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 Database: EPODOC

[EPODOC: SS 17] Washer and socket and tool and torque and bolt and nut

Results in EPODOC 7

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PN - [MX2016008104](#) A 20170327

PR - US201361916926P
20131217; US201461940919P
20140218; WO2014US35375
20140424; US201462012009P
20140613; WO2014US70996
20141217

AP - MX20160008104 20141217

DT - I

CCI - [B25B13/06](#) ; [B25B21/002](#) ;
[B25B23/0085](#) ; [B25B23/08](#) ;
[F16B39/24](#)

CUI - [B25B13/488](#)

PA - HYTORC DIVISION UNEX CORP
[US]

TI - A REACTION **WASHER** AND ITS
FASTENING **SOCKET**.

AB - The present invention seeks to
protect Applicant's HYTORC Z
System which involves: tools
having multi-speed / multi-
torque modes with **torque**
multiplication and vibration
mechanisms without use of
external reaction abutments; a
force transfer means to yield in-
line co-axial action and reaction
for use with such tools; driving
means and shifting means
capable of attaching to washers
under the **nut** for use with such
tools and force transfer means;



associated washers for use with such tools, force transfer means and driving means; and related accessories for use with such tools, force transfer means, driving means and washers. HYTORC(r) Z(r) Washers located under nuts or **bolt** heads of various types having engageable perimeters of multiple shapes, sizes, geometries and serrations, such as **washer**/fastener radius engagement differentials, and frictionally biased faces with relatively higher friction against the flange surface and relatively lower friction against the **nut**, such as friction coefficient increasing treatment means of various types, sizes and locations. HYTORC Z(r) Guns incorporating a powerful impact mechanism and a precise **torque** multiplier in the same **tool** combining rapid run-down with calibrated **torque**. HYTORC(r) Z(r) Sockets with dual drive coaxial action and reaction having outer sleeves to react on Z(r) Washers and an inner sleeves to turn nuts or **bolt** heads. HYTORC(r) Z(r) Spline Adapters and Reaction Plates for backwards compatibility with HYTORC (r)'s **torque**/tension systems including the AVANTI(r) square drive system, the STEALTH(r) limited clearance system, the pneumatic jGUN(r) series, the FLASH(r) Gun electric multiplier and more. HYTORC(r) Z(r) **Washer** and HYTORC(r) Friction Washerâ¬ combination including a dual friction-enhanced face **washer** for counter-**torque** under a **nut** or **bolt** head on the other side of the joint; and HYTORC(r) Z(r) Dual Drive Offset Links for tight clearances while using HYTORC

(r)'s **torque**/tension systems.

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PN - [CN106030128](#) A 20161012

PR - US201361916926P
20131217; US201461940919P
20140218; WO2014US35375
20140424; US201462012009P
20140613; WO2014US70996
20141217

AP - CN2014875590 20141217

DT - I

CT - || STSE (A)
[WO0077410](#) A1 20001221
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[A] 1-18
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[CN1096918C](#) C 20021225 [Y] (JOHNKS
JOHN K [US])
[Y] 30-33
* 说明书第8页第3段-第9页第3段、图
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[A] (SMOLAREK HANNA MARIA [AU])
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[A] 1-28
* 全文 *;
[US2012125163](#) A1 20120524
[YX] (MIYATA KATSUJI [JP])
[Y] 30-33
* 摘要、说明书第0007、0011、
0012、0015、0017、0021、0026、
0028、0061-0087段，图1-8 *
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[CN2154379Y](#) Y 19940126 [A] (DUAN
YINGXIAN [CN])
[A] 1-17
* 全文 *;
[CN1427927](#) A 20030702
[A] (SMOLAREK HANNA MARIA [AU])
[A] 1-17
* 全文 *;
[CN1656322](#) A 20050817
[A] (VERBINDUNGSTECHNIK GMBH
[DE])

[A] 1-17

* 全文 *;

[CN102138010](#) A 20110727

[A] (ACUMENT GMBH & CO OHG)

[A] 1-17

* 全文 *;

[CN102233555](#) A 20111109

[A] (ANITETO CO LTD)

