EXPERTLY DESIGNED, DELIVERED TO PERFORM

Powered by over 70 years of relentless problem-solving and steadfast reliability, Bishop-Wisecarver delivers innovative motion solutions around the world that thrive in harsh and extreme conditions. Our linear and rotary motion solutions, custom complex assemblies, and embedded intelligence systems lead the manufacturing industry, and they are backed by The Signature Experience promise of expert guidance, confidence and customer satisfaction.

PERFECT FOR HARSH AND EXTREME ENVIRONMENTS

When you purchase from Bishop-Wisecarver, you aren’t just getting a product that works; you’re getting products, systems and industry-leading expertise you can trust, especially in harsh and extreme environments—always exceeding our customers’ reliability requirements. When the motion gets tough, we keep you in motion.

Our Motion Products and Solutions Are Also Perfect For:

- Compact
- Long Life
- Multi-axis Capabilities
- High Speed
- Long Length
- Smooth
- Low Noise
- High/Low Temperature
- Dirty Environment
- Customizable
HEPCOMOTION AND BISHOP-WISECARVER

Bishop-Wisecarver is proud to be the exclusive North American distributor of HepcoMotion products since 1984. Together we are the pioneers and inventors of guide wheel-based vee technologies. With both companies being family-owned and operated, we are aligned not only technically but culturally. Together our companies are the world leaders in guide-wheel based designs, manufacturing, and innovation.

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INTRODUCTION

HEPCOMOTION GUIDANCE SYSTEM FOR BECKHOFF XTS SYSTEMS

Linear motion experts HepcoMotion have worked with Beckhoff to develop specialized versions of the PRT2 and 1-Trak guidance systems to work with the Beckhoff XTS eXtended Transport System. This option meets the needs of higher duty XTS applications where motion profiles and long term durability requirements are particularly demanding.

The Beckhoff XTS uses mechatronics technology to drive independently controlled movers around a linear motor track. This provides a solution for complex, high speed motion profiles up to 4m/s, without compromising positional accuracy.

The system integrates Hepco’s patented 1-Trak guidance system and lightweight three bearing mover, providing the optimum mover path for Beckhoff’s 180° motor modules. 1-Trak systems consist of an aluminum base plate with 1-Trak end segments and custom ground straight slides attached, providing rigidity and the highest level of accuracy and precision.

Hepco’s PRT2 systems are compatible with motor module segment sizes 22.5° and 45°, offering solutions for larger applications. Based on Hepco’s standard PRT2 range, track solutions can be configured into circular, oval and rectangular systems as standard, and can be supplied as complete factory assembled systems, semi-assembled track systems or components.

Stainless steel versions are available for all track solutions and can be adapted to suit customers’ needs. Please contact Bishop-Wisecarver for more information on specialist requirements.

FEATURES AND BENEFITS

- Hardened Vee guidance maintains accuracy over long periods
- Low maintenance bleed lubrication system
- All systems available in stainless steel
- Available with food compatible grease
- High rigidity
- Removable track section for easy maintenance
GFX 1-TRAK LITE SYSTEM COMPOSITION

GFX 1TL Systems

GFX 1-Trak Lite is a spacer slide version of Hepco’s 1-Trak guidance system, including a patented curved track form, providing the optimum mover path for 180° motor modules. The track system is mounted on an aluminum baseplate along with a set of motor support brackets, or can be supplied as a kit of parts for custom installation. Its length is only limited by the number of motors and movers supported by a Beckhoff control system. Please see page 10 or contact Bishop-Wisecarver for information on these limitations.

1-Trak Lite systems use a three bearing mover design. Movers are available in various bearing and length combinations, providing a range of load, moment and acceleration capabilities.

All Hepco guidance systems can be supplied fully assembled, with Beckhoff motor modules, mover magnets and mover encoder flags, partially assembled, or as a kit of components.

Customers should provide their own Beckhoff components for assembly.

