SMARTER LIFTING

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BEST PRACTICE AND GUIDELINES

Advice from Nobles Engineering on the proper use of swivels

Lifting swivels are such a familiar item of rigging hardware, often people don't give them much thought. Swivels perform a variety of important roles. These include:

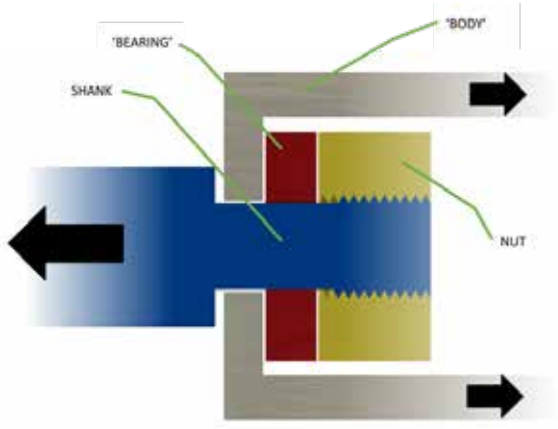
- Alignment
- Allowing a suspended payload to rotate (pivot)
- Avoiding having a suspended payload rotated (spun) by the equipment it hangs from
- Suspending or pulling a device that rotates under load at speed.
- Protecting a rope (or something else) from damage.
- To complicate things, the swivels which are offered to perform these roles vary considerably.

Any swivel will have three basic elements, the interfacing parts at either end and the bit in the middle that does the actual swiveling:

The nature of the swiveling element is critical to determining the suitability of a swivel. The swiveling element can be equipped with:

- a roller thrust bearing,
- a plain bearing such as a PTFE or bronze thrust washer,
- a basic metal washer acting as a thrust bearing, or
- it can be a simple 'plain swivel' with nothing to ease rotation beyond the bare, dry steel on steel of the main components.

This may be confusing without a diagram:



Basic layout of a swivelling element

The swiveling element almost always consists of these basic elements. The 'body' of the swivel could be in several forms including: the bow of a swivel self-locking hook, the cross-head of a crane hook block, or the barrel of a sealed bearing swivel.

Advice from Nobles Engineering on the proper use of swivels (continued)

The nut must be secured.

One thing we notice about the diagram is the nut. This is usually threaded on to the shank, sometimes instead it is a more elaborate assembly of collars and rings BUT if the nut comes loose, we have a disaster!

Securing a swivel's nut requires a mechanical device to prevent the thread from undoing. Often this is a dowel pin or cotter bolt driven through the nut and shank, or a keeper plate in a slot.

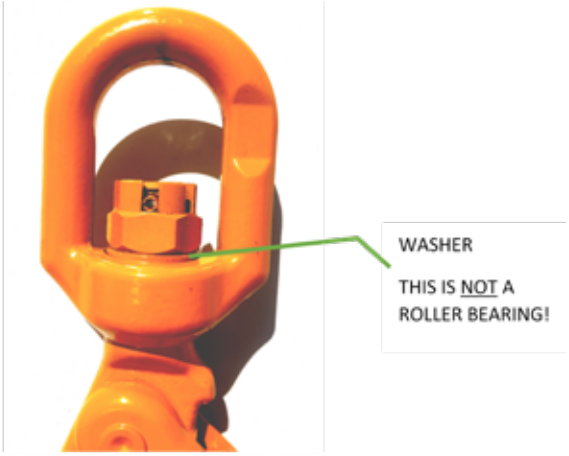
The nut must be secured with something which is strong enough for the application and type of swivel used, otherwise it can easily be broken because the forces, friction and leverage exerted by lifting gear in use can be very large.

It is vital that the security of the swivel is inspected, maintained and assured in accordance with the manufacturer's instructions. It is also vital that the right swivel is used in the right place. The rules are simple and they all hinge upon the nature of the bearing.

Bearing.

