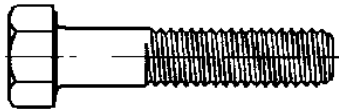


REFERENCE DOCUMENTS

CNH STPA020	Fastener Finishes and Material Specifications
EN 1665	Hexagon Bolts With Flange – Heavy series
ISO 4014	Hexagon head bolts – Product grades A and B
ISO 4017	Hexagon head bolts – Product grades A and B Full Thread
ISO 8765	Hexagon head bolts – Metric Fine , Product grades A and B
ISO 8676	Hexagon head bolts – Metric Fine , Product grades A and B Full Thread
ISO 888	Bolts screws and studs – Nominal and thread lengths for general purpose bolts
ISO 898-1	Mechanical properties of fasteners made of carbon steel and alloy steel
IFI 525	Industrial Fasteners Institute – Test Procedure for Chemical Coated Lock Screws
ISO 6157-3	Fasteners - Surface Discontinuities

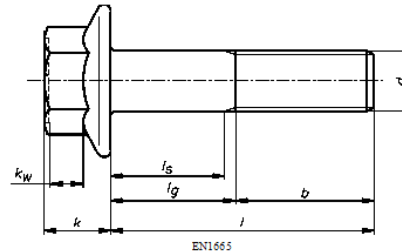
When a standard is referenced in a drawing or specification, it is understood that the reference is to the latest revision of the standard, unless stated otherwise.



ISO 4014 Bolt with shank



ISO 4017 Bolt fully threaded



EN1665

Thread Length: ISO 888
 Specifications: ISO 4014, ISO 4017, EN 1665

Typical part description for BOM's and CAD drawings

BOLT, LOCK, M8X25 FULL 8.8 ZND

Bolts and screws shall be free from burrs, seams, laps, loose scale, irregular surfaces and any defects affecting their serviceability (ISO 6157-3). Bolts shall conform to ISO 4014 (with Shank), ISO 4017 (Fully Threaded) or EN1665 as appropriate.

For cross reference listing of company part numbers, go to [PARTsolutions](#).

AUTHOR	APPROVED BY	ECO	PART NUMBER
D RAVI	03MAR26 A KHAN	03MAR26	35524329
			47646759

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Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 2 of 10

Table 1a. Hex Bolt (Coarse) General Information per ISO 4014 (with Shank) and ISO 4017 (Fully Threaded)

	4	5	6	8	10	12	14	16	18
Bolt Nominal Diameter	4	5	6	8	10	12	14	16	18
Coarse Thread Pitch	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5
Length of thread for									
Bolt length to 125	14	16	18	22	26	30	34	38	42
Bolt length 126 to 200	20	22	24	28	32	36	40	44	48
Bolt length: >200	33	35	37	41	45	49	53	57	61
Width across flats nom./ max	7	8	10	13	16	18	21	24	27
Width across corners min.	7.66	8.79	11.05	14.38	17.77	20.03	23.36	26.75	30.14
Head height max.	2.93	3.65	4.16	5.45	6.58	7.68	8.98	10.18	11.71

	20	22	24	30	36
Bolt Nominal Diameter	20	22	24	30	36
Coarse Thread Pitch	2.5	2.5	3	3.5	4
Length of thread for					
Bolt length to 125	46	50	54	66	-
Bolt length 126 to 200	52	56	60	72	84
Bolt length: >200	65	69	73	85	97
Width across flats nom./ max	30	34	36	46	55
Width across corners min.	32.95	37.72	39.55	50.85	60.79
Head height max.	12.72	14.35	15.22	19.12	22.92

Table 1b. Hex Bolt (Fine) General Information per ISO 8765 (with Shank) and ISO 8676 (Fully Threaded)

	8	10	12	14	16	18	20	24
Bolt Nominal Diameter	8	10	12	14	16	18	20	24
Fine Thread Pitch	1	1.25	1.25	1.5	1.5	1.5	1.5	2
Length of thread for								
Bolt length to 125	22	26	30	34	38	42	46	54
Bolt length 126 to 200	28	32	36	40	44	58	52	60
Bolt length: >200	41	45	49	53	57	61	65	73
Width across flats nom./ max	13	16	18	21	24	27	30	36
Width across corners min.	14.38	17.77	20.03	23.36	26.75	30.14	33.53	39.98
Head height max.	5.45	6.58	7.68	8.98	10.18	11.85	12.72	15.22



Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 3 of 10

Table 2. Hex Flange Bolt General Information per EN1665^

Nominal Diameter		M6^	M8^	M10	M12	M14	M16	M20
Pitch		1	1.25	1.5	1.75	2	2	2.5
d Body diameter	Max	6	8	10	12	14	16	20
	Min	5.82	7.78	9.78	11.73	13.73	15.73	19.67
s Width across flats	Max	10	13	16	18	21	24	30
	Min	9.78	12.73	15.73	17.73	20.67	23.67	29.67
e Width across corners	Min	10.95	14.26	17.62	19.86	23.15	26.51	33.23
d _c Flange diameter	Max	14.2	18.0	22.3	26.6	30.5	35	43
k _w Wrench height	Min	3.0	3.9	5.1	5.6	6.5	7.3	8.9
k Head height	Max	6.6	8.1	10.4	11.8	13.7	15.4	18.9
b Nominal thread length	<i>l</i> ≤ 125	18	22	26	30	34	38	46
	125 < <i>l</i> ≤ 200		28	32	36	40	44	52
	<i>l</i> > 200						57	65
	Fully threaded <i>l</i> ≤	25	30	35	40	45	50	60

Lengths (*l*): 10, 12, 16, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 180, 200

^M6 and M8 Hex Flange Head Bolts can be supplied per DIN 6921



Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 4 of 10

3. Hex and Flange Head Locking Bolts With Chemical Coating per IFI 525. Thread Diameters M6 to M20 Inclusive.

Locking bolts with chemical coating shall conform to IFI 525 standard. These bolts are for applications where temperatures will not exceed 105°C (220°F).

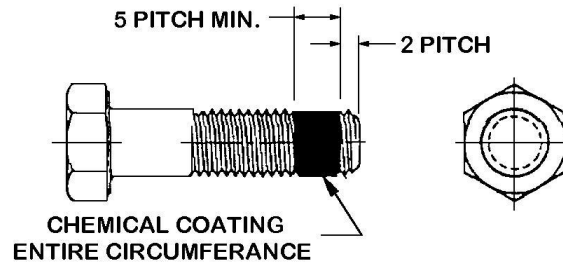
Approved chemical coating: ND Microspheres 593S (Blue) or Precote 85

Bolts shall assemble one full turn by hand. The prevailing torque of lock bolts occurring during the first installation shall not exceed the prevailing torque specified. In addition, the break-away torque and the maximum prevailing off torque occurring during the first removal shall not be less than the minimum values specified.

Table 3a. Locking Bolt Performance Requirements Per IFI 525

Nominal Size	Prevailing On Torque	Break Away Torque	Prevailing Off Torque
	Nm Max	Nm Min	Nm Min
M4	0.7	0.4	0.3
M5	1	0.8	0.5
M6	1.8	1.5	0.8
M8	2.8	4.0	2.0
M10	5.5	11	4.0
M12	7.2	16	7.0
M14	11	22	10
M16	14	33	16
M20	22	45	22

Note: Values are based on nut engagement in chemical area for a distance of one nominal screw diameter.


Table 4a. Locking Hex Bolts (Coarse) with Chemical Coating

Dia	Coarse Pitch	Length	Thread Length	Material	Finish	Part Number
4	0.7	30	FULL	8.8	ZND	92195366
4	0.7	35	FULL	8.8	DAC	47928340
5	0.8	16	FULL	10.9	ZND	51694935
5	0.8	20	FULL	10.9	ZND	90455175
6	1	16	FULL	8.8	BGM	92089208
6	1	16	FULL	8.8	ZND	90358784
6	1	20	FULL	10.9	BGM	92148911
6	1	25	FULL	8.8	ZND	90358831
6	1	40	FULL	10.9	ZND	92199236
6	1	45	FULL	8.8	ZND	90358832
8	1.25	12	FULL	10.9	ZND	47514410
8	1.25	16	FULL	10.9	ZND	51418399
8	1.25	16	FULL	8.8	DOR	51426388
8	1.25	20	FULL	8.8	DOR	47865293
8	1.25	20	FULL	8.8	ZND	90358833
8	1.25	20	FULL	SST	PLN	84363639
8	1.25	20	FULL	#A4-70	PLN	84390793
8	1.25	20		10.9	ZND	87646176
8	1.25	25	FULL	8.8	DOR	51433848
8	1.25	30		10.9	ZND	87646177
8	1.25	30	FULL	8.8	ZND	87378776
8	1.25	35		10.9	ZND	87646178
8	1.25	40		10.9	ZND	51678592
8	1.25	45		10.9	ZND	90454761
8	1.25	50		8.8	ZND	87025623
8	1.25	70		10.9	ZND	91805833
8	1.25	75		10.9	ZND	92032013
8	1.25	80		10.9	ZND	47603401
8	1.25	90		10.9	ZND	87302583
10	1.5	16	FULL	10.9	ZND	87635855
10	1.5	20		10.9	ZND	87646179
10	1.5	25	FULL	8.8	ZND	48073918
10	1.5	25	FULL	SST	PLN	84056909
10	1.5	25	FULL	#A4-70	PLN	48171693

