

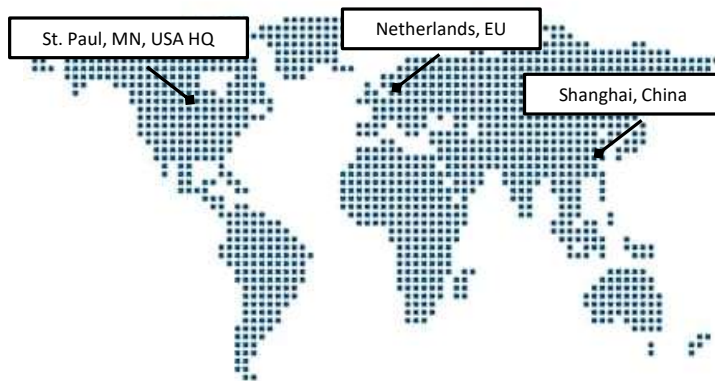
Reell Automotive Capabilities Presentation

August 2022

Who We Are



Over 50 years of Manufacturing Excellence



**Trusted Supplier of High-Quality
Motion Control Technologies to
Automotive OEMs and Tiers
Around the World**

Reell engineers and manufactures motion control solutions for a wide range of industries including Aerospace, Medical, Commercial, Industrial and Consumer Goods.

Our Automotive focused solutions enable and enhance user experience and product safety in an array of vehicle system applications:

- **Closure Systems / Input Engaging Clutches**
- **Spindle Drive Overload Clutch Protection**
- **Cargo Management / Organization**
- **Center Consoles / Glove Boxes**
- **Floor / Trunk / Frunk Storage Lids**
- **Display / Device / Mirror Positioning**
- **Headrests / Seating Armrests**

Position Control & Clutch Solutions



TI-100
Molded Nylon Inserts



TI-300 Series
Press-Fit Inserts



RT Series



PHB
Metal



PHC
Metal



PH35
Metal



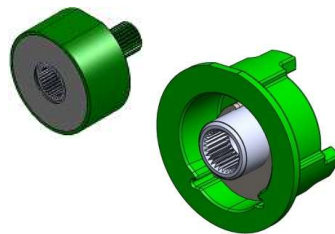
MH12
Molded Nylon



MH15
Molded nylon



TI-200
Overmold Inserts



Overload Clutches
(Custom)



Multi-Axis
Spherical Joint



MH13
Molded Nylon



MH18
Molded Nylon

Our Valued Automotive Partners



DAIMLER



HONDA



STELLANTIS



VOLKSWAGEN
GROUP



faurecia



kasai



prodriue



u-shin



Interiors Products

Center Console Applications

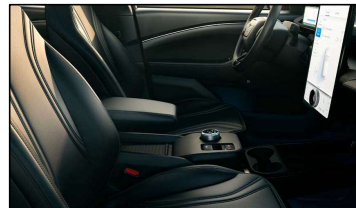
Center Console Work Surface



2021 Ford F-150



2021 Ford Mach E



Center Console Storage Lid



2021 Jeep Grand Cherokee



Center Console Armrest

Other Current Programs: Acura MDX, Ford EcoSport, Honda CR-V

Cargo Management Solutions



Under Floor Storage



Audi e-tron



2022 Nissan Pathfinder

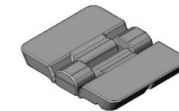
2022 Infiniti QX60



Frunk Storage

Camp Table

Dual-Axis Molded Hinge



2021 Ford Bronco Sport

Other Current Programs: Cadillac XT6, Ford/Lincoln Expedition/Navigator, Jeep Gladiator, Jeep Grand Wagoneer, Mercedes-Benz Maybach GLS, Nissan Titan

Chrysler Stow N' Go



A Long-Term Testament to Reell Technology, Quality & Performance



4th Gen
2005 - 2007



5th Gen
2008 - 2016



2017 to
Present

Town & Country

Pacifica / Voyager



Reell Dual Axis 180° Hinge

Dual Axis 180°

Allows Rotation w/o Hinge Barrel “Bump” On Top Surface

- Key Applications: Load Floors, Center Consoles, Parcel Shelves, Panels, Cargo Dividers & Interior Compartments

Features & Benefits

- Applied on Systems with Moving, Fixed, Multi or Split Large/Small Panels
 - Hinge Barrel is Recessed Into Panel Surface
 - Friction Positioning Provides Superior User Experience
 - Quiet Opening & Closing Operation
 - System Aesthetic Improvements
 - Symmetric Design – No Left + Right Required for Pairs
- **Development Status**
 - In Production for F-150 Center Console Work Surface & Bronco Sport Camp Table
 - Acura MDX Load Floor Application for Production MY 2014-2020
 - In Development for Alternate Mounting & Torque Options
 - Design is Available for Custom Development

