



Product Brochure

Controlled start transmission

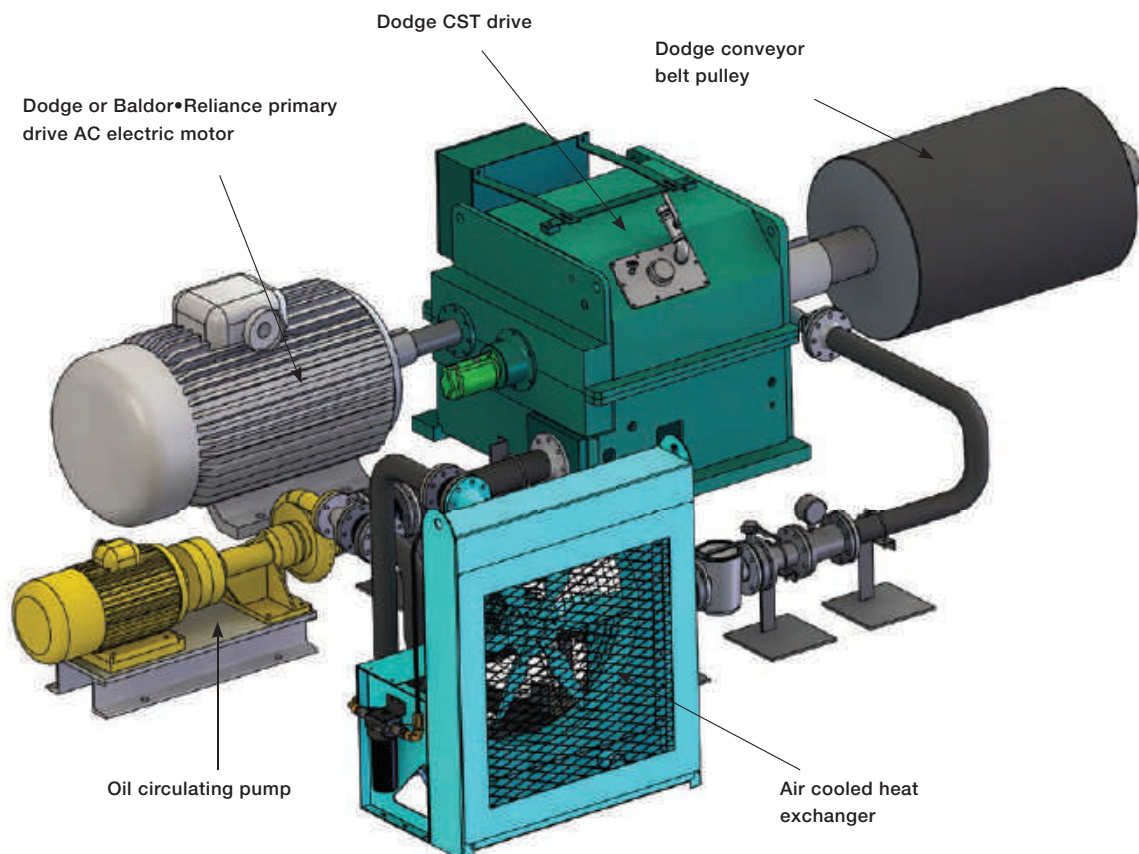
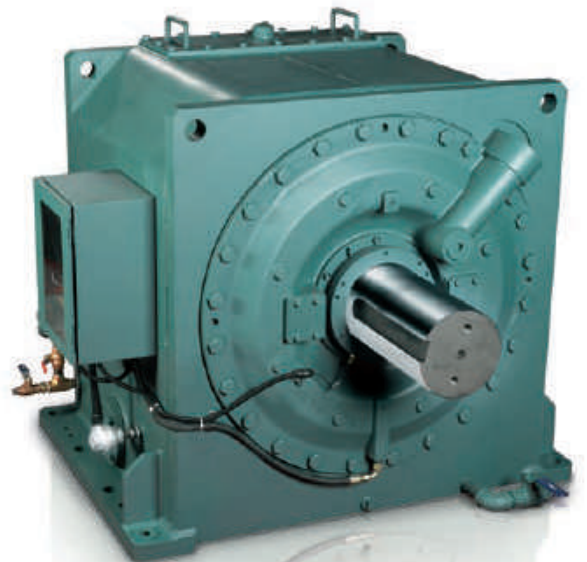


What CST does...

The Dodge® CST (Controlled Start Transmission) is a 2 in 1 gearbox which combines a planetary gear reducer with an integral wet clutch system. When coupled to an AC induction motor the CST gearbox converts the motor's high-speed, low-torque input to a low-speed, high-torque output, suitable for direct coupling to a high inertia load, such as a conveyor belt pulley.

The Dodge CST drive package is a very cost effective solution, engineered specifically to deliver total control of the most difficult high inertia loads such as long conveyor belts and conveyors with multiple synchronized drives. The CST drive provides efficient transmission of motor power and torque with consistent smooth start-up and shut-down, regardless of varying loads on the conveyor or ambient conditions.

CST load sharing performance is unsurpassed even when a system requires multiple drive stations such as tripper drives.

