

CPT Total Conventional Hip Investigation

Note: This analysis compares the CPT femoral stem prosthesis with all other total conventional hip prostheses.

This prosthesis has been identified as having a significantly higher rate of revision. For a detailed explanation of the process used by the Registry that results in identification of prostheses that have a higher than anticipated rate of revision please refer to the Prostheses with Higher than Anticipated Rates of Revision chapter of the most recent AOANJRR Annual Report, <https://aoanjrr.sahmri.com/annual-reports-2026>.

Note: Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator. Procedures using prostheses with no recorded use in 2025 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Total Conventional Hip Replacement

The revision rate of the CPT total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 1: Revision Rates of Primary Total Conventional Hip Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
CPT	1433	26053	205266	0.70 (0.66, 0.74)
Other Total Conventional Hip	18973	554469	3537257	0.54 (0.53, 0.54)
TOTAL	20406	580522	3742523	0.55 (0.54, 0.55)

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the CPT total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 2: Yearly Cumulative Percent Revision (95% CI) of Primary Total Conventional Hip Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs
CPT	2.3 (2.2, 2.5)	2.9 (2.7, 3.1)	3.4 (3.1, 3.6)	3.9 (3.6, 4.1)	4.3 (4.0, 4.6)	4.7 (4.4, 5.0)
Other Total Conventional Hip	1.7 (1.7, 1.7)	2.1 (2.1, 2.2)	2.4 (2.4, 2.5)	2.7 (2.7, 2.8)	3.0 (2.9, 3.0)	3.2 (3.2, 3.3)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
CPT	5.1 (4.8, 5.4)	5.5 (5.2, 5.9)	6.0 (5.6, 6.3)	6.3 (6.0, 6.7)	6.7 (6.3, 7.1)	7.1 (6.7, 7.5)
Other Total Conventional Hip	3.5 (3.4, 3.5)	3.7 (3.7, 3.8)	4.0 (4.0, 4.1)	4.3 (4.3, 4.4)	4.6 (4.6, 4.7)	5.0 (4.9, 5.1)

CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs
CPT	7.5 (7.0, 7.9)	7.7 (7.3, 8.2)	8.1 (7.6, 8.6)	8.4 (7.9, 9.0)	8.6 (8.1, 9.2)	9.1 (8.4, 9.7)
Other Total Conventional Hip	5.4 (5.3, 5.5)	5.7 (5.6, 5.8)	6.1 (6.0, 6.2)	6.5 (6.4, 6.7)	6.9 (6.7, 7.1)	7.2 (7.0, 7.4)

CPR	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
CPT	9.4 (8.7, 10.2)	9.8 (9.0, 10.6)	10.4 (9.4, 11.4)	10.8 (9.7, 12.0)	11.7 (10.2, 13.4)	12.6 (10.8, 14.8)	
Other Total Conventional Hip	7.6 (7.4, 7.8)	7.9 (7.7, 8.2)	8.4 (8.2, 8.7)	8.9 (8.6, 9.3)	9.5 (9.0, 10.0)	9.5 (9.0, 10.0)	10.2 (9.3, 11.2)

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

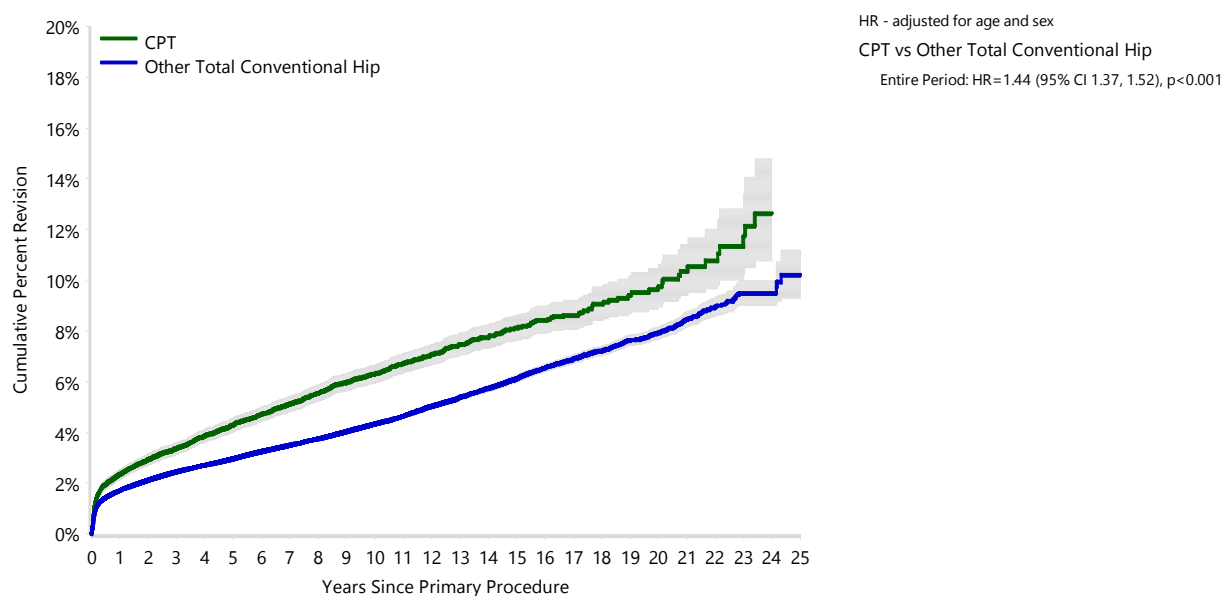
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the CPT total conventional hip prosthesis is compared to all other total conventional hip prostheses. In addition, hazard ratios are reported.

