

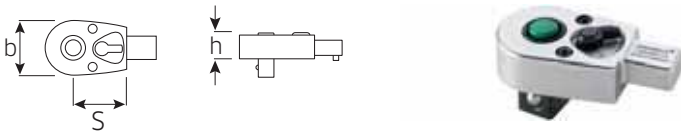
Insert/shell tools for torque wrenches

Output square drive in accordance with DIN 3120
 Long-term loading of the input and output square drive is in accordance with DIN EN ISO 6789:2003.
 This limit must not be exceeded if larger torque wrenches and tool holders are used.

725QR QuickRelease ratchet insert tool



reversible, with QuickRelease safety lock,
 size 4: 22 teeth, sizes 5 and 10: 30 teeth

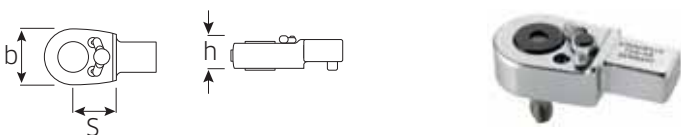


Code	size	"	mm	b mm	h mm	S mm	M N-m	Δ g
58 25 30 04	4	1/4	9x12	22	13.8	17.5	40	60
58 25 30 05	5	3/8	9x12	29	18	28*	100	130
58 25 30 10	10	1/2	9x12	29	18	28*	100	141

* Caution! Modified settings on torque wrench (refer to note on page 197).

725B Bit ratchet insert tool

reversible, with inside hexagon,
 1/4" or 5/16", DIN 3126/ISO 1173 D 6.3 or D8, for
 direct acceptance of bits 1/4" or 5/16"
 outside hexagon C 6.3 (size 4: 22 teeth, size 5: 30 teeth).
 Internal hex drive with a collar-thrust spring. Bits are easy to insert, lock
 securely in position and can be removed just as easily; even hex bits with
 a wide groove (Type E, DIN 3126/ISO 1173). Supplied without bits.

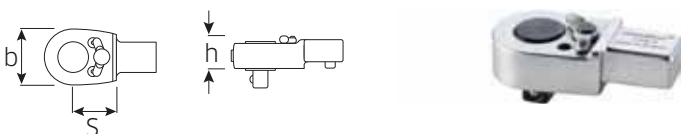


Code	size	inside "	mm	b mm	h mm	S mm	Δ g
58 25 50 04	4	1/4	9x12	22	13.6	17.5	54
58 25 50 05	5	5/16	9x12	29	17.9	28*	117

* Caution! Modified settings on torque wrench (refer to note on page 197).

725/4 Ratchet insert tool

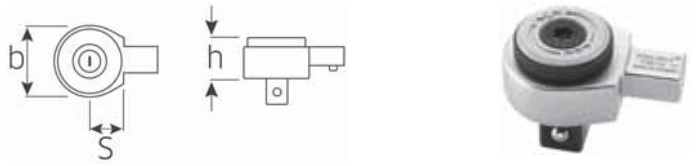
reversible, 22 teeth.



Code	"	mm	b mm	h mm	S mm	M N-m	Δ g
58 25 40 04	1/4	9x12	22	13.8	17.5	40	62

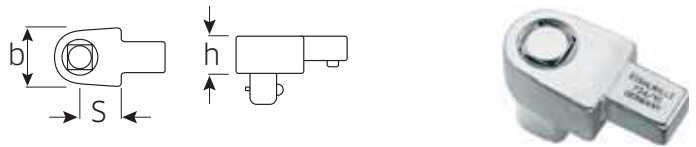
735 Ratchet insert tools, fine tooth

reversible, 60 teeth.



Code	size	"	mm	b mm	h mm	S mm	M N-m	Δ g
58 25 00 05	5	3/8	9x12	33	24	17.5	100	155
58 25 00 10	10	1/2	9x12	33	24	17.5	100	147

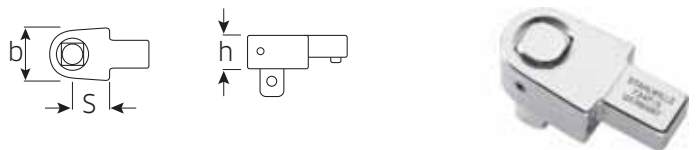
734 Square drive insert tools



Code	size	"	mm	b mm	h mm	S mm	M N-m	Δ g
58 24 00 04	4	1/4	9x12	20	14	17.5	40	71
58 24 00 05	5	3/8	9x12	20	14	17.5	80	76
58 24 00 10	10	1/2	9x12	20	14	17.5	100	82

734F Square drive insert tools

with permanently attached, captive square drive.

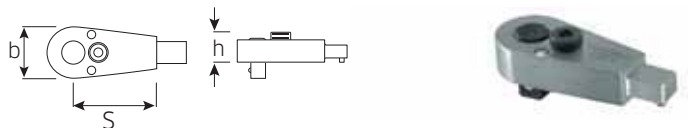


Code	size	"	mm	b mm	h mm	S mm	Δ g
58 24 10 04	4	1/4	9x12	22	14	17.5	72
58 24 10 05	5	3/8	9x12	22	14	17.5	75

725L/5 Ratchet insert tool

reversible, 30 teeth.

Caution! Modified settings on torque wrench (refer to note on p. 197).
 This ratchet insert tool has the same extension length as ring insert tool
 No 732G/10 (see p. 217) and square drive insert tool No 734L/5
 (see p. 216).

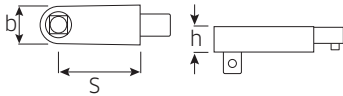


Code	"	mm	b mm	h mm	S mm	Δ g
58 15 10 05	3/8	9x12	27.5	19.6	45	164

9x12

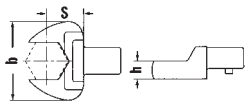
734L/5 Square drive insert tool

Caution! Modified settings on torque wrench (refer to note on p. 197). This square-drive insert tool has the same extension length as ring insert tool No 732G/10 (see p. 217) and ratchet insert tool No 725L/5 (see p. 215).



Code	mm	mm	b mm	h mm	S mm	g
58 24 2005	3/8	9x12	20	14	45	141

731/10 Open ended insert tools



Code	mm	mm	b mm	h mm	S mm	g
58 21 1007	7	9x12	22	5	17.5	40
58 21 1008	8	9x12	22	5	17.5	39
58 21 1009	9	9x12	26	5.5	17.5	38
58 21 1010	10	9x12	26	5.5	17.5	42
58 21 1011	11	9x12	26	5.5	17.5	41
58 21 1012	12¹⁾	9x12	30	7	17.5	43
58 21 1013	13	9x12	30	7	17.5	48
58 21 1014	14	9x12	35	8	17.5	52
58 21 1015	15	9x12	35	8	17.5	51
58 21 1016	16	9x12	38	8.5	17.5	58
58 21 1017	17	9x12	38	8.5	17.5	60
58 21 1018	18	9x12	42	9	20*	71
58 21 1019	19	9x12	42	9	20*	74

¹⁾ For flare nuts of hydraulic pipes on French vehicles

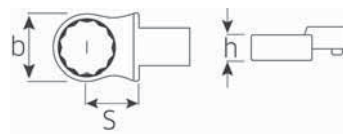
731a/10 Open ended insert tools

Code	mm	mm	b mm	h mm	S mm	g
58 61 1016	1/4	9x12	22	5	17.5	36
58 61 1020	5/16	9x12	22	5	17.5	53
58 61 1024	3/8	9x12	26	5.5	17.5	38
58 61 1028	7/16	9x12	26	5.5	17.5	37
58 61 1032	1/2	9x12	30	7	17.5	44
58 61 1034	9/16	9x12	35	8	17.5	49
58 61 1036	5/8	9x12	38	8.5	17.5	64
58 61 1038	11/16	9x12	42	9	20*	76
58 61 1040	3/4	9x12	42	9	20*	73

* Caution! Modified settings on torque wrench (refer to note on page 197)

