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### HEADED REINFORCEMENT CORP.

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### HRC® 555 SERIES, HRC® 670 and HRC® 670L SERIES T-HEAD, and HRC 350® SERIES T-HEAD HEADED ENDS OF CONCRETE REINFORCEMENT

#### CSI DIVISION:

03 00 00 CONCRETE

#### CSI Section:

03 21 00 Reinforcing Steel

#### 1.0 SCOPE OF EVALUATION

##### 1.1 Compliance to the following codes:

- 2024, 2021, 2018, 2015, and 2012 International Building Code® (IBC)
- 2024, 2021, 2018, 2015, and 2012 International Residential Code® (IRC)
- 2023 City of Los Angeles Building Code (LABC) – attached supplement
- 2023 City of Los Angeles Residential Code (LARC) – attached supplement

##### 1.2 Evaluated in accordance with:

- IAPMO UES EC 006

##### 1.3 Properties assessed:

- Structural

#### 2.0 PRODUCT USE

The HRC® 555 Series headed reinforcing bars are Class HA headed deformed steel reinforcing bars for concrete reinforcement. The HRC® 670 and HRC® 670L Series are attachable heads for deformed steel reinforcing bars for concrete reinforcement. The HRC® 350 Series headed reinforcing bars consist of threaded T-Heads and steel reinforcing bars for concrete reinforcement that are prepared with HRC 300 threaded ends. All products comply with Sections 25.4.4 and 25.4.5 of ACI 318-19 and ACI 318-14, and Section 12.6 of ACI 318-11 with Class HA heads for use in developing headed and anchored deformed bars in tension in normalweight concrete as an alternative to standard hooks or development lengths of straight deformed reinforcing bars.

#### 3.0 PRODUCT DESCRIPTION

##### 3.1 Product Information:

**3.1.1 HRC® 555:** The HRC® 555 Series are Class HA headed deformed bars complying with the requirements of ASTM A970. HRC® 555 Series are integrally factory-forged where the heads are produced by deforming the bar end(s) in a hot forging process. The headed reinforcing steel bars are available in No. 4 (13 mm) through No. 14 (43 mm) sizes. The net head bearing area,  $A_{brg}$ , of the HRC® 555 headed devices exceeds four times the nominal cross-sectional area,  $A_b$ , of the reinforcing bar, in conformance with the Class HA head requirements in Annex A1 of ASTM A970. The HRC® 555 Series is recognized for use with the material, grade, and reinforcing bar sizes listed in Table 1 of this report. The dimensions of the HRC® 555 headed reinforcing bars are shown in Table 2 and Figure 1 of this report.

**3.1.2 HRC® 670:** The HRC® 670 Series are Class HA heads complying with the requirements of ASTM A970 Annex A1. The HRC® 670 Series are field-installed T-Heads used mainly for retrofits and field repairs. The HRC® 670 Series, when connected to the specified reinforcing bars, complies as Class HA in accordance with ASTM A970. HRC® 670 uses a wedged grip system with a spring and tension bolt that is installed on the end of a torch-cut, sheared, or saw-cut reinforcing bar. The product is available in sizes for use with No. 5 (16 mm) through No. 18 (57 mm) reinforcing bars.

The net head bearing area,  $A_{brg}$ , of the HRC® 670 devices exceeds four times the nominal cross-sectional area,  $A_b$ , of the reinforcing bar. The HRC® 670 Series is recognized for use with the material, grade, and reinforcing bar sizes listed in Table 1 of this report. The dimensions of the HRC® 670 headed reinforcing bars are shown in Table 3 and Figure 2 of this report.

**3.1.3 HRC® 670L:** The HRC® 670L Series are Class HA heads complying with the requirements of ASTM A970 Annex A1. The HRC® 670L Series, when connected to the specified reinforcing bars, complies as Class HA in accordance with ASTM A970. HRC® 670L uses a wedged grip system with a spring and tension bolt that is installed on the end of a torch-cut, sheared, or saw-cut reinforcing bar. The product is available in sizes for use with No. 5 (16 mm) through No. 18 (57 mm) reinforcing bars.

The net head bearing area,  $A_{brg}$ , of the HRC® 670L devices, exceeds nine times the nominal cross-sectional area,  $A_b$ , of the reinforcing bar. The HRC® 670L Series is recognized for use with the material, grade, and reinforcing bar sizes listed in Table 1 of this report. The dimensions of the HRC® 670L headed reinforcing bars are shown in Table 4 and Figure 3 of this report.

