# CHAIN WEAR ANALYSIS WITH LUBECON ®



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# LUBECON ® THE EXPERT IN CHAIN WEAR ANALYSIS

CASTROL'S LUBECON BRAND OFFERS YOU A COMPLETE RANGE OF WORLD-CLASS CHAIN LUBRICANTS, LUBRICATING EQUIPMENT AND PRODUCT SUPPORT SERVICES DESIGNED TO HELP YOU ACHEIVE:

- 1. LONGER CHAIN LIFE
- 2. OPTIMUM CHAIN PERFORMANCE
- **3. EXTENDED MAINTENANCE INTERVALS**
- 4. INCREASED PRODUCTIVITY
- 5. DECREASED MAINTENANCE COSTS
- 6. LOWER OVERALL LUBRICANT CONSUMPTION AND WASTE

Castrol is the industry leading supplier of high performance lubricants, custom application equipment, and dedicated services for industrial conveyor systems. Our best-in-class products, coupled with the largest and most experienced service network in the industry, provide LubeCon customers a competitive advantage by reducing operating costs and downtime.



# CHAIN WEAR MONITOR

Monitoring and preventing **chain wear** is crucial in avoiding costly downtime attributed to chain failure.

The Castrol Chain Wear Monitor will non-intrusively measure chain wear on-the-fly. Predicting and trending wear over time, it gives you the information you need to maintain your chain.





## FEATURES AND BENEFITS:

- » Simple Ethernet or Portable models available
- » Accurate Superior repeatability at .01" precision
- » Measurement English and Metric units available
- » Power 12+ hours normal battery life or 120-220 VAC 50/60hz
- » Rugged Built to last, with industrial components
- » Convenient LCD touch screen with information on unit
- » Software Unmatched, easy to use software experience
- » **Options** Bent Trolley Detection and High Wear Marking add-ons
- » Troubleshoot Magnet troubleshooting and system self test available



#### DATA RETRIEVAL

Data is readily available and analyzed with the Castrol software packages. Data transfer is easy, whether using a flash drive on a portable unit or hardwired on an Ethernet unit.

#### HIGH WEAR MARKING SYSTEM

Castrol's High Wear Marker combined with a Chain Wear Monitor is an easy and effective way to mark worn chain links. The High Wear Marking add-on will accurately paint any link set that is outside of a customer set parameter. The Marking System is critical for quick and accurate identification of worn chain links or sections. This system will greatly reduce the number of hours and downtime required in searching for worn links.

#### BENT TROLLEY DETECTION

The Castrol Bent Trolley Detection add-on utilizes infrared beams and reflectors to identify a bent or abnormal trolley outside of a user specified range. This optional kit will pinpoint the exact location of the trolley in need of replacement. PLC notification is also available.

## THE ADVANTAGE OF CASTROL CHAIN ANALYSIS

Castrol's chain wear monitors are the proven industry standard. Castrol's reliability, repeatability and accuracy for chain wear analysis is unmatched. Our Chain Wear Monitor technology bridges the gap of our rivals by utilizing hundreds of sensors to accurately measure chain wear in link sets.

With Castrol, you'll experience superior repeatability and accuracy of up to .010 of an inch, ensuring that precision measurements are taken each and every time. Rival methods of using timers and timing algorithms can't compete in repeatability and accuracy. Additionally, Castrol Chain Wear Monitors are immune to chain surges and stopping and starting of conveyors.

Castrol chain wear monitors also provide the information you need, where you need it. Data is available both on the device and through the CWM software. Wear values, wear marking, critical wear, bent trolley, missing magnet, and multiple magnets is just some of the information available.

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## **CHAIN WEAR MONITOR PACKAGES**

Castrol is proud to offer two different Chain Wear Monitoring packages. Choosing the package that is right for you depends on your desired Chain Wear Monitoring experience. Monitoring and preventing excessive chain wear is the ultimate outcome, but the two models provide a system that is tailored to your needs. The software experience between the two models also varies, refer to the software literature for further information.

The **Portable** Chain Wear Monitor offers the convenience of portability and is adaptable to most common English & Metric chain sizes. It can be moved from conveyor to conveyor, storing chain wear readings that can easily be downloaded with the included Castrol USB memory stick. The portable model also features an internal rechargeable battery with exceptional life and quick recharge rates. A data file is maintained on the device even after battery life is diminished. The custom designed protective case is an optional accessory.

