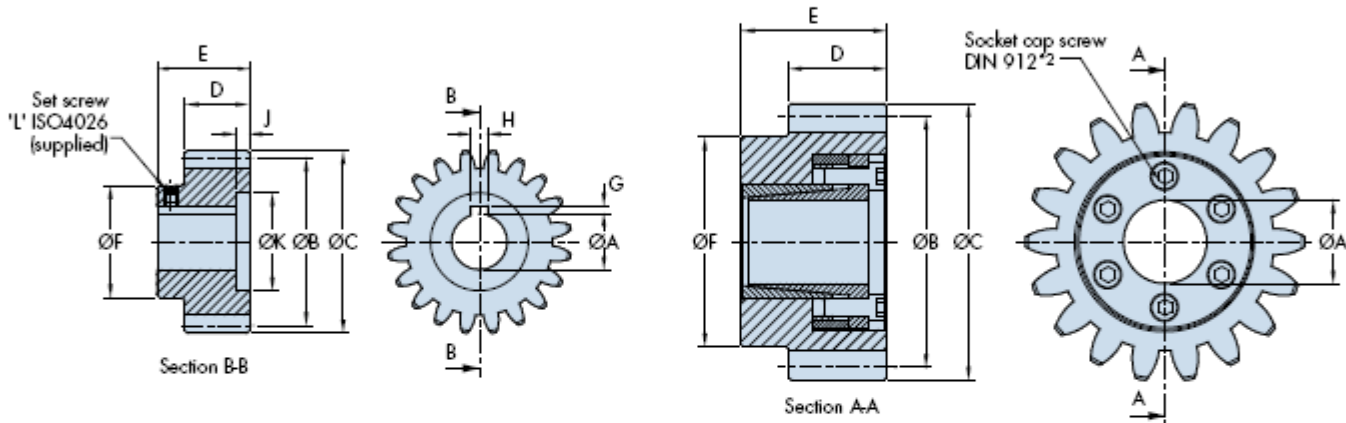
- The lubrication interval depends on stroke, duty and environment **49**. Threaded insert can be incorporated at the lubrication position to enable lubricators to be linked to a central point or lubrication canister **37**.
- HDLB33X lubricators will be supplied with a spacer **3** in a total height of the $\varnothing 150$ bearing and $\varnothing 144$ track roller.
- For through hole fixing, the $\varnothing 5.2$ holes in the lubricator should be tapped M4.
- The use of bearing lubricators allows easy carriage disengagement with the slide, as only the bearing will need to be removed.

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Pinions



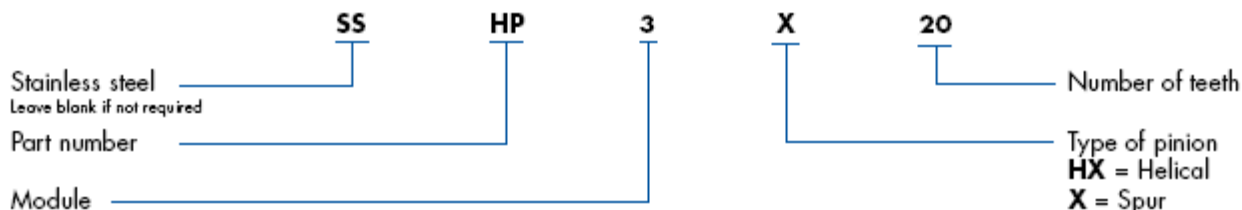
Pinions are made from high grade case hardened steel. The teeth are precision ground to ISO 1328 grade 6 for maximum wear resistance. Two types of pinions are available to suit the spur and helical rack cut into the back face of the single edge V slide and flat track. The smaller module pinions are supplied with a keyway location to mate with the drive shaft. The large module 4 and 5 pinions incorporate a locking bushing which, when tightened, locks onto the shaft and makes a rigid connection. Stainless steel spur pinions are available as standard and are supplied with a keyway location only.



| Part Number (Steel pinion ^{1&2}) | Pinion Type | Helix Angle | Mod | No of Teeth | A | B | C | D | E | F | G | H | J | K | L | kg |
|---------------------------------------------------|-------------|-------------|-----|-------------|----|--------|--------|----|----|-----|-----|---|---|----|----|------|
| HP 25 X 20 | Spur | - | 2.5 | 20 | 20 | 50 | 55 | 23 | 33 | 40 | 2.8 | 6 | 6 | 36 | M5 | 0.35 |
| HP 25 HX 20 | Helical | 30 | 2.5 | 20 | 20 | 57.74 | 62.74 | 23 | 33 | 40 | 2.8 | 6 | 6 | 36 | M5 | 0.46 |
| HP 3 X 20 | Spur | - | 3 | 20 | 20 | 60 | 66 | 23 | 33 | 40 | 2.8 | 6 | 6 | 36 | M5 | 0.5 |
| HP 4 HX 20 | Helical | 30 | 4 | 20 | 30 | 92.38 | 100.38 | 35 | 52 | 75 | - | - | - | - | - | 1.9 |
| HP 4 HX 24 | Helical | 30 | 4 | 24 | 40 | 110.85 | 118.85 | 35 | 59 | 90 | - | - | - | - | - | 2.9 |
| HP 5 X 18 | Spur | - | 5 | 18 | 30 | 90 | 100 | 35 | 52 | 75 | - | - | - | - | - | 1.8 |
| HP 5 X 24 | Spur | - | 5 | 24 | 40 | 120 | 130 | 35 | 59 | 100 | - | - | - | - | - | 3.6 |

| Part Number (Stainless steel pinion ^{1&2}) | Pinion Type | Mod | No of Teeth | A | B | C | D | E | F | G | H | J | K | L | kg |
|-------------------------------------------------------------|-------------|-----|-------------|----|-----|-----|----|----|-----|-----|----|-----|----|----|------|
| SS HP 25 X 20 | Spur | 2.5 | 20 | 20 | 50 | 55 | 23 | 33 | 40 | 2.8 | 6 | 5 | 35 | M5 | 0.35 |
| SS HP 3 X 20 | Spur | 3 | 20 | 20 | 60 | 66 | 23 | 33 | 40 | 2.8 | 6 | 5 | 35 | M5 | 0.5 |
| SS HP 5 X 18 | Spur | 5 | 18 | 30 | 90 | 100 | 35 | 52 | 75 | 3.3 | 10 | 8.5 | 60 | M8 | 1.8 |
| SS HP 5 X 24 | Spur | 5 | 24 | 40 | 120 | 130 | 35 | 59 | 100 | 3.3 | 12 | 8.5 | 60 | M8 | 3.6 |

Ordering Example



Notes

- Module 2.5 & 3, and all stainless steel pinions are supplied with location keyway and both retaining washer and a countersunk screw. All other steel versions are supplied complete with a locking bushing.
- Locking bushing retaining bolts should be tightened to a torque of 17Nm.
- All steel pinions are supplied case hardened with ground teeth as standard. Stainless steel versions are manufactured from 420 stainless steel and are hardened and ground.



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-  Assembled Carriages
26-27
-  Rack Driven Carriages
28-29
-  Mix & Match
46

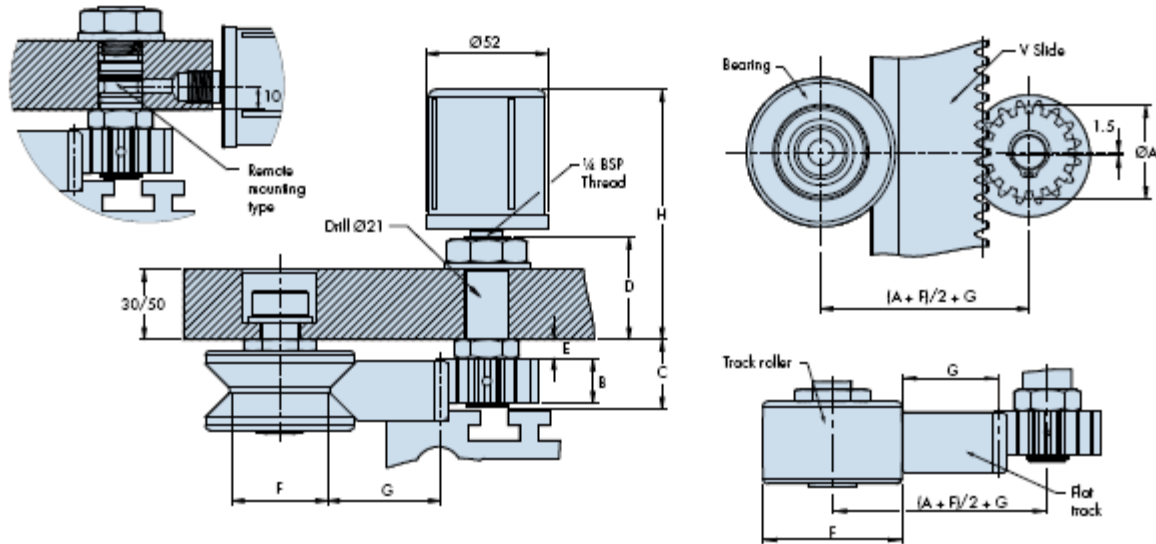
Automatic Rack Lubrication



Automatic rack lubrication systems provide constant lubrication to the rack and pinion interface. Two types are available, integral canister mounting and remote canister mounting, which require lubricant passageways in the carriage plate to be drilled as required. The lubrication systems are available to suit all sizes of rack driven carriage 28-29 and are generally suitable for customers' own manufactured carriages of the required thickness.

They are compatible with most combinations of rack elements and bearings, either V slides with V bearings or flat tracks with rollers. These combinations are given in the table below. Lubrication is carried out by means of grease filled pressure canister which delivers lubricant at a controlled rate directly to the teeth of the rack via cross drilled plastic pinion. The eccentric mounting journal allows correct engagement of the lubrication pinion with the rack.

Rack lubrication units to suit other thickness of carriage plates can be readily supplied to special order.