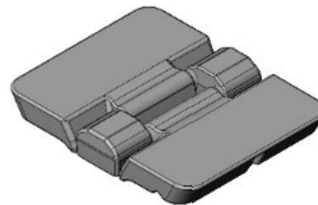


Production Application – Ford Bronco Sport

2021 Ford Bronco Sport

Torque Hinges for Rear Cargo Shelf System

- Unique design allows for fold flat positioning
- Offset torque values enable easy open / controlled close operation & panel fold sequencing



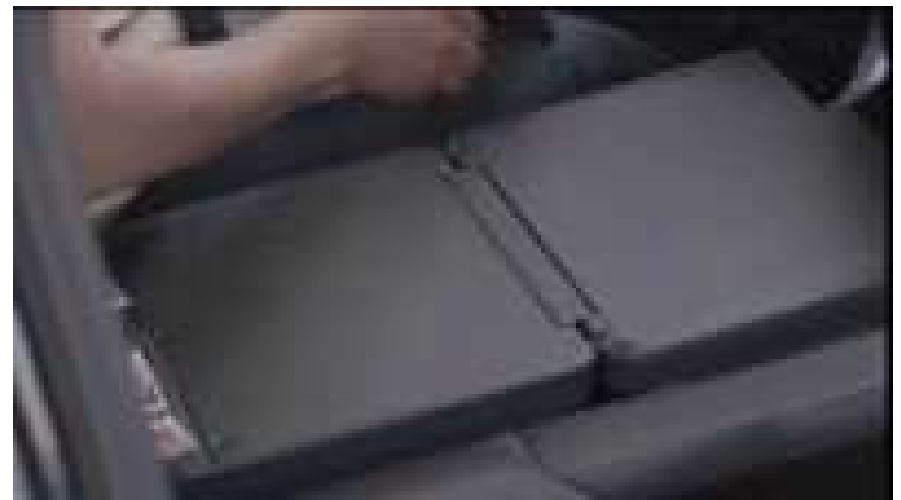
Enable Content to view video or follow this link
<https://www.youtube.com/watch?v=iUsR-sn8aMo>

Production Application – Ford F-150

2021 Ford F-150

Torque Inserts for Center Console Work Surface

- Unique design allows for fold flat positioning
- Offset torque values enable easy open / controlled close operation & superior user experience / feel



Enable Content to view video or follow this link
<https://www.youtube.com/watch?v=Dz7jdpIvN7w>

Other Interior Applications

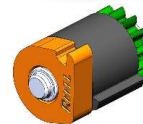
Display Positioning & Tray Table



Bentley
Bentayga



Ford
Ka / Figo



Device Dock
Cinching Wrap Spring Clutch

Camera Position Control



TIC5M



New Interiors Products and Concepts

New Product – MH13



MH13 – 5mm Shaft Friction Hinge

- *Product Offers Light Weight Small Package Positional Control*
- *Designed To Provide A Specific Holding Position*
- *Fits Between MH12 And MH14 In Reell's Molded Hinge Family*

Key Applications Include: Interior, Trunk Or Frunk Compartments, Storage Bins & Load Floors

Features & Benefits

- *Designed For Applications With Moderate Torque - 1 To 3 Nm*
- *Symmetric Torque*
- *Shaft Is More Robust Than MH12 Series*
- *Torque Tolerance Is Lower Than Lowest Torque Options On The MH14*
- *Mounting Is More Compact Than MH14*
- *M5 Fastener Size*

Development Status

- *Production Launch Completed*
- *Data Available On Reell.Com*



New Product – TI-130



TI-130 – 5mm Shaft Molded Friction Torque Insert

- *Product Offers Light Weight Small Package Positional Control*
- *Designed To Provide A Specific Holding Position*
- *Fits Between TI-120 And TI-140 In Reell's Molded Torque Insert Family*

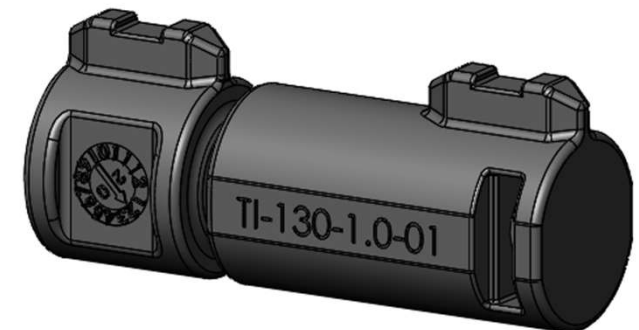
Key Applications Include: Console Lids, Interior, Trunk Or Frunk Compartments, Storage Bins & Load Floors

