Crusher upgrades

New generation crusher upgrades

Application
Available for Symons™ cone crushers, Nordberg™ cone crushers and Superior™ gyratory crushers - upgrades are available for specific models.

Our upgrades incorporate the higher performance of Metso’s modern crushers into your robust and reliable Symons™, Nordberg™ and Superior™ crushers.

Read more at: metso.com/CrusherUpgrades

Your crushing challenges
Your crushers are among your most valuable fixed assets, so you want them to be treated as such. Each dollar spent on them should give you the expected return.

Safety is also a concern since modern day crushers are much simpler to operate and maintain and you are looking for better working conditions for your employees.

A cost effective solution
Our upgrades are offered in easy to implement packages including all the instructions needed to allow your maintenance crew to do the job. However, our field service team is also ready to support you as needed, providing supervision or executing the complete upgrade.

Depending on your crusher model, we can offer an optimal solution to fit your needs:

**Upgrades for Symons™ cone crushers**
- Advanced bowl adjustment control
- Hydraulic motor bowl adjustment system
- Hydraulic tramp release and clearing system

**Upgrades for Nordberg™ cone crushers**
- Jack screw locking nut
- Top mount clamp cylinder
- Heavy duty head
- MP1250 retrofit kit
- Head maintenance stand

**Upgrades for Superior™ gyratory crushers**
- Super spider
- Arched spider
- Shimmed spider bushing
- Hydraulic shell separators
- Dual balance cylinder

The Metso factor
As the OEM supplier, Metso brings more to the table than simply knowing the dimensional specifications of your older machines. Metso also understands all the various factors that impact your crushers’ operating performance.

All our upgrades are carefully simulated and tested to ensure we deliver the results expected.

Benefits
- Ease of maintenance with a focus on safety
- Improved efficiency
- Reduced maintenance costs
- Improved productivity
We can make your old crusher perform like a modern day machine
Welcome to the new generation

No one knows your machine better than the OEM. We make sure your crusher performs.

**Advanced bowl adjustment control**
A revolutionary upgrade for your Symons™ crusher to improve the control of its bowl adjustment. Available for Symons™ 7'.

**Hydraulic motor bowl adjustment system***
Provides faster and safer bowl adjustment, eliminating the need for a bowl locking arrangement. Available for Symons™ 5½' and 7'.

**Hydraulic tramp release and clearing**
Hydraulic cylinders with accumulators, rather than springs, provide a faster and safer way to clear a stalled crusher. Available for Symons™ 5½' and 7'.

**Jack screw locking nut**
The new locking nut simplifies installation of the mantle - a minimal amount of torque applies the proper preload. Available for Nordberg™ crusher models MP800, 1000 and 1250.

**Top mount clamp cylinder**
Allows for easier replacement of the clamp cylinder and simplifies maintenance. Available for Nordberg™ crusher models HP800 and for MP800, 1000 and 1250.

**Heavy duty head**
Provides extended longevity for demanding applications. Available for Nordberg™ crusher models MP1000 and 1250.

**MP1250 retrofit kit***
The performance advantage of the Metso MP1250 cone crusher available in a retrofit kit for Nordberg™ MP1000.

**Head maintenance stand**
Developed to make maintenance tasks easier when servicing the head of your Nordberg™ crusher models MP800, 1000 or 1250.

**Super spider**
Improved spider arm design with increased extra coarse material passing, for reduced bridging and increased productivity. Available for Superior™ gyratory models 42-65, 54-75 and 60-89.

**Super spider**
Improved spider arm design with increased extra coarse material passing, for reduced bridging and increased productivity. Available for Superior™ gyratory models 42-65, 54-75 and 60-89.

**Dual balance cylinder**
Dual balance cylinder increases the amount of mainshaft jumping that your crusher can accommodate. Available for Superior™ gyratory models 42-65, 54-75 and 62-75.

**Arched spider***
Changes the geometry of the spider feed opening to allow better passage of material into the crushing chamber. Available for Superior™ gyratory models 42-65, 54-75 and 60-89.

**Shimmed spider bushing**
Made out of manganese bronze, this tapered spider bushing helps to reduce wear of the spider bushing. Available for Superior™ gyratory models 42-65, 50-65, 54-75, 62-75 and 60-89.

