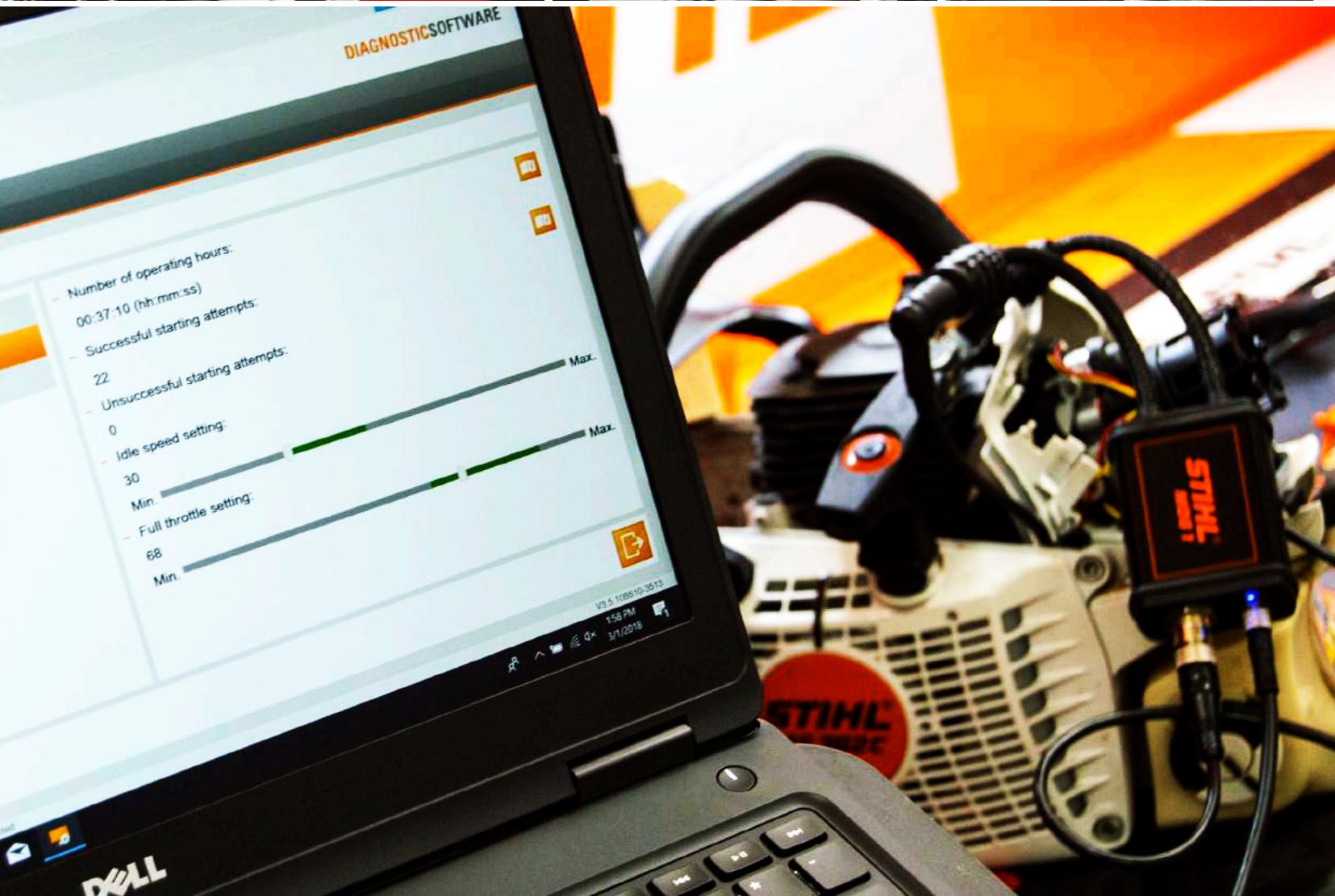


2019

TECHNICAL REFERENCE GUIDE

Specifications, Standard Features, Diagnostic Procedures & Product Liability

Bryant
EQUIPMENT SALES

Notes

Technical Reference Guide - Resources

1) Bryan Equipment Sales, Inc

www.bryanequipment.com

- Text or email your technical questions to techservice@bryanequipment.com
 - Or call 513 248 2000 prompt 3 to get Bryan Eq. Technical Service Rep.
- On the website: www.bryanequipment.com
 - **Training / Training Resources / Training videos** ... scroll to the bottom
 - How to perform a STIHL 4-Mix Leak Down test
 - How to perform a 2 stroke vacuum and pressure test
 - How to calibrate Original STIHL M-Tronic Chain Saw
 - How to calibrate New Generation 3.0 STIHL M-Tronic Chain Saw
 - How to adjust 2 stroke carburetors utilizing the MDG1
 - ...and more
 - **Technical Service / Technical Resources**
 - STIHL Diagnostic Software User Manual
 - USG Saw Chain Grinder Technical Guide
 - USG Saw Chain Grinder Setting Chart
 - ...and more
 - **Access STIHL Single Sign On (SSO)**

2) STIHL Single Sign On

<https://dealers.stihlusa.com/Portal>

- Under "My Applications"
 - **iCademy** (link to STIHL iCademy site)
 - **eService** (link to STIHL eService site for warranty and registration)
 - **Part Smart WEB** (internet version of parts look up media)
- Under "Links" section at bottom of SSO page
 - **STIHL Service Communication** (SSC Parts Look-Up Software) download link
 - Serial Number specific parts look up
 - Work Shop Manuals
 - Technical Bulletins
 - **STIHL Diagnostic Software** (SDS that works with MDG1, ADG1, ADG2) download link

Technical Reference Guide - Resources

3) STIHL iCademy

<https://www.stihlicademy.com/tm.php>

A) On website: Go To Videos / Optional Videos to find these 26 Tech Bits videos:

- Install a sprocket > Brake Service, TS 440
- MDG1 Engine Analyzer > Replacing iMow Blade
- Sealing a crankcase oilway > USG Chain Grinder
- HT Shaft Installation > How to properly maintain Chain Saw
- Rewind Starter Repair > STIHL Cut-Off Machine Safety
- Air filter Services > AK Series Diagnostics
- Spark Arrestor Inspection > HT Drive Tube Inspections
- Ignition module repair > Battery Basics
- Throttle Cable Adjustment > STIHL Injection (TS500i)
- Bar Stud Repair > STIHL Diagnostic Soft ware
- Replacing fuel Lines > STIHL M-Tronic
- Valve Clearance > **STIHL Engine Check**
- Trouble Shooting the Electric Start System
- Manually Re-Calibrating the STIHL M-Tronic System

B) On website: Go To Service Support to view the following

- STIHL MASTERWRENCH Service Training Lessons as seen in Silver and Gold Seminars
- Technical Bulletins back to 1968
- Work Shop Manuals of all models
- Specific information and some updates for product models
- **STIHL Service App...** view on your computer or hand held device such as phone
 - Set Up, diagnostic, and repair
 - STIHL Battery Product
 - Saw Chain Selector
 - STIHL Engine Check Process with video clips

Technical Reference Guide

Generations of STIHL	1
STIHL® Model Codes	4
STIHL® Service Kits	5
STIHL® Tune Up Component Charts	6
Bulk Starter Rope, Ignition Lead, and Fuel Line Charts	13
11 Digit Part Numbers for STIHL® Units & Attachments	14
STIHL® Specification Chart	17
Carburetor Reference Charts & Kits	53
Satisfaction Guarantee Claim Form	75
Retailer Labor Rate Certificate	76
Frequent Ask Questions	77
STIHL® M-Tronic™ Engine Check Segment	87
STIHL® Battery and Electric Segment	109
STIHL® High Pressure Washer Segment	171
STIHL® 4 Mix and 2 Stroke Engine Check Segment	179
TS 500i STIHL Engine Check Form	199
STIHL® Injection Section	201
STIHL® USG Grinder Chart	209
Summary of Extended Warranty Coverage Past to Present	210
STIHL® Cutquik® Wheel Selection Warning	213
Warranty Time Period by Product	Back Cover

Generations of **STIHL**®

CHAIN SAWS		
Series	Model	Production Years
1101	BL	1952-1959
1102	BLK	1954-1966
1106	Contra 06	1959-1968
	Contra S 06	1964-1968
	Contra 070	1959-1968
	070	1968-1977
	090	1968-1977
	07	1961-1965
1107	07S	1965-1968
	08	1963-1965
1108	08S	1965-1994
	S10	1968-1973
	090G	1969-1985
1110	040	1966-1967
	041	1967-1975
	041FB	1976-1986
	041AV	1967-1986
	041AVE	1968-1973
	041AVS	1977-1983
	041AVQ	1981-1985
	050	1968-1972
1111	051	1972-1985
	075	1974-1980
	076	1980-1986
	041G	1969-1975
1113	030	1970-1971
	031	1971-1982
	031E	1973-1982
	031Q	1980-1982
	032	1978-1985
1114	020	1971-1979
	020AVP	1972-1979
	020 Super	1979-1994
1115	045	1974-1980
	045 Super	1977-1980
	056AV	1980-1985
	056AVSE	1980-1984
	015	1973-1980
1116	015L	1973-1983
	015AV	1976-1983
	015AVE	1974-1983
	015AVEQ	1978-1983
1117	042AV	1976-1980
	048	1980-1985
1118	028AV, 028WB	1979-1980
	028AVEQ	1979-1983
1119	028AVS	1983-1990
	038AVE	1980-1985
	038AVEFB	1983-1985
	038AVS	1982-1985
	038AVSFB	1985-1993
	038AVM	1984-1989
	038 MAGNUM®	1985-1997
	09 Mini Boss™	1993-2006
1120	009	1980-1989
	009LE	1982-2009
	010AV	1978-1982
	010AVE	1982-1985
	011AVEQ	1980-1990
	011AVT	1980-1982
	011AVET	1982-1996
	012AVE	1986-1994
1121	012AVET	1986-1989
	024AVEQ	1982-1985
1121	024AVEQWB	1985-1994
	024AVES	1984-1989
	026	1988-2002
	026 Pro	1996-2002
	MS 260, 260 P	2002-2011

Series	Model	Production Years
1122	064AV	1986-1997
	066	1988-2003
	MS 660	2004-2014
	MS 650	2005-2012
1123	021, 023	1990-2002
	023C, 023L	1996-2002
	025	1991-2002
	MS 210	2002-2008
	MS 230	2002-2012
	MS 250	2002-Current
1124	084	1985-1997
	088	1997-2004
	MS 880	2004-Current
1125	034AV	1984-1993
	036	1991-2001
	036 Pro	1996-2001
	036QS	1997-2002
	MS 360, 360 P, 360QS	2002-2005
1127	029, 039	1992-2000
	MS 290	2000-2012
	MS 310, 390	2000-2009
1128	044	1988-2001
	046	1996-2001
	MS 440	2001-2012
	MS 460	2001-2012
1129	MS 461	2013-Current
	020T	1996-2002
	MS 200, 200 T	2002-2012
1130	017	1995-2002
	018	1999-2002
	MS 170, 180	2002-Current
	MS 180 C-B	2002-2012
1132	019T	1997-2002
	MS 191 T	2002-2006
1133	MS 270, 280	2003-2010
	MS 361	2004-2010
1135	MS 192, 192 T	2005-2014
	MS 193, 193 T	2014-Current
1138	MS 441	2007-2012
	MS 441 C-M	2011-2019
1139	MS 171, 181, 211	2009-Current
	MS 311, 391	2009-Current
1140	MS 362, 362 C-Q	2010-Current
	MS 362 C-M	2014-Current
	MS 271, 291	2010-Current
1141	MS 261	2010-Current
	MS 261 C-MQ	2014-2019
	MS 261 C-M,	2014-Current
1142	MS 462 C-M	2019-Current
	MS 241 C-M, 241 C-MQ	2014-2018
1143	MS 251, 251 C-BE	2013-Current
	MS 661 C-M	2014-Current
1144	MS 201 T C, 201 C	2011-2015
	MS 201 T C-M, 201 C-EM	2015-Current
1145	MS 150 C-E, MS 150 T C-E	2013-Current
	ELECTRIC CHAIN SAWS	
1202	E30	1967-1985
1203	E15	1967-1985
1204	E10	1973-1984
1206	E14	1984-1997
1207	E20	1985-1998
	E220Q	1999-2002
	MSE 220	2003-2014
1208	E140, E180	1998-2002
	MSE 140, 141, 180	2003-2014
	MSE 141 C-Q	2017-Current
1209	MSE 170 C-BQ, 210 C-BQ	2014-Current
1210	MSE 250 C-Q	2015-Current

Generations of **STIHL**®

POWER TOOLS		
Series	Model	Production Years
4104	FS 08	1969-1976
4106	FS 20	1969-1977
4108	FS 353	1979-1986
4109	FS 200, FS 202	1975-1983
4110	FS 410	1976-1986
4111	FS 150, 151	1976-1983
4112	FS 80	1977-1983
	FS 80E	1983-1984
	FS 80AVE	1983-1986
4114	FS 60	1979-1981
	FS 61	1980-1983
	FS 61E	1982-1986
4116	FS 65	1984-1986
	FS 360	1986-1997
	FS 550	1997-2012
4117	FS 420	1990-1997
	FS 90AV (OLD)	1982-1987
	FS 50 (OLD)	1983-1984
4118	FS 51	1984-1986
	FS 160	1987-1989
	FS 180	1987-1997
4119	FS 220	1987-1989
	FS 280 K	1988-1997
	FS 65	1983-1986
4121	FS 62	1986-1988
4122	FS 66	1986-1994
4124	FS 81AVE	1988-1995
4125	FS 48	1987-1989
	FS 52	1986-1988
	FS 56	1988-1994
4126	FS 81, 86	1986-1994
	FS 88	1995-1996
	FS 96	1986-1989
4127	FS 450	1997-2011
4128	FS 106	1990-1994
4130	FS 36	1990-2000
	FS 40, 44	1990-1999
	FC 44	1994-2000
4132	FR 106	1990-1996
4133	FS 72, 74, 76, FC 72	1992-1996
4134	FS 120, 200	1997-2000
	FS 250	2001-2014
	FS 350	1997-2015
4135	HT 250	2006-Current
4137	FS 108	1995-1997
	FC 75	1997-2011
	FS 75	1997-2006
	FS 80	1997-2010
	FS 85	1997-2006
4138	FS 85 RT	2000-2004
	HT 75	1997-2005
	HT 70	1999-2004
4139	HT 56 C-E	2010-Current
4140	FS 38	2014-Current
	FS 45, 46	2000-2013
	FS 55, 55 R	2000-2013
	FC 55	2000-2008
	FM 55 RC-E	2005-2008
4141	FS 83, 83 R, FS 73	2000-2001
4142	HT 73	2001-2005
4144	FS 40, 56	2008-Current
	FS 50 C-E	2013-Current
	FC 56 RC-E, FC 70	2009-Current
	FS 70, FS 70 C-E,	2010-Current
4147	FS 240, 240 R	2014-Current
	FS 360, 460	2013-2016
	FS 360 C-E, 460 C-EM	2014-Current
4148	FS 560 C	2012-2016
	FS 560 C-EM	2013-Current
4149	FS 94	2014-Current
	KM 94 R	2015-Current

Series	Model	Production Years
4180	FS 90, 100 RX, 110, 110 RX, 130	2002-2016
	FS 91, 91 R, 111, 111 R, 111 RX, 131, 131 R, 311	2016-Current
	KM 100 R, FC 110	2002-2016
	FC 95	2005-2016
	FC 91, 96, 111	2016-Current
	FS 90 R, KM 90 R	2005-2016
	KM 130 R	2006-2016
	KM 91 R, 111 R, 131 R	2016-Current
	FS 310	2010-2016
	FB 131	2016-Current
4182	HT 100, 101	2005-2016
	HT 102	2016-2018
	HT 103, 132,	2016-Current
	HT 133	2016-2018
	HT 130	2007-2016
4202	HT 131	2007-2016 / 2019-Current
	SG 17	1969-1991
4203	BG 17	1974-1991
	BR 320, 400	1989-2001
	BR 340 C, 420 C	2001-2007
	BR 380 D	2005-2010
	SR 320, 400	1989-2001
4210	BR 420 C MAG	2002-2007
	BG 60	1982-1986
4226	BG 61	1986-1991
	HS 60AVE	1984-1992
	BR 106	1991-1994
	HS 72, 74, 76	1992-1996
	HS 75	1997-2001
4227	HS 80	1997-2006
	HS 85	1997-2005
	BG 75	1996-2000
	BG 72	1992-1997
	HS 45	2000-Current
4229	BG 45 C	2003-2006
	BG 45	2000-2006
	BG 50	2015-Current
	BG 55, SH 55, BG 65	2000-2015
	BG 85, SH 85	2000-2010
4230	HL 75 K	1997-2005
	HL 75	1997-2005
	HL 45	1999-2016
	SP 200	2003-2008
	HL 56 K	2016-Current
4237	HS 81 T	2007-2015
	HS 86	2006-2015
	HS 82	2015-Current
	HS 87	2015-Current
	BG 56, 66, 86	2008-Current
4241	SH 56, 86	2008-Current
	BR 200	2011-Current
	SR 200	2014-Current
	HS 46, 56	2012-Current
	HL 91 K, 94, 94 K	2016-Current
4244	SR 450	2010-Current
	BR 350, 430	2010-Current
	BR 450, 450 C-EF	2015-Current
	SR 430	2016-Current
	SG 11, 31	2015-Current
4255	SG 10	2006-2014
	SG 20	2006-Current
	HL 100 135, 100 0, 100 K 135	2003-2016
4280	HL 90	2007-2016
	BR 500	2005-Current
	BR 550	2005-2015
	BR 600	2006-Current
	BR 700	2016-Current
4282	BR 700 X	2017-Current
	BR 800 C-E	2019-Current
	BR 800X	2019-Current
	BR 800X	2019-Current

Generations of **STIHL**[®]

POWER TOOLS		
Series	Model	Production Years
4601	MM 55, MM 55 C-E	2002-2019
4602	KW 85	2000-2005
4604	MM 56	2018-Current
4803	FE 55	1992-2002
	EC 70	1994-2001
4804	BE 55	1994-2000
4807	BGE 60	1999-2009
4809	FSE 60	2003-Current
4811	BGE 61, 71	2008-Current
4812	HSE 60	2008-2015
	HSE 70	2008-Current
4818	HSE 52	2014-Current
BATTERY		
Series	Model	Production Years
1250	MSA 160 C-BQ	2011-Current
1251	MSA 200 C-BQ	2014-Current
1254	MSA 120 C	2017-Current
	MSA 140 C-BQ	2018-Current
4511	HSA 45	2017-Current
4512	FSA 45	2017-Current
4513	BGA 45	2017-Current
4515	HSA 25	2018-Current
4521	HSA 56	2017-Current
4522	FSA 56	2017-Current
4523	BGA 56	2017-Current
4851	HSA 65	2012-2013
	HSA 66	2014-Current
4852	FSA 65, 85	2010-Current
4853	BGA 85	2011-Current
4857	HTA 65, 85	2014-Current
4859	HLA 65	2013-Current
	HLA 85	2015-Current
4863	FSA 90 R	2015-Current
4864	TSA 230	2014-Current
4866	BGA 100	2015-Current
4867	FSA 130 R, KMA 130 R	2019-Current
4869	HSA 94	2019-Current
6320	RMA 370	2013-Current
6320	RMA 410	2016-Current
6368	RMA 460	2018-Current
6372	RMA 510	2017-Current
INDUSTRIAL		
Series	Model	Production Years
4201	TS 08	1965-1977
	TS 350	1977-2001
	TS 360AVE	1984-1996
4205	TS 50	1972-1977
	TS 510AVE	1978-2005
	TS 760AVE	1986-2007
4207	TS 200	1974-1979
4221	TS 460AVE	1994-2008
4223	TS 400	1995-2008
4224	TS 700	2005-Current
	TS 800	2006-Current
4238	TS 410, 420	2008-Current
	TS 440	2017-Current
4250	TS 480i	2013-2018
	TS 500i	2012-Current
4252	GS 461	2012-Current
4308	BT 308	1964-1997
	BT 360	1996-1997
4309	BT 309	1966-1997
4311	BT 106	1991-1999

Series	Model	Production Years
4313	BT 120 C	1999-2005
	BT 121	2005-2013
	BT 130	2014-2016
	BT 131	2016-Current
4314	BT 45	2002-Current
CLEANING SYSTEMS		
Series	Model	Production Years
4703	RE 110 K	1990-1993
4709	SE 100	1990-1996
4710	RB 400 (OLD)	1990-1996
4718	RB 220 K	1990-1996
4719	RE 102 K	1990-1996
4758	SE 61	2010-2014
4774	SE 122	2010-Current
4784	SE 62	2014-Current
4786	SE 133	2017-Current
4789	RB 200	2017-Current
4790	RB 400	2017-Current
4791	RB 600	2017-Current
4792	RB 800	2017-Current
CHAIN GRINDERS		
Series	Model	Production Years
5202	HOS	2001-Current
5203	USG	2001-Current
iMOW		
Series	Model	Production Years
6301	RMI 422 P	2018-Current
6309	RMI 632 T	2018-Current

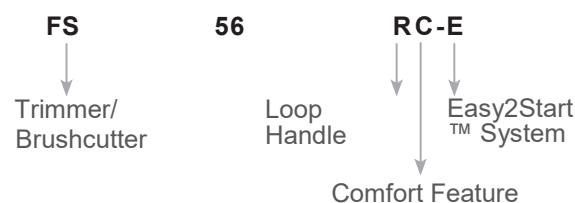
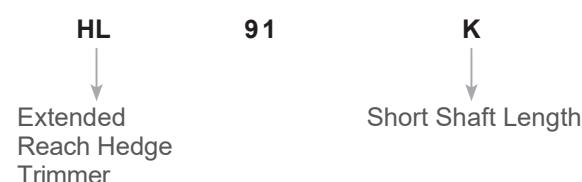
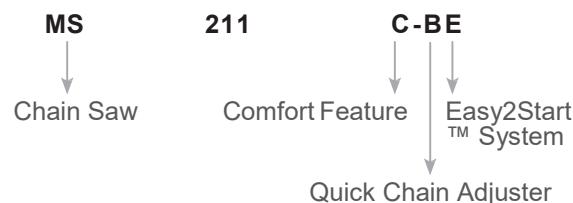
STIHL® Model Codes

STIHL Technical Reference Guide

Prefix	
BF	Pick Style Tines
BG	Handheld Blower
BGA	Blower - Battery-Powered
BGE	Electric Handheld Blower
BK	Bolo Style Tines
BR	Blower - Backpack
BT	Earth Auger, Drill and Boring Gear
FC	Grass Edger
FH	Power Scythe
FBD	Bed Redefiner
FCB	Curved Lawn Edger for KM
FCS	Straight Lawn Edger for KM
FS	Trimmer/Brushcutter
FSA	Trimmer, Battery Powered
FSB	Curved Shaft Trimmer for KM
FSE	Corded Electric Trimmer
GS	Deep Concrete Cutter
HL	Extended Reach Hedge Trimmer
HLA	Extended Hedge Trimmer, Battery-Powered
HS	Hedge Trimmer
HSA	Hedge Trimmer, Battery-Powered
HSE	Electric Hedge Trimmer
HT	Pole Pruner
HTA	Pole Pruner, Battery-Powered
IEM	Intelligent Engine Management
KB	Bristle Brush
KM	Kombi Motor/Split Shaft Unit
KW	STIHL PowerSweep™
MF	Lawn Dethatcher
MM	Multi Motor/STIHL YARD BOSS®
MS	Chain Saw
MSA	Chain Saw, Battery-Powered
MSE	Chain Saw, Electric Powered
PA	Professional Axe
PH	Professional Hedge Shear
PL	Professional Lopper
PP	Professional Pruner
PS	Professional Hand Saw
RB	Gasoline Powered Pressure Washers
RL	Lawn Aerator
RMA	Lawn Mower, Battery-Powered
SE	Electric Vacuum
SG	Manual Backpack Sprayer
SH	Vacuum Shredder
SR	Sprayer / Blower - Backpack
TS	Cut-Off Machine
TSA	STIHL Cutquik® Cut-Off Machine, Battery - Powered

Suffix	
AV	Anti Vibration
B	Quick Chain Adjustment
C	Comfort can have one or more of the following features: Easy2Start™, Quick Chain Adjuster, ElastoStart™
D	Catalytic Converter
E	Electronic Ignition (Designation for older models- no longer used)
i	Electronic Fuel Injection
E	Easy2Start™
M	STIHL M-Tronic™
FB	FARM BOSS®
K	Shorter Shaft Length (Extended reach Hedge Trimmer or Brushcutter)
KM	Kombi Motor/ Split Shaft Unit
L	Low Noise
M	STIHL MAGNUM®
MB	STIHL MiniBoss™
QS	STIHL Quickstop® Additional Chain Braking System
R	Wrap Handle (Chain Saw models)
R	Loop Handle (Trimmers and Brushcutters)
R	Rejuvenating Hedge Trimmer Blade (Hedge Trimmer models)
RT	Kombi Machine with Loop Handle
S	Super
X	Lightweight Shaft Trimmer w/ Loop Handle
T	Top Handle (Chain Saw)
T	Trimming Hedge Trimmer Blade (Hedge Trimmer models)
W	Heated Handle/ Carburetor
WB	STIHL WOOD BOSS®
Z	Spark Arresting Muffler

EXAMPLES



STIHL® Service Kits

Service Kits		
Fits Models	Includes	Part Number
Chain Saw Service Kits		
MS 170, MS 180	Air Filters, Fuel Filter and Spark Plug	1130 007 1800
MS 171, MS 181, MS 211	Air Filter, Fuel Filter and Spark Plug	1139 007 1800
MS 210, MS 230, MS 250	Air Filter, Fuel Filter and Spark Plug	1123 007 1800
MS 251	Air Filter, Fuel Filter and Spark Plug	1143 007 1800
MS 290, MS 310, MS 390	Air Filter, Fuel Filter and Spark Plug	1127 007 1800
MS 311 (w/ serial no. lower than 295 938 526) MS 391 (w/ serial no. lower than 295 938 026)	(Pre) Air Filter, (Main Air) Fuel Filter and Spark Plug	1140 007 1800
MS 261, MS 271, MS 291 MS 311 (w/ serial no. greater than 295 938 526) MS 391 (w/ serial no. greater than 295 938 026)	HD2 Air Filter, Fuel Filter and Spark Plug	1141 007 1800
Blower Service Kits		
BG 50, BG 55, BG 65, BG 85, SH 55, SH 85	Air Filter, Fuel Filter and Spark Plug	4229 007 1800
BG 56, BG 66, BG 86, SH 56 (C-E), SH 86 (C-E)	Air Filter, Fuel Filter and Spark Plug	4241 007 1800
BR 500, BR 550, BR 600, BR 700	Air Filter, Dual Fuel Filter Assembly and Spark Plug	4282 007 1800
BR 350, BR 430, BR 450, BR (450 C-EF), SR 430, SR 450	Air Filter, Fuel Filter and Spark Plug	4244 007 1800
Trimmer Service Kits		
FC 56, FC 70, FS 40, FS 56, FS 70, HT 56, KM 56	Air Filter, Fuel Filter and Spark Plug	4144 007 1800
FS 38, FS 45, FS 46, FS 55, HL 45, KM 55	Air Filter, Fuel Filter and Spark Plug	4140 007 1800
BG 75, FS 75, FS 80, FS 85, KM 85, HL 75, HT 75	Air Filters, Fuel Filter and Spark Plug	4137 007 1800
FC 90, FC 95, FC 100, FC 110, FS 90, FS 100 RX, FS 110, HL 90, HL 100, HT 101, KM 90, KM 110	Air Filter, Fuel Filter and Spark Plug	4180 007 1800
FC 91, FC 96, FC 111, FS 91, FS 111, FS 111 RX, KM 91, KM 111, HT 102, HT 103	Air Filter, Fuel Filter, Spark Plug and Spark Arresting Screen	4180 007 1042
FS 131, FS 311, KM 131, FB 131, BT 131, HT 132, HT 133	Air Filter, Fuel Filter, Spark Plug and Spark Arresting Screen	4180 007 1043

STIHL® Tune Up Component Charts

Chain Saws

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
009, 010 011, 012	1120 120 1600	1110 400 7005 0000 400 7000	0000 350 3502	3	42	N/A
MS150T	1146 140 4402	0000 400 7011	0000 350 3513	2.7 Easy2Start™	31.5 Easy2Start™	0000 190 3502
MS150	1146 140 4403	0000 400 7011	0000 350 3513	2.7 Easy2Start™	31.5 Easy2Start™	0000 190 3502
017, 018	1130 124 0800 1130 124 801HD	1110 400 7005 0000 400 7000	0000 350 3500	3 2.7 Easy2Start™	31.5 36 Easy2Start™	0000 190 3402 N/A Easy2Start™
MS 170 MS 180	1130 124 0800 1130 124 0801HD	1110 400 7005 0000 400 7000	0000 350 3500	3 2.7 Easy2Start™	31.5 36 Easy2Start™	0000 190 3402 N/A Easy2Start™
MS 171	1139 120 1602	0000 400 7011	0000 350 3500	3	33.5	0000 190 3402
MS 181 MS 211	1139 120 1602	0000 400 7011	0000 350 3500	3 2.7 Easy2Start™	33.5 35.8 Easy2Start™	0000 190 3402
019 T MS 190 T MS 191 T	1132 124 0800	1110 400 7005 0000 400 7000	0000 350 3502	3	31.5	N/A
020 T MS 200 T	1129 120 1607	1110 400 7005 0000 400 7000	0000 350 3504	3	29.5	0000 190 3409
MS 200	1129 120 1604	1110 400 7005 0000 400 7000	0000 350 3504	3	29.5	0000 190 3409
MS 201 T	1145 140 4400	0000 400 7011	0000 350 3500	3	29.5	0000 190 3409
MS 201TC-M	1145 140 4404	0000 400 7011	0000 350 3500	3	29.5	0000 190 3409
MS 201	1145 140 4401	0000 400 7011	0000 350 3500	2.7 Easy2Start™	34.25	0000 190 3409
MS 192 T	1137 120 1600	1110 400 7005 0000 400 7000	0000 350 3502	2.7	31.5	0000 190 3402
MS 192	1137 120 1603	0000 400 7011	0000 350 3502	2.7 Easy2Start™	31.5	N/A
MS 193T	1137 120 1604	0000 400 7011	0000 350 3502	2.7 Easy2Start™	31.5	N/A
MS 193	1137 120 1607	0000 400 7011	0000 350 3502	2.7 Easy2Start™	31.5	N/A
021 023 025	1123 120 1613	1110 400 7005 0000 400 7000	0000 350 3500	3 2.7 Easy2Start™	31.5 36 Easy2Start™	0000 190 3402 N/A Easy2Start™
MS 210 MS 230 MS 250	1123 120 1613	1110 400 7005 0000 400 7000	0000 350 3500	3 2.7 Easy2Start™	31.5 36 Easy2Start™	0000 190 3402 N/A Easy2Start™
024	1121 120 1618	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	0000 190 3401
MS 241C-M	1141 120 1604	0000 400 7011	0000 350 3502	3	29.6	0000 190 3409