732/10 Ring insert tools

AS-drive



Code	mm	mm	b mm	h mm	S mm	g
58 22 1007	7	9x12	13	8	17.5	37
58 22 1008	8	9x12	14.2	8	17.5	40
58 22 1010	10	9x12	17.2	9	17.5	44
58 22 1011	11	9x12	18.5	9	17.5	41
58 22 1012	12	9x12	20.5	11	17.5	49
58 22 1013	13	9x12	21.5	11	17.5	55
58 22 1014	14	9x12	22.5	11	17.5	52
58 22 1015	15	9x12	24.5	12	17.5	52
58 22 1016	16	9x12	26	12	17.5	54
58 22 1017	17	9x12	27	13	17.5	59
58 22 1018	18	9x12	28	13	17.5	56
58 22 1019	19	9x12	30.5	13	17.5	65
58 22 1021	21	9x12	33	15	17.5	71
58 22 1022	22	9x12	34.5	15	17.5	74

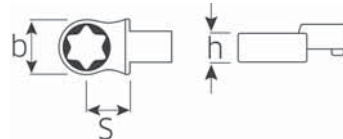
732a/10 Ring insert tools

AS-drive

Code	mm	mm	b mm	h mm	S mm	g
58 62 1016	1/4	9x12	13	8	17.5	36
58 62 1020	5/16	9x12	14.2	8	17.5	37
58 62 1024	3/8¹⁾	9x12	17.2	9	17.5	37
58 62 1028	7/16	9x12	18.5	9	17.5	40
58 62 1032	1/2	9x12	21.5	11	17.5	53
58 62 1034	9/16	9x12	22.5	11	17.5	52
58 62 1036	5/8	9x12	26	12	17.5	54
58 62 1038	11/16	9x12	28	13	17.5	58
58 62 1040	3/4	9x12	30.5	13	17.5	58
58 62 1042	13/16	9x12	33	15	17.5	68
58 62 1044	7/8	9x12	34.5	15	17.5	69

¹⁾ For Volvo aero-engines, types "JAS"

732TX/10 TORX® insert tools



Code	size	mm	b mm	h mm	S mm	g
58 29 1006	E6	9x12	13	8	17.5	40
58 29 1008	E8	9x12	14.2	8	17.5	45
58 29 1010	E10	9x12	17.2	9	17.5	45
58 29 1012	E12	9x12	18.5	9	17.5	50
58 29 1014	E14	9x12	21.5	11	17.5	60



732G/10 Ring insert tools



Caution! Modified settings on torque wrench (refer to note on p. 197). This insert tool has the same extension length as insert tool No 725L/5 (see p. 215) and square-drive insert tool No 734L/5 (see p. 216); HPQ® high performance steel, gunmetal finish.



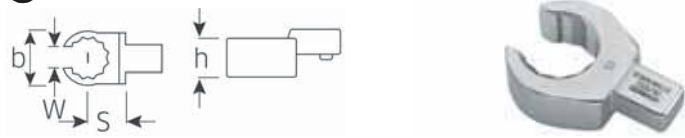
Code	mm	mm	b mm	h mm	S mm	g
58 62 0007	7	9x12	11.5	6	45	31
58 62 0008	8	9x12	12.4	6	45	33
58 62 0009	9	9x12	14	8	45	40
58 62 0010	10	9x12	15.6	8	45	44
58 62 0013	13	9x12	19.3	9.2	45	60

732aG/10 Ring insert tools

Code	"	mm	b mm	h mm	S mm	g
58 62 1216	1/4	9x12	10.4	6	45	28
58 62 1220	5/16	9x12	12.4	6	45	31
58 62 1224	3/8	9x12	14.9	8	45	42
58 62 1228	7/16	9x12	17	8	45	43
58 62 1232	1/2	9x12	19	9.2	45	58
58 62 1234	9/16	9x12	21	9.2	45	58
58 62 1236	5/8	9x12	23	12	45	74

for assembling and dismantling aero-engines.

733/10 Open ring insert tools



Code	mm	mm	b mm	h mm	W mm	S mm	g
58 23 1010	10	9x12	21.5	11	7.1	17.5	57
58 23 1011	11	9x12	22.5	11	8.6	17.5	55
58 23 1012	12	9x12	24.5	12	9	17.5	59
58 23 1013	13	9x12	26	12	10	17.5	55
58 23 1014	14	9x12	27	13	11	17.5	60
58 23 1016	16	9x12	30.5	13	13	17.5	65
58 23 1017	17	9x12	31.5	13	14	17.5	64
58 23 1018	18	9x12	33	15	14.8	17.5	74
58 23 1019	19	9x12	34	15	15.8	17.5	80
58 23 1021	21	9x12	38.5	15	16.2	20*	88
58 23 1022	22	9x12	39.5	15	17	20*	92
58 23 1024	24	9x12	40	15	18	20*	75

* Caution! Modified settings on torque wrench (refer to note on page 197)

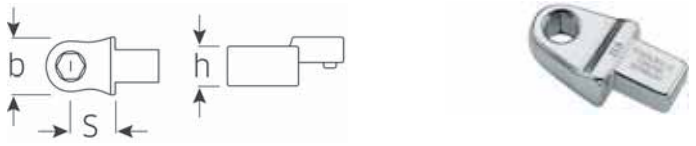
733a/10 Open ring insert tools



Code	"	mm	b mm	h mm	W mm	S mm	g
58 63 1024	3/8	9x12	21.5	11	7.1	17.5	55
58 63 1028	7/16	9x12	22.5	11	8.6	17.5	56
58 63 1032	1/2	9x12	26	12	9.5	17.5	58
58 63 1034	9/16	9x12	27.5	13	11	17.5	59
58 63 1036	5/8	9x12	30.5	13	12.7	17.5	61
58 63 1038	11/16	9x12	33	15	14	17.5	48
58 63 1040	3/4	9x12	34	15	15.8	17.5	76

736 BIT holder insert tools

Internal hex drive with a collar-thrust spring. Bits are easy to insert, lock securely in position and can be removed just as easily; even hex bits with a wide groove (Type E, DIN 3126/ISO 1173).

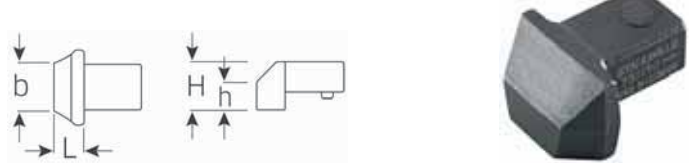


Code	size	inside	mm	b mm	h mm	S mm	g	
58 26 1010	10	D 8	5/16	9x12	16	12.5	17.5	47
58 26 2610	10-1	D 6.3	1/4	9x12	14	10	17.5	45

inside \odot DIN 3126/ISO 1173

737/10 Blank end insert tool

gunmetal finish. To prevent damage from excessive temperatures, the locking pin, spring and washer are not fitted until the welding work has been completed. Instructions are supplied.

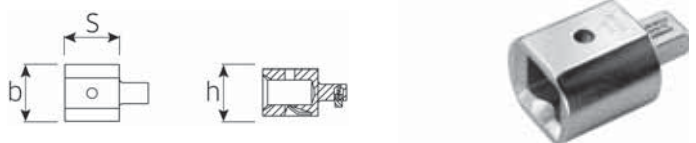


Code	Welding surface	mm	H mm	L mm	g
58 27 0010	8 x 14	9x12	14.5	8	35

7370/10 Adaptor



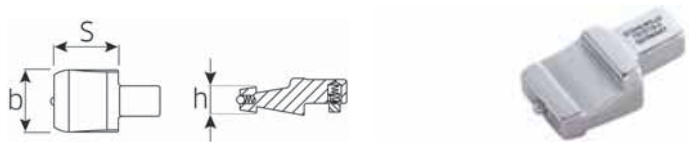
for using insert tools with an outer square drive of 14 x 18 mm on torque wrenches with an internal square drive of 9 x 12 mm. Caution! Modified settings on torque wrench (refer to note on p. 197).