Features & Benefits

- *Designed For Applications With Moderate Torque - 1 To 2.5 Nm*
- *Symmetric Torque*
- *Shaft Is More Robust Than TI-120 Series*
- *Torque Tolerance Is Lower Than Lowest Torque Options On The TI-140*
- *12mm Barrel Size Mounting Is More Compact Than TI-140*

Development Status

- *Launch Of 1, 1.5 And 2 Nm Completed*
- *Data Available On Reell.Com*
- *2.5 Nm Additional Testing Planned*



New Products – TI-150 & TI-160



TI-150 – 6.35mm Shaft One-way Friction Torque Insert

TI-160 – 8mm Shaft One-way Friction Torque Insert

- Products Offer One-way High Torque Density Positional Control
- Designed To Provide A Torque Free Lift In One Rotation Direction And Holding Positional Torque In The Other

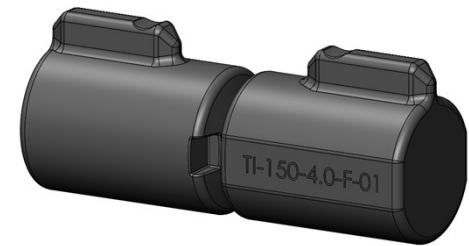
Key Applications Include: Console Lids, Interior, Trunk Or Frunk Compartments, Storage Bins & Load Floors

Features & Benefits

- TI-150 Designed For Applications With Moderate Torque - 2 To 4 Nm Per Insert
- TI-160 Designed For Higher Torque - 4 Nm To 6 Nm Per Insert
- One-way Torque
- Axial Press In Assembly
- Mounting Size: TI-150 Has 17 Mmm Barrel And TI-160 Has 19mm Barrel

Development Status

- Production Launch Completed
- Data Available On Reell.Com



New Product Concept - Inertial Locking Torque Insert



Torque Insert With Integrated Lock That Engages Under Inertial Force

- *Product Combines Positional Control With Inertial Locking Functionality*
- *Designed To Eliminate Need For Mechanical Latches Thus Reducing Part Count, Weight, Complexity & Cost*

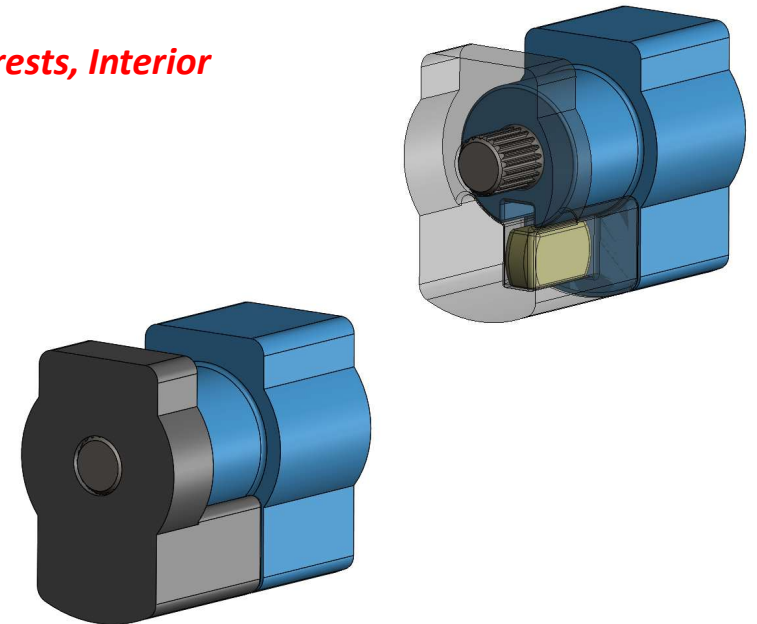
Key Applications Include: Latchless Center Console Storage/Armrests, Interior Compartments, Storage Bins & Load Floors

Features & Benefits

- *Designed For Compliance With FMVSS Impact Requirements*
- *Lock Engages Under Inertial Force To Prevent Rotation*
- *Functions As A Standard Torque Insert During Normal Operation*
- *Quiet Opening & Closing Operation*
- *System Cosmetic Improvements – Hidden Lock*
- *Symmetric Design – No Left + Right Required For Pairs*