*Discontinued Models

STIHL® Tune Up Component Charts

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
026	1121 120 1612 Non Compensating	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	0000 190 3401
026 PRO	1121 120 1618 Compensating	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	0000 190 3401
MS 260 MS 260 PRO	1121 120 1618	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	0000 190 3401
MS 261 MS 261C-M	1141 120 1604	1110 400 7005 0000 400 7000	0000 350 3515	3.5	38	0000 190 3401
MS 270 MS 280	1133 120 1604	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	0000 190 3401
MS 271 MS 291	1141 120 1600	1110 400 7005 0000 400 7000	0000 350 3515	3.5 3 Easy2Start™	38 38 Easy2Start™	N/A
028	1118 120 1611	1110 400 7005 0000 400 7000	0000 350 3500	3.5	38 Plastic 42 Metal Housing	N/A
029, 039	*1127 120 1621 *compensating	1110 400 7005 0000 400 7000	0000 350 3500	3.5	38	1128 190 3400
029, 039	**1127 120 1611 **non compensating	1110 400 7005 0000 400 7000	0000 350 3500	3.5	38	1128 190 3400
MS 290 MS 310 MS 390	1127 120 1621	1110 400 7005 0000 400 7000	0000 350 3500	3.5	38	1128 190 3400
MS 311 MS 391	1141 120 1600	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	N/A
034	1125 120 1615 1125 120 1620	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
036 036 PRO	1125 120 1615 1125 120 1620 Non Compensating Up to S/N 232 622 639	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
036 036 PRO	1125 120 1626 Compensating After S/N 232 622 640	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
MS 360 MS 360 PRO	1125 120 1626	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
MS 361	1135 120 1600	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
MS 362	1140 140 4500 Prefilter 1140 140 4401 Filter	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
MS 362C-M	1141 120 1604 HD 2	1110 400 7005 0000 400 7000 After SN 183609631 0000 400 7011	0000 350 3504 0000 350 3518	3.5	38	1128 190 3400

STIHL® Tune Up Component Charts

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
044, 046 MS 440 MS 460 MS 461	0000 140 4402 HD 2	1110 400 7005 0000 400 7005	0000 350 3504	3.5	38	1128 190 3400
MS 441 MS 441C-M	0000 140 4402 HD 2	1110 400 7005 0000 400 7000	0000 350 3504	3.5	38	1128 190 3400
MS 462	1142 140 4400	0000 400 7011	0000 350 3518	3.5	38	1128 190 3400
064, 066 MS 650 MS 660	0000 140 4402 HD 2	1110 400 7005 0000 400 7000	0000 350 3504	4.5	39.5	1122 190 3400
MS 661C-M MS 661C-M v3	1144 140 4400 1144 140 4402	1110 400 7005 0000 400 7000	0000 350 3504 0000 350 3518	4.5	39.5	1122 190 3400
084, 088, MS 880	0000 140 4402 HD 2	1110 400 7005 0000 400 7000	0000 350 3504	4.5	39.5	1122 190 3400
Pole Pruners						
HT 56	4144 124 2800	0000 400 7011	0000 350 3513	2.7 Easy2Start™	36	N/A
HT 70	4137 124 2800	1110 400 7005 0000 400 7000	0000 350 3502	2.7	36	0000 190 3403
HT 73	4141 141 0600 Prefilter 4141 124 0800 Filter	0000 400 7007	4141 350 3500	3	31.5	0000 190 3400
HT 75	4137 124 2800	1110 400 7005 0000 400 7000	0000 350 3502	3	31.5	0000 190 3403
HT 100 HT 101	4180 120 1800	0000 400 7009	0000 350 3502	3	33.5	N/A
HT 102 HT 103	4180 141 0300	0000 400 7009	0000 350 3521	3	33.5	N/A
HT 130 HT 131	4180 120 1800	0000 400 7009	0000 350 3502	3	33.5	N/A
HT 132 HT 133	4180 141 0300	0000 400 7011	0000 350 3521	3	33.5	N/A
HT 250	4134 141 0300	1110 400 7005 0000 400 7000	0000 350 3506	3	33.5	N/A
Blowers						
BG 45, BG50 BG 55, BG 65, BG 85, SH 55, SH 85	4229 120 1800	1110 400 7005 0000 400 7000	0000 350 3502	3	42	N/A
BG 56, BG 66, BG 86, SH 56, SH 86	4241 120 1800 4241 140 4401 4241 140 4400 - HD2	0000 400 7011	0000 350 3502	3 3 Easy2Start™	42 42 Easy2Start™	0000 190 3404 N/A Easy2Start™
BR 320, BR 400 SR 320, SR 400	4203 141 0300 4203 141 0310	1110 400 7005 0000 400 7000	0000 350 3502	3.5	38	0000 190 3401
BR 340, BR 380, BR 420, SR 340, SR 380, SR 420	4203 141 0301 4203 120 1500	1110 400 7005 0000 400 7000	0000 350 3502	3.5	38	0000 190 3401
BR 350	4223 141 0300	1110 400 7005 0000 400 7000	0000 350 3502	3.5	38	N/A
BR 420	4203 141 0301	1110 400 7005 0000 400 7000	0000 350 3502	3.5	38	0000 190 3401

*Discontinued Models

STIHL® Tune Up Component Charts

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
BR 430, BR 450 SR 430, SR 450	4223 141 0300	1110 400 7005 0000 400 7000	0000 350 3502	3.5	38	0000 190 3401
BR 500 BR 550 BR 600 BR 700 BR 700 X	4282 141 0300	0000 400 7011	4282 007 3600	3.5	38	N/A
BR 800 BR 800 C	4283 141 0300 4283 141 0300	0000 400 7011 0000 400 7011	0000 350 3518 0000 350 3518	3.5 3.0	38 59	N/A

Line Trimmers

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
FS 36 FS 40	4130 124 0800	4112 400 7001	0000 350 3502	3.5	33.5	0000 190 3400
FS 44	4130 124 0800	4112 400 7001	0000 350 3502	3.5	33.5	0000 190 3400
FS 38 FS 45 FS 46	4140 124 2800	1110 400 7005 0000 400 7000	0000 350 3506	3 2.7 Easy2Start™	42 36 Easy2Start™	N/A 0000 190 3404 N/A
FS 55 KM 55	4140 124 2800	1110 400 7005 0000 400 7000	0000 350 3506	3 2.7 Easy2Start™	42 36 Easy2Start™	N/A 0000 190 3404 N/A
FS 40, FS 50 FS 56 New 4144 Series	4144 124 2800	0000 400 7011	0000 350 3513	2.7 Easy2Start™	36 Easy2Start™	N/A
FS 70	4144 124 2800	0000 400 7011	0000 350 3513	2.7	36	N/A
FS 75	4137 124 1501 Prefilter 4137 124 2801 Filter	1110 400 7005 0000 400 7000	0000 350 3502	2.7	36	0000 190 3403
FS 80 FS 85 KM 85	4137 124 1501 Prefilter 4137 124 2801 Filter	1110 400 7005 0000 400 7000	0000 350 3502	2.7	36	0000 190 3403
FS 83	4141 141 0600 Prefilter 4141 124 0800 Filter	0000 400 7007	4141 350 3500	3	31.5	0000 190 3400
FS 90, FS 100 RX, FS 110, KM 110 R	4180 120 1800	0000 400 7009	0000 350 3502	3	33.5	N/A
FS 91, FS 111 KM 91, KM 111	4180 141 0300	0000 400 7009	0000 350 3521	3	33.5	N/A
FS 131 KM 131	4180 141 0300	0000 400 7011	0000 350 3521	3	33.5	N/A
FS 94	4149 120 1800	0000 400 7011	0000 350 3503	2.7	36	N/A
FS 120 FS 200 FS 250	4134 141 0300	1110 400 7005 0000 400 7000	0000 350 3506	3	33.5	N/A
FS 130	4180 120 1800	0000 400 7011	0000 350 3502	3	33.5	N/A
FS 310	4134 141 0300	0000 400 7011	0000 350 3502	3	33.5	N/A

STIHL® Tune Up Component Charts

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
FS 350	4134 141 0300	1110 400 7005 0000 400 7000	0000 350 3506	3 3	33.5	0000 190 3405
FS 360	4147 141 0300	0000 400 7011	0000 350 3502	3	40	N/A
FS 450	4134 141 0300	1110 400 7005 0000 400 7000	0000 350 3506	3 3	33.5	0000 190 3405
FS 460	4147 141 0300	0000 400 7011	0000 350 3502	3	40	N/A
FS 550	4116 120 1602 4116 141 0300	1110 400 7005 0000 400 7000	0000 350 3502	3.5	38	0000 190 3401
FS 560	4148 352 8200	1110 400 7005 0000 400 7000	0000 350 3502	3	40	N/A

Edgers

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
FC 55 C-E	4140 124 2800	1110 400 7005 0000 400 7000	0000 350 3506	3	42	0000 190 3404
FC 56 FC 70 C-E (4144)	4144 124 2800	0000 400 7011	0000 350 3513	2.7	40	N/A
FC 73 FC 83	4141 141 0600 Prefilter 4141 124 0800 Filter	0000 400 7007	4141 350 3500	3	31.5	0000 190 3400
FC 75	4137 124 1500 Prefilter 4137 124 2800 Filter	1110 400 7005 0000 400 7000	0000 350 3502	2.7	36	0000 190 3403
FC 90 FC 95 FC 100 FC 110	4180 120 1800	0000 400 7009	0000 350 3502	3	33.5	N/A
FC 91 FC 96 FC 111 FB 131	4180 141 0300	0000 400 7009	0000 350 3521	3	33.5	N/A

Augers and Drills

BT 45	4314 124 2800	1110 400 7005 0000 400 7000	0000 350 3503	3	41.75	0000 190 3404
BT 120 C BT 121	4134 141 0300	1110 400 7005 0000 400 7000	0000 350 3506	3	33.5	0000 190 3405
BT 130	4134 141 0300	0000 400 7011	0000 350 3502	3	33.5	N/A
BT 131	4180 141 0300	0000 400 7011	0000 350 3521	3	33.5	N/A

Hedge Trimmers

HS 45	4228 124 1500 Prefilter 4140 124 2800 Filter	1110 400 7005 0000 400 7000	0000 350 3503	3	42	0000 190 3404
HS 46 HS 56	4242 120 1800	0000 400 7011	0000 350 3503	2.7 Easy2Start™	36	N/A

STIHL® Tune Up Component Charts

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Rope Diameter in Millimeters	Rope Length in Inches	ElastoStart™
HS 60 HS 61	4211 141 0300 Prefilter 4210 141 0302 Filter	0000 400 7000	0000 350 3502	3.5	31.5	N/A
HS 72 HS 74 HS 76	4133 124 1500 Prefilter 4133 124 2800 Filter	1110 400 7005 0000 400 7000	0000 350 3503	3	31.5	N/A
HS 75 HS 80 HS 85	4137 124 1500 Prefilter 4137 124 2800 Filter	1110 400 7005 0000 400 7000	0000 350 3503	2.7	36	0000 190 3403
HS 81 HS 86	4237 120 1800	0000 400 7009	0000 350 3503	2.7 Easy2Start™	40 36	N/A
HS 82 HS 87	4237 141 0300	0000 400 7011	4237 350 0413	2.7	40	N/A
HL 45	4140 124 2800	1110 400 7005 0000 400 7000	0000 350 3506	3	41.75	N/A
HL 56	4144 124 2800	0000 400 7011	0000 350 3513	2.7	36	N/A
HL 73	4141 141 0600 Prefilter 4141 124 0800 Filter	0000 400 7007	4141 350 3500	3	31.5	0000 190 3400
HL 75	4137 124 1501 Prefilter 4137 124 2801 Filter	1110 400 7005 0000 400 7000	0000 350 3502	2.7	36	0000 190 3403
HL 90	4180 120 1800	0000 400 7009	0000 350 3502	3	33.5	N/A
HL 91	4180 141 0300	0000 400 7009	0000 350 3521	3	33.5	N/A
HL 94	4149 120 1800	0000 400 7011	0000 350 3503	2.7	36	N/A
HL 100	4180 120 1800	0000 400 7009	0000 350 3502	3	33.5	N/A

Cut-Off Machine Chart

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Drive Belt	Rope Dia. in mm	Rope Length in inches	ElastoStart™ Rope with grip	ElastoStart™ Rope in bulk
TS 350	4201 141 0300 4201 141 0310 4201 140 1801	1110 400 7005 0000 400 7000	0000 350 3500	9490 000 7850	4.5	39.5	0000 190 3414	0000 930 2200
TS 400 S/N >138430817	4223 007 1010	1110 400 7005 0000 400 7000	0000 350 3500	9490 000 7851	4.5	39.5	0000 190 3414	0000 930 2267
TS 410 TS 420	4238 140 4404	1110 400 7005 0000 400 7000	0000 350 3506	(12" TS 410) 9490 000 7901 (14" TS 420) 9490 000 7900	4.5	39.5	0000 190 3414	0000 930 2295

STIHL® Tune Up Component Charts

STIHL Model #	Air Filter	Spark Plug	Fuel Filter	Drive Belt	Rope Dia. in mm	Rope Length in inches	ElastoStart™ Rope with grip	ElastoStart™ Rope in bulk
TS 440	4238 140 4404	1110 400 7005 0000 400 7000	0000 350 3506	4238 007 1004 Drive belt kit	4.5	39.5	0000 190 3414	0000 930 2295
TS 480i TS 500i	4238 140 4404	1110 400 7005 0000 400 7000	4250 350 3500	(12") 9490 000 7901 (14") 9490 000 7900	4	39.5	0000 190 3414	0000 930 2295
TS 460	4221 007 1002	1110 400 7005 0000 400 7000	0000 350 3500	9490 000 7850	4.5	39.5	0000 190 3414	0000 930 2295
TS 510 TS 760	4221 007 1002	1110 400 7005 0000 400 7000	0000 350 3500	(14") 9490 000 7892 (16") 9490 000 7895	4.5	39.5	0000 190 3414	0000 930 2295
TS 700	4224 007 1013	1110 400 7005 0000 400 7000	0000 350 3504	9490 000 7920	4.5	39.5	0000 190 3414	0000 930 2295
TS 800	4224 007 1013	1110 400 7005 0000 400 7000	0000 350 3504	9490 000 7915	4.5	39.5	0000 190 3414	0000 930 2295

Gasoline High Pressure Washer Chart

STIHL Model #	Air Filter	Spark Plug	Fuel Tank Filter	Starter Rope with Handle	Replacement High Pressure Hose	Set of Nozzles
RB 200	4789 124 1500	4789 400 7000	4789 358 1800	4789 190 3500	4925 500 0817	4790 007 1000
RB 400	4790 140 4400	4790 400 7000	4790 358 1800	4789 190 3500	4925 500 0817	4790 007 1000
RB 600	4791 140 4400	4790 400 7000	4790 358 1800	4789 190 3500	4925 500 0809	4791 007 1000
RB 800	4792 140 4400	4790 400 7000	4790 358 1800	4792 195 3500	4925 500 0811	4792 007 1000

Bulk Starter Rope, Ignition Lead, and Fuel Line Charts

ElastoStart™ Components (for specific unit models use parts list)

Description	Rope Diameter in Millimeters	Part Number
ElastoStart™ Assembly	3.5	0000 190 3401
ElastoStart™ Assembly	3.0	0000 190 3403
ElastoStart™ Assembly	2.7	0000 190 3403
ElastoStart™ Assembly	3.0	0000 190 3404
ElastoStart™ Assembly	3.0	0000 190 3405
ElastoStart™ Replacement Rope	4.5	1122 190 2900
ElastoStart™ Assembly	4.5	1122 190 3400
ElastoStart™ Replacement Rope	3.5	1123 190 2900
ElastoStart™ Replacement Rope	3.5	1128 190 2900
ElastoStart™ Assembly	3.5	1128 190 3400
ElastoStart™ Replacement Rope Reel (28 per spool)	3.5	0000 930 2267
ElastoStart™ Replacement Rope Reel (28 per spool)	4.5	0000 930 2268

200' Reels of Starter Rope

Rope Diameter in Millimeters	Part Number
2.7	0000 930 2210
3.0	0000 930 2211
3.5	0000 930 2212
4.5	0000 930 2213

Ignition Lead Wire

Description	Part Number
33' of Ignition Lead Wire	0000 930 2251

■ ROPE WARRANTY PART #: **4237 195 8200**



To warranty 1
starter rope use
this part.

Fuel Line

Description	Length in Feet	Length in Meters	Part Number
Black 3.1 mm x 5.7 mm (R3)	32.8	10	0712 923 8004
Grey 3.1 mm x 5.7 mm (R5)	3.28	1	0000 937 5004

Return Line

Description	Length in Feet	Length in Meters	Part Number
Black 2.2 mm x 5.5 mm (R1)	3.28	1	0000 930 2802
Black 2.2 mm x 5.5 mm (R5)	3.28	1	0000 937 5006

Vent Line

Description	Length in Feet	Length in Meters	Part Number
Black 3.0 mm	9.8	3	0000 930 2207

11 Digit Part Numbers for **STIHL®** Units & Attachments

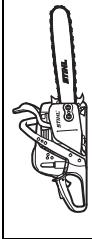
Unit	11 Digit Part Number	Unit	11 Digit Part Number
BG 50	4229 011 1722	FS 91	4180 200 0507
BG 56 C-E	4241 011 1707	FS 91 R	4180 200 0506
BG 66 L	4241 011 1708	FS 94 R	4149 200 0014
BG 86	4241 011 1710	FS 111	4180 200 0508
BG 86 C-E	4241 011 1711	FS 111 R	4180 200 0509
BGA 45	4513 011 5902	FS 111 RX	4180 200 0510
BGA 56 UNIT Only	4523 011 5901	FS 131	4180 200 0512
BGA 56	4523 011 5911	FS 131 R	4180 200 0511
BGA 85	4853 011 5901	FS 240	4147 200 0204
BGA 100	4866 011 5901	FS 240 R	4147 200 0203
BGE 61	4811 011 1513	FS 311	4180 200 0513
BGE 71	4811 011 1540	FS 360 C-E	4147 200 0224
BR 200	4241 011 1600	FSA 45	4512 011 5702
BR 350	4244 011 1601	FSA 56 UNIT Only	4522 011 5701
BR 430	4244 011 1621	FSA 56	4522 011 5711
BR 450	4244 011 1634	FSA 65	4852 011 5702
BR 450 C-EF	4244 011 1631	FSA 85	4852 011 5703
BR 500	4282 011 1616	FSA 90 R	4863 011 5721
BR 600	4282 011 1614	FSA 130 R	4867 011 5721
BR 700	4282 011 1622	FSE 60	4809 011 4100
BR 700 X	4282 011 1626	HL 45	4232 200 0002
BR 800 C-E	4283 011 1600	HL 56	4236 200 0000
BR 800 X	4283 011 1610	HL 91 K 0	4243 200 0002
BT 45 EAD	4314 200 0004	HL 94 145	4243 200 0009
BT 45 WBD	4314 200 0003	HL 94 K 0	4243 200 0010
BT 131	4313 011 2121	HL 94 K 145	4243 200 0012
FB 131	4180 011 6500	HLA 65	4859 011 2901
FC 56 C-E	4144 011 1908	HLA 85	4859 011 2921
FC 70	4144 011 1910	HOS	5202 200 0003
FC 91	4180 011 1913	HS 45 18	4228 011 2928
FC 96	4180 011 1914	HS 46 C-E	4242 011 2924
FC 111	4180 011 1915	HS 56 C-E	4242 011 2941
FS 38	4140 012 2327	HS 81 T 24	4237 011 2903
FS 40 C-E	4144 011 2307	HS 82 R 24	4237 012 2900
FS 50 C-E	4144 011 2349	HS 82 R 30	4237 012 2902
FS 56 C-E	4144 200 0133		
FS 56 RC-E	4144 200 0013		
FS 70 R	4144 200 0137		

11 Digit Part Numbers for **STIHL®** Units & Attachments

Unit	11 Digit Part Number	Unit	11 Digit Part Number
HS 82 T 24	4237 012 2910	MS 201 C-EM	1145 011 3014
HS 82 T 30	4237 012 2913	MS 201 T C-M	1145 011 3017
HS 86 R 30	4237 011 2931	MS 211 18	1139 200 0355
HS 87 R 30	4237 012 2920	MS 211 C-BE 18	1139 200 0356
HS 87 T 30	4237 012 2930	MS 241 C-M	1143 011 3095
HS 87 T 40	4237 012 2932	MS 250 18	1123 200 0722
HSA 25	4515 011 3505	MS 251 18	1143 200 0492
HSA 45	4511 011 3502	MS 251 C-BE 18	1143 200 0437
HSA 56 UNIT Only	4521 011 3501	MS 261	1141 012 3000
HSA 56	4521 011 3511	MS 261 C-M	1141 011 3095
HSA 65	4851 011 3502	MS 261 C-MQ	1141 012 3002
HSA 66	4851 011 3522	MS 271	1141 011 3041
HSA 94 R	4869 011 3513	MS 271 18	1141 200 0605
HSA 94 T	4869 011 3505	MS 271 20	1141 200 0582
HSE 52	4818 011 3508	MS 291	1141 011 3073
HSE 60	4812 011 3537	MS 291 C-BEQ	1141 011 3054
HSE 70	4812 011 3538	MS 291 18	1141 200 0589
HT 56 C-E	4139 200 0011	MS 291 20	1141 200 0583
HT 101	4182 200 0066	MS 311	1140 011 3018
HT 102	4182 200 0154	MS 362	1140 011 3022
HT 103	4182 200 0155	MS 362 C-M	1140 012 3020
HT 131	4182 200 0068	MS 362 C-MQ	1140 011 3078
HT 132	4182 200 0156	MS 362 RC-M	1140 012 3021
HT 133	4182 200 0157	MS 391	1140 011 3038
HT 250	4134 200 0315	MS 461	1128 012 3020
HTA 65	4857 011 6421	MS 461 R	1128 012 3022
HTA 85	4857 011 6401	MS 661 C-M	1144 011 3021
KM 56 RC-E	4144 200 0017	MS 661 R C-M	1144 011 3022
KM 91 R	4180 200 0503	MS 880	1124 011 3017
KM 94 R	4149 200 0043	MS 880 R	1124 011 3018
KM 111 R	4180 200 0504	MSE 170 C-BQ	1209 011 4006
KM 131 R	4180 200 0505	MSE 210 C-BQ	1209 011 4024
KMA 130 R	4867 011 6821	MSE 220	1207 011 4013
MM 55	4601 011 3903	MSE 250 C-Q	1210 011 4002
MM 55 C-E	4601 011 3905	MSA 120 C Unit	1254 011 5801
MM 56 C-E	4604 011 5403	MSA 120 C 12	1254 011 5811
MS 150 C-E	1146 011 3011	MSA 160 C-BQ	1250 011 5806
MS 150 T C-E	1146 011 3010	MSA 161 T UNIT	1252 011 5814
MS 170 16	1130 200 0370	MSA 200 C-BQ	1251 011 5806
MS 171 16	1139 200 0246		
MS 180 16	1130 200 0448		
MS 180 C-B 16	1130 200 0256		
MS 180 C-BE 16	1130 200 0372		
MS 181 C-BE 16	1139 200 0204		
MS 192 C-E	1137 011 3021		
MS 193 C-E	1137 011 3061		
MS 193 T	1137 011 3047		

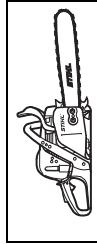
11 Digit Part Numbers for **STIHL®** Units & Attachments

Unit	11 Digit Part Number	Batteries	11 Digit Part Number
RB 200	4789 012 4600	AK 10	4520 400 6501
RB 400	4790 012 4600	AK 20	4520 400 6504
RB 600	4791 012 4600	AL 100	4850 430 2502
RB 800	4792 012 4600	AL 101	4850 430 2522
RMA 370	6320 011 1450	AL 300	4850 430 5502
RMA 410	6338 011 1450	AL 500	4850 430 5702
RMA 460	6368 011 1400	AP 100	4850 400 6521
RMA 460 V	6338 011 1410	AP 300	4850 400 6541
RMA 510	6372 011 1400	AP 300 S	4850 400 6581
RMA 510 V	6372 011 1410	AR 900	4865 400 6501
SE 62	4784 012 4406	AR 1000	4865 400 6506
SE 122	4774 012 4407	AR 2000	4865 400 6511
SG 11	4255 019 4911	AR 3000	4865 400 6521
SG 20	4247 019 4900	Hand Tools	
SG 31	4255 019 4931	PA 10	0000 882 1000
SG 51	4255 019 4951	PA 30	0000 882 1001
SG 71	4255 019 4971	PA 40	0000 882 1002
SH 56 C-E	4241 011 0905	PA 50	0000 882 1004
SH 86 C-E	4241 011 0907	PA 80	0000 882 1003
SR 200	4241 011 2623	PA 100	7010 881 1901
SR 430	4244 011 2601	PH 80	0000 882 0709
SR 450	4244 011 2643	PL 5	7010 882 0705
TSA 230	4864 011 6601	PL 10	0000 882 0701
USG	5203 200 0009	PL 30	0000 882 0702
KM/MM Attachment		PL 40	0000 882 0703
BF-KM	4601 740 5001	PP 10	0000 882 0704
BG-KM	4606 740 5001	PP 30	0000 882 0705
FBD-KM	4180 740 5000	PP 40	0000 882 0706
FCB-KM	4180 740 5003	PP 60	7010 881 3603
FCS-KM	4180 740 5005	PP 100	0000 882 0708
FH-KM	4243 740 5007	PP 101	7010 871 0407
FSB-KM	4137 740 5007	PP 600	7010 881 4102
FS-BLADE-KM	4180 200 0472	PP 70	0000 882 0707
FS-LINE-KM	4180 200 0471	PP 80	7010 882 0702
HL-KM 0	4243 740 5001	PP 800	7010 881 4103
HL-KM 0 135	4230 740 5001	PP 900	7010 882 0700
HL-KM 0 145	4243 740 5004	PS 10	0000 882 0901
HT-KM	4182 200 0158	PS 30	0000 882 0902
KB-KM	4601 740 4901	PS 40	7010 882 0900
KW-KM	4601 740 4900	PS 60	7010 882 0901
BF-MM	4601 740 4605	PS 70	0000 882 0905
BK-MM	4601 740 4606	PS 75	7010 881 4101
FCS-MM	4601 740 4603	PS 80	0000 882 0906
FS-MM	4601 740 4609	PS 90	7010 882 0902
KB-MM	4601 740 4608		
KW-MM	4601 740 4604		
MF-MM	4601 740 4607		
RL-MM	4601 740 4600		

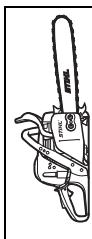


MS 170 1130		H	L															
MS 171 1139		-	-	LD = 2	-	-	30.1 (+0.05/-0.10) 0.01 (+0.002/-0.004)	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	14,000	8 6	28 20.5	50 37	7.3 (+/-2.0) 0.25 (+/-0.07)		
MS 180 1130		-	-	LD = 2	-	-	31.8 (+0.05/-0.10) 0.01 (+0.002/-0.004)	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F	0.5 0.02	2,800	14,000	8 6	28 20.5	50 37	7.3 (+/-2.0) 0.25 (+/-0.07)		
MS 181 1139		-	1 1/2 (24/16)	1	3/4 (12/16)	1 (16/16)	31.8 (+0.10/-0.10) 0.01 (+0.004/-0.004)	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	CMR 6 H	0.5 0.02	2,800	13,500	11 8	28 20.5	50 37	7.0 (+/-2.5) 0.24 (+/-0.08)		
MS 192 1137		-	1 (16/16)	1	3/4 (12/16)	1 (16/16)	30.1 (+0.10/-0.10) 0.01 (+0.004/-0.004)	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	CMR 6 H	0.5 0.02	3,000	13,500	8 6	25 18.5	25 18.5	7.5 (+/-1.5) 0.26 (+/-0.05)		
MS 192 T 1137		-	1 (16/16)	1	3/4 (12/16)	1 (16/16)	30.1 (+0.10/-0.10) 0.01 (+0.004/-0.004)	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	3,000	13,500	8 6	25 18.5	25 18.5	7.5 (+/-1.5) 0.26 (+/-0.05)		
MS 193 1137					1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1/4 (4/16)	30.1 (+0.10/-0.10) 0.01 (+0.004/-0.004)	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	CMR 6 H	0.5 0.02	3,000	13,000	8 6	25 18.5	25 18.5	8.4 (+/-1.5) 0.28 (+/-0.05)
MS 193 T 1137					1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1/4 (4/16)	30.1 (+0.10/-0.10) 0.01 (+0.004/-0.004)	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	CMR 6 H	0.5 0.02	3,000	13,000	8 6	25 18.5	25 18.5	8.4 (+/-1.5) 0.28 (+/-0.05)

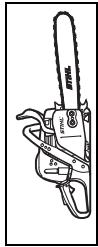


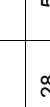
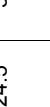
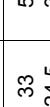
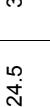
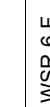
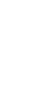
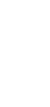
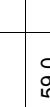
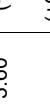
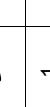
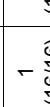
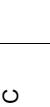
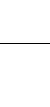
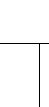
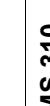


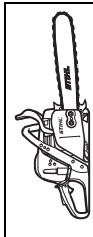
MS 250 1123	C1Q-S75 C1Q-S76 C1Q-S92	H L	– 1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	45.4 (+0.20/-0.10) 0.012 (+0.008/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	14,000	11.5 8.5	28 20.5	50 37	7.0 0.24
MS 250 C 1123	C1Q-S75	H L	– 1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 1/2 (24/16)	45.4 (+0.20/-0.10) 0.012 (+0.008/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	14,000	11.5 8.5	28 20.5	50 37	7.0 0.24
MS 251 1143	WTF-8 C1Q-S295	H L	– 1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	45.6 (+0.20/-0.10) 2.8	CMR 6 H	0.5 0.02	2,800	13,000	11.0 8	28 20.5	50 37	8.0 (+/-2.0) 0.27 (+/-0.07)
MS 251 C 1143	WTF-9 C1Q-S296	H L	– 1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (4/16)	45.6 (+0.20/-0.10) 2.8	CMR 6 H	0.5 0.02	2,800	13,000	11.0 8	28 20.5	50 37	8.0 (+/-2.0) 0.27 (+/-0.07)
MS 260 1121	WT-403 WTE-1 WTE-2	H L	– 1 (16/16)	– 1 (16/16)	– 3/4 (12/16)	– 1 (16/16)	48.7 (+0.05/-0.10) 2.96 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	14,000	10 7.5	30 22	50 37	min 4.5 (+/-2.0) max 11.5 (+/-3.0) min 0.16 (+/-0.07) max 0.4 (+/-0.10)
												11 8	33 24.5	50 37	