Hazard ratios are reported for specific time periods during which the hazard ratio is constant. This is done to enable more specific and valid comparisons of the risk of revision over time. The pattern of variation in risk has important implications with respect to the underlying reasons for any difference.

Figure 1: Cumulative Percent Revision of Primary Total Conventional Hip Replacement



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs
CPT	26053	24319	22614	20477	18541	16607	14741	13019
Other Total Conventional Hip	554469	488756	433973	381775	335970	292211	253592	216050

Number at Risk	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
CPT	11509	10012	8641	7258	5860	4675	3675	2853	2191
Other Total Conventional Hip	181726	150364	122063	97381	78135	62100	48822	37355	27883

Number at Risk	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
CPT	1639	1196	903	686	495	334	219	109	24
Other Total Conventional Hip	20103	14400	10228	7270	4767	2798	1407	527	84

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 3**Primary Diagnosis for Revised Primary Total Conventional Hip Replacement**

This table identifies the diagnosis of the primary procedure which was subsequently revised. This information is provided as there is a variation on outcome depending on the primary diagnosis. It is therefore important when considering the reasons for a higher than anticipated rate of revision that there is identification of the primary diagnosis. This information should be compared to the primary diagnosis for the revisions of all other total conventional hip prostheses.

Table 3: Primary Diagnosis for Revised Primary Total Conventional Hip Replacement

Primary Diagnosis	CPT		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Osteoarthritis	1079	75.3	15796	83.3
Fractured Neck Of Femur	179	12.5	1399	7.4
Osteonecrosis	65	4.5	814	4.3
Developmental Dysplasia	17	1.2	310	1.6
Rheumatoid Arthritis	22	1.5	193	1.0
Failed Internal Fixation	17	1.2	153	0.8
Tumour	19	1.3	140	0.7
Other Inflammatory Arthritis	16	1.1	91	0.5
Fracture/Dislocation	13	0.9	49	0.3
Other	6	0.4	15	0.1
Arthrodesis Takedown			13	0.1
TOTAL	1433	100.0	18973	100.0

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 4

Reasons for Revision

This is reported in two ways: a percentage of primary procedures revised and as a percentage of all revision procedures.

% Primaries Revised: This shows the proportional contribution of each revision diagnosis as a percentage of the total number of primary procedures. This percentage can be used to approximate the risk of being revised for that diagnosis. Differing percentages between groups, with the same distribution of follow up time, may identify problems of concern.

% Revisions: The number of revisions for each diagnosis is expressed as a percentage of the total number of revisions. This shows the distribution of reasons for revision within a group but cannot be used as a comparison between groups.