[A] 1-17

* 全文 *

- CCI - [B25B13/06](#) ; [B25B21/002](#) ;
[B25B23/0085](#) ; [B25B23/08](#) ;
[F16B39/24](#)
- CUI - [B25B13/488](#)
- PA - HYTORC DIVISION UNEX CORP
- TI - A reaction **washer** and its fastening **socket**.
- AB - The present invention seeks to protect Applicant's HYTORC Z System which involves: tools having multi-speed / multi-**torque** modes with **torque** multiplication and vibration mechanisms without use of external reaction abutments; a force transfer means to yield in-line co-axial action and reaction for use with such tools; driving means and shifting means capable of attaching to washers under the **nut** for use with such tools and force transfer means; associated washers for use with such tools, force transfer means and driving means; and related accessories for use with such tools, force transfer means, driving means and washers. HYTORC<R> Z<R> Washers located under nuts or **bolt** heads of various types having engageable perimeters of multiple shapes, sizes, geometries and serrations, such as **washer**/fastener radius engagement differentials, and frictionally biased faces with relatively higher friction against the flange surface and relatively lower friction against the **nut**, such as friction coefficient increasing treatment means of various types,

sizes and locations. HYTORC Z<R> Guns incorporating a powerful impact mechanism and a precise **torque** multiplier in the same **tool** combining rapid run-down with calibrated **torque**. HYTORC<R> Z<R> Sockets with dual drive coaxial action and reaction having outer sleeves to react on Z<R> Washers and an inner sleeves to turn nuts or **bolt** heads. HYTORC<R> Z<R> Spline Adapters and Reaction Plates for backwards compatibility with HYTORC 's **torque**/tension systems including the AVANTI<R> square drive system, the STEALTH<R> limited clearance system, the pneumatic jGUN<R> series, the FLASH<R> Gun electric multiplier and more. HYTORC<R> Z<R> **Washer** and HYTORC<R> Friction **Washer**<TM> combination including a dual friction-enhanced face **washer** for counter-**torque** under a **nut** or **bolt** head on the other side of the joint; and HYTORC<R> Z<R> Dual Drive Offset Links for tight clearances while using HYTORC<R>'s **torque**/tension systems.

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PN - [AU2014370184](#) A1 20160721

PR - WO2014US35375
20140424; US201461940919P
20140218; US201462012009P
20140613; US201361916926P
20131217; WO2014US70996
20141217

AP - AU20140370184 20141217

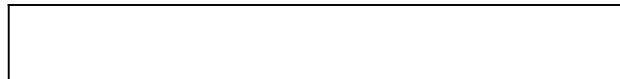
DT - I

CCI - [B25B13/06](#) ; [B25B21/002](#) ;
[B25B23/0085](#) ; [B25B23/08](#) ;
[F16B39/24](#)

CUI - [B25B13/488](#)

PA - HYTORC DIVISION UNEX CORP

TI - A reaction **washer** and its
fastening **socket**.



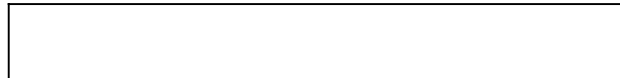
AB

- The present invention seeks to protect Applicant's HYTORC Z System which involves: tools having multi-speed / multi-**torque** modes with **torque** multiplication and vibration mechanisms without use of external reaction abutments; a force transfer means to yield in-line co-axial action and reaction for use with such tools; driving means and shifting means capable of attaching to washers under the **nut** for use with such tools and force transfer means; associated washers for use with such tools, force transfer means and driving means; and related accessories for use with such tools, force transfer means, driving means and washers. HYTORC® Z® Washers located under nuts or **bolt** heads of various types having engageable perimeters of multiple shapes, sizes, geometries and serrations, such as **washer**/fastener radius engagement differentials, and frictionally biased faces with relatively higher friction against the flange surface and relatively lower friction against the **nut**, such as friction coefficient increasing treatment means of various types, sizes and locations. HYTORC Z® Guns incorporating a powerful impact mechanism and a precise **torque** multiplier in the same **tool** combining rapid run-down with calibrated **torque**. HYTORC® Z® Sockets with dual drive coaxial action and reaction having outer sleeves to react on Z® Washers and an inner sleeves to turn nuts or **bolt** heads. HYTORC® Z® Spline Adapters and Reaction Plates for backwards compatibility with HYTORC®'s **torque**/tension

systems including the AVANTI® square drive system, the STEALTH® limited clearance system, the pneumatic jGUN® series, the FLASH® Gun electric multiplier and more. HYTORC® Z® **Washer** and HYTORC® Friction **Washer™** combination including a dual friction-enhanced face **washer** for counter-**torque** under a **nut** or **bolt** head on the other side of the joint; and HYTORC® Z® Dual Drive Offset Links for tight clearances while using HYTORC®'s **torque**/tension systems.