The **Ethernet** Chain Wear Monitor is less adaptable, as it is tailored for a specific conveyor. It is intended to remain stationary on a beam for the duration of the conveyor life. The convenience of the Ethernet model is the ability to access data and monitor multiple devices via a typical TCP/IP network connection at a workstation with the required software. This model does not contain an internal battery and must use a 120-220 VAC 50/60hz power source. Up to 26 historic data files are stored on an Ethernet model and are available for download.



\* Shown with optional protective case, High Wear Marking Kit, and Bent Trolley Detection Kit. \*\*



# **SUMMARY & COMPARISON**

<b>PORTABLE</b> CHAIN WEAR MONITOR	SPECIFICATION	<b>ETHERNET</b> CHAIN WEAR MONITOR
Moveable Throughout Plant	MOUNTING	Permanent on Conveyor
All Common English & Metric Sizes	CHAIN SIZES	3" (75mm), 4" (100mm), or 6" (150mm)
Provided USB Memory Stick	DATA ACCESS	Ethernet TCP/IP Network Access with Software
Tailored for Data Analysis	SOFTWARE	Over the Network Monitoring and Data Analysis
Quick Charge Internal Battery, 12+ hrs Life	POWER SUPPLY	120-220 VAC 50/60hz
Missing Magnet Error on Controller	TROUBLESHOOTING	Missing and Multiple Magnet Error in Software
High Wear Marking Kit, Bent Trolley Detection Kit	ADD-ONS	High Wear Marking Kit, Bent Trolley Detection Kit
12:35PM Size: 6" Conveyor: Phosphate A1-56B Speed: 60 100%   11/14/16 CURRENT WEAR VALUES STATUS   Link #19,354 = .02 Link #19,355 = .34 Link #19,356 = .06 Wear   Link #19,357 = .14 Link #19,358 = .12 Link #19,359 = .04 Oritical   Link #19,360 = .02 Link #19,361 = .26 Link #19,362 = .08 Bent   Manual Record STATUS: Waiting for Magnet to begin recording Missing   Main Wear Clear Results	LCD TOUCH SCREEN	12:35PM Size: 6" Conveyor: Phosphate A1-56B Speed: 60 Image: Conveyor: Phosphate A1-56B Speed: 60 Image: Conveyor: Phosphate A1-56B Status   Link #19,354 .02 Link #19,355 .34 Link #19,356 .06 Image: Conveyor: Phosphate A1-56B Status   Link #19,354 .02 Link #19,355 .34 Link #19,356 .06 Image: Conveyor: Phosphate A1-56B Status Image: Conveyor: Phosphate A1-56B Status Status Image: Conveyor: Phosphate A1-56B Status Image: Conveyor: Phosphate A1-56B Status Image: Phosphate A1-56B Status Image: Phosphate A1-56B Status Image: Phosphate A1-56B Status Image: Phosphate A1-56B Image: Phosphate A

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# Castrol LubeCon

# **HIGH WEAR MARKING**

Immediately identifying a highly worn link set on your overhead monorail conveyor can prevent **costly downtime**.

Link sets become worn from regular use, improper lubrication, or other variables. The Castrol Chain Wear Monitor with High Wear Marking attachment can instantly identify a worn link set with a visual indicator, typically marked with paint. The highly worn link can then be quickly located for repair/replacement.





## FEATURES AND BENEFITS:

- » Simple - Plug and play, easy installation
- Accurate Utilizes Chain Wear Monitor wear values to determine marking »
- Adjustable High wear marking set point can be entered specific to user preference »
- » Battery - No additional battery or power is necessary
- **Rugged** Built to last, with industrial components »
- Convenient LED indicator on device and icon on touch screen when marking »
- Troubleshoot "Test Wear Marker" verifies proper function »
- » Universal - Designed for standard aerosol can size

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## HOW IT WORKS

With the Castrol Chain Wear Monitor you will be supplied with the wear information you need to properly maintain your chain. As an added benefit, Castrol offers the High Wear Marking attachment.

By utilizing this add-on, the Chain Wear Monitor can be setup with a High Wear Marking set point, any link set passing through the Chain Wear Monitor beyond that set point will subsequently be marked with the material of your choosing (typically spray paint).

With the convenience of a visual indicator, the painted link set can then be quickly identified and evaluated.

The High Wear Marking attachment will save you time counting link sets and give you the peace of mind that the appropriate link set has been located.





