



# WEDGE ANCHOR

ZINC, GALVANIZED & STAINLESS STEEL

The **Allfasteners Wedge Anchor** is a torque-controlled, wedge expansion anchor for heavy duty fastening applications where high pull out values in concrete are needed. The anchor and the hole diameter are the same, simplifying the anchor installation by placing the anchor through the existing hole in the material to be fastened. Used in fastening sheet metal, steel and aluminum angles, or wood to concrete. Due to its high resistance to vibratory loads, this anchor is ideal for installing machinery, hand rails, dock bumpers, storage racks, etc.



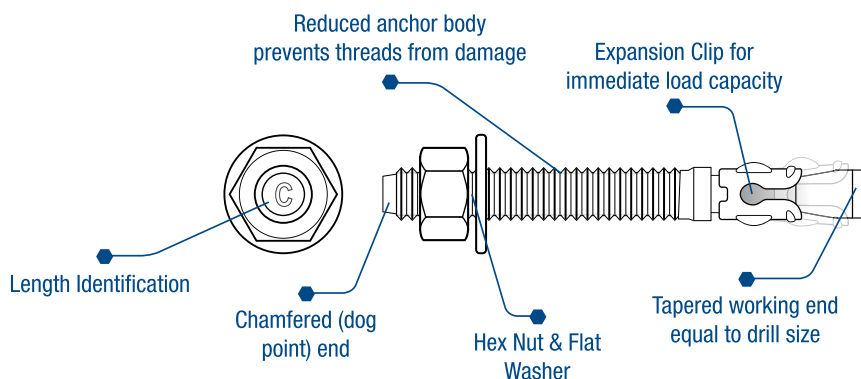
## APPLICATIONS & USES

- Solid Concrete (Normal-Weight and Light-Weight)
- Grout-Filled Concrete Block
- Concrete-Filled Metal Deck
- Structural Anchorage
- Machinery, Hand rail, dock bumper installation
- Storage racking anchorage

## KEY FEATURES

- Length ID stamped on visible end of each anchor
- Fully threaded for use in all applications, including varied material thickness. Eliminates subsurface obstruction problems.
- Nominal drill diameter is the same as anchor diameter, allowing anchor to be installed after setting of fixture
- Heavy duty applications
- Depth of holes can be over-drilled with no loss of load capacity
- Impact section is raised (dog-point) to prevent thread damage during installation
- Mechanical expansion action allows immediate load application

## MATERIAL SPECIFICATIONS



COMPONENTS	ZINC	HOT DIPPED GALVANIZED
Body	C1010 Carbon Steel	C1010 Carbon Steel
Expanding Clip	Carbon Steel	Type 304 Stainless
Hex Nut	ASTM A563 Grade A Carbon Steel	ASTM A563 Grade A Carbon Steel
Flat Washer	Carbon Steel	Carbon Steel
Plating/Finish	Electroplated zinc plating (clear)	Hot Dipped Galvanized



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**MATERIAL SPECIFICATIONS (CONT'D)**

Components	304 STAINLESS	316 STAINLESS
Body	Type 304 Stainless Steel	Type 316 Stainless Steel
Expanding Clip		
Hex Nut		
Flat Washer		
Plating/Finish		

