

DiscovOre Prime head assembly Arrow 3S overshot assembly

Safe work procedures

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Introduction

The DiscovOre Prime head assembly is designed to reach the bottom of the drill string faster than any other head assembly. To achieve the best performance possible, it is important to use proper procedures when handling the inner tube outside of the drill string and to properly maintain the components of the assembly.

The first priority for everybody should be safety. It is important not to sacrifice safety for increased production. Well-maintained equipment is a part of good safety practices. This document will outline the best practices for safety and maintenance of the DiscovOre Prime head assembly.

To take full advantage of the DiscovOre Prime, please follow the recommended procedures and rig settings that affect the entire drilling cycle.





DiscovOre Prime case parts and replenishment

DiscovOre Prime N, H, & P are delivered in a secured case that contains everything needed for most drilling situations, for example:

- Survey tool adapter.
- Core orientation adapter.
- Extended inner tubes – inner tube overshot receiver.
- Bushing puller.
- Small parts container.
- Overshot adapter for gyro.
- 36" needle bar to reset landing indicator ball.

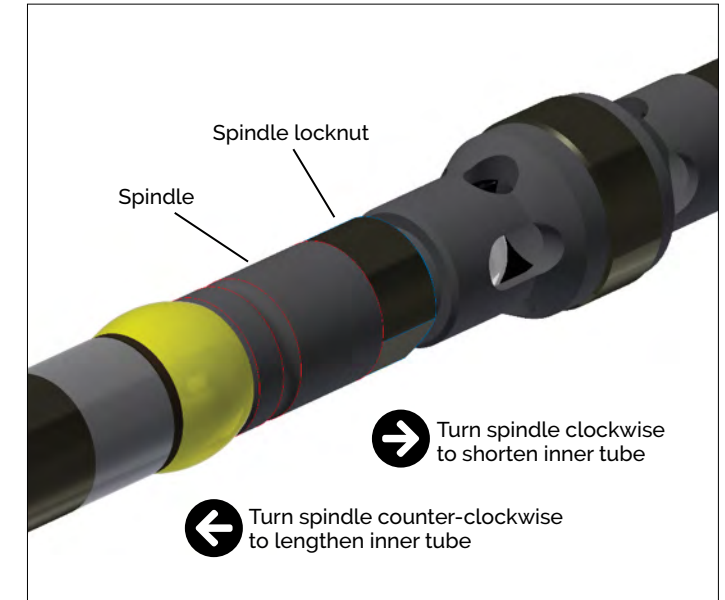
There are enough spare parts in the case to replace parts as they wear out during start-up. This will give the supervisors an opportunity to evaluate what must be kept in local stock, as well as keeping the Prime case on the rig full of parts. Parts diagrams for N, H & P are included within this document.

N DiscovOre Prime is available in an underground configuration. It is available as a head assembly and surface to underground conversion kit.

Set up

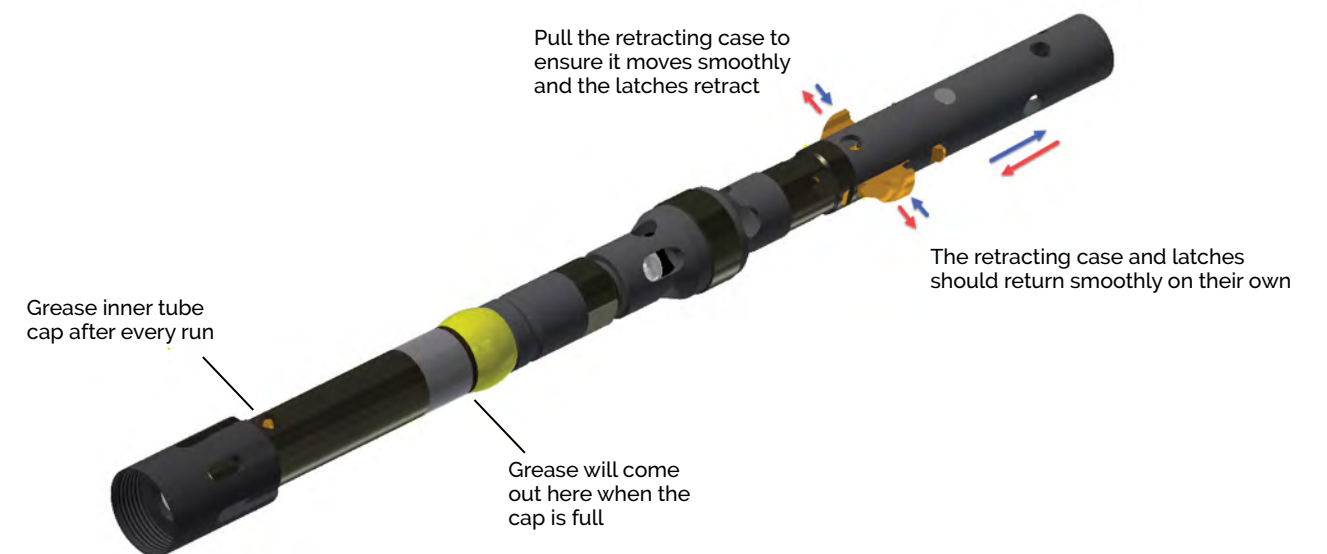
Adjust inner tube length

- Use inner tube wrenches to loosen the locknut from the spindle.
- Turn the spindle counterclockwise to lengthen the inner tube assembly, making the gap at the bit smaller.
- Turn the spindle clockwise to shorten the assembly, making the gap at the bit bigger.
- Turn the locknut onto the spindle and use inner tube wrenches to lock the spindle.



Verify the whole assembly

- Use the inner tube wrenches to verify all components of the Prime head assembly are sufficiently tight so it will not unthread inside the drill string.
- Ensure there is grease in the inner tube cap and that it rotates freely.
 - It is important to add grease after every run to ensure long life of the bearings and latches.
- Ensure the latch retracting case moves freely and the latches smoothly retract.



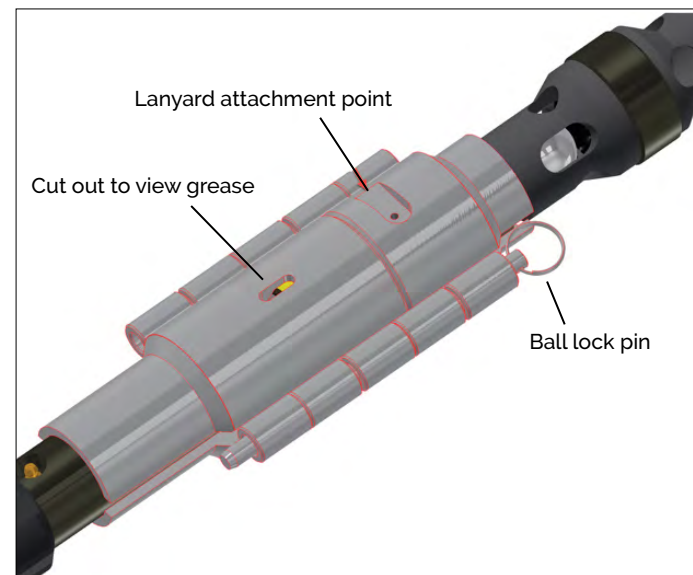
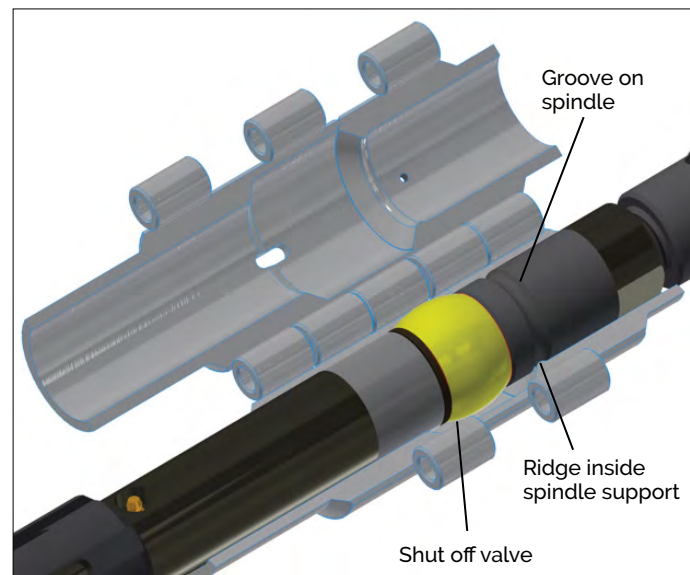
Handling the inner tube assembly