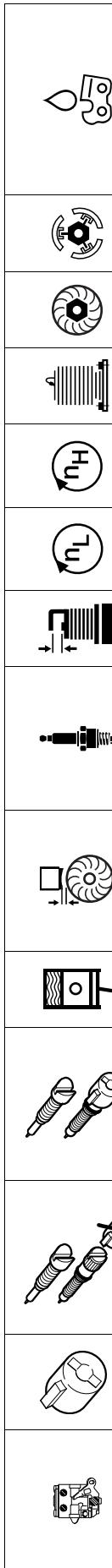
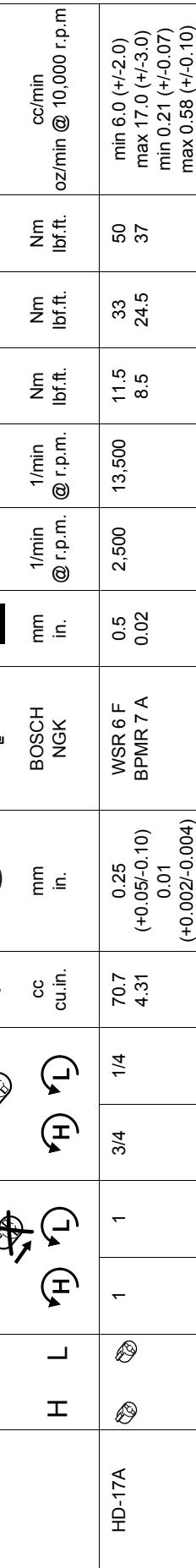
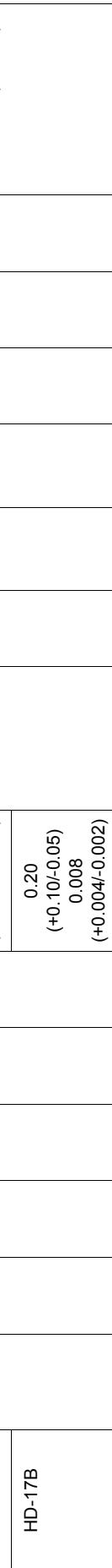
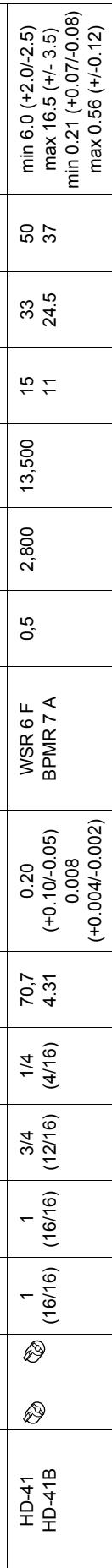
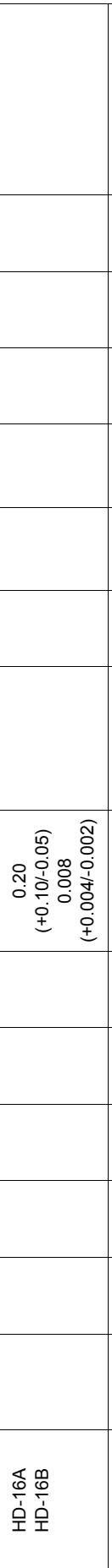
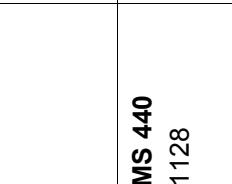
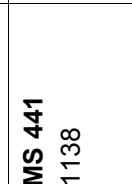
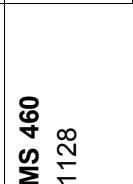
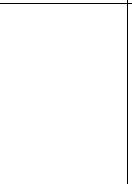
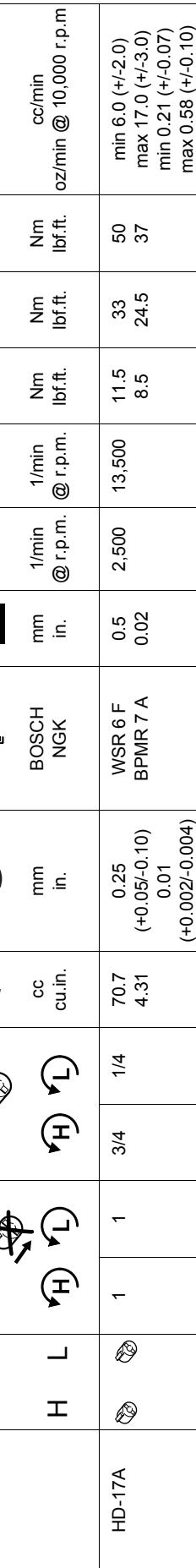
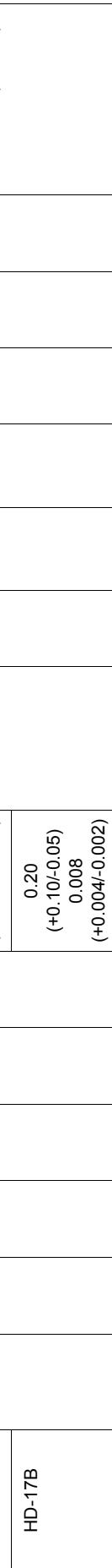
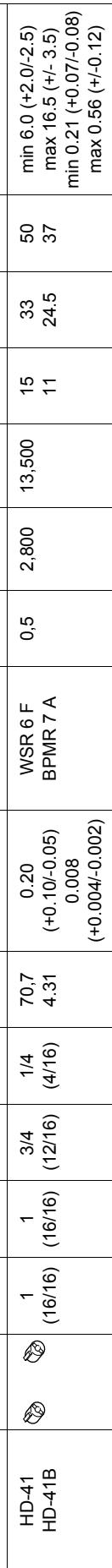
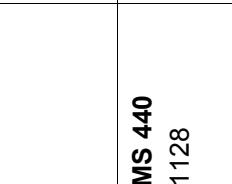
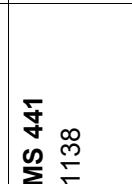
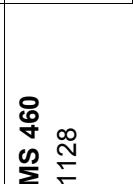
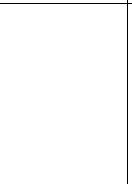
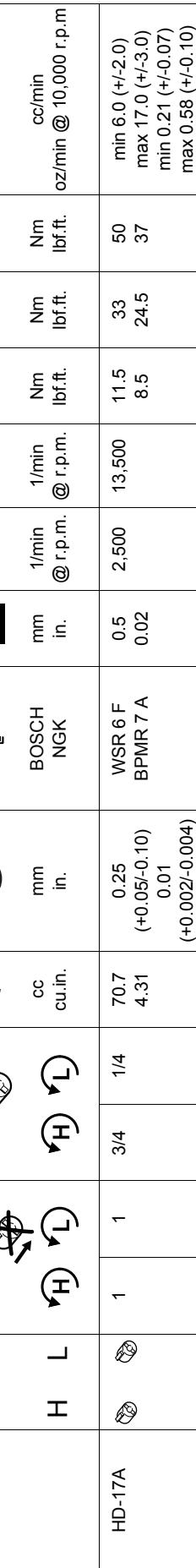
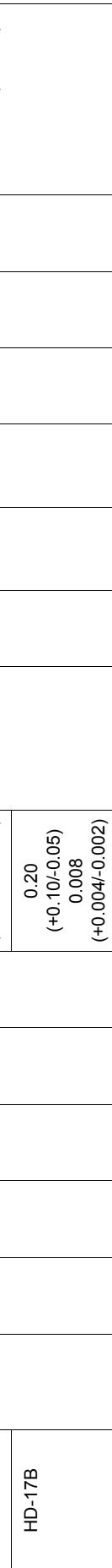
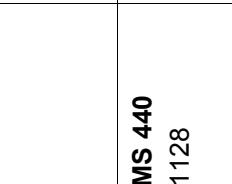
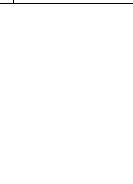
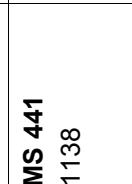
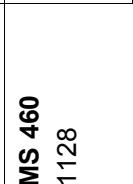
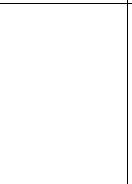


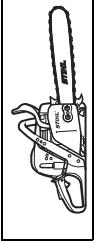
MS 261 1141	C1Q-S178	H L														
MS 270 1133	HD-33A					BOSCH NGK	mm in.	1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	oz/min @ 10,000 r.p.m	oz/min @ 10,000 r.p.m			
MS 271 1141	C1Q-S178	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	50.2 3.06	0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)	BPMR 7 A 0.5 0.02	2,800	14,000 10 7.5	28 20.5	50 37	min 4.5 (+/-2.0) max 11.5 (+/-3.0) min 0.16 (+/-0.07) max 0.4 (+/-0.10)		
MS 280 1133	HD-32A					1 1/4 (20/16)	3/4 (12/16)	1/4 (4/16)	50 3.06	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F 0.5 0.02	2,800	13,500 9 6.5	28 20.5	50 37	8.0 (+/-2.0) 0.27 (+/-0.07)
MS 280 I 1133	HD-39	-			1 1/4 (20/16)	3/4 (12/16)	1/4 (4/16)	54.7 3.34	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	13,500 9 6.5	28 20.5	50 37	10 0.34	
MS 290 1127	HD-18B				1 (16/16)	1 (16/16)	3/4 (12/16)	1/4 (4/16)	56.5 3.43	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	12,500 11 8	28 20.5	50 37	6-15 0.21-0.51
MS 291 1141	C1Q-S178 C1Q-S179	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	55.5 3.39	0.30 (+0.20/-0.05) 0.012 (+0.008/-0.006)	BPMR 7 A 0.5 0.02	2,800	13,000 11 8	28 20.5	50 37	min 6.0 (+/-2.0) max 17.5 (+3.0/-4.5) min 0.21 (+/-0.07) max 0.60 (+0.10/-0.16)		
	HD-18C										13,500			8.0 (+/-2.0) 0.27 (+/-0.07)		



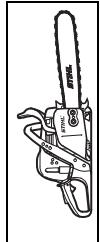
MS 310 1127	HD-21B	H L												
	HD-21C													
MS 311 1140	WTE-9	-												
MS 361 1135	HD-34A	-												
	HD-34B													
MS 362 1140	WTE-8	-												
MS 391 1140	WTE-9	-												



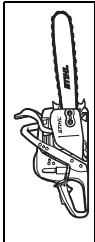
													
													
MS 440 1128 HD-17A HD-17B	H L 	cc cu.in. 	BOSCH NGK 	mm in. 	WSR 6 F BPMR 7 A 	0.5 0.02 							
MS 441 1138 HD-41 HD-41B	1 	1 	3/4 	1/4 	70,7 4,31 	0,20 							
MS 460 1128 HD-16 HD-16A HD-16B	1 	1 	3/4 	1/4 	76,5 4,67 	0,25 							
MS 660 1122 WJ-69 WJ-69B	1 	1 	3/4 	1/4 	91,6 5,59 	0,25 							

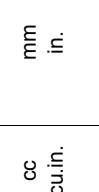
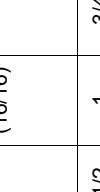
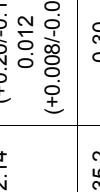


MS 880 1124	HT-12D	H L	H L	cc cu.in.	mm in.	BOSCH NGK	WSR 6 F BPMR 7 A	0.5 0.02	2,700	11,500	15 11	45 33	80 59
WG-12	(24/16)	1 1/2	1 (16/16)	1/2 (8/16)	1/4 (4/16)	121.6 7.42	(+0.05/-0.10) 0.012 (+0.002/-0.004)	0.30 0.012	2,700	11,500	45 33	80 59	min 14.0 (+/-5.0) max 36.0 (+/-5.0) min 0.48 (+/-0.17) max 1.23 (+/-0.17)
MS 461 1128	HD 50	1 1/2	1	3/4	1/4	76.5	0.2	WSR 6 F BPMR 7 A	0.5 0.02	2,500	13,500		



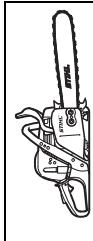
009 L 1120														
012 1120	-	-	1 (16/16)	1 (16/16)	-	-	40.8 0.20 (+0.10/-0.05)	2.49 0.008 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,800 10,500 9 6.5	25 18.5	28 20.5	8.5 (+/-2.5) 0.29 (+/-0.08)	
017 1130	C1S-S1B	-	-	1 (16/16)	1 (16/16)	1 (16/16)	45.2 0.20 (+0.10/-0.05)	2.76 0.008 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,700 10,500 9 6.5	25 18.5	25 18.5	8.5 (+/-2.5) 0.29 (+/-0.08)	
018 1130	WT-325	-	-	LD = 1	-	-	30.1 0.25 (+0.05/-0.10)	1.84 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	3,200 2,800 - 0.5	28 7	20.5	50 37	
	C1Q-S43	-	-	LD = 2	-	-	31.8 0.25 (+0.05/-0.10)	1.94 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800 2,800 - 0.5	28 7	20.5	50 37	
019 T 1132	C1Q-S43 C1Q-S57	-	-	LD = 2	-	-	35.2 0.20 (+0.05/-0.10)	2.15 0.008 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800 2,800 - 0.5	28 6	20.5	50 37	
	C1Q-S46A	-	-	1 (16/16)	-	-	35.2 0.20 (+0.10/-0.05)	2.15 0.008 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800 2,800 - 0.5	28 6	20.5	50 37	
MS 191 T 1132	C1Q-S59	-	1 (16/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	46.5 0.25 (+0.05/-0.10)	2.84 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	3,000 12,500 8 6	28 20.5	50 37	7.0 (+/-2.0) 0.24 (+/-0.07)	
020 1114	WT-15A			-	-	1 1/4 (20/16)	1 1/4 (20/16)	35.2 0.20 (+0.10/-0.05)	2.15 0.008 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,400 12,000 11.5 8.5	25 32.5	32.5 24	10.0 (+/-2.0) 0.34 (+/-0.07)

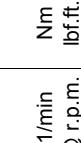
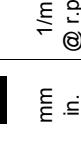
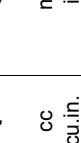
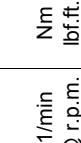
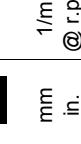
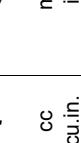
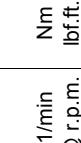
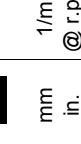
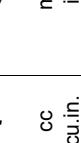
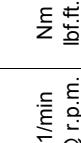
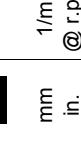
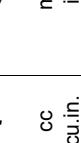
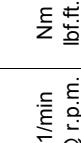
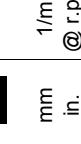
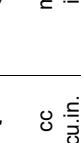
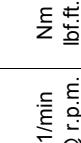
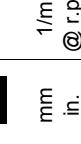
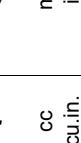
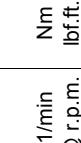
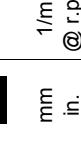
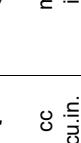
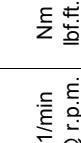
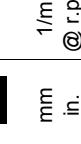
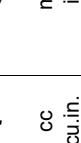


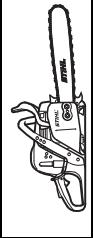
020, 020 T 1129	C1Q-S32	H L	 	 	cc cu.in.	mm in.	BOSCH NGK	 	1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	cc/min oz/min @ 10,000 r.p.m		
021 1123		- -	- 1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	35.2 2.15	0.25 (+0.15/-0.10) 0.01 (+0.006/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	14,000 11,500	11.5 8.5 11.5 8.5	25 20.5	33 24.5 28 20.5
MS 210 1123	C1Q-S77A C1Q-S90A							35.2 2.14	0.30 (+0.20/-0.10) 0.012 (+0.008/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	12,500	11.5 8.5	28 20.5	50 37
023 1123	WT-215	- -	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	40.2 2.45	0.30 (+0.20/-0.10) 0.012 (+0.008/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	12,500	11.5 8.5	28 20.5	50 37
024 1121	WT-194	- -	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	44.3 2.70	0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	13,000	10 7.5	30 22	50 37
025 1123	WT-215	- -	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	45.4 2.76	0.30 (+0.20/-0.10) 0.012 (+0.008/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	13,000	11.5 8.5	28 20.5	50 37
026 1121		- -	1 (16/16)	1 (16/16)	-	-	-	48.7 2.96	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,800	14,000	10 7.5	33 24.5	50 37
028 1118	WT-16B	- -	-	-	1 (16/16)	1 (16/16)	1 (16/16)	51.5 3.14	0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,600	12,500	7 5	30 22	50 37
														4.5-11.5 0.16-0.4	
														10.0 (+/-2.0) 0.34 (+/-0.07)	



2018 - 02 USA



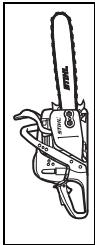
											
029 S 1127	HD-18B										
036 1125	C3A-S39										
MS 360 1125	C3A-S39										
038 1119	48A-101A										
039 1127	HD-21B										
MS 390 1127	HD-21B										
	HD-21C										

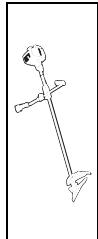


044 1128	H L	cc cu.in.	mm in.	BOSCH NGK	1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	cc/min oz/min @ 10,000 r.p.m							
HD-17A	(16/16)	(16/16)	(12/16)	3/4 1/4 (4/16)	70.7 0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,500	13,500	11.5 8.5	32.5 24	50 37	6-17 0.21-0.58				
HD-15B	- -	1 (16/16)	1 (16/16)	1 (16/16)	1 (16/16)	0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)							min 6.0 (+/-2.0) max 17.0 (+/-3.0) min 0.21 (+/-0.07) max 0.58 (+/-0.10)			
046 1128	HD-8A HD-14A	- -	1 (16/16)	1 (16/16)	1 (16/16)	0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,500	13,500	15 11	32.5 24	50 37	min 6.0 (+/-2.0) max 17.0 (+/-3.0) min 0.21 (+/-0.07) max 0.58 (+/-0.10)			
056 1115	HS-118B		- -	- 1 1/4 (20/16)	93.6 5.71 (+0.10/-0.05) 0.008 (+0.004/-0.002)	0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)	WSR 6 F 0.5 0.02	2,200	12,000	10 7.5	30 22	45 33	21.0 (+/-4.0) 0.72 (+/-0.14)			
MS 650 1122	WJ-69		1 (16/16)	1 (16/16)	3/4 (12/16)	84.9 5.18 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A 0.5 0.02	2,500	13,500	15 11	45 33	70 51.5	10-21 0.34-0.72			
	WJ-69B WJ-69A					0.20 (+0.10/-0.05) 0.008 (+0.004/-0.002)							min 10.0 (+/-4.0) max 20.5 (+/-3.5) min 0.34 (+/-0.14) max 0.69 (+/-0.12)			
066 1122	WJ-69		1 (16/16)	1 (16/16)	3/4 (12/16)	91.6 5.59 (+0.05/-0.05) 0.008 (+0.002/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,500	13,000	15 11	33 24.5	70 51.5	10-21 0.34-0.72			
084 1124	HT-7A	- -	1 (16/16)	1 (16/16)	1 (16/16)	121.6 7.42 (+0.05/-0.05) 0.01 (+0.002/-0.002)	WSR 6 F BPMR 7 A 0.5 0.02	2,000	12,500	15 11	45 33	70 51.5	min 17.0 (+/-7.0) max 25.0 (+/-4.0) min 0.58 (+/-0.24) max 0.85 (+/-0.14)			

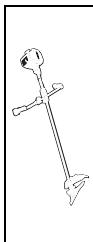


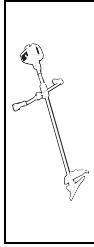
2018 - 02 USA





																									
																									
																									
																									
																									
																									
																									
																									
																									
																									
																									
						<img alt="Icon of a screw being tightened with a screwdriver." data-bbox="111																			



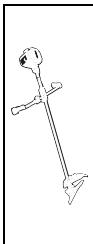


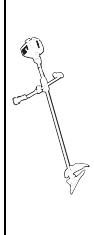
FS 91, 91 R FC 91, 96, 111 4180	C1Q-100345	H L	→H →L	→H →L	cc cu.in.	mm in.	BOSCH NGK	mm in.	1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.	mm in.	
FS 110 FC 100, 110 4180	C1Q-S72 C1Q-S81 C1Q-S88		3 1/2 (56/16)	1 3/4 (28/16)	—	—	28.4 1.73	0.25 (0.05/-0.10) 0.01 (+0.002/-0.004)	USR 7 AC 0.02	0.5 2,800	9 000 - 10 000	9 6.5	17 12.5	17 12.5	17 12.5	17 12.5	12 9	0.1 0.004	
FS 111, 111 R 4180	C1Q-100345		2 (32/16)	3 (48/16)	3/4 (12/16)	31.4 1.92	0.25 (0.05/-0.10) 0.01 (+0.002/-0.004)	USR 7 AC 0.02	0.5 2,800	10,300 - 10,700	9 6.5	17 12.5	17 12.5	17 12.5	17 12.5	17 12.5	12 9	0.1 0.004	
FS 120 4134	C1Q-S35 C1Q-S36 C1Q-S51	— —	1 (16/16)	1 (16/16)	—	—	28.4 1.73	0.25 (0.05/-0.10) 0.01 (+0.002/-0.004)	USR 7 AC 0.02	0.5 2,800	9 000 - 10 000	9 6.5	17 12.5	17 12.5	17 12.5	17 12.5	12 9	0.1 0.004	
FS 130 4180	C1Q-S98 C1Q-S131B	— —	1 3/4 (28/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	36.3 2.21	0.20 (0.10/-0.05) 0.00812 (+0.004/-0.002)	WSR 6 F BPMR 7 A 0.02	0.5 2,800	11,300 - 13,300	10 7.5	32 23.5	32 23.5	32 23.5	32 23.5	32 23.5	12 9	0.1 0.004



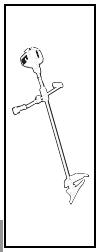
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---					
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
																				
														<img alt="Icon of a hand holding a wrench" data-bbox="1155 675 1185						

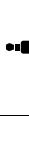
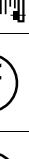
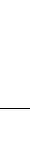
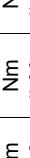
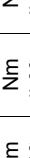
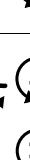
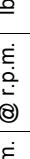
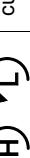
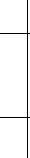
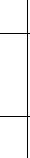
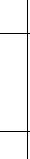
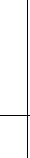
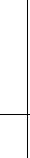
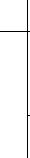
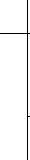
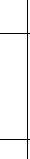
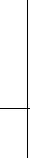
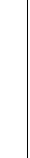
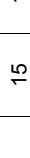
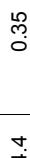
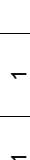
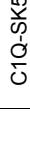
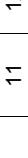
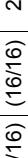
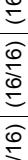
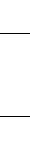
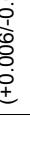
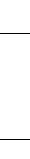
	H	L	H	L	cc cu.in.	mm in.	BOSCH NGK	mm in.	nL	nR	1/min @ r.p.m.	1/min @ r.p.m.				
FS 450, 480 4128	C1Q-S94	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	44.3 2.70	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,800 13,300	11,700- 13,300	10 7.5	32 23.5	24 17.5	
	C1Q-S154	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)					11,400- 12,800	10 7.5	28 20.5	24 18		
	C1Q-S156		1 1/2 (24/16)	1 (16/16)	1 (16/16)	3/4 (12/16)										
FS 460 C-EM 4147	WTF-7	-	-	-	-	-	45.6 2.80	0.30 (+0.05/-0.10) 0.012 (+0.002/-0.004)	CMR 6 H	0.5 0.02	2,700 12,900	11,700- 12,900	9 6.5	28 20.5	17 12.5	
FS 550 4116	HD-22 HD-31A		1 1/4 (20/16)	1 1/4 (20/16)	1/4 (4/16)	1/4 (4/16)	56.5 3.45	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,500 12,800	11,600- 12,800	12 9	30 22	24 17.5	10.5 14.5
FS 560 C-EM 4148	HDA-302	-	-	-	-	-	57.1 3.48	0.30 (+0.05/-0.10) 0.012 (+0.002/-0.004)	BPMR 7 A	0.5 0.02	2,500 12,900	11,700- 12,900	9 6.5	28 20.5	17 12.5	

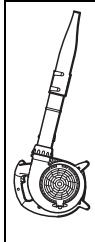




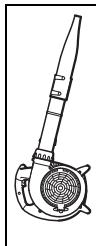
FS 25-4 4170	WYL-131	H L	→ H → L	cc cu.in.	BOSCH NGK	mm in.	1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	mm in.									
FS 56 4125	WT-45A	- -	1 (16/16) (16/16)	1 (16/16) (16/16)	1 (16/16) (16/16)	19.6 1.20	0.40 (+0.10/-0.05) 0.016 (+0.004/-0.002)	CR5 HSB	0.65 0.025	3,100	11,500				15 11			8 6	
FS 65-4 4170	WYL-135	- -	- -	- -	- -	31.0 1.89	0.40 (+0.10/-0.05) 0.016 (+0.004/-0.002)	WSR 6 F BPMR 7 A	0.5 0.02	2,800									
FS 66 4123	WT-45A	- -	1 (16/16) (16/16)	1 (16/16) (16/16)	1 (16/16) (16/16)	19.6 1.20	0.35 (+0.15/-0.15) 0.014 (+0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,700									
FS 72, 74, 76 4133	WT-227F	- -	1 (16/16) (16/16)	1 (16/16) (16/16)	1 (16/16) (16/16)	23.9 1.46	0.35 (+0.15/-0.15) 0.014 (+0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	10,500	9.5 7			20 14.5				
FS 81 4124	WT-45A	- -	1 (16/16) (16/16)	1 (16/16) (16/16)	1 (16/16) (16/16)	22.5 1.37	0.35 (+0.15/-0.15) 0.014 (+0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,700					8 6	17 12.5		17 12.5	
FS 86 4126	WT-45A	- -	1 (16/16) (16/16)	1 (16/16) (16/16)	1 (16/16) (16/16)	25.4 1.55	0.35 (+0.15/-0.15) 0.014 (+0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,800					15 11	14 10.5	7 5		



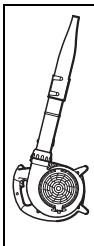
											
											
											
											
											
											
											
											
											
											
											



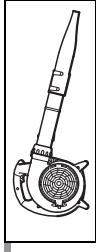
	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
BG 56, SH 56 4241	C1M-S142A C1M-S142C C1M-S142D	- (24/16)	1 1/2 (16/16)	1 (12/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	CMR 6 H	0.5 0.02	2,500 6.5	9 12.5	17 12.5	21 15.5						
BG 66 4241	C1M-S144 C1M-S144A C1M-S144B	- (24/16)	1 1/2 (16/16)	1 (12/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	CMR 6 H	0.5 0.02	2,500 6.5	9 12.5	17 12.5	21 15.5						
BG 86, SH 86 4241	C1M-S141A C1M-S141C C1M-S141D	- (24/16)	1 1/2 (16/16)	1 (12/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	CMR 6 H	0.5 0.02	2,500 6.5	9 12.5	17 12.5	21 15.5						
BR 200, SR 200 4241	C1M-X1978 C1M-S219	- (24/16)	1 1/2 (16/16)	1 (12/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	CMR 6 H	0.5 0.02	2,500 6.5	9 12.5	17 12.5	21 15.5						
BR 350 4244	C1Q-S199	- (24/16)	1 1/2 (24/16)	3/4 (24/16)	1 1/2 (24/16)	1/4 (4/16)	63.3 3.86	0.25 (+0.10/-0.10) 0.01 (+0.004/-0.004)	BPMR 7 A	0.5 0.02	3,000 8.9	12 8.9	20 18.5	35 25.8						
BR 420, SR 420 4203	HD-28A HD-45		1 (16/16)	2 1/4 (36/16)	1/4 (4/16)		56.5 3.44	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	3,100 7.5	10 7.5	25 18.5	25 18.5						



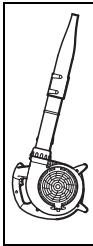
BR 430 4244	C1Q-S165	H L	H L	H L	1 1/2 (24/16) 1 (16/16)	3/4 (12/16)	1 (16/16)	63.3 (0.10/0.10) 3.86 (0.01/0.01)	BPMR 7 A	0.5 0.02	3,000 8.9	12 18.5	35 25.8
BR 450, BR 450 C 4244	C1Q-S209A				1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	63.3 (0.10/0.10) 3.86 (0.01/0.01)	BPMR 7 A	0.5 0.02	3,000 8.9	12 18.5	30 22
SR 430, 450 4244	C1Q-S165				1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	63.3 (0.10/0.10) 3.86 (0.01/0.01)	WSR 6 F BPMR 7 A	0.5 0.02	3,000 8.9	12 18.5	25 18.5
BR 500 4282	C1Q-S99				3 1/2 (56/16)	2 (32/16)	3/4 (12/16)	64.8 (0.10/0.10) 3.95 (0.01/0.01)	CMR 6 H	0.7 0.028	2,500 8.9	12 8.9	30 15
	C1Q-S99A				3 1/2 (56/16)	2 (32/16)	3/4 (12/16)	64.8 (0.10/0.10) 3.95 (0.01/0.01)	CMR 6 H	0.7 0.028	2,500 8.9	12 8.9	30 15
	C1Q-S183	-	-		3 1/2 (56/16)	2 (32/16)	-	-		0.5 0.02			
BR 550 4282	C1Q-S101				3 1/2 (56/16)	2 (32/16)	3/4 (12/16)	64.8 (0.10/0.10) 3.95 (0.01/0.01)	CMR 6 H	0.7 0.028	2,500 8.9	12 8.9	30 15
	C1Q-S101A				3 1/2 (56/16)	2 (32/16)	3/4 (12/16)	64.8 (0.10/0.10) 3.95 (0.01/0.01)	CMR 6 H	0.7 0.028	2,500 8.9	12 8.9	30 15
	C1Q-S185	-	-		3 1/2 (56/16)	2 (32/16)	-	-		0.5 0.02			



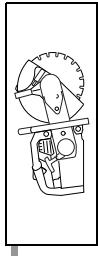
BR 600 4282	C1Q-S100	H L			3 1/2 (56/16)	2 (32/16)	3/4 (12/16)	3/4 (12/16)	64.8 3.95	0.25 (0.10/-0.10) 0.01 (0.004/-0.004)	BOSCH NGK	mm in.	1/min @ 1:p.m.	Nm lbf.ft.	Nm lbf.ft.	mm in.	
	C1QS100A																
	C1Q-S184	- -	3 1/2 (56/16)	2 (32/16)	-	-					CMR 6 H	0.7 0.028	2.500	12 8.9	20 15	30 22	0.1 0.004
	C1Q-S10347A																
BR 700 4282																	
BR 800 4283	4283/01	- -	3 1/2 (56/16)	1 1/2 (24/16)	-	-	79.9 4.88	0.25 (0.10/-0.10) 0.01 (0.004/-0.004)	CMR 6 H	0.5 0.02	2.500	12 8.9	20 15	30 22	0.1 0.004		

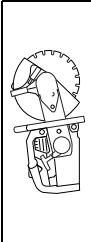


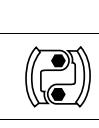
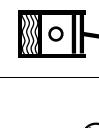
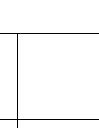
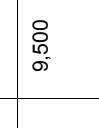
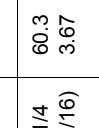
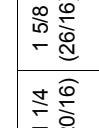
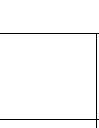
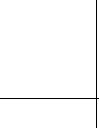
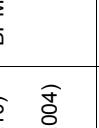
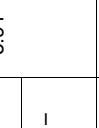
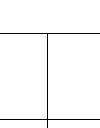
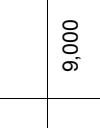
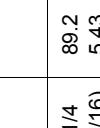
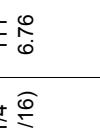
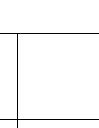
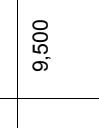
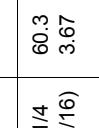
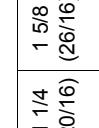
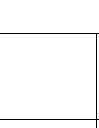
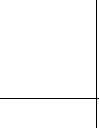
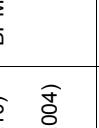
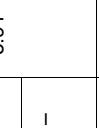
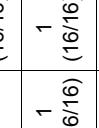
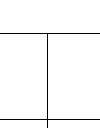
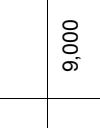
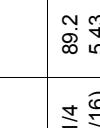
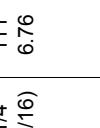
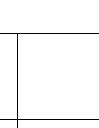
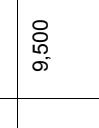
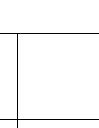
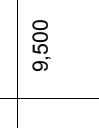
	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
BG 45, BG 46, BR 45, BR 46 4229	C1Q-S73 C1Q-S112	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.30 (0.15/-0.15) 0.012 (0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	9 6.5	17 12.5	21 15.5		
BG 55, SH 55 BG 65 4229	C1Q-S55 C1Q-S64 C1Q-S68 C1Q-S68E	-	-	-	-	-	27.2 1.66	0.30 (0.15/-0.15) 0.012 (0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	9 6.5	17 12.5	21 15.5		
BG 85, SH 85 4229	C1Q-S64 C1Q-S68	-	-	-	-	-	27.2 1.66	0.30 (0.15/-0.15) 0.012 (0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	9 6.5	17 12.5	21 15.5		
BR 200 4241	C1M-X1978	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	CMR 6 H	0.5 0.02	2,500	9 6.5	17 12.5	21 15.5		
BR 320, SR 320 4203	HD-7		2 (32/16)	2 1/2 (40/16)	1/4 (4/16)	1/4 (4/16)	44.9 2.73	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	3,100	8 6	25 18.5	25 18.5		
BR 320 L 4203	HD-13B		2 1/2 (40/16)	2 (32/16)	1/4 (4/16)	1/4 (4/16)	44.9 2.73	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	3,100	8 6	25 18.5	25 18.5		
BR 340, SR 340 4203	HD28A		1 (16/16)	2 1/4 (36/16)	1/4 (4/16)	1/4 (4/16)	44.9 2.73	0.25 (0.05/-0.10) 0.01 (0.002/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	3,100	10 7.5	25 18.5	25 18.5		