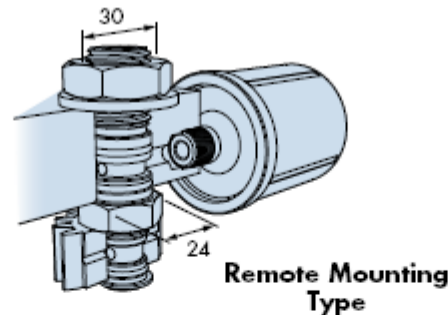
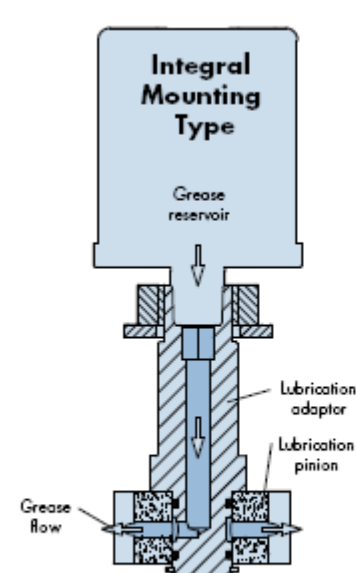
| Part Number | Mod | Pinion Type | For Use With | | No of Teeth | A | B | C | D | E | H |
|-------------|-----|-------------|--------------|----------|-------------|------|----|----|----|------|-----|
| | | | | | | | | | | | |
| HLP A 25 S | 2.5 | Spur | ..HJR64 | ..HRR58 | 16 | 40 | 18 | 30 | 47 | 9 | 150 |
| HLP A 25 H | 2.5 | Helical | ..HJR95 | ..HRR89 | 16 | 46.2 | 18 | 30 | 47 | 9 | 150 |
| HLP A 30 S | 3 | Spur | ..HJR120 | ..HRR122 | 16 | 48 | 18 | 30 | 47 | 9 | 150 |
| HLP A 25 SX | 2.5 | Spur | ..HJR120 | ..HRR122 | 16 | 40 | 18 | 36 | 47 | 15 | 150 |
| HLP A 25 HX | 2.5 | Helical | ..HJR120 | ..HRR122 | 16 | 46.2 | 18 | 36 | 47 | 15 | 150 |
| HLP A 30 SX | 3 | Spur | ..HJR120 | ..HRR122 | 16 | 48 | 18 | 36 | 47 | 15 | 150 |
| HLP A 40 H | 4 | Helical | ..HJR128 | ..HRR122 | 16 | 73.9 | 24 | 40 | 47 | 13.5 | 150 |
| HLP A 50 S | 5 | Spur | ..HJR128 | ..HRR122 | 16 | 80 | 24 | 40 | 47 | 13.5 | 150 |
| HLP A 40 HX | 4 | Helical | ..HJR150 | ..HRR144 | 16 | 73.9 | 24 | 52 | 67 | 25.5 | 170 |
| HLP A 50 SX | 5 | Spur | ..HJR150 | ..HRR144 | 16 | 80 | 24 | 52 | 67 | 25.5 | 170 |

| Mod | G | | | |
|-----|------|------|------|------|
| | | | | |
| 2.5 | 49.1 | 48.8 | 40.5 | 40.3 |
| 3 | 48.6 | 48.3 | 40.0 | 39.8 |

| Mod | G | | | |
|-----|------|------|------|------|
| | | | | |
| 4 | 53.6 | 53.3 | 40.6 | 40.3 |
| 5 | 52.6 | 52.3 | 39.6 | 39.3 |

| | F |
|----------|-----|
| ..HJR64 | 41 |
| ..HJR95 | 72 |
| ..HJR120 | 96 |
| ..HJR128 | 96 |
| ..HJR150 | 118 |

| | F |
|----------|-----|
| ..HRR58 | 58 |
| ..HRR89 | 89 |
| ..HRR122 | 122 |
| ..HRR144 | 144 |



Ordering Example

Automatic rack lubrication unit **HLP A 25S I**
 Rack module type **25S**
I = Integral mounted canister
R = Remote mounted canister

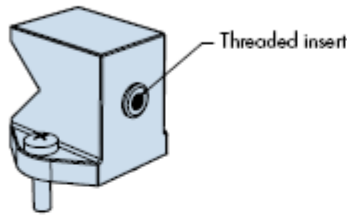
Rack lubrication canisters should be ordered separately: Part Number **LAGD125**

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Bishop-Wisecarver can provide modifications to the standard cap wipers and lubricators so that they can be easily connected to a centralized lubrication system. Adding threaded inserts to locations on the lubricator and cap wiper body allows threaded connectors to be fitted so that oil lubrication can be fed directly to the felt wipers. Inserts with M4, M5 and M6 threads are available as standard. Other sizes are available on request.

Lubricator Options



All types and sizes of lubricators as detailed on 34 can be fitted with threaded inserts at the lubrication point. Please refer to that page for positions. Standard fitted inserts may be ordered by adding a suffix, as shown below, to the lubricator part number 34.

Ordering Example

State lubricator part number 34 followed by:

C4 for M4 insert.

C5 for M5 insert.

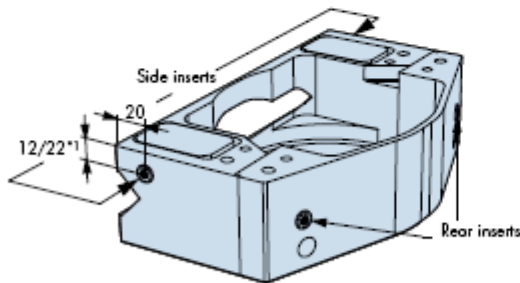
C6 for M6 insert.

Cap Wiper Options

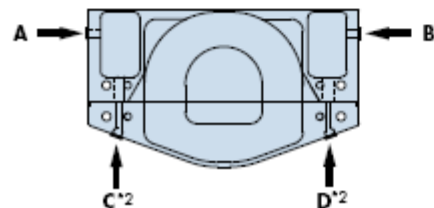
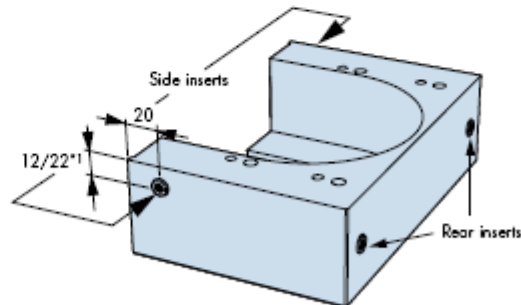
All types and sizes of bearing cap wipers and roller cap wipers as detailed on 32 & 33 can be fitted with threaded inserts. Inserts may be fitted on either one or both ends of the wiper body or, at one or both oil lubrication positions in the back face 32 & 33. The small series cap wipers are available only with inserts fitted at the ends*2.

Oil lubrication into the felt wiper of one end of the wiper body is generally sufficient to ensure carry over of lubricant to the felt insert on the other side of the body (see automatic lubrication example at the bottom of the page). This allows an outboard scraper to be fitted at the opposite end to the insert if required.

Bearing Cap Wiper Insert Positions



Roller Cap Wiper Insert Positions



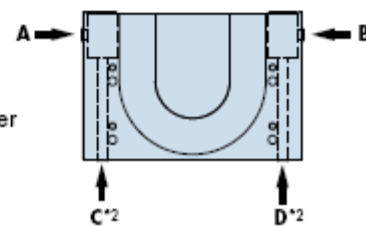
Ordering Example

State bearing cap wiper / roller cap wiper part number 32 & 33 followed by:

C4 A — Choose insert position A - D

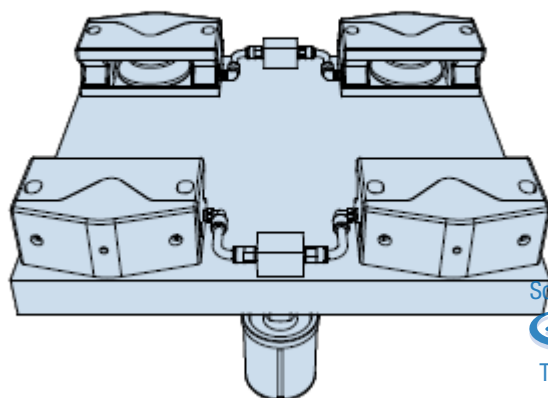
C4 for M4 insert. **C5** for M5 insert.

C6 for M6 insert



Notes:

1. Roller cap wipers CW144 and bearing cap wipers CW150 have insert dimension 22mm from the wiper mounting base. All others have a dimension of 12mm.
2. Insert positions C & D are not available for small series bearing cap wipers CW64 & CW95.



Automatic Lubrication For Cap Wipers

Threaded inserts for cap wipers and lubricators enable them to be linked to a central lubrication point or pressure feed canister.

Bishop-Wisecarver is able to supply carriages with linked lubrication devices according to the customer's preferred layout. The illustration shows one of the many possibilities.

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Assembled Beams
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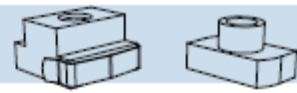
Assembled Carriages
26-27