A4-70 Stainless Steel – refer to ASTM F738M



Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 6 of 10

Table 4a. Locking Hex Bolts (Coarse) with Chemical Coating (Continued)

Dia	Coarse Pitch	Length	Thread Length	Material	Finish	Part Number
10	1.5	30	FULL	10.9	PHC	48195027
10	1.5	35		8.8	ZND	87646181
10	1.5	35	FULL	10.9	ZND	84349423
10	1.5	40	FULL	SST	PLN	84406847
10	1.5	40	FULL	#A4-70	PLN	84413228
10	1.5	45	FULL	SST	PLN	84364042
10	1.5	50	FULL	10.9	ZND	47800651
10	1.5	60		8.8	ZND	90337096
10	1.5	60	FULL	10.9	ZND	47804294
10	1.5	65		10.9	ZND	92032014
10	1.5	70		10.9	BGM	47640111
10	1.5	75		8.8	ZND	47749496
10	1.5	80		8.8	BGM	92736034
10	1.5	80		10.9	BGM	47640107
12	1.75	16	FULL	8.8	ZND	90443432
12	1.75	25	FULL	SST	PLN	87564475
12	1.75	25	FULL	#A4-70	PLN	48171704
12	1.75	25	FULL	8.8	ZND	51680824
12	1.75	25	FULL	10.9	ZND	51564942
12	1.75	30	FULL	8.8	ZND	86624975
12	1.75	30	FULL	10.9	ZND	47844966
12	1.75	35	FULL	10.9	ZND	47859833
12	1.75	35	FULL	10.9	DOR	87550555
12	1.75	40	FULL	10.9	PHC	47562559
12	1.75	40	FULL	10.9	ZND	87584292
12	1.75	45	FULL	8.8	ZND	92210761
12	1.75	45	FULL	10.9	PHC	47632825
12	1.75	45	FULL	10.9	ZND	84533154
12	1.75	45	FULL	10.9	DOR	48186701
12	1.75	50		10.9	PHC	87018613
12	1.75	50		10.9	ZND	84479757
12	1.75	50		10.9	DOR	48186703
12	1.75	60	FULL	10.9	PHC	92070282
12	1.75	60	FULL	10.9	ZND	48023733
12	1.75	60		8.8	ZND	90342154
12	1.75	65		8.8	ZND	47565553
12	1.75	65		10.9	ZND	47952337
12	1.75	90		8.8	ZND	87014322
14	2	90		10.9	PHC	51469903
14	2	110		10.9	ZND	90355376
16	2	30	FULL	10.9	ZND	51659958
16	2	35	FULL	8.8	ZND	87563128

A4-70 Stainless Steel – refer to ASTM F738M



Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 7 of 10

Table 4a. Locking Hex Bolts (Coarse) with Chemical Coating (Continued)