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PN - [JP2016013595](#) A 20160128
 PR - JP20140136776 20140702
 AP - JP20140136776 20140702
 DT - I
 FI - B25B23/14&640M; B25B23/153
 FT - 3C038/EA01
 PA - MAKITA CORP
 TI - **NUT**FASTENER
 AB - PROBLEM TO BE SOLVED: To enhance the functionality and usability of a **nut** fastener by applying a shear wrench for fastening a hexagon **nut** to a normal **bolt** by using a reaction **washer**, in the shear wrench which is a fastening **tool** for fastening a **nut** to a shear **bolt**, and makes a user hardly receive a reaction of fastening by cutting a chip at a fastening final stage, and absorbing reaction **torque**.
 SOLUTION: A **nut** fastener is made to function as a combined machine which is adapted to both a first fastening mode in which a hexagon **nut** is fastened to a shear **bolt**, a chip part is



sheared at a fastening final stage, and reaction **torque** is absorbed, and a second fastening mode in which the hexagon **nut** N2 is fastened to a normal **bolt** R while absorbing the reaction **torque** by using a reaction **washer** Z. Since the **nut** fastener is adapted to both the fastening modes by exchanging an outer **socket** 40 and an inner **socket** 41, the functionality and the usability of the **nut** fastener 1 are enhanced.

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PN - [WO2015100115](#) A2 20150702

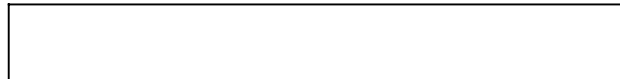
PNFP - WO2015100115 A3 20151112

PR - US201361916926P
20131217; US201461940919P
20140218; WO2014US35375
20140424; US201462012009P
20140613

AP - WO2014US70996 20141217

DT - **

CT - |EP| ISR (A3)
[US2012125163](#) A1 20120524
[XYI] (MIYATA KATSUJI [JP])
[X] 1-8,10,14,15,19-27,29,67,69
* abstract *
* figures 1, 8 *
* paragraph [0007] *
* paragraph [0011] *
* paragraph [0012] *
* paragraph [0015] *
* paragraph [0017] *
* paragraph [0021] *
* paragraph [0028] *
[Y] 30-33
[I] 9,11-13,16-18,28,68;
[US2009142155](#) A1 20090604
[A] (SU YONG-TSEH [TW])
[A] 28
* figure 2 *;
[EP0988935](#) A2 20000329
[YA] (JUNKERS JOHN K [US])
[Y] 30-33
* paragraph [0018] *



* paragraphs [0020] , [0022] *
 * figure 3 *
 [A] 1;
[US6966735](#) B1 20051122
 [A] (YAMAZAKI MASAKI [JP])
 [A] 8,9,11-13,16
 * figures 20, 21a, 21b *;
[WO0166964](#) A1 20010913
 [A] (SMOLAREK HANNA MARIA
 [AU])
 [A] 17,18
 * figure - *;
[US2006090606](#) A1 20060504
 [X] (SPIRER STEVEN E [US])
 [X] 34,36,38-49,52-59,62-65
 * abstract *
 * figures 12, 19 *
 * paragraphs [0034] , [0 91] , [103] , [115] , [129] *
 [I] 35,37,50,51,60,61,66;
[US2007157736](#) A1 20070712
 [X] (KAWANO HIROSHI [JP], et al)
 [X] 35,36,60
 * abstract *
 * figure - *
 * paragraphs [0005] , [0 28] *;
[WO2011098923](#) A2 20110818
 [X] (HYTORC DIVISION UNEX
 CORP [US], et al)
 [X] 35,36
 * abstract *
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[US2012211249](#) A1 20120823
 [A] (SEITH WARREN ANDREW
 [US], et al)
 [A] 37
 * the whole document *

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| CCI | - B25B13/06 ; B25B21/002 ;
B25B23/0085 ; B25B23/08 ;
F16B39/24 |
| CUI | - B25B13/488 |
| PA | - (A2 A3)
HYTORC DIVISION UNEX CORP
[US] |
| TI | - (A2)
APPARATUS FOR TIGHTENING
THREADED FASTENERS
- (A3) |

A REACTION **WASHER** AND ITS
FASTENING **SOCKET**.