Roller Driven Carriages
28-29

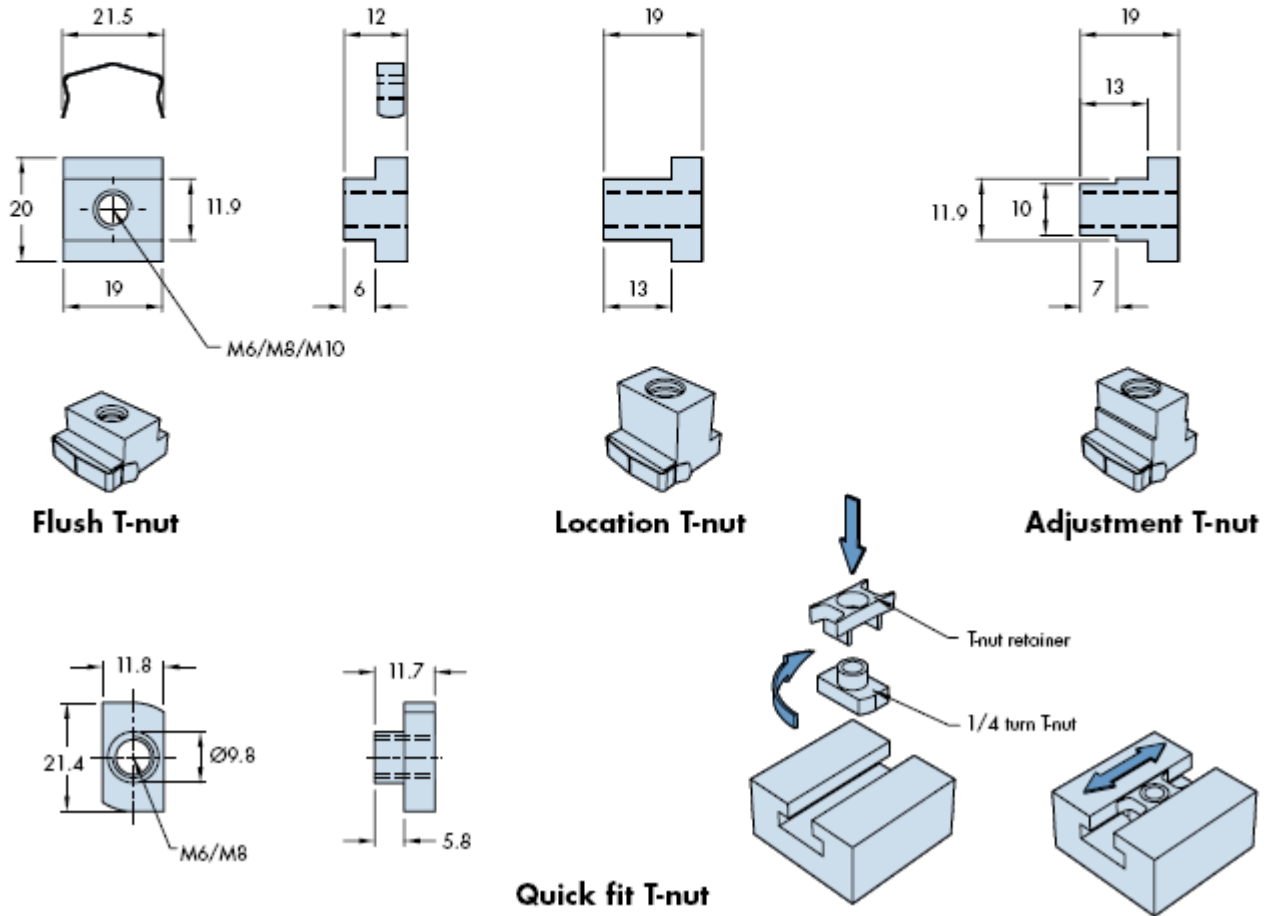


Lubrication
32-34



T-nuts are manufactured in high grade steel supplied chemically blackened and are designed to fit the T-slots of the construction beams. Three types of high strength T-nuts are available: the flush type HTNM for attachment of the customer's own components, the location type HTNM8L which locates into the keyways of the back plates 16-17, and the adjustment type HTNM8A required for system alignment facility 17. All high strength T-nuts are supplied with a retaining spring clip to prevent loss of position when the T-nut is fitted into the T-slot in the construction beams.

Also available is a range of quick fit T-nuts. These can be inserted directly into the T-slot of the construction beams and rotated through 90° to engage. Available with threads of M6 and M8, the quick fit T-nut is supplied with a plastic retainer to prevent the T-nut from turning when the fixing bolt is loosened. It also holds the T-nut in place and allows repositioning if required.



| Part Number | Type | Thread | Retainer |
|-------------|------------|--------|----------|
| HTN M6 | Flush | M6 | Spring |
| HTN M8 | Flush | M8 | Spring |
| HTN M10 | Flush | M10 | Spring |
| HTN M8L | Location | M8 | Spring |
| HTN M8A | Adjustment | M8 | Spring |
| HRTN M6 | Quick fit | M6 | Plastic |
| HRTN M8 | Quick fit | M8 | Plastic |

Ordering Example

State the quantity and the part number of the type of T-nut required.

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Example: 10 x HTN M10 10 ea. Flush type T-nut with M10 thread and spring retainer.



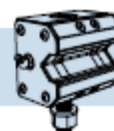
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Bearing Blocks

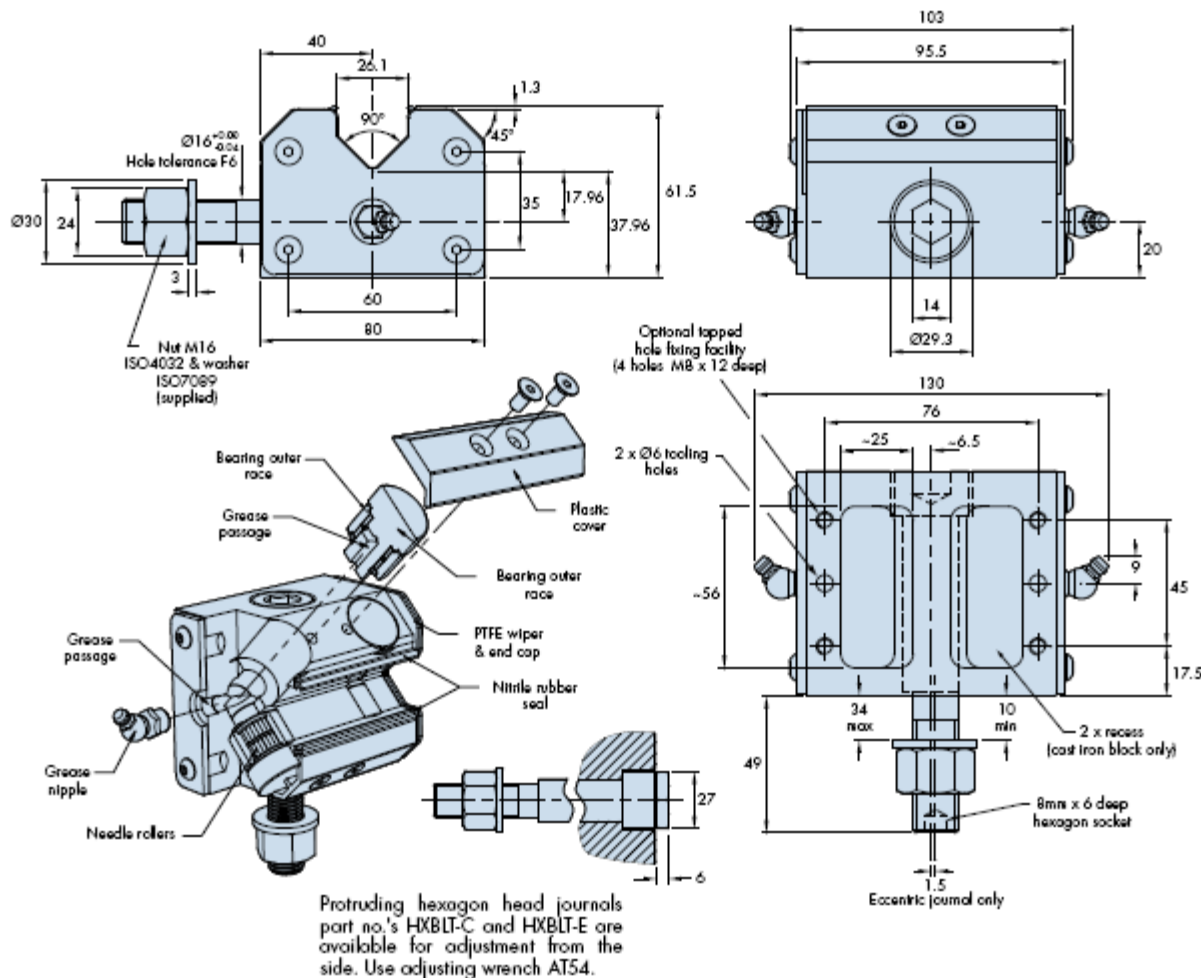


HDS2 bearing blocks can be used in place of V bearings in cases where limited width is available and where high rigidity is required. They are designed for use in conjunction with the ..HSS25 V slides only. They may be used with the HB25C and HB25 construction beams with slides corner mounted in any position  24, They may also be used in conjunction with high style back plates HHN25 and HHW25  16&17, either mounted to a base or T-slot mounted to the beams  25.

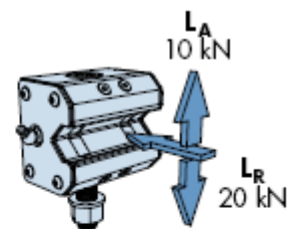
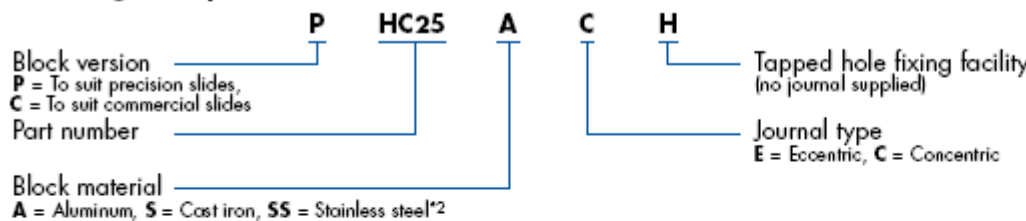
Bearing blocks feature high capacity full complement needle roller races within a precision machined rigid casting. A lubrication facility channels lubricant direct to the needle races, then onto the roller/slide contact faces. Side and adjustable end seals retain the lubricant and prevent ingress of debris. Bearing blocks can be mounted via high tensile steel concentric and eccentric (adjustable) journals or by using the optional tapped hole fixing facility in the back face. Blocks are available in high quality nodular cast iron, high strength aluminum, and stainless steel with a slightly different design.


For load capacity, technical specification and further details including stainless steel version, please visit our web site

IMPORTANT: Lubrication channels are not interconnected. Both ends must be charged with grease*1.



Ordering Example



 Cast iron block = 3 kg, aluminum block = 1.2 kg, and journal = 0.4 kg.

Notes:

- On installation, blocks should be charged with NGL No. 2 lithium soap based grease. Lubrication intervals will vary between applications, but once per 200km would be typical.
- Stainless steel blocks are only available in 'P' grade to suit precision slides.