**Hydraulic shell separators**

(*) Not a new generation upgrade - previously available in Metso's portfolio.

(**) Super spider upgrades for Superior™ models 42-65 and 54-75 previously available in Metso's portfolio.

(***) Arched spider upgrades for Superior™ 42-65 previously available in Metso's portfolio.
Crusher upgrades

Advanced bowl adjustment control

Application
A revolutionary upgrade for your Symons™ crusher to improve the control of its bowl adjustment making it equivalent to Metso’s current MP and HP crusher models. Available for Symons™ 7’ (HD, XHD and SHD).

Focus on efficiency
Improving crushing efficiency is a common challenge in global mining operations. As you strive for maximized throughput, there’s always a risk of safety being compromised as machines are pushed to their limits.

Another challenge is to find affordable technological solutions to improve your existing equipment when the market is not favourable to large CAPEX investments.

A lifetime solution provider
Metso is committed to supporting our previously supplied crushers and we are continuously developing upgrades to bring modern day technology to our older crusher models including your Symons™ crusher.

Our new generation hydraulic clamping system is made to improve the functionality of your crusher, allowing your 7” Symons™ crusher to have the same level of bowl adjustment automation capabilities as those provided on current HP and MP series crushers.

Package composition
The package is composed of new structural and hydraulic components that are fitted to your existing crusher components with some modifications. It also includes a new PLC driven hydraulic power unit with Ethernet communication capabilities to allow remote operation and connectivity to the most advanced automation systems.

Improved functionality
By implementing the upgrade, your Symons™ crusher will have full rotational control throughout the entire bowl removal and installation process. This allows faster bowl adjustment, removal and installation times as well as minimizes labor engagement in all operations involving bowl rotation activities.

In addition, this upgrade allows your crusher setting to be adjusted remotely from the process plant control room.

Automation capability
The new modern hydraulic adjustment system supports integration of Metso’s TC1000 automation system. Depending on the application, the TC1000 system can also automatically adjust the crusher setting to maintain crusher power draw and product sizing which can maximize plant production and efficiency.

Benefits
- Reduced maintenance time and cost
- Ease of maintenance with a focus on safety
- Improved crushing efficiency
- Better product quality

Improve the production of your Symons™ cone crusher by up to 20% with Metso’s bowl adjustment control.

Read more at: metso.com/CrusherUpgrades
Crusher upgrades
Hydraulic motor bowl adjustment system

Application
Provides faster and safer bowl adjustment, eliminating the need for a bowl locking arrangement. Available for Symons™ 5½’ (HD), 7’ (HD, XHD and SHD).

Benefits
• Ease of maintenance with a focus on safety
• Efficiency improvements

Improved profitability and safety
Maximizing profitability in crushing is a recurring industry challenge, which means that all costly investments need to be carefully considered. Any investment made should also bring improved safety considerations.

Easier crusher adjustments
Metso offers a new generation bowl clamping system that provides faster and safer bowl adjustment than the manual or hydraulic ram-style systems. It also eliminates the mechanical bowl locking arrangement, replacing it with a hydraulic break system. Heavy-duty hydraulic motors turn the ring gear up to three full turns in one minute, speeding both bowl adjustment and bowl removal during liner change-out.

Reduced manual labor engagement
Metso hydraulic bowl clamping and adjustment system dramatically reduces the total manual labor needs normally provided by maintenance staff during bowl adjustment, installation and removal.

Package composition
1) Hydraulic bowl clamping and hydraulic ram style adjustment package includes: hydraulic lock posts, hydraulic adjustment ram assemblies, upgraded lock arm assembly, hoses and fittings.
2) Hydraulic bowl clamping and gear drive adjustment package includes: new adjustment cap assembly, hydraulic lock posts, hydraulic adjustment motor (and brake assemblies), hoses and fittings.
3) Hydraulic gear drive adjustment package includes: hydraulic adjustment motor, brake, mounting bracket assemblies, drive ring, brake control hoses, fittings and valves.

Retrofit systems include all components, hardware, templates, instructions and manuals for installation and operation of your upgraded system. Power unit is offered separately and selected based on the level of selected upgrade. Installation of the power unit may require electrical and civil work.