Code	mm	mm	b mm	h mm	S mm	g
58 29 0010	9x12	14x18	31	26	30.5	114

7370/10-2 Adaptor

for use with insert tools with a lateral dovetail profile in torque wrenches with 9 x 12 mm internal square drives. Caution! Modified settings on torque wrench (refer to note on p. 197).



Code	mm	b mm	h mm	S mm	g
58 29 0012	9x12	23.5	9.5	24	51

1820 Tool holder

with tool carrier to receive insert/shell tools (without torque function).



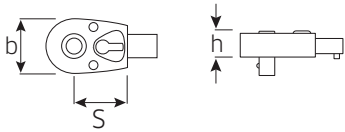
Code	mm	L mm	g
18 20 0001	9x12	382.5	490

Insert/shell tools

725QR/20 QuickRelease ratchet insert tool



reversible, with QuickRelease safety lock, 36 teeth.

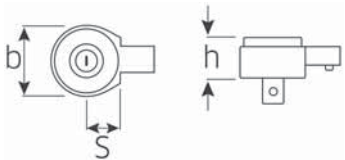


Code	size	"	mm	b mm	h mm	S mm	M N·m	Δg
58 25 30 20	20	1/2	14x18	41	22.3	38.5*	200	325

* Caution! Modified settings on torque wrench (refer to note on page 197).

735 Ratchet insert tools, fine tooth

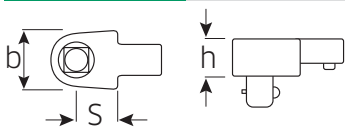
reversible, 60 teeth.



Code	size	"	mm	b mm	h mm	S mm	M N·m	Δg
58 25 00 20	20	1/2	14x18	43	26	25	300	302
58 25 00 40	40	3/4	14x18	50	31.5	25	400	510
58 25 00 65	40HD	3/4	14x18	58	36	30*	650	737

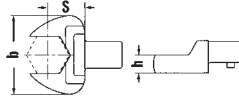
* Caution! Modified settings on torque wrench (refer to note on page 197).

734 Square drive insert tools



Code	size	"	mm	b mm	h mm	S mm	M N·m	Δg
58 24 00 20	20	1/2	14x18	27	18	25	300	203
58 24 00 40	40	3/4	14x18	40	25	25	650	396

731/40 Open ended insert tools



Code	"	mm	b mm	h mm	S mm	Δg
58 21 40 13	13	14x18	30	7	25	128
58 21 40 14	14	14x18	35	8	25	129
58 21 40 15	15	14x18	35	8	25	132
58 21 40 16	16	14x18	38	9	25	140
58 21 40 17	17	14x18	38	9	25	136
58 21 40 18	18	14x18	42	10	25	147
58 21 40 19	19	14x18	42	10	25	145
58 21 40 21	21	14x18	50	11	25	171
58 21 40 22	22	14x18	50	11	25	165
58 21 40 24	24	14x18	53	12	25	167
58 21 40 25	25	14x18	53	12	25	170
58 21 40 27	27	14x18	60	13	30*	219
58 21 40 30	30	14x18	66	14	30*	245
58 21 40 32	32	14x18	66	14	32.5*	246
58 21 40 34	34	14x18	66	14	32.5*	239
58 21 40 36	36	14x18	74	15	32.5*	275
58 21 40 38	38	14x18	74	15	32.5*	265
58 21 40 41	41	14x18	82	15	36.5*	307

* Caution! Modified settings on torque wrench (refer to note on page 197).

731a/40 Open ended insert tools

Code	"	mm	b mm	h mm	S mm	Δg
58 61 40 28	7/16	14x18	30	7	25	127
58 61 40 32	1/2	14x18	30	7	25	125
58 61 40 34	9/16	14x18	35	8	25	129
58 61 40 36	5/8	14x18	38	9	25	136
58 61 40 38	11/16	14x18	42	10	25	148
58 61 40 40	3/4	14x18	42	10	25	144
58 61 40 42	13/16	14x18	50	11	25	171
58 61 40 44	7/8	14x18	50	11	25	165
58 61 40 46	15/16	14x18	53	12	25	177
58 61 40 48	1	14x18	60	13	30*	224
58 61 40 52	1 1/8	14x18	66	14	30*	258

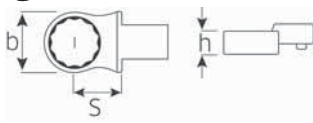
* Caution! Modified settings on torque wrench (refer to note on page 197).

STAHLWILLE insert tools.
More diversity. More options.



732/40 Ring insert tools

AS-drive



Code	mm	mm	b mm	h mm	S mm	Δg
58 22 40 13	13	14x18	22.5	11	25	130
58 22 40 14	14	14x18	23	11	25	123
58 22 40 15	15	14x18	24	11	25	128
58 22 40 16	16	14x18	25.5	12	25	133
58 22 40 17	17	14x18	27	12	25	135
58 22 40 18	18	14x18	29	13	25	134
58 22 40 19	19	14x18	30.5	13	25	138
58 22 40 21	21	14x18	33	15	25	144
58 22 40 22	22	14x18	34.5	15	25	145
58 22 40 24	24	14x18	37.5	15	25	153
58 22 40 27	27	14x18	42.5	17	25	162
58 22 40 28	28	14x18	45.5	19	25	175
58 22 40 30	30	14x18	46	19	25	182
58 22 40 32	32	14x18	47.5	19	25	181
58 22 40 34	34	14x18	52	19	28*	210
58 22 40 36	36	14x18	54	19	28*	203
58 22 40 41	41	14x18	60	20	30*	240

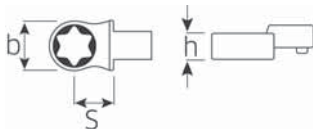
* Caution! Modified settings on torque wrench (refer to note on page 197).

732a/40 Ring insert tools

AS-drive

Code	"	mm	b mm	h mm	S mm	Δg
58 62 40 32	1/2	14x18	22.5	11	25	122
58 62 40 34	9/16	14x18	23	11	25	122
58 62 40 36	5/8	14x18	25.5	12	25	134
58 62 40 38	11/16	14x18	29	13	25	132
58 62 40 40	3/4	14x18	30.5	13	25	138
58 62 40 42	13/16	14x18	33	15	25	142
58 62 40 44	7/8	14x18	34.5	15	25	147
58 62 40 46	15/16	14x18	37.5	15	25	151
58 62 40 48	1	14x18	41	17	25	160

732TX/40 TORX® insert tools



Code	size	mm	b mm	h mm	S mm	Δg
58 29 40 14	E14	14x18	22.5	11	25	130
58 29 40 18	E18	14x18	24	11	25	135
58 29 40 20	E20	14x18	29	13	25	150
58 29 40 24	E24	14x18	30.5	13	25	150

7370/40-1 Adaptor

for using shell tools with an internal square drive of 24.5 x 28 mm on torque wrenches with an internal square drive of 14 x 18 mm. Caution! Modified settings on torque wrench (refer to note on p. 197).



Code	mm	mm	L mm	Δg
58 29 00 41	14x18	24,5x28	66	251

736/40 BIT holder insert tool

Internal hex drive with a collar-thrust spring. Bits are easy to insert, lock securely in position and can be removed just as easily; even hex bits with a wide groove (Type E, DIN 3126/ISO 1173).

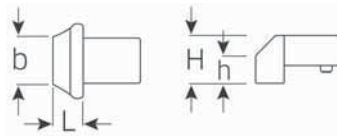


Code	inside	"	mm	b mm	h mm	S mm	Δg
58 26 10 40	D 8	5/16	14x18	16	12.5	25	112

inside ○ DIN 3126/ISO 1173

737/40 Blank end insert tool

gunmetal finish. To prevent damage from excessive temperatures, the locking pin, spring and washer are not fitted until the welding work has been completed. Instructions are supplied.