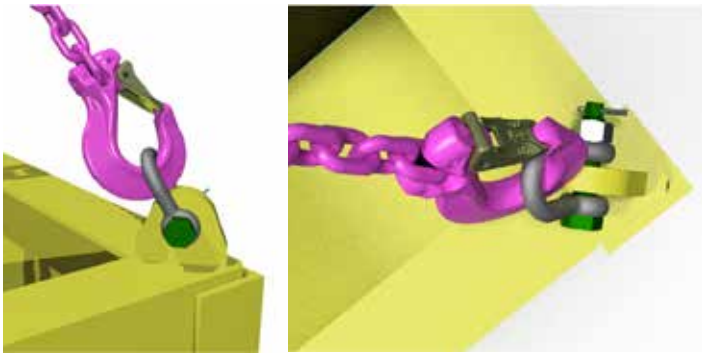
If the bearing does not have rollers or balls - > then the swivel is for alignment only.

If the bearing looks like a washer, or a stack of washers, or there is nothing there at all - > then the swivel is for alignment only.



Typical swivel found on the end of a chain sling

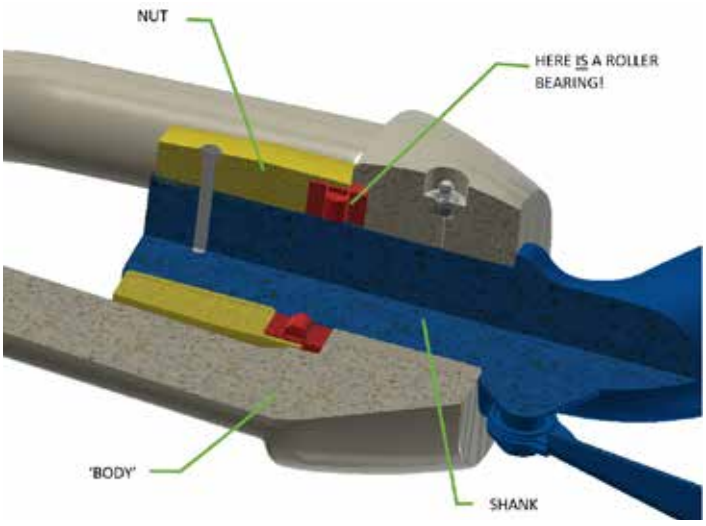
Swivels made for alignment only must not be rotated under load, or failure may result.



Alignment problem - The lug seems aligned to the sling, but isn't. if the chain is short or poorly rigged it may have a pronounced twist.

Swivels for alignment are nevertheless very useful. A natural alignment of lifting components is often elusive and can result in unacceptable twists in the rigging, or difficulty in connecting parts.

Only if a roller (or ball) thrust bearing is fitted can rotation under load be allowed.



Cutaway diagram of a Nobles TSF swivel model

Rotation under load is important to many lifting applications. Various standards, (for example AS3850 for tilt-up concrete construction) will require lifting tackle such as sheave blocks and hooks to be equipped with roller bearings where swiveling under load is required.

Not so fast!

Lifting swivels with a roller bearing are generally only

BEST PRACTICE AND GUIDELINES

Advice from Nobles Engineering on the proper use of swivels (continued)

designed for slow and limited movement. They are capable of pivoting a payload, and other limited rotations.
What they cannot do is cope with continuous rotation and high-speed rotation. Lifting swivels are devised with lifting cycles in mind. If they are fitted to rotating machinery or suffer continuous and high-speed rotation then the bearings, shanks and other components can rapidly expire and a regular lifting swivel may be entirely unsuitable.

Manufacturer advice should always be sought and purpose built equipment specified as soon as continuous or high speed rotation is a necessity.

Are there times when a swivel must NOT be used?

Unfortunately yes. If we fit swivels to the end of a rope, the rope must be of a type which will not unlay itself under load. If this happens, then both the breaking load and the fatigue life of the rope can be severely reduced.

Some ropes do not unlay themselves under load and are rotationally stable. These ropes need a swivel to avoid torsional damage from imposed torques. Modern, high performance ropes that are called 'rotation resistant' fit into this category.