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with Section 104.2.3 of the 2024 IBC and Section 104.11 of previous editions. This document shall only be reproduced in its entirety.

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**3.1.4 HRC® 350:** The HRC 350® Series T-Heads are Class HA heads complying with the requirements of ASTM A970 Annex A1. The HRC 350® Series T-Headed bars consist of internally threaded HRC 350® T-Heads that connect to steel reinforcing bars prepared with HRC 300 threaded ends. The HRC® 350 Series T-Head, when connected to the specified reinforcing bars, complies as Class HA in accordance with ASTM A970. The product is available in sizes for use with No. 4 (13 mm) through No. 11 (36 mm) reinforcing bars.

The net head bearing area,  $A_{brg}$ , of the HRC® 350 Series T-Head devices exceeds four times the nominal cross-sectional area,  $A_b$ , of the reinforcing bar. The HRC® 350 Series T-Heads are recognized for use with the reinforcing bar materials, grades, and sizes listed in Table 1 of this report. The dimensions of the HRC® 350 T-Head reinforcing bars are shown in Table 5 and Figure 4 of this report.

**3.2. Material Information:** HRC® 555 headed ends are manufactured from ASTM A615 or ASTM A706 steel reinforcing bars. HRC® 670 and HRC® 670L T-Heads are manufactured from AISI 1141 and AISI 8620 steel and include a steel spring and a rubber O-ring. HRC® 350 Series T-Heads are manufactured from steel complying with ASTM A108 Grades 1018, 1144, and 1215 or AISI 1045, 1141, or 1144 steel.

## 4.0 DESIGN AND INSTALLATION

### 4.1 Design

**4.1.1 Use:** Use of the headed bars and heads to develop a deformed bar in tension is subject to the conditions in Section 25.4.4.1 of ACI 318-19 and ACI 318-14, or Section 12.6.1 of ACI 318-11.

**4.1.2 Development Length in Tension:** Development lengths shall be determined in accordance with Sections 25.4.4.2 and 25.4.4.3 of ACI 318-19 or ACI 318-14, or Section 12.6.2 of ACI 318-11. When utilizing the equation in Section 25.4.4.2 of ACI 318-19 and -14 (Section 12.6.2 of ACI 318-11) to calculate development length in tension, the registered design professional shall verify that the proposed heads conform to ASTM A970.

For the 2018, 2015, and 2012 IBC and IRC [ACI 318-14 and -11], the maximum compressive design strength of concrete used in the development length in tension equation is 6,000 psi (41.4 MPa).

The development length in tension,  $\ell_{dt}$ , in inches, (including modification factors) shall not be less than the larger of  $8d_b$  or 6-inches.

For the 2024, 2021, 2018, and 2015 IBC and IRC, the development length in tension for headed deformed bars and heads in special moment frames shall conform to the provisions of ACI 318-19 or -14 Section 18.8.5.2.

For the 2024 and 2021 IBC and IRC [ACI 318-19], parallel tie reinforcement  $A_{tt}$ , may be considered within the region of a beam-column only as set forth in ACI 318-19 Sections 25.4.4.4 and 25.4.4.5.

Headed deformed bars and heads terminating in a joint shall conform to the provisions of ACI 318-19 Sections 18.4.4.5 and 25.4.4.6, or ACI 318-14 Section 18.8.3.4, where applicable.

The concrete cover for the reinforcement shall be at least  $2d_b$ , and the center-to-center spacing between bars shall be at least  $3d_b$ , in accordance with Section 25.4.4.1 of ACI 318-19.

The concrete cover for the reinforcement shall be at least  $2d_b$ , and the clear spacing between bars shall be at least  $4d_b$ , in accordance with Section 25.4.4.1 of ACI 318-14 or Section 12.6 of ACI 318-11.

For designs in accordance with ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, the use of No. 14, No. 18, Grade 75, and Grade 80 headed deformed bars for development length is outside the scope of this report. The anchorage of No. 14, No. 18, Grade 75, and Grade 80 bars shall be designed in accordance with ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, or otherwise to the satisfaction of the registered design professional and approved by the building official.

The development length,  $\ell_{dt}$ , shall be measured from the critical section as shown in Figure R25.4.4.2a of ACI 318-19 and ACI 318-14, or Figure R12.6(a) of ACI 318-11.