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# **BENT TROLLEY DETECTION**

Immediately identifying a bent trolley on your overhead monorail conveyor can save you **costly downtime.** Utilizing Castrol's Patent Pending technology in Bent Trolley Detection can give you peace of mind.

Trolleys can become bent from impact or loose and sagging from a failed fastener. The Castrol Chain Wear Monitor with Bent Trolley Detection add-on can identify a bent trolley that is outside of a user specified range. Any trolley crossing this zone will be recorded and the exact link location pinpointed for maintenance.





## FEATURES AND BENEFITS:

- » Simple Plug and play installation
- » Accurate User specified detection range can be dialed in for your trolley
- » Detection Infrared beam technology will identify exact abnormal trolley locations
- » Battery No additional battery or power is necessary
- » Rugged Built to last, with industrial components
- » Convenient Information available on LCD screen, software report, or PLC
- » Innovative Patent Pending Technology

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## HOW IT WORKS

Castrol's Bent Trolley Detection kit is an essential attachment for monitoring and maintaining your conveyor. Utilizing infrared beam technology, the Bent Trolley Detector will record the exact link-set location of any trolley that breaks the user specified range for a "normal trolley".

The detection range is completely customizable and can be adjusted to your exact trolley. This will allow the detection of any abnormal trolley, whether it is bent, broken, or otherwise needing attention.

Once an abnormal trolley has been identified, the link-set location is recorded on the Chain Wear Monitor and can be transmitted to both CWM software and PLC notification.

The trolley can then be quickly located and repaired.

#### CHAIN WEAR MONITOR

![](_page_9_Figure_7.jpeg)

![](_page_9_Picture_9.jpeg)

![](_page_10_Picture_0.jpeg)

# **CWM SOFTWARE**

A specially tailored Castrol software package will accompany both Portable and Ethernet Chain Wear Monitors.

Each software has been specifically designed according to the Portable or Ethernet Monitoring experience.

While there are some similarities between the software, the Ethernet software is focused mainly on dashboard-style network based monitoring and the Portable software features mostly data analysis and trending tools.

![](_page_10_Picture_5.jpeg)

Simulated System 0: Updated 11:42:11 Chain Speed = 0.000 FPM No Alarms	Simulated System 1: Updated 11:42:11 Chain Speed = 0.000 FPM No Alarms	Simulated System 2: Updated 11:42:11 Chain Speed = 0.000 FPM No Alarms	Simulated System 3: Updated 11:42:11 Chain Speed = 0.000 FPM No Alarms
Status Key: Disabled	onnection Failure OK Alarm	7).	*Dight click on an embedded autom to non

# SOFTWARE GENERATED REPORTS

#### **Summary Report**

The Summary Report is available as a snapshot in the software as well as a fully printable report. The Summary Report will show each link set and it's wear value as well as conveyor information and any CWM fault messages. The Summary Report is a combination of all of the data recorded from a chain wear reading.

#### **High Wear Report**

To more easily identify link sets in need of attention, the High Wear Report is available. This report allows a user to specify a setpoint within the software and isolate the link sets with wear exceeding that value.

#### **Bent Trolley Report**

To identify the exact link set location of trolleys in need of attention, the Bent Trolley Report is available. This report displays easy to interpret information with a list of trolleys that exceed the detection setpoint on the CWM.

#### Wear Trending Analysis

Castrol is proud to offer customers an innovative new report that tracks the health of their chain over time. The Wear Trending Report allows a user to specify up to 6 previously dated CWM readings and compare

their wear values.

This information can be a powerful indicator in whether a conveyor is being properly maintained and lubricated.

![](_page_11_Figure_11.jpeg)