AB

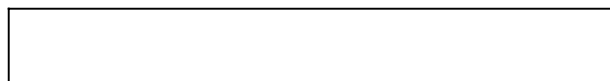
- (A2 A3)

The present invention seeks to protect Applicant's HYTORC Z System which involves: tools having multi-speed / multi-**torque** modes with **torque** multiplication and vibration mechanisms without use of external reaction abutments; a force transfer means to yield in-line co-axial action and reaction for use with such tools; driving means and shifting means capable of attaching to washers under the **nut** for use with such tools and force transfer means; associated washers for use with such tools, force transfer means and driving means; and related accessories for use with such tools, force transfer means, driving means and washers. HYTORC® Z® Washers located under nuts or **bolt** heads of various types having engageable perimeters of multiple shapes, sizes, geometries and serrations, such as **washer**/fastener radius engagement differentials, and frictionally biased faces with relatively higher friction against the flange surface and relatively lower friction against the **nut**, such as friction coefficient increasing treatment means of various types, sizes and locations. HYTORC Z® Guns incorporating a powerful impact mechanism and a precise **torque** multiplier in the same **tool** combining rapid run-down with calibrated **torque**. HYTORC® Z® Sockets with dual drive coaxial action and reaction having outer sleeves to react on Z® Washers and an inner sleeves to turn nuts or **bolt** heads. HYTORC® Z® Spline

Adapters and Reaction Plates for backwards compatibility with HYTORC®'s **torque**/tension systems including the AVANTI® square drive system, the STEALTH® limited clearance system, the pneumatic jGUN® series, the FLASH® Gun electric multiplier and more. HYTORC® Z® **Washer** and HYTORC® Friction **Washer**™ combination including a dual friction-enhanced face **washer** for counter-**torque** under a **nut** or **bolt** head on the other side of the joint; and HYTORC® Z® Dual Drive Offset Links for tight clearances while using HYTORC®'s **torque**/tension systems.

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PN - [WO2015095425](#) A2 20150625
 PNFP - WO2015095425 A3 20151112
 PR - US201361916926P
 20131217; US201461940919P
 20140218; WO2014US35375
 20140424; US201462012009P
 20140613
 AP - WO2014US71000 20141217
 DT - *; Rep
 CT - |EP| ISR (A3)
[US2012125163](#) A1 20120524
 [XYI] (MIYATA KATSUJI [JP])
 [X] 1-8,10,14,15,19-27,29,67,69
 * abstract *
 * figures 1,8 *
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 [Y] 30-33
 [I] 9,11-13,16-18,28,68;
[US2009142155](#) A1 20090604
 [A] (SU YONG-TSEH [TW])
 [A] 28
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 [Y] (JUNKERS JOHN K [US])



[Y] 30-33
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[US6966735](#) B1 20051122
 [A] (YAMAZAKI MASAKI [JP])
 [A] 8,9,11-13,15
 * figures 20, 21a, 21b *;
[WO0166964](#) A1 20010913
 [A] (SMOLAREK HANNA MARIA
 [AU])
 [A] 17,18
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[US2006090606](#) A1 20060504
 [XI] (SPIRER STEVEN E [US])
 [X] 34,38-49,52-59,62-65
 * abstract *
 * figures 12,19 *
 * paragraphs [0034] , [0 91] , [103] , [115] , [129] *
 [I] 35-37,50,51,60,61,66;
[US2007157736](#) A1 20070712
 [A] (KAWANO HIROSHI [JP], et al)
 [A] 35,36,60
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 * paragraphs [0005] , [0 28] *;
[WO2011013852](#) A1 20110203
 [A] (HITACHI KOKI KK [JP], et al)
 [A] 35,36
 * abstract *;
[US2012211249](#) A1 20120823
 [A] (SEITH WARREN ANDREW
 [US], et al)
 [A] 37
 * the whole document *