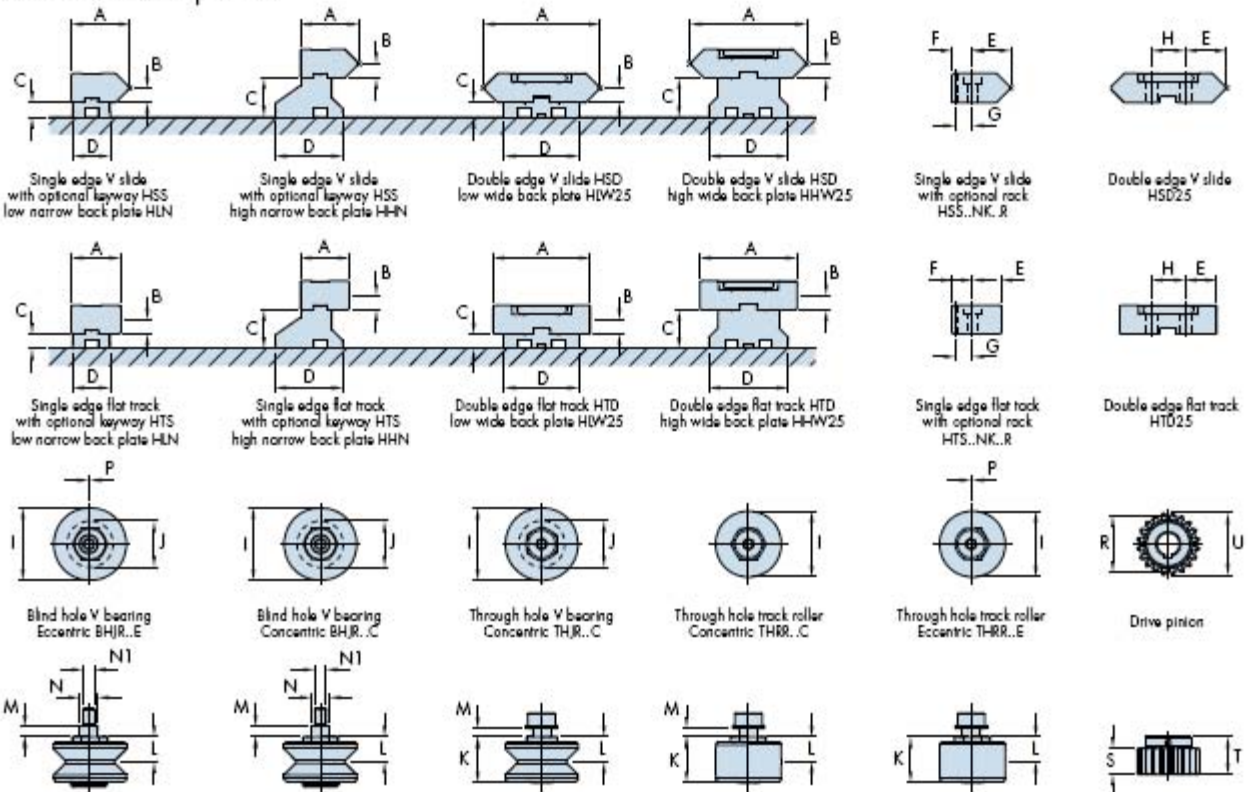


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Data and Dimensions for Assembled Systems

Use this section to calculate the overall dimensions of a system without having to refer to dimensions on individual component pages. Use it also for calculating drilling positions and for important reference dimensions of mating components. These tables include all basic dimensions for most standard components. For more detailed dimensional information refer to the catalog pages for the individual components.

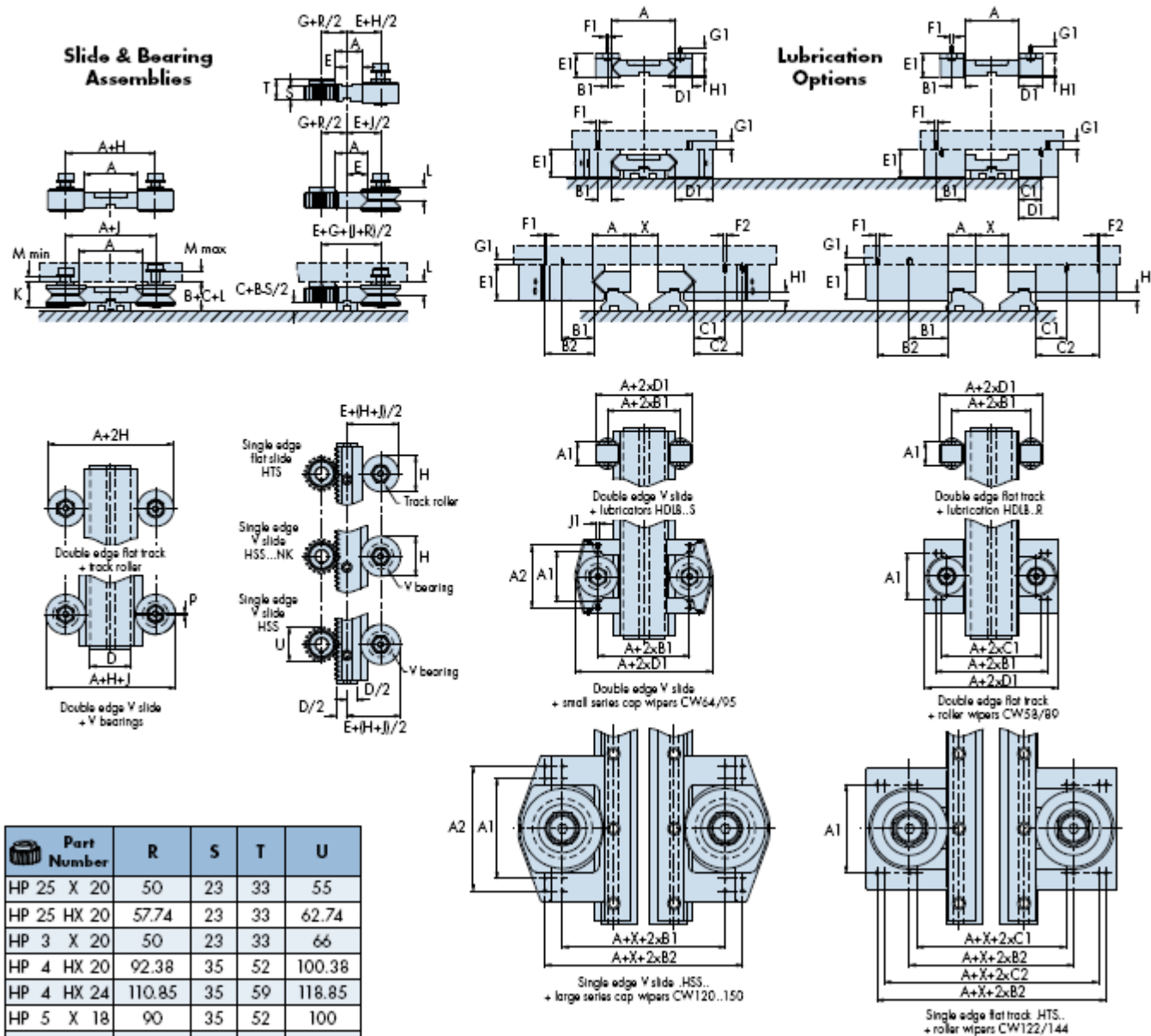


| Part Number | Rack Module | A | | B | | C | D | E | | F | | G | H |
|-------------|-------------|---------|---------|---------|---------|----|----|---------|---------|---------|---------|------|----|
| | | P Grade | C Grade | P Grade | C Grade | | | P Grade | C Grade | P Grade | C Grade | | |
| HSS 25 | 2.5 | 51.2 | 51.7 | 12.5 | 12.7 | 13 | 33 | 33.7 | 34 | 17.5 | 17.7 | 15.1 | - |
| HSS 25 | 3 | 51.2 | 51.7 | 12.5 | 12.7 | 13 | 33 | 33.7 | 34 | 17.5 | 17.7 | 14.6 | - |
| HSS 33 | 4 | 57.2 | 57.7 | 16.5 | 16.7 | 15 | 39 | 31.2 | 31.5 | 26 | 26.2 | 22.1 | - |
| HSS 33 | 5 | 57.2 | 57.7 | 16.5 | 16.7 | 15 | 39 | 31.2 | 31.5 | 26 | 26.2 | 21.1 | - |
| HSD 25 | - | 102.4 | 103 | 12.5 | 12.7 | 13 | 66 | 36.2 | 36.5 | - | - | - | 30 |
| HTD 25 | - | 85.42 | 85.8 | 12.5 | 12.7 | 13 | 66 | 27.7 | 27.9 | - | - | - | 30 |
| HTS 25 | 2.5 | 42.7 | 43.1 | 12.5 | 12.7 | 13 | 33 | 25.2 | 25.4 | 17.5 | 17.7 | 15.1 | - |
| HTS 25 | 3 | 42.7 | 43.1 | 12.5 | 12.7 | 13 | 33 | 25.2 | 25.4 | 17.5 | 17.7 | 14.6 | - |
| HTS 33 | 4 | 44.2 | 44.7 | 16.5 | 16.7 | 15 | 39 | 18.3 | 18.5 | 26 | 26.2 | 22.1 | - |
| HTS 33 | 5 | 44.2 | 44.7 | 16.5 | 16.7 | 15 | 39 | 18.3 | 18.5 | 26 | 26.2 | 21.1 | - |

| | Part Number | | | | | | | | | | | | | | | | | |
|----------------|-------------|---------|----------|----------|----------|---------|---------|----------|----------|----------|---------|---------|----------|----------|---------|---------|----------|----------|
| | THJR 64 | THJR 95 | THJR 120 | THJR 128 | THJR 150 | BHJR 64 | BHJR 95 | BHJR 120 | BHJR 128 | BHJR 150 | THRR 58 | THRR 89 | THRR 122 | THRR 144 | BHRR 58 | BHRR 89 | BHRR 122 | BHRR 144 |
| I | 64 | 95 | 120 | 128 | 150 | 64 | 95 | 120 | 128 | 150 | 58 | 89 | 122 | 144 | 58 | 89 | 122 | 144 |
| J | 41 | 72 | 96 | 96 | 118 | 41 | 72 | 96 | 96 | 118 | - | - | - | - | - | - | - | - |
| K | 40 | 40 | 50 | 50 | 80 | 44 | 44 | 54 | 54 | 80 | 40 | 40 | 50 | 80 | 44 | 44 | 54 | 80 |
| L | 22 | 22 | 28 | 28 | 40 | 22 | 22 | 28 | 28 | 40 | 22 | 22 | 28 | 40 | 22 | 22 | 28 | 40 |
| M min | 6.5 | 9 | 6.5 | 6.5 | 6.5 | 10 | 11.5 | 17 | 17 | 20 | 6.5 | 9 | 6.5 | 6.5 | 10 | 11.5 | 17 | 20 |
| M max | 27.5 | 32 | 37 | 37 | 40 | - | - | - | - | - | 27.5 | 32 | 37 | 40 | - | - | - | - |
| N ² | 16 | 20 | 25 | 25 | 38 | 16 | 20 | 25 | 25 | 38 | 16 | 20 | 25 | 38 | 16 | 20 | 25 | 38 |
| N1 | - | - | - | - | - | M10 | M12 | M14 | M16 | M20 | - | - | - | - | M10 | M16 | M24 | M36 |
| P ³ | 1.25 | 2 | 3 | 3 | | 1.25 | 2 | 3 | 3 | | 1.25 | 2 | 3 | | 1.25 | 2 | 3 | |