Improve the production of your Symons™ cone crusher by up to 15% with Metso’s hydraulic motor bowl adjustment system.

Read more at:
metso.com/CrusherUpgrades
Repeating the original Symons™ mechanical springs with the Metso hydraulic tramp release and cavity clearing system can reduce maintenance and repair cost, downtime and operating cost.

Read more at: metso.com/CrusherUpgrades

Benefits
• Improved productivity
• Reduced maintenance costs
• Ease of maintenance with a focus on safety

Aiming for an optimal return on investment
Maintenance costs for your crusher need to be continuously evaluated in terms of cost-benefit ratios. Any money invested needs to fall within budget. And the result should translate into more productivity, improved safety and reduced downtime.

Better and safer maintenance
A crusher equipped with the new generation tramp release permits a quick and convenient clearing of a plugged cavity and also allows for the inspection of crusher liners and the repair of mainframe liners in “clear mode”.

Improved operation
The new generation retrofit minimizes the potential for stalling allowing crusher operation with a smaller closed side setting for finer feed heading to the downstream circuit. This results in more crushing and less grinding. In addition, it also maintains constant adjustment ring “hold-down” force, minimizing ring bounce.

Package composition
Hydraulic tramp release retrofit package includes: hydraulic cavity clearing cylinders, hydraulic tramp release cylinders, accumulators and mounting brackets.

Retrofit systems include all components, hardware, templates, instructions and manuals for installation and operation of your upgraded system. Power unit is offered separately and selected based on the level of selected upgrade. Installation of the power unit may require electrical and civil work.

Optional services and components
Cast main frames may require modification to the frames upper flange to accept the hydraulic cavity clearing and tramp release retrofit systems. Metso offers frame modification kits that allow field modifications for these applications.

Lower spring segments, spring bolts and nuts are sold as individual pieces or complete sets, but are not included in the retrofit systems.
**Crusher upgrades**  
**New generation jack screw locking nut**

**Application**  
The new locking nut simplifies installation of the mantle - a minimal amount of torque applies the proper preload. Available for Nordberg™ crusher models MP800, 1000 and 1250.

**Benefits**  
- Ease of maintenance with a focus on safety
- Improved productivity

Thoughtfully designed with maintenance in mind, the jack screw locking nut simplifies the task of replacing the mantle of your crusher.

Read more at:  
[metso.com/CrusherUpgrades](http://metso.com/CrusherUpgrades)

**Optimal crusher maintenance**  
You aim for reduced crusher downtime with shorter maintenance breaks, making sure your staff is using appropriate tools and following the right procedures to ensure a safe operation.

In addition, you want to make sure your crusher is operating efficiently and reliably without risk caused by locking nuts that were not tightened properly.

**Simplifying the mantle replacement**  
The jack screw locking nut is composed of a series of jacking screws that apply a pre-load to prevent the mantle from coming loose. By incorporating this upgrade you ensure that you no longer need to use unwieldy tools such as a sledge hammer or battering ram.

The jack screw locking nut is easily torqued by using your pneumatic air gun - tightening a mantle becomes as easy as pulling the trigger.

**Fully compatible**  
The Metso designed jack screw locking nut will fit and work perfectly, whether your machine is a short head or standard configured machine. It will also work well for machines with a solid stub bolt or machines with an integral head stub (as used with an anti-spin device).

**Package composition**  
The package is composed of the locking nut, locking nut urethane sleeve, feed plate, torch ring and torque bars. To complete the installation you also need a head lifting tool and assorted hardware.

**Protect your workers and assets**  
By using the new generation jack screw locking nut your technicians are no longer exposed to risk or injury caused by a battering ram suspended from a crane. In addition, your crusher will no longer be damaged by sledge hammers used to secure the mantle.
Benefits
- Reduced maintenance costs
- Efficiency improvements
- Improved productivity
- Ease of maintenance with a focus on safety

Application
Allows for easier replacement of the clamp cylinder and simplifies maintenance. Available for Nordberg™ crusher models HP800 and for MP800, 1000 and 1250.

Achieve up to 3 times the cylinder life for your Nordberg™ cone crusher with Metso’s top mount clamp cylinder.