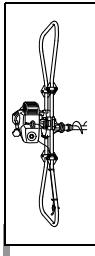


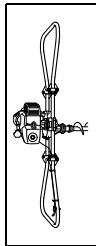
WT-580	H	L	 	 	 	 	 	 	 	 	 	 
BR 340 L 4203			1 1/8 (18/16)	2 (32/16)	1/4 (4/16)	1/4 (4/16)	44.9 (0.05/-0.10) 0.01 (0.002/-0.004)	W/SR 6 F BPMR 7 A 0.02	0.5 0.02	3,100 7.5	10 25 18.5	25 18.5
BR 380 4203			1 (16/16)	2 1/4 (36/16)	1/4 (4/16)	1/4 (4/16)	56.5 (0.05/-0.10) 0.01 (0.002/-0.004)	W/SR 6 F BPMR 7 A 0.02	0.5 0.02	3,100 7.5	10 25 18.5	25 18.5
BR 400, SR 400 4203	HD-7		2 (32/16)	2 1/2 (40/16)	1/4 (4/16)	1/4 (4/16)	56.5 (0.05/-0.10) 0.01 (0.002/-0.004)	W/SR 6 F BPMR 7 A 0.02	0.5 0.02	3,100 6	8 25 18.5	25 18.5
	HD-13B			2 1/2 (40/16)	2 (32/16)	1/4 (4/16)						



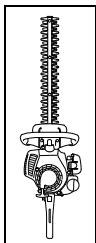


																										
TS 350 4201	HL-366 HL-371A																									
TS 400 4223	HS-279D WJ-108A	—	—	1 1/4 (20/16)	1 5/8 (26/16)	1/4 (4/16)	1/4 (4/16)	60.3 3.67	0.25 (+0.05/-0.05) 0.01 (+0.002/-0.002)	WSR 6 F BPMR 7 A	0.5 0.02	2,500		9,500 8	10.5 20.5	27.5 30.5		30 22								
TS 460 4221	HS-275B	—	—	—	1 (16/16)	1 (16/16)	—	—	64.1 3.91	0.30 (+0.10/-0.10) 0.012 (+0.004/-0.004)	WSR 6 F BPMR 7 A	0.5 0.02	2,500		9,700 7.5	10 7.5	30 22		40 29.5							
TS 510 4205	HS-280D			1 (16/16)	1 (16/16)	1/2 (8/16)	1/4 (4/16)	89.2 5.43	0.20 (+0.00/-0.05) 0.00812 (+0.000/-0.002)	WSR 6 F BPMR 7 A	0.5 0.02	1,800		9,000 7	7.5 5.5	33 24.5		78 58								
TS 760 4205	HS-281D			1 (16/16)	1 (16/16)	1/2 (8/16)	1/4 (4/16)	111 6.76	0.25 (+0.05/-0.05) 0.01 (+0.002/-0.002)	WSR 6 F BPMR 7 A	0.5 0.02	1,800		9,000 8,200 ¹⁾ 7	9.5 7	33 24.5		78 58								

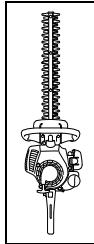




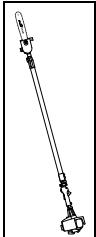
				mm in.	1/min @ r.p.m.	1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.	Nm lbf.ft.
				BOSCH NGK							
BT 120 C 4313	C1Q-S82	H L		cc cu.in.	30.8 (+0.20/-0.10) 0.012 (+0.0008/-0.0004)	0.30 (+0.20/-0.10) 0.012 (+0.0008/-0.0004)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	12,300 10.0 7.5	32 24



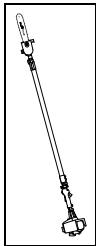
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
									<img alt="Icon of a hand holding a screwdriver" data					



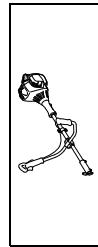
HS 75, 80, 85 4226	C1Q-S29 C1Q-S42	- -	- -	1 (16/16)	- -	25.4 0.30 (+0.15/-0.15) 0.012 (+0.006/-0.006)	WSR 6 F BPMR 7 A 0.5 0.02	2,800 10,500	9.5 7	21 15.5					
HL 73 4235	- -	- -	- -	- -	- -	25.4 0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	CMR 7 A 0.6 0.024	2,800 10,500	10 7.5	21 15.5					
HL 75, FH 75 4230	C1Q-S28 C1Q-S41	- -	- -	1 (16/16)	- -	25.4 0.30 (+0.15/-0.15) 0.012 (+0.006/-0.006)	WSR 6 F BPMR 7 A 0.5 0.02	2,800 10,500	9.5 7	21 15.5					
C1Q-S45 C1Q-S56	- -	- -	LD = 2	- -											
C1Q-S63 C1Q-S69	-	1 1/2 (24/16)	1 (16/16)	3/4 (12/16)	1 (16/16)										
HL 91, 94 4243	4149/02			1 1/2 (24/16)	2 1/2 (40/16)	- -	24.1 0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	CMR 6 H USR 4 AC 0.5 0.02	2,800 9,300	8 6	M6 12 M9 M8 16 11.8	17 12.5	17 12.5		



															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
					<img alt="Icon of a wrench with a										



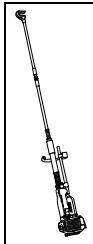
	H	L			BOSCH NGK	mm in.				1/min @ r.p.m.	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	mm in.
						cc cu.in.								
HT 73 4142	–	–	–	–	–	–	25.4 (+0.15/-0.15)	0.35 0.014 (+0.006/-0.006)	CMR 7 A 0.5 0.02	3,000	10,000- 11,000	9 6.5	19 14	19 14



														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
								<img alt="Icon of a hand holding a screwdriver" data-bbox="103						



KM 110 4180	C1Q-S72 C1Q-S81 C1Q-S88	H	L	H	L	H	L	O	T	BOSCH NGK	mm in.	1/min @ r.p.m.	η_L	η_R	1/min @ r.p.m.	Nm lbf.ft.	Nm lbf.ft.	mm in.	
KM 111 4180	C1Q-100345			2 (32/16)	3 (48/16)	3/4 (12/16)	3/4 (12/16)	31.4 1.92	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	USR 7 AC	0.5 0.02	2,800	10,500	9 6.5	17 12.5	17 12.5	12 9	0.1 0.004	
KM 130 4180	C1Q-S98			4 (64/16)	4 (40/16)	2 1/2 (12/16)	3/4 (12/16)	36.3 2.22	0.25 (+0.05/-0.10) 0.01 (+0.002/-0.004)	CMR 6 H	0.7 0.03	2,800	10,500	9 6.5	17 12.5	17 12.5	12 9	0.1 0.004	
KM 131 4180	C1Q-S176			4 (64/16)	2 (32/16)	2 -	-	-	-	CMR 6 H	0.5 0.02	2,800	9,500	9 6.5	17 12.5	17 12.5	12 9	0.1 0.004	
MM 55 4601	C1Q-S79 C1Q-S93	-	2 (32/16)	1 (16/16)	1 (16/16)	3/4 (12/16)	1 (16/16)	27.2 1.66	0.30 (+0.15/-0.15) 0.012 (+0.006/-0.006)	WSR 6 F BPMR 7 A	0.5 0.02	2,800	8,900	9 6.5	17 12.5	17 12.5			
MM 56 4604	4604/02			1 1/2 (24/16)	1 (16/16)	1 (16/16)	1 (16/16)	-	-	CMR 6 H	0.5 0.02	2,800	8,900	9 6.5	20 14.5	17 12.5			



Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
Chain Saws				
Contra Lightning	HL122D	1106 120 0606	N/A	0000 007 1056
07/07 S	HL155	1107 120 0606	N/A	0000 007 1057
08 S	HL155	1107 120 0606	N/A	0000 007 1057
	HL166	1108 120 0601/7	1106 007 1061	0000 007 1057
	LA-S8	1108 120 0608	1106 007 1061	0000 007 1084
S 10	HL155	1107 120 0606	N/A	0000 007 1057
	HL166	N/A	1106 007 1061	0000 007 1057
	HS-62	1108 120 0603	N/A	0000 007 1059
009	WA-56	1120 120 0600	N/A	0000 007 1064
	C1S-S1	1120 120 0605	4119 007 1060	0000 007 1082
	WT-323	1120 120 0606	N/A	0000 007 1065
	WT-563	1120 120 0601	N/A	N/A
	WA-99	1120 120 0602	N/A	0000 007 1063
	WT-29	1120 120 0604	N/A	0000 007 1065
	WT-21	1120 120 0603	N/A	0000 007 1065
010	WA-56	1120 120 0600	N/A	0000 007 1064
	WT-29	1120 120 0604	N/A	0000 007 1065
	C1S-S1	1120 120 0605	4119 007 1060	0000 007 1082
	WA-99	1120 120 0602	N/A	0000 007 1063
011	WT-21	1120 120 0603	N/A	0000 007 1065
	WT-29	1120 120 0604	N/A	0000 007 1065
	C1S-S1	1120 120 0605	4119 007 1060	0000 007 1082
	WA-99	1120 120 0602	N/A	0000 007 1063
012	C1S-S1	1120 120 0605	4119 007 1060	0000 007 1082
	WT-29	1120 120 0604	N/A	0000 007 1065
015	HDC-17	1116 120 0600	N/A	0000 007 1067
MS 150	C1Q-S262	1146 120 0604	1146 007 1000	7010 871 0236
020AV	WT-15	1114 120 0604	N/A	0000 007 1065
	WA-1	1114 120 0601	N/A	0000 007 1063
	WA-86	1114 120 0602	N/A	0000 007 1063
	HU-7A	1114 120 0600	N/A	0000 007 1052
017, MS 170	C1Q-S57	1130 120 0603	1130 007 1061	0000 007 1086
	WT-325	1130 120 0600	1123 007 1061 1130 007 1001	0000 007 1076
	C1Q-S43	1130 120 0601	1130 007 1061	0000 007 1086
MS 171	C1Q-S123	1139 120 0607	4229 007 1060	7010 871 0229
	C1Q-238	1139 120 0615	4229 007 1060	7010 871 0229
	C1Q-S270	1139 120 0619	4229 007 1060	7010 871 0229

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
018, MS 180	C1Q-S57	1130 120 0603	1130 007 1061	0000 007 1086
	C1Q-S43	1130 120 0601	1130 007 1061	0000 007 1086
MS 181	C1Q-S121	1139 120 0605	4229 007 1060	7010 871 0229
	C1Q-S122	1139 120 0606	4229 007 1060	7010 871 0229
	C1Q-S191	1139 120 0608	4229 007 1060	7010 871 0229
	C1Q-S239	1139 120 0616	4229 007 1060	7010 871 0229
	C1Q-S268	1139 120 0612	4229 007 1060	7010 871 0229
MS 181 C-BE	C1Q-S192	1139 120 0609	4229 007 1060	7010 871 0229
	C1Q-269	1139 120 0613	4229 007 1060	7010 871 0229
019 T	C1Q-S46	1132 120 0603	1123 007 1060	RB-72
	WT-451	1132 120 0600	1123 007 1061	0000 007 1072
MS 191T	C1Q-S59	1132 120 0604	1129 007 1062	RB-91
MS 192 T	C1Q-S103	1137 120 0600A	1129 007 1062	0000 007 1093
	C1Q-S134	1137 120 0600B	1129 007 1062	0000 007 1093
	C1Q-S257	1137 120 0650	1129 007 1062	0000 007 1093
	C1Q-S104	1137 120 0602A	1129 007 1062	0000 007 1093
MS 192 T-CE	C1Q-S135	1137 120 0602B	1129 007 1062	0000 007 1093
	C1Q-S258	1137 120 0651	1129 007 1062	0000 007 1093
MS 192 C-E	C1Q-S124	1137 120 0603	1129 007 1062	0000 007 1093
	C1Q-S259	1137 120 0652	1129 007 1062	0000 007 1093
MS 193 C-E	C1Q-S287	1137 120 0613	1137 007 1700	RB-236
MS 193 T	C1Q-S285	1137 120 0606	1137 007 1700	RB-236
020 T / MS 200	C1Q-S16	1129 120 0601	1129 007 1060	0000 007 1081
	C1Q-S32	1129 120 0650	1129 007 1062	0000 007 1093
	C1Q-S61	1129 120 0651	1129 007 1062	0000 007 1093
	WT-326	1129 120 0606	1129 007 1061	0000 007 1075
	C1Q-S96	1129 120 0607	1129 007 1061	0000 007 1093
	C1Q-S126	1129 120 0610	1129 007 1061	0000 007 1093
	C1Q-S127	1129 120 0611	1129 007 1061	0000 007 1093
MS 201 T	C1Q-S188	1145 120 0600	1145 007 1700	7010 871 0227
	C1Q-S214	1145 120 0604	1145 007 1700	7010 871 0227
	C1Q-S248	1145 120 0650	1145 007 1700	7010 871 0227
	C1Q-S250	1145 120 0608	1145 007 1700	7010 871 0227
MS 201 C-E	C1Q-S189	1145 120 0602	1145 007 1700	7010 871 0227
	C1Q-S215	1145 120 0605	1145 007 1700	7010 871 0227
	C1Q-S249	1145 120 0651	1145 007 1700	7010 871 0227
	C1Q-S284	1145 120 0653	1145 007 1700	7010 871 0227
MS 201 T C-M	C1Q-S274	1145 120 0616	1145 007 1700	RB-247
MS 201 C-EM	C1Q-S273	1145 120 0613	1145 007 1700	RB-247

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
021, MS 210	WT-215	1123 120 0605	1123 007 1061	0000 007 1072
	WT-286	1123 120 0615	1123 007 1061	0000 007 1072
	WT-503	1123 120 0614	1123 007 1061	0000 007 1072
	C1Q-S11	1123 120 0600	1123 007 1060	0000 007 1081
	C1Q-S77	1123 120 0604	1123 007 1060	0000 007 1040
	C1Q-S87	1123 120 0609	1123 007 1060	0000 007 1040
	C1Q-S90	1123 120 0619	1123 007 1060	0000 007 1040
	C1Q-S86	1123 120 0608	1123 007 1060	0000 007 1040
MS 211	C1Q-S119	1139 120 0601	4229 007 1060	7010 871 0229
	C1Q-S268	1139 120 0612	4229 007 1060	7010 871 0229
	C1Q-S240	1139 120 0617	4229 007 1060	7010 871 0229
MS 211 C-BE	C1Q-S269	1139 120 0613	4229 007 1060	7010 871 0229
	C1Q-S241	1139 120 0618	4229 007 1060	7010 871 0229
	C1Q-S120	1139 120 0602	4229 007 1060	7010 871 0229
023, MS 230	WT-215	1123 120 0605	1123 007 1061	0000 007 1072
	WT-283	1123 120 1610	1123 007 1061	0000 007 1072
	WT-286	1123 120 0615	1123 007 1061	0000 007 1072
	WT-360	1123 120 0611	1123 007 1061	0000 007 1072
	WT-396	1123 120 0613	1123 007 1061	0000 007 1072
	WT-498	1123 120 0616	1123 007 1061	0000 007 1073
	C1Q-S76	1123 120 0603	1123 007 1060	0000 007 1040
	C1Q-S92	1123 120 0620	1123 007 1060	0000 007 1040
	C1Q-S85	1123 120 0607	1123 007 1060	0000 007 1040
025, MS 250	WT-215	1123 120 0605	1123 007 1061	0000 007 1072
	WT-283	1123 120 0610	1123 007 1061	0000 007 1072
	WT-286	1123 120 0615	1123 007 1061	0000 007 1072
	WT-313	1123 120 0612	1123 007 1061	0000 007 1072
	C1Q-S11	1123 120 0600	1123 007 1060	0000 007 1081
	C1Q-S75	1123 120 0602	1123 007 1060	0000 007 1040
	C1Q-S76	1123 120 0603	1123 007 1060	0000 007 1040
	C1Q-S85	1123 120 0607	1123 007 1060	0000 007 1040
	C1Q-S242	1123 120 0607	1123 007 1060	0000 007 1040
MS 251	WTF-8	1143 120 0602	1143 007 1700	7010 871 0226
	C1Q-S233	1143 120 0605	1145 007 1700	RB-230
	C1Q-295	1143 120 0611	1143 007 1703	_____
MS 251 C-BE	WTF-9	1143 120 0632	1143 007 1700	7010 871 0226
	C1Q-S234	1143 120 0635	1145 007 1700	RB-230

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
021, MS 210	WT-215	1123 120 0605	1123 007 1061	0000 007 1072
	WT-286	1123 120 0615	1123 007 1061	0000 007 1072
	WT-503	1123 120 0614	1123 007 1061	0000 007 1072
	C1Q-S11	1123 120 0600	1123 007 1060	0000 007 1081
	C1Q-S77	1123 120 0604	1123 007 1060	0000 007 1040
	C1Q-S87	1123 120 0609	1123 007 1060	0000 007 1040
	C1Q-S90	1123 120 0619	1123 007 1060	0000 007 1040
	C1Q-S86	1123 120 0608	1123 007 1060	0000 007 1040
MS 211	C1Q-S119	1139 120 0601	4229 007 1060	7010 871 0229
	C1Q-S268	1139 120 0612	4229 007 1060	7010 871 0229
	C1Q-S240	1139 120 0617	4229 007 1060	7010 871 0229
MS 211 C-BE	C1Q-S269	1139 120 0613	4229 007 1060	7010 871 0229
	C1Q-S241	1139 120 0618	4229 007 1060	7010 871 0229
	C1Q-S120	1139 120 0602	4229 007 1060	7010 871 0229
023, MS 230	WT-215	1123 120 0605	1123 007 1061	0000 007 1072
	WT-283	1123 120 1610	1123 007 1061	0000 007 1072
	WT-286	1123 120 0615	1123 007 1061	0000 007 1072
	WT-360	1123 120 0611	1123 007 1061	0000 007 1072
	WT-396	1123 120 0613	1123 007 1061	0000 007 1072
	WT-498	1123 120 0616	1123 007 1061	0000 007 1073
	C1Q-S76	1123 120 0603	1123 007 1060	0000 007 1040
	C1Q-S92	1123 120 0620	1123 007 1060	0000 007 1040
	C1Q-S85	1123 120 0607	1123 007 1060	0000 007 1040
025, MS 250	WT-215	1123 120 0605	1123 007 1061	0000 007 1072
	WT-283	1123 120 0610	1123 007 1061	0000 007 1072
	WT-286	1123 120 0615	1123 007 1061	0000 007 1072
	WT-313	1123 120 0612	1123 007 1061	0000 007 1072
	C1Q-S11	1123 120 0600	1123 007 1060	0000 007 1081
	C1Q-S75	1123 120 0602	1123 007 1060	0000 007 1040
	C1Q-S76	1123 120 0603	1123 007 1060	0000 007 1040
	C1Q-S85	1123 120 0607	1123 007 1060	0000 007 1040
	C1Q-S242	1123 120 0607	1123 007 1060	0000 007 1040
	WTF-8	1143 120 0602	1143 007 1700	7010 871 0226
MS 251	C1Q-S233	1143 120 0605	1145 007 1700	
	C1Q-295	1143 120 0611	1143 007 1703	
MS 251 C-BE	WTF-9	1143 120 0632	1143 007 1700	7010 871 0226
	C1Q-S234	1143 120 0635	1145 007 1700	

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
024	HU-54	1121 120 0600	1118 007 1065	0000 007 1052
	WT-426	1121 120 0650	1118 007 1066	0000 007 1072
	WT-194	1121 120 0606	N/A	0000 007 1072
	WT-22	1121 120 0601	N/A	0000 007 1065
MS 241 C-M	WTF-1	1143 120 0600	1143 007 1700	7010 871 0226
026 / MS 260	WT-403	1121 120 0610	1121 007 1062	0000 007 1072
	WT-426	1121 120 0650	1121 007 1062	0000 007 1072
	WT-427	1121 120 0612	1121 007 1062	0000 007 1072
	WT-590	1121 120 0616	1121 007 1062	
	WT-194	1121 120 0606	N/A	0000 007 1072
	WT-22	1121 120 0601	N/A	0000 007 1065
	WT-394	1121 120 0608	N/A	0000 007 1072
	WT-493	1121 120 0613	1121 007 1062	0000 007 1072
	WTE-1	1121 120 0602	1121 007 1063	7010 871 0232
MS 261 / C-Q	C1Q-S178	1141 120 0600	1141 007 1006	7010 871 0202
	C1Q-S211	1141 120 0606	1141 007 1006	7010 871 0202
	C1Q-S252	1141 120 0616	1141 007 1030	7010 871 0202
	C1Q-100361	1141 120 0636	1141 007 1030	
MS 261 C-M / C-MQ	C1Q-S229	1141 120 0620	1141 007 1006	7010 871 0202
	C1Q-100362	1141 120 0630	1141 007 1030	
MS 270	HD-33	1133 120 0604	1128 007 1066	0000 007 1074
MS 271 / 291	C1Q-S178	1141 120 0600	1141 007 1006	7010 871 0202
	C1Q-S181	1141 120 0601	1141 007 1006	7010 871 0202
	C1Q-S211	1141 120 0606	1141 007 1006	7010 871 0202
	C1Q-S246	1141 120 0611	1141 007 1030	7010 871 0202
	C1Q-S252	1141 120 0616	1141 007 1030	7010 871 0202
	C1Q-100361	1141 120 0636	1141 007 1030	
MS 291 C-BEQ	C1Q-S182	1141 120 0603	1141 007 1006	7010 871 0202
	C1Q-S179	1141 120 0602	1141 007 1006	7010 871 0202
	C1Q-S212	1141 120 0610	1141 007 1006	7010 871 0202
	C1Q-S247	1141 120 0615	1141 007 1030	7010 871 0202
	C1Q-S253	1141 120 0617	1141 007 1030	7010 871 0202
028	WT-16	1118 120 0601	1120 007 1064	0000 007 1065
	HU-40	1118 120 0600	1118 007 1065	0000 007 1052
MS 280	HD-39	1133 120 0612	1128 007 1066	0000 007 1074
	HD-32	1133 120 0607	1128 007 1066	0000 007 1074
029 / MS 290	HD-5	1127 120 0601	1127 007 1060	0000 007 1074
	HD-18	1127 120 0604	1127 007 1062	0000 007 1074
	HD-19	1127 120 0650	1127 007 1062	0000 007 1074

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
030 / 031	HU-3G	1113 120 0600	N/A	0000 007 1052
	WA-2	1113 120 0602	N/A	0000 007 1063
MS 310	HD-19	1127 120 0650	1127 007 1062	0000 007 1074
	HD-21	1127 120 0605	1127 007 1062	0000 007 1074
MS 311 / 391	WTE-9	1140 120 0601	1140 007 1004	7010 871 0232
	WTE-16	1140 120 0603	1140 007 1004	7010 871 0232
032	HU-51	1113 120 0604	1118 007 1060	0000 007 1052
	WA-49	1113 120 0603	1113 007 1060	0000 007 1063
034	C3A-S19	1125 120 0606	1128 007 1065	0000 007 1079
	C3A-S26	1125 120 0608	N/A	0000 007 1079
	C3A-S31	1125 120 0651	1128 007 1065	0000 007 1079
	C3A-S38	1125 120 0617	1128 007 1065	0000 007 1079
	C3A-S39	1125 120 0615	1125 007 1065	0000 007 1079
	HK-43	1125 120 0600	1119 007 1065	0000 007 1060
	C3A-S4	1125 120 0604	N/A	0000 007 1079
036 / MS 360	C3A-S27	1125 120 0609	1128 007 1065	0000 007 1079
	C3A-S31	1125 120 0651	1128 007 1065	0000 007 1079
	C3A-S39	1125 120 0615	1128 007 1065	0000 007 1079
	C3A-S52	1125 120 0612	1128 007 1065	0000 007 1079
	C3A-S65	1125 120 0614	1128 007 1065	0000 007 1079
MS 361	HD-34	1135 120 0601	1128 007 1066	0000 007 1074
MS 362	WTE-8	1140 120 0600	1140 007 1004	7010 871 0232
	WTE-18	1140 120 0604	1140 007 1004	7010 871 0232
	WTE-22	1140 120 0610	1140 007 1004	
MS 362 C-M	C1Q-S235	1140 120 0604	1140 007 1700	7010 871 0254
	1140/15	1140 120 0615	1140 007 1703	
038	Bing 48-A 101	1119 120 0650	1119 007 1062 (DG)	1119 007 1066 (RK)
	HK-42	1119 120 0601	N/A	0000 007 1060
	HK-29A	1119 120 0600	N/A	0000 007 1054
	HK-29B	1119 120 0600	N/A	0000 007 1060
	C3-S148	1119 120 0605	N/A	
039, MS 390	HD-5	1127 120 0601	1127 007 1060	0000 007 1074
	HD-19	1127 120 0650	1127 007 1062	0000 007 1074
	HD-21	1127 120 0605	1127 007 1062	0000 007 1074
040	HS-29D	1110 120 0603	N/A	0000 007 1053
041	HS-138B	1110 120 0607/9	N/A	0000 007 1059
	HS-77C	1110 120 0606	N/A	0000 007 1053
	HS-181C	1110 120 0610	N/A	0000 007 1053
	HS-138B	1110 120 0607/9	N/A	0000 007 1059
	HS-208B	1110 120 0611	N/A	0000 007 1053

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
042	WS-3	1117 120 0600	N/A	0000 007 1069
	WS-13	1117 120 0600	N/A	0000 007 1069
	WS-14	1117 120 0602	N/A	0000 007 1070
	WS-25	1117 120 0603	N/A	0000 007 1070
044 / MS 440	HD-10	1128 120 0619	1128 007 1066	0000 007 1071
	HD-11	1128 120 0620	1128 007 1066	0000 007 1071
	HD-15	1128 120 0625	1128 007 1066	0000 007 1074
	HD-17	1128 120 0622	1128 007 1066	0000 007 1074
	C3M-S5E	1128 120 0601	1128 007 1065	0000 007 1080
	C3M-S5G	1128 120 0617	1128 007 1065	0000 007 1080
	C3M-S12B	1128 120 0615	1128 007 1065	0000 007 1080
	C3M-S12A	1128 120 0603	1128 007 1065	0000 007 1080
	C3M-S20	1128 120 0606	1128 007 1065	0000 007 1080
	C3M-S22	1128 120 0611	1128 007 1065	0000 007 1080
	C3M-S23	1128 120 0616	1128 007 1065	0000 007 1080
	C3M-S24	1128 120 0618	1127 007 1065	0000 007 1080
MS 441	HD-41	1138 120 0600	1128 007 1066	0000 007 1074
MS 441 C-M	HD-47	1138 120 0605	1128 007 1066	7010 871 0230
	HD-49	1138 120 0606	1128 007 1066	7010 871 0230
	HD-49	1138 120 0650	1128 007 1066	7010 871 0230
046, MS 460	HD-8	1128 120 0610	N/A	0000 007 1071
	HD-9	1128 120 0620	N/A	0000 007 1071
	HD-14	1128 120 0624	1128 007 1066	0000 007 1074
	HD-16	1128 120 0623	1128 007 1066	0000 007 1074
	HD-18	N/A	N/A	0000 007 1074
MS 461	HD-24	1128 120 0626	1128 007 1066	0000 007 1074
	HD-50	1128 120 0629	1128 007 1066	0000 007 1074
MS 462	1142/03	1142 120 0603	1142 007 1700	
045	HS-118	1115 120 0600	1115 007 1060	0000 007 1058
048	WS-14	1117 120 0602	N/A	0000 007 1070
	WS-25	1117 120 0603	N/A	0000 007 1070
050	WS-11	N/A	1111 007 1060	0000 007 1070
	HS-60	1111 120 0601	1115 007 1060	0000 007 1059
051	WS-11	N/A	1111 007 1060	0000 007 1070
	HS-60	1111 120 0601	1115 007 1060	0000 007 1059
056	HS-118	1115 120 0600	1115 007 1060	0000 007 1058
	WJ-4	1115 120 0602	1122 007 1060	0000 007 1066
064	Bing 49-A	1122 120 0603	N/A	1122 007 1061
	WJ-10	1122 120 0602	1122 007 1060	0000 007 1066
	WJ-6	1122 120 0601	1122 007 1060	0000 007 1066
	WJ-48	1122 120 0613	1122 007 1060	0000 007 1066

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
066 / MS 660 / MS 650	WJ-65	1122 120 0616	1122 007 1060	0000 007 1066
	WJ-34	1122 120 0608	1122 007 1060	0000 007 1066
	WJ-35	1122 120 0607	1122 007 1060	0000 007 1066
	WJ-41	1122 120 0605	N/A	0000 007 1066
	WJ-42	1122 120 0609	N/A	0000 007 1066
	WJ-48	1122 120 0613	1122 007 1060	000 007 1066
	WJ-51	1122 020 0616	1122 007 1060	0000 007 1066
	WJ-52	1122 120 0615	1122 007 1060	0000 007 1066
	WJ-65	1122 120 0616	1122 007 1060	0000 007 1066
	WJ-67	1122 120 0621	1122 007 1060	0000 007 1066
	WJ-69	1122 120 0618	1122 007 1060	0000 007 1066
	WJ-76	1122 120 0623	1122 007 1060	0000 007 1066
	WJ-86	1122 120 0606	1122 007 1060	0000 007 1066
MS 661 C-M	WJ-134	1144 120 0610	1144 007 1700	7010 871 0256
	WJ-140	1144 120 0612	1144 007 1700	
070	LB-S9	1106 120 0650	1106 007 1061	0000 007 1084
	HL-244	1106 120 0607	1106 007 1060	0000 007 1055
	HL-324	1106 120 0611	1106 007 1060	0000 007 1055
076	WS-11	N/A	1111 007 1060	0000 007 1070
	HS-60	1111 120 0601	1115 007 1060	0000 007 1059
	WS-26	1111 120 0605	1111 007 1060	0000 007 1070
084	HT-1	1124 120 0600	1124 007 1060	0000 007 1059
	HT-2	1124 120 0602	1124 007 1060	0000 007 1059
	HT-3	1124 120 0603	1124 007 1060	0000 007 1059
	HT-5	1124 120 0605	1124 007 1060	0000 007 1059
	HT-7	1124 120 0607	1124 007 1060	0000 007 1059
088 / MS 880	HT-11A	1124 120 0608	1124 007 1060	0000 007 1062
	HT-11B	1124 120 0608	1124 007 1060	0000 007 1061
	HT-12	1124 120 0609	1124 007 1060	0000 007 1061
	WG-12	1124 120 0611	1124 007 1061	
	WG-13	1124 120 0613	1124 007 1061	
090	LB-S9	1106 120 0650	1106 007 1061	0000 007 1084
	HL-244	1106 120 0607	N/A	0000 007 1056
	HL-324	1106 120 0611	1106 007 1060	0000 007 1055
Blowers / Sprayers				
BG 45	C1Q-S48	4229 120 0601	4229 007 1062	0000 007 1088
	C1Q-S73	4229 120 0605	4229 007 1060	0000 007 1039
	C1Q-S112	4229 120 0607	4229 007 1060	
BG 46	C1Q-S73	4229 120 0605	4229 007 1060	0000 007 1039
	C1Q-S112	4229 120 0607	4229 007 1060	