If you wish to re-use motors predating 2016, please check compatibility with Bishop-Wisecarver’s technical department.
All Hepco guidance systems can be supplied fully assembled, with Beckhoff motor modules, mover magnets and mover encoder flags, partially assembled, or as a kit of components.

Customers should provide their own Beckhoff components for assembly.

If you wish to re-use motors predating 2016, please check compatibility with Bishop-Wisecarver’s technical department.

GFX PRT2 ring and track systems use four bearing fixed center movers. Please see the PRT2 catalog for more information on fixed center carriages.
Various mover sizes and capabilities are available to suit XTS applications. Below is a list of the key parameters and how they vary with mover size and bearing type:

**Mover Options**

**Three bearing 1-Trak Mover**
- 25mm outer bearings
- Most compact mover
- Lowest mover mass
- Suitable for light moment loads
- Available in standard lengths: 52mm and 72mm

**Four bearing PRT2 Mover**
- All 25mm bearings
- Compact high moment mover
- Low mover mass
- Suitable for medium moment loads
- 55mm long as standard
- 34mm outer bearings
- Compact mover
- Low mover mass
- Suitable for medium moment loads
- Available in standard lengths: 70mm and 80mm

**Defining System Requirements**

When specifying a HepcoMotion guidance system for Beckhoff XTS, the following factors are considered:

- Payload, fixture mass and position relative to mover
- Speed and acceleration profile of the application
- Duty cycle
- Precision requirement
- Required system life
- Machine size - system length
- Orientation
- Additional process loads
- Servicing and maintenance requirements
- Required mover pitch
- Environmental conditions (temperature, humidity, pollutants, variation etc.)

**Bleed Lubrication**

Sufficient lubrication is essential for all Hepco guidance systems for Beckhoff XTS. All systems incorporate a bleed lubrication facility, which channels lubricant directly to the vee faces of the slide.

Lubricant is then distributed around the system by the movers. This process can be aided with lubricators mounted on movers (PRT2 systems only).

It is highly recommended that lubrication ports are situated approximately once every 3 meters of track. For more information on lubrication requirements, flow rates and food grade lubricants, please see the Hepco Guidance Systems for Beckhoff XTS - Lubrication Datasheet 01.

Please see the PRT2 catalog page 52 for more information on bleed lubrication and positioning lubrication ports on a PRT2 track system.
**APPLICATION EXAMPLES - FEATURES AND BENEFITS**

**High Speed Lane Divider**
This example shows a vertically mounted, lightly loaded, high speed and high duty GFX 1-Trak system being used to sort randomly positioned items into two separate lanes.

- High rigidity - solid steel base plate
- Positional repeatability
- Durable - hardened guidance system
- Low maintenance - integrated bleed lubrication
- Standard configuration

**Double Sided System**
Two GFX 1-Trak systems manufactured with a single ‘back to back’ base provide a compact and accurate assembly.

- High rigidity - solid steel back plate
- Excellent parallelism - ground back plate
- Positional accuracy
- Compact
- Customizable - designed to suit a specific application
APPLICATION EXAMPLES - FEATURES AND BENEFITS

Multi-Operation and Variable Speed Application
The horizontally mounted system shown below comprises of a GFX PRT2 track system mounted on a customizable Hepco MCS support structure.

- Durability - hardened guidance system
- High moment capacity - for higher process forces
- Low maintenance - integrated bleed lubrication
- Machine integration - MCS support structure
- Precision ring and track technology (PRT2)
- Standard configuration

Multi-directional Bend
This high temperature assembly application utilizes 180° end modules, plus internal and external 22.5° curved Beckhoff modules, creating an ‘S’ bend system layout, with a GFX 1-Trak Lite track system.