Get the best from your crusher
Current low ore grades mean that mines need to process high volumes of material. As a consequence, you aim to maximize the capacity of your crusher over the long haul. Planned downtime is expected to be short and effective.

Designed for heavy duty applications
Our new generation upgrade provides you with a more robust clamping cylinder that is better suited to withstand heavy duty mining applications that may lead to premature or recurring failures. The new upgrade improves lateral stability of the rod when pressurized, which prevents the seals from being damaged.

Simplified maintenance
A common issue noticed in mine operations is that repair procedures do not always allow for easy replacement of the clamping cylinders due to the necessity of disassembling the crusher.

The new clamping cylinder is designed to allow you to remove or replace the cylinder without having to dismantle the top half of the machine. As a result, it improves and facilitates the care of your machine.

Package composition
The package is composed of the clamp cylinders, hoses, hardware, clamp ring re-work drawing and hydraulic fittings.

Read more at: metso.com/CrusherUpgrades

(*) Patent pending.
Crusher upgrades
New generation heavy duty head

Application
Provides extended longevity for demanding applications. Available for Nordberg™ crusher models MP1000 and 1250.

Reliability in extreme conditions
Your goal is to get high longevity from your crushers as well as have them demonstrate the ability to operate under demanding conditions, where the specific application, process and ore feed can vary significantly. Equipment installed in your crushing plant should ensure longer uptimes while minimizing machine failure.

The money invested in your machinery should be justified by equipment reliably doing their job, no matter how severe the application is.

Improved surface to tolerate stress
The heavy duty head is designed for mines that require greater durability than that provided by a standard head. The new head has been developed based on the demand from the field, using data collected from modern mining practices.

The heavy duty head absorbs overloads that can lead to failure via cracking. This head has a machined head cavity which removes the stress risers. The improved machined surface can better tolerate the stresses from extreme workloads and occasional tramp events.

Package composition
Our heavy duty head is supplied in two package levels, a basic sub assembly level and a more comprehensive assembly level. While the sub-assembly includes the heads and oil deflector tubes only, the assembly level includes all the internal components installed: head, head ball, seals, oil deflector tubes, lower head bushing, upper head bushing and all the needed hardware.

Benefits
- Improved productivity
- 2 year extended warranty
- Efficiency improvements

The most demanding applications require components that will perform, even in the harshest environments. The heavy duty head has been designed to accomplish this task.

Read more at:
metso.com/CrusherUpgrades

Leaflet number 357/04-10/62/Eng-Tmk.  ©2016 Metso Corporation. All rights reserved.
Crusher upgrades
MP1250 retrofit kit

Application
The performance advantage of the Metso MP1250 cone crusher available in a retrofit kit for the Nordberg™ MP1000.

Cost effective and higher production
With current mines facing lower ore grades, getting the highest capacity possible from your crushers becomes critical. You aim to have crushing equipment that reduces energy consumption and maintenance while maximizing production.

However, the current mining environment is not favorable towards making large capital expenditures, so you aim for a cost effective solution to extract the maximum from your operations.

Cost effective and higher production
With current mines facing lower ore grades, getting the highest capacity possible from your crushers becomes critical. You aim to have crushing equipment that reduces energy consumption and maintenance while maximizing production.

However, the current mining environment is not favorable towards making large capital expenditures, so you aim for a cost effective solution to extract the maximum from your operations.

Results from field tests
Rigorous field testing was conducted on the MP1250 to validate the projected performance increase. The test period encompassed ore bodies with varying properties and the MP1250 was directly evaluated against existing MP1000 crushers. Under specific conditions, the MP1250 averaged a 29% overall increase in fine ore production over the MP1000.

Further, the MP1250 consistently recorded a reduction in the specific energy used (kWh/t) by 10% and greater.

Readily adaptable to any MP1000
The MP1250 retrofit kit is an easy to install package developed to increase the capacity from your crusher, utilizing the same foundation and support structure of your current MP1000. The original 1000 hp motor can be used in most cases, depending on application details and amperage draw.

Package composition
The MP1250 retrofit kit consists of the following components: head ball, upper head bushing, socket liner, eccentric and counterweight.

Benefits
- Efficiency improvements
- Improved productivity
- Cost competitive solution
- Ease of maintenance

Get the performance of a MP1250, at a fraction of its price. By replacing as few as five components in your existing MP1000, you can get up to a 30% increase in capacity by virtue of advanced crushing dynamics.