Chain Wear Monitor Summary Repor Conveyor: BW123						
Wear Range	0065"	.066132"	.133199"	.2265"	.266332"	.333"+
# of Link Sets	0	7	24	14	0	0
% Of Chain	0.0%	15.6%	53.3%	31.1%	0.0%	0.0%
	reicenta	Je of Link	ADart Trai	in Greate	1.01.170	
		Number o	T Bent I rol	leys : 15		
	Date	Number o	T Bent I roi	1/1/1	6 12:00 AM	
	Date Total # Lii Chain Siz	nk Sets	f Bent Troi	1/1/1	6 12:00 AM 45 4"	
	Date Total # Lin Chain Siz Length of 'Assumes no cl	nk Sets e Chain	r Bent Troi	1/1/1	6 12:00 AM 45 4" 30.00 ft	
	Date Total # Lin Chain Siz Length of *Assumes no cl Minimum	nk Sets e Chain wear*	r Bent Troi	1/1/1	6 12:00 AM 45 4" 30.00 ft 0.08	
	Date Total # Lin Chain Siz Length of 'Assumes no cl Minimum Maximum	nk Sets e Chain an wear Wear Wear	r Bent Troi	1/1/1	6 12:00 AM 45 4" 30.00 ft 0.08 0.25	
	Date Total # Lin Chain Siz Length of Assumes no cl Minimum Maximum Average V	nk Sets e Chain ban wear* Wear Wear Vear Vear	r Bent Troi	1/1/1	6 12:00 AM 45 4" 30.00 ft 0.08 0.25 0.17	

	High W Conv	ear Su eyor:	ummary F PHOSPH	<u>Report</u> ATE		
Date/Time Da	ata Collected				11/9/2016	
Total # Link Sets in Chain					45	
Chain Size					4	
Minimum We	ear				0.08	
Maximum Wear					0.27	
Average Wea	ar				0.17	
User Specifi	ed Wear Setpo	oint			0.180 inch	
Links Excee	ding Setpoint				11	
Note: Link #1 Link #	is identified by th Chain Wear	e magnet. P Link #	lease refer to the n Chain Wear	nanual for mo Link #	re information. Chain Wear	

![](_page_11_Figure_14.jpeg)

![](_page_11_Figure_15.jpeg)

![](_page_11_Picture_16.jpeg)

![](_page_12_Picture_0.jpeg)

# **CWM PROTECTIVE CASE**

At Castrol we understand how important it is to protect your investment. We offer products not only to maintain and protect your conveyor, but also a product to protect the Chain Wear Monitor itself.

The custom designed Chain Wear Monitor case combines the convenience of transportation with a superior level of protection.

![](_page_12_Picture_4.jpeg)

![](_page_12_Picture_5.jpeg)

External case dimensions are 30" x 23" x 16"

## FEATURES AND BENEFITS:

- » Portable Case includes telescoping handle and edge-caster black wheels
- » Durable High Density Polyethylene shell and ATA-rated military hardware
- » Resistant Tongue-groove sealed frame resists dirt, moisture, and most solvents
- » Convenient Custom designed to house the CWM and all of it's accessories
- » Protection High density foam insert keeps accessories separate and safe

![](_page_13_Picture_0.jpeg)

## **Tailored to House All of The Accessories**

![](_page_13_Picture_2.jpeg)

Chain Wear Monitor

![](_page_13_Picture_4.jpeg)

# **PRODUCT COMPARISON**

![](_page_14_Figure_1.jpeg)

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# EXPERIENCE COUNTS WHEN IT COMES TO SERVICE

## PROTECT YOUR INVESTMENT AND MAXIMIZE YOUR SAVINGS

For more than 100 years, Castrol has been providing superior quality products and services for chain and conveyor customers. LubeCon factory-trained field personnel are always where you need them, when you need them. Each of our dedicated sales and service professionals are able to recommend, install, and maintain the right equipment, lubricants, and support services for your individual needs.

## SAFE AND RELIABLE SERVICE

Health, Safety and Environment (HSE) is the cornerstone of our business and we have the highest expectations for our HSE performance. The care that we put into the safety of our products and practices directly benefits our customers, their employees and the communities in which they operate.

At Castrol, we make sure that all our employees and contractors are well informed, well trained, engaged and committed to the HSE improvement process. We recognize that safe operations depend not only on technically sound plant equipment, but also on experienced people and an active HSE culture, and that no activity is so important that it cannot be done safely.

![](_page_15_Picture_6.jpeg)

## **DOCUMENTED SUCCESS**

Castrol LubeCon specialists tailor a service plan to match your needs. Each service call is documented and communicated so that you never have to wonder about the condition of the LubeCon equipment in your facility. In addition, all process improvements are documented through case studies that you can use to implement best practices across company sites.

Ask your LubeCon representative about

- Extended Warranty Services
- Customized Case Studies
- Plant Lubrication Surveys
- Customized Service Intervals
- Chain Wear Monitoring Services
- Lubricant Sampling and Reporting Services

![](_page_15_Picture_16.jpeg)

# Notes:

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![](_page_16_Picture_2.jpeg)

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![](_page_17_Picture_3.jpeg)

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