

NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA

Ref: 10/55184

Note: the prompts given below are only a guide to the information required for approval. Dependent on the type of equipment or system that requires approval delete any section that is not applicable or include additional information if necessary. Mandatory fields are marked with an asterisk (*).

1	Equipment or System to be approved * Pandrol Rotating Shoulder (Part No. 75212) Pandrol Support Plate (Part No. 14657)
2	Originator * Name: Wayne Olsen Company: ARTC
3	Introduction * Pandrol Australia have developed a new Rotating Shoulder and Support Plate for insertion into the AN7 sleepers to rectify the failing shoulders. It braces and spaces the new standard gauge rotating shoulder against the existing broad gauge shoulder.
4	Determination of Need * The AN7 gauge convertible concrete sleepers have been in service for 18 years between Mile End and Wolseley and during this period the gauge was converted from broad to standard gauge. During recent site inspections it has been found that in some curves the track has developed wide track gauge of up to +29mm referring to the standard gauge configuration. Due to the combined abrasive effect of trains sanding and moisture whilst negotiating grades, significant wear to the cast iron socket on the AN7 sleeper has occurred. The rotating shoulder displays a large amount of wear adjacent to the rail foot. The wear of these components results in loss of clip toe load and causes widening of gauge. It has been noted that the original manufacturer instructions had recommended installation of the shoulders with adhesive which did not occur. This has been identified as a key root cause of the current issue.
5	Significant Change or Not * This change in equipment or system is assessed as MINOR
6	Review Panel * <ul style="list-style-type: none">• John Furness - Manager Standards• Wayne Olsen - Project Manager• Abbie Thomas - Standards Engineer• Banduka Gunasekara - Project Engineer (Transfield)
7	Safety A Risk Assessment was performed on 28 Oct 10 by W.Olsen (ARTC) and S.Glynn (Transfield) to determine abnormal risks that may occur due to the implementation of the new Pandrol Rotating Shoulder and Support Plate. Control measures to decrease risks are to be put in place and contingencies identified in the event of the risk eventuating. Refer to the attached Risk Assessment for details. Transfield have compiled a Job Analysis Worksheet (JA No. 229-6001-5 15/9/10) identifying all safety issues related to the actual process involved in installation and the worksite. The glue used to secure the Rotating Shoulder is HILTI HIT-RE 500. Refer to attached MSDS.
8	Performance and Suitability The components were attached to a concrete sleeper and the assembly was subjected to a repeated load test as per AS 1085.19 Railway Track Material - Resilient Fastening Assemblies. All components successfully completed the test and there was no evidence of any shoulder movement or damage to the support plate. After disassembly the shoulder and support plate were still locked in place and the epoxy showed no signs of cracking or de-bonding. Refer to Pandrol Report No 65301-16 (16 Aug 2010 - J.Bagge) - AN7 Sleeper Repair Assembly Repeated Load Test for details.
(i)	Use in other rail networks None.
(ii)	Use in the ARTC network A test site at 71.8km on the Main South Line has been under evaluation since 9 Feb 2010. AK Car results and field gauge readings indicate that the assembly can maintain the correct gauge of track under the service conditions. As a result of the test this proposed method has been suggested as a most appropriate and economical remedy for the AN7 sleeper wide gauge issue. Refer to Final Inspection Report compiled by Transfield (B. Gunasekara 22/10/2010) for details.

(iii) **Issues arising from usage of the equipment/system**

All trials have been performed with machined test parts rather than production cast parts. This different manufacturing methods should not affect the performance of the product.

(iv) **Changes required to infrastructure or systems for use of the equipment**

The installation of this assembly results in some minor changes to the ARTC infrastructure. The new rotating shoulder is to be glued into the existing sleeper socket and is supported with the new backing cast plate and an additional e2003 Pandrol clip.

Refer to Pandrol Report No 65301-15 (28 Apr 2010 - D.Gosling - Method Statement Field Repairs of AN7 Gauge Change Sleepers) for details.

9 **Maintainability**

This installation will only have a minor effect on existing maintenance regimes. Data from scheduled AK car runs is to be used to monitor out of gauge tolerance, in addition to regular visual inspections performed by track inspectors during the first 6 months from installation.

Refer to Pandrol Report No 65301-15 (28 Apr 2010 - D.Gosling - Method Statement Field Repairs of AN7 Gauge Change Sleepers) and Transfield Services Work Method Statement Track Strengthening/AN7 Sleeper Upgrading (Rev 3 - B.Gunasekara) for details.

10 **Approval ***

The Pandrol Rotating Shoulder (Part No. 75212) and Support Plate (Part No. 14657) for track strengthening and gauge stability of AN7 sleepers are approved for use at the following locations on the ARTC Network:

Curve Locations - 2010/11

Line Segment	From (km)	To (km)
Mt Lofty - Balhannah	32.146	32.401
Mt Lofty - Balhannah	32.439	32.977
Mt Lofty - Balhannah	40.160	40.630
Mt Barker Junction - Petwood	53.858	54.168
Mt Barker Junction - Petwood	54.195	54.543
Mt Barker Junction - Petwood	59.372	59.744

Curve Locations - Other affected areas for subsequent budget years

Line Segment	From (km)	To (km)
Mile End - Belair	8.312	8.939
Mile End - Belair	11.882	12.007
Belair - Mt Lofty	23.628	23.915
Belair - Mt Lofty	24.400	24.667
Belair - Mt Lofty	25.891	26.174
Belair - Mt Lofty	26.199	26.368
Belair - Mt Lofty	26.906	27.140
Belair - Mt Lofty	27.300	27.777
Belair - Mt Lofty	27.784	28.072
Belair - Mt Lofty	28.238	28.443
Belair - Mt Lofty	30.069	30.288
Mt Lofty - Balhannah	31.010	31.340
Mt Lofty - Balhannah	36.172	36.390
Mt Lofty - Balhannah	40.720	40.970
Mt Lofty - Balhannah	42.000	42.250
Mt Barker Junction - Petwood	50.746	51.257
Petwood - Murray Bridge	64.981	65.303
Petwood - Murray Bridge	70.650	71.154

Petwood - Murray Bridge	82.409	82.515
11 Conditions of Approval * <ul style="list-style-type: none"> To be installed following the manufacturer's instructions. Regular visual inspections are to be performed by track inspectors during the first 6 months from installation. AK car data is to be assessed for out of gauge tolerance up until June 2011. A Temporary Speed Restrictions of 40 kph will be in place for a minimum of 24 hrs to ensure the glue is fully cured (Refer pg 6 of Pandrol Report No 65301-15) 		
12 Does the Originator accept the additional Conditions of Approval as set by the Review Panel:		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
13 Sign off <i>ARTC office use only</i>		
Review Panel:		
J.Furness		Date:
A.Thomas		Date: 01/11/2010
W.Olsen		Date: 28/10/10
B. Gunasekara		Date: 29/10/10
14 Attachments <ul style="list-style-type: none"> Report No 65301-16 (16 Aug 2010 - J.Bagge) - AN7 Sleeper Repair Assembly Repeated Load Test Final Inspection Report compiled by Transfield (B. Gunasekara 22/10/2010) Refer to Pandrol Report No 65301-15 (28 Apr 2010 - D.Gosling - Method Statement Field Repairs of AN7 Gauge Change Sleepers) Transfield Services Work Method Statement - Track Strengthening/AN7 Sleeper Upgrading (Rev 3 - B.Gunasekara) Risk Assessment dated 28 Oct 10 MSDS for Hilti Hit-RE 500 Job Analysis Worksheet (Transfield JA No. 229-6001-5 15/9/10) 		