Development lengths specified for the development and splices of reinforcement shall not be subject to a strength reduction factor in accordance with Section 25.4.1.3 of ACI 318-19 and ACI 318-14, or Section 9.3.3 of ACI 318-11.

**4.1.3 Termination of Headed Bars:** When designed in accordance with Section 25.4.4.2 of ACI 318-19 and ACI 318-14, or Section 12.6.2 of ACI 318-11, longitudinal headed deformed bars extending from a beam or a slab terminating at a support member, such as a column, shall extend through the joint to the far face of the confined supporting member in accordance with Figure R25.4.4.2b of ACI 318-19 and ACI 318-14, and Figure R12.6 (b) of ACI 318-11.

Splices of reinforcement to headed deformed reinforcing bars in tension shall comply with Sections 25.5.1 and 25.5.2 of ACI 318-19 and ACI 318-14, or Sections 12.14 and 12.15 of ACI 318-11.

**4.1.4 Design for Anchorage to Concrete:** Where headed reinforcing bars are used as anchorage to concrete, concrete breakout failure shall be considered. For compliance with Section 1909 of the IBC, ACI 318-19 and ACI 318-14 Chapter 17, and ACI 318-11 Appendix D as anchorage to concrete, additional data needs to be prepared by a registered design professional and approved by the building official to justify how the headed bars are substantiated in accordance



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with Section 17.1.3 of ACI 318-19 and ACI 318-14, or Section D.2.3 of ACI 318-11, or comply with ANSI/ASME B1.1, B18.2.1, and B18.2.6.

**4.2 Installation:** The HRC® 555, HRC® 670 and/or 670L, and HRC® 350 Series T-Head shall be installed in accordance with HRC's installation instructions, applicable code sections of ACI 318, this evaluation report, and the approved plans. The HRC® 555's forged head is fixed and requires no field assembly.

**4.2.1** The HRC® 670 and/or 670L shall be installed by first cutting the reinforcing bar square to the desired length (desired elevation minus the value "X" noted in Table 3) and removing any debris and concrete from the bar end. Any burrs or other imperfections shall be grounded down. With the bolt removed, the HRC® 670 and/or 670L shall be pushed onto the bar. The bar end shall be against the bolt hole. The bolt is then reinserted and torqued until the bolt head breaks off.

**4.3 Special Inspection:** Periodic special inspection of the headed bars shall be provided at the job site as required by Sections 1704.2 and 1705.3 of the IBC. The special inspector is responsible for verifying the identification of the headed deformed reinforcing bars, grade, and size of reinforcing bars, installation of reinforcing bar splices to the headed deformed reinforcing bars, as well as placement of the headed bars.

## 5.0 LIMITATIONS

The HRC® 555, HRC® 670, HRC® 670L, and HRC® 350 headed bars described in this report comply with, or are suitable alternatives to, what is specified in the codes listed in Section 1.0 of this report, subject to the following limitations:

**5.1.** The headed bars shall be installed in accordance with the applicable code, the manufacturer's installation instructions, and this report. In the event of a conflict, the more restrictive governs.

**5.2** Anchorage system calculations and installation details shall be designed in conformance with the IBC and ACI 318 by the registered design professional and approved by the building official.

**5.3** Special inspections shall be provided in accordance with Section 4.3 of this report.

**5.4** Minimum concrete cover for development shall be in accordance with Sections 20.6 and 25.4.4.1 of ACI 318-19 and ACI 318-14, or Sections 7.7 and 12.6 of ACI 318-11, and shall be measured from the outer surface of the HRC® 555, HRC® 670, HRC® 670L, or HRC® 350 reinforcing bar's head, as applicable.

**5.5** Fabricators and fabrication facilities for the HRC® 555 Series shall be qualified by HRC.

**5.6** For structures regulated by ACI 318-19 and ACI 318-14 Chapter 18 (2018 and 2015 IBC), ACI 318-11 Chapter 21 (2012 IBC), where the HRC® 555, HRC® 670, HRC® 670L, or HRC® 350 headed reinforcing bars resisting earthquake-induced flexure, axial force, or both, in special moment frames, special structural walls, and all components of special structural walls including coupling beams and wall piers, mill certificates shall be submitted to the building official as evidence that the steel reinforcing bars comply with Section 20.2.2.5 of ACI 318-19 and ACI 318-14, or Section 21.1.5.2 of ACI 318-11.

**5.7** The use of headed and mechanically anchored deformed reinforcement for developing bars in compression and for lap splices is outside the scope of this report.