- Special mover designed to overcome temperature variation.
- Low maintenance - integrated bleed lubrication
- High load capacity
- Durability - hardened guidance system
- Harsh environment - Vee system technology
- Positional repeatability
- High load capacity
- Flexible layout - patented track geometry
- Customizable - designed to suit a specific application
TECHNICAL DATA - GFX 1-TRAK LITE SYSTEMS

GFX 1TL systems are comprised two 1-Trak end segments and ground GV3 or SL2 spacer slides. These can be supplied as a set of components or assembled to a solid aluminum baseplate. Assembled systems can be supplied with motor support structures and all the required fasteners for motor connection or fully assembled with Beckhoff XTS motors. External dimensions are shown below for more information please contact Bishop-Wisecarver’s technical department.

<table>
<thead>
<tr>
<th>MOVER PART NUMBER</th>
<th>GFX-1TC-C25</th>
<th>GFX-1TC-C25</th>
<th>GFX-1TC-C34</th>
<th>GFX-1TC-M34</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>52</td>
<td>72</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>45</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>OUTER BEARING DIAMETER</td>
<td>25</td>
<td>25</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>TYPICAL MAX PAYLOAD**</td>
<td>0.5kg</td>
<td>1.5kg</td>
<td>4kg</td>
<td>5kg</td>
</tr>
<tr>
<td>MASS***</td>
<td>610g</td>
<td>680g</td>
<td>790g</td>
<td>820g</td>
</tr>
</tbody>
</table>

Notes:
1. GFX 1TL is restricted to the capacity of the Beckhoff motor control system which is at least 50 meters of total track length and 100 movers.
2. Please contact Bishop-Wisecarver’s technical department for more information on mover load and moment capacity.
3. Mass of movers includes Beckhoff magnet and encoder flag assembly.
4. See page 12 for system designations.
Guidance systems for Beckhoff XTS can also be supplied as PRT2 ring and track assemblies, which can be configured into oval, rectangular and circular systems. Motor modules are supplied in 45° or 22.5° segments. PRT2 systems require a four bearing fixed center carriage (FCC) mover.

Notes:
1. GFX PRT2 system length is restricted to the capacity of the Beckhoff motor control system, which is in excess of 50 meters of total track length and 100 movers.
2. Please contact Bishop-Wisecarver’s technical department for more information on mover load and moment capacity.
3. Mass of movers includes Beckhoff magnet and encoder flag assembly.
4. Size 25 and 34 mover profiles vary slightly, please see page 7 for a visual comparison.
# SYSTEM AND COMPONENT SPECIFICATION - GFX 1-TRAK SYSTEMS

## GFX 1-Trak Systems

Corrosion resistant systems use all stainless steel track components.

**Product**
GFX

**Corrosion Resistant Option**
(CR)

**System Length**
1TL - 1-Trak Lite

**System Type**
4M

---

## Movers

Corrosion resistant movers are supplied with stainless steel bearings.

**Product**
GFX

**Corrosion Resistant Option**
(CR)

**Mover Type**
1TC - 1-Trak Mover

**Bearing Type**

<table>
<thead>
<tr>
<th>AS</th>
<th>Axial Stiffness</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Double Row Bearings</td>
</tr>
</tbody>
</table>

**Mover Size**

<table>
<thead>
<tr>
<th>C25</th>
<th>Compact 25 bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>S25</td>
<td>Standard 25 bearings</td>
</tr>
<tr>
<td>C34</td>
<td>Compact 34 Bearings</td>
</tr>
<tr>
<td>M34</td>
<td>Standard 34 bearings</td>
</tr>
</tbody>
</table>

---

4 Corrosion resistant movers are supplied with stainless steel bearings.

2 System length is determined by the number of straight motor modules.

3 Outer bearing size also determines the size of the mover. Please see page 10 or the GFX Technical Guide for more mover information.

5 Bearings are axial stiffness as standard. -DR movers incorporate double row bearings. Please see the GFX Technical Guide for mover load information.
**SYSTEM AND COMPONENT SPECIFICATION - GFX PRT2 SYSTEMS**

**GFX PRT2 Track Systems**

Corrosion resistant systems use all stainless steel track components.

Optional support structure shown. Contact Bishop-Wisecarver's Technical Sales Department for more information.