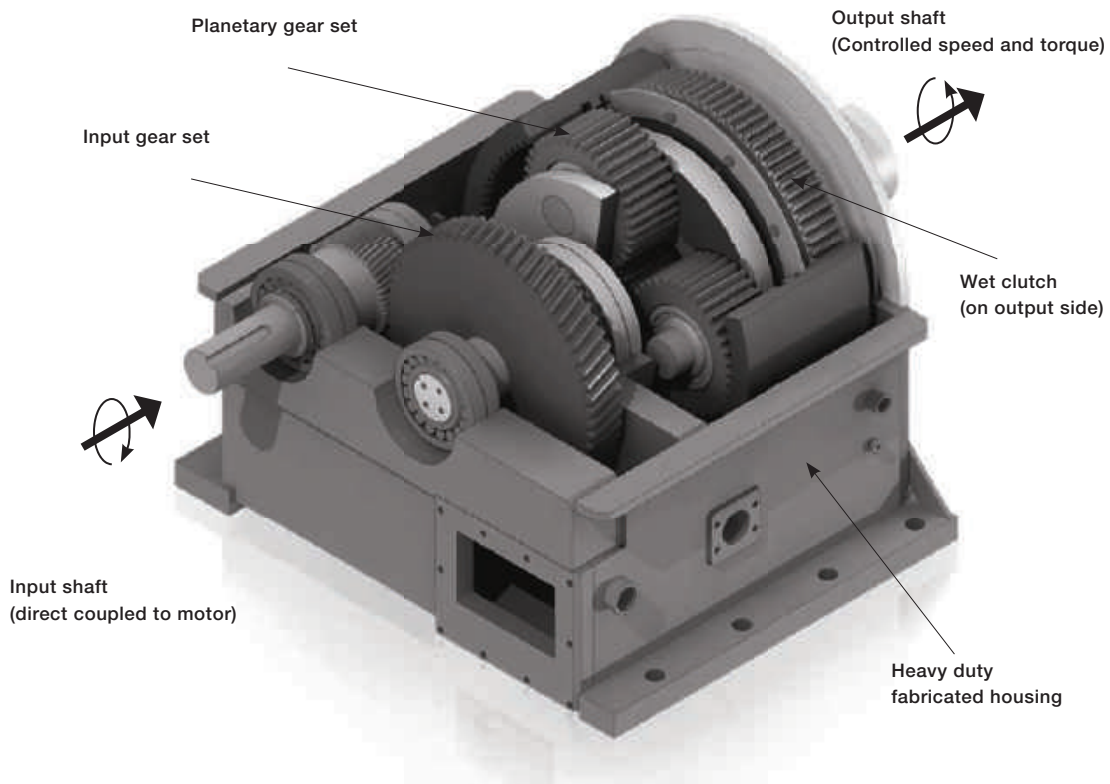


How CST works...

The Dodge® CST incorporates a wet clutch system that is located on the output shaft side of the gearbox, allowing the motor to be started under no-load conditions. The clutch system comprises a set of rotating friction plates and opposing stationary plates, an oil pressure activated piston for engagement, and a spring mechanism for clutch release. Oil is circulated between the plates by a closed circuit pump and cooled through a heat exchanger.

When hydraulic oil pressure is applied to the piston, the clutch plates engage, causing the output shaft to rotate and gradually accelerate to driving speed in predetermined controlled time.

Drive control and feedback equipment is mounted on the gearcase and is comprised of a hydraulic manifold, proportional valve, pressure adjusting valve, filters, gauges, and sensors. These are interfaced via hard-wiring or data-network with a PLC based CST controller which can control up to four CST units for multi-drive synchronized applications.



More than soft start...

Dodge® CST delivers a range of benefits not available from electronic soft-start motor control alone.

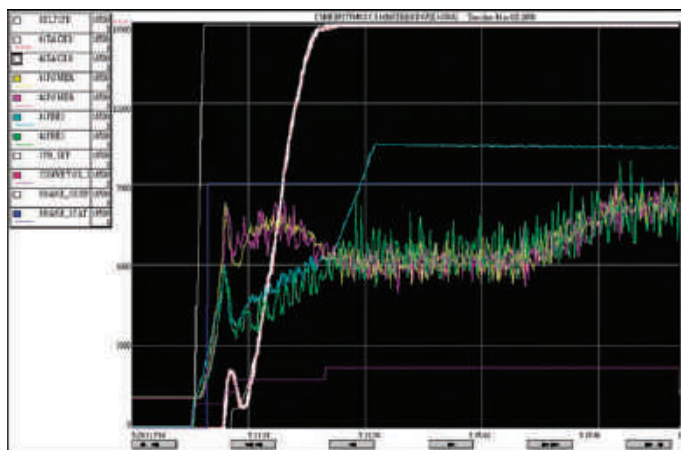
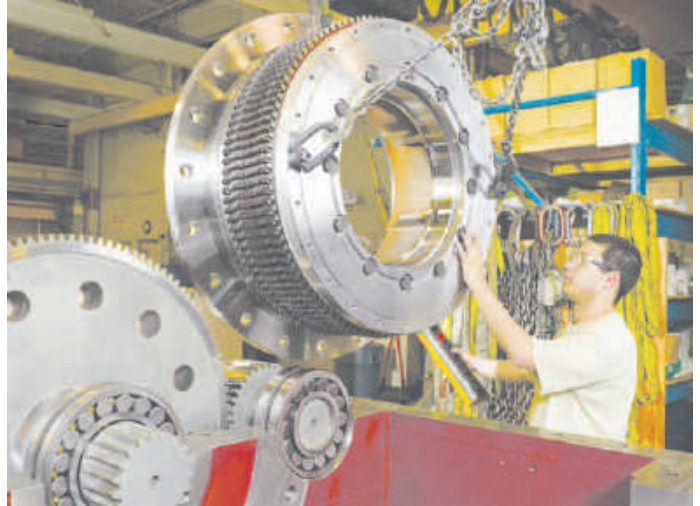
CST delivers excellent motor load sharing to minimize the loads and stresses on all conveyor components. Maximum motor power is available throughout the controlled speed profile, and the clutch unit absorbs shock loads, protects the motor, gearbox, bearings, belt idlers, pulleys, conveyor belts and splices.