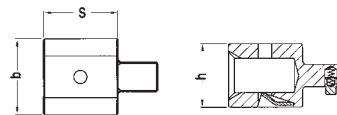


Code	Welding surface	mm	H mm	L mm	Δg
58 27 00 40	h x b mm	14x18	21.5	12	98

7370/40 Adaptor



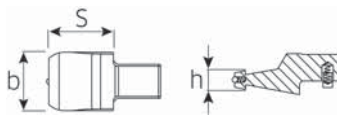
for using insert tools with an outer square drive of 9 x 12 mm on torque wrenches with an internal square drive of 14 x 18 mm. Caution! Modified settings on torque wrench (refer to note on p. 197).



Code	mm	mm	b mm	h mm	S mm	Δg
58 29 00 40	14x18	9x12	28	21	21.5	115

7370/40-2 Adaptor

for use with insert tools with a lateral dovetail profile in torque wrenches with 14 x 18 mm internal square drives. Caution! Modified settings on torque wrench (refer to note on p. 197).



Code	mm	b mm	h mm	S mm	Δg
58 29 00 42	14x18	31.5	9.5	34.6	138

1821 Tool holder

with tool carrier to receive insert/shell tools (without torque function).



Code	mm	L mm	Δg
18 21 00 01	14x18	575	720

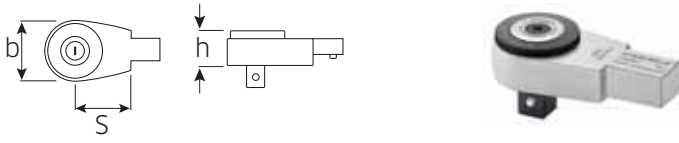
Insert/shell tools

22x28

735/65 Ratchet insert tool, fine tooth



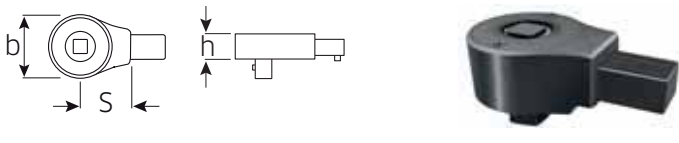
reversible, 60 teeth, load capacity up to 650 N·m, for size 65 torque wrenches.



Code	"	mm	b mm	h mm	S mm	Δg
58 25 10 65	3/4	22x28	61	35	55	1100

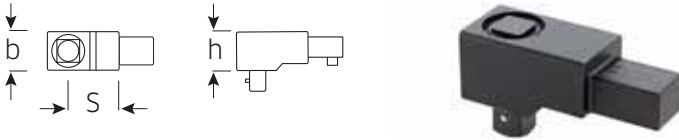
735/100 Ratchet insert tool

with push through square drive, 30 teeth.



Code	"	mm	b mm	h mm	S mm	Δg
58 25 01 00	3/4	22x28	76	42	55	1893

734/100 Square drive insert tool



Code	"	mm	b mm	h mm	S mm	Δg
58 24 01 00	3/4	22x28	43	42	55	1171

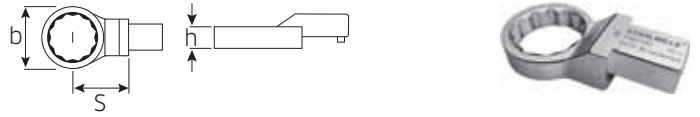
731/100 Open ended insert tools



Code	mm	mm	b mm	h mm	S mm	Δg
58 21 10 24	24	22x28	50	13	55	628
58 21 10 27	27	22x28	56	14	55	648
58 21 10 30	30	22x28	63	15	55	695
58 21 10 32	32	22x28	67	15	55	713
58 21 10 34	34	22x28	72	15	55	739
58 21 10 36	36	22x28	74	15	55	727
58 21 10 41	41	22x28	84	16	55	902
58 21 10 46	46	22x28	94	17	55	952
58 21 10 50	50	22x28	104	18	55	1074
58 21 10 55	55	22x28	114	19	55	1174
58 21 10 60	60	22x28	124	20	55	1230

732/100 Ring insert tools

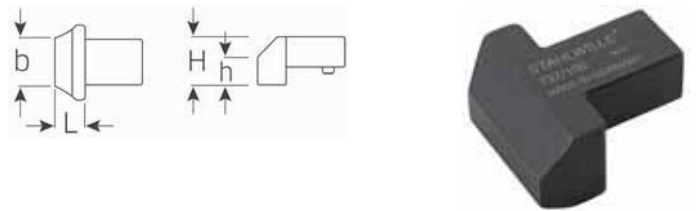
AS-drive



Code	mm	mm	b mm	h mm	S mm	Δg
58 22 10 24	24	22x28	43	15	55	629
58 22 10 27	27	22x28	43	15	55	619
58 22 10 30	30	22x28	46	16	55	632
58 22 10 32	32	22x28	49	16	55	625
58 22 10 34	34	22x28	52	17	55	638
58 22 10 36	36	22x28	54	17	55	631
58 22 10 41	41	22x28	61	18	55	642
58 22 10 46	46	22x28	66	19	55	640
58 22 10 50	50	22x28	75	20	55	713
58 22 10 55	55	22x28	84	21	55	791
58 22 10 60	60	22x28	93	22	55	885

737/100 Blank end insert tool

gunmetal finish. To prevent damage from excessive temperatures, the locking pin, spring and washer are not fitted until the welding work has been completed. Instructions are supplied.



Code	Welding surface h x b mm	mm	H mm	L mm	Δg
58 27 01 00	15 x 50	22x28	32	24	521

7370/100 Adaptor

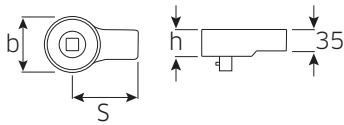
for using shell tools with an internal square drive of 24.5 x 28 mm on torque wrenches with an internal square drive of 22 x 28 mm. Caution! Modified settings on torque wrench (refer to note on p. 197).



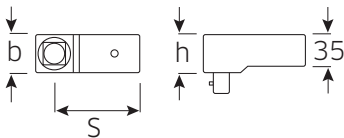
Code	mm	mm	L mm	S mm	Δg
58 29 11 00	22x28	24,5x28	85	100	563

735/80 Ratchet shell tool

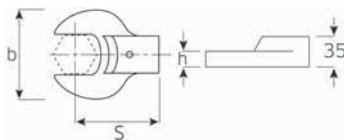
with push through square drive, 30 teeth.



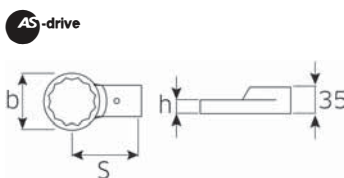
Code	"	mm	b mm	h mm	S mm	Δg
58 25 00 80	3/4	24,5x28	76	43	95	2000

734/80 Square drive shell tool


Code	"	mm	b mm	h mm	S mm	Δg
58 24 00 80	3/4	24,5x28	42	42	95	1200

731/80 Open ended shell tools


Code	mm	mm	b mm	h mm	S mm	Δg
58 21 80 24	24	24,5x28	50	13	95	601
58 21 80 27	27	24,5x28	56	14	95	620
58 21 80 30	30	24,5x28	63	15	95	655
58 21 80 32	32	24,5x28	67	15	95	670
58 21 80 34	34	24,5x28	72	15	95	699
58 21 80 36	36	24,5x28	74	15	95	740
58 21 80 41	41	24,5x28	84	16	95	810
58 21 80 46	46	24,5x28	94	17	95	867
58 21 80 50	50	24,5x28	104	18	95	1010
58 21 80 55	55	24,5x28	114	19	95	1150
58 21 80 60	60	24,5x28	124	20	95	1330

732/80 Ring shell tools


Code	mm	mm	b mm	h mm	S mm	Δg
58 22 80 24	24	24,5x28	36	15	95	605
58 22 80 27	27	24,5x28	40.5	15	95	610
58 22 80 30	30	24,5x28	46	16	95	630
58 22 80 32	32	24,5x28	49	16	95	635
58 22 80 34	34	24,5x28	52	17	95	650
58 22 80 36	36	24,5x28	54	17	95	650
58 22 80 41	41	24,5x28	61	18	95	675
58 22 80 46	46	24,5x28	66	19	95	720
58 22 80 50	50	24,5x28	75	20	95	803
58 22 80 55	55	24,5x28	84	21	95	889
58 22 80 60	60	24,5x28	93	22	95	995

732a/80 Ring shell tools

AS-drive

Code	"	mm	b mm	h mm	S mm	Δg
58 62 80 46	15/16 ¹⁾	24,5x28	36	14	95	604
58 62 80 50	1 1/16 ¹⁾	24,5x28	40.5	14	95	608

¹⁾ for jet engine pins (Airbus A320/A321)

7370/80 Shell adaptor

for attaching 14 x 18 mm insert tools.