Dia	Coarse Pitch	Length	Thread Length	Material	Finish	Part Number
16	2	35	FULL	10.9	ZND	84246776
16	2	35	FULL	10.9	PHC	87036180
16	2	40		8.8	ZND	87612751
16	2	40		10.9	PHC	84160005
16	2	40	FULL	10.9	ZND	47535146
16	2	45	FULL	10.9	ZND	47800602
16	2	50	FULL	8.8	ZND	87563129
16	2	50	FULL	10.9	ZND	47552134
16	2	55	FULL	10.9	PHC	48137515
16	2	60	FULL	10.9	PHC	87028191
16	2	60	38	10.9	PHC	47590234
16	2	60	FULL	8.8	ZND	90427237
16	2	60	FULL	10.9	ZND	47800603
16	2	65	FULL	10.9	ZND	47852758
16	2	70		10.9	PHC	47581815
16	2	80		10.9	PHC	87698770
16	2	80		10.9	ZND	47755873
16	2	90		10.9	PHC	47589535
16	2	95		10.9	PHC	87550181
16	2	100		10.9	ZND	51441257
16	2	130		10.9	ZND	92073341
16	2	140		10.9	PHC	87626146
16	2	140		10.9	ZND	92073342
16	2	170		10.9	PHC	87028192
16	2	180		10.9	ZND	47596666
16	2	210		10.9	PHC	84518951
18	2.5	40	FULL	10.9	ZND	51606132
20	2.5	30	FULL	10.9	ZND	47919382
20	2.5	35	FULL	8.8	ZND	87646182
20	2.5	40	FULL	8.8	ZND	87646183
20	2.5	40	FULL	10.9	BGM	92076427
20	2.5	40	FULL	10.9	ZND	47535150
20	2.5	45	FULL	8.8	ZND	87646184
20	2.5	45	FULL	10.9	ZND	47919383
20	2.5	50	FULL	10.9	ZND	87563127
20	2.5	50	FULL	10.9	BGM	92089061
20	2.5	55	FULL	8.8	ZND	87563126
20	2.5	55	FULL	10.9	ZND	51465148
20	2.5	60	FULL	10.9	ZND	87639785
20	2.5	70	FULL	10.9	DOR	51647417
20	2.5	70	FULL	10.9	ZND	47859848

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Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 8 of 10

Table 4a. Locking Hex Bolts (Coarse) with Chemical Coating (Continued)

Dia	Coarse Pitch	Length	Thread Length	Material	Finish	Part Number
20	2.5	75		10.9	ZND	87352548
20	2.5	80		10.9	PHC	87371130
20	2.5	80		10.9	ZND	47938603
20	2.5	90		10.9	ZND	84567300
20	2.5	110		10.9	ZND	90355379
20	2.5	120		10.9	ZND	87015929
20	2.5	140		10.9	ZND	92046691
22	2.5	50	FULL	10.9	ZND	47797248
22	2.5	60		10.9	ZND	47410130
24	3	60		10.9	ZND	87354794
24	3	75		10.9	ZND	87564730
24	3	80		10.9	ZND	87564731
24	3	95		10.9	DOR	51647418
24	3	110		10.9	ZND	84345492
24	3	130		10.9	DAC	92080393
24	3	180		10.9	ZND	47567994
24	3	280		10.9	ZND	47598724
24	3	290		10.9	ZND	47568002

Table 4b. Locking Hex Bolts (Fine) with Chemical Coating

Dia	Fine Pitch	Length	Thread Length	Material	Finish	Part Number
12	1.25	25	FULL	8.8	ZND	412631
14	1.5	25		8.8	PLN	9504320
14	1.5	35	FULL	10.9	PHC	92692684
14	1.5	35	FULL	12.9	PHC	92765852
14	1.5	100	FULL	10.9	DAC	92724671
14	1.5	120	FULL	10.9	DAC	92724670
16	1.5	50	FULL	10.9	DAC	92724668
16	1.5	65	FULL	10.9	DAC	92724669
16	1.5	110	FULL	10.9	ZND	92771804
16	1.5	130	FULL	10.9	ZND	92771805
16	1.5	140	FULL	10.9	ZND	92771806
20	1.5	35	FULL	10.9	BGM	92126641
20	1.5	40	FULL	10.9	DAC	51489935
20	1.5	40	FULL	10.9	BGM	92073535
24	2	190		10.9	ZND	84600281
24	2	210		10.9	ZND	87629043
24	2	240		10.9	ZND	84600282