**5.8** The HRC Headed Bars and Heads recognized in this report are produced by or under the supervision of Headed Reinforcement Corp.

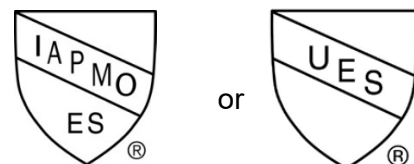
## 6.0 SUBSTANTIATING DATA

**6.1** Data in accordance with IAPMO UES Evaluation Criteria for Headed and Mechanically Anchored Deformed Reinforcement Bars in Tension (EC 006-2024), approved September 2024.

**6.2** Test reports are from laboratories in compliance with ISO/IEC 17025.

## 7.0 IDENTIFICATION

HRC® 555 headed ends are packaged with a label bearing the manufacturer's name (Headed Reinforcement Corporation), model, and size. HRC® 670 and HRC® 670L T-Heads shall include a marking etched on the top of the product that includes the product name, a unique lot number, and the size of the reinforcing bar the head is to be used with. HRC® 350 T-Heads shall include a marking etched on the top of the product that includes the product name, a unique lot number or heat number, and the size of the reinforcing bar the head is to be used with. All products shall include the unique heat code identification, the letter "H", to indicate that the product has been produced to the ASTM A970 Annex A1 specification, and the Uniform Evaluation Service Report Number (ER-177). Products prepared by officially licensed fabricators may have additional unique identifiers that correspond to the fabricator. Either IAPMO UES Mark of Conformity may also be used as shown below:



**IAPMO UES ER-177**

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email at [info@uniform-es.org](mailto:info@uniform-es.org)



**TABLE 1 – EVALUATED PRODUCTS: SIZE AND MATERIAL GRADE<sup>1</sup>**

Reinforcement Material	Compatible Reinforcing Bar Sizes (No.)			
	HRC <sup>®</sup> 555 Series	HRC <sup>®</sup> 670 Series	HRC <sup>®</sup> 670L Series	HRC <sup>®</sup> 350 Series T-Head
ASTM A706/A615 Grade 60	4 - 14	5 – 18	5 – 18	4 - 11
ASTM A615 Grade 75 <sup>2</sup>	8 - 11	---	---	---
ASTM A706/615 Grade 80 <sup>2</sup>	5 - 11	7 – 18	7 – 18	4 - 11

<sup>1</sup> Note: For compliance with the IBC and either ACI 318-19 and ACI 318-14 Chapter 17, or ACI 318-11 Appendix D as anchorage, additional data needs to be prepared by the registered design professional and approved by the building official to justify how the headed bars are substantiated in accordance with Section 17.1.3 of ACI 318-19 and ACI 318-14 or Section D.2.3 of ACI 318-11. See Section 4.1.4 of this report.

<sup>2</sup> Note: The scope of applicability is described in Section 4.1.1 of this report, which varies with the edition of ACI 318.

**TABLE 2 - DIMENSIONS OF HRC 555 HEADED REINFORCING BARS**

Dimensions	Bar size	#4	#5	#6	#7	#8	#9	#10	#11
Reinforcing bar	d <sub>b</sub> , Diameter [in]	0.500	0.625	0.750	0.875	1.000	1.128	1.270	1.410
	A <sub>b</sub> , Area [in <sup>2</sup> ]	0.20	0.31	0.44	0.60	0.79	1.00	1.27	1.56
Head	*T <sub>min</sub> [in]	0.25	0.31	0.38	0.44	0.50	0.56	0.64	0.70
	D [in]	1.14	1.42	1.69	1.97	2.25	2.56	2.87	3.19
	A <sub>brg</sub> [in <sup>2</sup> ]	0.82	1.27	1.80	2.45	3.18	4.14	5.20	6.43

For SI: 1 inch = 25.4 mm, 1 sq. in. = 645 mm<sup>2</sup>, 1 foot = 305 mm.