Spindle support – N size only

IMPORTANT: Always use the spindle support when handling the inner tube assembly outside of the drill string. Install it as soon as it is exposed from the drill string when lifting. Leave it on while removing core, handling and resetting the landing indicator ball. Remove the spindle support just before it enters the drill string.

N DiscovOre Prime uses many B size parts. Care must be taken when handling to prevent damage to the head assembly. Always use the spindle support when handling the inner tube outside of the drill string. To use the spindle support:

- Place the spindle support around the shut off valve, or valve spacer if installed.
- The orientation can be indicated by the lanyard attachment point. It will be towards the top of the assembly.
- Avoid lifting the spindle support by the lanyard.
- The ridge inside the spindle support fits in the groove of the spindle and prevents it from sliding off when the valve spacer is installed.
- Close the spindle support in position and use the ball lock pin to secure it.
- Do not remove the spindle support when greasing the bearings. There is a cutout to view grease coming out of the bearings.
- Use care to ensure the spindle support and lanyard do not catch on the mast when raising or lowering the inner tube from the drill string.

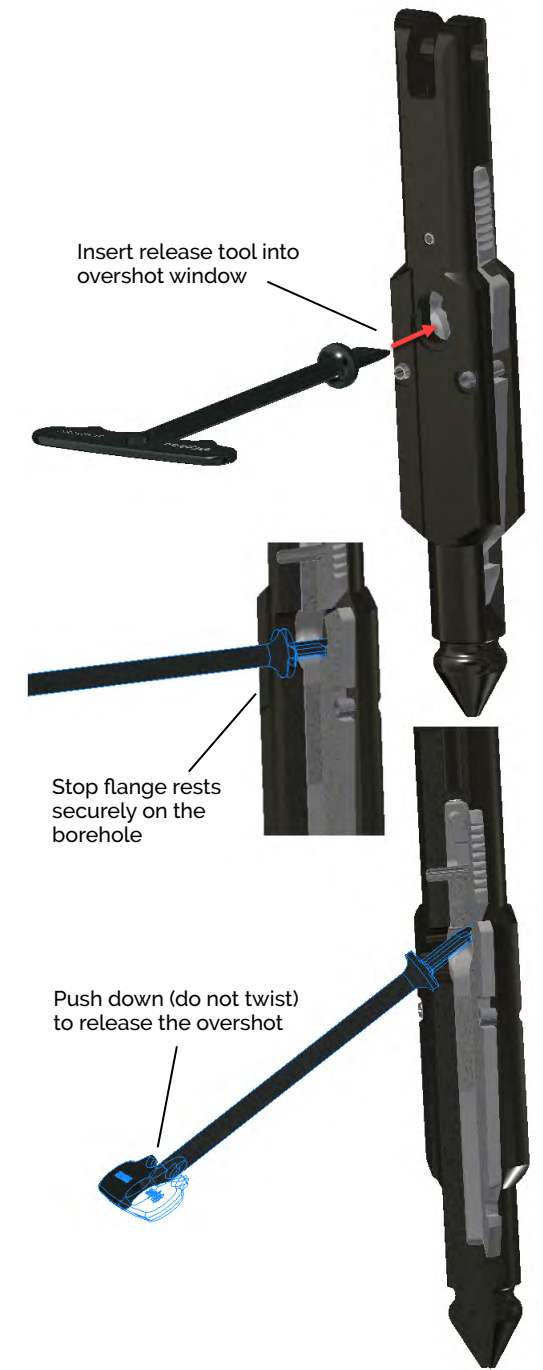


Overshot

For safety, it is recommended to always use the wireline and overshot to handle the inner tube assembly outside of the drill string. It is not recommended to drop an inner tube into the drill string. Doing so may damage the head assembly, latches and drill rod threads.

Lowering

- Insert the overshot into the top of the retracting case
 - The automatic lock is engaged when there is tension on the wireline.
- Insert the included safety pin to ensure the connection is secure.
- Maneuver the inner tube into the drill string.
- Remove spindle support (N size only).
- Remove the safety pin.
- Lower the inner tube until the latches are below the threads of the drill rod.
- Insert the release tool horizontally into the opening of the overshot body until the stop flange rests securely on the borehole.
- Push down (do not twist) on the handle to retract the lifting dogs, releasing the head assembly from the overshot.

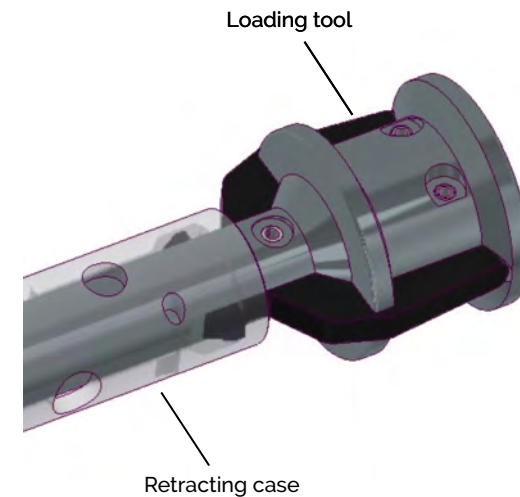


Dry hole lowering

- When using the overshot to lower the inner tube down the drill string, it is important to slow down the overshot before reaching the bottom to avoid a hard impact that can damage the equipment. This also applies when retrieving a full inner tube.

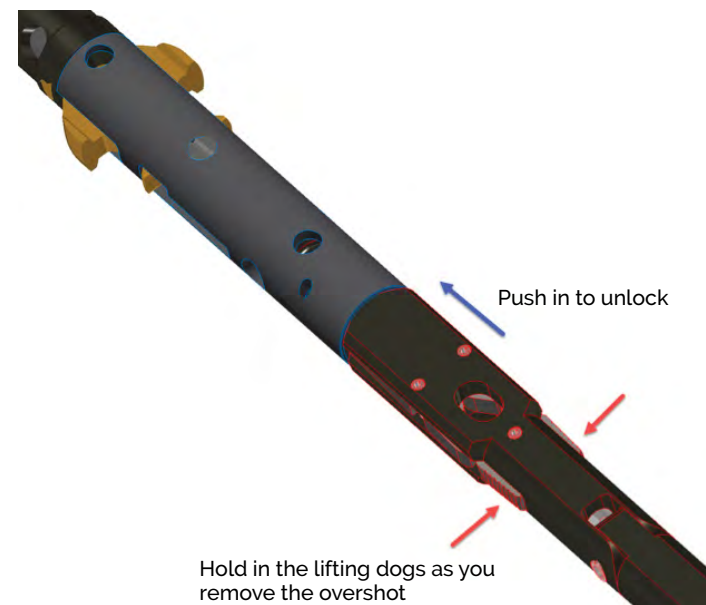
Underground insertion

- On N DiscovOre Prime underground, a latch lock feature is present. This feature adds additional security when drilling upholes.
- When the latch lock feature is installed, the use of the NU DiscovOre Prime Loading tool (P/N 3760017770) may be required.
- The loading tool is installed into the retracting case and will hold the latch lock disengaged so the head assembly can be inserted into the drill string. It will automatically disengage when the latches are fully inserted.