Table 4: Primary Total Conventional Hip Replacement - Reason for Revision

Revision Diagnosis	Number	CPT		Other Total Conventional Hip		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	314	1.2	21.9	4859	0.9	25.6
Prosthesis Dislocation/Instability	375	1.4	26.2	4162	0.8	21.9
Fracture	461	1.8	32.2	4136	0.7	21.8
Loosening	187	0.7	13.0	3536	0.6	18.6
Pain	12	0.0	0.8	334	0.1	1.8
Leg Length Discrepancy	5	0.0	0.3	305	0.1	1.6
Malposition	9	0.0	0.6	277	0.0	1.5
Implant Breakage Stem	11	0.0	0.8	209	0.0	1.1
Lysis	13	0.0	0.9	197	0.0	1.0
Implant Breakage Acetabular Insert	7	0.0	0.5	125	0.0	0.7
Wear Acetabular Insert	3	0.0	0.2	112	0.0	0.6
Incorrect Sizing	3	0.0	0.2	94	0.0	0.5
Metal Related Pathology	7	0.0	0.5	92	0.0	0.5
Implant Breakage Acetabular	6	0.0	0.4	68	0.0	0.4
Wear Head				49	0.0	0.3
Tumour	3	0.0	0.2	43	0.0	0.2
Heterotopic Bone	2	0.0	0.1	26	0.0	0.1
Implant Breakage Head				26	0.0	0.1
Wear Acetabulum	1	0.0	0.1	6	0.0	0.0
Osteonecrosis	2	0.0	0.1	2	0.0	0.0
Synovitis				2	0.0	0.0
Progression Of Disease	1	0.0	0.1			
Other	11	0.0	0.8	313	0.1	1.6
N Revision	1433	5.5	100.0	18973	3.4	100.0
N Primary	26053			554469		

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Total Conventional Hip Replacement

This figure details the cumulative incidence of the most common reasons for revision. The five most common reasons for revision are included as long as each of these reasons account for more than 10 procedures or at least 5% of all revisions for the CPT total conventional hip prosthesis. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other total conventional hip prostheses.

Figure 2: Cumulative Incidence Revision Diagnosis for Primary Total Conventional Hip Replacement

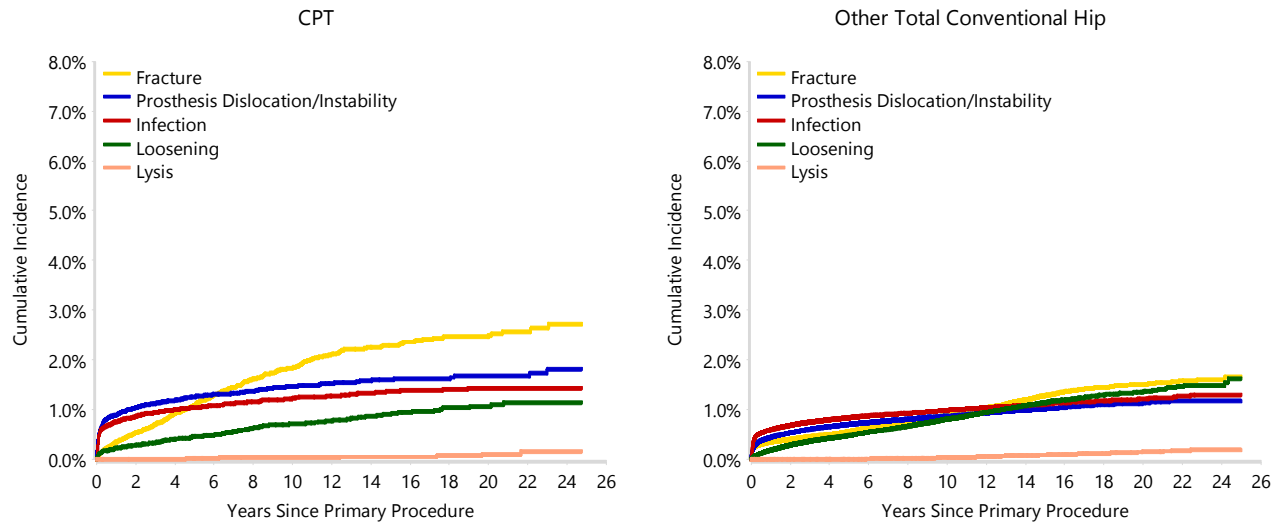


TABLE 5

Type of Revision Performed for Primary Total Conventional Hip Replacement

This analysis identifies the components used in the revision of the CPT total conventional hip prosthesis and compares it to the components used in the revision of all other total conventional hip prostheses.

The reason this analysis is undertaken is to identify whether there is one or more components which are being replaced that differ from the components replaced for revisions of all other total conventional hip prostheses i.e. is there a difference in the type of revision undertaken for the CPT total conventional hip prosthesis compared to all other total conventional hip prostheses.