\* Head thickness shall be no larger than bar diameter

**FIGURE 1 – HRC<sup>®</sup> 555 HEADED REINFORCING BARS**

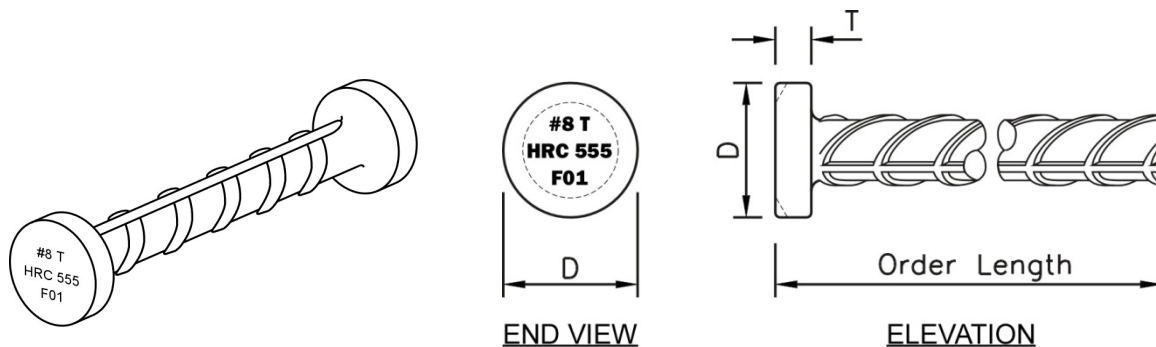




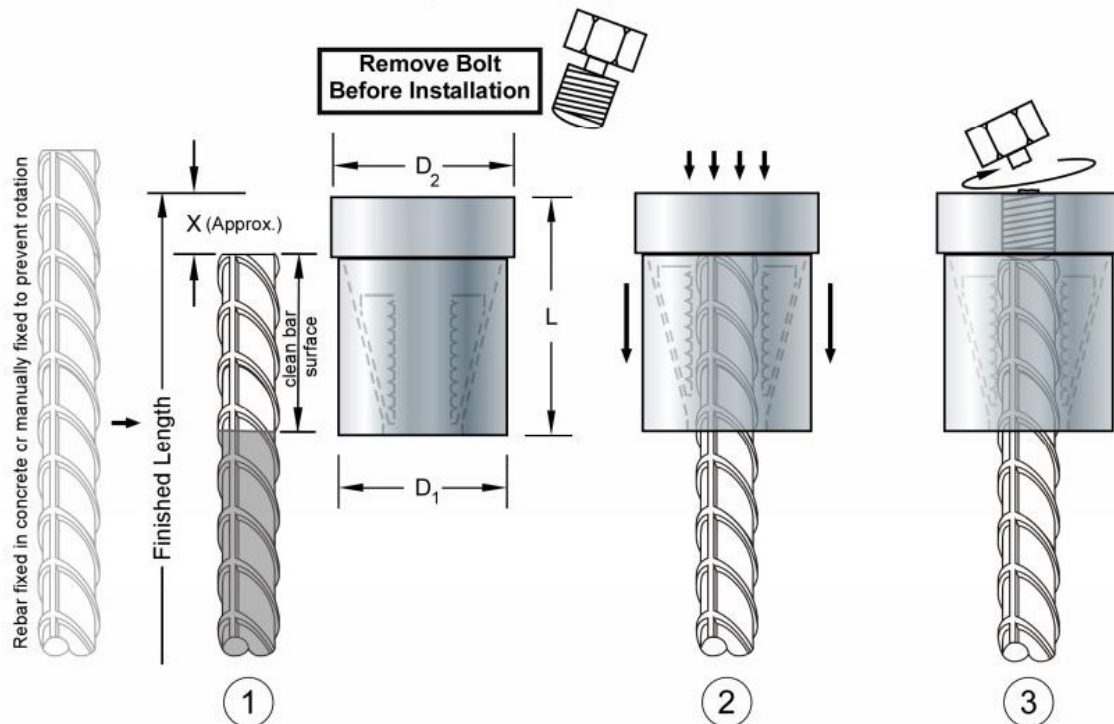
TABLE 3 – DIMENSIONS OF HRC 670 T-HEAD FOR USE WITH REINFORCING BARS

Dimensions	Bar Size	#5	#6	#7	#8	#9	#10	#11	#14	#18
Reinforcing bar	$d_b$ , Diameter (in)	0.625	0.75	0.875	1.0	1.128	1.27	1.41	1.69	2.26
	$A_b$ , Area (in <sup>2</sup> )	0.31	0.44	0.60	0.79	1.00	1.27	1.56	2.25	4.00
Head	$D_1$ (in)	1.5	1.75	2.08	2.375	2.625	3.0	3.5	4.0	5.25
	$D_2$ (in)	1.75	1.875	2.25	2.5	2.75	3.25	3.625	4.0	5.25
	L (in)	2.22	2.48	2.8	3.3	3.35	3.7	4.2	4.9	6.25
	X (in)	0.5	0.5	0.625	0.625	0.75	0.875	1.0	1.07	1.07
	Bolt Socket Size (in)	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	1	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$

For SI: 1 inch = 25.4 mm, 1 sq. in. = 645 mm<sup>2</sup>, 1 foot = 305 mm.