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
BR 45	C1Q-S73	4229 120 0605	1129 007 1060	0000 007 1039
	C1Q-S112	4229 120 0607	4229 007 1060	
BG 50	C1Q-100332	4229 120 0608	4229 007 1060	
	C1Q-100332D	4229 120 0610	4229 007 1700	
	4229/10	4229 120 0650	4229 007 1700	
BG 55 / 65 / 85	C1Q-S50	4229 120 0600	1129 007 1062	0000 007 1088
	C1Q-S55	4229 120 0604	1129 007 1062	0000 007 1091
	C1Q-S64	4229 120 0603	1129 007 1062	0000 007 1091
	C1Q-S68	4229 120 0606	4229 007 1060	
BG 60	WT-38	4117 120 0605	N/A	0000 007 1065
	Teikei	4210 120 0601	N/A	N/A
BG 61	WT-38	4117 120 0605	N/A	0000 007 1065
SH 55 / 85	C1Q-S50	4229 120 0600	1129 007 1062	0000 007 1088
	C1Q-S55	4229 120 0604	1129 007 1062	0000 007 1091
	C1Q-S64	4229 120 0603	1129 007 1062	0000 007 1091
	C1Q-S68	4229 120 0606	4229 007 1060	
BG 72	WT-253	4227 120 0600	4133 007 1060	0000 007 1073
	WT-330	4227 120 0601	4133 007 1060	0000 007 1073
BG 75	C1Q-S30	4227 120 0602	4227 007 1060	0000 007 1085
	C1Q-S47	4227 120 0604	4227 007 1060	0000 007 1089
	WT-413	4227 120 0603	4133 007 1060	0000 007 1073
BG/SH 56	C1M-S142	4241 120 0601	4241 007 1002	7010 871 0205
BG 66	C1M-S144	4241 120 0602	4241 007 1002	7010 871 0206
	C1M-S205	4241 120 0609	4241 007 1002	7010 871 0206
BG/SH 86	C1M-S141	4241 120 0600	4241 007 1002	7010 871 0205
	C1M-S203	4241 120 0607	4241 007 1002	7010 871 0205
	C1M-S228	4241 120 0606	4241 007 1002	7010 871 0205
BR 106	C1Q-SK6	4222 120 0600	4132 007 1061	0000 007 1078
BR 200	C1M-S201	4241 120 0604	4241 007 1002	7010 871 0205
	C1M-S205	4241 120 0609	4241 007 1002	7010 871 0206
	C1M-S206	4241 120 0610	4241 007 1002	7010 871 0205
	C1M-S219	4241 120 0611	4241 007 1002	7010 871 0205
BR 320 / 400	HD-2	4203 120 0600	4116 007 1061	0000 007 1071
	HD-4	4203 120 0601	4116 007 1061	0000 007 1071
	HD-7	4203 120 0602	N/A	0000 007 1074
	HD-13	4203 120 0603	4116 007 1061	0000 007 1071
BR 320 L	WT-230	4203 120 0605	4203 007 1061	0000 007 1073
	WT-331	4203 120 0606	4116 007 1061	0000 007 1073
	WT-489	4203 120 0607	4203 007 1061	0000 007 1073
BR 340 / 420	HD-28	4203 120 0608	4116 007 1061	0000 007 1071
	HD-29	4203 120 0604	4116 007 1061	0000 007 1071

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
BR 340 L	WT-580	4203 120 0609	4203 007 1061	0000 007 1072
BR 350	C1Q-S199	4244 120 0601	4228 007 1051	7010 871 0222
	C1Q-S209	4244 120 0603	4228 007 1051	7010 871 0222
BR 380	HD-45	4203 120 0610	4203 007 1061	0000 007 1071
BR 430/ BR 450	C1Q-S165	4244-120-0602	4228 007 1051	7010 871 0222
	C1Q-S209	4244 120 0603	4228 007 1051	7010 871 0222
	C1Q-S220	4244 120 0606	4228 007 1051	7010 871 0222
BR 500	C1Q-S99	4282 120 0600	4180 007 1061	
	C1Q-S99A	4282 120 0603	4180 007 1061	
	C1Q-S183	4282 120 0606	4180 007 1061	
BR 550	C1Q-S101	4282 120 0602	4180 007 1061	
	C1Q-S101A	4282 120 0605	4180 007 1061	
	C1Q-S185	4282 120 0608	4180 007 1061	
BR 600/ BR 700	C1Q-S100	4282 120 0601	4180 007 1061	
	C1Q-S100A	4282 120 0605	4180 007 1061	
	C1Q-S184	4282 120 0607	4180 007 1061	
	C1Q-100347C	4282 120 0611	4282 007 1700	
BR 800	4283/01	4283 120 0601	4283 007 1700	
Hedge Trimmers				
HS 45	C1Q-S49	4228 120 0600	1129 007 1062	0000 007 1088
	C1Q-S54	4228 120 0601	1129 007 1062	0000 007 1094
	C1Q-S67	4228 120 0603	1129 007 1062	
	C1Q-S70	4228 120 0606	4228 007 1051	0000 007 1039
	C1Q-S169	4228 120 0608	4228 007 1051	7010 871 0222
HS 46 / HS 56	C1T-S195E	4242-120-0600 E	4242 007 1700	7010 871 0231
	C1T-S195F	4242 120 0600 F	4242 007 1701	7010 871 0385
HS 60	WT-189	4211 120 0602	4211 007 1060	0000 007 1072
HS 61	WT-189	4211 120 0602	4211 007 1060	0000 007 1072
HS 72 / 74 / 76	WT-264	4226 120 0600	4133 007 1060	0000 007 1073
	WT-329	4226 120 0601	4133 007 1060	0000 007 1073
HS 75 / 80 / 85	C1Q-S29	4226 120 0602	4227 007 1060	0000 007 1085
	C1Q-S42	4226 120 0604	4227 007 1060	0000 007 1089
	WT-412	4226 120 0603	4133 007 1060	0000 007 1073
HS 81 / 86	C1Q-S105	4237 120 0601	4229 007 1060	
	C1Q-S115	4237 120 0604	4229 007 1060	
	C1Q-S196	4237 120 0609	4229 007 1060	
	C1Q-S218	4237 120 0612	4229 007 1060	
HS 81 T C-E	C1Q-S140	4237 120 0606	4229 007 1060	
	C1Q-S198	4237 120 0611	4229 007 1060	
HS 82 / 87	C1Q-S292	4237 120 0615	4229 007 1060	

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
HL 45	C1Q-S44	4140 120 0600	4227 007 1060	0000 007 1085
	C1Q-S53	4140 120 0601	4227 007 1060	0000 007 1089
	C1Q-S58	4140 120 0610	4227 007 1060	0000 007 1091
	C1Q-S66	4140 120 0603	1129 007 1062	0000 007 1094
	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S153	4140 120 0616	4140 007 1060	7010 871 0222
	C1Q-S186	4140 120 0619	4140 007 1060	7010 871 0222
	C1Q-S291	4140 120 0625	4228 007 1051	7010 871 0222
HL 56	C1M-S267	4144 120 0608	4144 007 1012	
HL 73 / 73 K	WYA-1	N/A	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2	4141 120 0600	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2D	4141 120 0601	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
HL 75	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1089
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
	C1Q-S157	4137 120 0614	4140 007 1060	0000 007 1039
HL 90	C1Q-S131	4180 120 0608	4180 007 1060	
	C1Q-S110	4180 120 0604	4180 007 1060	
	C1Q-S174	4180 120 0611	4180 007 1060	
HL 91	RC2-S243	4149 120 0600	4149 007 1700	7010 871 0246
HL 94	RC2-S243	4149 120 0600	4149 007 1700	7010 871 0246
HL 100	C1Q-S72	4180 120 0600	4180 007 1060	
	C1Q-S131	4180 120 0608	4180 007 1060	
	C1Q-S110	4180 120 0604	4180 007 1060	
	C1Q-S88	4180 120 0603	4180 007 1060	0000 007 1041
	C1Q-S174	4180 120 0611	4180 007 1060	
STIHL YARD BOSS®				
MM 55	C1Q-S79	4140 120 0607	4140 007 1060	0000 007 1039
	C1Q-S93	4140 120 0609	4140 007 1060	0000 007 1039
MM 56	4604/02	4604 120 0602	4241 007 1002	

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
Line Trimmers/ Brushcutters				
FH 75	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1089
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
	C1Q-S157	4137 120 0614	4140 007 1060	0000 007 1039
FS 08	HL-166	1108 120 0601	1106 007 1061	0000 007 1057
FS 20	HS-138B	1110 120 0609	N/A	0000 007 1059
FS 36	WT-160	4130 120 0601	4130 007 1060	0000 007 1072
	WT-492	4130 120 0603	4130 007 1060	0000 007 1072
	WT-327	4130 120 0602	N/A	0000 007 1072
FS 38	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S291	4140 120 0625	4228 007 1051	7010 871 0222
FS 38 (2-MIX)	C1Q-S216	4140 120 0621	N/A	7010 871 0247
FS 40 (OLD)	WT-160	4130 120 0601	4130 007 1060	0000 007 1072
	WT-492	4130 120 0603	4130 007 1060	0000 007 1072
	WT-327	4130 120 0602	N/A	0000 007 1072
FS 40	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
	C1M-207	4144 120 0603	4241 007 1002	7010 871 0205
	C1M-S208	4144 120 0604	4241 007 1002	7010 871 0205
FS 44	WT-160	4130 120 0601	4130 007 1060	0000 007 1072
	WT-492	4130 120 0603	4130 007 1060	0000 007 1072
	WT-327	4130 120 0602	N/A	0000 007 1072
FS 45	C1Q-S44	4140 120 0600	4227 007 1060	0000 007 1085
	C1Q-S53	4140 120 0601	4227 007 1060	0000 007 1089
	C1Q-S58	4140 120 0610	4227 007 1060	0000 007 1091
	C1Q-S66	4140 120 0603	1129 007 1062	0000 007 1094
	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S153	4140 120 0616	4140 007 1060	7010 871 0222
	C1Q-S186	4140 120 0619	4140 007 1060	7010 871 0222

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
FS 46	C1Q-S44	4140 120 0600	4227 007 1060	0000 007 1085
	C1Q-S53	4140 120 0601	4227 007 1060	0000 007 1089
	C1Q-S58	4140 120 0610	4227 007 1060	0000 007 1091
	C1Q-S66	4140 120 0603	1129 007 1062	0000 007 1094
	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S153	4140 120 0616	4140 007 1060	7010 871 0222
	C1Q-S186	4140 120 0619	4140 007 1060	7010 871 0222
FS 48	WT-45	4126 120 0600	N/A	0000 007 1065
	WT-112	4132 120 0600	4117 007 1061	0000 007 1065
FS 51	WT-38	4117 120 0605	N/A	0000 007 1065
	Teiki	4118 120 0600	N/A	
FS 50 (OLD)	WT-38	4117 120 0605	N/A	0000 007 1065
	Teikei	4118 120 0600	N/A	
FS 50	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
	C1M-S207	4144 120 0603	4241 007 1002	7010 871 0205
	C1M-S208	4144 120 0604	4241 007 1002	7010 871 0205
FS 52	WT-45	4126 120 0600	N/A	0000 007 1065
	WT-112	4132 120 0600	4117 007 1061	0000 007 1065
FS 55	C1Q-S44	4140 120 0600	4227 007 1060	0000 007 1085
	C1Q-S53	4140 120 0601	4227 007 1060	0000 007 1089
	C1Q-S58	4140 120 0610	4227 007 1060	0000 007 1091
	C1Q-S66	4140 120 0603	1129 007 1062	0000 007 1094
	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S153	4140 120 0616	4140 007 1060	7010 871 0222
	C1Q-S186	4140 120 0619	4140 007 1060	7010 871 0222
FS 56 (OLD)	WT-45	4126 120 0600	N/A	0000 007 1065
	WT-112	4132 120 0600	4117 007 1061	0000 007 1065
FS 56	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
	C1M-S207	4144 120 0603	4241 007 1002	7010 871 0205
	C1M-S208	4144 120 0604	4241 007 1002	7010 871 0205
FS 60	Teikei	4114 120 0610	N/A	
FS 61	WT-38	4117 120 0605	N/A	0000 007 1065
	Teikei	4114 120 0610	N/A	
FS 62	WT-112	4132 120 0600	N/A	0000 007 1065
	WT-45	4126 120 0600	N/A	0000 007 1065

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
FS 65	WT-38	4117 120 0605	N/A	0000 007 1065
	Teikei	4114 120 0610	N/A	N/A
FS 66	WT-112	4132 120 0600	N/A	0000 007 1065
	WT-45	4126 120 0600	N/A	0000 007 1065
FS 70	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
	C1M-207	4144 120 0603	4241 007 1002	7010 871 0205
	C1M-S208	4144 120 0604	4241 007 1002	7010 871 0205
FS 72	WT-227	4133 120 0600	4133 007 1060	0000 007 1073
	WT-329	4226 120 0601	4133 007 1060	0000 007 1073
FS 74	WT-227	4133 120 0600	4133 007 1060	0000 007 1073
	WT-329	4226 120 0601	4133 007 1060	0000 007 1073
FS 75	WT 447	4137 120 0601	4133 007 1060	0000 007 1073
	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1085
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
FS 76	WT-227	4133 120 0600	4133 007 1060	0000 007 1073
	WT-329	4226 120 0601	4133 007 1060	0000 007 1073
FS 80 (OLD)	Teikei	4112 120 0611	N/A	N/A
FS 80	WT 447	4137 120 0601	4133 007 1060	0000 007 1073
	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1085
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
FS 81	WT-45	4126 120 0600	N/A	0000 007 1065
	WT-112	4132 120 0600	4117 007 1061	0000 007 1065
FS 83 / 83 T	WYA-1	N/A	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2	4141 120 0600	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2D	4141 120 0601	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
FS 85	WT-447	4137 120 0601	4133 007 1060	0000 007 1073
	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1085
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
FS 86	WT-45	4126 120 0600	N/A	0000 007 1065
	WT-112	4132 120 0600	4117 007 1061	0000 007 1065
FS 88	WT-45	4126 120 0610	4117 007 1061	0000 007 1065
	WT-367	4126 120 0611	4117 007 1061	0000 007 1065
FS 90 (OLD)	WT-38	4117 120 0605	N/A	0000 007 1065
FS 90	C1Q-S110	4180 120 0604	4180 007 1060	RB-160
	C1Q-S131	4180 120 0608	4180 007 1060	RB-165
	C1Q-S174	4180 120 0611	4180 007 1060	RB-165
FS 91 - FS 91 R	C1Q-100345	4180 120 0615	4180 007 1035	RB-287
FS 94 R	RC2-S243	4149 120 0600	4149 007 1700	7010 871 0246
FS 96	WT-38	4117 120 0605	N/A	0000 007 1065
FS 100	C1Q-S72	4180 120 0600	4180 007 1060	0000 007 1041
	C1Q-S81	4180 120 0602	4180 007 1060	0000 007 1041
	C1Q-S88	4180 120 0603	4180 007 1060	0000 007 1041
	C1Q-S131	4180 120 0608	4180 007 1060	RB-165
	C1Q-S174	4180 120 0611	4180 007 1060	RB-165
FS 106	WT-45	4126 120 0610	4117 007 1061	0000 007 1065
	WT-112	4132 120 0600	4117 007 1061	0000 007 1065
	C1Q-SK5	4135 120 0600	4134 007 1060	0000 007 1078
FS 108	C1Q-SK7	4135 120 0601	4132 007 1061	0000 007 1078
FS 110	C1Q-S72	4180 120 0600	4180 007 1060	0000 007 1041
	C1Q-S81	4180 120 0602	4180 007 1060	0000 007 1041
	C1Q-S88	4180 120 0603	4180 007 1060	0000 007 1041
	C1Q-S131	4180 120 0608	4180 007 1060	RB-165
	C1Q-S174	4180 120 0611	4180 007 1060	RB-165
FS 111	C1Q-100345	4180 120 0615	4180 007 1035	RB-287
FS 120	C1Q-S35	4134 120 0600	4134 007 1060	0000 007 1078
	C1Q-S36	4134 120 0601	4134 004 1060	0000 007 1078
	C1Q-S51	4134 120 0651	4134 007 1060	0000 007 1078
FS 130	C1Q-S98	4180 120 0601	4180 007 1061	RB-162
	C1Q-S130	4180 120 0607	4180 007 1061	RB-162
	C1Q-S176	4180 120 0610	4180 007 1061	RB-162
FS 131	C1Q-100344	4180 120 0614	4180 007 1035	RB-288

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
FS 150	HDC-17	1116 120 0600	N/A	0000 007 1067
FS 160	C1S-S2	4119 120 0601	1120 007 1061	0000 007 1082
	C1S-S3	4119 120 0602	4119 007 1061	0000 007 1039
FS 180	C1S-S2	4119 120 0601	1120 007 1061	0000 007 1039
	C1S-S3	4119 120 0602	4119 007 1061	0000 007 1039
FS 200 (1114)	HU-7A	1114 120 0600	N/A	0000 007 1052
FS 200	C1Q-S35	4134 120 0600	4134 007 1060	0000 007 1078
	C1Q-S36	4134 120 0601	4134 007 1060	0000 007 1078
	C1Q-S51	4134 120 0651	4134 007 1060	0000 007 1078
FS 220	WT-51	4119 120 0601	N/A	0000 007 1065
	WT-70	4119 120 0604	N/A	0000 007 1065
	C1S-S2	4119 120 0601	1120 007 1061	0000 007 1039
	C1S-S3	4119 120 0602	4119 007 1060	0000 007 1039
FS 240	WTF-10	4147 120 0605	4147 007 1700	7010 871 0226
FS 250	C1Q-S35	4134 120 0600	4134 007 1060	0000 007 1078
	C1Q-S51	4134 120 0651	4134 007 1060	0000 007 1078
	C1Q-S36	4134 120 0601	4134 007 1060	0000 007 1078
FS 280	C1S-S2	4119 120 0601	1120 007 1061	0000 007 1039
	C1S-S3	4119 120 0602	4119 007 1060	0000 007 1039
	WT-223	4119 120 0601	1120 007 1061	0000 007 1039
FS 310	C1Q-98	4180 120 0601	4180 007 1061	
	C1Q-S130	4180 120 0607	4180 007 1061	
	C1Q-S133	4180 120 0606	4180 007 1061	
	C1Q-S176	4180 120 0613	4180 007 1061	
FS 311	C1Q-100344	4180 120 0614	4180 007 1035	
FS 350	C1Q-S35	4134 120 0600	4134 007 1060	0000 007 1078
	C1Q-S36	4134 120 0601	4134 007 1060	0000 007 1078
	C1Q-S51	4134 120 0651	4134 007 1060	0000 007 1078
FS 360 (OLD)	HD-1	4116 120 0600	N/A	0000 007 1071
	HD-3	4116 120 0601	4116 007 1061	0000 007 1071
FS 360 C-E	WTF - 5	4147 120 0600	4147 007 1700	7010 871 0226
	WTF-10	4147 120 0605	4147 007 1700	7010 871 0226
FS 410 (OLD)	HS-138	1110 120 0609	N/A	0000 007 1059
FS 410	WTF-6	4147 120 0600	4147 007 1700	
FS 420	HD-3	4116 120 0601	4116 007 1061	0000 007 1071
FS 400	C1Q-S33	4128 120 0601	4134 007 1060	0000 007 1078
	C1Q-S94	4128 120 0603	1129 007 1062	0000 007 1094
	C1Q-S34	4128 120 0651	4134 007 1060	0000 007 1078
FS 450	C1Q-S33	4128 120 0601	4134 007 1060	0000 007 1078
	C1Q-S94	4128 120 0603	1129 007 1062	0000 007 1094
	C1Q-S34	4128 120 0651	4134 007 1060	0000 007 1078

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
FS 460 C-EM FS 460 C-EM	WTF - 7	4147 120 0603	4147 007 1700	7010 871 0226
	WTF-12	4147 120 0608	4147 007 1700	7010 871 0226
FS 550	HD-22	4116 120 0603	4116 007 1061	0000 007 1071
	HD-23	4116 120 0602	4116 007 1061	0000 007 1071
	HD-31	4116 120 0606	4116 007 1061	0000 007 1071
FS 560 C-EM	HDA-302	4148 120 0601	4148 007 1700	7010 871 0233
	HDA-311	4148 120 0602	4148 007 1700	7010 871 0233
STIHL PowerSweep™				
KW 85	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
	C1Q-S157	4137 120 0614	4140 007 1060	0000 007 1039
Pole Pruners				
HT 56	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
HT 73	WYA-1	N/A	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2	4141 120 0600	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2D	4141 120 0601	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
HT 70 / 75	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1089
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
	C1Q-157	4137 120 0614	4140 007 1060	0000 007 1039
	C1Q-S66	4140 120 0603	1129 007 1062	0000 007 1094
HT 100 / 101	C1Q-S131	4180 120 0608	4180 007 1060	
	C1Q-S110	4180 120 0604	4180 007 1060	
	C1Q-S88	4180 120 0603	4180 007 1060	0000 007 1041
HT 102 / 103	C1Q-100345	4180 120 0615	4180 007 1035	
	C1Q-S130	4180 120 0607	4180 007 1061	
	C1Q-98	4180 120 0601	4180 007 1061	
	C1Q-S176	4180 120 0610	4180 007 1061	
HT 132 / 133	C1Q-100344	4180 120 0614	4180 007 1035	

Carburetor Reference Charts & Kits

Kombi Powerheads				
Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
KM 55	C1Q-S66	4137 120 0603	1129 007 1062	0000 007 1094
	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S153	4140 120 0616	4140 007 1060	7010 871 0222
	C1Q-S186	4140 120 0619	4140 007 1060	7010 871 0222
KM 56	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
KM 85	C1Q-S69	4137 120 0608	4229 007 1060	0000 007 1039
	C1Q-S63	4137 120 0606	1129 007 1060	0000 007 1094
	C1Q-S157	4137 120 0614	4140 007 1060	0000 007 1039
KM 90	C1Q-S110	4180 120 0604	4180 007 1060	
	C1Q-S131	4180 120 0608	4180 007 1060	
	C1Q-S174	4180 120 0611	4180 007 1060	
KM 91	C1Q-100345	4180 120 0615	4180 007 1035	
KM 94	RC2-S243	4149 120 0600	4149 007 1700	7010 871 0246
	4149/02	4149 120 0602	4149 007 1701	
KM 110	C1Q-S72	4180 120 0600	4180 007 1060	0000 007 1041
	C1Q-S81	4180 120 0602	4180 007 1060	0000 007 1041
	C1Q-S88	4180 120 0603	4180 007 1060	0000 007 1041
	C1Q-S110	4180 120 0604	4180 007 1060	
	C1Q-S131	4180 120 0608	4180 007 1060	
	C1Q-S174	4180 120 0611	4180 007 1060	
KM 111	C1Q-100345	4180 120 0615	4180 007 1035	
KM 130	C1Q-S98	4180 120 0601	4180 007 1061	
	C1Q-S130	4180 120 0607	4180 007 1061	
	C1Q-S176	4180 120 0610	4180 007 1061	
KM 131	C1Q-100344	4180 120 0614	4180 007 1035	
Edgers				
FC 44	WT 160	4130 120 0601	4130 007 1060	0000 007 1072
	WT-492	4130 120 0603	4130 007 1060	0000 007 1072
	WT-327	4130 120 0602	1123 007 1061	0000 007 1072
FC 55	C1Q-S44	4140 120 0600	4227 007 1060	0000 007 1085
	C1Q-S53	4140 120 0601	4227 007 1060	0000 007 1089
	C1Q-S58	4140 120 0610	4227 007 1060	0000 007 1091
	C1Q-S66	4140 120 0603	1129 007 1062	0000 007 1094
	C1Q-S71	4140 120 0606	4140 007 1060	0000 007 1039
	C1Q-S97	4140 120 0612	4140 007 1060	0000 007 1039
	C1Q-S186	4140 120 0619	4140 007 1060	7010 871 0222
FC 56	C1M-S145B	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
	C1M-207	4144 120 0603	4241 007 1002	7010 871 0205
	C1M-S208	4144 1210 0604	4241 007 1002	7010 871 0205

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
FC 70	C1M-S145	4144 120 0600	4241 007 1002	7010 871 0205
	C1M-S146	4144 120 0601	4241 007 1002	7010 871 0205
	C1M-207	4144 120 0603	4241 007 1002	7010 871 0205
	C1M-S208	4144 120 0604	4241 007 1002	7010 871 0205
FC 72	WT-227	4133 120 0600	4133 007 1060	0000 007 1073
	WT-329	4226 120 0601	4133 007 1060	0000 007 1073
FC 73	WYA-1	N/A	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2	4141 120 0600	4141 007 1009 (DG) 4141 007 1002 (RB)	K20-WYA
	WYA-2D	4141 120 0601	4141 007 1003 (DG) 4141 007 1002 (RB)	K20-WYA
FC 75	C1Q-S28	4137 120 0600	4227 007 1060	0000 007 1085
	C1Q-S41	4137 120 0602	4227 007 1060	0000 007 1085
	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	WT-447	4137 120 0601	4133 007 1060	0000 007 1073
FC 83	WY-A1	4141 120 0601	4141 007 1002	
FC 85	C1Q-S45	4137 120 0603	4227 007 1060	0000 007 1085
	C1Q-S56	4137 120 0604	4227 007 1060	0000 007 1089
	C1Q-S63	4137 120 0606	1129 007 1062	0000 007 1094
	C1Q-S69	4137 120 0608	4140 007 1060	0000 007 1039
FC 90	C1Q-S110C	4180 120 0604	4180 007 1060	0000 007 1041
	C1Q-S131B	4180 120 0608	4180 007 1060	0000 007 1041
FC 91 / 96 / FC 111	C1Q-100345	4180 120 0615	4180 007 1035	
FC 95	C1Q-S110C	4180 120 0604	4180 007 1060	0000 007 1041
	C1Q-S131B	4180 120 0608	4180 007 1060	0000 007 1041
FC 110	C1Q-S72	4180 120 0600	4180 007 1060	0000 007 1041
	C1Q-S81	4180 120 0602	4180 007 1060	0000 007 1041
	C1Q-S131B	4180 120 0608	4180 007 1060	0000 007 1041
FB 131	C1Q-100344	4180 120 0614	4180 007 1035	
STIHL Cutquik® Cut-Off Machines				
GS 461	HD-50	1128 120 0629	1128 007 1066	0000 007 1074
TS 08	HL-166	1108 120 0601	1106 007 1061	0000 007 1057
	HL-292	1108 120 0604	1106 007 1061	0000 007 1057
TS 50	HS-212	4205 120 0600	1115 007 1060	0000 007 1059
TS 200	HU-7A	1114 120 0600	N/A	0000 007 1052
TS 350	HL-292	1108 120 0604	1106 007 1061	0000 007 1057
	HL-371	4201 120 0610	4201 007 1060	0000 007 1057
	HL-372	4201 120 0611	4201 007 1060	0000 007 1057

Carburetor Reference Charts & Kits

Carburetor Kits				
Model Number	Carb Model	Carb Number	IPL Repair Kit	Vendor Repair Kit
TS 350 AV	HL-327	4201 120 0601	4201 007 1060	0000 007 1057
	LA-S168	4308 120 0600	4201 007 1060	0000 007 1084
TS 360	HL-327	4201 120 0601	4201 007 1060	0000 007 1057
	LA-S168	4308 120 0600	4201 007 1060	0000 007 1084
TS 400	HS-274	4223 120 0600	1124 007 1060	0000 007 1061
	HS-279	4223 120 0650	1124 007 1060	0000 007 1061
	WJ-108	4223 120 0652	1122 007 1060	0000 007 1066
TS 410 / 420	C1Q-S118	4238 120 0600	4238 007 1060	4238 007 1061
TS 440	C1Q-S118	4238 120 0600	4238 007 1060	4238 007 1061
TS 460	HS-276	4221 120 0650	1124 007 1060	0000 007 1061
	HS-275	4221 120 0651	1124 120 1060	0000 007 1061
TS 510	HS-277	4205 120 0601	1115 007 1060	0000 007 1062
	HS-280	4205 120 0602	1115 007 1060	0000 007 1062
	HS-281	4205 120 0603	1115 007 1060	0000 007 1062
	HS-212	4205 120 0600	1115 007 1060	0000 007 1059
TS 700 / 800	HS-314	4224 120 0600	4224 007 1008	
	WJ-114	4224 120 0601	1122 007 1060	0000 007 1066
TS 760	HS-212	4205 120 0600	1115 007 1060	0000 007 1059
	HS-277	4205 120 0601	1115 007 1060	0000 007 1059
	HS-280	4205 120 0602	1115 007 1060	0000 007 1062
	HS-281	4205 120 0603	1115 007 1060	0000 007 1062
	HS-212	4205 120 0600	1115 007 1060	0000 007 1059
Auger and Drill				
BT 45	C1Q-S74/A/B	4314 120 0600	4314 007 1051	
	C1Q-S74D	4314 120 0600	4314 007 1051	
BT 106	SK5	4135 120 0602	N/A	
	C1Q-SK5	4135 120 0600	4132 007 1061	0000 007 1078
BT 120	C1Q-S36	4134 120 0601	4134 007 1060	0000 007 1078
	C1Q-S51	4134 120 0651	4134 007 1060	0000 007 1078
	C1Q-S82	4134 120 0603	1129 007 1062	0000 007 1088
	C1Q-S161	4134 120 0652	4128 007 1060	7010 871 0228
BT 121	C1Q-S82	4134 120 0603	1129 007 1062	0000 007 1088
	C1Q-S161	4134 120 0652	4128 007 1060	7010 871 0228
BT 130	C1Q-S176	4180 120 0610	4180 007 1061	
BT 131	C1Q-100344	4180 120 0614	4180 007 1035	
BT 360	HL-327	4201 120 0601	4201 007 1060	0000 007 1057
	LA-S168	4308 120 0600	4201 007 1060	0000 007 1084

Carburetor Reference Charts & Kits

Carburetor Jets

Jet Size MM	Jet Part Number
.26	4229 121 5604
.32	4180 121 5600
.34	4137 121 5603
.35	4229 121 5602
.36	4229 121 5601
.37	4229 121 5603
.38	4237 121 5600
.39	4228 121 5602
.40	1132 121 5640
.41	4137 121 5600
.42	1123 121 5642
.42	4137 121 5601
.43	4228 121 5600
.44	1123 121 5653
.44	1130 121 5601
.45	1130 121 5604
.46	1123 121 5631
.50	1129 121 5600
.52	1121 121 5602
.52	1132 121 5604
.54	1130 121 5600
.55	1123 121 5625
.56	1120 121 5600
.58	1127 121 5602
.60	1122 121 5608
.62	1122 121 5603
.65	1122 121 5606

Short Blocks

Part Number	Series/Unit
4180 020 0200	FS 110/100 RX, KM 110, HT 101, HL 100, FC 100, FC 110, HT 100
4180 020 0201	HT 130, FS 130, KM 130, HT 131, FS 310
4180 020 0202	FS 90, FC 90, FC 95, KM 90, HL 90
4180 020 0203	FS 111, HT 103, HT 102, KM 111, FC 111
4180 020 0204	FC 91, FS 91, FC 96, KM 91
4180 020 0205	FS 131/311, HT 133, FB 131, KM 131, HT 132, BT 131
4282 020 0200	BR 500/550/600/700
4283 020 0200	BR 800



STIHL seven day satisfaction guarantee program allows STIHL retailers to receive a credit of 10% of retailer cost on serial numbered units if returned within seven days of purchase. A customer can return a STIHL serial numbered unit to you, the selling STIHL Retailer, for a refund (including taxes) or an exchange within seven consecutive days of purchase. TS, TSA, GS, RMI, FSA, RE & RB units do not qualify for the seven day Satisfaction Guarantee Warranty. The unit must be returned to the original selling retailer. Please complete form below and email or fax with a copy of the product registration form. Copy of registration not required if product is registered through STIHL eService.