Development Status

- *EV Sample Successfully Sled Tested*
- *Design Is Available For Custom Development*



New Product Family – Spherical – SJ200, SJ300 & SJ500



Spherical Frictional Positioning And Rotational Torque Positions

- *Product Offers Multi-Axis Position Control*
- *Three Package Sizes with Multiple Torque Options in Each Package*

Key Applications Include: Screen Support and Motion, Mirror Positioning

Features & Benefits

- *Symmetric or Axis Differentiated Torque*
- *SJ200 – 0.2 and 0.4 Nm*
- *SJ300 – 1 and 2 Nm*
- *SJ500 – 4, 6 and 8 Nm*

Development Status

- *SJ200 – Available*
- *SJ300 - Available*
- *SJ500 – PV Testing Status*

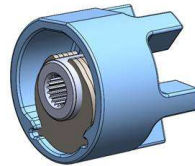


Mechanisms Products & Concepts

Overload Clutches



Honda
Odyssey



Acura RDX



Power Hatch – Roof Mounted Overload Clutches

- Fully mechanical clutch transmits torque until torque limit is exceeded
- Re-engages when abuse load event ceases
- Quiet & smooth operation throughout
- No moving mechanisms

Strut Overload Clutch

Protection Torque Limiter for Spindle Drives

- Allows manual movement of door when spindle drive is powered
- Prevent damage to people, vehicle & objects
- Precise torque limiter
- Very quiet, long life



BMW
X5 / X7



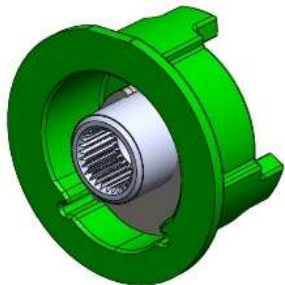
Overload Clutches – New Applications for 2021



2021
Chevrolet
Silverado

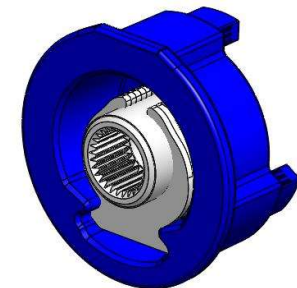


2021
Ford F-150



Power Tailgate Overload Clutches

- Fully mechanical clutch transmits torque until torque limit is exceeded
- Re-engages when abuse load event ceases
- Quiet & smooth operation throughout
- No moving mechanisms



Current Slip Clutch Programs

Programs and number of parts shipped with no quality or performance defects

Over 1.33M parts delivered since 2017



**Chevy Silverado
Power Tailgate**

350K+ parts since
2017



**Acura RDX
Power Hatch**

286K+ parts since
2018



**BMW X5/X7
Power Hatch**

446K+ parts since
2019



**Honda Odyssey
Power Hatch**

109K+ parts since
2020



**Ford F-150
Power Tailgate**

142K+ parts since
2020

Input Engaging Clutch

Peugeot
3008/5008



Tesla X



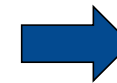
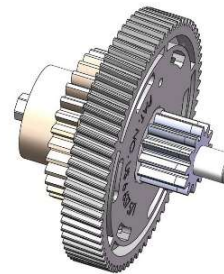
Opel
Grandland



Input Engaging Clutch

Automatic Door Closure Cinching Systems

- A fully mechanical clutch engages when cinching motor turns on
- Clutch disengages when motor is turned off
- Quietly releases under load
- Quiet opening & closing operation



Input Engaging Clutch – New Application for 2021

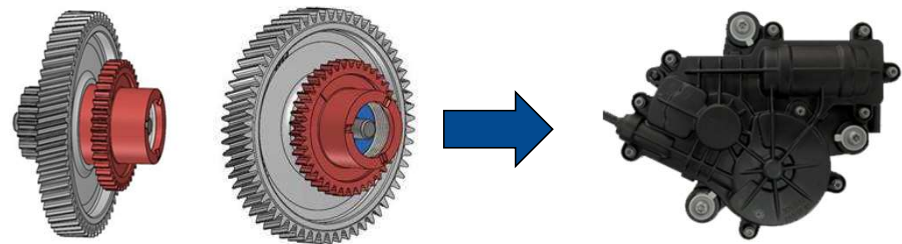
2021 Cadillac Escalade



Power Side Door – Input Engaging Clutch

Automatic Door Closure Cinching System

- A fully mechanical clutch engages when cinching motor turns on
- Clutch disengages when motor is turned off
- Quietly releases under load
- Quiet opening & closing operation



Thank You