FIGURE 2 - HRC® 670 T-HEAD

No Special Equipment Needed



1  
Cut bar to desired elevation - "X".  
Clean any debris and/or concrete off the deformed bar surface for the length that will be inserted into the T-Head. Grind down burrs and imperfections if necessary.

2  
Remove the bolt. Push HRC 670 onto bar, **without bolt**, until it bottoms out. Verify bar end is flush against bolt hole. Hammer down if necessary.

3  
Re-insert bolt and torque until bolt head breaks off.\*\*

\*\*Although the bolt torque secures the HRC 670 from longitudinal movement in tension and compression, it may be possible to rotate the device around the bar's axis.

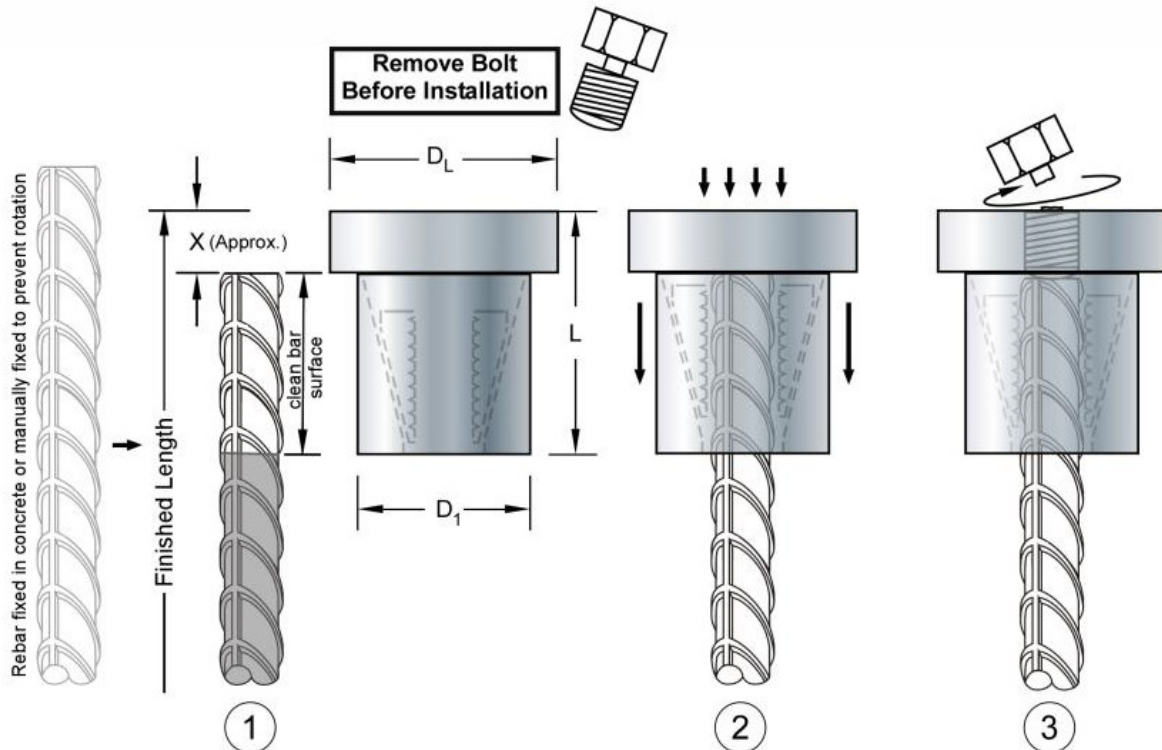
TABLE 4 – DIMENSIONS OF HRC 670L T-HEAD FOR USE WITH REINFORCING BARS

Dimensions	Bar Size	#5	#6	#7	#8	#9	#10	#11	#14	#18
Reinforcing bar	d <sub>b</sub> , Diameter (in)	0.625	0.75	0.875	1.0	1.128	1.27	1.41	1.69	2.26
	A <sub>b</sub> , Area (in <sup>2</sup> )	0.31	0.44	0.60	0.79	1.00	1.27	1.56	2.25	4.00