Retrieval

- The overshot can travel down the drill string faster than a standard overshot.
- To take advantage of the increased speed, unspool the wireline at an increased rate while taking care to prevent over-spooling on your wireline drum.
- Slow down the overshot as it nears the bottom to avoid a hard impact that can damage the equipment.
- Once the overshot is connected to the inner tube assembly, it is automatically locked.
- Retract your wireline until the overshot emerges from the top of the drill string.
- Install the safety pin.
- Install the spindle support as soon as head assembly is visible from the drill string (N size only).
- Remove the inner tube from the drill string.
- To release the overshot, remove the safety pin then make sure there is slack in the wireline and push it into the retracting case. Squeeze the lifting dogs while removing the overshot from the retracting case.



Maintenance

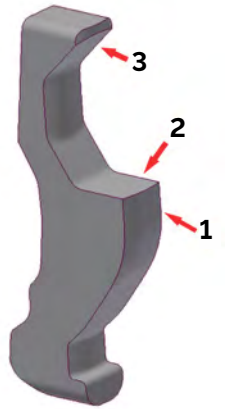
DiscovOre assembly videos can be found on the Epiroc YouTube channel. Please refer to the parts diagrams, included within this document, to ensure parts are assembled in the correct location.

Head assembly latches

DiscovOre Prime latches have three main wear points:

1. Outer surface.
2. Engagement surface.
3. Latch release surface.

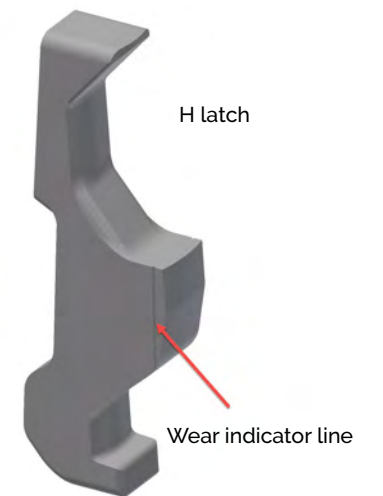
These surfaces should be inspected regularly for wear, deformation and cracks. If any are found, the latches should be replaced, along with the latch spring(s).



H DiscovOre Prime latches have a wear indicator. As the outer surface is worn down during regular use, it will get closer to the indicator line. Consider changing the latches if the distance is small. If the latches are worn to the wear indicator line, you must replace the latches to ensure the inner tube stays locked in the core barrel.

Remove the latches

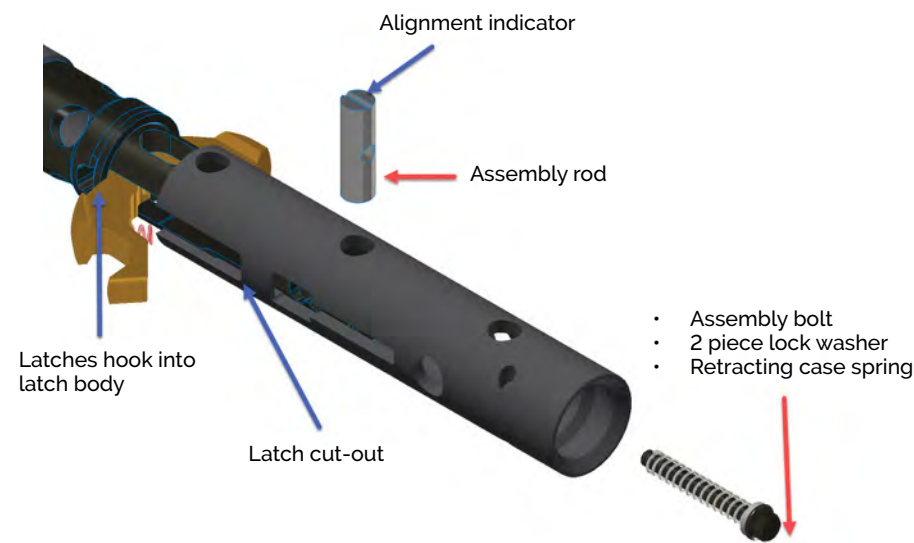
1. Use a 3/8" or 10 mm socket to remove the assembly bolt on top of the head assembly. The Prime Case contains a T-handle magnetic socket – 3760017281 for this bolt.
2. Remove the assembly bolt, lock washer and spring as one.
3. NU & H size only – remove the lower assembly bolt and lock washer. Reference parts breakdown.
4. Remove the assembly rod(s).
5. Squeeze and hold the latches together, then remove the retracting case.
6. Slowly release the latches so that they do not pop out.
7. Remove the latches by unhooking them from the latch body and remove the latch spring(s).



Install the latches

1. Slide the retracting case over the latch body so that the cut-out for the latches aligns with the latch body.
2. Install the spring(s) in the latches and hook one latch into the latch body.
3. Hook the second latch into the latch body.
4. Ensure the springs are inserted into the spring pocket of both latches.
5. Squeeze the latches together and slide the retracting case over the latches.
6. Install the assembly rod in the hole above the latches.
7. Install the 2-piece lock washer and spring on the assembly bolt.
8. Use the magnetic socket to install the bolt, washer and spring as one, through the top of the retracting case. The bolt must pass through the hole in the assembly rod. For N and H size, use the line on the end of the assembly rod to adjust alignment.
9. NU & H size only – install lower assembly rod, assembly bolt and washer. Reference parts breakdown for more information.
10. Tighten the assembly bolt(s). Pressure must be applied to compress the retracting case spring before the bolt will start to thread into the latch body. Torque should not exceed 90 in lb or 10.2 nm.

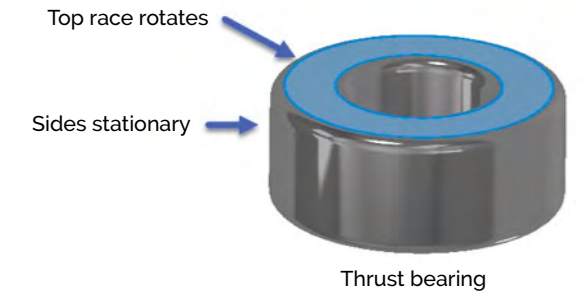
CAUTION: Do not overtighten the assembly bolt(s). Over-torquing the bolt can shear the head off. This can result in head assembly failure and the inner tube falling, causing injury.



Spindle bearings and shut off valves

DiscovOre assembly videos can be found on the Epiroc YouTube channel. Please refer to the parts diagrams, included within this document, to ensure parts are assembled in the correct location.

- It is important to replace bearings when they start to show signs of wear and are no longer turning smoothly.
- The shut off valve can be replaced with the valve spacer for increased speed.
- Inspect the bearing housing for damage and wear when replacing bearings.
- Thrust bearings must be installed in the correct orientation. While holding the sides of the bearing, the top race should be able to rotate. Top race(s) should point toward retracting case.
- During reassembly, do not overtighten the locknut. Thread on the locknut until there is no play in the bearing housing and compression spring, then add add a 3/4 turn.
- Always add grease after every run to ensure long life of the bearings and latches.