Data and Dimensions for Assembled Systems

For systems using HDS2 carriages, please refer to [□26](#) and for systems incorporating beams, please refer to [□27](#). Dimensions not stated can be found on the relevant component pages.



| Part Number | R | S | T | U |
|-------------|--------|----|----|--------|
| HP 25 X 20 | 50 | 23 | 33 | 55 |
| HP 25 HX 20 | 57.74 | 23 | 33 | 62.74 |
| HP 3 X 20 | 50 | 23 | 33 | 66 |
| HP 4 HX 20 | 92.38 | 35 | 52 | 100.38 |
| HP 4 HX 24 | 110.85 | 35 | 59 | 118.85 |
| HP 5 X 18 | 90 | 35 | 52 | 100 |
| HP 5 X 24 | 120 | 35 | 59 | 130 |

X is the variable spacing between slides / tracks. See end view above.

| Part Number | A1 | B1 | D1 | E1 | F1 | G1 | H1 |
|-------------|----|-----|------|----|----|----|-----|
| HDLB 25 J | 39 | 34 | 53 | 39 | M5 | 5 | 4.5 |
| HDLB 25 S | 39 | 8.5 | 10.5 | 39 | M5 | 5 | 4.5 |
| HDLB 25 R | 39 | 21 | 38 | 39 | M5 | 5 | 4.5 |
| HDLB 33 J | 50 | 42 | 67 | 50 | M5 | 7 | 5.5 |
| HDLB 33 S | 50 | 9.9 | 34.9 | 50 | M5 | 7 | 5.5 |
| HDLB 33 R | 50 | 25 | 50 | 50 | M5 | 7 | 5.5 |
| HDLB 33 JX | 50 | 42 | 67 | 62 | M5 | 9 | 5.5 |
| HDLB 33 SX | 50 | 9.9 | 34.9 | 62 | M5 | 9 | 5.5 |
| HDLB 33 RX | 50 | 25 | 50 | 62 | M5 | 9 | 5.5 |

| Part Number | A1 | A2 | B1 | B2 | C1 | C2 | D1 | E1 | F1 | F2 | G1 | H1 |
|-------------|-----|-----|------|------|------|------|-------|----|----|----|----|------|
| CW 64 | 84 | 100 | 19 | - | 19 | - | 56 | 46 | M5 | - | 8 | 1.7 |
| CW 95 | 114 | 132 | 35 | - | 35 | - | 89 | 46 | M5 | - | 8 | 1.7 |
| CW 120 | 160 | 195 | 47.5 | 73.5 | 47.5 | 73.5 | 115.5 | 58 | M6 | M6 | 9 | 17.3 |
| CW 128 | 165 | 200 | 47.5 | 75.5 | 47.5 | 75.5 | 118.5 | 58 | M6 | M6 | 9 | 13.3 |
| CW 150 | 190 | 235 | 58 | 89.5 | 58 | 89.5 | 142 | 85 | M6 | M6 | 12 | 28.3 |
| CW 58 | 74 | - | 47 | - | 37 | - | 64 | 45 | M5 | - | 15 | 2.7 |
| CW 89 | 105 | - | 62.5 | - | 50.5 | - | 95 | 45 | M5 | - | 15 | 2.7 |
| CW 122 | 142 | - | 61 | 113 | 49 | 101 | 130 | 58 | M5 | M5 | 9 | 13.3 |
| CW 144 | 165 | - | 72 | 124 | 60 | 112 | 152 | 84 | M5 | M5 | 13 | 27.3 |

Notes:

- The calculated position of the pinion relative to the rack gives an approximate location only. Customers should make provision for the pinion to be adjusted relative to the rack to ensure the best running condition. The drive flange assembly [□30](#) includes a facility for this type of adjustment.
- Mounting holes for bearings (ref. N dimension) should be drilled and reamed tolerance F6.
- P dimension refers to eccentric V bearings and track rollers only.

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Load Life Calculations

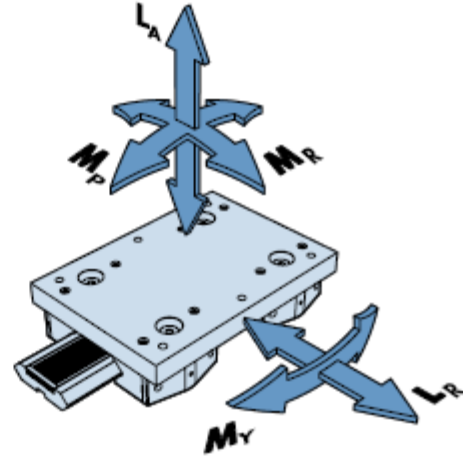
The load capacity and life expectancy of HDS2 will be determined by several factors. The key factors are the size and type of bearings and slide, the presence or absence of lubrication, and the magnitude and direction of loads. Other factors including operational speed, length of stroke and environmental conditions may also have an effect.

When calculating the system load and life, one of two approaches should be taken: if the system uses a conventional four bearing carriage (such as any of the HDS2 carriages), then this may be treated as a single item, and the load and life be determined as in the **Systems with Carriages** section below; alternatively, each bearing can be treated separately according to the method shown in the **Individual Bearing Calculations** section.

Systems with Carriages

When calculating the loading and life of a V slide system using a four bearing carriage, the loading on the system should be resolved into the direct load components, L_A and L_R , and the moment loading components M_P , M_Y and M_R (see diagram on the right).

The maximum direct and moment load capacities for HDS2 carriages are given in the tables below. Capacities are included for both 'dry' and 'lubricated' conditions - this refers to the 'V' contact, since all bearings are greased internally for life. Values are based on shock free duty.

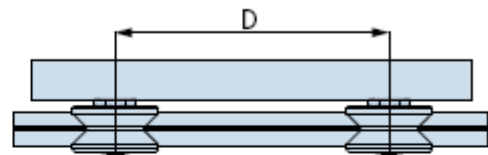


| Carriage Part Number | Dry System | | | | | Lubricated System | | | | |
|----------------------|------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|
| | $L_A(max)$ | $L_R(max)$ | $M_R(max)$ | $M_Y(max)$ | $M_P(max)$ | $L_A(max)$ | $L_R(max)$ | $M_R(max)$ | $M_Y(max)$ | $M_P(max)$ |
| | N | N | Nm | Nm | Nm | N | N | Nm | Nm | Nm |
| AU6425D.. | 10,000 | 16,000 | 450 | 8 x D | 5 x D | 10,000 | 16,000 | 450 | 8 x D | 5 x D |
| AU..6425C.. | 10,000 | 16,000 | 900 | 8 x D | 5 x D | 10,000 | 16,000 | 900 | 8 x D | 5 x D |
| AU..6425N.. | 10,000 | 16,000 | 810 | 8 x D | 5 x D | 10,000 | 16,000 | 810 | 8 x D | 5 x D |
| AU..6425W.. | 10,000 | 16,000 | 1,260 | 8 x D | 5 x D | 10,000 | 16,000 | 1,260 | 8 x D | 5 x D |
| AU9525D.. | 28,000 | 40,000 | 1,280 | 20 x D | 14 x D | 28,000 | 40,000 | 1,280 | 20 x D | 14 x D |
| AU..9525C.. | 28,000 | 40,000 | 2,510 | 20 x D | 14 x D | 28,000 | 40,000 | 2,510 | 20 x D | 14 x D |
| AU..9525N.. | 28,000 | 40,000 | 2,260 | 20 x D | 14 x D | 28,000 | 40,000 | 2,260 | 20 x D | 14 x D |
| AU..9525W.. | 28,000 | 40,000 | 3,520 | 20 x D | 14 x D | 28,000 | 40,000 | 3,520 | 20 x D | 14 x D |
| AU12025D.. | - | - | - | - | - | 40,000 | 60,000 | 1,830 | 30 x D | 20 x D |
| AU..12025C.. | - | - | - | - | - | 40,000 | 60,000 | 3,590 | 30 x D | 20 x D |
| AU..12025N.. | - | - | - | - | - | 40,000 | 60,000 | 3,230 | 30 x D | 20 x D |
| AU..12025W.. | - | - | - | - | - | 40,000 | 60,000 | 5,030 | 30 x D | 20 x D |
| AU..12833N.. | 40,000 | 60,000 | 4,530 | 30 x D | 20 x D | 40,000 | 60,000 | 4,530 | 30 x D | 20 x D |
| AU..12833W.. | 40,000 | 60,000 | 6,530 | 30 x D | 20 x D | 40,000 | 60,000 | 6,530 | 30 x D | 20 x D |
| AU..15033N.. | - | - | - | - | - | 68,000 | 100,000 | 7,710 | 50 x D | 34 x D |
| AU..15033W.. | - | - | - | - | - | 68,000 | 100,000 | 11,110 | 50 x D | 34 x D |

Load capacities apply to steel systems. For stainless steel systems, load capacities are 25% lower.

Calculating the System Load Factor

To calculate the system life, the load factor L_F should first be calculated using the equation below. Where M_Y and M_P loads are concerned, the $M_{Y(max)}$ and $M_{P(max)}$ for the relevant carriage will need to be determined. This is established by multiplying the figure shown in the table by the spacing of the bearing, D , in millimeters. L_F should not exceed 1 for any combination of loads. Once L_F has been determined for the application, the life is calculated as shown on 43.



