No. 1 HDCS Heavy Duty Compact Ballscrew Transmission

The HDCS unit uses the strong and compact HB25C construction beam. The concave top face of the beam accommodates the ballscrew, minimising system height. This unit can be used as a stand alone horizontal axis, or a vertical axis with either the carriage or the beam as the moving element. Grippers can be attached to the end plate.

The slides fitted are the Heavy Duty single edge type with either 64mm or 95mm dia bearings depending upon capacity requirements. Slide lubrication is provided by low maintenance cap wipers with a relubrication point provided for the ballscrew. The fitted ballscrew is 25mm diameter, with either a 3mm or 10mm pitch. The whole unit can be provided with a bellows cover if necessary.

- Compact high strength aluminium beam section.
- Lengths up to 2900mm as standard.
- Optional bellows covered version.
- High capacity 64mm or 95mm dia bearings provide good rigidity under load.
- Beam T-slots compatible with HDS section for ease of mounting

Pick & Place Gantry
This unit uses an HDLS unit (see separate catalogue) for the X-axis and an HDCS unit with fitted servo motor for the Z-axis. A gripper is attached to the end plate of the HDCS unit.
The Hepco HDCS unit is built using the strong yet compact HB25C construction beam, and fitted with single edge V slides, HSS25. Two sizes of carriage are available using the Ø64 V bearing for heavy loads and the larger capacity Ø95 V bearing for very heavy loads. Drive is provided by a Ø25mm ballscrew, with a choice of 5mm or 10mm pitch. HDCS units are available with a bellows cover as a standard option, these will provide a high level of protection from dirt & debris. Belt driven systems are also available see the HDLS Heavy Duty linear transmission system catalogue for details.

Standard unit - Nominal stroke length is calculated with the carriage positioned against the buffer. In practice a clearance between the carriage and the buffers should be provided at either end of the stroke to allow for overrun. Beam length (L) = Stroke length + carriage length (B) + 40.

Performance
The maximum linear speed of the HDCS unit is determined by the critical speed of the ballscrew and pitch size. The linear speed for different ballscrew pitches and the maximum rotational speed of the ballscrew are shown in the graphs below.

Notes:
1. Beam lengths up to figure stated are available rapid delivery, beam length up to 5900mm are possible - contact Hepco for details.
2. Dimension ‘B’ for bellows version HDCS 64/95 B are 10mm longer than the standard version due to additional plates for mounting the bellows, actual carriage plate lengths are the same for both versions.
3. Dimension ‘E’ in the table is stated for slide grade P1, for P3 grade slide dimension ‘E’ = 141.7mm.
The HDCS unit with bellows option offers protection against the ingress of dirt and debris. The end plates of the unit have been extended and the drive end bearing has been moved out board of the unit to accommodate the bellows. This results in slightly different dimensions compared to the standard version. When specifying beam length, care should be taken to allow for the closed length of the bellows, see the note below. Bellows are manufactured from Polyester 4528, with other material options available on request. The ballscrew lubrication point is located on the side of the carriage, an additional “beam lubrication point” where the ballscrew nut is accessible through the beam is available on request.

**Bellows unit** - Rubber buffers are not fitted to the bellows version unit, as the fitted bellows will perform the same duty. Nominal stroke length is calculated with the carriage positioned against the closed bellows. In practice a clearance between the carriage and the bellows should be provided at either end of the stroke to allow for overrun. When calculating the overall beam length the following formula should be used. Beam length \( L = \text{Stroke length} \times 1.22 + \text{carriage length} (B) + 10\).

For applications with critical beam length requirements please contact Hepco.

### Load Capacities

The table below shows the maximum loading for each carriage in each possible loading mode. It also includes loads for 10,000km travel. This table is intended as a guide for initial selection only. Please send your application details to Hepco and we will calculate the system load/life for you.

<table>
<thead>
<tr>
<th>HDCS Type</th>
<th>H1</th>
<th>H2</th>
<th>M5</th>
<th>Mv</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDCS 64</td>
<td>max 10 000N @ 500km</td>
<td>max 16 000N @ 500km</td>
<td>max 900Nm @ 500km</td>
<td>max 1800Nm @ 500km</td>
<td>max 1125Nm @ 500km</td>
</tr>
<tr>
<td></td>
<td>2820N @ 10 000km</td>
<td>5470N @ 10 000km</td>
<td>308Nm @ 10 000km</td>
<td>615Nm @ 10 000km</td>
<td>348Nm @ 10 000km</td>
</tr>
<tr>
<td>HDCS 95</td>
<td>max 28 000N @ 400km</td>
<td>max 40 000N @ 400km</td>
<td>max 2510Nm @ 400km</td>
<td>max 5400Nm @ 400km</td>
<td>max 3780Nm @ 400km</td>
</tr>
<tr>
<td></td>
<td>8810N @ 10 000km</td>
<td>12 580N @ 10 000km</td>
<td>790Nm @ 10 000km</td>
<td>1700Nm @ 10 000km</td>
<td>1190Nm @ 10 000km</td>
</tr>
</tbody>
</table>
The HepcoMotion HDCS unit can be supplied with a fitted motor to suit many applications. Connection to other motors and gearboxes is quick and simple using one of the fixing kits. Standard kits to suit a range of motor faces including IEC C80, C90, C105, C120 and NEMA 23 and 34 are stock items. Hepco can offer a fast service on special connection kits for attachment of customer’s motors and gearboxes.

The fitted motor is a cost effective option, capable of high speeds and thrusts. Hepco can supply AC motors, steppers and servo systems including optional holding brakes, encoders for positioning and inverter drives for power and control.

Please contact Hepco for full details and application advice.

Motor Connection kit

- Motor connection flange. This flange is customised to suit the specified motor.
- High performance drive coupling. The coupling is sized to match the output shaft of the HDCS and fitted motor to a maximum of Ø19mm.
- HDCS - Shaft spacer
- Connection tube - complete with connection screws
- Motor - Shaft spacer. This is tailored to suit motor shaft length.

Limit switch options

- Standard HDCS limit switch assembly
  - Mechanical switch
  - Inductive switch
  - HDCS V3SWA M
  - HDCS V3SWA I

- HDCS bellows version limit switch assembly
  - Mechanical switch
  - Inductive switch
  - HDCS B V3SWA M
  - HDCS B V3SWA I

The optional HDSCS limit switch assemblies are supplied complete with switch, mounting bracket, fixing bolts and quick fit T-Nuts. Please state part number and quantity required when ordering. Please note that the limit switch assemblies are not interchangeable between the standard or bellows units.

The ordering information below is given to assist communication, but customers are recommended to discuss the application with Hepco first so that the best configuration can be specified to suit the requirements.

Ordering details

<table>
<thead>
<tr>
<th>Part Number</th>
<th>HDCS</th>
<th>B</th>
<th>64</th>
<th>P1</th>
<th>L1850</th>
<th>P10</th>
<th>BLP</th>
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<tbody>
<tr>
<td>Bellows option ‘B’</td>
<td>Leave blank if not required</td>
<td>Screw pitch</td>
<td>P5 = 5mm, P10 = 10mm</td>
<td>Beam length ‘L’</td>
<td>Slide grade</td>
<td>P1 = Precision, P3 = Commercial</td>
<td></td>
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<tr>
<td>Bearing size. Choose 64 or 95 depending on load capacity</td>
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