Read more at:
metso.com/CrusherUpgrades
Crusher upgrades
New generation head maintenance stand

Application
Developed to make maintenance tasks easier when servicing the head of your Nordberg™ crusher models MP800, 1000 or 1250.

Benefits
• Ease of maintenance with a focus on safety
• Reduced maintenance costs

Our head maintenance stand optimizes the servicing of your cone crusher and makes maintenance and repairs easier and safer.

Read more at: metso.com/CrusherUpgrades

Improved maintenance efficiency
Putting the wellbeing of employees first, you look for new procedures to improve service activities.

Maintenance on rock crushers is being performed at increasing intervals, so new technologies that speed up the process can play an important role in reducing downtime.

Safer head manipulation
The head maintenance stand makes servicing the head, for both routine maintenance and periodic repairs easier and safer. Once the head is in the stand, a crane is no longer needed to manipulate the head.

The device is used for common maintenance procedures such as mantle changes and for periodic repairs such as bushing replacements, bore measurements and parts replacement, among others.

The head is affixed to the stand, which provides a stable platform on which to work. The head can be rotated by use of the included electric motor and gear box to position the head in the best and safest position to work from.

Simple installation, multiple use
The head maintenance stand can be easily installed in the maintenance area by bolting the platform into the ground of your workshop, and connecting the wiring to your energy source. Once installed, it can be used for maintaining the heads of all your MP crushers.

Package composition
The package is composed of the head stand with a complete maintenance platform equipped with rails, steps and motor with gear box.
Discovering your needs
Current lower grade deposits demand high processing rates to become feasible. Thus the profitability of a mining site is closely related to its processing capacity. In the current market scenario, capital investments are only considered when there are no alternative solutions.

In a conventional mining plant, primary crushing is always challenging due to different materials sizes being dumped into the crusher. With the primary crusher situated in the initial stage of a crushing operation, any breakdown or stoppage can result in a serious bottleneck.

Benefits of a greater feed opening
Increasing the feed opening prevents large pieces of rock from bridging and blocking off the feed opening.

Bridging is a very common occurrence in mines when large material is fed to the primary crusher. When that occurs, timely and expensive rock breaker interventions are needed to break the large material causing the blockage. In addition, larger feed openings also allow higher processing rates.

Components
When acquiring the new super spider you get all the parts needed including: upper top shell, mainshaft, spider, rim liners, arm, guards, concaves, mantle and hardware. Optionally you can also acquire spider bushing and seals, spider lube pump and controller, mainshaft step components, dust seal arrangement, lock nut and torch ring.

Benefits
- Efficiency improvements
- Improved productivity
- Reduced maintenance costs
- Cost competitive solution

Application
Improved spider arm design with increased extra coarse material passing, for reduced bridging and increased productivity. Available for Superior™ gyratory models 42-65, 54-75 and 60-89.
Crusher upgrades
New generation arched spider

Application
Changes the geometry of the spider feed opening to allow better passage of material into the crushing chamber. Available for Superior™ gyratory models 42-65, 54-75 and 60-89.

Benefits
• Ease of maintenance
• Improved productivity
• Efficiency improvements

More throughput with no CAPEX
Given the current need for higher volumes of materials to be processed in order to achieve the expected ore production, you aim for more throughput from your existing machines. Furthermore, as the current market situation is not favorable for large capital expenditures, you also aim for cost efficient solutions to avoid the high cost of purchasing new and larger machines.

Increased material throughput
The arched spider changes the geometry of the spider feed opening to allow better passage of material into the crushing chamber. Increased open area around the arms gives the material greater ability to flow into the machine unobstructed than with the conventional flat arm style spider.

Minimal changes to your plant
The arched spider may be fitted to your machine without the need to change the structure. The spider flange is in the same location as the conventional flat arm spider flange.

Reduced downtime
A larger feed opening contributes to the reduction of bridging and, consequently, the number of emergency stops needed to remove oversized material.

Package composition
The package is composed of the spider assembly. To complete the installation will need hardware, arm liners, rim liners, spider cap and retention hardware.