The CST control system delivers an S-curve acceleration ramp. After the drive motor is up to full speed, a pretension torque is applied to the belt to the point of initial belt movement. When the transient belt waves have stabilized, additional torque is applied to accelerate the system to full speed.

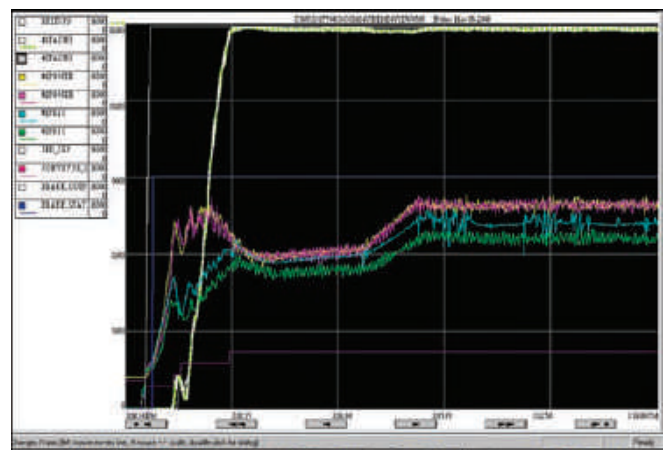
This acceleration ramp can be several minutes in length as required by the conveyor system and is consistent regardless of the loading conditions.

Advantages include reduction in:

Peak motor demand, potential slippage between drive pulley and belt; belt transient stress waves, and shock and surge loads on conveyor components.



Trend analysis shows the motor experiencing heavy load surges with typical drives.



Trend analysis shows load shocks on the motor substantially smoothed when CST clutch is programmed for soft start. The clutch absorbs shocks and load surges, delivering superior drive performance and overall component reliability...Controlled acceleration ramp delivers significantly reduced shock loadings and peak stress...

The power of CST...

While the unique clutch design of the Dodge® CST delivers the smooth speed and load control during start-up and shut-down, the precision engineered planetary gear train converts the high-speed, low-torque input from the AC motor, to a low-speed, high torque output efficiently and safely.

With a CST drive, the motor starts unloaded and comes up to full speed with no load. In addition, when multiple drive motors are utilized, they can be brought up to full speed independently prior to applying any load. Starting the motors in this manner limits the demand on the power grid because the motors are at full speed before applying load; the available starting torque is not limited to the motor pull up torque as for most drives. In fact the full breakdown torque of the motor is available, if required, without over sizing the system.



Model CST G750K



Model CST G1500K



Model CST 2500K

Synchronized Control...

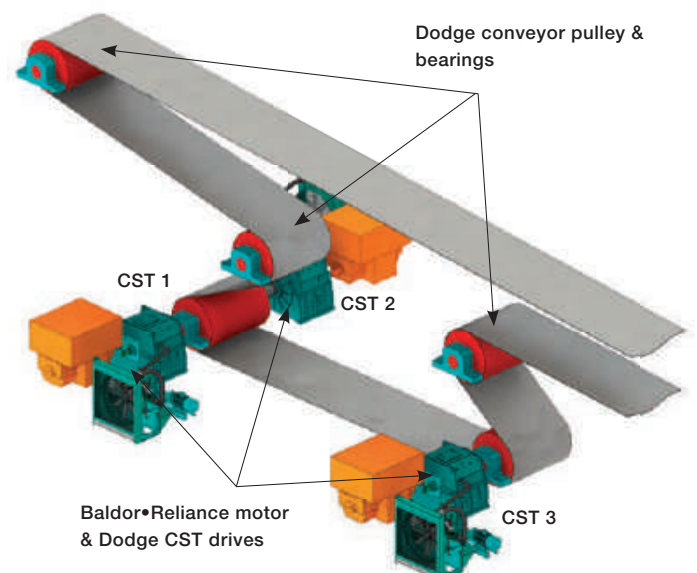
The Dodge® CST control system executes synchronized soft start and load sharing control of up to four CST drives per drive station, and can be interfaced with plant remote supervisory systems, interlocks and safety equipment via hard-wiring or over a data-network.