**Product**
GFX

**Corrosion Resistant Option**
(Leave blank if not required)

**Movers**
Corrosion resistant movers are supplied with stainless steel bearings. Bearings are axial stiffness as standard. -DR movers use double row bearings. Please see the GFX Technical Guide for mover load information.

**Product**
GFX

**Corrosion Resistant Option**
(Leave blank if not required)

**Mover Type**
FCC - Fixed center (PRT2)

**Segment Diameter**
637 - 45° modules
1274 - 22.5° modules

**Notes**
1. 360° GFX ring systems using 22.5° motor modules and 1274mm diameter rings require 16 motor modules.
2. All movers are supplied fully assembled and adjusted to a system, unless requested otherwise.

**Diagram**

- System length is determined by the number of straight motor modules.
- System size is determined by the module size (OVAL-4M, RING-8M, etc.).
- Additional options include slide lubricators (LB) and bearing types (AS, DR).
**Challenge**
Inspection system needed to complete 15 processes with an average cycle time of 2 seconds. Traditional systems had difficulty achieving the timing needed.

**Critical Factors**
Each mover weighing 4 Kg needed to be able to manipulate the diffusers for all around inspection. This means that each mover would need to be equipped with lifting and rotating mechanisms.

**Solution**
The HepcoMotion® GFX Guidance System for the Beckhoff XTS was selected and includes 11 meters of track and 35 movers that all travel simultaneously through the 15 inspection stations. Upon start-up of the system, the tools are initialized at an RFID station that identifies the position of each mover.

**Results**
The final configuration allows a cycle time of 1.9 seconds per unit, exceeding the customer's design parameter, while providing a maintenance schedule that works for the customer in their three-shift operation environment. HepcoMotion® GFX Guidance for the Beckhoff XTS is a very adaptable solution that is becoming widely used in the auto industry for many applications. Manufacturers are looking for improved cycle times and the ability to make quick changes as the need arises.
Challenge
Product transfer system with a need to form 80 cartons per minute and move at speeds of up to 2.5 meters per second while having a high duty cycle and operating in a food grade environment

Critical Factors
The system needed to package flow-wrapped products such as snacks, cereal bars, candy bars and roll-wrapped products. With a large variety of products, the system needs to accommodate different sizes quickly and efficiently. The movers can be easily programmed to move closer together or further apart to suit the different sized cartons.

Solution
The HepcoMotion® GFX Guidance System for the Beckhoff XTS was selected and then specialized versions of the PRT2 and 1-Trak guidance systems were developed to ensure the customer’s requirements were met along with providing long term durability.

Results
The combination of the Beckhoff XTS and HepcoMotion’s GFX Guidance System has enabled the customer to develop a revolutionary product, boasting one of the highest speeds available for a solution with such a small footprint. HepcoMotion® GFX Guidance for the Beckhoff XTS is a highly versatile product that is rapidly being adopted in the packaging industry for applications such as this, where users are looking to benefit from vastly improved production rates with the ability to make changes on the fly.
Components & Accessories
- DualVee®
- MadeWell®
- GV3
- SL2
- PRT2
- HDS2
- HDRT
- MCS
- Motor Mounts
- Gantry Brackets
- Wrenches

Manual Linear Guide Systems
- DualVee®
- UtiliTrak®
- MinVee®
- GV3
- Simple Select®
- SL2
- HDS2
- MHD
- HTS

Actuated Linear Guide Systems
- LoPro®
- XLA™
- ECO60™
- SlickStick™
- SteadyRail™
- HDLS
- HDCS
- PDU2
- DAPDU2
- SBD
- PSD
- SDM
- DLS

Rotary Guide Systems
- PRT2
- DTS2
- DTS
- ALR
- HDRT
- 1-Trak
- GFX

Robot Transfer Units
- LoPro® RTU
- DualVee® RTU

Custom Solutions
- Extruded Profile Guides
- Custom Bearings
- Custom Subassemblies
- Engineering Services
- Large Diameter Ring Guides and Track

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