Caution! Modified settings on torque wrench (refer to note on p. 197).



Code	mm	mm	b mm	h mm	S mm	Δg
58 29 00 80	24,5x28	14x18	36	26	70	281

1822 Tool holder

with tool carrier to receive insert/shell tools (without torque function).



Code	mm	L mm	Δg
18 22 00 03	24,5x28	1000	2000

540a HD CROW-FOOT spanners Heavy Duty

For particularly high loadings, e.g. stainless steel screw fittings.

Full use of jaws in conjunction with standard ratchets.

Caution! Modified settings on torque wrench (refer to note on page 197), chrome plated. Supplied without ratchet.

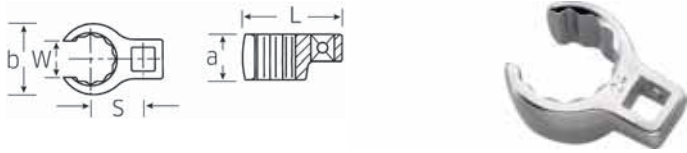


Code	"	"	L mm	b mm	a mm	S mm	Δg	g	box
02 50 10 34	9/16	3/8	43.4	32	11	26.8	72	1	
02 50 10 36	5/8	3/8	45	34.8	11	27.7	79	1	
02 50 10 38	11/16	3/8	47.2	38	11	28.6	87	1	
02 50 10 42	13/16	3/8	51	46.4	11	30.5	114	1	
02 50 10 44	7/8	3/8	52	48	11	31.3	118	1	
02 50 10 46	15/16	3/8	54	51.2	11	32.3	130	1	
02 50 10 48	1	3/8	56	53.4	11	33.2	137	1	
02 50 10 50	1 1/16	3/8	57	53.8	11	34.1	136	1	
02 50 10 52	1 1/8	3/8	59	53.8	11	35	140	1	
02 50 10 56	1 1/4	3/8	62	60	11	36.8	168	1	
02 50 10 62	1 7/16	3/8	66.5	66	11	39.6	192	1	
03 50 10 64	1 1/2	1/2	76	70	16	45	358	1	
03 50 10 69	1 13/16	1/2	85	84	16	49.6	470	1	
03 50 10 72	2	1/2	89	90	16	52.3	505	1	
03 50 10 74	2 1/8	1/2	91.5	92.8	16	54.2	523	1	
03 50 10 75	2 3/16	1/2	93	96	16	55.1	545	1	
03 50 10 76	2 1/4	1/2	95	99	16	56	568	1	

440 CROW-RING spanners



Caution! Modified settings on torque wrench (refer to note on page 197).
Chrome Alloy Steel, chrome plated.



Code	mm	"	L mm	b mm	a mm	S mm	W mm	g	g
01 19 00 08	8	1/4	23.8	12.7	8	12.3	6.3	11	1
01 19 00 09	9	1/4	28.5	18.2	13.5	14	6.7	21	1
01 19 00 10 1)	10	1/4	28.4	18.2	13.5	14	7.1	16	1
01 19 00 11	11	1/4	28	18.2	13.5	14	8.6	17	1
01 19 00 12 1)	12	1/4	30.8	20.6	14	15.7	9	20	1
01 19 00 13	13	1/4	32	22.2	14	16.4	10	20	1
01 19 00 14 1)	14	1/4	31.7	22.2	14	16.4	11.1	20	1
02 19 00 15	15	3/8	36.5	24.6	17.5	19.1	11.9	34	1
02 19 00 16	16	3/8	36.1	24.6	17.5	19.1	13	27	1
02 19 00 17 1)	17	3/8	39.2	27.3	17.5	20.5	14	40	1
02 19 00 18	18	3/8	40.8	29	18.5	21.3	14.8	45	1
02 19 00 19 1)	19	3/8	40.5	29	18.5	21.3	15.8	40	1
02 19 00 20	20	3/8	42.9	31.3	18.5	22.5	15.8	54	1
02 19 00 21	21	3/8	42.8	31.3	18.5	22.5	16.2	45	1
02 19 00 22 1)	22	3/8	45.3	33.5	19	23.6	17	57	1
02 19 00 23	23	3/8	47.5	35.7	19.5	24.6	17.5	71	1
02 19 00 24 1)	24	3/8	47.3	35.7	19.5	24.6	18	57	1
02 19 00 25	25	3/8	49.3	37.7	20	25.7	19	80	1
02 19 00 26	26	3/8	49.3	37.7	20	25.7	19	63	1
02 19 00 27	27	3/8	52.8	40	21.4	28.2	20	100	1
02 19 10 27 27MB 1)	27	3/8	57.1	42.1	15	29.3	20	92	1
03 19 00 28	28	1/2	56.8	42.1	22.5	29.3	21	120	1
03 19 00 30	30	1/2	63	48	22.5	32.5	22	155	1
03 19 00 32	32	1/2	62.5	48	22.5	32.5	24	137	1
03 19 00 34	34	1/2	64.2	50	24	33.5	27	148	1
03 19 00 36	36	1/2	66.5	51.9	24	34.6	27	150	1
03 19 00 38	38	1/2	68.1	53.9	24	35.6	28.6	147	1
03 19 00 40	40	1/2	71.8	57.9	24.5	37.7	31	160	1
03 19 00 41	41	1/2	71.8	57.9	24.5	37.7	31	169	1
03 19 00 42	42	1/2	71	57.9	24.5	37.7	33.2	189	1
03 19 00 46	46	1/2	77.7	64.2	26	40.9	34.1	215	1
03 19 00 50	50	1/2	83.2	70.5	27.5	44.1	39.7	295	1

- 1) For union nuts on fuel injection leads on 4-cylinder Mercedes-Benz diesel engines
- 2) For use on suction or pressure lines within expansion valve of air conditioning unit (Mercedes-Benz)
- 3) Slim-line version for setting of electronic injection on 440-HP-engines Mercedes-Benz series OM 442