Standard interface is Ethernet, alternative connectivity is available including:

→ DH+ → Profibus → Modbus → DeviceNet



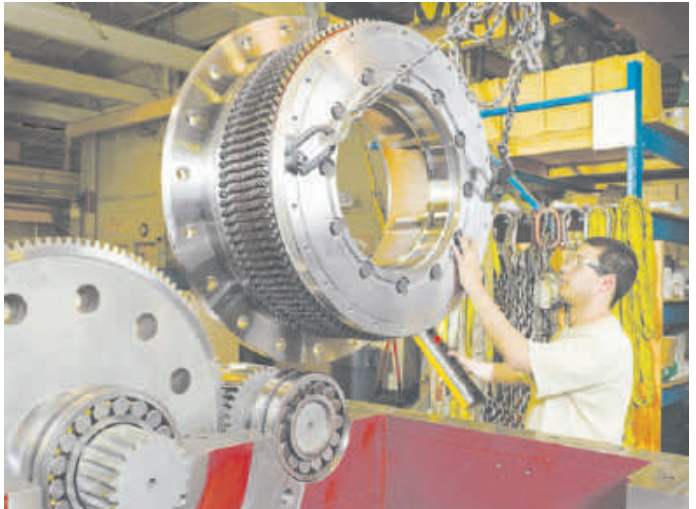
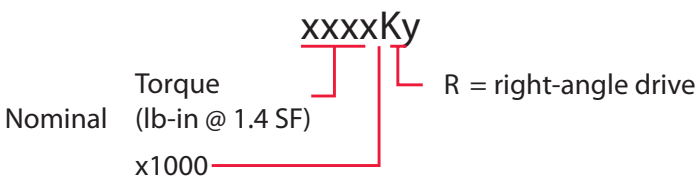
NEMA-4 CST controller



CST nomenclature...

The basic CST description is based on the nominal torque rating in lb-in at a 1.4 service factor. For example a 1000K CST has a nominal rating of 158144 Nm (1,400,000 lb-in) of torque. All models are available in offset parallel configuration and some are available on a right angle model. The right angle versions are indicated by an "R" suffix.

Dodge® CST drive model designation



Models and specifications of Dodge CST drives

CST model (K = 1000 lb-in Torque)		Max. HP on Input shaft at 1780 rpm service factor = 1.4		Gear ratio	Output speed (@ 1780 rpm Input) RPM
lb-in	Nm	HP	kW		
280K	31628	400	300	15,3750 - 38,1563	115,8 - 46,7
280KR	31628	400	300	15,2190 - 57,2128	117,0 - 31,1
420K	47443	600	450	16,8636 - 38,3478	105,6 - 46,4
420KR	47443	565	420	16,7334 - 57,2197	106,4 - 57,2
630K	71165	900	670	16,6250 - 38,3333	107,1 - 46,4
G750K	84720	1414	1050	15,6214 - 38,9118	113,9 - 45,7
G750KR	84720	1431	1067	15,4339 - 40,3946	115,3 - 44,1
G1000K	112960	1749	1300	12,0582 - 38,5110	124,2 - 46,2
G1000KR	112960	1749	1300	12,5528 - 55,5909	141,8 - 32,0
1120K	126515	1500	1118	17,0769 - 34,9091	104,2 - 51,0
1120KR	126515	1249	930	16,8587 - 57,6261	105,6 - 30,9
G1500K	169440	2375	1771	12,3673 - 34,9091	111,6 - 51,0
G1500KR	169440	2375	1771	12,2609 - 57,6261	145,2 - 25,7
1950K	220272	2500	1864	17,1000 - 38,3727	104,1 - 46,4
2500K	282400	2900	2162	17,1000 - 38,3727	104,1 - 46,4

The CST package...

Baldor can supply your complete drive package with our proven products.

Get a complete engineered system including:

- Dodge CST
- Dodge or Baldor•Reliance motor
- Drive base
- Dodge couplings
- Flywheels
- Dodge conveyor pulleys
- Dodge mounted bearings
- PLC control system



The reliability of CST...

Dodge CST design and manufacturing is based on reliability in difficult environments. Utilization of CSTs for starting and load sharing in complex bulk materials handling applications affords the precise control required with a simple yet reliable solution.

The rugged construction and simplicity of a mechanical soft start and load sharing drive make CST a great choice for demanding applications where high availability is a must. The design incorporates a rugged gear train and many other standard features to assure a long life of trouble free performance. The superior sealing system, incorporating tandem lip seals with a grease purge cavity, provides taconite protection with the added benefit of the excluder lip seal preventing contamination within the grease cavity.

Testimony to the durability of CST systems is evidenced by the fact that many CST systems have been in service for decades around the globe. Serviceability is also a key factor in selection of a drive system. CST systems are simple to operate and maintain without the high degree of technical expertise required by more complex control packages. This is especially important in the remote locations relying on local resources for service and maintenance.

CST is a simple, reliable solution for high availability and lower cost of ownership.





Dodge Industrial, Inc.