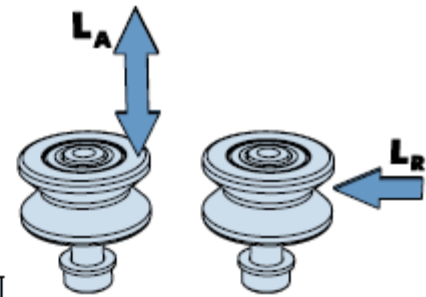
$$\text{Load Factor } L_F = \frac{L_A}{L_{A(max)}} + \frac{L_R}{L_{R(max)}} + \frac{M_R}{M_{R(max)}} + \frac{M_Y}{M_{Y(max)}} + \frac{M_P}{M_{P(max)}}$$

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Individual 'V' Bearing Calculations

Many systems do not use standard carriages. In such cases it is necessary to use conventional statics calculations to determine the loading on each bearing in the system, by resolving into axial L_A and radial L_R components. Maximum capacities for all types of HDS2 'V' bearings are given in the table below, and are included for both 'dry' and 'lubricated' conditions - this refers to the 'V' contact, since all bearings are greased internally for life. Values are based on shock-free duty.



| Bearing Part Number | Dry | | | Lubricated | | |
|---------------------|-------------|-------------|-----------------|-------------|-------------|-----------------|
| | L_A (max) | L_R (max) | Basic Life (km) | L_A (max) | L_R (max) | Basic Life (km) |
| | N | N | | N | N | |
| ..HJ64 | 2,500 | 8,000 | 300 | 2,500 | 8,000 | 500 |
| ..HJ95 | 7,000 | 20,000 | 400 | 7,000 | 20,000 | 400 |
| ..HJ120 | - | - | - | 10,000 | 30,000 | 700 |
| ..HJ128 | 10,000 | 30,000 | 500 | 10,000 | 30,000 | 700 |
| ..HJ150 | - | - | - | 17,000 | 50,000 | 2,000 |

The above figures assume that bearings are used with slides equal or larger than the preferred slide selection for that bearing size. For details of the preferred sizes, see 18-19. For loading of bearings with smaller slides, please contact Bishop-Wisecarver.

Calculating the System Load Factor

To calculate the system life, the load factor L_f should first be calculated using the equation below.

$$\text{Load Factor } L_f = \frac{L_A}{L_{A(\max)}} + \frac{L_R}{L_{R(\max)}}$$

L_f should not exceed 1 for any combination of loads.

Once L_f has been determined for each bearing, the life can be calculated as follows:

Calculating System Life

With the L_f determined for either a four bearing carriage or for an individual bearing, the life in km can be calculated using one of the three equations below. In these equations, the Basic Life is taken from the table (above) in respect of the bearing and lubrication condition applicable.

Dry System

$$\text{Life (km)} = \frac{\text{Basic Life}}{(0.04 + 0.96L_f)^2}$$

Lubricated System

$$\text{Life (km)} = \frac{\text{Basic Life}}{(0.04 + 0.96L_f)^3}$$

$$\text{Life (km)} = \frac{\text{Basic Life}}{(0.04 + 0.96L_f)^{3.3}}$$

(Use this calculation for all bearings other than ..HJR150.)

(Use this calculation for ..HJR150 bearings only.)

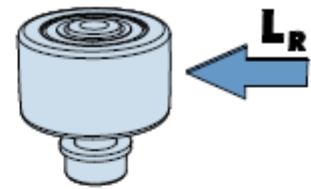
For further information regarding calculations using the methods above visit www.bwc.com/product/hds.html.

Notes:

- The maximum values of L_A , L_R , M_R , M_p , M_V and the magnitude of the system basic life for each bearing type relate to the performance of complete systems. Tests have shown these figures to be more reliable than working from theoretical static and dynamic load capacities (C and C_0) of the bearings.
- The calculations within this section assume that the linear stroke involves a number of complete bearing revolutions. If the stroke of any application is less than five times the bearing outside diameter, calculate the distance travelled as if it moves five bearing diameters per stroke. Systems operating at speeds in excess of 8m/s may require additional calculations. Please contact Bishop-Wisecarver for assistance.
- For the purpose of the Load/Life calculations on this page, the axial load L_A is that load in the axial direction which the bearing can accept from a 'V' slide engaged in its outer ring. Since the line of force is some distance removed from the axis of the bearing, this value is much less than the theoretical axial load capacity of the bearing.
- In the above calculations, the term "lubricated" refers to the contact between the slide and bearing 'V's. This lubrication may best be achieved using lubricators and cap wipers. However other methods which ensure the presence of a suitable grease or oil in the critical area are acceptable.
- When a system consists of more than four bearings per carriage (e.g. see application example on 9), it cannot always be guaranteed that the load will share equally between all bearings. In such cases, it is recommended that the system be derated to allow for the life of the most heavily laden bearing. Please contact Bishop-Wisecarver for assistance.

Track Roller Calculations

Systems incorporating track rollers running on flat tracks or flat faces of the single edge 'V' slides will require a different calculation to determine the load and life. Track rollers only have a radial load capacity stated as they are not usually loaded axially. Their pure rolling contact with the track means that they do not need to be derated for use in unlubricated applications (although it is recommended that the tracks and rollers be lightly oiled for best performance).



The maximum radial load capacity L_R for the HDS2 track roller is stated in the table below.

| Load Capacities for Track Rollers | | Basic Life (km) |
|-----------------------------------|-------------|-----------------|
| Roller Part Number | L_R (max) | |
| | | N |
| ..HRN58 | 5,000 | 500 |
| ..HRR58 | 10,000 | 300 |
| ..HRR89 | 20,000 | 400 |
| ..HRR122 | 30,000 | 700 |
| ..HRR144 | 80,000 | 500 |

Calculating the System Load Factor

To calculate the roller life, the load factor L_F should first be calculated using the equation below.

$$\text{Load Factor } L_F = \frac{L_R}{L_{R(\max)}} \quad L_F \text{ should not exceed } 1.$$

Calculating Track Roller Life

With L_F determined for each roller, the life in km can be calculated using the equation below. The basic life is taken from the table (above) for the respective track roller.

$$\text{Life (km)} = \frac{\text{Basic Life}}{L_F^3}$$

(Use this calculation for all track rollers other than ..HRR144.)

$$\text{Life (km)} = \frac{\text{Basic Life}}{L_F^{3.3}}$$

(Use this calculation for ..HRR144 track roller only.)

Rack and Pinion Force Calculations

The driving force which can be transmitted through a rack and pinion will depend on the choice of rack (e.g. MOD 2.5 spur or MOD4 x 30° helical), the size of pinion selected, the length of stroke and the desired life (total travel in km). The table below details the driving force in N for all combinations of parts and for a useful range of stroke lengths and design lives. All figures assume ideal lubrication and pinion contact conditions, and that all movement is for the full stroke indicated. It is recommended that a safety factor be applied when selecting rack and pinion components. This table is suitable for initial selection of parts, but please contact Bishop-Wisecarver if you require a specific calculation tailored for your application.

| Rack and Pinion Combination | Stroke Length = 1m | | | Stroke Length = 4m | | | Stroke Length = 16m | | |
|----------------------------------|--------------------------------|---------|----------|--------------------------------|---------|----------|--------------------------------|---------|----------|
| | Expected Life Of Rack & Pinion | | | Expected Life Of Rack & Pinion | | | Expected Life Of Rack & Pinion | | |
| | 1,000km | 5,000km | 25,000km | 1,000km | 5,000km | 25,000km | 1,000km | 5,000km | 25,000km |
| Mod2.5 & 20 tooth pinion | 2,200 | 1,700 | 1,200 | 3,700 | 2,500 | 1,800 | 3,700 | 3,600 | 2,500 |
| Mod2.5 helical & 20 tooth pinion | 3,300 | 3,000 | 2,500 | 4,300 | 3,500 | 3,100 | 4,300 | 4,100 | 3,500 |
| Mod3 & 20 tooth pinion | 3,400 | 3,100 | 2,500 | 4,400 | 3,600 | 3,200 | 4,400 | 4,300 | 3,600 |
| Mod4 helical & 20 tooth pinion | 6,700 | 5,200 | 3,700 | 11,800 | 8,000 | 5,800 | 11,900 | 11,000 | 8,200 |
| Mod4 helical & 24 tooth pinion | 7,500 | 5,800 | 5,300 | 12,600 | 9,200 | 6,600 | 12,700 | 12,700 | 8,300 |
| Mod5 & 18 tooth pinion | 4,700 | 3,900 | 2,700 | 8,500 | 5,700 | 4,100 | 8,500 | 8,500 | 5,800 |
| Mod5 & 24 tooth pinion | 5,800 | 4,700 | 3,300 | 10,900 | 7,400 | 5,300 | 11,000 | 11,000 | 7,500 |



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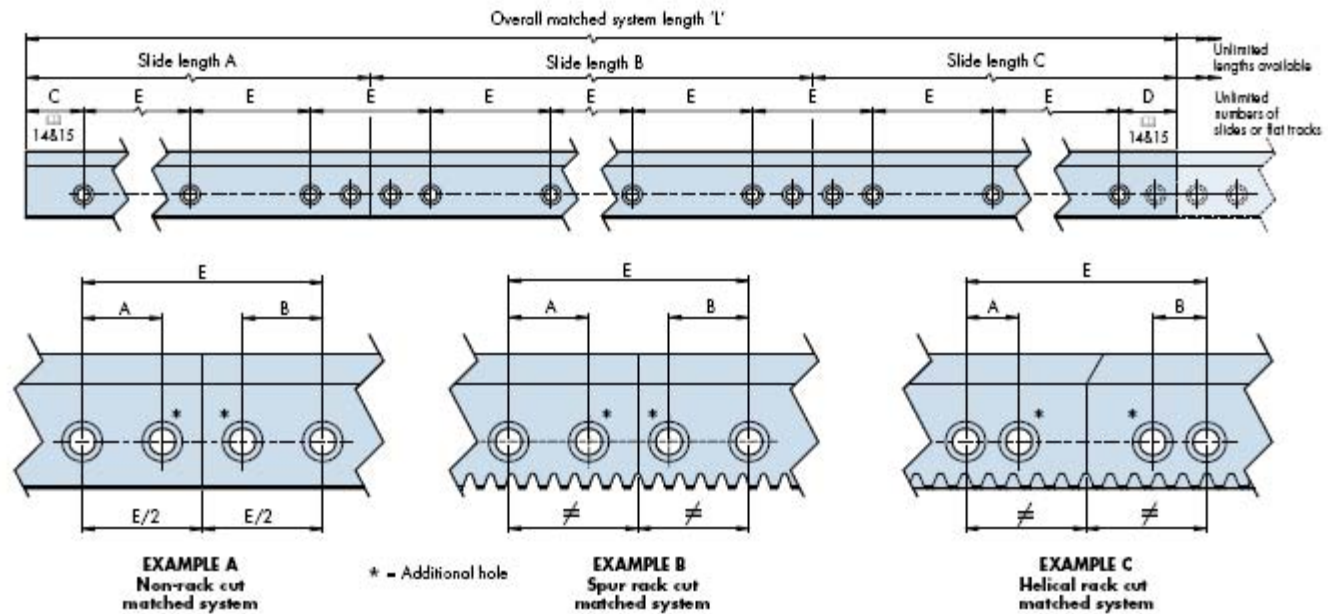
Matched Systems

Slides or flat tracks can be ordered as matched sets to achieve any length. This is useful not only for achieving very long lengths but also for multiple short lengths to enable replacement of a damaged section.