<b>Description</b>	A four piece assembly consisting of (1) anchor bolt threaded at one end with a unified pitch, a shoulder at the opposite end which retains a free-spinning clip, (2) a clip with three lateral slits and projections designed to exert greater holding power the greater the load that is applied, (3) a hex nut, and (4) a flat washer.			
<b>Applications/Advantages</b>	These are heavy-duty, non-bottom bearing anchors of greater shear strength than other light and medium-duty expansion anchors. The design of the expansion clip assures full contact with the masonry. Wedge anchors withstand temperature fluctuations well. For best performance, minimum anchor spacing should be 10 hole diameters and minimum edge distance be 5 hole diameters.			
<b>Material</b>	<b>CARBON STEEL</b>		<b>TYPE 304 STAINLESS</b>	
	<b>ANCHOR BODY</b>	AISI 1018 - 12L14 or equivalent free-machining carbon steel	<b>ANCHOR BODY</b>	Type 304Cu (1/4" thru 3/4" diameters); Type 3-4 (7/8" thru 1-1/4" diameters & all lengths over 7")
	<b>EXPANSION WEDGE</b>	AISI C1008 - 1010 or equivalent carbon steel	<b>EXPANSION WEDGE</b>	Type 304 stainless
	<b>NUT</b>	ASTM A-563 Grade A Carbon Steel	<b>NUT</b>	18-8 stainless
	<b>WASHER</b>	Carbon Steel	<b>WASHER</b>	18-8 stainless
<b>Ultimate Shear Strength</b>	See average test values as listed in the tables on pages 8-9. <b>IMPORTANT:</b> The maximum working loads should not exceed 1/4 of the average ultimate values for a specific size.			
<b>Plating</b>	Steel wedge anchors are typically zinc or mechanically galvanized plated.			

**LENGTH IDENTIFICATION CODE**

Length identification indicates overall length of anchor. Stamp is visible before and after installation.

	A	B	C	D	E	F	G	H	I	J	K	L	M
<b>Mark From Up to*</b>	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"	6-1/2"	7"	7-1/2"
	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"	6-1/2"	7"	7-1/2"	8"

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
<b>Mark From Up to*</b>	8"	8-1/2"	9"	9-1/2"	10"	11"	12"	13"	14"	15"	16"	17"	18"
	8-1/2"	9"	9-1/2"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"

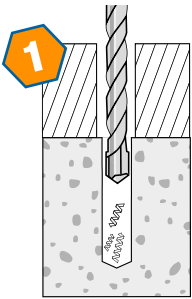
\* Up to but not including



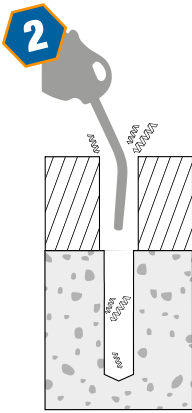
# WEDGE ANCHOR

ZINC, GALVANIZED & STAINLESS STEEL

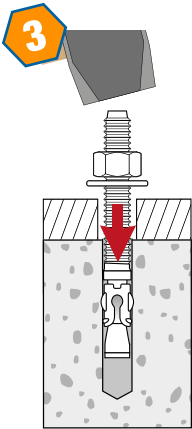
## INSTALLATION GUIDE



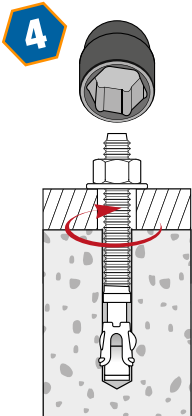
1. Using the proper drill bit size, drill a hole into the base material to the required depth. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15.



2. Remove dust and debris from hole using a hand pump, compressed air or a vacuum to remove loose particles left from drilling



3. Remove dust and debris from hole using a hand pump, compressed air or a vacuum to remove loose particles left from drilling.



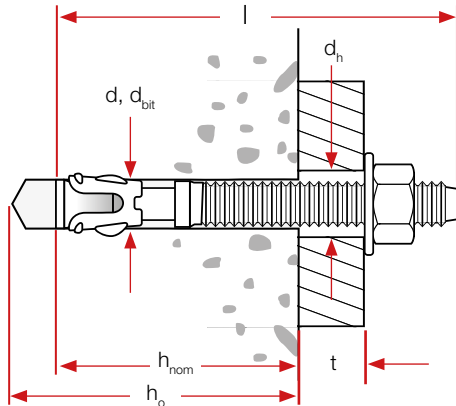
4. Tighten the anchor with a torque wrench by applying the required installation torque,  $T_{inst}$   
Note: the threaded stud will draw up during tightening of the nut; the expansion wedge (clip) remains in original position.