440a CROW-RING spanners

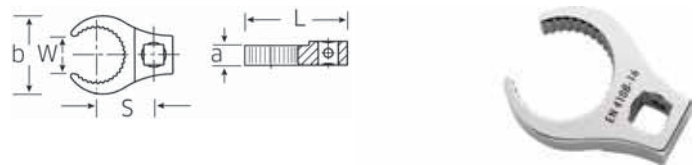
Code	"	mm	L mm	b mm	a mm	S mm	W mm	g	g
01 49 00 24	3/8 1)	1/4	28.4	18.2	13.5	14	7.1	14	1
01 49 00 28	7/16	1/4	28	18.2	13.5	14	8.6	14	1
01 49 00 32	1/2	1/4	30.5	20.6	14	15.7	10	19	1
01 49 00 34	9/16	1/4	31.7	22.2	14	16.4	11.1	23	1
02 49 00 36	5/8	3/8	36.5	24.6	17.5	19.1	11.9	33	1
02 49 00 38	11/16	3/8	39.2	27.3	17.5	20.5	14	36	1
02 49 00 40	3/4	3/8	40.9	29	18.5	21.3	14.2	44	1
02 49 00 42	13/16	3/8	42.9	31.3	18.5	22.5	15.8	51	1
02 49 00 44	7/8	3/8	45.2	33.5	19	23.6	17.5	62	1
02 49 00 46	15/16	3/8	47.2	35.7	19.5	24.6	18.3	63	1
02 49 00 48	1	3/8	49.3	37.7	20	25.7	19	71	1
02 49 00 50	1 1/16	3/8	52.8	40	21.4	28.2	20	84	1
03 49 00 52	1 1/8	1/2	56.8	42.1	22.5	29.3	21	110	1
03 49 00 56	1 1/4	1/2	62.5	48	22.5	32.5	23.8	137	1
03 49 00 58	1 5/16	1/2	62.3	48	22.5	32.5	24.6	130	1
03 49 00 60	1 3/8	1/2	64.2	50	24	33.5	27	138	1
03 49 00 62	1 7/16	1/2	66.5	51.9	24	34.6	27	143	1
03 49 00 64	1 1/2	1/2	68.1	53.9	24	35.6	28.6	152	1
03 49 00 65	1 9/16	1/2	70.1	55.9	24	36.7	29.4	172	1
03 49 00 66	1 5/8	1/2	71.8	57.9	24.5	37.7	31	169	1
03 49 00 68	1 3/4	1/2	75.6	62	25.5	39.8	33.2	199	1
03 49 00 69	1 13/16	1/2	77.7	64.2	26	40.9	34.1	229	1
03 49 00 72	2	1/2	83.2	70.5	27.5	44.1	39.7	277	1
03 49 00 76	2 1/4	1/2	91.2	78.7	29.5	48.2	42.8	337	1
03 49 00 77	2 5/16	1/2	93.3	80.9	30	49.2	43.6	309	1
03 49 00 78	2 3/8	1/2	95.2	83	30.5	50.2	46	385	1

1) For Volvo aero-engines, types "JAS"

440S MJ CROW-RING spanners



Supersedes No 440 MJ
Caution! Modified settings on torque wrench (refer to note on page 197),
EN 4108, for pipe unions with straight cylindrical involute toothing,
HPQ® high performance steel, chrome plated.

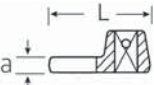
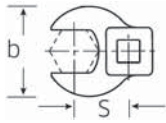


Code	Threaded nut	mm	L mm	b mm	a mm	S mm	W mm	g	g	
01 21 10 10	MJ10	DN04	1/4	31.9	22	8	17	6.5	25	1
01 21 10 14	MJ14	DN06	1/4	36.5	27	8	19.5	8.5	30	1
02 21 10 16	MJ16	DN08	3/8	43.8	31	8	24	10.5	50	1
02 21 10 18	MJ18	DN10	3/8	45.2	33	8	25	13	45	1
02 21 10 20	MJ20	DN12	3/8	46.2	35	8	26	15	50	1
02 21 10 22	MJ22	DN14	3/8	48.4	37	9	27	17.5	55	1
02 21 10 24	MJ24	DN16	3/8	49.5	39	9	28	19.7	60	1
02 21 10 27	MJ27	DN18	3/8	54.4	44	10	31	21.5	75	1
02 21 10 30	MJ30	DN20	3/8	60.8	50	10	36	23.7	95	1



540 CROW-FOOT spanners

Caution! Modified settings on torque wrench (refer to note on page 197), Chrome Alloy Steel, chrome plated.



Code	mm	"	L mm	b mm	a mm	S mm	Δg	g	
01 20 00 08	8	1/4	25.5	19.8	6.3	14.6	21	1	
01 20 00 09	9	1/4	25.5	19.8	6.3	14.6	21	1	
01 20 00 10	10	1/4	25.5	19.8	6.3	14.6	20	1	
02 20 00 11	11	3/8	32	22.2	6.3	17.4	36	1	
02 20 00 12	12	3/8	34.3	25.4	6.3	18.2	37	1	
02 20 00 13	13	3/8	34.3	25.4	6.3	17.8	36	1	
02 20 00 14	14	3/8	37.7	30	6.3	20.8	46	1	
02 20 00 15	15	3/8	37.7	30	6.3	20.4	45	1	
02 20 00 16	16	3/8	37.7	30	6.3	19.9	45	1	
02 20 00 17	17	3/8	42.5	38	6.3	23.8	62	1	
02 20 00 18	18	3/8	42.5	38	6.3	22.9	61	1	
02 20 00 19	19	3/8	42.5	38	6.3	22.4	64	1	
02 20 00 20	20	3/8	42.4	38	6.3	25	55	1	
02 20 00 21	21	3/8	44.5	41	6.3	23.6	59	1	
02 20 00 22	22	3/8	44.5	41	6.3	24.2	64	1	
02 20 00 23	23	3/8	44.5	41	6.3	25.8	63	1	
02 20 00 24	24	3/8	44.4	41	6.3	26.2	60	1	
02 20 00 25	25	3/8	47	45	8	26.4	75	1	
02 20 00 26	26	3/8	47	45	8	27.6	80	1	
02 20 00 27	27	3/8	47	45	8	27.6	76	1	
02 20 00 28	28	3/8	50	50	8	29.3	78	1	
02 20 00 30	30	3/8	50	50	8	29.3	84	1	
02 20 00 32	32	3/8	53	57	8	30.5	95	1	
02 20 00 34	34	3/8	54.5	60	8	31.6	107	1	
02 20 00 36	36	3/8	56.5	62	8	32.8	100	1	
02 20 00 40	40	3/8	63	70	8	37.6	130	1	
02 20 00 41	41	3/8	63	70	8	37.2	130	1	
02 20 00 42	42	3/8	63	70	8	37.7	125	1	
02 20 00 46	46	3/8	72	82	8	43.1	191	1	
02 20 00 50	50	3/8	75	88	8	45.4	217	1	

540a CROW-FOOT spanners

Code	mm	"	L mm	b mm	a mm	S mm	Δg	g	
01 50 00 24	3/8	1/4	25.5	19.8	6.3	14.6	17	1	
02 50 00 28	7/16	3/8	32	22.2	6.3	17.2	34	1	
02 50 00 32	1/2	3/8	34.3	25.4	6.3	18.1	37	1	
02 50 00 34	9/16	3/8	37.7	30	6.3	20.9	40	1	
02 50 00 36	5/8	3/8	37.7	30	6.3	20.4	44	1	
02 50 00 38	11/16	3/8	42.5	38	6.3	24.1	62	1	
02 50 00 40	3/4	3/8	42.5	38	6.3	24	66	1	
02 50 00 42	13/16	3/8	42.3	38	6.3	24	59	1	
02 50 00 44	7/8	3/8	44.5	41	6.3	25.8	65	1	
02 50 00 48	1	3/8	47	45	8	26.7	78	1	
02 50 00 50	1 1/16	3/8	47	45	8	27.2	78	1	
02 50 00 52	1 1/8	3/8	50	50	8	28.5	84	1	
02 50 00 54	1 3/16	3/8	50	50	8	29.2	83	1	
02 50 00 56	1 1/4	3/8	53	57	8	30.3	101	1	
02 50 00 58	1 5/16	3/8	53	57	8	31.2	101	1	
02 50 00 60	1 3/8	3/8	54.5	60	8	32.3	105	1	
02 50 00 62	1 7/16	3/8	56.5	62	8	33.1	107	1	
02 50 00 64	1 1/2	3/8	58	65	8	34.5	118	1	
02 50 00 65	1 9/16	3/8	59.5	68	8	35.7	126	1	
02 50 00 66	1 5/8	3/8	63	70	8	37.3	140	1	
02 50 00 67	1 11/16	3/8	63	70	8	37.7	126	1	
02 50 00 68	1 3/4	3/8	68	76	8	40.4	161	1	
02 50 00 70	1 7/8	3/8	72	82	8	42	205	1	
02 50 00 72	2	3/8	75	88	8	44.8	214	1	
02 50 00 74	2 1/8	3/8	75.6	91	10	46	265	1	
02 50 00 76	2 1/4	3/8	80.5	96	10	49.5	297	1	
03 50 00 78	2 3/8	1/2	81.5	96	8	51.3	214	1	

447 Adaptor



Caution! Modified settings on torque wrench (refer to note on page 197), American sizes: SAE AS 954-E, HPQ® high performance steel, gunmetal finish.