- CCI - [B25B13/06](#) ; [B25B21/002](#) ;
[B25B23/0085](#) ; [B25B23/08](#) ;
[F16B39/24](#)
- CUI - [B25B13/488](#)
- PA - (A2 A3)
 HYTORC DIVISION UNEX CORP
 [US]
- TI - (A2)
 APPARATUS FOR TIGHTENING
 THREADED FASTENERS
 - (A3)
 A REACTION **WASHER** AND ITS

FASTENING SOCKET

AB

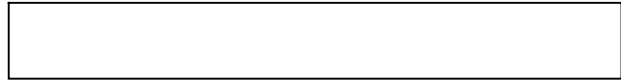
- (A2 A3)

The present invention seeks to protect Applicant's HYTORC® Z® System which involves: tools having multi-speed / multi-**torque** modes with **torque** multiplication and vibration mechanisms without use of external reaction abutments; a force transfer means to yield in-line co-axial action and reaction for use with such tools; driving means and shifting means capable of attaching to washers under the **nut** for use with such tools and force transfer means; associated washers for use with such tools, force transfer means and driving means; and related accessories for use with such tools, force transfer means, driving means and washers. HYTORC® Z® Washers located under nuts or **bolt** heads of various types having engageable perimeters of multiple shapes, sizes, geometries and serrations, such as **washer**/fastener radius engagement differentials, and frictionally biased faces with relatively higher friction against the flange surface and relatively lower friction against the **nut**, such as friction coefficient increasing treatment means of various types, sizes and locations. HYTORC Z® Guns incorporating a powerful impact mechanism and a precise **torque** multiplier in the same **tool** combining rapid run-down with calibrated **torque**. HYTORC® Z® Sockets with dual drive coaxial action and reaction having outer sleeves to react on Z® Washers and an inner sleeves to turn nuts or **bolt** heads. HYTORC® Z® Spline Adapters and Reaction Plates for

backwards compatibility with HYTORC®'s **torque**/tension systems including the AVANTI® square drive system, the STEALTH® limited clearance system, the pneumatic jGUN® series, the FLASH® Gun electric multiplier and more. HYTORC® Z® **Washer** and HYTORC® Friction **Washer™** combination including a dual friction-enhanced face **washer** for counter-**torque** under a **nut** or **bolt** head on the other side of the joint; and HYTORC® Z® Dual Drive Offset Links for tight clearances while using HYTORC®'s **torque**/tension systems.

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PN - [JPH10331823](#) A 19981215
 PR - JP19970142047 19970530
 AP - JP19970142047 19970530
 DT - I
 FI - F16B31/02&Z; F16B39/26&Z;
 G01L5/00&103B
 FT - 2F051/AA06; 2F051/AB01;
 2F051/AB03; 3J034/AA08;
 3J034/BA08; 3J034/CA01;
 3J034/EA05
 PA - SEKISUI HOUSE KK
 TI - **BOLT AND NUT** FASTENING
 MANAGEMENT METHOD
 AB - PROBLEM TO BE SOLVED: To
 provide a **bolt** and **nut** fastening
 management method in which
 the fastening completion can be
 decided visually even when
 a **tool** with **socket** is used in
 order to confirm the completion
 of the fastening work, and the
 fastening **torque** management is
 simple. SOLUTION: A **nut** with
 spring **washer** 8 furnishing a **nut**
 2; a spring **washer** 3; a colored
 film 6 covering the periphery of



the **nut** and the spring **washer** to hook its upper edge 4 to the upper side peripheral edge 2a of the **nut**; and a rotation and stop discriminating body 7 which is fixed to the lower edge 5 of the colored film 6, to hook its inner edge side 7a to the lower side peripheral edge 3a of the spring **washer** 3, and projects its outer edge side 7b from the lower edge 5 to the outer side; is screwed to a **bolt** and fastened regularly. And by cutting and peeling the colored film 6 in the condition that the rotation and stop discriminating body 7 is held between the spring **washer** 3 and a framework member, the **nut** 2 and the spring **washer** 3 are exposed at the completing time of the fastening work.

[SS 18]