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## INSTALLATION SPECIFICATIONS



- $l$  = overall anchor length
- $d$  = anchor diameter
- $d_{bit}$  = drill diameter
- $d_h$  = clearance hole diameter in fixture
- $h_{nom}$  = minimum embedment depth
- $h_{ef}$  = effective embedment depth
- $h_o$  = minimum hole depth
- $t$  = fixture thickness

The minimum base material thickness should be  $1.5 h_{nom}$  or 3", whichever is greater.

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 Nm.

## INSTALLATION SPECIFICATIONS - ZINC PLATED & HOT DIPPED GALVANIZED

### CARBON STEEL - NOMINAL ANCHOR DIAMETER, $d$

Setting Information	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4			
Nominal drill diameter, $d_{bit}$	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4			
Fixture clearance hole diameter, $d_h$	5/16	7/16	9/16	11/16	13/16	1	1-1/8	1-3/8			
Nominal embedment depth, $h_{nom}$	1-3/4	2-3/8	2-1/4	3-5/8	3-1/2	4-3/8	4-1/4	5-5/8	5-1/8	5-1/4	7-1/4
Effective embedment depth, $h_{ef}$	1-1/2	2	2	2-3/4	3-1/8	4	3-3/4	5	4-1/2	4-1/2	6-1/2
Minimum hole depth, $h_o$	2	2-1/2	2-5/8	4	3-3/4	4-3/4	4-1/2	5-3/4	4-7/8	4-7/8	7-1/4
Minimum anchor length, $l_{anch}$	1-3/4	2-1/4	2-3/4	3-1/2	4-1/4	6	6	9			
Torque wrench size	7/16	9/16	3/4	15/16	1-1/8	1-5/16	1-1/2	1-7/8			
Installation Torque (ft-lb)	4	20	40	70	110	175	225	375			

## INSTALLATION SPECIFICATIONS - STAINLESS STEEL TYPE 304 & 316

### STAINLESS STEEL - NOMINAL ANCHOR DIAMETER, $d$

Setting Information	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4			
Nominal drill diameter, $d_{bit}$	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4			
Fixture clearance hole diameter, $d_h$	5/16	7/16	9/16	11/16	13/16	1	1-1/8	1-3/8			
Nominal embedment depth, $h_{nom}$	1-3/4	2-3/8	2-1/4	3-5/8	3-1/2	4-3/8	4-1/4	5-5/8	5-1/8	4-1/4	7-1/4
Effective embedment depth, $h_{ef}$	1-1/2	2	2	2-3/4	3-1/8	4	3-3/4	5	4-1/2	4-1/2	6-1/2
Minimum hole depth, $h_o$	2	2-1/2	2-5/8	4	3-3/4	4-3/4	4-1/2	5-3/4	4-7/8	4-7/8	7-1/4
Minimum anchor length, $l_{anch}$	1-3/4	2-1/4	2 3/4	3-1/2	4-1/4	6	6	9			
Torque wrench size	7/16	9/16	3/4	15/16	1-1/8	1-5/16	1-1/2	1-7/8			
Installation Torque (ft-lb)	4	20	40	70	110	175	225	375			



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**TECHNICAL DATA**

Below data applies to all anchor codes 1WAZ (Zinc Plated), 1WAG (Galvanized), 1WAS2 (304 Stainless Steel, and 1WAS4 (316 Stainless Steel).