For standard matched system requirements, Bishop-Wisecarver will supply a number of slides or flat track lengths to achieve the overall length required with the minimum number of joints. A continuous hole pitch will be maintained along the entire length of the matched system, and an additional hole will be provided either side of the joint for security and alignment. For plain, non-rack cut matched systems, the joints will be central between mounting holes (see example A). For rack cut systems, the joint position between teeth may not coincide with the center position between holes, and therefore could be up to one tooth pitch offset either side (see examples B & C).

Where specific rack cut lengths or multiple identical rack cut lengths are required, these must be ordered to a factor of the tooth pitch. Special hole positions may be required.

In all matched systems the details are recorded to enable the replacement of any individual slide or track.



| | V Slides | | | Flat Tracks | | | | | | | | | |
|---|----------|-----------|--------------|-------------|-----------|--------------|----------|-----------|--------------|----------|-----------|--------------|----------|
| | .HSS25. | | .HSS33. | | .HSD25. | | .HTS25. | | .HTS33. | | .HTD25. | | |
| | Non-Rack | Spur Rack | Helical Rack | Non-Rack | Spur Rack | Helical Rack | Non-Rack | Spur Rack | Helical Rack | Non-Rack | Spur Rack | Helical Rack | Non-Rack |
| A | 30 | 20 | 40 | 30 | 30 | 30 | 30 | 20 | 40 | 30 | 30 | 30 | 30 |
| B | 30 | 20 | 40 | 30 | 30 | 30 | 30 | 20 | 40 | 30 | 30 | 30 | 30 |
| E | 90 | | 120 | | 90 | | 90 | | 120 | | 90 | | 90 |

For best running quality when using single edge slides or flat tracks in parallel, it is advisable to offset the joints so they do not coincide. It is also important to ensure that slides and tracks overlap any joints in the back plates or beams where these have been supplied in joined condition for long length requirements. Such applications should be discussed with Bishop-Wisecarver.

For further information on matched systems and installation details, please refer to www.bwc.com/products/hds.html.

IMPORTANT: All matched system requirements should be referred to Bishop-Wisecarver's technical department.

Ordering Details

Standard matched systems (longer than 4046mm):

State 'L' to the required overall length according to the slide and flat track ordering details 15.

Specific or identical length matched systems:

State the overall length of the matched slide or track required and the individual quantity and lengths of which it is comprised, according to ordering details 15.

Example 1: 1 x **matched** P HSS25 L7826 NK R C43 D43 comprising 4 x P HSS25 L1956.5 NK R

Note: For rack cut slides and tracks, Bishop-Wisecarver will determine the C&D dimensions to suit the rack pitch across the joints.

Example 2: 1 x **matched** P HSS25 L5576 C43 D43 comprising:
1 x P HSS25 L3688 C43 D45 + 1 x P HSS25 L1888 C43 D43

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Mix & Match Component Compatibility

| | | ✓ = Preferred Choice ✓ = Compatible × = Not Compatible | | | | | | | | | | |
|-------------------|--------------|------------------------------------------------------------------|----------------|----------------|----------------|----------------|--------------|--------------|------------|------------|----------------|----------------|
| | | | | | | | | | | | | |
| | | Part Number | ..HSS25NK... | ..HSS33NK... | ..HSS25... | ..HSS33... | ..HTS25NK... | ..HTS33NK... | ..HTS25... | ..HTS33... | ..HSD25... | ..HTD25... |
| V Bearings | | .HJR64... | ✓ | ✓ | ✓ | ✓ | × | × | × | × | ✓ | × |
| | | .HJR95... | ✓ | ✓ | ✓ | ✓ | × | × | × | × | ✓ | × |
| | | .HJR120... | ✓ | ✓ | ✓ | ✓ | × | × | × | × | ✓ | × |
| | | .HJR128... | × | ✓ | ✓ | ✓ | × | × | × | × | × | × |
| | | .HJR150... | × | ✓ | × | ✓ | × | × | × | × | × | × |
| Track Rollers | | .HRN58... | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| | | .HRR58... | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| | | .HRR89... | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| | | .HRR122... | × | ✓ ¹ | × | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| | | .HRR144... | × | ✓ ¹ | × | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| Back Plate | | HLN25.. | × | × | ✓ | × | × | × | ✓ | × | × | × |
| | | HLN33.. | × | × | × | ✓ | × | × | × | ✓ | × | × |
| | | HHN25.. | × | × | ✓ | × | × | × | ✓ | × | × | × |
| | | HHN33.. | × | × | × | ✓ | × | × | × | ✓ | × | × |
| | | HLW25.. | × | × | × | × | × | × | × | × | × | ✓ |
| Construction Beam | | HB25C.. | ✓ | × | ✓ | × | ✓ | × | ✓ | × | ✓ ² | ✓ ² |
| | | HB25.. | ✓ | × | ✓ | × | ✓ | × | ✓ | × | ✓ ² | ✓ ² |
| | | HB33.. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ ² | ✓ ² |
| Lubricator | | HDLB25R | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| | | HDLB33R | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ ¹ | ✓ | ✓ | ✓ | ✓ | × | ✓ |
| | | HDLB33RX | × | ✓ ¹ | × | ✓ ¹ | × | ✓ | × | ✓ | ✓ | × |
| | | HDLB25S | ✓ | × | ✓ | × | × | × | × | × | ✓ | × |
| | | HDLB33S | ✓ | ✓ | ✓ | ✓ | × | × | × | × | ✓ | × |
| | | HDLB33SX | × | ✓ | × | ✓ | × | × | × | × | × | × |

| | | V Bearings | | | | | Track Rollers | | | | |
|------------|--|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | Part Number | .HJR64... | .HJR95... | .HJR120... | .HJR128... | .HJR150... | .HRR58... | .HRR89... | .HRR122... | .HRR144... |
| Lubricator | | HDLB25J | ✓ | ✓ | ✓ ³ | ✓ ³ | ✓ ³ | × | × | × | × |
| | | HDLB33J | ✓ ³ | ✓ ³ | ✓ | ✓ | ✓ ³ | × | × | × | × |
| | | HDLB33JX | × | × | × | × | ✓ | × | × | × | × |
| | | HDLB25R | × | × | × | × | × | ✓ | ✓ | ✓ ³ | ✓ ³ |
| | | HDLB33R | × | × | × | × | × | ✓ ³ | ✓ ³ | ✓ | ✓ ³ |
| | | HDLB33RX | × | × | × | × | × | × | × | × | ✓ |
| | | HDLB25S | ✓ | ✓ | ✓ ³ | ✓ ³ | ✓ ³ | × | × | × | × |
| | | HDLB33S | ✓ ³ | ✓ ³ | ✓ | ✓ | ✓ ³ | × | × | × | × |
| | | HDLB33SX | × | × | × | × | ✓ | × | × | × | × |

Notes:


- Track rollers, roller cap wipers and roller lubricators are compatible with single edge V slides when used on the back face of the slide.
- Double edge V slides & flat tracks can only be fitted to the construction beam using the HLW25 or HHW25 back plate and T-nuts □25.
- Allowances for differences in mounting heights will be required. Please refer to the relevant component pages for details.

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Lubrication Devices Mix & Match




CW 64/95
CW 120/128/150



HDLB25/33S
HDLB33SX




CW 58/89
CW 122/144




HDLB25/33R
HDLB33RX







V Bearings



Track Rollers



x = Not Compatible

| | | Part Number | .HJR64... | .HJR95... | .HJR120... | .HJR128... | .HJR150... | .HRR58.. | .HRR89.. | .HRR122.. | .HRR144.. | |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------|-----------------|------------------|------------------|-------------------|-----------------|-----------------|--------------------|---------------------|----------|
| V Slides & Back Plates |  | .HSS25.. + .HLN25.. | HDLB25S or CW64 | HDLB25S or CW95 | HDLB33S | x | x | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R | x | |
| | | .HSS33.. + .HLN33.. | HDLB25S | HDLB25S | HDLB33S | HDLB33S | HDLB33SX | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R | HDLB33RX | |
| |  | .HSS25.. + .HHN25.. | HDLB25S or CW64 | HDLB25S or CW95 | HDLB33S or CW120 | x | x | HDLB25R | HDLB25R | x | x | |
| | | .HSS33.. + .HHN33.. | HDLB25S | HDLB25S | HDLB33S | HDLB33S or CW128 | HDLB33SX or CW150 | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R | HDLB33RX | |
| |  | .HSD25.. + .HLW25.. | HDLB25S or CW64 | HDLB25S or CW95 | HDLB33S | x | x | x | x | x | x | |
| | | .HSD25.. + .HHW25.. | HDLB25S or CW64 | HDLB25S or CW95 | HDLB33S or CW120 | x | x | x | x | x | x | |
| | Flat Tracks & Back Plates |  | .HTS25.. + .HLN25.. | / | / | / | / | / | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R | x |
| | | | .HTS33.. + .HLN33.. | / | / | / | / | / | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R | HDLB33RX |
|  | | .HTS25.. + .HHN25.. | / | / | / | / | / | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R or CW122*2 | x | |
| | | .HTS33.. + .HHN33.. | / | / | / | / | / | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R or CW122*2 | HDLB33RX or CW144*3 | |
|  | | .HTD25.. + .HLW25.. | / | / | / | / | / | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R | x | |
| | | .HTD25.. + .HHW25.. | / | / | / | / | / | HDLB25R or CW58 | HDLB25R or CW89 | HDLB33R or CW122 | x | |

Notes:

- Track rollers, roller cap wipers and roller lubricators are only compatible with single edge V slides when used on the back face of the slide.
- Roller cap wiper CW122 is only compatible with HTS25 + HHN25 and HTS33 + HHN33 when running on the front face of the flat track.
- Roller cap wiper CW144 is only compatible with HTS33 + HHN33 when running on the front face of the flat track.




Indicates back face of HSS25/33 slide




Indicates front face of HTS25 flat track




Indicates front face of HTS33 flat track


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Installation

This page covers general installation of V bearings  and track roller systems .