Inspection points

It is important to inspect the head assembly and overshot assembly periodically to ensure parts do not fail prematurely. This will prevent injuries, as well increase the performance and reliability of the head assembly.

Spindle

- With the inner tube stationary, rotate the head assembly at the retracting case.
- There should be minimal side-to-side movement. If there is excessive movement, inspect the spindle more closely and replace if needed.

Latches

- Inspect the latches for cracks and deformation. Replace if any are found.
- Inspect the latches for wear as mentioned in the MAINTENANCE section.
- The top surface of the latch may wear faster if you are pushing blocks. This will mean that the locking coupling will also be worn. Replace the latches and locking coupling to prevent a mismatched inner tube.

Retracting case

- The retracting case must move smoothly and return on its own quickly. If not, clean any debris that may have built up between the latch body and retracting case. As well, ensure the assembly bolt is still tight and the retracting case spring is still in good condition.
- Routinely remove and clean retracting case spring.

Bearings

- All bearings should rotate smoothly, if not, replace as necessary.
- Grease the inner tube cap after every run to ensure optimal bearing life.

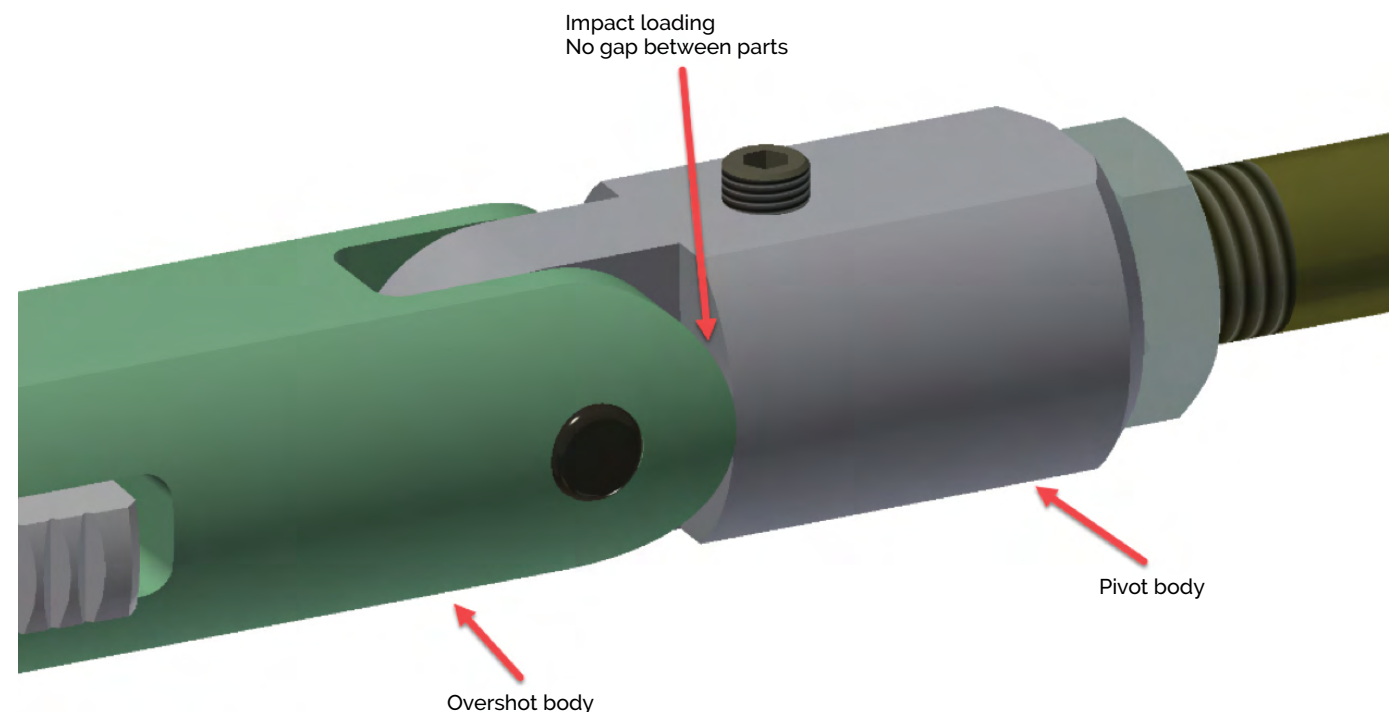
Landing shoulder and landing ring

- Inspect the landing shoulder often to prevent it from jamming in the landing ring.
- Inspect the landing ring for excessive wear at every bit change.
- Due to the faster drop speed of the Prime head assembly, the inner tube will hit the landing ring harder. Expect the landing ring and landing shoulder to wear faster than other head assemblies. As the faster trips result in more frequent cycles

Arrow 3S Overshot

The overshot is a lifting device and can cause severe injury if not maintained properly. It is very important to visually inspect it for excessive wear and damage on a regular basis.

- Lifting dogs must be inspected for excessive wear, cracks and deformation.
- The overshot body must be inspected for excessive wear and cracks.
- Grease the cable swivel bearings regularly and ensure it rotates freely.
- Pivot body should rotate freely. There should be a maximum gap of 0.040" or 1mm between the pivot body and overshot body. If the gap is too big, replace the pivot body and the spring pin.



Drilling with DiscovOre Prime

The DiscovOre Prime head assembly is like no other head assembly available. It has the ability to drop more than twice as fast, depending on hole conditions. It is important to know the differences with DiscovOre Prime to get the most productivity and ensure efficient, reliable drilling.

Pushing blocks

- Pushing blocks adds additional wear on thrust bearings, latches and the locking coupling.
- Because the Prime drops at a much higher speed, it may be better to retrieve the inner tube instead of pushing a block and risk jamming the inner tube, causing damage to parts or other issues.
- Blocks can be detected on the drill's gauges with a decrease in torque combined with an increase in head pressure.
 - Torque decreases because the bit is no longer cutting the rock. Head pressure is applied to the thrust bearings instead of the bit.
 - Head pressure increases because penetration rate is zero while the rig is trying to achieve the set feed rate.
- Shut off valves and increased water pressure should be used as a last signal to detect a block.
 - By the time there is high water pressure, there is too much load on the bearings causing excessive wear.
 - Water will not be reaching the bit when the shut off valve increases the water pressure. Without water for cooling, this increases the chances of burning your bit. It also degrades the grease in the spindle, reducing bearing life.

Shut off valve and valve spacer

- The Prime Case comes with an optional valve spacer to replace the shut off valve. With the valve spacer installed, the inner tube assembly can drop 15-25% faster.
- Detecting blocks with the valve spacer installed can be seen on the drill's gauges by a decrease in torque combined with an increase in head pressure.
- Currently, all Prime head assemblies offer one shut off valve option.

Breaking core

- Try to avoid breaking core while rotating. This puts extra load on the bearings that they are not intended to handle.
- Expect higher wear and frequency of replacement of the bearings if you break the core while rotating.