Read more at: metso.com/CrusherUpgrades

The innovative design of the arched spider changes the geometry of the spider feed opening to more easily allow material to flow into the crusher, improving the production by up to 10%.

Leaflet number 330-04-146060-EN - METSO Corporation. All rights reserved.
Crusher upgrades
New generation shimmed spider bushing

Application
Made out of manganese bronze, this tapered spider bushing helps to reduce wear of the spider bushing. Available for Superior™ gyratory models 42-65, 50-65, 54-75, 62-75 and 60-89.

Profitability through efficiency
Improving the profitability of your crushing operation is highly dependent on efficient production with increased and reliable uptime.

Another important aspect for profitability is the reduction of your spare parts inventory by using longer lasting parts.

Repair downtime caused by worn bushing
The spider bore can experience wear over time in a manner similar to the bushing. If the bore diameter becomes too large, the spider would then require major and costly repairs.

Long lasting spider bushing
Our new generation bushing is made of manganese bronze and combines harder metallurgy to stave off wear and is also tapered to compensate for slightly worn bores. The bushing is shimmed to allow the proper penetration into the bore. As a result of this new spider bushing concept, the spider will be less prone to needing costly repairs.

Composition and installation
Made out of manganese bronze, this tapered spider bushing helps to reduce wear of the spider bushing.

Available for Superior™ gyratory models 42-65, 50-65, 54-75, 62-75 and 60-89.

Benefits
• Improved productivity
• Efficiency improvements
• Reduced maintenance costs

Our newly developed bushing helps to reduce wear, increasing the durability of the bushing in extreme crushing environments.

Read more at:
metso.com/CrusherUpgrades
Crusher upgrades
New generation hydraulic shell separators

Application

Benefits
- Ease of maintenance with a focus on safety
- Efficiency improvements

Efficient and safe production
To reach the profitability you are aiming for, it is necessary to achieve both efficient crushing along with improved uptime for your crusher. In addition, you aim for safer operations, with minimal exposure to risks through the adoption of better maintenance procedures and advanced tools.

Less effort, more results
In a standard gyratory crusher, the normal procedure to separate the spider from the top shell is to screw the manual jacking screws to unlock the taper fit holding the shells together. When using the new generation hydraulic shell separators, a hydraulic pump is used to pump cylinders affixed to the top shell to split the taper joint. As a result, the procedure can now be performed more quickly and in a safer manner.

Hydraulic cylinders are installed in pockets and hosed to a manifold where a manually operated high pressure pump is used to supply the hydraulic force to separate the shell from the spider.

Package composition
The package is composed of the hydraulic cylinders, hydraulic pump, hoses, manifold, mounting collars and all the hardware required.
Crusher upgrades
New generation dual balance cylinder

Application
Dual balance cylinder increases the amount of mainshaft jumping that your crusher can accommodate. Available for Superior™ gyratory models 54-75 and 62-75.

Efficient and safe production
One common concern in mining is how to achieve the most efficient crushing process in order to increase profitability, while also ensuring high machine availability and safety levels.

As a consequence, miners are always aiming to reduce risks caused by sudden equipment failure that requires a service intervention.

Reduced damages to the equipment
Metso’s dual balance cylinder kit was developed as a cost effective solution to reduce damage caused to the components while processing hard ores. During the process, the shaft can ride up, separating the mainshaft step components. This separation can cause damage when the shaft returns to its normal position.

By adding a second balance cylinder, the vertical travel of the mainshaft components is increased, keeping the mainshaft and step components together, minimizing potential damage to critical components.

Simple installation
Made to fit to the existing mainshaft positioning system (MPS) piping, the additional balance cylinder is easily installed by physically mounting it to the machine. Once installed, the cylinder is filled with nitrogen and hydraulic fluid and is ready to run.

Package composition
The package is composed of a balance cylinder, “Y” pipe, gaskets, clamps and mounting/straps.

Benefits
• Ease of maintenance with a focus on safety
• Reduced maintenance costs

The dual balance cylinder doubles the amount of hydraulic fluid present in the mainshaft positioning system. This allows for twice the vertical travel of the mainshaft step components which minimizes the chance of the mainshaft and step components separating under heavy operating conditions.

Read more at: metso.com/CrusherUpgrades