*ULTIMATE LOAD CAPACITIES FOR CARBON STEEL WEDGE ANCHOR IN NORMAL WEIGHT CONCRETE*

Anchor Diameter (in)	Embedment Depth (in)	MINIMUM CONCRETE COMPRESSIVE STRENGTH (f'c)	
		3500 psi	
		TENSION lbs	SHEAR lbs
1/4	1-1/8	3005	1655
	2	3205	1655
	1-5/8	4735	3785
	2-3/8	5045	3785
3/8	2-5/8	5190	3785
	3-1/8	5115	3785
	3-3/8	5270	3785
	1-7/8	5315	6410
1/2	3-1/4	5960	6410
	6-1/2	9680	6410
	2-3/4	8460	8315
5/8	3-7/8	10230	8315
	4-3/8	12890	8315
	6-3/8	14760	8315
3/4	3-1/2	12725	16985
	4	13255	16985
	4-3/4	13865	16985
	5-1/2	17240	16985

*ALLOWABLE LOAD CAPACITIES FOR CARBON STEEL WEDGE ANCHOR IN NORMAL WEIGHT CONCRETE*

Anchor Diameter (in)	Embedment Depth (in)	MINIMUM CONCRETE COMPRESSIVE STRENGTH (f'c)	
		3500 psi	
		TENSION lbs	SHEAR lbs
1/4	1-1/8	751	414
	2	801	414
	1-5/8	1184	946
3/8	2-3/8	1261	946
	2-5/8	1298	946
	3-1/8	1279	946
	3-3/8	1318	946
1/2	1-7/8	1329	1603
	3-1/4	1490	1603
	6-1/2	2420	1603
5/8	2-3/4	2115	2079
	3-7/8	2558	2079
	4-3/8	3223	2079
	6-3/8	3690	2079
3/4	3-1/2	3181	4246
	4	3314	4246
	4-3/4	3466	4246
	5-1/2	4310	4246



**WEDGE ANCHOR**  
ZINC, GALVANIZED & STAINLESS STEEL

**TECHNICAL DATA (CONT'D)**

Below data applies to all anchor codes 1WAZ (Zinc Plated), 1WAG (Galvanized), 1WAS2 (304 Stainless Steel), and 1WAS4 (316 Stainless Steel).

*ULTIMATE LOAD CAPACITIES FOR CARBON STEEL WEDGE ANCHOR IN NORMAL WEIGHT CONCRETE*

Anchor Diameter (in)	Embedment Depth (in)	MINIMUM CONCRETE COMPRESSIVE STRENGTH (f'c)	
		4000 psi	
		TENSION lbs	SHEAR lbs
7/8	3-7/8	16354	20234
	5-3/4	18250	20234
	8-3/4	16850	20234
1	4-1/2	18250	27605
	7-1/2	26726	27605
	10	30491	27605
1-1/4	5-1/2	22971	42690
	7	27845	42690
	10	34788	42690

*ALLOWABLE LOAD CAPACITIES FOR CARBON STEEL WEDGE ANCHOR IN NORMAL WEIGHT CONCRETE*

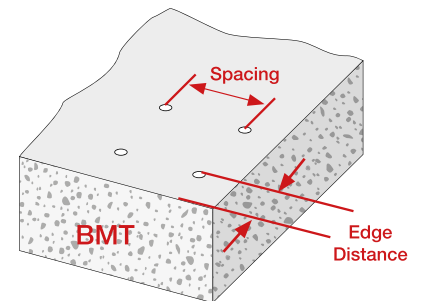
Anchor Diameter (in)	Embedment Depth (in)	MINIMUM CONCRETE COMPRESSIVE STRENGTH (f'c)	
		4000 psi	
		TENSION lbs	SHEAR lbs
7/8	3-7/8	4089	5059
	5-3/4	4563	5059
	8-3/4	4213	5059
1	4-1/2	4563	6901
	7-1/2	6682	6901
	10	7623	6901
1-1/4	5-1/2	5743	10673
	7	6961	10673
	10	8697	10673

**SETTING - BASE MATERIAL THICKNESS (BMT)**

There is a recommended minimum thickness of the solid base material that the anchor can be set in. The minimum is based on 1.5 times of the calculated embedment to be used. Eg. an anchor to be installed to a depth of 4", the base material should be 6" deep.