Locking couplings

- Locking couplings are available with or without a drive tang. The latches of the DiscovOre surface head assemblies are independent, unlike other head assemblies, so it is recommended to use locking couplings with drive tangs, except for underground.
 - Independent latches mean one latch will always engage the locking coupling even if the other lands on the drive tang. This is not possible with other head assemblies.
 - It is advised to rotate the drill string before drilling to ensure both latches are engaged with the locking coupling.
- With a drive tang on the locking coupling, it is ensured that the head assembly rotates with the drill string, reducing the wear on the latches, landing shoulder and landing ring.
 - When using a locking coupling without a drive tang, the latches will spin in the adapter coupling while drilling, causing premature wear.
 - There is no advantage to using a locking coupling without a drive tang for surface drilling.

Water consumption

- The Prime head assembly falls down the drill string faster than pumping it down. The following steps will greatly reduce water consumption.
 - Increase your downhole water flow rate until you see water pressure on your downhole pressure gauge. This indicates that your drill string has a full volume of water, after which the advantage of pumping in is minimal, as Prime is designed to fall through the water "NOT be pushed" by the water.
 - Reduce your downhole water flow rate to 5-8 GPM until you see the water pressure landing indication confirming Prime is seated in the core barrel.
 - Open your release to evacuate the air pockets in the drill string.
 - Close the release and set your water flow rate for drilling.
- Due to the reduced time needed for the Prime head assembly to drop to the core barrel, water consumption is reduced. This is due to the lower flow rate required and less time pumping while it drops.
 - This translates into less water consumed per meter drilled. Although not necessarily less water used per day, as the total amount of meters drilled per day will also increase.
 - The reduced demand for water while Prime drops will keep the level of water in the tank higher so you can start drilling as soon as it lands.
- With less time pumping and a lower flow rate, you should experience longer service intervals on your pump.

Inner tube extensions

- If using inner tube extensions, they should be placed next to the inner tube cap of the head assembly, when possible.
- Disconnect the inner tube at the extension to save wear and tear on the inner tube cap.

Survey tools and accessories

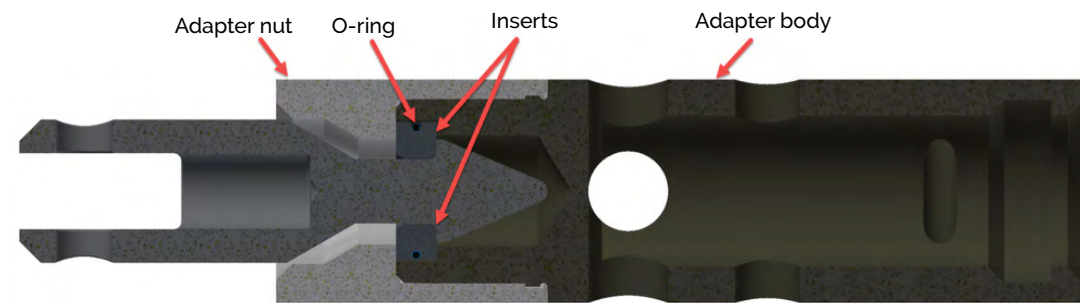
The DiscovOre Prime case comes with the parts needed for most drilling conditions, rig set ups and geology requirements.

Core orientation

- The Prime case comes with adapters to use popular core orientation tools that attach to the inner tube cap body.
- It is important to use a tool that is sized smaller than the drill rods. For example, N rods will require a B size tool and H rods require an N size tool. Using the proper size tool will ensure the best performance of the Prime head assembly.
- We are currently working with all major core orientation providers to assist them in creating Prime specific kits. This will ensure a streamlined installation as well as maintaining all of the benefits of Prime. Please ask your local core orientation provider for a Prime-specific option.
 - Reflex Prime ACT III Kit P/N.
 - N size: 104351.
 - H size: 104602.
- Installation instructions are included in every case. They are also included at the end of this document.

Survey tools

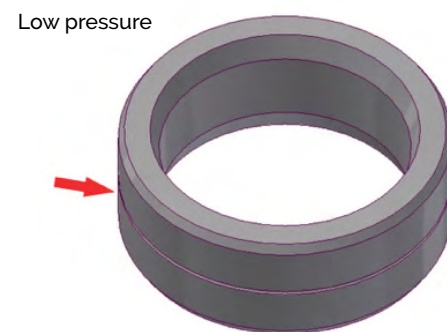
- The overshoot head of the gyro will have to be replaced with the Arrow 3S overshoot head included in the Prime Case to be compatible with DiscovOre Prime head assembly.
 - For N Prime, a B to N Jar Staff adapter - 3760017744 is included in the case.
- The spearhead adapter - N 3760017534, HP 3760017544 will have to be installed over the spearhead of the gyro to make it compatible with the Arrow 3S overshoot:
 1. Place the adapter nut over the spearhead point.
 2. Push the 2 inserts (held together by an O-ring) over the spearhead point.
 3. Thread the adapter nut on the adapter body. The inserts may shift, ensure they are seated properly in the pocket of the adapter body.



Landing indicator bushings

All DiscovOre Prime cases comes with a 36" needle bar to reset the landing indicator ball. Only use this needle bar and ensure the head assembly is supported properly when resetting the ball. For N size, always make sure the spindle support is installed when resetting the ball.

- The Prime case contains high pressure and low pressure bushings.
- The low pressure bushings can be identified by the line around the exterior.
- Use the high pressure bushings in deeper holes for a more noticeable pressure increase.

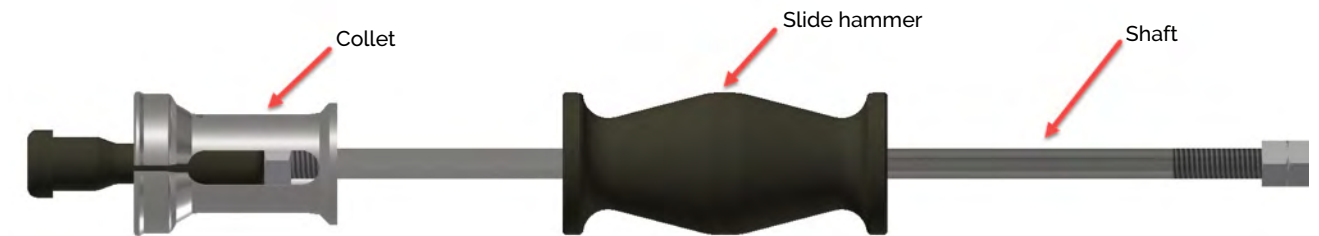


IMPORTANT: Using the high pressure bushings in shallow holes may require water pressure that is too high for the pump to push the ball through the bushing.

Bushing puller

The N Prime case contains a bushing puller to easily remove the landing indicator bushing without damaging the threads of the lower latch body.

1. Hold the collet against the bushing.
2. Slide the shaft in, against the collet.
3. Push the collet and shaft to pop the collet into the bushing.
4. Slide the shaft out and hold it against the collet to lock the collet to the bushing.
5. Use the slide hammer to knock out the bushing.
6. Place the new bushing in the lower latch body.
7. Thread on the mid body to press the new bushing into place.