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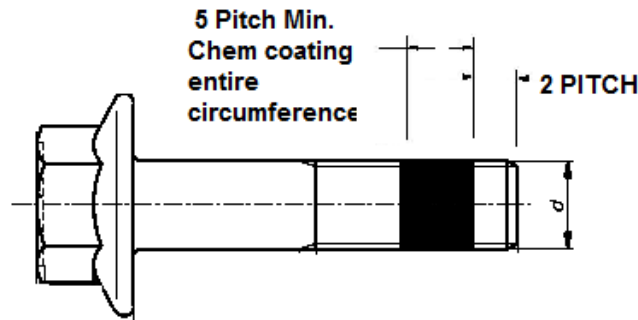


Table 5. Locking Hex Flange Bolts with Chemical Coating
(See Table 2 for dimensional details)

Dia	Pitch	Length	Thread Length	Material	Finish	Part Number
^6	1	16	FULL	8.8	ZND	47846470
^6	1	30	FULL	10.9	ZND	91823193
^6	1	35	18	8.8	ZND	90431681
^6	1	40	18	8.8	ZND	91724943
^6	1	40	FULL	10.9	ZND	92156777
^6	1	50	18	8.8	ZND	90431686
^6	1	70	18	8.8	ZND	90431667
^8	1.25	16	FULL	8.8	ZND	47662028
^8	1.25	16	FULL	10.9	ZND	51418829
^8	1.25	20	FULL	8.8	ZND	48046570
^8	1.25	20	FULL	8.8	DAC	90387190
^8	1.25	20	FULL	8.8	BGM	92806295
^8	1.25	20	FULL	10.9	ZND	92063773
^8	1.25	30	FULL	8.8	ZND	51642049
10	1.5	20	FULL	8.8	ZND	48056741
10	1.5	25	FULL	8.8	ZND	51596706
10	1.5	40		10.9	ZND	90417421
10	1.5	165		10.9	ZND	91890444
12	&1.25	20	FULL	10.9	ZND	48010869
12	1.75	20	FULL	10.9	ZND	48023734
12	1.75	25	FULL	10.9	ZND	48051851
12	1.75	30	FULL	10.9	ZND	48046572
12	1.75	35	FULL	10.9	DOR	91872514
12	1.75	35	FULL	10.9	ZND	51565784
12	1.75	45	30	10.9	ZND	51670302
12	1.75	50		10.9	ZND	91841805
12	1.75	100		10.9	ZND	91832648
12	1.75	130		10.9	ZND	91845898

^ M6 and M8 Hex Flange Head Bolts can be supplied per DIN 6921 & Fine Pitch



Standard Part

Hex and Flange Head Locking Bolts - Chemical - Metric - Non-Preferred

STPB841

47646759

Rev CH

Page 10 of 10

Table 5. Locking Hex Flange Bolts with Chemical Coating (Continued)
(See Table 2 for dimensional details)

Dia	Pitch	Length	Thread Length	Material	Finish	Part Number
12	1.75	150		10.9	ZND	91831350
12	1.75	200		10.9	ZND	91831351
14	&1.5	60	34	10.9	DAC	92071980
14	&1.5	80	34	10.9	DAC	91769814
14	&1.5	85	34	10.9	DAC	91769815
14	&1.5	90	34	10.9	DAC	91769816
14	2	50	34	10.9	ZND	90397993
16	&1.5	70	38	10.9	DAC	91769817
16	&1.5	75	38	10.9	DAC	91769818
16	&1.5	80	38	10.9	DAC	92212228
16	&1.5	90	38	10.9	DAC	92212229
16	2	30	FULL	10.9	ZND	47715974
16	2	40	FULL	10.9	ZND	47714048
16	2	45	FULL	8.8	ZND	47714046
16	2	45	FULL	10.9	ZND	47714037
16	2	50	FULL	10.9	ZND	47715976
16	2	60	FULL	10.9	ZND	47714047
16	2	70		10.9	ZND	47714053
16	2	80		10.9	ZND	47714045
*16	2	90		10.9	ZND	47714056
16	2	90		10.9	ZND	91841803
16	2	100		10.9	ZND	91841804
16	2	160		10.9	ZND	91831352
20	2.5	35	FULL	10.9	ZND	90397994
20	2.5	60		10.9	ZND	92115197
20	2.5	60		10.9	DOR	91891429
20	2.5	80		10.9	ZND	51431133
20	2.5	90		10.9	BGM	92099601
20	2.5	100		10.9	ZND	90417426
20	2.5	210		10.9	ZND	91891430

* Left Hand Thread
& Fine Pitch