**Embedment** - a pre-determined depth to obtain the required load capacity. Equal to or greater than the minimum embedment allowance.

**Drill Depth** - is the required embedment depth into the substrate plus a cavity allowance approximately 1.5 times the anchor diameter.





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## SETTING - SPACING

The anchor diameter is equal to the drill diameter which eliminates the need for hole plotting or layout. As the anchor can be spaced using the fixture the maximum load in tension or shear can be achieved by spacing anchors 10 times the selected diameter.

This spacing can be reduced but the load value should also be reduced, see table below.

Anchor SPACING						
LOAD CAPACITY	10 x D	9 x D	8 x D	7 x D	6 x D	5 x D
Reduce by	100%	10%	20%	30%	40%	50%
Reduction Factor	1.00	0.90	0.80	0.70	0.60	0.50

## SETTING - EDGE DISTANCE FOR TENSION

Should be determined by 12 times the selected anchor diameter to obtain the maximum load in tension. The recommended minimum spacing is 5 times the selected anchor diameter.

In tension – reducing the edge distance to the minimum, the load value will reduce by 20%.

Edge Distance in TENSION only								
LOAD CAPACITY	12 x D	11 x D	10 x D	9 x D	8 x D	7 x D	6 x D	5 x D
Reduce by	100%	3%	6%	9%	11%	14%	17%	20%
Reduction Factor	1.00	0.97	0.94	0.91	0.89	0.86	0.83	0.80

## SETTING - EDGE DISTANCE FOR SHEAR

Should be determined by 12 times the selected anchor diameter to obtain the maximum load in shear. The recommended minimum spacing is 5 times the selected anchor diameter.

In shear – reducing the edge distance to the minimum, the load value will reduce by 50%.

Edge Distance in SHEAR only								
LOAD CAPACITY	12 x D	11 x D	10 x D	9 x D	8 x D	7 x D	6 x D	5 x D
Reduce by	100%	7%	14%	21%	29%	36%	43%	50%
Reduction Factor	1.00	0.93	0.86	0.79	0.71	0.84	0.57	0.50



# WEDGE ANCHOR

ZINC, GALVANIZED & STAINLESS STEEL

## ORDERING INFORMATION - ZINC PLATED & HOT DIPPED GALVANIZED



Zinc Plated (Clear)



Hot Dipped Galvanized

### LENGTH SELECTION

The published length is the overall length of the anchor. Allow for fixture thickness plus one anchor diameter for the nut and washer thickness when selecting a length.

Minimum Length Requirement must be > the minimum Embedment Depth + Fixture thickness (incl. shims & spacers) + Anchor diameter