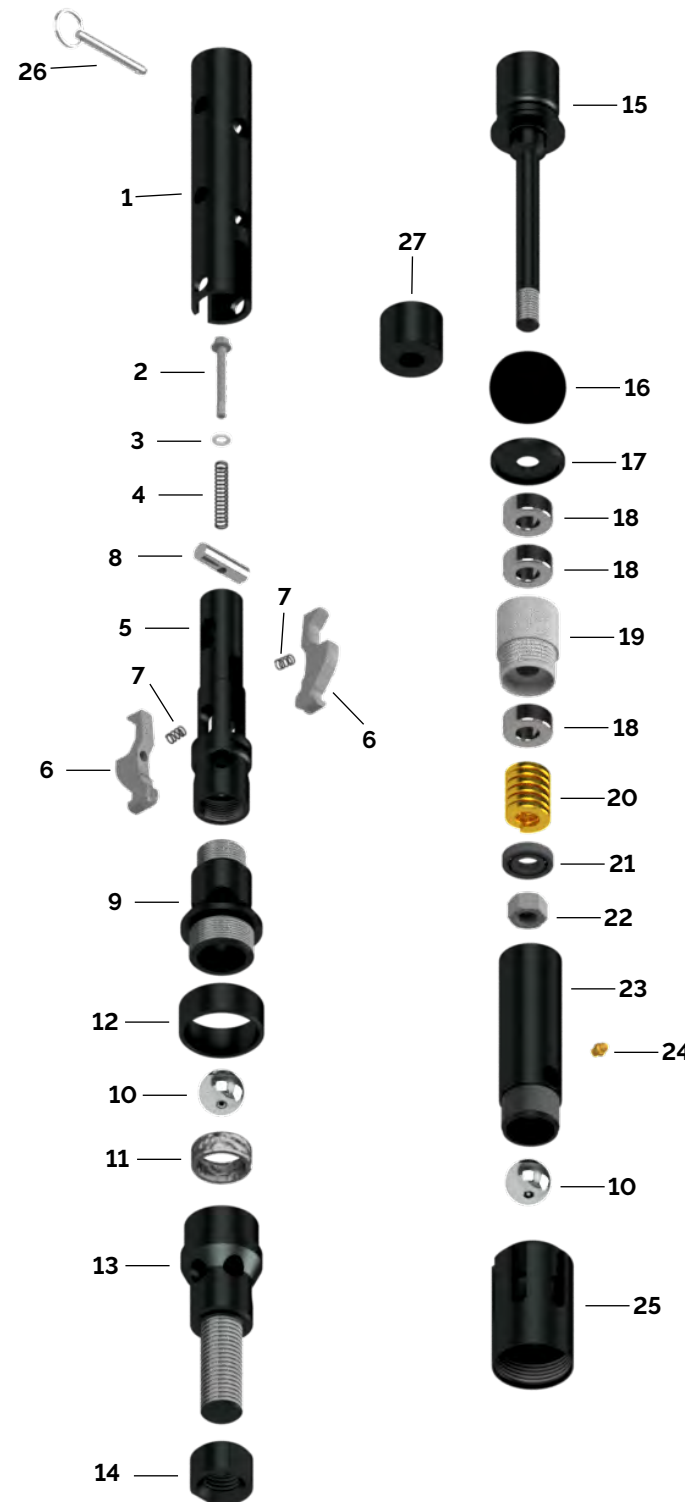
Extended inner tube

Included in the N and H Prime cases is an Arrow 3S overshoot receiver - N 3760017734, H 3760017339 that threads onto an inner tube. Use this to lift the remaining inner tube out of the drill string with the overshoot when using extended inner tubes.

DiscovOre Prime N exploded view

DiscovOre Prime head assembly

Item	Description	Qty
-	N-D Prime Head Assembly - Surface	1
1	Retracting case	1
2	Assembly bolt	1
3	Wedge lock washer	1
4	Spring retracting case	1
5	Latch body	1
6	Latch	2
7	Spring - Latch	2
8	Assembly rod	1
9	Mid body - Surface	1
10	Chrome ball	2
11	Landing indicator bushing low	1
12	Landing shoulder	1
13	Lower body	1
14	Locknut - Spindle	1
15	Spindle	1
16	Shut off valve - Black	1
17	Valve adjusting washer	1
18	Thrust bearing	3
19	Bearing housing	1
20	Compression spring	1
21	Ball bearing	1
22	Stover nut	1
23	Inner tube cap body	1
24	Grease fitting	1
25	Inner tube adapter	1
26	Safety pin	1
27	Valve spacer	OPT



*Please refer to the In-The-Hole catalog for part numbers.

DiscovOre Prime N case parts and small parts kit

DiscovOre Prime case parts

Description	Case qty
N case assembly	-
ND Prime head assembly	2
Retracting case	1
Latch body	1
Mid body	1
Spindle	1
Bearing housing	1
Inner tube cap body	1
Inner tube adapter	1
Valve spacer	2
Spindle support	1
Core orient. inner tube adapter	2
Spindle support pin	1
Needle bar 36"	1
DiscovOre tool	1
ND Prime overshot assembly	1
BA3S overshot head	1
BA3S spares kit	1
Inner tube overshot receiver	1
N to B jar staff adapter	1
Spearhead adapter	1
Jar staff	1
Bushing puller assy	1
Pelican case	1
Case divider	1
Small parts container	1
Lower body	1
Core ori. spacer	2
Inner tube EXT N 2"	2

DiscovOre Prime small parts kit

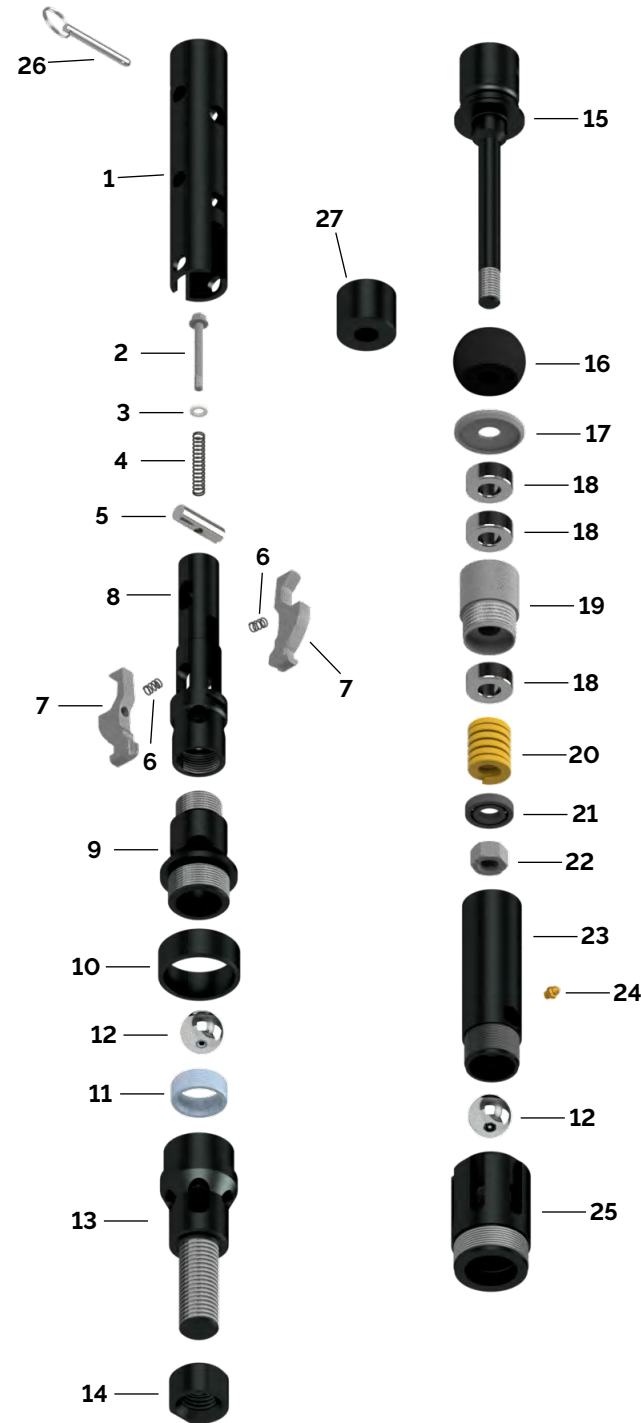
Description	Case qty
Small parts N container assembly	-
Landing indicator bushing high	4
Landing indicator bushing low	4
Chrome ball	1
Overshot centralizer	1
Shut off valve - Black	8
Latch	8
Landing shoulder	1
O-ring	1
Safety pin	1
Spindle lock nut	1
Compression spring	1
Assembly bolt	2
Wedge lock washer 1/4"	2
Retracting case spring	2
Assembly rod	2
Ball bearing	8
Grease fitting	3
Stover nut	1
Valve adjusting washer	1
Latch spring	8
Spiral pin 1/4" x 1 5/8"	2
Thrust bearing	12