Table 5: Primary Total Conventional Hip Replacement - Type of Revision

Type of Revision	CPT		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Femoral Component	564	39.4	6373	33.6
Acetabular Component	176	12.3	3212	16.9
THR (Femoral/Acetabular)	179	12.5	2208	11.6
Cement Spacer	39	2.7	544	2.9
Removal of Prostheses	10	0.7	88	0.5
Reinsertion of Components	2	0.1	27	0.1
Total Femoral	1	0.1	12	0.1
Bipolar Head and Femoral	1	0.1	10	0.1
N Major	972	67.8	12474	65.7
Head/Insert	353	24.6	5184	27.3
Head Only	46	3.2	883	4.7
Minor Components	47	3.3	269	1.4
Insert Only	14	1.0	161	0.8
Bipolar Only			1	0.0
Cement Only	1	0.1		
Head/Neck/Insert			1	0.0
N Minor	461	32.2	6499	34.3
TOTAL	1433	100.0	18973	100.0

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 6

Revision Rates of CPT Primary Total Conventional Hip Replacement by Fixation

This analysis is provided as some prostheses have more than one fixation option. Additionally there are prostheses where an alternative to the recommended approach to fixation was used e.g. a cementless prosthesis that has been cemented or vice-versa.

Table 6: Revised Number of CPT Primary Total Conventional Hip Replacement by Fixation

Fixation	N Revised	N Total
Cemented	161	2311
Cementless	0	3
Hybrid (Femur Cemented)	1272	23739
TOTAL	1433	26053

TABLE 7

Revision Rates of CPT Primary Total Conventional Hip Replacement by Bearing Surface

This analysis is provided as some prostheses are combined with a variety of bearing surfaces. All bearing surfaces used with this prosthesis are listed.

Table 7: Revised Number of CPT Primary Total Conventional Hip Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Ceramic/Ceramic	32	381
Ceramic/Non XLPE	12	102
Ceramic/XLPE	146	2720
Ceramic/XLPE + Antioxidant	76	2135
Metal/Metal	18	152
Metal/Non XLPE	87	1223
Metal/XLPE	891	14938
Metal/XLPE + Antioxidant	171	4387
Ceramicised Metal/XLPE + Antioxidant	0	1
Unknown	0	14
TOTAL	1433	26053

TABLE 8**Revision Rates of CPT Primary Total Conventional Hip Replacement by Approach**

This analysis is provided as some prostheses are used with a variety of surgical approaches. All surgical approaches used with this prosthesis are listed.

Table 8: Revised Number of CPT Primary Total Conventional Hip Replacement by Approach

Approach	N Revised	N Total
Anterior	14	290
Lateral	135	2997
Posterior	466	9751
TOTAL	615	13038

Note: Excludes 13015 procedures with no approach recorded

TABLE 9**Revision Rates of Primary Total Conventional Hip Replacement by State**

This enables a state by state variation to be identified for the CPT total conventional hip prosthesis and provides the comparative data for each of the states for all other total conventional hip prostheses.

The purpose of this analysis is to determine if the higher than anticipated rate of revision has widespread distribution between states. If there is widespread distribution then the reason for the higher than anticipated rate of revision is unlikely to be surgeon specific. If the prosthesis has been used in only a small number of states it is not possible to distinguish if the higher than anticipated rate of revision is related to the prosthesis, surgeon, technique or patient.

Table 9: Revised Number of Primary Total Conventional Hip Replacement by State

Component	State	N Revised	N Total
CPT	NSW	335	5860
	VIC	311	5671
	QLD	165	3281
	WA	179	3470
	SA	256	4432
	TAS	29	1022
	ACT/NT	158	2317
Other Total Conventional Hip	NSW	5335	163386
	VIC	4682	143412
	QLD	3850	102108
	WA	2381	62182
	SA	1820	51068
	TAS	428	17978
	ACT/NT	477	14335
TOTAL		20406	580522

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 10**Number of Revisions of CPT Primary Total Conventional Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the CPT total conventional hip prosthesis. It also provides the subsequent number of revisions of the primaries reported in that year.

Primary procedures performed in later years have had less follow up time therefore the number revised is expected to be less than the number revised in earlier years. For example, a primary procedure performed in 2025 has a maximum of one year to be revised, whereas a primary procedure performed in 2023 has a maximum of three years to be revised.

Table 10: Number of Revisions of CPT Primary Total Conventional Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2000	15	113
2001	28	407
2002	24	464
2003	40	477
2004	35	553
2005	29	504
2006	39	555
2007	37	739
2008	62	1070
2009	67	1049
2010	65	1196
2011	86	1241
2012	79	1295
2013	84	1462
2014	102	1566
2015	101	1303
2016	68	1233
2017	68	1240
2018	68	1159
2019	57	1275
2020	60	1339
2021	65	1409
2022	60	1333
2023	48	1567
2024	28	1043
2025	18	461
TOTAL	1433	26053

TABLE 11

Revision Rates of CPT Primary Total Conventional Hip Replacement by Catalogue Number Range

Many prostheses have a number of catalogue ranges. The catalogue range is specific to particular design features; more than one catalogue range usually indicates a minor difference in design in a particular CPT prosthesis.