For cranes and other winch driven machinery Nobles can provide the expert advice necessary to ensure the best rope selection for the machine design. Leading manufacturers such as Bridon and the standard ISO16625 provide guidance as to which ropes should have a swivel and which ropes cannot have one.

Does your rigging already have a swivel?

The answer (perhaps surprisingly) is almost always 'yes'. The bottom hook or hook block of your crane will more than likely be designed with a roller bearing swivel built-in.

Care should be taken therefore when suspending something beneath a crane hook. Any rope which is hung beneath must fit the definition of an approved wire rope sling in accordance with AS1666 and the conventional rope selection and design factors must be in use – otherwise competent advice must be sought to avoid adverse effects due to the swivel that is present.

If you are lifting, you will be using swivels. Nobles are uniquely placed to help with the right products and advice for swivel applications including swivel chain fittings and swivel equipped lifting points of every type. We also offer our own roller bearing TSF series swivel hooks and SBS range of sealed bearing swivels built to Australian Standard AS2318. For specialised applications, bespoke devices and customer's existing swivels Nobles offers comprehensive inspection, design and refurbishment services.

To speak to one our lifting & rigging specialists please call 1300 711 559 or email sales@nobles.com.au.

SOLUTIONS & CASE STUDIES

Four common equipment problems and how to prevent them

When selecting the right gear, we pick upon the critical issues of load security, stability, strength and so on. But what if we have gear that works sufficiently well when new and then things go wrong? Here we must pay attention to essential care and maintenance to avoid expense, downtime and disaster.

So what are some common and preventable lifting gear failures which working lifting gear can suffer? Let us look at four of the big ones which every owner should be able to avoid.

Lost markings

Sound like such a simple thing, but without markings our lifting gear just isn't lifting gear anymore. Without essential identifying markings there is no way that you can make your gear pass inspection, or in the event of an incident stand up to scrutiny in court. There is also no way to address many other essential aspects of safe use and maintenance. Markings come in different forms of course and some are more durable than others.

Simple advice that could save much lifting gear from the scrap bin is to take care of the markings. Ensure that: you have sufficient markings upon delivery, protect the markings, and act upon damage to markings before the information is lost.

Where markings are lost or mis-interpreted and the wrong rating applied, this of course risks equipment failure.

Four common equipment problems and how to prevent them (continued)

Needless wear

Everything wears out eventually, but there are some things which need not make lifting gear wear out far quicker and more severely than is necessary.

Leaving equipment connected to a vehicle when it is not in use
The simple action of driving around a forklift, truck or other vehicle exposes contact points to many thousands more cycles than they would otherwise experience. This especially acute if the connection is less than ideal – such as a hard chain connector into a mild steel lug.

Using the wrong fitting for the job
If a lug is designed for a shackle, it should always be used with a shackle, if the shackle is much wider than the lug it will be prone to slop back and forth and cause rapid wear – this would properly be addressed by using spacer washers on the pin. Take special note however. If the connecting fittings are not the proper choice then accelerated wear is not the worst consequence – The first and most important advice that everyone can apply is that if the connection does not look like a good comfortable fit to stop, ask questions and make sure that the connections are safe ones.

Dragging
Lifting gear is rarely made for intentional dragging along the ground. Take the time to pack up and lift it between uses and storage.

Keep synthetics clean
All lifting gear should be kept clean, but special mention must be made of synthetic slings. Just like a dirty carpet, if you leave dried out salty water, dirt or other fine abrasives on your synthetic slings then they will perish by a thousand cuts. Not only does this cause deterioration leading to discard, the decay is at a microscopic scale and not obvious to many end users – resulting in sudden failure.

Corrosion

It sounds obvious, by exposure to the elements or to corrosive environments could be destroying more of your lifting gear than anything else. Attention to simple things can help:

- Never store ordinary synthetic slings in the open (sunlight and weather will destroy them).
- Never leave a lifting beam that is made from channel or universal beam outside lying on its side.
- Never store lifting gear in a container which can gather moisture but not drain it out.
- If it should be lubricated, then ensure that it is lubricated. Consider traditional storage techniques for chain and wire rope slings that involve dipping or wiping down with oil every time they are put away.
- Talk to your supplier about getting the best surface treatment and storage solution for your equipment.