CARBON STEEL AF WEDGE ANCHORS								
ZINC Clear	HD GALV.	Anchor* x O.A.L (in.)	MIN. Embedment (in.)	Thread Length (in.)	Washer O.D Ø (in.)	Hex Nut A/F (in.)		
1WAZ14134	1WAG14134	1/4 x 1-3/4	1-1/8	5/8	5/8	1/2	100	1000
1WAZ14214	1WAG14214	1/4 x 2-1/4		1-1/8			100	800
1WAZ14314	1WAG14314	1/4 x 3-1/4		2-1/8			100	500
1WAZ38214	1WAG38214	3/8 x 2-1/4	1-1/2	7/8	13/16	11/16	50	400
1WAZ38234	1WAG38234	3/8 x 2-3/4		1-3/8			50	250
1WAZ38300	1WAG38300	3/8 x 3		1-5/8			50	250
1WAZ38312	1WAG38312	3/8 x 3-1/2		2-1/8			50	250
1WAZ38334	1WAG38334	3/8 x 3-3/4		2-3/8			50	250
1WAZ38500	1WAG38500	3/8 x 5		3-5/8			50	250
1WAZ12234	1WAG12234	1/2 x 2-3/4	1-7/8	1-1/8	1-1/16	7/8	50	200
1WAZ12334	1WAG12334	1/2 x 3-3/4		1-3/4			50	200
1WAZ12414	1WAG12414	1/2 x 4-1/4		2-5/8			50	200
1WAZ12412	1WAG12412	1/2 x 4-1/2		2-7/8			50	200
1WAZ12512	1WAG12512	1/2 x 5-1/2		3-7/8			50	150
1WAZ12700	1WAG12700	1/2 x 7		5-3/8			25	100
1WAZ12812	1WAG12812	1/2 x 8-1/2	6-7/8	25	100			
1WAZ58312	1WAG58312	5/8 x 3-1/2	2-1/2	1-1/2	1-5/16	1-1/16	25	100
1WAZ58412	1WAG58412	5/8 x 4-1/2		2-1/2			25	100
1WAZ58500	1WAG58500	5/8 x 5		3			25	100
1WAZ58600	1WAG58600	5/8 x 6		4			25	75
1WAZ58700	1WAG58700	5/8 x 7		5			25	75
1WAZ58812	1WAG58812	5/8 x 8-1/2		6-1/2			10	40
1WAZ58100	1WAG58100	5/8 x 10	8	10	40			
1WAZ34414	1WAG34414	3/4 x 4-1/4	2-7/8	1-3/4	1-1/2	1-1/4	20	60
1WAZ34434	1WAG34434	3/4 x 4-3/4		2-1/4			20	60
1WAZ34512	1WAG34512	3/4 x 5-1/2		3			20	60
1WAZ34614	1WAG34614	3/4 x 6-1/4		3-3/4			20	60
1WAZ34700	1WAG34700	3/4 x 7		4-1/2			10	40
1WAZ34812	1WAG34812	3/4 x 8-1/2		6			10	40

\*Drill diameter

O.A.L is Overall Length







# WEDGE ANCHOR

ZINC, GALVANIZED & STAINLESS STEEL

## ORDERING INFORMATION (CONT'D) - ZINC & HOT DIPPED GALVANIZED

CARBON STEEL AF WEDGE ANCHORS								
ZINC Clear	HD GALV.	Anchor* x O.A.L (in.)	MIN. Embedment (in.)	Thread Length (in.)	Washer O.D Ø (in.)	Hex Nut A/F (in.)		
1WAZ78600	1WAG78600	7/8 x 6	3-7/8	2-1/4	1-3/4	1-7/16	5	30
1WAZ78800	1WAG78800	7/8 x 8		2-1/4			5	25
1WAZ78100	1WAG78100	7/8 x 10		2-1/4			5	20
1WAZ78120	1WAG78120	7/8 x 12		2-1/4			5	20
1WAZ10600	1WAG10600	1 x 6	4-1/2	2-1/4	2	1-5/8	5	30
1WAZ10900	1WAG10900	1 x 9		2-1/4			5	20
1WAZ10120	1WAG10120	1 x 12		2-1/4			5	20
1WAZ11490	1WAG11490	1-1/4 x 9	5-1/2	3-1/4	3	2	5	15
1WAZ11412	1WAG11412	1-1/4 x 12		3-1/4			5	15

\*Drill diameter

O.A.L is Overall Length

## ORDERING INFORMATION - STAINLESS STEEL TYPE 304 & 316





Stainless Steel

### LENGTH SELECTION

The published length is the overall length of the anchor. Allow for fixture thickness plus one anchor diameter for the nut and washer thickness when selecting a length.