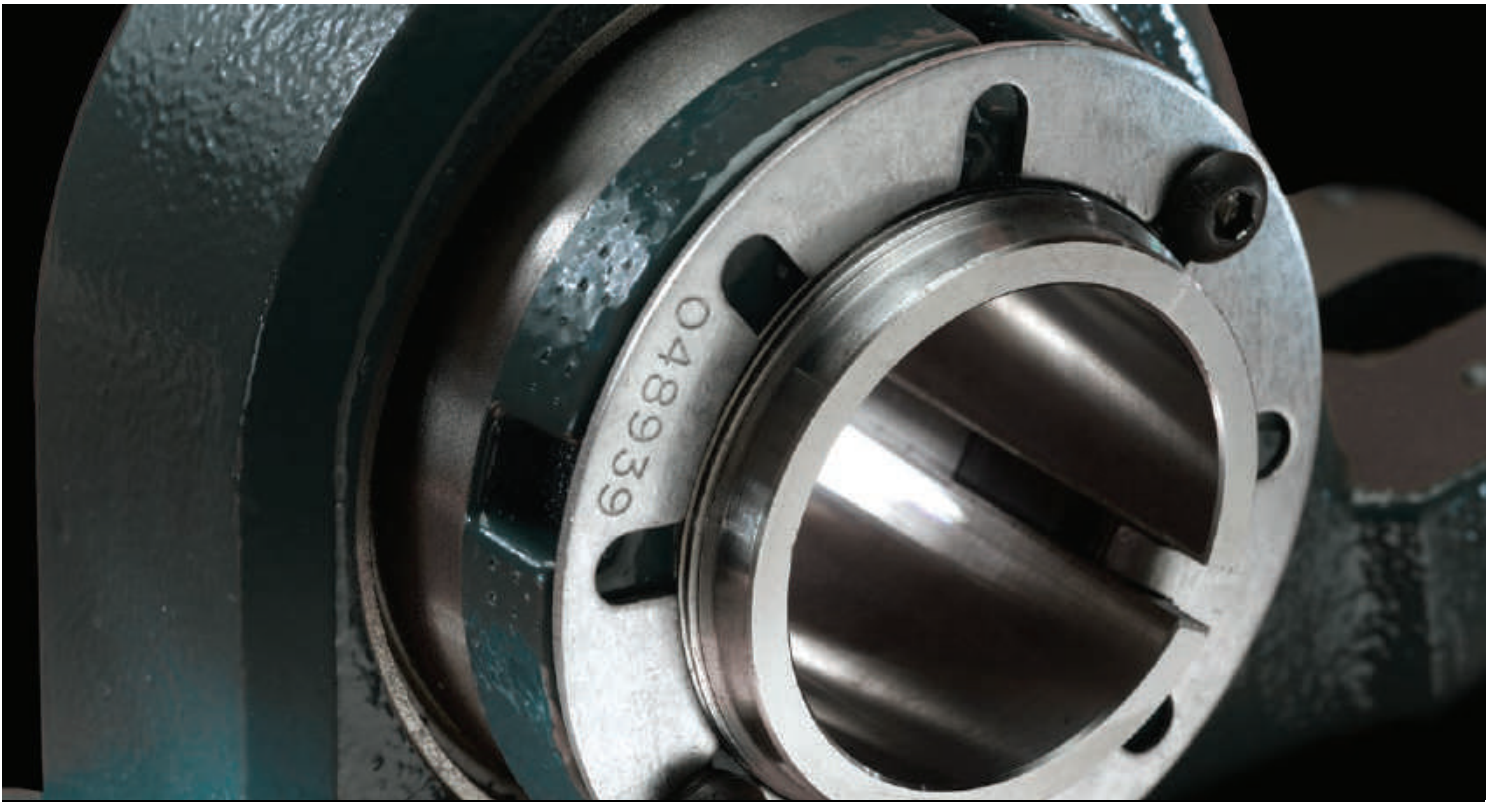
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An RBC Bearings company.



Product Brochure

Dodge® ISN bearings



We provide motors, generators and mechanical power transmission products, services and expertise to save energy and improve customers' processes over the total lifecycle of our products, and beyond.



The mounted spherical roller bearing that lives up to its name

For more than 125 years, the Dodge® brand has been synonymous with the best the industry has to offer. Bearing users throughout the world recognize that, with Dodge, they have access to the best selection of the highest quality mounted bearings in the industry.

These assurances are now more evident than ever in our complete family of Dodge ISN spherical roller bearings—the only high-capacity double-row spherical roller bearings with an effective easy-on, easy-off adapter mounting and removal system. Not only does this patented system provide a concentric grip for superior holding on the shaft, it ensures that the bearing can be mounted and dismounted in less than fifteen minutes.

Combine these features with the ISN bearings' superior sealing systems and compact one-piece, industry-standard dimensioned housings, and you have a family of mounted roller bearings which lives up to its name.



The original Dodge® ISN mounted bearings

Patented sealing options

An ineffective seal can allow contaminants to enter a bearing, which can cause failure. However, with ISN bearing inserts, there are two exclusive seals for maximum sealing protection.

Our proven Trident seals are extremely effective for dirty environments, low-to-medium speeds, and normal ambient conditions. Made of nitrile material, this triple-lip rubbing seal has a low coefficient of friction, and its seal land maintains full seal contact even when misaligned.

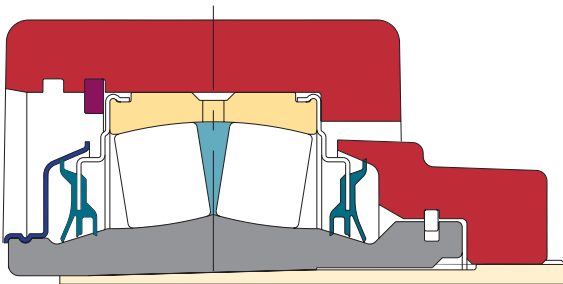
For higher speeds and harsher ambient conditions, ISN inserts offer labyrinth seals with corrosion-resistant flingers and steel clearance seal carriers.