Satisfaction claim forms must be submitted within 30 days of product return date.

Retailer Information

Date Sent: _____

STIHL Retailer #: _____

Retailer Name: _____

Customer Information

Customer Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Product Information

Date Sold: _____

Date Returned: _____

Serial #: _____

Model / Part #: _____

Reason for Return:

Submitted by: _____



PHONE 513-248-2000 FAX 877-756-4676
EMAIL: info@bryanequipment.com



Retailer Labor Rate Certificate

Account #_____

Retailer Name: _____

Address: _____

Phone Number: _____

My Distributor is:



I hereby certify that my posted retail shop labor rate is \$_____ per hour and that this is the true and correct rate that I charge all retail customers and is reflected on my invoices.

Included are copies of two (2) verifiable shop invoices for proof of rates.

Print Name: _____

Email Address: _____

Date: _____

Please email, or fax this information to:



margiege@bryanequipment.com
Fax: (877) 756-4676

Frequent Asked Questions

STIHL Service Communication (SSC)
Choose Serial Number when unit is from 2008 or later



confidential

Serial number - STIHL Service Communication

File View Language ?

STIHL

HOME CATALOG SHOPPING CART SEARCH SERIAL NUMBER NEWS

Serial number

Serial number 516509898 Search

BR 600-Z

Type the serial number in search box & click "Search"

STIHL Service Communication (SSC)
When Serial Number is NOT available Select Version



File View Language ?

STIHL HINT: ALL USA VERSIONS END WITH THE LETTER "Z"

HOME CATALOG SHOPPING CART SEARCH SERIAL NUMBER

03-2017-USA

Favorites

Navigation

- MS 210, MS 210 C
- MS 211, MS 211 G
- MS 230, MS 230 C
- MS 231, MS 231 C, MS 251, MS 251 C
- MS 241 C
- MS 250, MS 250 C
- MS 260, MS 260 C
- MS 261, MS 261 C
- MS 270, MS 270 C, MS 280, MS 280 C
- MS 271, MS 271 C, MS 281, MS 281 C
- MS 290, MS 310, MS 390
- MS 311, MS 391
- MS 360
- MS 360 C
- MS 361, MS 361 C
- MS 362, MS 362 C

Crankcase

Cylinder, Muffler

Oil pump, Clutch

Chain brake

Chain tensioner, Chain sprocket cover

Ignition system, Wire harness

Version

- (1) MS 362
- (2) MS 362 C-B
- (3) MS 362 C-M
- (4) MS 362 C-M R/W/Z
- (5) MS 362 C-M R2
- (6) MS 362 C-M V/W
- (7) MS 362 C-M V/W/Z
- (8) MS 362 C-MQ
- (10) MS 362 C-MQ Z
- (11) MS 362 C-G
- (12) MS 362 C-G Z
- (13) MS 362 C-G V/W/Z
- (14) MS 362-RZ
- (15) MS 362-VW
- (18) MS 362-VW/Z
- (17) MS 362-Z

Description

Crankcase

Cylinder, Muffler

Oil pump, Clutch

Chain brake

Chain tensioner, Chain sprocket cover

Ignition system, Wire harness

75 Element(s)

Frequent Asked Questions

Oil passage leak, fix

STIHL®

confidential

- 0000 953 1001 Grub Screw
 - Use to repair chainsaw which has a missing oil bore plug
 - MS 170/180; MS 210/230/250; MS 290/310/390
 - Use red lock tight and be sure to leave one thread exposed



Oversize Bar Studs

STIHL®

confidential

- MS 290/310/390 Bar Mount, polymer housings:
 - Oversize Collar Screw 1127 664 2410 DG 9
- MS 271/291/311/391
 - Oversize collar screw 0000 664 2411
- 3005 Bar Mount, polymer housings:
 - Oversize Collar Screw 1123 664 2405 DG 9
 - MS 170/180, MS 171/181, MS 191, MS192,
 - MS210/230/250, and MS 211/231/251
- MS 193C/193T
 - Oversize collar screw 0000 664 2415



Frequent Asked Questions

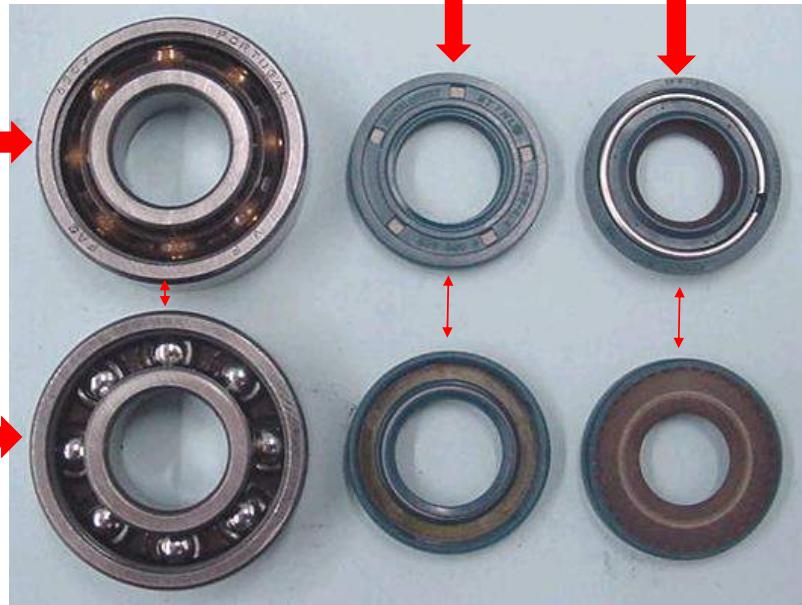
Two types of crankcase seals (various models)

STIHL®

Use this style seal when
Cylinder / Pan split

Use this style seal when
Cylinder / Pan Not split

- This side faces away from the crankshaft counterweight



- This side faces towards the crankshaft counterweight

HT 103 / HT 133 Chain Conversion (from 1/4 to 3/8)

STIHL®

confidential

- 3/8" Picco can be used
- Sprocket: 0000 640 2003
- 14" Bar (3/8 Picco, .043 gauge)
 - BAR: 3005 008 3909
 - Chain: 61 PMM3 50
- 14" Bar (3/8 Picco, .50 gauge)
 - Bar: 3005 000 4809
 - Chain: 63 PM3 50



Frequent Asked Questions

Spare Part Kits for Rock Boss Chain



:confidential

Technical Information 05.2014

5. Spare parts

Chain type	Model number	Kit Tie straps ¹⁾	Kit Drive links without tang ²⁾	Kit Drive links with tang ³⁾
36 GBM	3210	3210 007 1000	3210 662 1151	3210 662 1150
36 GBE	3211			

¹⁾ Contains 5 tie straps and 5 preset tie straps

²⁾ Contains 5 drive links without tang

³⁾ Contains 5 drive links with tang

Heli Coil Kit: 5910 850 5200....\$272.10



STIHL offers a complete Heli coil kit which includes installation tools.



5910 850 5200 Heli coil kit complete

9795 003 0260 Heli coil thread insert M4 x 8 (included in kit)

9795 003 0350 Heli coil thread insert M5 x 7.5

9795 003 0360 Heli coil thread insert M5 x 10 (included in kit)

9799 003 0410 Heli coil thread insert M6 x 15.4

9795 003 0460 Heli coil thread insert M6 x 12 (included in kit)

9795 003 0660 Heli coil thread insert M8 x 16 (included in kit)

9795 003 0760 Heli coil thread insert M10 x 20

9795 003 4610 Heli coil thread insert M14 x 1.25 x 8.4 (in kit)

STIHL also offers threaded inserts for the purpose of polymer thread repair

STIHL does not offer
The 10 mm spark plug
Heli coil repair kit

9795 003 0840 Threaded Insert M4 X 10

9795 003 0353 Threaded Insert M5 X 10

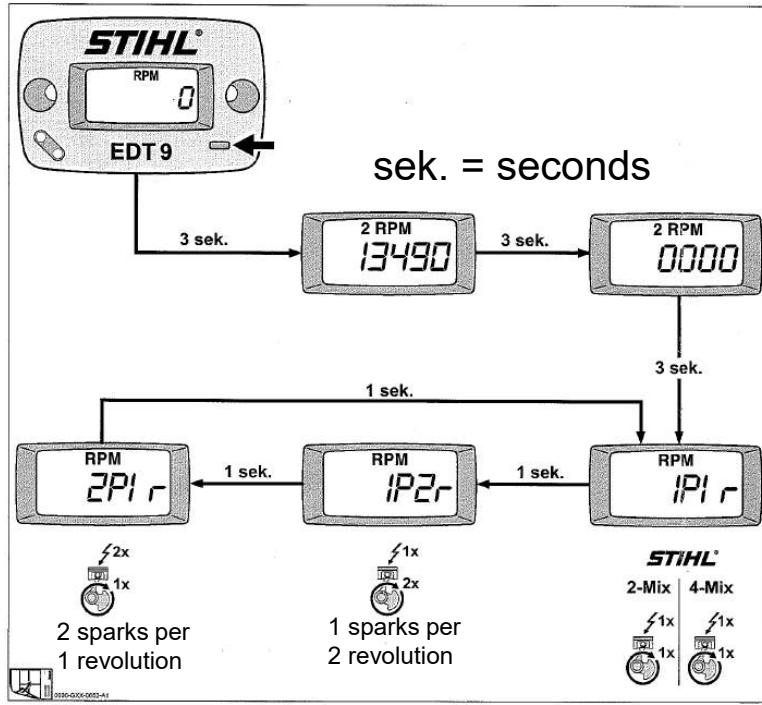
Frequent Asked Questions

EDT 9 Mode Settings

5910 850 1100

STIHL®

confidential



IPI r means 1 Pulse (spark event) per 1 crankshaft revolution, and is the setting for all STIHL engines

Drive Bits for cordless drill and other tools

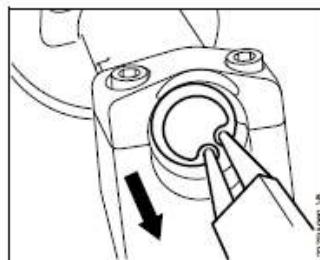
STIHL®

confidential

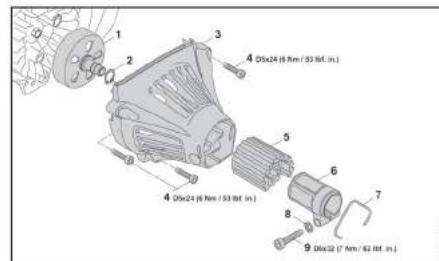
- 0812 540 1016 (T-20)
- 0812 540 1112 (T-27)



- 0816 630 1452



- 0816 610 1495



Frequent Asked Questions

Carb Service Tools



confidential

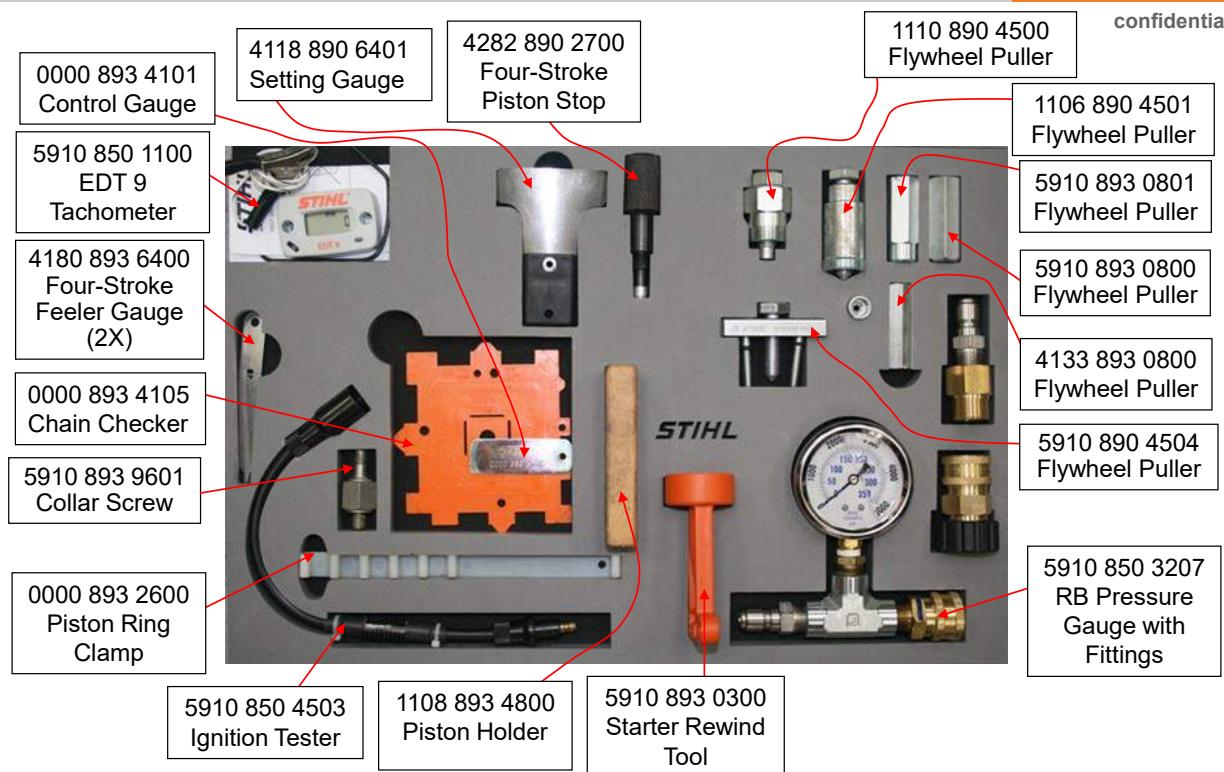


- All of these are necessary for service and repair of STIHL carburetors today
- 5910 890 4502
- 5910 890 4501
- 5910 890 4500
- 5910 890 2310
- 5910 890 2307
- 5910 890 2306
- 5910 890 2305
- 5910 890 2304

Drawer Layout



confidential



Frequent Asked Questions

Drawer Layout

STIHL®

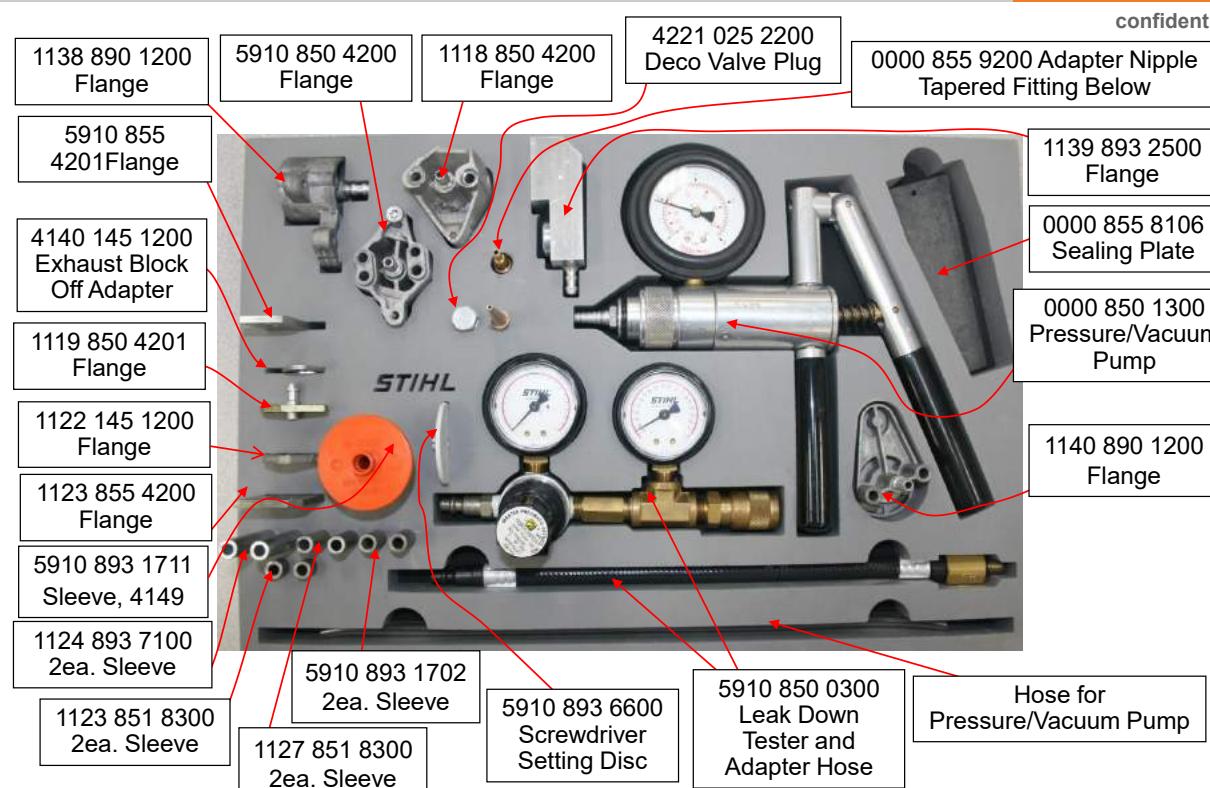
confidential



Drawer Layout

STIHL®

confidential



Frequent Asked Questions

The screenshot shows the STIHL Service Communication SSC website. In the top right corner, there is a red arrow pointing down to the search bar which contains the text "MDG1". The main content area displays the "Diagnostic unit MDG 1" product page. It features a diagram of the diagnostic unit with numbered components (1 through 11) and a table of contents for the assembly details. The table lists two items: Reference 5910 840 0210 (QTY 1) and Description Diagnostic unit MDG 1, and Reference 0910 840 0201 (QTY 1) and Description Diagnostic unit.

Find MDG1 in STIHL Service Communication SSC
By typing in MDG1 to look at component part numbers
7 Bluetooth USB stick: 5910 840 1501 (reference TI 55.2017)

Most Current Version of MDG1 has Gray dot on Power Supply Side
5910 840 0210

STIHL®

confidential



Original Version had
Two Black dots on
Power supply side



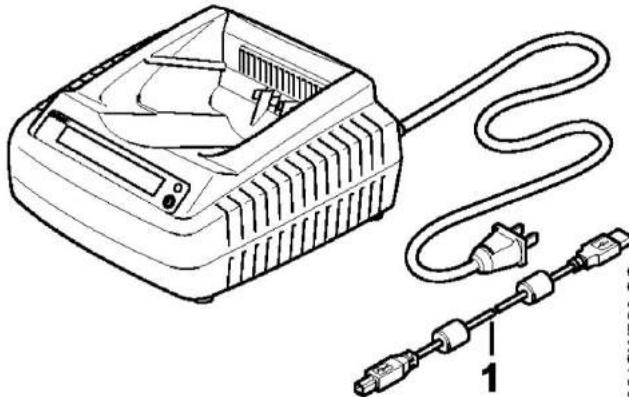
Current Version has
One Black dot & One Gray dot
On Power supply side

Frequent Asked Questions

ADG1 Analyzer for Battery Diagnostic: 4850 840 0102

STIHL®

confidential

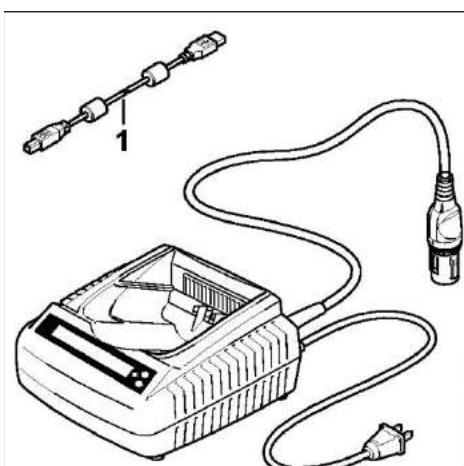


Optional USB cable to connect to computer in order to update firmware

#1 5910 840 0501

**ADG2 Analyzer for Unit Diagnostic: 4850 840 0242
Reference TI 56.2017**

STIHL®



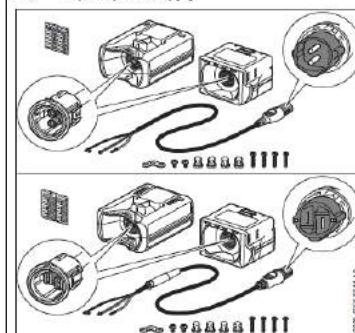
Optional USB cable to connect to computer in order to update firmware
#1 5910 840 0501

4. Conversion kit

4.1 Explanation

The new conversion kit 4850 007 1003 is available for converting previous analyzers. The conversion steps are described on the instruction sheet supplied with the kit.

4.2 Spare parts supply



Top: previous conversion kit 4850 007 1002 together with previous wiring harness 4850 440 3051 (round contacts)

Bottom: new conversion kit 4850 007 1003 together with new plug 4850 400 1606 (flat contacts)

The previous conversion kit 4850 007 1002 is no longer available.

The new conversion kit 4850 007 1003 can be used with all versions of previous analyzers.

5. Adapter AP, adapter AK

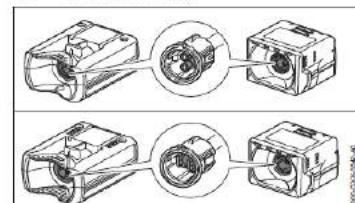
5.1 Explanation

Adapters AP and AK now have a new socket. The new socket is adapted to the flat contacts of the new plug.

The socket on adapters AP and AK cannot be converted. Adapters AP and AK have to be replaced.

The new adapters AP and AK are supplied with the new ADG 2 (■ 3) and are also included in the new conversion kit 4850 007 1003.

5.2 Spare parts supply



Top: previous adapter AP 4850 440 0503 and previous adapter AK 4850 440 0504 with round contacts

Bottom: new adapter AP 4850 440 0505 and new adapter AK 4850 440 0506 with flat contacts

The previous adapters AP and AK are no longer available.

DIA 209a

(See DIA 209 tutorial for details on use of this worksheet)



STIHL M-Tronic™ Engine Check

Customer Name: _____

Date: _____

Model # _____

Serial # _____

Service Technician: _____

Work Order # _____

If no fault or problem is found place a ✓ mark in the box

If a fault or problem is present place an ✗ in the box and write out details of what was found

1. Deflectors, shrouds, covers _____

9. Spark plug connection, terminal spring, and high-tension lead condition _____

Fasteners loose or missing _____

Other observations _____

2. Warning Labels _____

10. Spark present with STIHL ZAT4 tester
No - install new plug and retest _____

Other observations _____

Ignition shut off function _____

3. Cutting Attachment: Note type & condition;
any accessories present? _____

11. Spark plug correct heat range _____

Spark plug carbon fouled _____

Sooted over _____

Normal in appearance _____

Spark plug gap _____

4. Throttle operates smoothly _____
 Multi-Function lever works smoothly _____

12. Muffler condition _____

Spark arrester screen blocked or missing _____

Other observations _____

5. AV system condition _____

13. Remove muffler

Carbon deposits in exhaust port _____

Piston condition _____

Piston rings free _____

Cylinder wall condition _____

6. Starter rope worn, frayed, length &
diameter OK _____

14. Cooling fins blocked, cracked, broken off

7. Air Filter worn or damaged _____
 Air Filter packed with dirt or debris _____

15. Dump fuel into a suitable container

Fuel have a stale odor _____

Debris or water present _____

Color of fuel _____

With Master Control Lever™ in ▲ position,
pull starter rope 10-20 times to purge all fuel
from carb

- Other observations _____

8. Dirt or debris on clean side of filter _____

- Evidence of dirt in carburetor bore or on
choke butterfly _____

- Other observations _____

16. Visual Inspection of wiring harness
 Wires routed correctly
 Ground and control unit connections tight
Other observations _____

Connect Unit to STIHL Diagnostic Software with MDG 1. (Install recoil starter with 2 screws on opposite corners if it has been removed)

17. Connection successful

18. Open "Data" tile and view "Operating Data".
Idle speed setting number value: _____
Full throttle setting number value: _____
 Fuel flow settings within green area
If not indicate where settings are below:

Idle speed setting:



Full throttle setting:



19. Open "Electrical Diagnosis" tile and follow instructions on screen to perform tests:

- Solenoid valve
- Control unit
- Temperature sensor
- O, ▲, I and Stop positions detected
- Testing of flywheel

20. Fuel Filter dirty or restricted _____
 Filter torn or damaged _____

21. Pressure test fuel line to 10 PSI; if fail determine if the fuel line, carb or both are at fault and repair as needed before step 21

22. Open "Solenoid Test" tile, view instructions if needed, and pressure test the solenoid
 Solenoid leakage test _____

Disconnect Unit from MDG1.

23. Pressure test tank for leaks _____

24. Vacuum test tank vent _____

25. Inspect intake side of piston condition on two-stroke if visible; if not visible wait until Step 23 is complete to remove flange or manifold _____

26. Impulse passage clear _____

27. Vacuum test crankcase to specifications and record results _____

- Pressure test crankcase to specifications and record results _____
If values do not meet specifications, locate leaks and note results _____

28. Crankshaft end play excessive _____
 Crankshaft side play excessive _____

29. Carb Check:

- Physical damage _____
- Throttle shaft loose in bore _____
- 10 PSI pressure test of inlet needle _____
- Internal contamination present _____

- Condition of fuel inlet screen _____
- Condition of diaphragms; stiff, damaged _____

(Use carburetor worksheet for further evaluation if necessary)

30. Any other observations about unit _____

- Final Repair: once repairs are completed, perform MDG 1 Test Run from Electrical Diagnosis Function in SDS, reset control unit if needed

Final Running:

- Unit starts easily
- Engine idle RPM change excessive at roll out
- Acceleration response OK
- Run under load satisfactory

Attachment:

- Chain oiler working
- Line advance operation OK
- Clutch disengaged at idle

Comments: _____

© Copyright 2018, STIHL Incorporated, Virginia Beach, VA.

All rights reserved.

STIHL dealers may copy this document for their use only.
US/STR

STIHL® M-Tronic™ Engine Check Segment

When do a “Recalibration” on an M-Tronic Unit?



Confidential

- 1) If the Control Module is replaced
- 2) If the Carburetor or Solenoid Valve is replaced
- 3) If the Engine Management screen is showing the fuel flow values are out of the green area. FIRST IDENTIFY AND FIX ANY ISSUE THEN RECALIBRATE
(For Example: seal leak, fuel system issue, air filter condition, etc.)

ORIGINAL CALIBRATION PROCESS

- 1) Start Unit in ▲ “triangle” cold start position
- 2) Allow unit to run in ▲ “triangle” position for 60 to 90 seconds
- 3) Immediately turn unit off
- 4) Restart and allow unit to idle for 60 seconds
- 5) Make 5 consecutive cuts
- 6) Turn off machine



Announcing M-Tronic Gen. 3 ... Technical Information Bulletin TI 14.2017



Confidential

MS 362C-M M-Tronic Generation 3.0

- Serial Number 183 609 631 and greater
- Bryan Equipment has been shipping since approximately November 2017
- Generation 3.0 Software is on Control Module
 - NEW Gen 3 Control Module: **1140 400 4707**
 - **NEW CALIBRATION PROCESS FOR GEN 3 MODULES**
 - Refer to TI 14.2017



1140 400 4707

GENERATION 3.0 CALIBRATION PROCESS

- 1) Set the Master Control lever to ▲ “triangle” cold start position
- 2) Engage the chain brake
- 3) Start the engine without pressing the throttle trigger.
The engine is running and the Master Control lever remains in ▲ “triangle” position
- 4) Allow the engine to run for 45 seconds without pressing the throttle trigger
- 5) Release the chain brake
- 6) Press the throttle trigger to “WOT” for at least 30 seconds and keep holding trigger down
- 7) The engine will accelerate and the saw chain revolves. The engine speed will fluctuate and increase significantly during the calibration. After 30 seconds the engine is calibrated.
- 8) Allow unit to come down to idle and then shut off



STIHL® M-Tronic™ Engine Check Segment

Announcing M-Tronic Gen. 3 ... Technical Information Bulletin TI 61.2017



Confidential

MS 661C-M M-Tronic Generation 3.0

- Serial Number 183 981 428 and greater
- Bryan Equipment has been shipping since approximately April 2018
- Generation 3.0 Software is on Control Modules
 - Intro Gen 3 Control Module: **1144 400 4703** introduced with black valve (April 2018)
 - Can install white valve with 1144 400 4703 module with no issues
 - Current Gen 3 Control Module: **1144 400 4704** introduced with white valve (July 2018)
 - **NEW CALIBRATION PROCESS FOR GEN 3 MODULES**
 - Refer to TI 61.2017



1144 400 4704

GENERATION 3.0 CALIBRATION PROCESS

- 1) Set the Master Control lever to ▲ "triangle" cold start position
- 2) Engage the chain brake
- 3) Start the engine without pressing the throttle trigger.
The engine is running and the Master Control lever remains in ▲ "triangle" position
- 4) Allow the engine to run for 45 seconds without pressing the throttle trigger
- 5) Release the chain brake
- 6) Press the throttle trigger to "WOT" for at least 30 seconds and keep holding trigger down
- 7) The engine will accelerate and the saw chain revolves. The engine speed will fluctuate and increase significantly during the calibration. After 30 seconds the engine is calibrated.
- 8) Allow unit to come down to idle and then shut off



1144 400 4703

"4702" is inscribed on 4703 module



MS 661 with Gen 3 M-Tronic



Confidential

- In production >183 981 428.
- See TI 61.2017.
- Identifying mark is "**M3.0**" on rear handle label.
- However, due to a problem in production, old labels (**without the "M3.0"**) were applied for initial 3 weeks of production.
- Issue is now resolved.



STIHL® M-Tronic™ Engine Check Segment

Calibration Videos found on BryanEquipment.com:
Training / Training Resources / Training Videos / Scroll down to Service



Ken Morrison (9603) Home Make Payment Search STIHL SSO Corporate Policies & Info FAQs Sign Out

Bryan
EQUIPMENT SALES

ORDER My ACCOUNT PROGRAMS TRAINING MERCHANDISING MARKETING TECHNICAL SERVICE INTERNAL

Training Resources

Sales Training Tips **Training Videos** STIHL iCademy®

Chain Saw Tips
Handheld Blower Tips
Backpack Blower Tips

Welcome to STIHL iCademy®
STIHL iCademy® Overview
STIHL iCademy® Training

Ken Morrison (9603) Home Make Payment Search STIHL SSO Corporate Policies & Info FAQs Sign Out

Bryan
EQUIPMENT SALES

ORDER My ACCOUNT PROGRAMS TRAINING MERCHANDISING MARKETING TECHNICAL SERVICE INTERNAL

Service


[How to Adjust Carburetors using the MDG1](#)
8:59


[How to Calibrate the New STIHL Gen 3 0 M Tronic Saws Jan 2018](#)
0:48


[How to Calibrate the Original STIHL M Tronic Saws](#)
2:57

M-Tronic Solenoid Valve Repair Solution For:



Technical Bulletin expected in future announcing a "KIT PN" for valve and filter

■ MS 362C-M



- Replace failed BLACK valve with WHITE valve (0000 120 5104).
 - Additionally, install new orange mesh fuel filter (0000 350 3518). Finer filtration
 - Calibrate the unit.
 - Calibration process is determined by which control module is on the machine.



0000 120 5104



0000 350 3518

STIHL® M-Tronic™ Engine Check Segment

M-Tronic Solenoid Valve Repair Solution For:



Technical Bulletin expected in future announcing a "KIT PN" for valve, filter, & module

■ MS 661C-M



Shown with optional lightweight guide bar.

- Replace failed **BLACK** valve with **WHITE** valve (0000 120 5104).

- Additionally,

- Install new control module with Gen 3.0 software (1144 400 4703 or 4704).
- And install new orange mesh fuel filter (0000 350 3518). Finer filtration.
- Calibrate the unit.
- Calibration process is New STIHL Gen 3.0 procedure.



