

# TenarisHydril EasyDock® Connection

## Scope

These guidelines apply only to the specific case of TenarisHydril EasyDock® connectors. This document should be used in conjunction with the TenarisHydril Running Manual, which is the main document applicable for running all TenarisHydril Premium Connections.

Tenaris Field Service Representatives can modify the application of the recommendations on these guidelines when circumstances dictate. Implementation will only occur if the representative deems the modification to be non-detrimental to product integrity. All modifications being explained and agreed with the client representative prior to implementation and fully documented in the running report.

## References

- API Recommended Practice 5C1.
- API Specification 5L.
- FTD29356 Premium Connection Approved Thread Compounds
- GDL31457 Recommended guidelines for the field inspection of TenarisHydril connections.
- GDL23353 Blue® Series and Legacy Series Make up Acceptance.

## Equipment, Material & Documents

1. Verify the appropriate thread compound is available onboard for this connector.
2. Refer to document FTD29356 “Premium Connection Approved Thread Compounds” for a list of compounds approved by Tenaris.
3. Latest version of the specific Product Data Sheet can be obtained from Tenaris web site. In case it is not available, request the data sheet to the local Technical Sales representative.
4. Verify the compatibility of the EasyDock® connector with accessories such as pup joints, etc. Interchange capability is indicated in the product Data Sheet.
5. Ensure accessories such as O-rings, spare Anti Rotation Keys (ARK's) and ARK installation tools are available on the rig prior to operation commencement.
6. Specific tools required for successful running or pulling of EasyDock®
  - Allen key: 5 mm
  - Spare ARKs and hexagonal bolts
  - Hammer
  - Chisel
  - Spare O-rings

## Pre-Running

1. Check weld cord, ensuring the elevators can pass over to seat against the connector.
2. The following connector information will be hard-stamped on the connector OD.
  - Connector name
  - OD
  - Connector SMYS

- Manufacturing Facility
  - Manufacturing Quarter
  - Traceability Numbers.
3. The pipe grade will be stenciled in the pipe ID no less than 6" back from the pipe end.
  4. Make note of the connector and pipe grade, there should be a disparity.
  5. Shift ARK(s) to unlocked position and tighten bolt.
  6. Check if ARK(s) are moving freely, if not loosen with the aid of anti-seize spray (WD40).
  7. Ensure the connections are cleaned and free of all debris and / or contaminants, cleaning methods employed should conform to the recommendations contained within the TenarisHydril running manual.
  8. Visually inspect threads and shoulders as per GDL31457 "Recommended guidelines for the field inspection of TenarisHydril connections", prior to running ensuring no damage is evident.
  9. Check the condition and fit of the O-ring (elastomeric seal).
  10. Connector should arrive with the O-ring installed, if not check fit of O-rings onboard.
  11. Ensure there are spare O-rings on board.
  12. Clean, dry then replace protectors.
  13. Re set all ARK(s) and secure in order to prevent them from damage when pipe is moved.
  14. Never move or handle pipe without protectors securely in place.

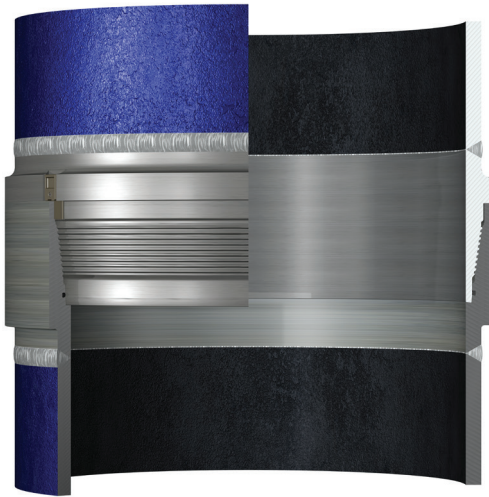
15. Check the number of ARK(s) of each connection; one or two as per customer specification.
16. Verify material grade of any pups or accessories are compatible with main string.
17. Pay particular attention and note the type of connector on each item.
18. EasyDock® is interchangeable within same OD. When connectors with different wall thickness are combined there may be a step in the bore.

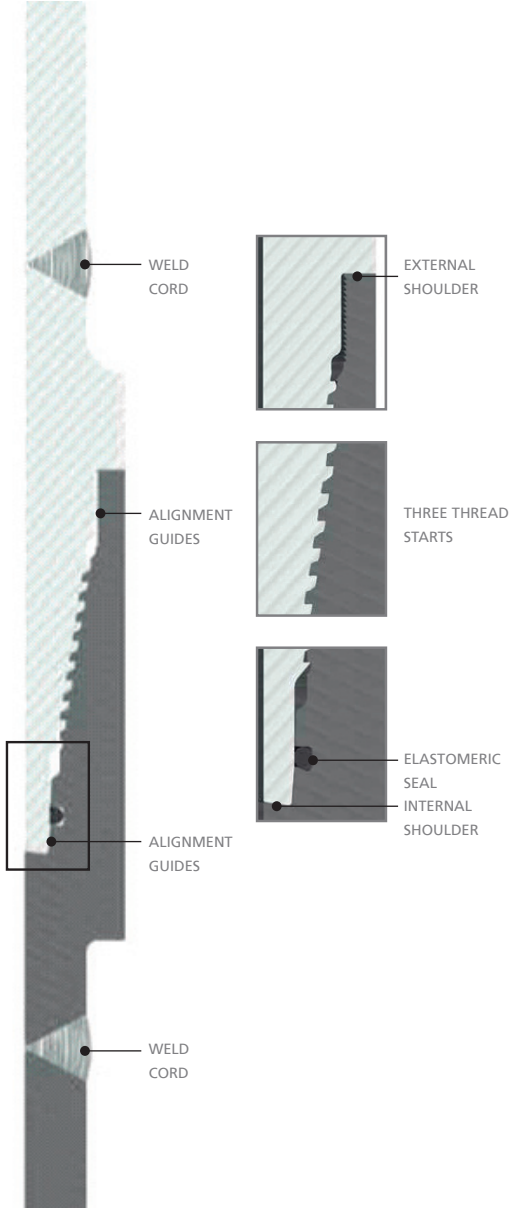
## Inspection

1. Check box and pin connections for mashes or out of round, large OD connections can be susceptible to handling damage such as mashes, dents or ovality.
2. Visually inspect all connectors as per Tenaris document GDL31457 "Recommended guidelines for the field inspection of TenarisHydril connections"
3. Ensure the pin and box shoulders have no dents, tears or raised material which could interfere with correct assembly.
4. Ensure there are no gouges or raised material on the alignment guide areas.
5. Check O-ring groove has no dents, mashes or gouges which would preclude correct installation of the ring.
6. Check O-ring has no abrasions, cuts or tears, if found replace with a new ring ensuring it is correctly seated.
7. Check function of Anti Rotation Keys (ARK) to ensure ease of use whilst RIH.

8. It is advisable to use an anti-corrosion spray on the ARKs to prevent seizure whilst in storage.
9. Alternatively a storage compound can be applied.

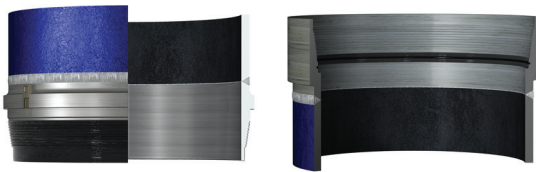
## EasyDock® Configuration





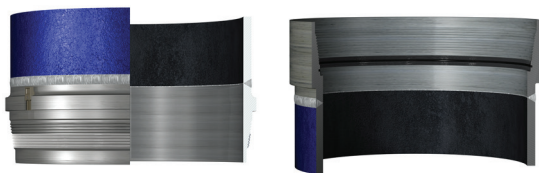
## Thread Compound Application

1. Ensure all connection surfaces are free of all contamination / debris and completely dry prior to doping, ensure any previously applied storage compound is completely removed.
2. Do not use solvents on Elastomeric Seal (ELS) as they may degrade the O-ring.
3. For Tenaris approved thread compounds, refer to FTD29356 "Premium Connection Approved Thread Compounds".
4. Always use a new unopened pail of thread compound, ensuring it is completely homogenised prior to use.
5. **PIN END:** Apply a thin even coat of running compound, covering the full thread area, external shoulder and pin nose. The thread form should be clearly visible.
6. Do not apply dope on the external alignment guide.



7. **BOX END:** Apply a thin even coat of running compound covering seal surface area only (where ELS is located).
8. Do not apply dope on the external alignment guide.
9. Do not pack the O-ring causing dope to encroach under the ring.
10. For Tenaris approved thread compounds, apply the friction factor indicated in FTD29356.

## Thread Lock Application



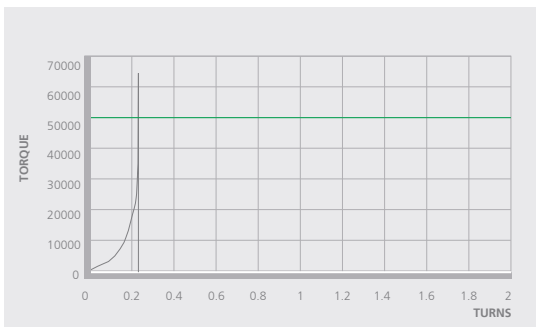
1. Ensure the connections are completely clean and dry prior to applying thread lock.
2. Apply thread lock to 50% of the threads behind the pin sealing area, where the ELS is located.
3. Do not apply thread lock onto the sealing area, where the ELS is located.
4. Apply an even coat of running compound to the box internal and external torque shoulders and seal surface area.
5. Apply the thread lock manufacturers indicated friction factor.

## Torque Application

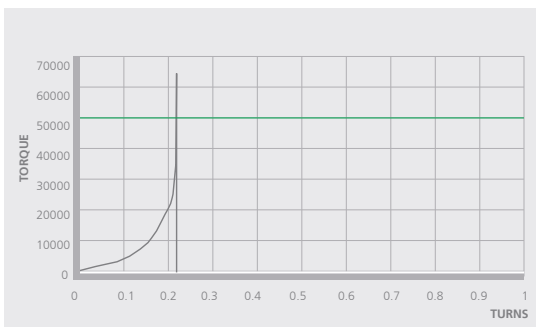
1. The use of computer make up analysis equipment is not necessary to make up EasyDock® connectors.
2. EasyDock® assembles within  $\frac{3}{4}$  of a turn from stabbing to power tight make up.
3. A make-up is acceptable if final torque is within the defined window and there is no visible gap at the external shoulder.



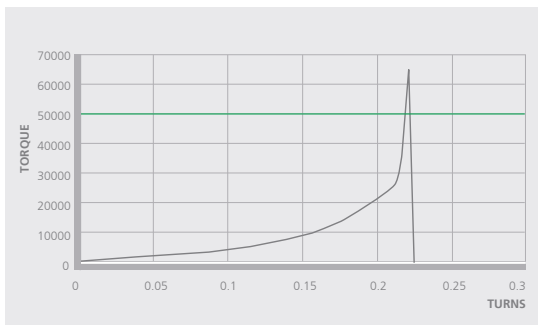
4. If torque turn computer equipment is used set reference torque at zero. The guidelines indicated in GDL23353 "Blue® Series and Legacy Series Make up Acceptance" are applicable.
5. Shoulder point should be clearly observed on the torque-turn graph. Note that quite different profiles can be obtained by changing the turn span of the graph. The second and third graphs display an obvious clarity advantage.



Graph window set at 2 turns.



Graph window set at 1 turn.



Graph window set at 0.3 turn.

## Running

1. Alignment is critical for all pipe running operations, with large OD being even more so. Ensure travelling block / top drive is aligned with the rotary.
2. A misalignment of 20% of the connector OD is excessive and should be corrected.
3. A stabbing guide is highly recommended to allow controlled, safe stabbing.
4. The use of a weight compensator is recommended.
5. Stab pipe in a smooth controlled fashion, ensuring elevators are slackened off from connector.
6. Ensure pipe is stabilised during stabbing and make up, this is especially important in windy conditions and if running on a floating installation.
7. Once stabbed and stabilised the make-up should be conducted in a single continuous operation without starts and stops until optimum torque is attained.

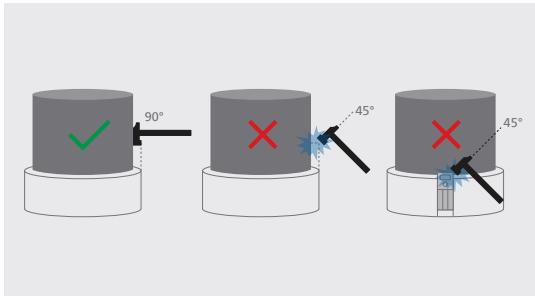
8. Ensure ARK(s) are in the unlocked position prior to stabbing.
9. Apply Low gear and make up below 5 RPM but no slower than 2 RPM.
10. Apply the torque indicated in the appropriate data sheet ensuring an acceptable make up is attained as previously described.
11. Slacken the fixing bolt on the open ARK(s) and hammer into position.
12. Tighten ARK bolt to lock in position.
13. Once assembled scribe a longitudinal line across both connectors as visual reference.
14. If a situation arises where an O-ring and/or ARK(s) requires replacing, do so away from well bore.