Head	D <sub>1</sub> (in)	1.5	1.75	2.08	2.375	2.625	3.0	3.5	4.0	5.25
	D <sub>L</sub> (in)	2.0	2.5	2.875	3.25	3.625	4.0	4.5	5.5	7.25
	L (in)	2.22	2.48	2.8	3.3	3.35	3.7	4.2	4.9	6.25
	X (in)	0.5	0.5	0.625	0.625	0.75	0.875	1.0	1.07	1.07
	Bolt Socket Size (in)	3/4	3/4	3/4	1	1	1 1/4	1 1/2	1 1/2	1 1/2

For SI: 1 inch = 25.4 mm, 1 sq. in. = 645 mm<sup>2</sup>, 1 foot = 305 mm.

FIGURE 3 - HRC® 670L T-HEAD

### No Special Equipment Needed



Cut bar to desired elevation - "X". Clean any debris and/or concrete off the deformed bar surface for the length that will be inserted into the T-Head. Grind down burrs and imperfections if necessary.

Remove the bolt. Push HRC 670 onto bar, **without bolt**, until it bottoms out. Verify bar end is flush against bolt hole. Hammer down if necessary.

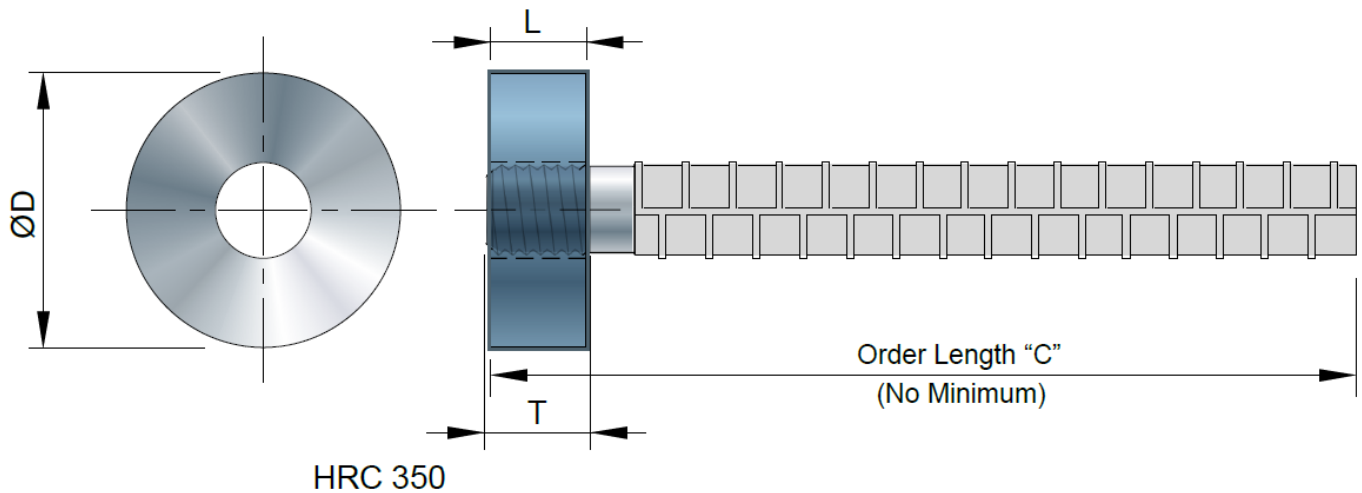
Re-insert bolt and torque until bolt head breaks off.\*\*

\*\*Although the bolt torque secures the HRC 670 from longitudinal movement in tension and compression, it may be possible to rotate the device around the bar's axis.