0000 120 5104



0000 350 3518



1144 400 4704



NOT FOR USE ON THE FOLLOWING SAWS:



Confidential

- 0000 120 5104 White Valve is **NOT** to be used on the following chain saws:
MS201C-EM, MS201TC-M, MS241C-M, MS261C-M, MS441C-M



STIHL® M-Tronic™ Engine Check Segment

HD2 Air Filters: Changes



Confidential

- 2019 Changes:
 - Filter material color change from black to white:
 - Easier to tell when the filter is dirty.
 - Adding cleaning instruction to back of filter.
- Cleaning Process: See STIHL Bulletin **TI 16.2018**
 - Wash, soak in hot, soapy water for 10 minutes.
 - Alternative to soapy water is:
 - STIHL Degreaser 7010 881 9401
 - Rinse from the inside out.
 - Allow Filter to Dry and Reinstall.



Technical Information

45.2017

Replacing the solenoid valve on STIHL M-Tronic™

Contents

1. Technical description
2. Solenoid valve
3. Holders
4. Screws
5. Service notes
6. New special tool
7. Troubleshooting charts
8. Summary

1. Technical description

The solenoid valve located on the carburetor on all STIHL M-Tronic™ chain saws and STIHL M-Tronic™ power tools can be replaced.

Components affected are:

- Solenoid valve
- Holders
- Screw

Service work on the following components is carried out as previously:

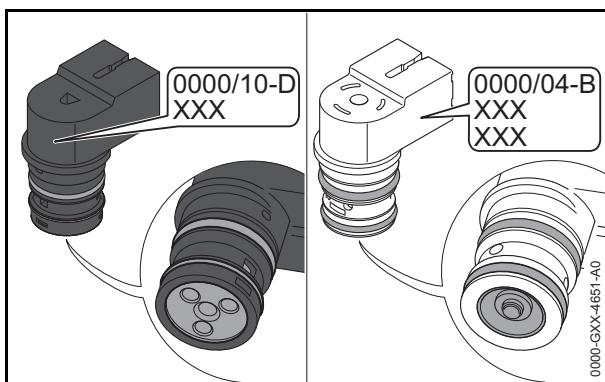
- Metering diaphragm, pump diaphragm
- Inlet needle, inlet control lever
- Gaskets
- Choke shutter
- Air valve housing

STIHL® M-Tronic™ Engine Check Segment

2. Solenoid valve

2.1 Available solenoid valves

Two different solenoid valves can be installed in carburetors.



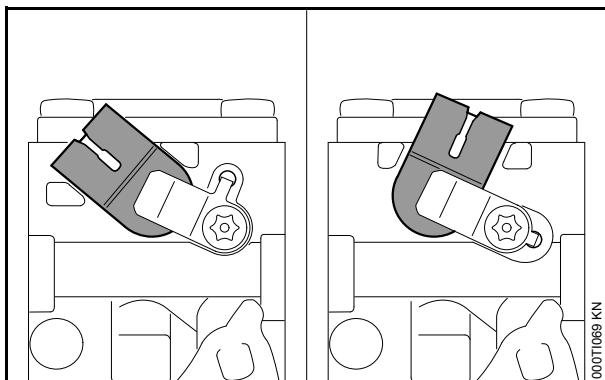
Left Solenoid valve 0000 120 5110
Right Solenoid valve 0000 120 5104

Solenoid valve 0000 120 5110 has a black housing, solenoid valve 0000 120 5104 has a white housing.

On solenoid valve 0000 120 5110 the valve end nearest the carburetor is plastic, on solenoid valve 0000 120 5104 it is metal.

2.2 Installation position

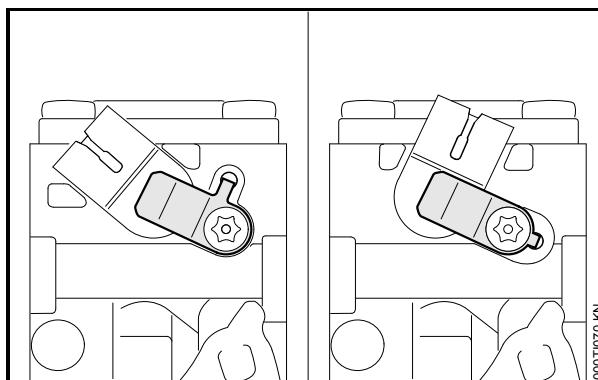
The installation position of the solenoid valve varies according to the make of carburetor fitted (Walbro or Zama).



Left Installation position of solenoid valve with Walbro carburetors
Right Installation position of solenoid valve with Zama carburetors

3. Holders

Dependent on the carburetor installed (Walbro or Zama), two different holders can be installed. In future, the holders will be available as spare parts.



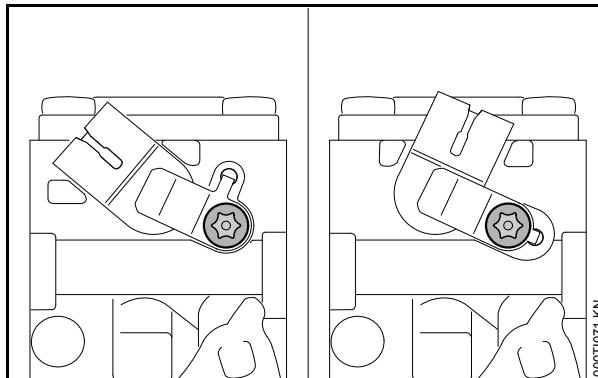
Left: Holder 0000 121 2300
 for Walbro carburetor
Right: Holder 0000 121 2301
 for Zama carburetor

The holders are not interchangeable.

4. Screws

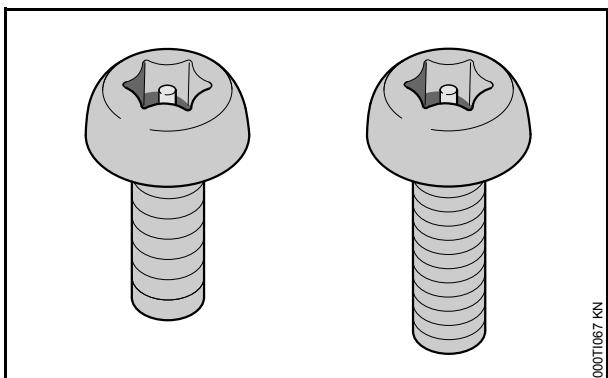
The previously installed screws (hexagon round-head screw with locking pin) are not available as spare parts and will be replaced by hexagon round-head screws without locking pin.

4.1 Previous screws



Dependent on the holder, 3, two different screws were previously installed. These differ with regard to the thread form.

STIHL® M-Tronic™ Engine Check Segment



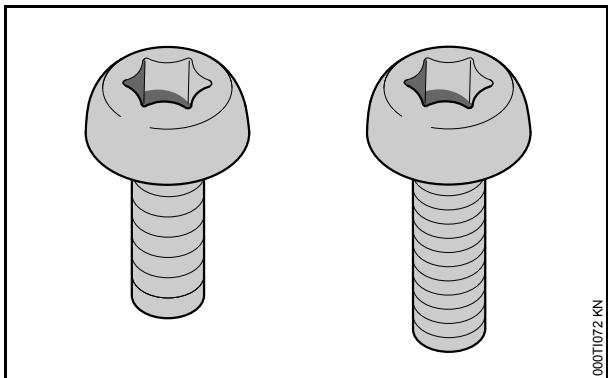
- Left: previous hexagon round-head screw with locking pin (inch thread) for Walbro carburetor
Right: previous hexagon round-head screw with locking pin (metric fine pitch thread) for Zama carburetor

Due to the different thread form, the screws are not interchangeable.

The previous screws can still be used.

4.2 New screws

Dependent on the holder, **3** two different hexagon round-head screws will be installed in future. These differ with regard to the thread form.



- Left: new hexagon round-head screw 0000 122 7102 with inch thread for Walbro carburetor
Right: new hexagon round-head screw 0000 122 7103 with metric fine pitch thread for Zama carburetor

Due to the different thread form, the screws are not interchangeable.

5. Service notes

When repairing or servicing the solenoid valve, always carry out the following work steps:

- Determine the spare parts, **5.1**
- Clean the carburetor, **5.2**
- Replace the valve, **5.3**
- Adapt the engine electronic system to the new solenoid valve, **5.4**

5.1 Determining the spare parts

The necessary spare parts must be determined depending on the carburetor installed and the solenoid valve installed, **2**.

5.1.1 Solenoid valve

The spare part used must always be the same type of solenoid valve as previously installed in the carburetor:

- Solenoid valve 0000 120 5110 (black housing) must always be replaced by a solenoid valve 0000 120 5110, **2**.
- Solenoid valve 0000 120 5104 (white housing) must always be replaced by a solenoid valve 0000 120 5104, **2**.

5.1.2 Walbro carburetor

In addition to the solenoid valve use the following spare parts:

- Holder 0000 121 2300
- Screw 0000 122 7102

5.1.3 Zama carburetor

In addition to the solenoid valve use the following spare parts:

- Holder 0000 121 2301
- Screw 0000 122 7103

STIHL® M-Tronic™ Engine Check Segment

5.2 Cleaning the carburetor

Before replacing the solenoid valve, the area around the valve seat must be completely clean. Dirt in the valve seat causes immediate problems.

Remove coarse dirt with a brush and blow off carefully with compressed air (do not blow into openings and Venturi).

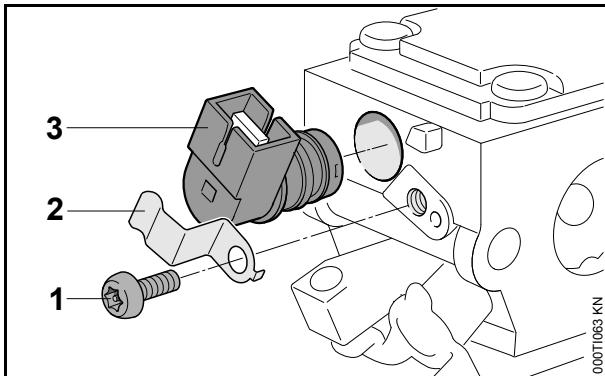
Clean the carburetor housing with a brush or lint-free cloth and commercially available carburetor cleaner.

Do not use aggressive or corrosive substances.

Ultrasonic cleaning is not recommended.

5.3 Replacing the solenoid valve

5.3.1 Removing the solenoid valve

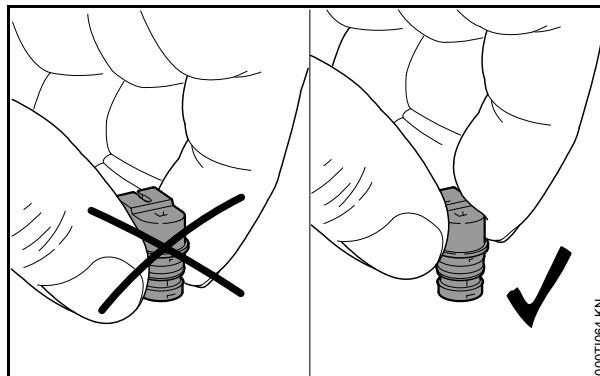


- Remove screw (1) with screwdriver 5910 890 2313.
- Remove the holder (2).
- Pull out solenoid valve (3).

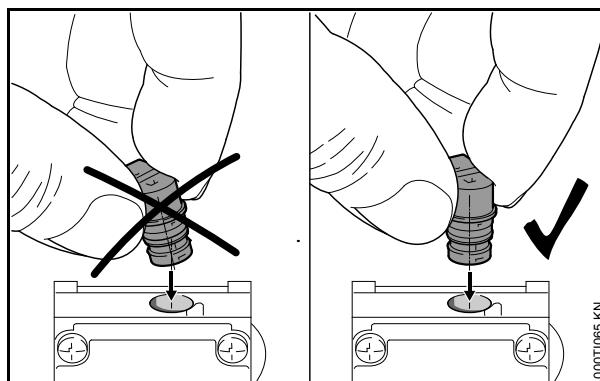
Do not reuse the solenoid valve that has been removed. Gaskets can become damaged during removal.

5.3.2 Installing the solenoid valve

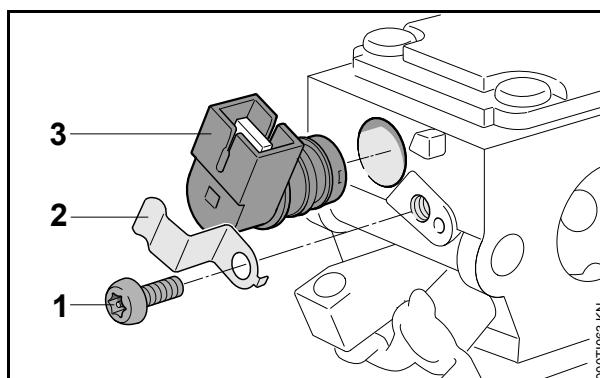
- Check that the O-rings on the solenoid valve are undamaged; replace if necessary.



- Only hold the solenoid valve above the collar to avoid damaging the sealing surfaces.
- Coat the solenoid valve below the collar with STIHL press fluid OH 723.



- Insert the solenoid valve perfectly vertically.



- Press in the solenoid valve (3) as far as it will go – do not apply pressure to the plug connection.

The collar of the solenoid valve housing makes contact with the carburetor housing.

- Fit the holder (2) and tighten the screw (1) (6 in. lbs / 0.7 Nm).

STIHL® M-Tronic™ Engine Check Segment

5.4 Adapting the engine control system to the new solenoid valve

5.4.1 Explanation

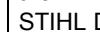
If the solenoid valve is replaced, the engine control system is not adjusted for the new solenoid valve initially. The machine may not develop the optimum power or it may not have proper running behavior.

There are various procedures for adapting the engine electronic system to the new solenoid valve, depending on the machine model, the status of the control unit software (STIHL M-Tronic™ version) and whether STIHL Diagnostic Software and the analyzer MDG1 are available:

- Reset control unit to factory default settings,  5.4.3
- Calibration,  5.4.5
- Calibration in conjunction with the STIHL Diagnostic Software,  5.4.6

Calibration in conjunction with the STIHL Diagnostic Software enables the engine electronic system to be optimally adapted to the new solenoid valve.

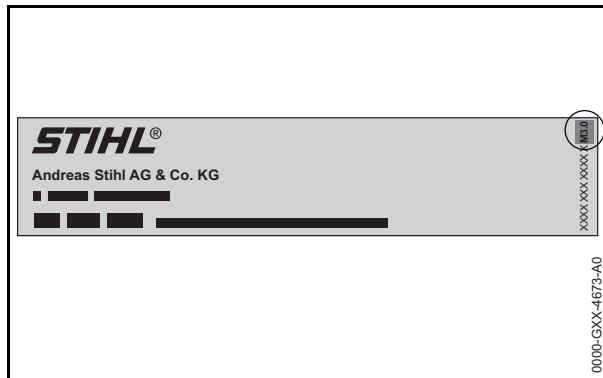
The appropriate procedure must be individually selected for each machine:

	Reset control unit to factory default settings,  5.4.3	Calibration,  5.4.5	Calibration in conjunction with the STIHL Diagnostic Software,  5.4.6
Power tool	X		
Chain saw with STIHL M-Tronic™ version lower than 2.1,  5.4.2	X		
Chain saw with STIHL M-Tronic™ version 2.1 or higher,  5.4.2. STIHL Diagnostic Software and analyzer MDG 1 are not available.		X	
Chain saw with STIHL M-Tronic™ version 2.1 or higher,  5.4.2. STIHL Diagnostic Software and analyzer MDG 1 are available.			X

STIHL® M-Tronic™ Engine Check Segment

5.4.2 Determining the STIHL M-Tronic™ version

Control unit software version can only be determined for chain saws and only from STIHL M-Tronic™ version 2.1.



The STIHL M-Tronic™ version is indicated on the emissions label after the material no., e.g.:

Indication on emissions label	STIHL M-Tronic™ version
1142 967 3301 A – M2.1	2.1
1140 967 3304 B – M3.0	3.0

If there is no such indication on the emissions label, the STIHL M-Tronic™ version is lower than 2.1.

5.4.3 Resetting control unit to factory default settings

- Remove saw chain and guide bar or cutting attachment.
- For chain saws: Remove the chain sprocket cover.
- Set control lever to the ▲ position.
- Start engine, without depressing the throttle trigger.
- Allow engine to run for at least 90 seconds in position ▲.
- Switch off engine.

The control unit has been reset to the factory default setting. The engine electronic system has been adapted to the new solenoid valve.

5.4.4 Preparing for calibration

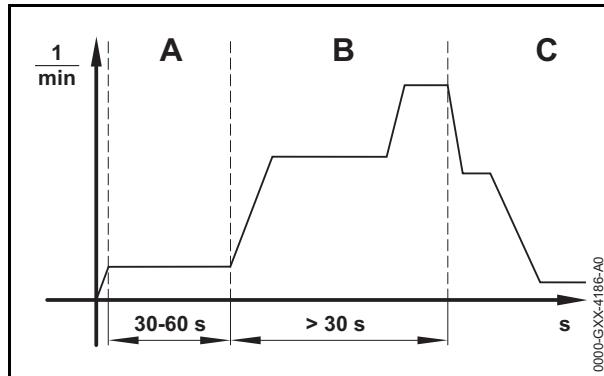
Carry out the following steps before calibration to achieve an optimum result after calibration:

- Clean the air filter.
- If the engine is cold: warm up engine for about 1 minute by blipping the throttle.

- Fit a cutting attachment specified in the Instruction Manual.
- Tension chain as specified.
- Check that the saw chain is sufficiently lubricated.
- Check that the fuel used is of the grade specified in the Instruction Manual.

5.4.5 Calibration

- Preparing for calibration, 5.4.4.



- Set master control lever to the ▲ position.
- Engage chain brake.
- Start engine without depressing the throttle trigger.

The engine runs and the master control lever remains in the ▲ position.

- Allow engine to run for at least 30 to max. 60 seconds (A) without depressing the throttle trigger.
- Release chain brake.
- Depress and hold down throttle trigger for at least 30 seconds (B).

The engine accelerates and the saw chain rotates. The chain saw is being calibrated. The engine speed fluctuates and rapidly increases during calibration.

- If the engine stops: try again to calibrate the chain saw.
- If the engine repeatedly stops:
 - Engage chain brake.
 - Do not use chain saw. The chain saw must be serviced.
- As soon as the engine speed drops (C): Release throttle trigger.

STIHL® M-Tronic™ Engine Check Segment

The engine idles. The chain saw is calibrated and ready for use. The engine electronic system has been adapted to the new solenoid valve.

5.4.6 Calibration in conjunction with the STIHL Diagnostic Software

Preparing for calibration,  5.4.4.

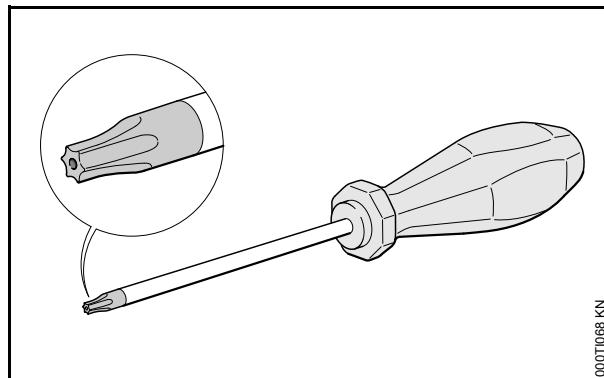
To carry out calibration in conjunction with the STIHL Diagnostic Software, the cutterless saw chain 3/8" 1.3 mm – 3112 000 0066 must be fitted.

Issues arising in connection with calibration can be read from the fault memory with the aid of the STIHL Diagnostic Software.

The STIHL Diagnostic Software performs the calibration.

The engine electronic system is optimally adapted to the new solenoid valve.

6. New special tool



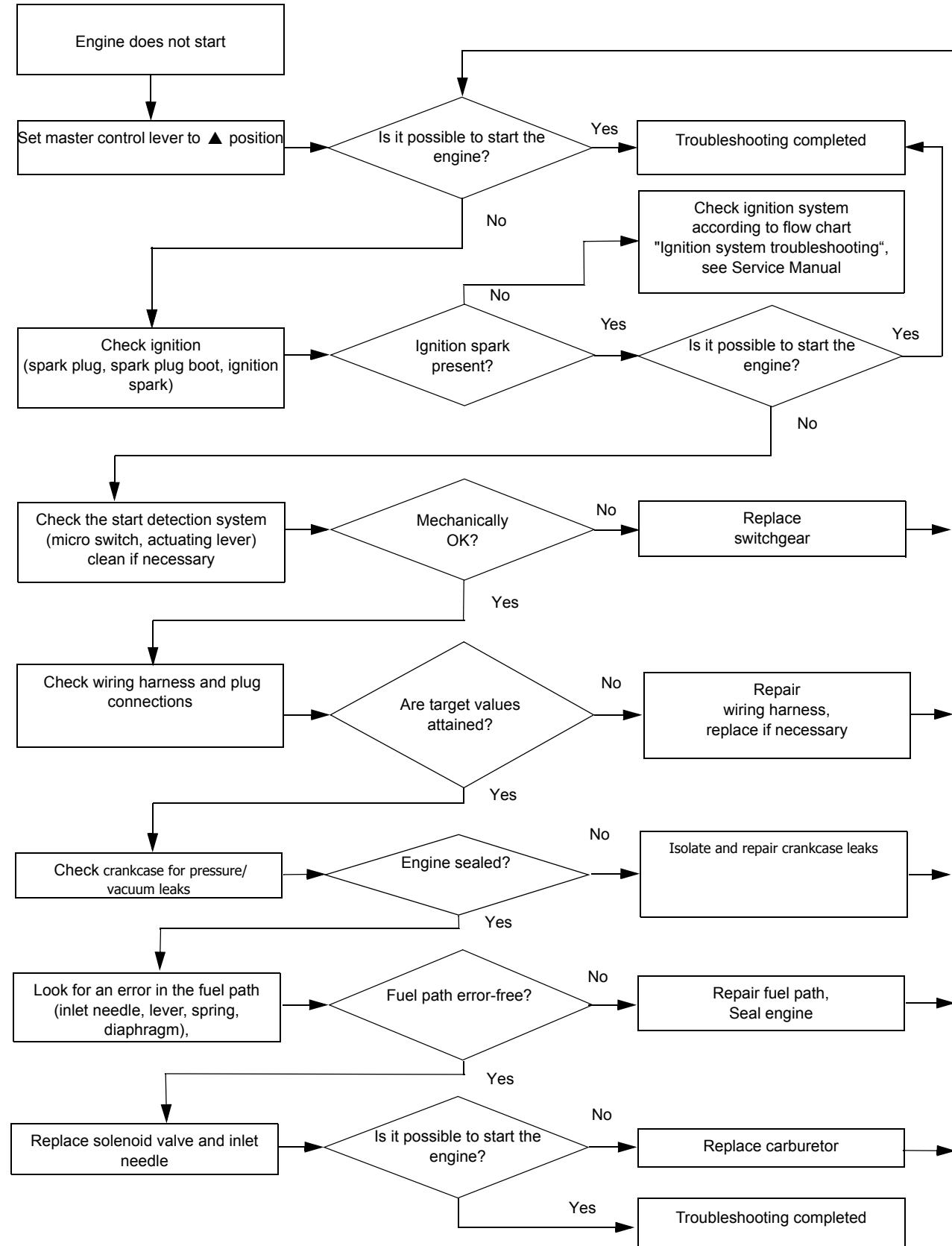
Screwdriver T10 with hole 5910 890 2313 is needed to unscrew the previously installed hexagon round-head screws with locking pin.,  4.1.

The screwdriver can also be used for the new hexagon round-head screws without locking pin,  4.2.