V Slides and Flat Tracks (Without Back Plates)

For optimum performance and accuracy, slides and tracks should be mounted on a flat surface. Single edge V slides and single edge flat tracks should be set parallel in a system, either by clamping the back faces against parallel registers or by locating the keyways onto dowel pins or purpose made key sections. Double edge V slides and wide flat tracks may be located in a similar manner utilizing the keyway if precise straightness or positional location is required.

V Slides and Flat Tracks (With Back Plates)

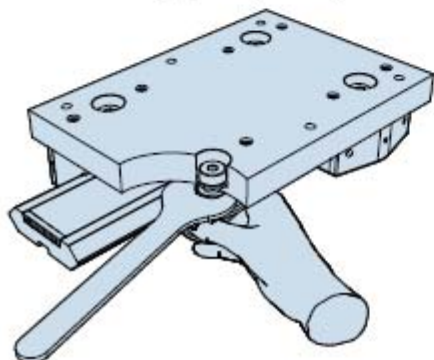
Installation of slides or tracks mounted on back plates is similar to the above procedure. Either the edge of the back plate itself or the keyway can be utilized to provide a datum reference. If the edge of the back plate is used, it is important to ensure that the depth of register affords running clearance for the V bearings, cap wipers and bearing blocks. It is advisable to set the assembled elements against the loaded side of the keys/dowels in order to overcome any slight clearances.

Customers mounting single edge V slides or single edge flat tracks in parallel are recommended to specify the jacking screw alignment facility available for use both with and without the construction beam (□ 17 for installation details). Customers may also specify the location T-nut HTN25-L for locating assembled elements to construction beams. Location T-nuts should be used in only one of the two large keyways in the wide plate HLW25.

Drilling (V slides and Flat Tracks)

Holes in the mounting surface should be drilled using the slide or track as a template unless an accurate means of pre-drilling is available.

V Bearings/Cap Wipers and Track Rollers (See figure below left)



The mounting surfaces for the V bearings should be flat and in the same plane. The bearing elements should be assembled to the mounting surface or carriage with the concentric bearings on the side taking the greatest load. In the case of more than two bearing assemblies engaged on the datum (concentric) side of the slide or track, all bearing assemblies between the two outermost concentric assemblies should be eccentric to allow precise engagement and sharing of the load. All bearings on the opposite side should be eccentric.

The concentric bearings should be fully tightened and the eccentrics semi-tightened, then adjusted to their outermost position. The complete carriage assembly, minus any additional components, should be counterbalanced through its center of gravity by means of a length of rope. It is recommended that a lifting eye in the appropriate position be provided for this purpose.

With the carriage in its counterbalanced condition, the eccentric bearings opposite the concentrics should be rotated using the adjusting wrench until engaged with the slide or track such that there is no detectable play and minimal preload. The bearings should be checked for preload by rotating between forefinger and thumb such that the bearing skids against the slide or track without application of undue force. The adjusted bearings should then be fully tightened and checked again for preload. The process as described should be repeated for any pairs of eccentric bearings fitted between the outermost ones. The carriage assembly may then be checked for free running by pushing back and forth along the slide.

The carriage should be withdrawn from the slide to enable bearing cap wipers to be fitted if required. (Roller cap wipers can be fitted without the necessity to withdraw the carriage). The carriage should be returned to the slide with cap wipers adjusted to achieve maximum compression of the felt wipers without the slide contacting the plastic body. The carriage assembly should then be checked for running quality in the non-counterbalanced condition.

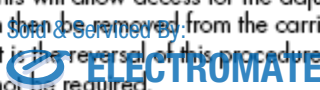
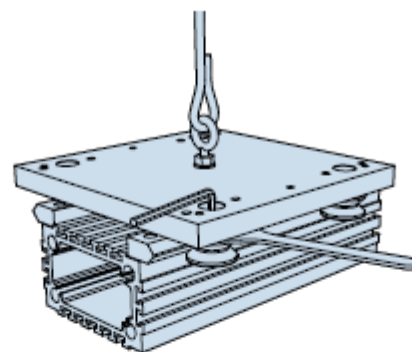
On completion of adjustment, the chamber of the small series bearing cap wipers only should be charged with grease □ 49.

Important: Additional preload imposed on the system by incorrect adjustment or misalignment will reduce the load capacity and life of the system. Customers are advised to make allowances for this.

Bearing Adjustment and Carriage Removal

Bearing adjustment can take place with cap wipers in place and without the need to remove the carriage from the slide or track. Remove the front cover from the cap wiper body to expose the eccentric bearings. This will allow access for the adjustment wrench. Adjustment for the bearings themselves is as described above. Again, adjustment should take place with the carriage in its counterbalanced state.

Carriage removal can take place without the need to slide the carriage to the end of the slide or track. Remove the front covers from the cap wipers covering the concentric bearings. This will allow access for the adjustment wrench. With the wrench in place, unscrew the bearing stud from the bearing. The bearing can then be removed from the carriage. Remove the cap wiper body and the carriage can now be lifted clear from the slide. Replacement is the reverse of this procedure. The advantage of this method is that the eccentric bearings are not affected, and adjustment should not be required.



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'V' Slides & Flat Tracks

Material and finish: High carbon bearing steel, hardened on running faces. Those areas which are ground have N5 surface finish. Other areas have a chemically blackened finish.

Stainless steel version

Material and finish: Special martensitic stainless steel conforming generally to AISI 420 series, ground on all main surfaces to N5. Hardened on running faces.

Bearings & Track Rollers

Bearings rings, balls & rollers: Carbon-chromium bearing steel AISI 52100, hardened and tempered
Seals: Nitrile rubber
Cage: Plastic, metal for ..HJR150.. & ..HRR144..
Studs: High tensile steel, chemically blackened finish
Temperature range: -20°C to +120°C

Stainless steel version

Bearings rings, balls & rollers: Stainless steel AISI 440C, hardened and tempered
SS.HJR150.. & SS.HRR144.. contain a steel twin taper roller bearing
Seals: Nitrile rubber
Cage: Plastic
Studs: Stainless steel AISI 303
Temperature range: -20°C to +120°C

Carriage Plates & Back Plates

Material: High strength aluminum alloy
Finish: Clear anodized to 15µm thickness

Cap Wipers & Lubricators

Material: Body: Impact resistant plastic
Wipers: Felt
Fixings: Stainless steel grades AISI 304 or 316
Temperature range: -20°C to +60°C

Lubricants: Small series bearing cap wipers: } Grease NLGI consistency No. 2
Large series bearing cap wipers, all roller } Oil 68 cSt or similar. Food
cap wipers and all lubricators: } compatible lubricants may also
be used.

Frictional Resistance for 'V' Slide Systems

Coefficient of friction (without cap wiper or lubricators) = 0.02.
Cap seals and lubricators add friction as follows:

4 cap wipers per carriage: CW64 or CW95 = 5N
CW120, CW128 or CW150 = 10N

4 lubricators per carriage: HDLB25 = 2.5N
HDLB33 = 5N

Maximum Linear Speeds

HDS2 V slide and flat track system can operate at very high speeds, up to 10m/s in some instances. Speeds are dependent on stroke, duty and environmental conditions. Please contact Bishop-Wisecarver to discuss application requirements. Stated speeds do not apply to rack driven systems.

Tightening Torques

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LoPro® Linear Motion System
MadeWell® Crown Rollers
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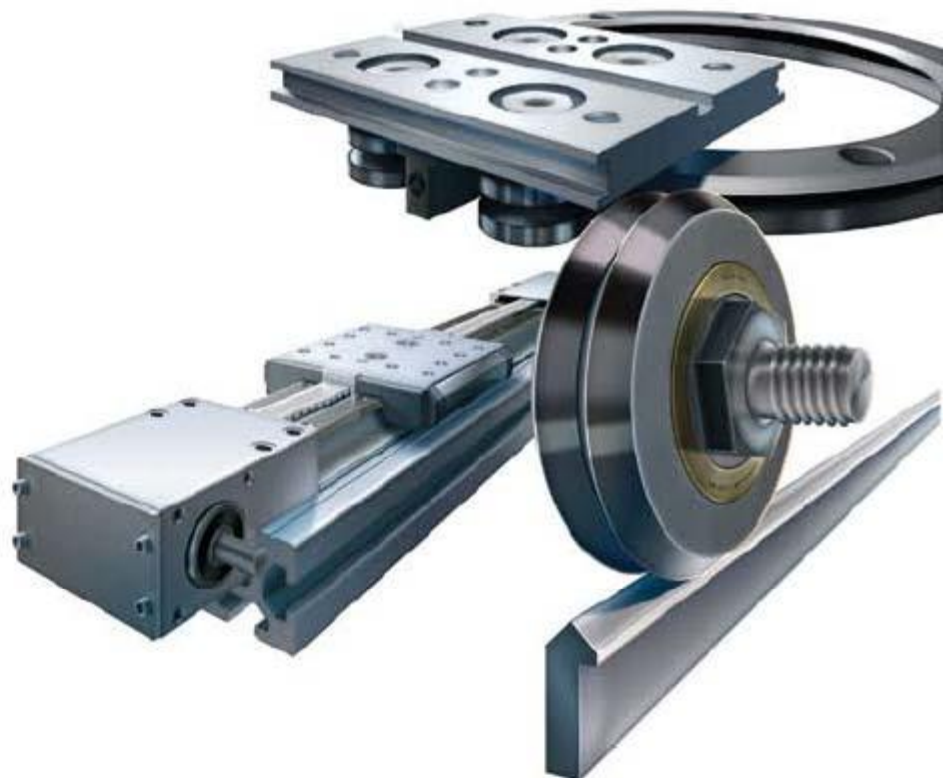
HepcoMotion®

DAPDU2 Double Acting Profile Driven Unit
DLS Driven Linear System
DTS Driven Track System
GV3 Linear Guidance and Transmission System
HDCB Heavy Duty Compact Beam
HDCS Heavy Duty Compact Screw
HDLS Heavy Duty Driven Linear System
HDRT Heavy Duty Ring Slides and Track System
HDS Heavy Duty Slide System
MHD Heavy Duty Track Roller Guidance System
MCS Machine Construction System
PDU2 Profile Driven Unit
PRT Precision Ring and Track System
PSD120 Profile Screw Driven Unit
SBD Sealed Belt Drive
Simple-Select®
SL2 Stainless Steel Based Slide System

3D CAD DRAWINGS

GOT A TOUGH APPLICATION CHALLENGE?

PRODUCT ORDERS



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