To organise for one of our specialist lifting and rigging technicians to service your equipment, please give us a call on 1300 711 559 or send us an email at techservices@nobles.com.au.

Crane Safety: How to ensure you're not another statistic

If you own, hire, lease, handle, store, transport, maintain or manage the use of a crane in the workplace you must understand the risks of crane operation and ensure your operators are properly trained. To help you understand the steps you should take before operating a crane, as well as how to manage environmental factors and guarantee your crane operators are competent we are providing some useful tips below to ensure you don't become another statistic.

WHS duty under the law

Everyone in the workplace has a duty of care under Australian Workplace Health and Safety (WHS) laws. Crane designers, manufacturers, importers and/or suppliers, crane owners and other persons with management control of the crane or workplace, inspectors and operators. It is everyone's responsibility to ensure crane safety procedures are in place and are being followed. Safe Work Australia provides a detailed table of who is responsible and how, you can view this here.

How to manage the risks

To ensure your workplace is actively managing risks that can affect workplace safety, you should ensure you have proper processes in place to complete the following steps.

1. Identify hazards

Find out what could cause harm by observing the workplace, asking crane operators/crew and others about problems they encountered and review your inspection, test and maintenance records.

2. Assess risks

In many cases the risks and related control measures will be known but there are other cases you may need to carry out a risk assessment to identify the likelihood of somebody being harmed by the hazard and how serious the harm could be.

3. Control risks

You should consider whether the hazard can be completely removed from the workplace. If you are unable to completely eliminate the risk, then you should consider substituting the hazard, isolating the hazard or use engineering controls to minimise the risk as much as reasonably practicable.

4. Review control measures

Control measures need to be regularly reviewed to ensure they remain applicable. You will need to take into consideration changes to the nature and duration of work as well as ensure the system in place is working as planned.

Key Risk Areas for Crane Operations

Setting up a crane

You should consider the following risks when choosing where to site a crane:

- The risk of overturning or collapsing due to failure of foundation or supporting structure as a result of the forces imposed on it
- The risk of the crane colliding with structures or objects at the workplace
- The load and lift paths including load pick up, drop off or installation locations.

Crane standing area should conform to the manufacturer's

Crane Safety: How to ensure you're not another statistic (continued)

instructions or a competent person's recommendations and designed to withstand the forces likely imposed on it while in service, out of service, erecting and dismantling. These forces can include:

- Dead weight of the crane
- Dead weight of the load and lifting attachments
- Dynamic forces from the crane moving
- Bearing pressure from the crane's outriggers/tyres/tracks
- Wind loadings.

Crane stability

Crane stability is dependent on crane operation parameters, ground conditions, wind conditions and the way loads are lifting or moved. Failure to maintain stability is one of the key factors associated with serious crane incidents. If a crane moves unexpectedly while mobiling or slewing, the load may swing unexpectedly.

Cranes should only be sited and operated on stable surfaces, designed by a competent person where applicable, with the correct bearing pressure and without significant holes or indentations that may cause the crane and load to move unexpectedly from being unstable.

Crane overload

You should never overload a crane, care should be given by the crane operator to ensure they never attempt to lift a load that exceeds the crane's rated capacity. A crane of variable radius will have a crane-specific load chart detailing how the crane lifting capacity varies depending on how the crane is set up. Using the load chart correctly is critical to ensure the crane is used safely. The chart should be easily accessible for the operator to verify the crane will not be overloaded.

Before lifting a load, always check the hoist rope hangs vertically over the load, care should be taken to stop the load swinging when lifting and the crane operator should always have the load under control when lowering loads or when the load is suspended.

Some factors that are often overlooked when reading load charts include:

- Subtracting the mass of the hook and lifting slings from the capacity of the crane at the particular radius
- Subtracting the mass of the fly jib (adjustment mass) from the capacity of the main hook when lifting from the main hook on the main boom with a fly jib attached to the boom head
- The increased maximum working radius that may result when using a fly jib.