ISN spherical plummer blocks

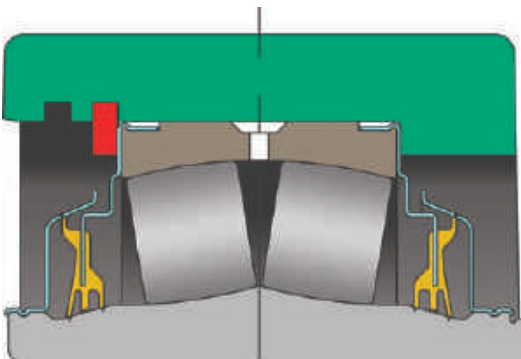
- Patented ISN "Push/Pull" adapter mounting system
- Eliminates need for feeler gauges
- Easy removal
- Expansion & non-expansion, field convertible
- Triple lip contact seals for wet or dirty applications
- Labyrinth non-contact seals for high speed & high temperature applications

Time saving removal and replacement design

- 1) Steel cage provides precision roller guidance
- 2) Outer ring riding two-piece guide ring minimizes heat generation
- 3) Tapered seal land maintains full contact when misaligned
- 4) Patented nitrile triple lip seal resists heat & chemical breakdown
- 5) Ease in mounting & dismounting with patented adapter system
- 6) Adapter sleeve improves concentricity and reduces vibration



Trident® seals



Labyrinth seals

Patented adapter system can be installed or removed in 15 minutes

- Clockwise rotation of the locknut pushes the tapered adapter sleeve between the shaft and bearing inner ring, allowing quick metal to metal contact during initial installation.
- Locknut is then further rotated for a pre-determined number of turns, properly reducing bearing clearance. No feeler gauges are used.
- Lock plate keeps locknut tight for dependable shaft attachment
- Integral locknut-inner ring design allows efficient removal of the sleeve from the bearing assembly via counter clockwise rotation of the locknut

IP Housing Options

- P2B-ISON: 30-140 mm (1 1/8"-5")
- P2B-IP: 35-100 mm (1 1/8"-4")
- F4B-IP: 35-100 mm (1 7/16"-3 15/16")
- WSTU-IP: 35-100 mm (1 1/8"-4")
- P2B-ISAF: 35-90 mm (1 7/16"- 3 7/16")
- P4B-ISAF: 65-170 mm (2 7/16"-7")
- P4B-IP: 65-125 mm (2 3/8"-5")
- FC-IP: 35-125 mm (1 1/8"-5")
- IP Insert: 35-170 mm (1 1/8"-7")



ISON and IP configuration options: ISON series

Interchangeable with competitive SN products

- Two-bolt plummer blocks: 30-140 mm (1 1/8"-5")

ISAF Series

Interchangeable with Dodge USAF and many competitive SAF products

- Two-bolt plummer blocks: 35-90 mm (1-7/16" up to 3-7/16")
- Four-bolt plummer blocks: 65-170 mm (2-7/16" up to 7")

IP Series

Interchangeable with Dodge

S-2000 unitized housings and many competitive products.

- Two-bolt plummer blocks: 35-100 mm (1-1/8" to 4")
- Four-bolt plummer blocks: 65-125 mm (2-3/8" up to 5")
- Four-bolt flanges: 35-100 mm (1-1/8" up to 4")
- Flange bearings piloted: 35-125 mm (1-1/8" to 5")
- Wide slot take-up: 35-100 mm (1-1/8" to 4")
- Inserts: 35-170 mm (1-1/8" to 7")

IP-E Series

Our IP-E bearing is now available with Type E mounting dimensions

- Two-bolt plummer blocks: 35-90 mm (1-3/8" up to 3 1/2")
- Four-bolt plummer blocks: 65-170 mm (2-1/4" up to 7")
- Four-bolt flanges: 35-115 mm (1-3/8" up to 4-1/2")
- Piloted flanges: 35-125 mm (1-3/8" up to 5")
- Wide slot take-ups: 35-100 mm (1-1/8" up to 4")