Code	mm	"	d1 mm	d2 mm	h1 mm	h2 mm	S mm	Δg	g	
02 18 10 07	7	3/8	11.5	19	6	11	50.8	30	1	
02 18 10 08	8	3/8	12.4	19	6	11	50.8	30	1	
02 18 10 09	9	3/8	14	19	8	11	50.8	40	1	
02 18 10 10	10	3/8	15.6	19	8	11	50.8	40	1	
02 18 10 13	13	3/8	19.3	19	9.2	11	50.8	55	1	

447a Adaptor

Code	mm	"	d1 mm	d2 mm	h1 mm	h2 mm	S mm	Δg	g	
02 47 00 16	1/4	3/8	10.4	19	6	11	50.8	27	1	
02 47 00 20	5/16	3/8	12.4	19	6	11	50.8	29	1	
02 47 00 24	3/8	3/8	14.9	19	8	11	50.8	41	1	
02 47 00 28	7/16	3/8	17	19	8	11	50.8	40	1	
02 47 00 32	1/2	3/8	19	19	9.2	11	50.8	56	1	
02 47 00 34	9/16	3/8	21	19	9.2	11	50.8	61	1	
02 47 00 36	5/8	3/8	23	19	12	11	50.8	73	1	

1225 Special extension

3/8" offset



Code	L mm	d mm	Δg	g	
12 25 00 01	150	17	128	5	

447aSP Spline-Drive adaptor



Caution! Modified settings on torque wrench (refer to note on page 197), MS-33787, MIL-W-8982, HPQ® high performance steel, gunmetal finish.



Code	Spline size	"	mm	d1 mm	d2 mm	h1 mm	h2 mm	S mm	Δg	g	
02 48 00 14	7	3/8	7/32	9.4	19	6	11	50.8	27	1	
02 48 00 16	8	3/8	1/4	10.4	19	6	11	50.8	27	1	
02 48 00 18	9	3/8	9/32	11.5	19	6	11	50.8	29	1	
02 48 00 20	10	3/8	5/16	12.4	19	6	11	50.8	29	1	
02 48 00 24	12	3/8	3/8	14.9	19	8	11	50.8	40	1	
02 48 00 28	14	3/8	7/16	17	19	9.2	11	50.8	50	1	
02 48 00 32	16	3/8	1/2	19	19	9.2	11	50.8	59	1	
02 48 00 34	18	3/8	9/16	21	19	9.2	11	50.8	55	1	
02 48 00 36	20	3/8	5/8	23	19	12	11	50.8	74	1	

Allocation of coefficients of friction and recommended values to various materials, surfaces and joint lubrication states

Class of friction coefficient	Range for μ_G and μ_K	Selection of typical examples for	
		Material/surfaces	Lubricants
A	0.04 to 0.10	bright metal, hardened and tempered black, phosphated electrocoatings like Zn, Zn/Fe, Zn/Ni, zinc flake coatings	solid lubricants such as MoS ₂ , graphite, PTFE, PA, PE, PI in bonded coatings, as topcoats or in pastes; melted wax, wax dispersion
B	0.08 to 0.16	bright metal, hardened and tempered black, phosphated electrocoatings like Zn, Zn/Fe, Zn/Ni, zinc flake coatings, Al and Mg alloyscoatings hot-dip zinc-plated organic coatings	solid lubricants, such as MoS ₂ , graphite, PTFE, PA, PE, PI in bonded coatings, as topcoats or in pastes; melted wax; wax dispersions; greases; oils; delivery state MoS ₂ ; graphite; wax dispersions with integrated solid lubricant or wax dispersion
C	0.14 to 0.24	austenitic steel austenitic steel bright metal, phosphatised electroplated coatings like Zn, Zn/Fe, Zn/Ni, zinc flake coatings, adhesive	solid lubricants or waxes; pastes wax dispersion pastes delivery status (slightly oiled) without
D	0.20 to 0.35	austenitic steel electroplated coatings like Zn, Zn/Fe	oil without
E	≥ 0.30	electroplated coatings like Zn, Zn/Fe Zn/Ni, austenitic steel, Al, and Mg alloys	without

Approximate values for static friction μ_T in the joint

Material pairings	Coefficient of static friction in this state	
	dry	lubricated
steel - steel/cast steel	0.1 to 0.23	0.07 bis 0.12
steel - soft cast iron	0.12 to 0.24	0.06 to 0.1
soft cast iron - soft cast iron	0.15 to 0.3	0.2
bronze - steel	0.12 to 0.28	0.18
soft cast iron - bronze	0.28	0.15 to 0.2
steel - copper alloy	0.07	
steel - aluminum alloy	0.1 to 0.28	0.05 to 0.18
aluminum - aluminum	0.21	

Assembly pretension forces F_{MTab} and tightening torque M_A at $\nu = 0.9$ for **setscrews** with standard metric threads to DIN ISO 262; head sizes of hex screws to DIN EN ISO 4014 to 4018, screws with outer hex to DIN 34800 and cheese head to DIN EN ISO 4762 and central bore "medium" to DIN EN 20273.