This analysis has been undertaken to determine if the revision rate varies according to the catalogue number range.

Model	Catalogue Range	Catalogue Description	Cement	Material	Fixation
Femoral Stem					
CPT	00801100005-00801100500	FEMORAL COMPONENT STANDARD OFFSET	YES	METAL	POLISHED
CPT	00801100220-00801100420	EXTENDED NECK OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
CPT	00801100418-00801100426	EXTENDED OFFSET FEMORAL COMPONENT	YES	METAL	POLISHED
CPT	00811400000-00811405000	ZIMALOY COCR POLISHED TAPERED STANDARD OFFSET FEMORAL STEM	YES	METAL	POLISHED
CPT	00811400010-00811400510	ZIMALOY COCR POLISHED TAPER EXTENDED OFFSET FEMORAL STEM	YES	METAL	POLISHED
CPT	00811400218-00811400218	ZIMALOY COCR POLISHED TAPER STANDARD OFFSET LONG FEMORAL STEM	YES	METAL	POLISHED
CPT	00811400230-00811400530	ZIMALOY COCR POLISHED TAPER EXTRA EXTENDED OFFSET FEMORAL STEM	YES	METAL	POLISHED
CPT	00811400318-00811400426	ZIMALOY COCR POLISHED TAPER EXTENDED OFFSET LONG FEMORAL STEM	YES	METAL	POLISHED
CPT	00811401218-00811401318	ZIMALOY COCR POLISHED TAPER VALGUS NECK LONG FEMORAL STEM	YES	METAL	POLISHED

Table 11: Revised Number of CPT Primary Total Conventional Hip Replacement by Catalogue Number Range

Femoral Stem Range	N Revised	N Total
00801100005-00801100500	54	717
00801100220-00801100420	30	435
00801100418-00801100426	0	3
00811400000-00811405000	456	9106
00811400010-00811400510	709	13132
00811400218-00811400218	7	146
00811400230-00811400530	166	2371
00811400318-00811400426	10	133
00811401218-00811401318	1	10
TOTAL	1433	26053

TABLE 12

Revision Rates of CPT Primary Total Conventional Hip Replacement by Component

A prosthesis may be combined with multiple components. This analysis has been undertaken to determine if the revision rate varies according to the component with which it is combined.

Table 12: Revised Number of CPT Primary Total Conventional Hip Replacement by Acetabular Component

Acetabular Component	N Revised	N Total
Acetabular Shell (Global)	1	10
Adept	0	6
Allofit	88	2014
Apollo	0	1
Avantage	22	316
BI-MENTUM	0	1
Brunswick	0	1
Burch Schneider	2	6
Charnley	0	1
Contemporary	2	5
Continuum	212	3431
Contour	0	2
Custom Made (Ossis)	0	2
Delta-TT	1	1
DeltaMotion	0	1
Duraloc	1	2
Duraloc Option	0	1
Durasul	1	14
Durom	4	29
Dynasty	0	1
Elite Multi-Cup Ogee	0	5
Elite Plus LPW	0	2
Elite Plus Ogee	0	3
Endo-Model	0	1
Exceed	4	59
Exeter Contemporary	1	3
Exeter X3 Rimfit	1	6
Fin II	0	1
Fitmore	26	293
Fixa	0	1
Freedom	3	20
G7	176	5189
G7 Multihole	33	568
Generic Shell	0	4
Icon	1	1
Jump System	0	2
LCP	0	1
Logical G	1	5
Low Profile Cup	21	223
Mallory-Head	3	64
Marathon	13	258
Mpact	0	4
Mutars	0	1

Acetabular Component	N Revised	N Total
No Acetabular	5	41
Novae	0	5
Novae E	3	33
PINNACLE	4	134
Polarcup	0	6
R3	1	9
RM Cup	1	96
Reflection (Cup)	2	33
Reflection (Shell)	1	8
Regenerex	0	4
S-Rom	3	32
SPH-Revision	0	1
Trabecular Metal	0	1
Trabecular Metal (Cup)	3	59
Trabecular Metal (Shell)	173	2744
Tri-Flange	1	1
Trident (Cup)	0	1
Trident (Shell)	3	22
Trident II/Tritanium (Shell)	0	1
Trident/Tritanium (Shell)	0	2
Trilogy	543	9025
Trilogy IT	9	132
Trinity	2	23
Trinity Plus	0	2
Versacem	0	1
Versafitcup CC	0	3
Versafitcup DM	0	1
ZCA	62	1074
TOTAL	1433	26053