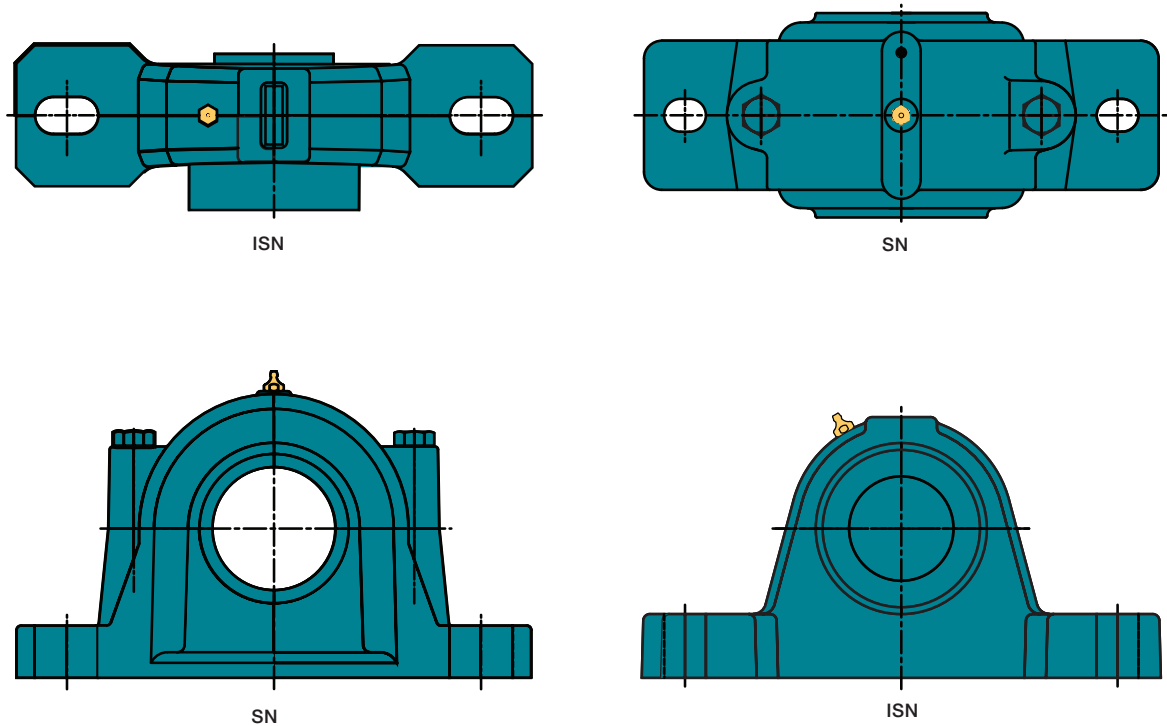
Dodge® ISN benefits

Dodge ISN bearings vs. standard SN products

Dodge ISN series	Standard SN products
One package—shaft ready	Trois paquets ou plus—assemblage par l'utilisateur
Bearing matched to shaft	Bearing oversized to accommodate adapter
Simple clearance setting—no special tools or feeler gauges	Requires feeler gauges
100% seal constant pressure	Seals in the housing—loses effectiveness when misaligned
Greased at the factory	User packs the grease and cleans the mess
Grease retained near the rollers with the seal	Grease migrates out to the housing cavity away from the rollers
Reduced grease consumption	Large cavity to fill with grease
Factory sealed	Subject to on site contamination
Easy, intuitive removal method	Difficult removal



ISN: Dimensional interchange with other SN plummer blocks



Only the best bearings come from the best plant

Our Dodge Type E, S-2000, S-2000-E, ISN and IP-E bearings are the best. Manufactured at our Marion, NC, plant—one of IndustryWeek's Top 10 Best Plants for 2004—they represent the best in roller bearing technology and innovation.

When you want the best bearings, look to Dodge and our plant in Marion, NC. Together, they are your best source for performance-proven solutions.

Bearing users throughout the world recognize that, with Dodge, they have access to the best selection of the highest quality of mounted bearings in the industry.



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ELASTOMERIC COUPLINGS

RAPTOR

Raptor is the premier elastomeric coupling in the industry with proven performance in a variety of applications. Its split, natural rubber element delivers leading vibration damping and misalignment capabilities. Its patented WingLock design increases surface area and maximizes fatigue resistance by delivering higher bond strength than competitive designs.

Features and benefits

- Interchangeable with competitive designs
- Split-element design for easy installation
- Longer-driven equipment life
- Lasts 6.7 times longer than urethane designs



Industry-leading warranty

Raptor couplings carry an industry-leading 5-year, limited warranty—even when used with competitors’ components.

Raptor close-coupled couplings ratings and dimensions

Size	Part number	Max speed (rpm)	Max torque (in-lbs)	HP/100	Straight bore		Taper-Lock			QD		
					RSB Hub	Max bore (in)	Hub	Max bore (in)	Bushing	Hub	Max bore (in)	Bushing
E2	015843	6600	194	0.31	015234	1.13	-	-	-	-	-	-
E3	015844	6600	371	0.59	015235	1.38	015801	1.00	1008	015801	-	-
E4	015845	6600	558	0.89	015236	1.63	015802	1.00	1008	015802	1.19	JA
E5	015846	6600	926	1.47	015237	1.88	015803	1.13	1108	015803	1.63	SH
E10	015847	6600	1456	2.31	015238	2.13	015804	1.44	1310	015804	1.94	SDS
E20	015848	6600	2308	3.66	015239	2.38	015805	1.69	1610	015805	2.50	SK
E30	015849	5800	3651	5.79	015240	2.88	015806	2.13	2012	015806	2.94	SF
E40	015850	5000	5504	8.73	015241	3.38	015807	2.69	2517	015807	3.50	E
E50	015851	4200	7656	12.10	015242	3.63	015808	2.69	2517	015808	3.50	E
E60	015852	3800	12505	19.80	015243	4.00	015809	3.25	3020	015809	3.94	F
E70	015853	3600	22132	35.10	015244	4.50	015810	3.94	3535	015810	4.50	JA
E80	015854	2000	39503	62.70	015245	6.00	015865	4.44	4040	015865	5.50	M
E100	015931	1900	85085	135.00	015246	6.75	015201	4.94	4535	015201	5.50	M
E120	015932	1800	170170*	270.00*	015247	7.50	015202	5.00	5040	015202	6.00	N
E140	015933	1500	340340*	540.00*	015248	9.00	015203	7.00	7060	015203	7.00	P

*For Taper-Lock and QD mounting, refer to bushing torque ratings
 1. Grade-8 fasteners
 2. Maximum bore dimensions are based on shallow keys

Raptor spacer couplings

Raptor spacer couplings are designed to expand your application options by offering a wide range of distances between shaft ends. This provides the space needed to access and maintain the connected equipment without having to move and realign shafts. Raptor spacer couplings meet all ANSI and ISO pump standard spacer lengths.