Dim.	Strength class	Assembly pretension forces F_{MTab} in kN for $\mu_c =$							Tightening torque M_A in N-m for $\mu_K = \mu_c =$						
		0.08	0.10	0.12	0.14	0.16	0.20	0.24	0.08	0.10	0.12	0.14	0.16	0.20	0.24
M 4	8.8	4.6	4.5	4.4	4.3	4.2	3.9	3.7	2.3	2.6	3.0	3.3	3.6	4.1	4.5
	10.9	6.8	6.7	6.5	6.3	6.1	5.7	5.4	3.3	3.9	4.6	4.8	5.3	6.0	6.6
	12.9	8.0	7.8	7.6	7.4	7.1	6.7	6.3	3.9	4.5	5.1	5.6	6.2	7.0	7.8
M 5	8.8	7.6	7.4	7.2	7.0	6.8	6.4	6.0	4.4	5.2	5.9	6.5	7.1	8.1	9.0
	10.9	11.1	10.8	10.6	10.3	10.0	9.4	8.8	6.5	7.6	8.6	9.5	10.4	11.9	13.2
	12.9	13.0	12.7	12.4	12.0	11.7	11.0	10.3	7.6	8.9	10.0	11.2	12.2	14.0	15.5
M 6	8.8	10.7	10.4	10.2	9.9	9.6	9.0	8.4	7.7	9.0	10.1	11.3	12.3	14.1	15.6
	10.9	15.7	15.3	14.9	14.5	14.1	13.2	12.4	11.3	13.2	14.9	16.5	18.0	20.7	22.9
	12.9	18.4	17.9	17.5	17.0	16.5	15.5	14.5	13.2	15.4	17.4	19.3	21.1	24.2	26.8
M 7	8.8	15.5	15.1	14.8	14.4	14.0	13.1	12.3	12.6	14.8	16.8	18.7	20.5	23.6	26.2
	10.9	22.7	22.5	21.7	21.1	20.5	19.3	18.1	18.5	21.7	24.7	27.5	30.1	34.7	38.5
	12.9	26.6	26.0	25.4	24.7	24.0	22.6	21.2	21.6	25.4	28.9	32.2	35.2	40.6	45.1
M 8	8.8	19.5	19.1	18.6	18.1	17.6	16.5	15.5	18.5	21.6	24.6	27.3	29.8	34.3	38.0
	10.9	28.7	28.0	27.3	26.6	25.8	24.3	22.7	27.2	31.8	36.1	40.1	43.8	50.3	55.8
	12.9	33.6	32.8	32.0	31.1	30.2	28.4	26.6	31.8	37.2	42.2	46.9	51.2	58.9	65.3
M 10	8.8	31.0	30.3	29.6	28.8	27.9	26.3	24.7	36	43	48	54	59	68	75
	10.9	45.6	44.5	43.4	42.2	41.0	38.6	36.2	53	63	71	79	87	100	110
	12.9	53.3	52.1	50.8	49.4	48.0	45.2	42.4	62	73	83	93	101	116	129
M 12	8.8	45.2	44.1	43.0	41.9	40.7	38.3	35.9	63	73	84	93	102	117	130
	10.9	66.3	64.8	63.2	61.5	59.8	56.3	52.8	92	108	123	137	149	172	191
	12.9	77.6	75.9	74.0	72.0	70.0	65.8	61.8	108	126	144	160	175	201	223
M 14	8.8	62.0	60.6	59.1	57.5	55.9	52.6	49.3	100	117	133	148	162	187	207
	10.9	91.0	88.9	86.7	84.4	82.1	77.2	72.5	146	172	195	218	238	274	304
	12.9	106.5	104.1	101.5	98.8	96.0	90.4	84.8	171	201	229	255	279	321	356
M 16	8.8	84.7	82.9	80.9	78.8	76.6	72.2	67.8	153	180	206	230	252	291	325
	10.9	124.4	121.7	118.8	115.7	112.6	106.1	99.6	224	264	302	338	370	428	477
	12.9	145.5	142.4	139.0	135.4	131.7	124.1	116.6	262	309	354	395	433	501	558
M 18	8.8	107	104	102	99	96	91	85	220	259	295	329	360	415	462
	10.9	152	149	145	141	137	129	121	314	369	421	469	513	592	657
	12.9	178	174	170	165	160	151	142	367	432	492	549	601	692	769
M 20	8.8	136	134	130	127	123	116	109	308	363	415	464	509	588	655
	10.9	194	190	186	181	176	166	156	438	517	592	661	725	838	933
	12.9	227	223	217	212	206	194	182	513	605	692	773	848	980	1092
M 22	8.8	170	166	162	158	154	145	137	417	495	567	634	697	808	901
	10.9	242	237	231	225	219	207	194	595	704	807	904	993	1151	1284
	12.9	283	277	271	264	257	242	228	696	824	945	1057	1162	1347	1502
M 24	8.8	196	192	188	183	178	168	157	529	625	714	798	875	1011	1126
	10.9	280	274	267	260	253	239	224	754	890	1017	1136	1246	1440	1604
	12.9	327	320	313	305	296	279	262	882	1041	1190	1329	1458	1685	1877
M 27	8.8	257	252	246	240	234	220	207	772	915	1050	1176	1292	1498	1672
	10.9	367	359	351	342	333	314	295	1100	1304	1496	1674	1840	2134	2381
	12.9	429	420	410	400	389	367	345	1287	1526	1750	1959	2153	2497	2787
M 30	8.8	313	307	300	292	284	268	252	1053	1246	1428	1597	1754	2031	2265
	10.9	446	437	427	416	405	382	359	1500	1775	2033	2274	2498	2893	3226
	12.9	522	511	499	487	474	447	420	1755	2077	2380	2662	2923	3386	3775
M 33	8.8	389	381	373	363	354	334	314	1415	1679	1928	2161	2377	2759	3081
	10.9	554	543	531	517	504	475	447	2015	2392	2747	3078	3385	3930	4388
	12.9	649	635	621	605	589	556	523	2358	2799	3214	3601	3961	4598	5135
M 36	8.8	458	448	438	427	415	392	368	1825	2164	2482	2778	3054	3541	3951
	10.9	652	638	623	608	591	558	524	2600	3082	3535	3957	4349	5043	5627
	12.9	763	747	729	711	692	653	614	3042	3607	4136	4631	5089	5902	6585
M 39	8.8	548	537	525	512	498	470	443	2348	2791	3208	3597	3958	4598	5137
	10.9	781	765	748	729	710	670	630	3345	3975	4569	5123	5637	6549	7317
	12.9	914	895	875	853	831	784	738	3914	4652	5346	5994	6596	7664	8562

Assembly pretension forces and tightening torques

MAsssembly pretension forces F_{MTab} and tightening torques M_A for screws with standard metric threads to DIN 13, Page 43 (M 1.6-M 2.5-M 3 to M 39) and head contact sizes such as DIN 912 (DIN EN ISO 4762), DIN 931 (DIN EN 24014), DIN 934 (DIN EN 24032), DIN 6912, DIN 7984, DIN 77990. The table readings F_{MTab} and M_A are based on the SI unit N (Newton). 1 N = 0.102 kp, 1 N-cm = 0.102 kp-cm, 1 N-m = 0.102 kp-m, 1 kp = 9.81 N, 1 kp-cm = 9.81 N-cm, 1 kp-m = 9.81 N-m. The assembly pretension forces F_{MTab} listed in the table above result in 90% exploitation of a screw's yield strength $\sigma_{0.2}$ (DIN ISO 898 Part 1) through the comparative tension σ_{rel} , which depends on the coefficient of thread friction μ_c . The table of assembly pretension forces shows what quality of which

screw is required for a particular thread friction to generate a certain required assembly pretension force F_{MTab} . The tightening torque M_A required to achieve 90% yield strength exploitation for a screw whose dimensions and quality are given can be determined from the right-hand table having regard to a specific underhead friction (μ_h). To determine the rated torque to be applied, deduct half the spread of the corresponding torque wrench from the applicable tightening torque M_A in the table. Calculation of the table entries and notes on their application to VDI 2230, Page 1.

MULTIPOWER

Makes child's play of the largest torques.

MULTIPOWER – or really “tough work”.

STAHLWILLE MULTIPOWER torque multipliers with planetary gears take the fatigue out of tightening or loosening stiff or large bolt connections. A long lever is not necessary.

STAHLWILLE MULTIPOWER multiplies human strength; steady torque transfer is easy on nuts and bolts. Even the largest torques are transferred with ease and precision over long periods.

Accordingly, construction materials and workmanship are extremely robust.

When combined with STAHLWILLE torque wrenches, MULTIPOWER really shows its strength.

The MULTIPOWER range extends to 5000 N·m/3687 ft·lb.

MULTIPOWER tools are also available on request up to 12000 N·m/8850 ft·lb.

The MULTIPOWER from 2000 N·m are fitted with an anti-backlash device. Spare parts, see p. 227

MP300 MULTIPOWER

with overload protection and planetary gears, in carrying case, with one spare sun wheel (overload cut-out), deviation of indication $\pm 5\%$.



Code	size	N·m ¹⁾	ft·lb ¹⁾	N·m ²⁾	ft·lb ²⁾	Gear ratio	Torque ratio	⌀ "	■ "	b mm	h mm	L mm	ΔΔ g	ΔΔ g with box
53030800	800	800	590	229	169	4 : 1	1 : 3.5	1/2	3/4	66	85	215	2000	5838
53031350	1350	1350	996	375	277	4 : 1	1 : 3.6	3/4	3/4	90	106	265	3400	7500
53032000	2000*	2000	1475	160	118	16 : 1	1 : 12.5	1/2	1	95	161	330	7000	11000
53033000	3000*	3000	2212	240	177	16 : 1	1 : 12.5	3/4	1	95	161	330	7000	10805
53035000	5000*	5000	3687	294	217	20 : 1	1 : 17.0	3/4	1 1/2	120	180	400	10400	14000

MULTIPOWER tools are also available on request up to 12000 N·m/8850 ft·lb.

*) with anti-backlash device

¹⁾ max. output

²⁾ max. input

MP100-1500 MULTIPOWER

- particularly compact construction
- light and easy to handle
- with ratchet function
- working angle 8°
- with rotary scale
- for use with a torque wrench with a fixed 1/2" square drive
- patents applied for
- in carry-case
- included in the set:
3 hexagon inserts sizes 30; 32; 36 mm,
1 insert with 1" outer square drive,
1 reaction arm 400 mm
- display deviation value $\pm 5\%$



Code	N·m ¹⁾	ft·lb ¹⁾	N·m ²⁾	ft·lb ²⁾	Gear ratio	Torque ratio	⌀ "	b mm	h mm	L mm	ΔΔ g	ΔΔ g with box
96531500	1500	1106	300	221	5.62 : 1	1 : 5	1/2	105	30	165	1890	3630

¹⁾ max. output

²⁾ max. input