Environmental factors

Wind

Winds impose extra loads on a crane and affect the crane's stability. Design wind speeds should be listed in the manufacturer's instructions and marked on load charts. Installing an anemometer on the crane will provide accurate wind speeds provided it is installed in a location on the crane to do so. If the wind speed is greater than those recommended by the manufacturer, you should stop operating the crane and stow the crane if possible.

Crane operators should recognise that the wind speed may be greater at the height of the load compared to the wind speed at the height of the crane's cabin. Operating a crane in high wind velocity can cause your cranes load to swing which puts unnecessary strain on the crane and can cause it to drop the load. Also, wind gusts have a different effect on the crane than a constant wind.

Rain

Operating a crane in light to moderate rain can be a difficult task as it can affect the load as well as impair the crane operator's visibility. It is not recommended to operate a crane in heavy rain as it can have damaging effects on the crane itself. Water might be able to enter different parts of the crane such as clutch and brakes impacting their ability to operate properly. If you have the ability, you should move the crane into a sheltered area to avoid the possibility of damage. Once you remobilise the crane after a storm always ensure you inspect it for signs of damage before returning to operation.

Lightning

You should not operate an overhead crane if there is lightning in the area. A good indicator of lighting is if you hear thunder or you can also use a lighting detector. If you are alerted to the presence of lighting, immediately turn off the cranes electrical power and lower the boom. Then take shelter from the crane and other metal equipment with your coworkers. Once the lightning has ended, before you return to work, you need to check the crane for any damage. The temperatures from lightning strikes can melt crane rope, so be sure to check and replace these if necessary.

SAFETY, STANDARDS & COMPLIANCE

Crane Safety: How to ensure you're not another statistic (continued)

Licences to operate cranes versus crane operator competency

One way of managing the risks is to ensure that all of your crane operators are appropriately trained and licensed. Licences differ in each state, however, Safe Work Australia provides a table of the type of cranes where the operator must hold a high-risk work licence. You can access this table in this Smarter Lifting article on our website.

Even if your crane operators are licensed they must be trained and assessed as competent for the specific type of crane they will be using. Regular training is important to ensure licensed crane operators, doggers and riggers maintain the competencies gained when they undertook their high-risk work licence and understand the cranes they are working with.

Traditional hands-on training and VOC can be expensive, time-consuming and subjective, as it requires the on-site operation of a crane involving both operator and instructor/assessor. In these live settings it is also not practically possible to assess crane operators' reactions to sudden changes in load stability and environmental factors.

Use of crane simulation technology

As such an increasing number of leading global crane operating companies are now investing in crane simulation technology to not only ensure their crane operators are objectively competent to complete the job, but also to ensure they are able to appropriately and safety respond to environmental hazards that may suddenly occur on worksites.

The leading international crane simulator by ITI (USA) uses Virtual Reality and is available exclusively from Nobles in Australia and Cookes in New Zealand in both portable desktop unit and an even more immersive motion-base unit. The ITI VR crane simulation hardware comes with a wide variety of software allowing you to assess crane operators with a life-like hazard experience without the risk of a real-life disaster.

For example, features include on-demand simulation of environmental elements such as wind and lightening, so you can ensure your crane operators are capable to handle hazardous environmental situations as they arise on the worksite. ITI VR crane simulation software packages are now available for mobile cranes as well as tower and overhead cranes.

For more information on crane safety, download the General Guide for Cranes from Safe Work Australia. To find out more about VR Crane Simulation please call us on 1300 711 559 or send us an email at sales@nobles.com.au.

Note: the above information is a partial summary of Safe Work Australia general guidelines for crane operation available for download from our website. Before operating a crane you should consult and comply with the full guidelines and all relevant Australian Standards and WHS laws.