Raptor spacer couplings ratings and dimensions

Size	Part number	Max speed (rpm)	Max torque (in-lbs)	Straight bore				Taper-Lock				QD			
				BSE (in)		Total length (in)		BSE (in)		Total length (in)		BSE (in)		Total length (in)	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
ES2-R*	101771	6600	194	4.00	4.56	5.88	6.44	-	-	-	-	-	-	-	-
ES3-R*	101772	6600	371	3.38	5.51	7.25	8.51	4.27	5.84	7.25	7.60	-	-	-	-
ES4-R*	101773	6600	558	3.02	5.51	7.25	8.87	4.27	5.84	7.25	7.60	4.50	6.07	7.25	8.07
ES5-R*	101774	6600	926	2.88	5.51	7.25	9.01	4.27	5.84	7.25	7.60	3.98	5.55	7.25	8.17
ES10-R*	101775	6600	1456	2.62	5.51	7.25	9.27	4.16	5.73	7.25	7.73	7.04	5.99	7.25	8.61
ES20	101776	4800*	2308	2.76	7.08	9.38	11.40	5.04	7.12	9.38	9.38	5.16	7.24	9.38	11.12
ES30	101777	4200*	3651	2.06	7.08	9.38	11.70	4.59	6.67	9.38	9.38	4.46	6.54	9.38	10.66
ES40	101778	3600*	5504	1.68	7.08	9.38	12.08	4.09	6.17	9.38	9.67	3.71	5.79	9.38	11.29
ES50	101779	3100*	7656	1.18	7.08	9.38	12.58	4.09	6.17	9.38	9.67	4.22	6.30	9.72	11.80
ES60	101780	2800*	12505	2.74	9.84	12.50	16.34	6.16	8.29	12.50	12.92	4.98	7.74	12.50	15.24
ES70	101781	2600*	22132	2.00	9.84	12.50	17.08	4.66	7.42	12.50	14.42	3.98	6.74	13.23	15.99
ES80	101782	1800*	39503	2.26	9.84	12.50	19.58	4.16	6.92	12.50	14.92	1.90	4.66	15.40	18.16

*Suffix R designates high-speed rings are included as standard offerings and required for sizes ES2-R - ES10-R.

* For sizes ES20 - ES80, high-speed rings are optional and sold separately. To achieve the max allowable speed of close-coupled couplings, the installation of high-speed rings is required.

Competitor interchange

Size	Close-coupled part numbers			Spacer part numbers		
	Dodge	Rexnord Omega	TB Woods Dura-Flex	Dodge	Rexnord Omega	TB Woods Dura-Flex
E2	015843	7300005	WE2	101771	7300075	WES2
E3	015844	7300010	WE3	101772	7300080	WES3
E4	015845	7300015	WE4	101773	7300085	WES4
E5	015846	7300020	WE5	101774	7300090	WES5
E10	015847	7300025	WE10	101775	7300095	WES10
E20	015848	7300030	WE20	101776	7300100	WES20
E30	015849	7300035	WE30	101777	7300105	WES30
E40	015850	7300040	WE40	101778	7300110	WES40
E50	015851	7300045	WE50	101779	7300115	WES50
E60	015852	7300050	WE60	101780	7300120	WES60
E70	015853	7300055	WE70	101781	7300125	WES70
E80	015854	7300060	WE80	101782	7300130	WES80
E100	015931	7300065	-	-	-	-
E120	015932	7300070	-	-	-	-
E140	015933	7300071	-	-	-	-

OPTIFY™ is an easy-to-use, condition monitoring platform that provides overall health indications of assets remotely – letting you know when maintenance is needed before it's too late.

The free platform offers a unique digital advantage by seamlessly combining Dodge® Industrial Internet of Things (IIoT) products and robust data analytics with industry-leading product expertise, allowing you to reduce downtime, improve reliability, and operate safely.

The advanced platform's integrated notifications provide warnings on decreasing health status of assets, allowing you to schedule maintenance before a problem occurs and the system goes down – saving valuable time and mitigating unforeseen expenses.

Offering both online and offline capabilities, OPTIFY is an advantageous solution for tracking key performance parameters in your operations anywhere, anytime.



Condition monitoring

Viewing operations clearly at a glance makes preventing unplanned downtime easy. Like-asset comparison and historical data collection are built-in features that don't require separate portals.



Advanced analytics

Users can customize their view to compare data trends across different periods of time. Fast Fourier Transform (FFT) analysis provides a comprehensive look into equipment health to evaluate unique machinery issues.



Improved safety

Remotely monitor assets without removing guards or stopping equipment, minimizing on-site hazards and injury liability.



Intuitive interface

Easily manage your plant and assets through the streamlined interface. The comprehensive dashboard displays asset health with color-coded status indicators to efficiently monitor asset health.

The intelligent, one-stop-shop condition monitoring platform to control assets remotely



Continuous data flow

The cloud-based platform is constantly connected to your operations and provides a continuous flow of data between your assets and OPTIFY, allowing you to use your own data to make critical operations decisions in real-time.



Alerts and alarms

Notifications alert you to immediate actions needed to keep operations running smoothly.



Dedicated support

Access to industry-leading customer service is available at your fingertips when you need it most. The team of experts at Dodge is based in the United States and is committed to providing premier support to help you succeed.

Remote accessibility

Access the platform anytime, anywhere through a browser, or mobile app. The app features an offline mode, allowing data to be captured in the field to upload later.

Scan to access
OPTIFY or visit
dodgeoptify.com



The OPTIFY app is available at:

