



leaders in **attachment** safety



THE QUEEN'S AWARDS  
FOR ENTERPRISE:  
INNOVATION  
2014

TEFRA has proven itself to be the safest Coupler on the market today.



## An Introduction to TEFRA

TEFRA - the single most significant progression in Coupler safety. This simple, comprehensive solution makes **TEFRA the safest Coupler on the market today.**

### THE FACTS

The integral primary and secondary safety systems in TEFRA **eliminate the most dangerous aspect of handling attachments** - the risk of the attachment separating from the coupler.

Hill solve this by using a **positive locking system** that is permanently engaged in all orientations, making this crucial safety feature 'active' and not 'passive' in the way it works.

TEFRA components are cast steel, meaning **lower weight and higher strength.**

TEFRA has broad market appeal, meeting every challenge, with versions available to suit the demands of all industry sectors.

### THE FIGURES

TEFRA fits excavators in size classes from **1.5 to 120 tonnes.** TEFRA is fully compliant with the expected requirements of the forthcoming **ISO 13031** global standard.

TEFRA has proven itself to be the **safest Coupler on the market today.**

“We lead where others follow, which is why Hill is recognised as the UK’s number one provider of couplers. Of course, we couldn’t do this without your loyal support so a ‘Big Thank You’ to all our customers.”

Ian Hill  
Managing Director  
ian.h@hillattach.com



“The commitment from our team, combined with the quality of our products, fantastic customer service and aftersales care means we retain our current customers and attract new opportunities.”

**Oliver Phelan**  
Global Sales Director  
oliver.p@hillattach.com



## Primary Locking System

TEFRA is an industry first. The **dual safety** features of TEFRA are **unique** within the attachment industry.

The primary safety system consists of a **uniquely designed** set of hooks powered by a single high specification hydraulic cylinder. The cylinder works together with a dedicated solenoid valve, locking the attachment securely into place.

The intrinsic feature of the hooks is their shape - they are individually designed to tightly hold their respective pins against the body of the coupler. This **secure and failsafe retention** means the attachment stays in place in all orientations and operating conditions.



## Secondary Locking System

Our Active Protection System (Hill APS) consists of 2 separate powerful springs that apply pressure to the hooks to ensure attachment retention at all times.

A single leaf spring applies constant pressure to the front hook. This compact and durable spring ensures the **hook stays in place at all times.**

Both springs are individually **rated far in excess of any strength and safety requirements**, and have undergone stringent testing to ensure durability and reliability in the field.

A coil spring serves exactly the same function in relation to the rear hook.





## Hill Smart Valve

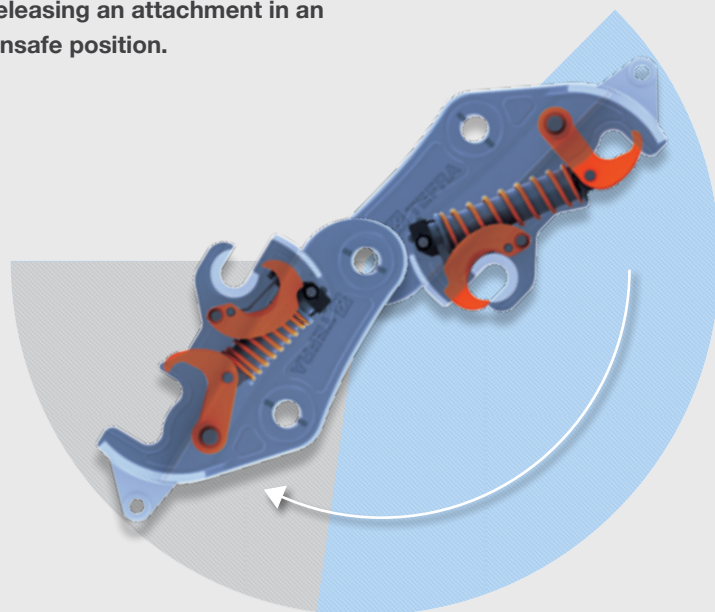
A unique, fully patented major safety feature of the TEFRA Coupler.

The Hill Smart Valve is a simple, patented, totally effective solution ensuring that the attach and release sequence cannot be performed until the coupler is orientated towards the operator in a crowded position.

**This prevents the operator from releasing an attachment in an unsafe position.**

The Hill Smart Valve is an **integral part** of the cylinder design. As it is protected within the cylinder, it is **not susceptible to** external damage or contamination from material entering the coupler during use.

It requires **no routine maintenance** and is compatible with other warning systems such as audible indicators to ensure a safe and easy operation.



**Permitted Release Zone.** The Smart Valve will allow oil to flow into the cylinder so that the release procedure can commence.

**No Release Zone.** The Smart Valve will stop oil from flowing into the cylinder, thereby preventing the release procedure.

**“Our promise to you is simple - we will continue to be as pro-active, as diligent and as dynamic within the industry, as we always have been.”**

**Marie Keating**

Sales Support Administrator  
marie.k@hillattach.com



**Hill controls production at every stage. This is how we maintain the integrity of our name.**

## Hill TEFRA Compact Couplers

A new range to complete the TEFRA line-up. The innovative TEFRA coupler is now available to fit most mini excavators from 1.5 tonnes and the CAT and JCB BHL range.

### Mini Excavators

These couplers have cast steel frames, for **maximum strength and minimum weight**, which is crucially important when installing a coupler onto smaller types of excavator.



### Featuring the innovative TEFRA internal design:

- Cast steel front and rear hooks
- Single cylinder for secure primary attachment locking and retention
- Hill APS secondary locking system
- Hill smart valve to ensure safe attachment and release activity

“By controlling every stage of our supply chain we can guarantee the integrity of our name.”

**Delise Turley**  
Production Controller  
delise.t@hillattach.com



## Hill TEFRA BHL Couplers & Backhoe Loaders

Our new range of BHL couplers effectively minimise the loss of breakout force, whilst ensuring optimum material retention in the bucket, without the bucket fouling on the dipper.

Hill can uniquely offer the fleet owner **a single source** of fully compliant, automatic, double locking pin grabber couplers, which are:

- **Exceptionally safe** - through the use of Hill APS attachment retention and locking systems and the innovative Hill Smart Valve
- **Highly durable** - purpose designed components and fewest moving parts
- **Compliant** - with BSEN 474 and also expected to fully meet the forthcoming ISO 13031 global standard
- **Extremely flexible** - with extensive pick up range





## The Hill AWS (Automatic Warning System) - monitoring and warning device

“Safety is at the heart of everything we do. If it’s not safe, it’s not Hill.”

Neal Loughran  
Engineering Manager  
neal.l@hillattach.com



Following extensive research we have developed a product that continuously monitors the hydraulic system of the coupler, helping to prevent common failures and incidents.

AWS actively **monitors the excavator and coupler hydraulics** to ensure that they are **functioning as intended**. Advanced early warning is given to indicate any changes in system performance, ahead of conventional signs of failure, such as external oil leaks or loss of coupler engagement forces.

The sophisticated new AWS hydraulic solenoid monitors not only hydraulic pressure but critically, oil flow. Possible problems are identified, long before they become visible to the operator.

The valve is connected to the control system, which triggers an audible warning. The audible warning alerts the machine operator and all persons at risk working in the vicinity of the excavator - **in the critical area in front of the machine, where the attachment is being used**.

### Universal Application

AWS has been developed to be installed on excavators, fitted with any type of hydraulic coupler, irrespective of the original manufacturer.

### AWS Detects & alerts:

- Internal hydraulic oil leaks, not visible externally, for example, the seals within the coupler cylinder
- External hydraulic oil leaks in cylinders or hoses
- Faulty solenoid valve
- Failure of the primary engagement system
- Incorrect use due to insufficient operator training

## The Hill ECS (External Coupler Sounder) - warning device

Alerting individuals in the area that an attachment change is taking place.

Using the same external sounder as the superior AWS system, the **ECS monitors coupler pressure only**, alerting individuals in the area that an attachment change is taking place, **without the constant monitoring** of the excavator and coupler hydraulics.

### ECS Detects & alerts:

- Major external hydraulic oil leaks in cylinders or hoses
- Complete failure of the primary engagement system
- Incorrect use due to insufficient operator training



## Reverse Hose System

A simple solution to a common problem.

It's long been an issue that Coupler hoses are vulnerable due to their location.

They can easily become entangled in the excavator linkage, causing rapid wear and tear, often causing **major damage** to the hoses.

The only logical solution is to prevent the hoses from moving **out of position in the first place.**

The **Hill Reverse Hose System** consists of a specially designed manifold block and hoses encased in a protective sleeve that **ensures they stay in the correct position at all times.**



When the hoses are between the bucket link, they can't be damaged during everyday operation. **It's simple.**



**“We promise to put customer satisfaction first.”**

Gerry Mulgrew  
Service Manager  
gerry.m@hillattach.com



## TITAN Buckets

Hill buckets are a simple, no-nonsense solution to the need for reliably long lasting, earth moving equipment.

TITAN HD



Our buckets feature a double radius design, which gives **superior digging performance due to the low drag factor.** This also means that they fill quickly, meaning more productive digging and loading operations.

TITAN HDX



They are built to **conform to Original Equipment Manufacturers** dimensions and have the option of fixed pin or bossed attachment points.

Hill provides two specification options: the **HD** and the **HDX.**

DITCH CLEANING OR GRADING BUCKETS



Our range is available in widths from **72” up to 120”.** All sizes feature a central strengthening rib and can have a welded cutting edge or a bolt on reversible type. These buckets have been carefully designed to provide **long service life** in the full range of site and ground conditions.

*We can manufacture TITAN buckets for the most extreme application. Please feel free to talk to us about your requirements.*

## TEFRA TILT

“We’ve listened to the challenges our customers face. Tefra Tilt is our solution.”

**Ross Fairweather**  
Regional Sales Manager  
Scotland & North England  
ross.f@hillattach.com

The **TEFRA TILT** takes all the advantages of the award winning **TEFRA Coupler**, and provides our customers with the added benefit of increased productivity and versatility in multiple applications.

The **TEFRA TILT** will be available for machines sizes ranging from 3-20 tonne, and like the **TEFRA Coupler**, it’s been specifically designed to be essentially maintenance free. The heavy duty motor is self-lubricating and wear free so that you are able

to concentrate on the important tasks. The robust design of the individual components made from high strength, surface hardened materials, allows up to **180° rotation** almost without play even after prolonged operation.



## Celebrating More Than 20 Years In Business



Hill Engineering was started in 1994 by Ian Hill (Managing Director) Today Hill Engineering employs over 70 people in a purpose built factory in the city of Newry. Our people are our core strength and the business growth is a reflection of their dedication and commitment.



The foundation which this business was built on 20 years ago proudly resonates today.

Our commitment is simple : we are proactive, diligent and dynamic in order to bring the most durable , cost effective, safest products on to the market.

We are immensely proud of the recognition of our innovation, most recently for TEFRA, a simple but comprehensive solution to coupler attachment.

It won the 2014 Queen’s Award for Enterprise in innovation, the UK’s highest accolade for business success. It was also recognised by Plantworx innovation award for engineering.

We are an ISO 9001 accredited firm and use this quality system as a code of conduct for all our activities. Hill Engineering strongly believes in promoting and supporting local communities to foster good relations. We are looking forward to continuing

our year on year growth to develop and manufacture the very best products in our modern, purpose built factory.





## The Queen's Award

Hill Engineering has been awarded the **2014 Queen's Award for Enterprise in Innovation**, which recognises excellence in UK business enterprise, having designed, developed and globally marketed ground breaking engineering equipment.

The TEFRA is suitable for excavators ranging from 1.5 tonne to 120 tonne and is fully compliant with all expected key provisions of the forthcoming new European (EN474) and proposed global ISO 13031 safety standards.

**"It is a great honour to be recognised for the outstanding levels of innovation within this company."**

**William McIntosh**  
Sales & Marketing Executive  
William.m@hillattach.com



THE QUEEN'S AWARDS  
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Hill Engineering Managing Director, Ian Hill said "I am delighted that our innovation and commercial success has been recognized with a Queen's Award. It reflects our commitment to innovation and clearly demonstrates that Hill Engineering is a global player with innovation at the heart of

the company. It is a tremendous achievement for the company, especially in our 20th year. The TEFRA has led to 30% year on year growth for Hill, with further significant growth projected.

Since launching the product in 2011, Hill Engineering has achieved phenomenal sales in Europe, Australia and USA.





## About Hill

We are a **British team meeting global standards.**  
The Hill name has long been synonymous with **superior safety** delivered with absolute confidence.

Our fantastic reputation is under constant scrutiny and is continually being challenged... by us.

In an Industry which requires such **stringent safety standards**, there's simply no room for complacency.

Hill continually develops safer ways to work and consistently delivers exceptional, **world class products** without compromise.

From the second you engage with us, our **customer service** is professional, concise and friendly.

We establish life-long relationships with customers who can focus on excelling at their job, because they know we excel at ours.

Our uncompromising commitment to safety means that Hill is a recognised **front runner in industry compliance** and customer confidence.

**“The Hill TEFRA Coupler is the most safety compliant product on the market today.”**

**Darren Bland**  
Regional Sales Manager  
Central England  
darren.b@hillattach.com



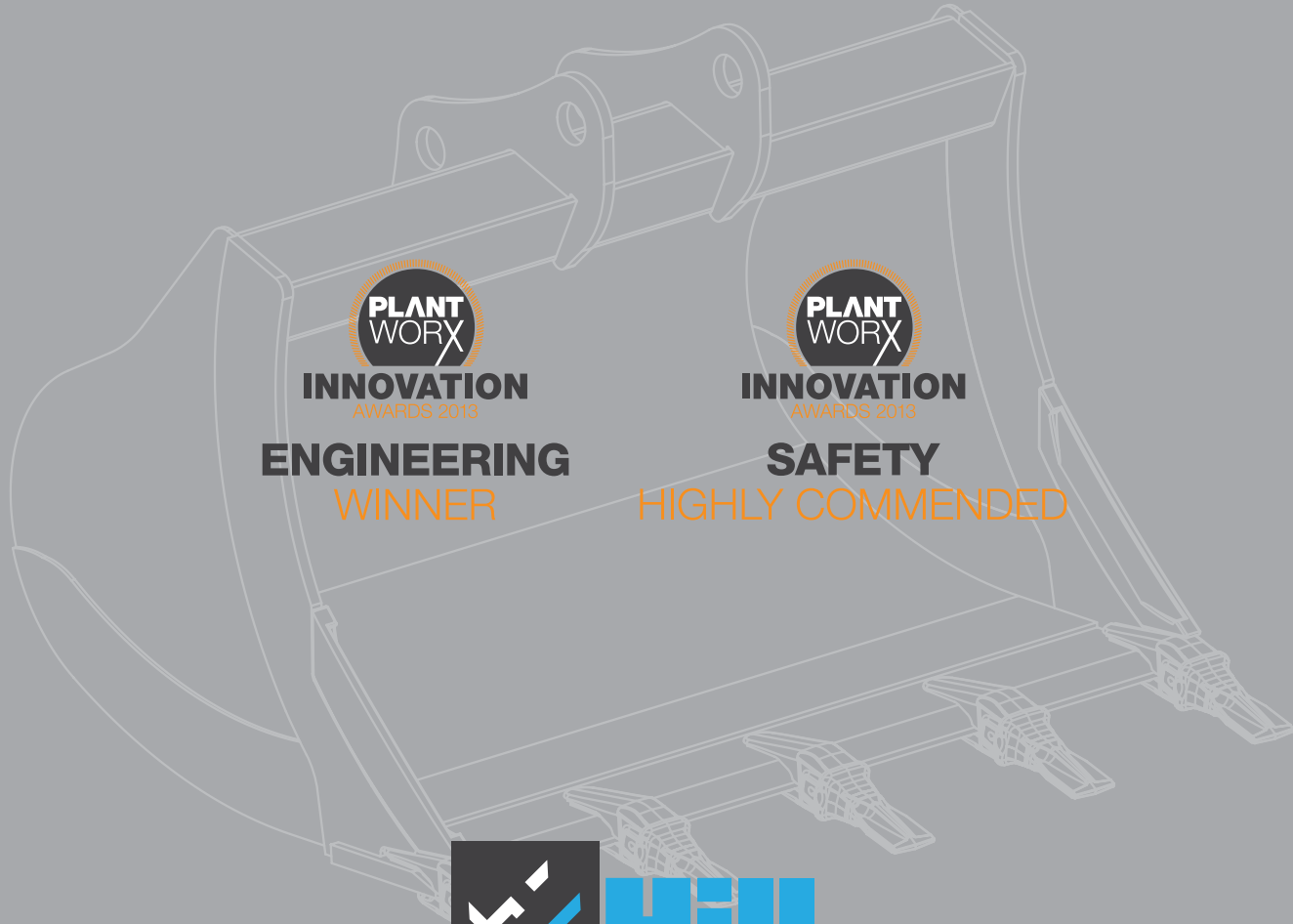
[www.hillattach.com](http://www.hillattach.com)

- 1994 Ian Hill started trading as a manufacturer of plant equipment
- 1995 The business began to diversify into the development and production of Excavator Quick Couplers
- 2001 Gained accreditation to ISO 9001
- 2004 2nd production facility opened to enable manufacture of excavator buckets
- 2006 Completed a £4.5m investment into an amalgamation of both production facilities (85,000 sq.ft. purpose built factory in Newry)
- 2007 Developed original facility as dedicated Research & Development operation
- 2008 Design, prototyping & testing of the TEFRA Coupler range & AWS (advanced warning system)
- 2011 Launch of the all new TEFRA Coupler and TITAN bucket ranges.
- 2012 Launch of the cast Mini TEFRA range for 3 tonne and 7 tonne machines
- 2013 Winner of the Plant Worx Innovation in Engineering Award and Highly commended in Safety
- 2014 Launch of the TEFRA TILT
- 2014 Awarded the 2014 Queen's Award for Enterprise in Innovation
- 2015 Deloitte Best Managed Company Award
- 2016 Deloitte Best Managed Company Award
- 2017 Deloitte Best Managed Company Award
- 2018 Launch of the TEFRA coupler for 1.5 tonne - 2.5 tonne machines

**We establish life-long relationships with customers who can focus on excelling at their job, because they know we excel at ours.**







**INNOVATION**  
AWARDS 2013

**ENGINEERING**  
WINNER



**INNOVATION**  
AWARDS 2013

**SAFETY**  
HIGHLY COMMENDED



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