**TABLE 5 – DIMENSIONS OF HRC® 350 T-HEAD FOR USE WITH REINFORCING BARS**

Dimensions	Bar Size	#4	#5	#6	#7	#8	#9	#10	#11
Reinforcing Bar Properties	<b>d<sub>b</sub>, Diameter (in)</b>	0.5	0.625	0.750	0.875	1.00	1.128	1.27	1.41
	<b>A<sub>b</sub>, Area (in<sup>2</sup>)</b>	0.20	0.31	0.44	0.60	0.79	1.00	1.27	1.56
Reinforcing Bar Thread Information	<b>Thread Size</b>	½" – 13 UNC	⅝" – 11 UNC	¾" – 10 UNC	⅞" – 9 UNC	1" – 8 UNC	1⅛" – 7 UNC	1¼" – 7 UNC	M36 x 4
	<b>T min. (in)</b>	0.75	0.75	1.00	1.00	1.125	1.5	1.625	1.625
HRC 350 Dimensions	<b>ØD min. (in)</b>	1.13	1.50	1.75	2.00	2.25	2.63	3.00	3.25
	<b>Thread Size</b>	½" – 13 UNC	⅝" – 11 UNC	¾" – 10 UNC	⅞" – 9 UNC	1" – 8 UNC	1⅛" – 7 UNC	1¼" – 7 UNC	M36 x 4
	<b>L (in)</b>	0.75	0.75	1.00	1.00	1.125	1.5	1.625	1.625

For SI: 1 inch = 25.4 mm, 1 sq. in. = 645 mm<sup>2</sup>, 1 foot = 305 mm.

**FIGURE 4 - HRC® 350 T-HEAD**



## CITY OF LOS ANGELES SUPPLEMENT

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### HRC® 555 SERIES, HRC® 670 and HRC® 670L SERIES T-HEAD, and HRC® 350 SERIES T-HEAD HEADED ENDS OF CONCRETE REINFORCEMENT

#### CSI Section:

03 21 00 Reinforced Steel

#### 1.0 RECOGNITION

The HRC® 555 Series headed reinforcing bars, the HRC® 670 and HRC® 670L attachable heads for deformed steel reinforcing bars, and the HRC® 350 Series threaded T-Heads and steel reinforcing bars, all described in ER-177 and this 2023 LABC and LARC supplemental report, have been evaluated for use as mechanical anchorage in concrete. The HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 Series T-Head have been evaluated for structural performance properties, subject to the requirements in ER-177 and this 2023 LABC and LARC supplemental report. The HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 Series were evaluated for compliance with the following codes and regulations:

- 2023 City of Los Angeles Building Code (LABC)
- 2023 City of Los Angeles Residential Code (LARC)

#### 2.0 LIMITATIONS

Use of the HRC® 555 Series, the HRC® 670, HRC® 670L, and the HRC® 350 T-Head recognized in this supplement is subject to the following limitations:

2.1 The design and installation of the HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 T-Head shall be in accordance with the 2021 International Building Code and the 2021 International Residential Code as noted in ER-177.

2.2 Calculations and specifications verifying compliance with this report and the LABC or LARC shall be submitted to the plan check engineer at the time of permit application. The HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 T-Head calculations shall be prepared, stamped, and signed by a California registered design professional.

2.3 Periodic special inspections shall be provided by the Registered Deputy Inspector in accordance with Sections 1704.4 and 1705.3 of the 2023 LABC during installations of the HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 T-Head. The special inspector is responsible for verifying the identification of the headed deformed reinforcing bars, grade, and size of reinforcing bars, installation of reinforcing bar splices to the headed deformed reinforcing bars, as well as placement of the headed bars.

2.4 The HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 T-Head shall be installed in accordance with the LABC or LARC, the manufacturer's installation instructions, and this supplement. In the event of a conflict, the more restrictive governs. A copy of the manufacturer's installation instructions shall be available on-site for all Registered Deputy Inspectors.

2.5 The design of anchorage to concrete shall comply with Section 4.1.4 of ER-177.

2.6 For use as reinforcement resisting earthquake-induced flexural and axial forces in frame members and boundary elements of special structural walls, the reinforcing bar component of the headed bars shall comply with Section 20.2 of ACI 318-19.

2.7 The HRC® 555 Series, HRC® 670, HRC® 670L, and HRC® 350 Series T-Head listed in this supplement shall include the unique heat code identification and the letter "H" to indicate that the product has been produced to the ASTM A970 Annex A1 specification. Products prepared by officially licensed fabricators may have additional unique identifiers that correspond to the fabricator.

2.8 The fabricator of the steel for the HRC® 555 Series, shall be required to maintain a detailed procedure for material control and suitable procedures and records attesting that the specified material has been furnished. The applicable ASTM designation or coating, as applicable, shall be included in each packaging assembly prior to shipment from the fabricator's plant. The fabricator's identification mark designation shall be established and on record prior to fabrication. Steel that is not identifiable from marking and test records shall be tested to determine conformity to this report. The fabricator shall furnish an affidavit of compliance, and test data shall be provided upon request.

2.9 This supplement expires concurrently with ER-177.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)