DiscovOre Prime N2 exploded view

DiscovOre Prime head assembly

Item	Description	Qty
-	NO2-D Prime Head Assembly - Surface	1
1	Retracting case	1
2	Assembly bolt	1
3	Wedge lock washer	1
4	Spring retracting case	1
5	Assembly pin	1
6	Spring - Latch	2
7	Latch	2
8	Latch body	1
9	Mid body - Surface	1
10	Landing shoulder	1
11	Landing indicator bushing low	1
12	Chrome ball	2
13	Lower body	1
14	Locknut - Spindle	1
15	Spindle	1
16	Shut off valve - Black	1
17	Valve adjusting washer	1
18	Thrust bearing	3
19	Bearing housing	1
20	Compression spring	1
21	Ball bearing	1
22	Stover nut	1
23	Inner tube cap body	1
24	Grease fitting	1
25	Inner tube adapter	1
26	Safety pin	1
27	Valve spacer	OPT



*Please refer to the In-The-Hole catalog for part numbers.

DiscovOre Prime N2 case parts and small parts kit

DiscovOre Prime case parts

Description	Case qty
NO2 case assembly	-
NO2 Prime head assembly	2
Retracting case	1
Latch body	1
Mid body	1
Lower body	1
Spindle	1
Bearing housing	1
Inner tube cap body	1
Inner tube adapter	1
Valve spacer	2
Spindle support	1
Core orientation spacer	2
Core orientation inner tube adapter	2
Spindle support pin	1
DiscovOre tool	1
ND Prime overshot assembly	1
BA3S overshot head	1
BA3S spares kit	1
Inner tube overshot receiver	1
N to B jar staff adapter	1
Spearhead adapter	1
Jar staff	1
Bushing puller assy	1
Needle bar 36"	1
Inner tube EXT N2 2"	2

DiscovOre Prime small parts kit

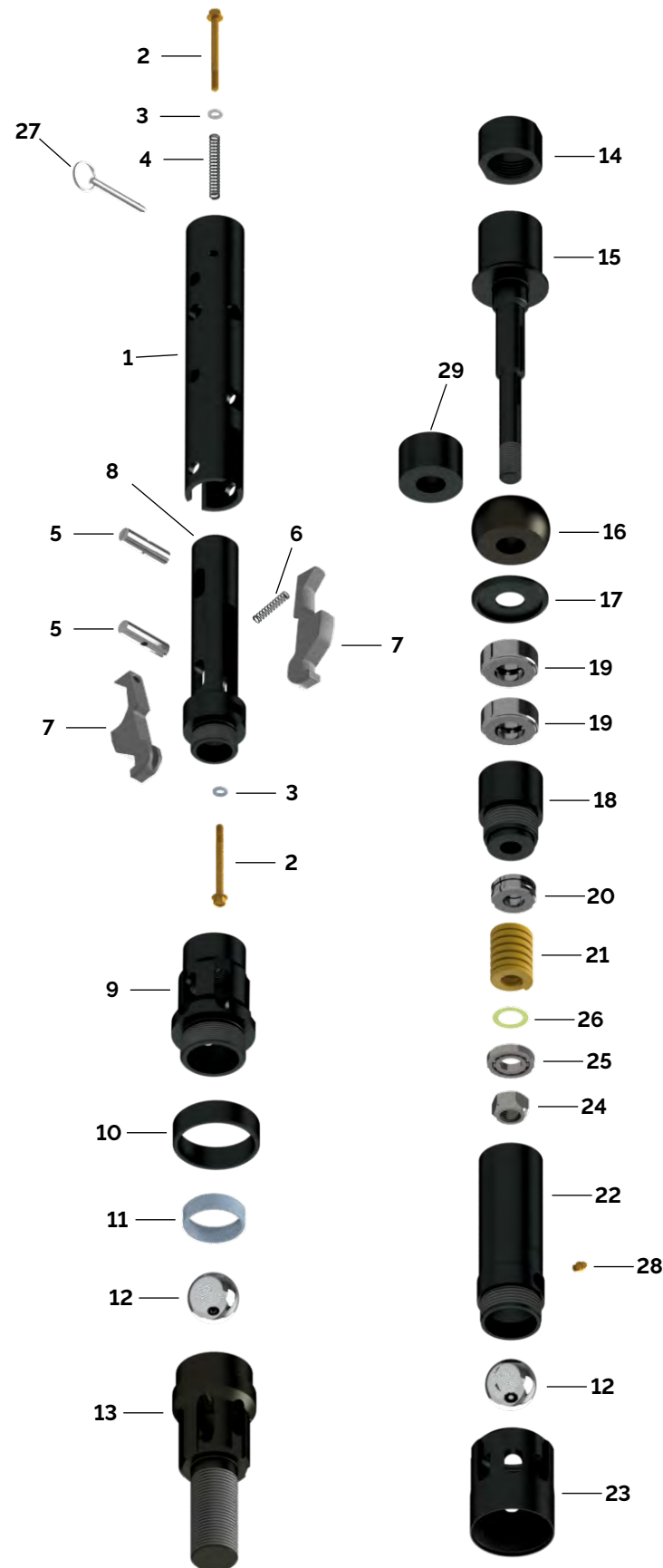
Description	Case qty
Small parts NO2 container assembly	-
Latch spring	8
Landing shoulder	1
Grease fitting	3
Stover nut	1
Spiral pin 1/4" x 1 5/8"	2
O-ring	1
Chrome ball	1
Valve adjusting washer	1
Spindle lock nut	1
Safety pin	1
Compression spring	1
Landing indicator bushing high	4
Landing indicator bushing low	4
Overshot centralizer	1
Thrust bearing	12
Shut off valve - Black	8
Assembly bolt	2
Wedge lock washer 1/4"	2
Retracting case spring	2
Assembly pin	2
Latch	8
Ball bearing	8



DiscovOre Prime H exploded view

DiscovOre Prime head assembly

Item	Description	Qty
-	H-D Prime Head Assembly - Surface	1
1	Retracting case	1
2	Assembly bolt	2
3	Wedge lock washer	2
4	Spring - Retracting case	1
5	Assembly rod	2
6	Spring - Latch	1
7	Latch	2
8	Latch body	1
9	Mid body - Surface	1
10	Landing shoulder	1
11	Landing indicator bushing 500 psi	1
12	Chrome ball	2
13	Lower body	1
14	Locknut - Spindle	1
15	Spindle	1
16	Shut off valve - soft	1
17	Valve adjusting washer	1
18	Bearing housing	1
19	Thrust bearing	2
20	Bearing hanger	1
21	Compression spring	1
22	Inner tube cap body	1
23	Inner tube adapter	1
24	Stover locknut	1
25	Ball bearing	1
26	Bearing washer	1
27	Safety pin	1
28	Grease fitting	1
29	Valve spacer	OPT



*Please refer to the In-The-Hole catalog for part numbers.