Minimum Length Requirement must be > the minimum Embedment Depth + Fixture thickness (incl. shims & spacers) + Anchor diameter

STAINLESS STEEL AF WEDGE ANCHORS								
TYPE 304	TYPE 316	Anchor* x O.A.L (in.)	MIN. Embedment (in.)	Thread Length (in.)	Washer O.D Ø (in.)	Hex Nut A/F (in.)		
1WAS214134	1WAS414134	1/4 x 1-3/4	1-1/8	5/8	5/8	1/2	100	1000
1WAS214214	1WAS414214	1/4 x 2-1/4		1-1/8			100	800
1WAS214314	1WAS414314	1/4 x 3-1/4		2-1/8			100	500
1WAS238214	1WAS438214	3/8 x 2-1/4	1-1/2	7/8	13/16	11/16	50	400
1WAS238234	1WAS438234	3/8 x 2-3/4		1-3/8			50	250
1WAS238300	1WAS438300	3/8 x 3		1-5/8			50	250
1WAS238312	1WAS438312	3/8 x 3-1/2		2-1/8			50	250
1WAS238334	1WAS438334	3/8 x 3-3/4		2-3/8			50	250
1WAS238500	1WAS438500	3/8 x 5		3-5/8			50	250

\*Drill diameter



O.A.L is Overall Length



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## ORDERING INFORMATION - STAINLESS STEEL TYPE 304 & 316

CARBON STEEL AF WEDGE ANCHORS								
TYPE 304	TYPE 316	Anchor* x O.A.L. (in.)	MIN. Embedment (in.)	Thread Length (in.)	Washer O.D Ø (in.)	Hex Nut A/F (in.)		
1WAS212234	1WAS412234	1/2 x 2-3/4		1-1/8			50	200
1WAS212334	1WAS412334	1/2 x 3-3/4		1-3/4			50	200
1WAS212414	1WAS412414	1/2 x 4-1/4		2-5/8			50	200
1WAS212412	1WAS412412	1/2 x 4-1/2	1-7/8	2-7/8	1-1/16	7/8	50	200
1WAS212512	1WAS412512	1/2 x 5-1/2		3-7/8			50	150
1WAS212700	1WAS412700	1/2 x 7		5-3/8			25	100
1WAS212812	1WAS412812	1/2 x 8-1/2		6-7/8			25	100
1WAS258312	1WAS458312	5/8 x 3-1/2		1-1/2			25	100
1WAS258412	1WAS458412	5/8 x 4-1/2		2-1/2			25	100
1WAS258500	1WAS458500	5/8 x 5		3			25	100
1WAS258600	1WAS458600	5/8 x 6	2-1/2	4	1-5/16	1-1/16	25	75
1WAS258700	1WAS458700	5/8 x 7		5			25	75
1WAS258812	1WAS458812	5/8 x 8-1/2		6-1/2			10	40
1WAS258100	1WAS458100	5/8 x 10		8			10	40
1WAS234414	1WAS434414	3/4 x 4-1/4		1-3/4			20	60
1WAS234434	1WAS434434	3/4 x 4-3/4		2-1/4			20	60
1WAS234512	1WAS434512	3/4 x 5-1/2		3			20	60
1WAS234614	1WAS434614	3/4 x 6-1/4	2-7/8	3-3/4	1-1/2	1-1/4	20	60
1WAS234700	1WAS434700	3/4 x 7		4-1/2			10	40
1WAS234812	1WAS434812	3/4 x 8-1/2		6			10	40
1WAS278600	1WAS478600	7/8 x 6		2-1/4			5	30
1WAS278800	1WAS478800	7/8 x 8		2-1/4			5	25
1WAS278100	1WAS478100	7/8 x 10	3-7/8	2-1/4	1-3/4	1-7/16	5	20
1WAS278120	1WAS478120	7/8 x 12		2-1/4			5	20
1WAS210600	1WAS410600	1 x 6		2-1/4			5	30
1WAS210900	1WAS410900	1 x 9	4-1/2	2-1/4	2	1-5/8	5	20
1WAS210120	1WAS410120	1 x 12		2-1/4			5	20
1WAS211490	1WAS411490	1-1/4 x 9		3-1/4			5	15
1WAS211412	1WAS411412	1-1/4 x 12	5-1/2	3-1/4	3	2	5	15

\*Drill diameter

O.A.L. is Overall Length