NEW PRODUCT RELEASES AND NEWS

Nobles recommits to stock class-leading RUD lifting points

Nobles have recently recommited with RUD Australia to stock RUD lifting points as part of our standard product range in our warehouses around Australia. This will provide our customers with ready access to class-leading lifting hardware that is fully supported, not only by the lifting and rigging specialists at Nobles, but also by the technical experts at RUD. Every RUD product has been tested and certified to ensure it meets their exceptional standards for strength, performance and endurance.

RUD was founded in 1875 by the Rieger family in Germany, over 140 years later this global company continues to focus on excellence in quality and ongoing innovation. The RUD Group today, employs more than 1,700 people across the world and its products are found in more than 120 countries. RUD has remained a dynamic business because of their future-oriented solutions and dedication to ongoing research and development.

Nobles standard lifting point product range now includes RUD's VLBS Load Ring, VLBG-PLUS Load Ring, VRBS-FIX Load Ring and VRS-F Starpoint.

For more information head to our online Product Catalogue.

SAFETY, STANDARDS & COMPLIANCE

Domestic vs Imported Products: What You Need To Know

At Nobles, we have partnerships with a wide range of well know and highly respected brands from across the globe. We import products from Netherlands, Austria and China to name a few. Regardless of which country you source your lifting and rigging products from, whether it be Germany or Japan - they are all imported product which means you need to make sure they are compliant with Australian Standards. Nobles conduct rigorous testing of imported products to ensure they comply with not only the individual product specifications set out by the supplier but to also ensure they comply with Australian Standards.

Lifting and rigging products have evolved

A few decades ago the common thought about imported products was that they were inferior, this was largely due to the many horror stories about failed hooks, broken cables and mislabeled or unmarked shackles that resulted in a slew of accidents causing workplace injuries and damaged equipment. This resulted in imported products developing a bad reputation and being overlooked at many jobsites.

However, this has since changed. With the economy now globalised and many suppliers moving their operations overseas, there have been large improvements made to the quality standards of imported products across the board.

Advantages and disadvantages

For years, people took pride in only buying Australian made products and some probably still do. However, many businesses have been forced to focus on operational efficiency and product performance to increase profits and reduce expenses. The biggest factor in choosing domestic or imported products should always come down to - what product is going to best suit your lifting and rigging requirements?

Some imported products are manufactured in large batches as standard off the shelf products in the most popular sizes and configurations. Mass production allows these suppliers to offer discounted pricing due to economy of scale. For companies that have standard lifting and rigging requirements, there is no issue in purchasing these off the shelf products as it will suit their requirements. These off the shelf products are tested by our suppliers and subjected to ongoing assessment and certification by Nobles prior to being put into operation. This ensures these products comply with the supplier's specifications which ultimately guarantees safety for our customer.

Whilst off the shelf products are suitable for some customers, those that require a customized solution may not be advised to purchase these products as they may not be suitable for their individual lifting and rigging requirements. Customised products are best suited to domestic manufacturers, like Nobles. We have an inhouse team of engineers that are able to customise a lifting and rigging solution to suit your individual requirements. We have the capability and flexibility to make a one of a kind product that can then be produced in small batches. Although it may not be the cheapest option, it guarantees the product will not only comply with your requirements but will also meet strict Australian Standards.

Domestic vs Imported Products: What You Need To Know (continued)

How to ensure an imported product is right for you

While there have been vast improvements in the quality standards of imported products, it is recommended that if you are contemplating purchasing imported products, here are a few things you should consider to minimise risk.

- Always check the markings on products (especially hardware items) to ensure they comply with Australian Standards. You can also ask for a Certificate of Conformance.
- Ask your distributor if they have visited the facilities that produce the imported products to ensure they have been properly inspected.
- Confirm your distributer has adequate Product Liability Insurance. If an incident were to occur, it would be near impossible to submit and collect a claim through the overseas manufacturer's liability insurance.
- Ensure your distributor has products that comply to the Australian Standards where applicable or their own inhouse specifications not those of the overseas manufacturers, this will lessen liability and assure quality products.
- Make sure there is a clear channel from the wholesaler to the distributor. Buying through a broker, for example, can lead to multiple manufacturing facilities being involves which can result in mixing product and compromising quality.
- A quality distributor will always conduct their own inhouse testing and inspection of imported products. Make sure your distributor has this process in place as well as a traceability program to help safeguard quality.