DiscovOre Prime H case parts and small parts kit

DiscovOre Prime case parts

Description	Case qty
H case assembly	-
HD Prime head assembly	2
Retracting case	1
Latch body	1
Mid body	1
Landing shoulder	1
Lower valve body	1
Lock nut - spindle	1
Spindle	1
Shut off valve - soft	6
Shut off valve - hard	2
Bearing housing	1
Inner tube cap body	1
NH A3S overshot assembly	1
NH A3S overshot head assembly	1
NH A3S spares kit	1
H spearhead adapter	1
Needle bar 36"	1
DiscovOre tool	1
Overshot receiver	1
2 3/8" inner tube extension	2
Inner tube adapter	1
Small parts kit	1

DiscovOre Prime small parts kit

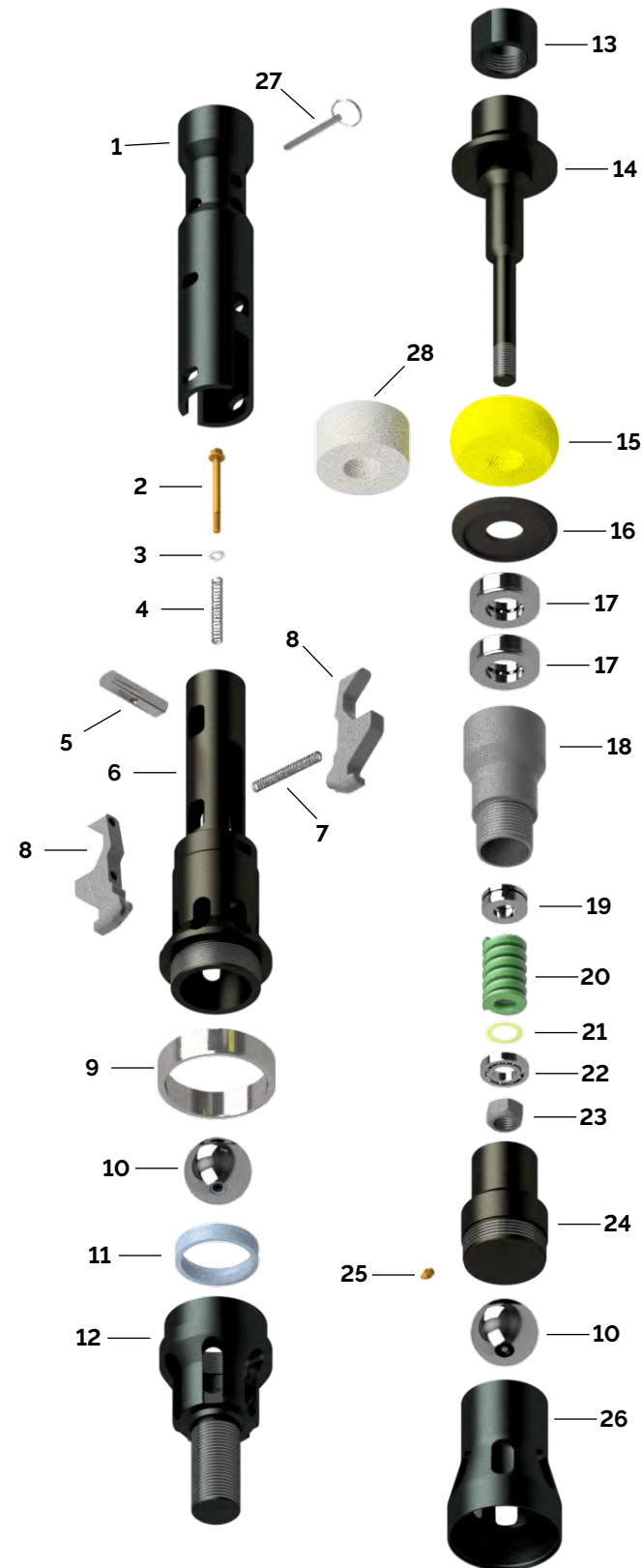
Description	Case qty
Small parts H container assembly	-
Bearing hanger	4
Landing indicator bushing - 300 psi	4
Valve adjusting washer	1
Valve spacer	2
Chrome ball	1
Assembly rod	4
Spring - Latch	4
Grease fitting	3
Compression spring	1
Latch	8
Thrust bearing	8
Safety pin	1
O-ring	1
Landing indicator bushing - 700 psi	4
Ball bearing	4
Stover locknut	1
Assembly bolt	4
Wedge lock washer	4
Spring - Retracting case	2
Bearing washer	4
Landing indicator bushing - 500 psi	4



DiscovOre Prime P exploded view

DiscovOre Prime head assembly

Item	Description	Qty
-	P-D Prime Head Assembly - Surface	1
1	Retracting case	1
2	Flanged hex	1
3	Wedge lock washer	1
4	Spring	1
5	Assembly rod	1
6	Latch body weldment	1
7	Spring	1
8	Latch	2
9	Landing shoulder	1
10	Stainless steel ball	2
11	Landing indicator bushing 500 psi	1
12	Lower body	1
13	Lock nut	1
14	Spindle	1
15	Shut off valve	1
16	Valve washer	1
17	Thrust bearing	2
18	Spindle bearing housing	1
19	Bearing hanger	1
20	Compression spring	1
21	Ball bearing	1
22	Bearing washer	1
23	Stover nut	1
24	Inner tube cap body	1
25	Grease fitting	1
26	Inner tube adapter	1
27	Safety pin	1
28	Spindle spacer	OPT



*Please refer to the In-The-Hole catalog for part numbers.

DiscovOre Prime P case parts and small parts kit

DiscovOre Prime case parts

Description	Case qty
P case assembly	-
Overshot head assembly	1
Retracting case	1
Inner tube adapter	1
Lower body	1
Latch body weldment	1
Shut off valve	8
Inner tube cap body	1
Spindle	1
Spindle bearing housing	1
Spearhead repl kit universal	1
Spare parts kits OS-NH-A35	1
Landing shoulder	1
DiscovOre tool	1
Spindle spacer	2
Small parts container assembly	1
Spindle lock nut	1
Thrust bearing	8
Needle bar 36"	1
Head assembly	2
Overshot assembly	1
Small parts kit	1

DiscovOre Prime small parts kit

Description	Case qty
Small parts container assembly	-
Spring 0.36 ODx0.258	4
Ball bearing	4
Latch	8
Landing indicator bushing 300 psi	4
Compression spring	1
Bolt	2
Stover nut	1
Bearing hanger	4
Stainless steel ball	1
Landing indicator bushing 700 psi	4
Valve washer	2
Wedge lock washer 1/4"	2
Spring 0.360"X 0.051"X 2.5"	2
Assembly rod	2
Safety pin	1
O-ring	1
Grease fitting	3
Landing indicator bushing 500 psi	4



About Epiroc

Epiroc's vision is to be the first choice of customers and potential customers, current and future employees, shareholders, and other stakeholders. To realize this vision, we must create positive awareness, establish trust and earn preference through consistent performance and leadership in innovation. Being first choice will help us attract and retain the best talent and result in a successful business.

All operations are conducted within a documented quality management system which complies with the requirements of ISO 9001.

Epiroc conducts its business with a commitment to quality and an ambition to continually improve both the actual and perceived performance of its products and services. Our overall objective is to make the issue right regardless of whether the dispute is an application error or technical non-conformance to the mutual benefit of all concerned.