## Anti Rotation Key (ARK) Function

1. ARKs are intended to be used for multiple installations if required, but this is only possible if they are properly handled, used and stored.
2. If an ARK is damaged it should be replaced with a new one.
3. To activate, completely loosen lock bolt and knock into place with a hammer, slide sledge or other such device.
4. Ensure all hammer blows contact the ARK strike face parallel to the face. Glancing blows or angled strikes can cause damage or break the ARK.
5. Hammer the ARK in the direction of travel only.

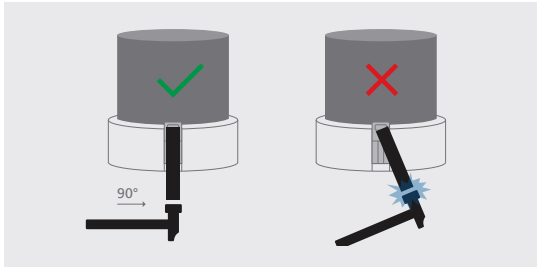
6. Stop hammering the ARK as soon as it is fully set to prevent breakage.
7. Ensure the ARK(s) are locked in place by the lock bolt using a hexagonal key.
8. Correct and incorrect methods of setting/ un-setting the ARK are indicated in the following diagrams.

### Setting:



9. The use of a chisel and hammer to unset the ARK is required
10. The chisel should be placed correctly in the removal slot to prevent damaging the ARK or slot edges.
11. Hammer the ARK in the direction of travel only.
12. Correct and incorrect de-activation methods are indicated in the following diagrams.

## Un-setting:

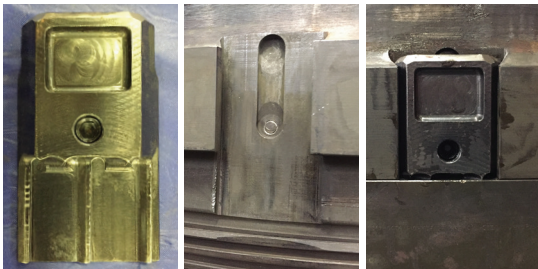


**13.** When the pipe is not being used knock the ARK(s) into the set position and lock in place.

**14.** If the pipe is to be stored ensure the ARK(s) are in the set position and completely cover with storage grease to prevent corrosion to both the ARK and the ARK slot.

**15.** TenarisHydril EasyDock® protectors are in two parts; the thread / seal protector and the bumper ring. When handling and / or storing pipe ensure both parts are correctly installed to pin and box in order to prevent damage to the connector, ARK(s) and ARK slots.

**16.** The ARK(s) fit snug into the key guide.



Left: ARK. Centre: ARK slot. Right: ARK installed.

## Pulling

1. Alignment is equally as critical for pulling as it is for running pipe.
2. Ensure travelling block / top drive is aligned with the hole, 20% deflection is excessive.
3. The use of a weight compensator is recommended.
4. Unlock the ARK bolt with the use of a hexagonal key.
5. Move the ARK to the unlocked position and tighten lock bolt.
6. Ensure all ARK(s) are deactivated.
7. It is possible to break out the connection with the ARK(s) installed however the break out torques will be significantly higher than normal.
8. Back up tong if used should be placed on the pipe body.
9. Break and spin out under 5 RPM.
10. Ensure vertical stabilization of the pipe when breaking and spinning out.
11. When rotating out use the previously scribed alignment marks to prevent connection bump.
12. Stop rotation when marks are aligned.
13. Do not over rotate and allow the pipe to 'bump' or spin on the last engaged thread.
14. A stabbing guide is recommended in order to guide the pin from the box when picked up.

15. Disengage pin from box and pull to one side using a rope or some other form of stabilising aid to secure the pipe. This is imperative in high winds or on a floating installation, care should be taken to lower the pipe to a safe, manageable height as soon as it is lifted free of the box.
16. Apply storage / thread compound to pin and box connection to prevent corrosion, including rejects.
17. Re-install clean, dry thread protectors securely.

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