Australian Standards

Customers should be aware that Australian Standards are constantly under review and evolving to maintain the highest levels of integrity. Nobles are at the forefront of keeping abreast with these changes and working with their overseas suppliers to ensure compliance.

Product Traceability

Having records of how and when products were made as well as the origins of the raw material shows responsibility and forward thinking of manufactures. Certain raw products are not always available in some countries which can greatly affect the manufactured product's performance. Traceability records ensure products can be traced back to an individual batch number and can help identify quality issues so appropriate action can be taken to prevent incident or liability.

Testing

At Nobles, we always test our imported products to ensure they not only comply with the product's individual specifications but to ensure they comply with Australian Standards as well as our own strict safety standards. Therefore, providing peace of mind that we not only prioritise safety but that we also only provide quality products.

In conclusion

There are not too many differences between domestic or imported products, both can be high quality, safe and compliant. You do need to be vigilant to ensure your distributor has taken the necessary precautions to ensure imported products are in fact safe and compliant.

When you choose Nobles, you can guarantee that we only sell the highest quality domestic and imported products because we value your safety. We put our suppliers through rigorous testing to ensure their products won't fail our customers and conduct extensive evaluations of their processes and quality management systems to ensure the highest level of confidence in the product we offer.

Our large product range means we will always have the right solution for your lifting and rigging requirements. If you have a complex or heavy lift that can't be solved with off the shelf products, we have a team of in-house engineers who are able to custom design and manufacture a solution. We are confident when we say - there is no lifting or rigging problem we can't solve.

Nobles have many international partnerships and have decades of experience in determining the quality of imported products. If you ever have a question about an imported product, please contact our team on 1300 711 559 or sales@nobles.com.au.

NEW PRODUCT RELEASES & NEWS

New exclusive partnership with Kito-PWB

Moving heavy loads inside can be as complex and dangerous as it is outside. Not only do you have to use the right equipment to get the job done, you also need to make sure the equipment has been properly installed and maintained to prevent accidents or serious injuries.

Nobles new partnership with Kito-PWB provides our Australian customers access to the widest range of high-performance electric chain hoists for industrial, resource and defence markets across Australia.

PWB have been operating since 1962 and have decades of experience, technology advancements and trusted global partnerships, culminating with their acquisition by Kito in 2016. Nobles new partnership provides preferred distribution of the proven ER range, the new EQ range as well as other Kito electric hoists made in Japan, configured and tested locally for Australian customers.

The new Kito economical and compact EQ range of Kito electric chain hoists come with a range of key features that make them a quality addition to drive productivity and ensure safety in your business operations.

- Safe and reliable brakes prevent a load from falling in the event of a sudden loss of power
- Motor cooling fan feeds cool air to the aluminum die-cast body
- Motor cover and regenerative resistors prevent excessive temperatures during operations
- Helical gears reduce noise allowing quiet operation and a long life
- Nickel-plated chain manufactured by Kito in Japan provide superior corrosion and wear resistance
- Bottom hook is designed to open gradually and not break under excessive overload
- A counter and hour meter function allows you to check the number of stats and the hoists total hours of operation to carry out routine maintenance and inspection according to the frequency of use
- A friction clutch disengages the motor in the event of an overload
- A triple safety mechanism and electronic OLL shuts off the device in the event of excessive lifting or lowering
- All hoists come with a thin, lightweight pendant control with emergency stop button.

The EQ range of electric hoists will be stocked by Nobles in all major cities, supported by local teams of technical experts. Download the EQ brochure for further information. Other Kito-PWB products also available from Nobles include the EF Series, ER2 Series, EDL Series and EDCL Series Electric Chain Hoists as well as the MR2 and MR2Q Electric Motorised Trolley.

For more information or to place an order for the new Kito-PWB range now available, please call 1300 711 559 or email sales@nobles.com.au.