STIHL® M-Tronic™ Engine Check Segment

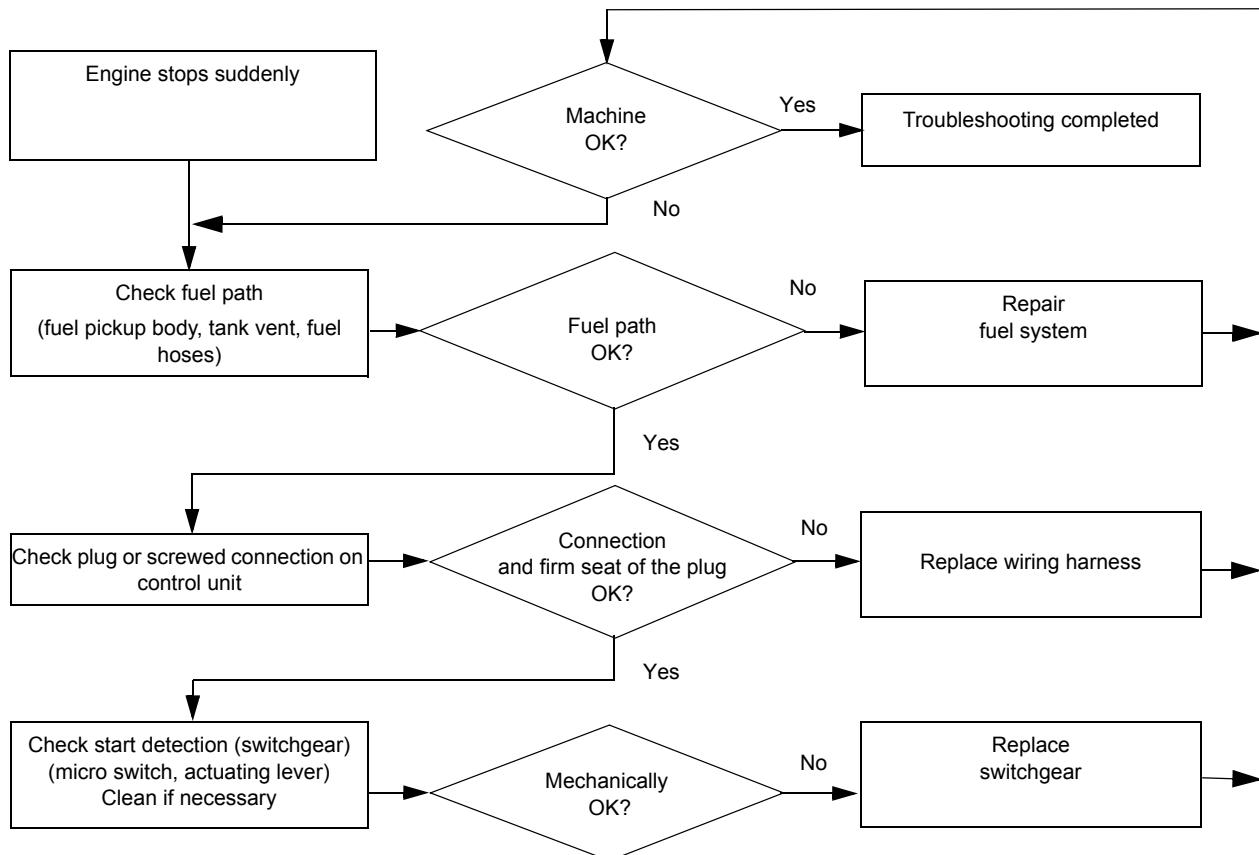
7. Troubleshooting charts

7.1 Engine does not start



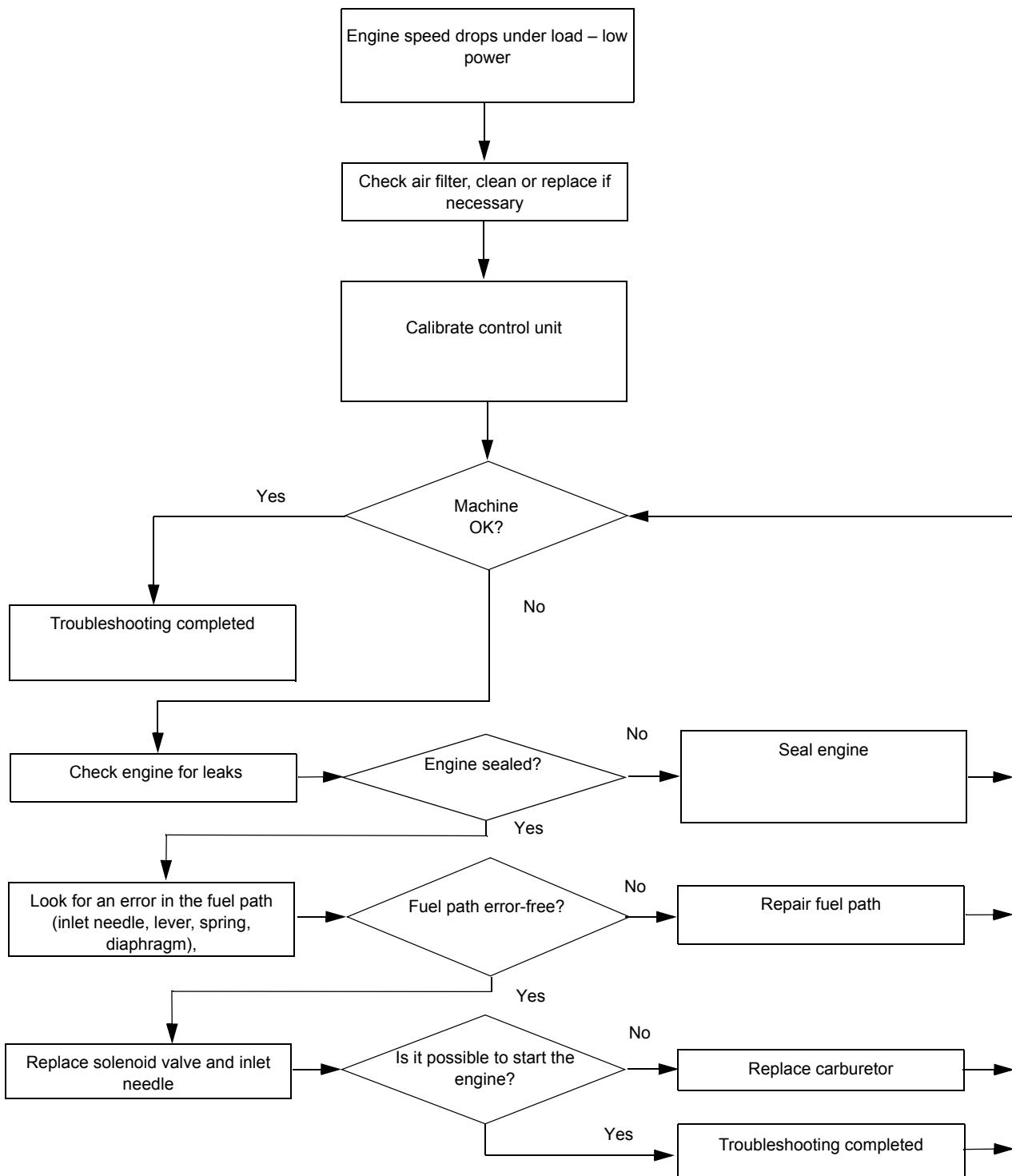
STIHL® M-Tronic™ Engine Check Segment

7.3 Engine stops suddenly



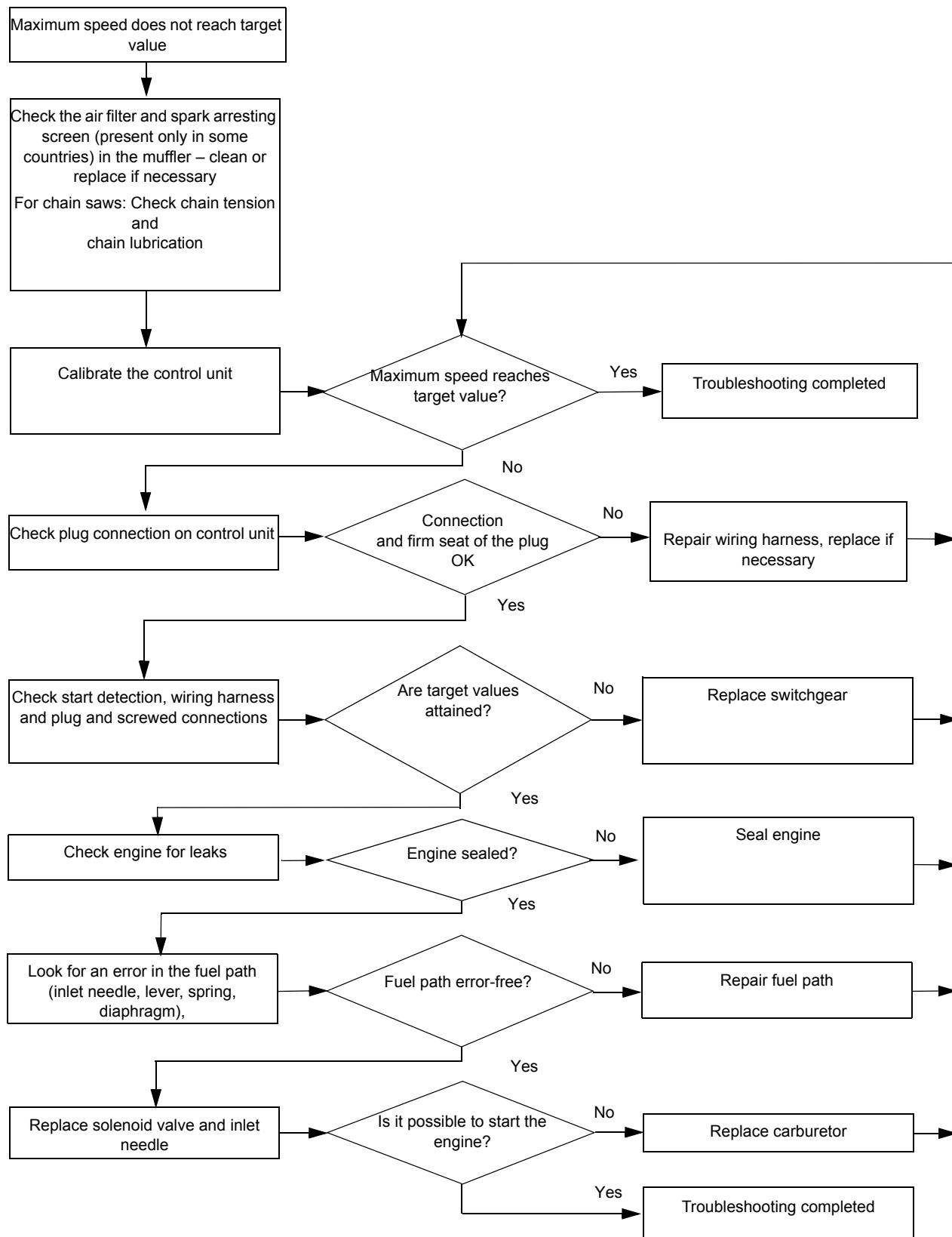
STIHL® M-Tronic™ Engine Check Segment

7.2 Engine speed drops under load – low power



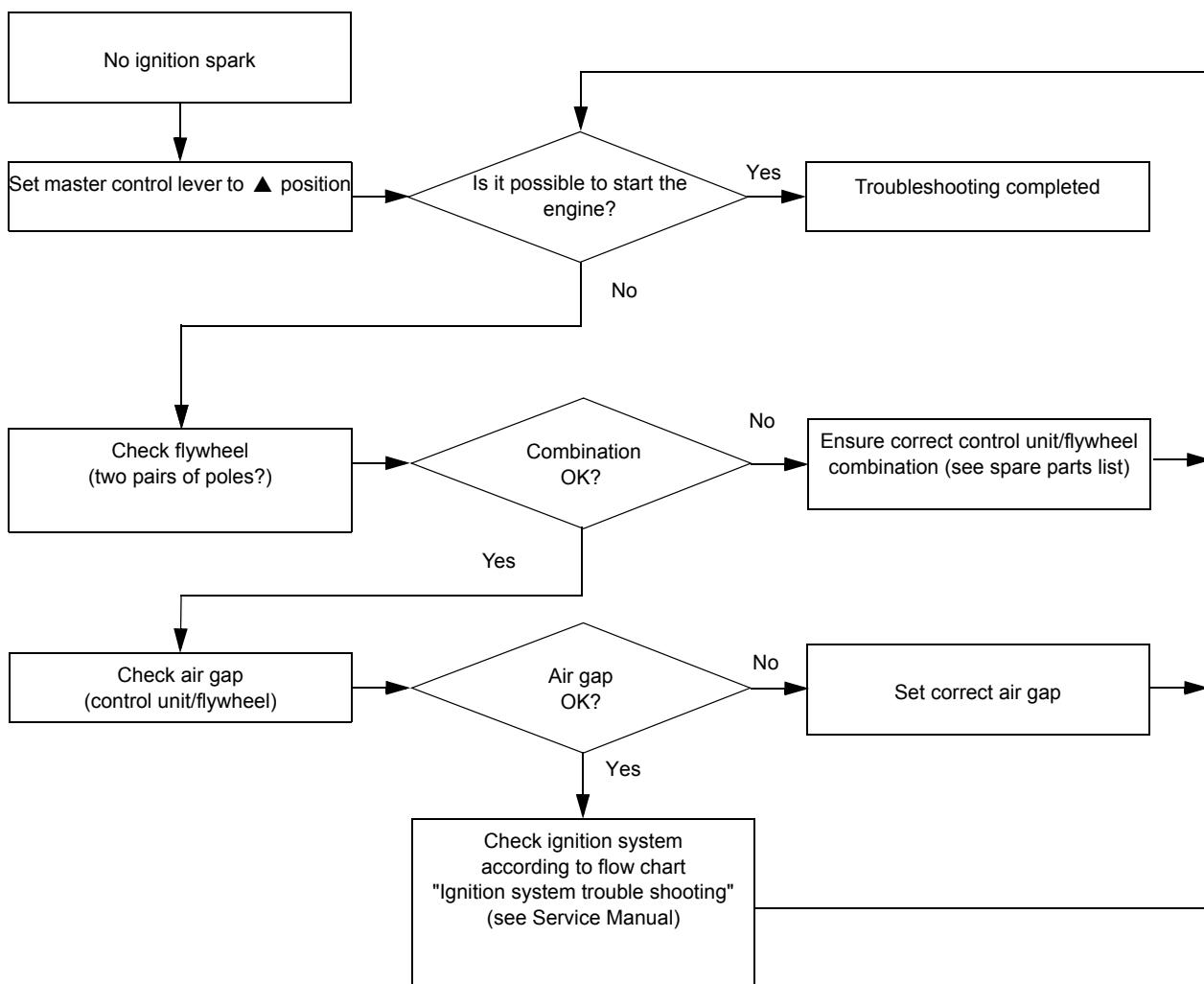
STIHL® M-Tronic™ Engine Check Segment

7.4 Maximum speed not reached



STIHL® M-Tronic™ Engine Check Segment

7.5 Ignition – no ignition spark



8. Summary

Pos.	Designation	previous	new	Note
1	Solenoid valve (black housing)	---	0000 120 5110	1)
2	Solenoid valve (white housing)	---	0000 120 5104	2)
3	Holder (Walbro)	---	0000 121 2300	1)
4	Screw (Walbro)	---	0000 122 7102	1)
5	Holder (Zama)	---	0000 121 2301	1)
6	Screw (Zama)	---	0000 122 7103	1)

Modification introduced: continuously

Note

- 1) New version part can also be used for previous machines
- 2) New version cannot be used for previous machines.

8.1 New special tool

Item	Description	Part number	Use
1	Screwdriver T10 with hole	5910 890 2313	Unscrewing the screw on the solenoid valve holder

STIHL® M-Tronic™ Engine Check Segment

STIHL DIAGNOSTIC SOFTWARE & MDG1

Troubleshooting

If you are having issues using SDS or your MDG1, let's do a quick check to see what could be causing the issue.

MDG1 will not connect to SDS or cannot be found.

- Check the LED's on the MDG1.

Green: The MDG1 has power.

Blue: The MDG1 is connected and paired via Bluetooth.

Pink: The MDG1 is not connected, it needs to be paired.

- Access the control panel on your computer. Select **Devices and Printers**. Look to see if your MDG1 is listed by serial number. If it's not in your device list, select add device. Windows will guide you through the pairing process. During pairing, you will be asked for the passcode. The passcode is **STIHL**.

Once the MDG1 is paired: Launch the STIHL DIAGNOSTIC SOFTWARE. If the pairing was successful, the serial number of your MDG1 will be displayed when the MDG1 is selected.

- If you are still unable to pair your MDG1, try shutting down nearby devices. Other electronic devices might be causing interference. Other scan tools in the shop might also create conflicts. The building itself might be blocking the signal, try connecting your MDG1 in a different location. Installed PC software might also block access. Does your PC require Administrator access to install a new device?

STIHL® M-Tronic™ Engine Check Segment

Now that we know our MDG1 is connected to our PC/Laptop- we still may encounter an issue while connecting to our unit. You might get the message: **Control Unit Does Not Respond.**

- Pull the starter rope 3-4 times to provide power to the control unit.
- Check the connector pin fit- The MDG1 pins maybe be damaged if connected incorrectly.
- Inspect all connections for dirt and debris and clean as needed.
- Check the wiring on the unit. Look for broken wires or loose connections.
Keep in mind we might have a failed control unit.

If a connection is not established at this time, it would be wise to connect a known running unit to your MDG1. If you are still unable to connect to the control module, there could be a PC or SDS software compatibility issue.

- Uninstall STIHL DIAGNOSTIC SOFTWARE
- Download the latest version of SDS <https://dealers.stihlusa.com/Portal>

Once the latest version of SDS is installed, reboot your computer and try connecting to the unit.

For a detailed Troubleshooting manual, please visit: www.bryanequipment.com

- Select the TECHNICAL SERVICE tab
- Select TECHNICAL RESOURCES
- Select STIHL DIAGNOSTIC SOFTWARE USER MANUAL

Don't forget to update your SDS software and MDG1 firmware regularly. New updates are continuously being released.

Battery Charge Information

Integrated, AI, AK & AP Series Batteries

Battery Charge Information – Integrated and AK Series Batteries

Battery Charging Times (Minutes for 80% / 100% charge)			Battery Charging Times (Minutes for 80% / 100% charge)			Charger
	AK10	AK20	AK30	FSA 45 (STIHL PolyCut 2-2 blades / .065 line)	HSA 45	BGA 45
AL 101	55 / 80	105 / 150	160 / 205	145 / 210		
AL 300	20 / 30	25 / 45	35 / 60		145 / 210	
AL 500	20 / 30	25 / 45	35 / 60			210 / 300
Working Times per Battery Charge* (Minutes)			Working Times per Battery Charge* (Minutes)			
MSA 120 C-BQ	15**	35	55	FSA 45 (STIHL PolyCut 2-2 blades/.065 line)		20 / 12
MSA 140 C-BQ	15**	35	45	HSA 45		40
FSA 56 (Nylon mowing head)	20	40	60	BGA 45		10
HSA 56	40	80	120			
BGA 56	10	20	30			
Working Range per Battery Charge* (Sq. Ft.)			(Minutes for 80% / 100% charge)			Charger
RMA 460	–	2,475	3,500	HSA 25		140 / 180

Note: Battery/tool combinations providing best performance shown in bold.

* The battery working times and working ranges for each battery charge are estimates and may vary depending on application.

** Reduced tool performance.

Working Times per Battery Charge* (Minutes)			Working Times per Battery Charge* (Minutes)			
FSA 45	(STIHL PolyCut 2-2 blades/.065 line)		FSA 45	(STIHL PolyCut 2-2 blades/.065 line)		20 / 12
HSA 45			HSA 45			40
BGA 45			BGA 45			10

* The battery working times and working ranges for each battery charge are estimates and may vary depending on application.

(Minutes for 80% / 100% charge)			Charger
HSA 25			140 / 180
Working Times per Battery Charge* (Minutes)			HSA 25
			110

* The battery working times and working ranges for each battery charge are estimates and may vary depending on application.

Battery Charge Information – AP Series & AR Series Batteries

Battery Charging Times ¹ (Minutes)	AP 100 (Black)	AP 100 (Orange)	AP 300 (Black) AP 300 (Orange)	AP 300 S (Orange)	AR 1000	AR 2000	AR 3000
AL 101	60 / 90	75 / 100	190 / 250	230 / 300	X	X	X
AL 300	25 / 35	30 / 45	45 / 65	55 / 70	130 / 160	190 / 215	220 / 265
AL 500	25 / 35	30 / 45	25 / 35	30 / 45	90 / 120	100 / 130	120 / 160
Working Times per Battery Charge ² (Minutes)							
MSA 160 C-BQ	15	18	50	62	125	180	230
MSA 200 C-BQ	15	18	45	56	110	160	200
MSA 161 T	15	18	50	62	X	X	X
HTA 65	15	18	55	68	125	180	230
HTA 85	15	18	55	68	125	180	230
KMA 130 R (FS-KM head) ³	13 / 8 / 6	16 / 7	38 / 23 / 18	47 / 22	100 / 60 / 50	140 / 90 / 75	180 / 110 / 90
FSA 65	25	30	75	93	200	300	380
FSA 85	15	18	45	56	120	160	200
FSA 90 R (nylon head)	10	12	30	37	80	120	150
FSA 130 R (nylon head) ³	16 / 12 / 8	19 / 10	40 / 30 / 20	50 / 25	100 / 85 / 70	150 / 120 / 100	190 / 150 / 125
HSA 66	60	72	180	223	450	660	800
HSA 94 R ³	45 / 40 / 35	54 / 42	135 / 120 / 105	167 / 130	380 / 350 / 320	550 / 500 / 450	700 / 630 / 570
HSA 94 T ³	45 / 40 / 35	54 / 42	135 / 120 / 105	167 / 130	380 / 350 / 320	550 / 500 / 450	700 / 630 / 570
HLA 65	60	72	180	223	450	660	800
HLA 85	60	72	180	223	450	660	800
BGA 85	8	10	24	30	65	90	115
BGA 100 ⁴	27 / 11 / 7 / 7	32 / 8	83 / 33 / 21 / 16	103 / 20	225 / 95 / 60 / 45	300 / 130 / 80 / 60	395 / 160 / 100 / 75
TSA 230	6	7	18	22	X	X	X
Working Range per Battery Charge ² (Sq. Ft.)							
RMA 510	X	X	5,100	6,100	X	X	X

Note: Battery/tool combinations providing best performance shown in bold.

¹ Charging times in minutes to 80% / 100% capacity.

² The battery working times and area specifications for each battery charge are estimates and may vary depending on how the tool is used and what is being cut.

³ Level 1 / level 2 / level 3

⁴ Level 1 / level 2 / level 3 / Boost

* The battery working times and working ranges for each battery charge are estimates and may vary depending on application.

KMA Accessories Run Times (minutes)

Performance Level 1 - 2 - 3



Part Number	AP 100	AP 300	AP 300 S	AR 1000	AR 2000	AR 3000
FS-Line-KM	13 / 8 / 6	38 / 23 / 18	45 / 27 / 21	100 / 63 / 50	150 / 92 / 75	190 / 115 / 90
FS-Blade-KM	24 / 16 / 13	75 / 45 / 40	90 / 54 / 48	200 / 130 / 100	300 / 190 / 15	370 / 240 / 190
FBD-KM	5 / 5 / 5	15 / 15 / 15	18 / 18 / 18	40 / 40 / 40	55 / 55 / 55	70 / 70 / 70
FCB-KM	11 / 9 / 6	32 / 25 / 17	38 / 30 / 20	90 / 70 / 45	130 / 100 / 85	160 / 130 / 85
KW-KM	15 / 13 / 12	45 / 40 / 35	54 / 48 / 42	125 / 110 / 90	180 / 155 / 140	230 / 190 / 180
BF-KM	15 / 13 / 12	45 / 40 / 35	54 / 48 / 42	125 / 110 / 90	180 / 155 / 140	230 / 190 / 180
KB-KM	15 / 13 / 12	45 / 40 / 35	54 / 48 / 42	125 / 110 / 90	180 / 155 / 140	230 / 190 / 180
BG-KM	13 / 7 / 5	35 / 20 / 13	42 / 24 / 15	100 / 60 / 40	150 / 85 / 60	190 / 110 / 70
HT-KM	20 / 15 / 9	60 / 45 / 30	72 / 54 / 36	170 / 125 / 75	250 / 180 / 110	310 / 230 / 140
HL-KM 0	60 / 50 / 40	180 / 145 / 120	216 / 174 / 144	500 / 400 / 330	730 / 580 / 480	900 / 730 / 600
FH-KM	60 / 50 / 40	180 / 145 / 120	216 / 174 / 144	500 / 400 / 330	730 / 580 / 480	900 / 730 / 600
HL-KM 0 145	60 / 50 / 40	180 / 145 / 120	216 / 174 / 144	500 / 400 / 330	730 / 580 / 480	900 / 730 / 600

Battery Status LED's



confidential

■ Quick battery diagnostics



- Green lights represent status of charge



- 1 glowing red light → Battery is too hot or too cold



- 4 flashing red lights → Problem in battery



- 3 glowing red lights → Power tool too warm



- 3 flashing red lights → Problem in power tool

Connectivity Solution - Socket-Style Battery



Socket-style battery supplies and accessories

AP Series Batteries

- AP 100
- AP 300
- AP 300 S



AR Series Batteries

- AR 1000
- AR 2000
- AR 3000



Compatible configurations



Battery Belt
with
Harness¹



AP
Battery
Backpack²



AP Battery Bag
w/Connecting
Cable³



Harness
Hip Pad



FSA/KMA
Harness

4850 490 0500 4850 490 0402 4850 440 5103 4866 740 2500 0000 007 1045

BGA 100	●	●	●	●
FSA 130 R	●	●	●	●
HSA 94 R	●	●	●	
HSA 94 T	●	●	●	
KMA 130 R	●	●	●	●

BGA 100	●
FSA 130 R	●
HSA 94 R	
HSA 94 T	
KMA 130 R	●

¹ Used in conjunction with AP Battery Bag with connecting cable (separate accessory – shown above). May also use optional AP Battery Bag for spare battery (separate accessory – not shown).

² Used in conjunction with AP Battery Bag with connecting cable (separate accessory – shown above). May also use optional AP Battery Bag for spare battery (separate accessory – not shown).

³ Used in conjunction with Battery Belt with Harness or AP Battery Backpack spare battery (separate accessory – shown above).

AI, AK Battery Product Quick-Check

Customer Name: _____

Date: _____

Unit Model # _____

Unit Serial # _____

Battery Model # _____

Battery Serial # _____

Technician: _____

Work Order # _____

If no fault or problem is found place a ✓ mark in the box

If a fault or problem is present place an ✗ in the box and write out details of what was found

1. Deflectors, shrouds, covers _____
 Fasteners loose or missing _____
 Other observations _____

2. Warning Labels _____

3. Cutting Attachment (Battery or Activation Key Removed): HSA, HLA-verify blades are free; FSA-verify head turns freely; MSA, HTA-chain moves around bar freely with chain brake in run position; RMA-verify blade spins easily by hand; TSA-verify arbor shaft spins freely _____

AI	AK	Comments: _____ _____ _____ _____ _____ _____ _____
<p>4. Verify battery LED readout:</p> <p><input type="checkbox"/> 1-4 green LED lit – battery OK</p> <p><input type="checkbox"/> no LED function; check customer's wall charger, charge unit with known good charger and re-check</p> <p><input type="checkbox"/> 1 glowing red LED – battery too hot or cold; allow to come to room temp and re-check</p> <p><input type="checkbox"/> 3 glowing red LED – tool is too warm, allow to come to room temp and re-check</p> <p><input type="checkbox"/> 3 or 4 flashing red LED or no LED function – problem in unit; troubleshoot and record findings:</p> <p><input type="checkbox"/> Motor</p> <p><input type="checkbox"/> Switch(s)</p> <p><input type="checkbox"/> Wiring</p> <hr/> <hr/> <hr/>	<p>4. Verify battery LED readout:</p> <p><input type="checkbox"/> 1-4 green LED lit – battery OK</p> <p><input type="checkbox"/> no LED function; check customer's charger, charge battery with known good charger and re-check</p> <p><input type="checkbox"/> 1 glowing red LED – battery too hot or cold; allow to come to room temp and re-check</p> <p><input type="checkbox"/> 3 glowing red LED – tool is too warm, allow to come to room temp and re-check</p> <p><input type="checkbox"/> 4 flashing red LED – replace battery</p> <p><input type="checkbox"/> 3 flashing red LED – problem in unit; troubleshoot and record findings:</p> <p><input type="checkbox"/> Inspect battery compartment contacts</p> <p><input type="checkbox"/> Switch audible click</p> <p><input type="checkbox"/> Motor</p> <p><input type="checkbox"/> Wiring</p> <hr/> <hr/> <hr/>	

STIHL Battery Products

AI Series Diagnostics Example

AI: Battery is Integrated to Unit



AI Series



confidential

- Step by step diagnostic procedures for BGA 45.
 - Based on the issues detected during the tests, a proper evaluation and repair decision can be determined.
 - Not all repairs will be cost effective, but this tutorial demonstrates the entire troubleshooting process
 - Refer to your AI, AK Battery Product Work Sheet



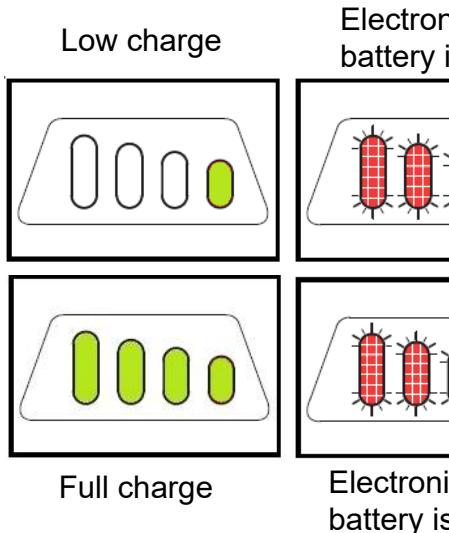
STIHL® Battery and Electric Segment

AI Series Battery Status LED's

STIHL®

confidential

- Check battery status LED's by pressing button.

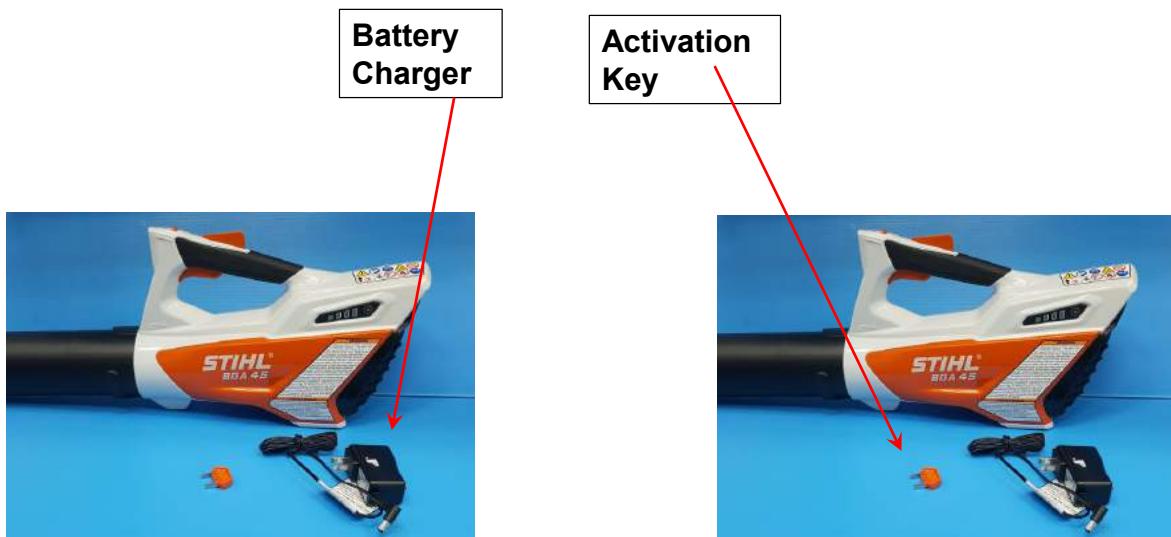


AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step by step procedures for diagnosing a BGA 45.



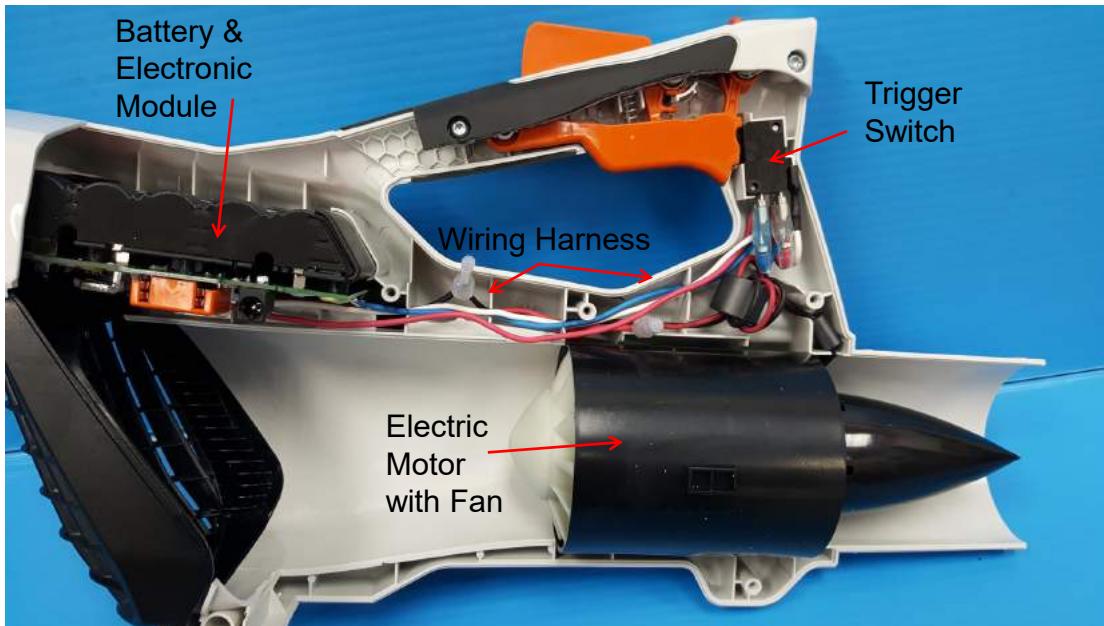
STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics

STIHL®

confidential

- There are only a few components to check and test.

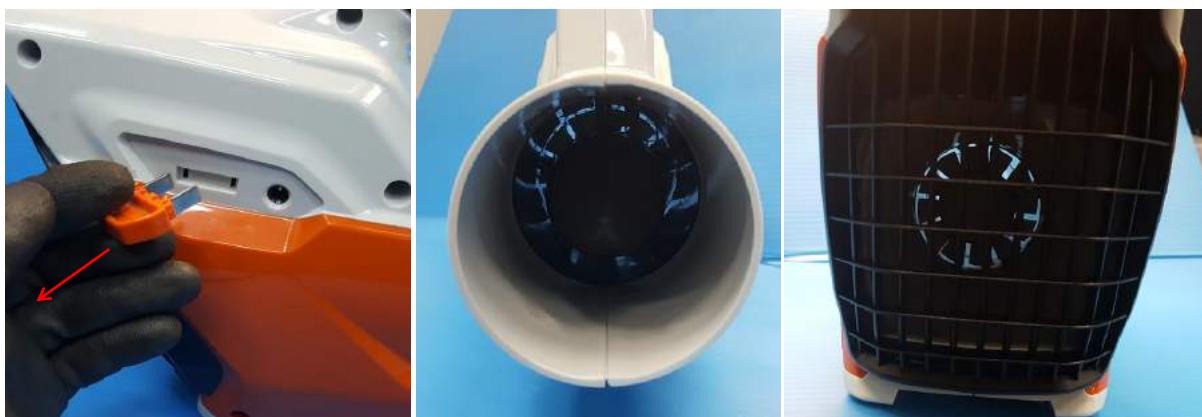


AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step 1 Visual inspection of complete unit.
 - Remove activation key.
 - Inspect air intake area for damage or debris contacting fan.



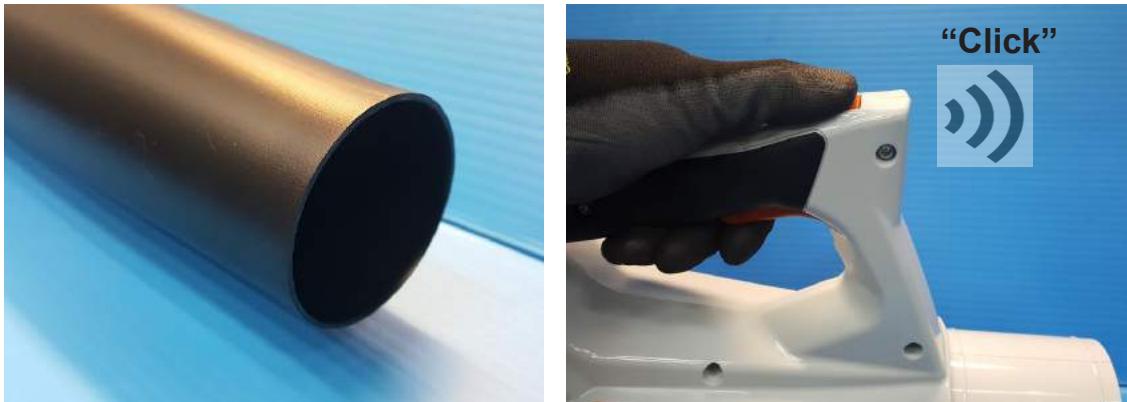
STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics



confidential

- Step 1 Visual inspection of complete unit.
 - Inspect nozzle for damage and wear.
 - Gently squeeze trigger and listen for an audible “click” to confirm the switch is mechanically working.
 - If “click” is not heard, switch is damaged and must be replaced.



AI Series BGA 45 Diagnostics



- Step 2 Check battery status of charge and check charger.
 - Press button to check battery status of charge.
 - Green LED's indicate status of charge:
1=25%, 2=50%, etc.
 - If only one green LED, plug in charger,
LED's should start flashing green
indicating that battery is charging.
 - If nothing happens,
test charger with digital Volt Ohm Meter DVOM,
set in DC volt read scale,
while charger is plugged into a power outlet.



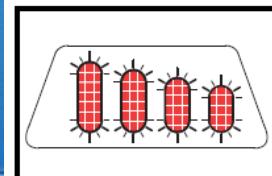
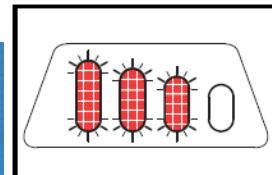
STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step 3 Install activation key and test unit.
 - While squeezing trigger, if nothing happens,
Then open unit for inspection and electrical tests.
 - Three or four flashing red lights?
Then open unit for tests and inspection.



Electronics or
battery issue

AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step 2 Continued: Inspect the charger port.
 - If charger tests good:
 - Inspect charger port on unit; replace electronics if damaged.
 - No visual damage to charger port; open unit and replace electronics.



Charging Port

STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step 4 Visually inspect wiring harness and test motor.

- Remove activation key.

- Remove nozzle and separate motor housings by removing the screws (T20 torx).

- Visually inspect the wiring harness for any damage or corrosion.



AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step 4 Continued: Testing the motor

- Set DVOM to resistance mode

- Connect the red and black test leads to the red and black connectors respectively in the wiring harness.

- Correct reading should be 0.2 Ohms or less –
YES - Motor is OK.

- **NO** - If test fails, motor must be replaced;
see BGA 45 workshop manual for instructions on replacing the motor.

✓
0.2 Ohms
or less



STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics

STIHL®

confidential



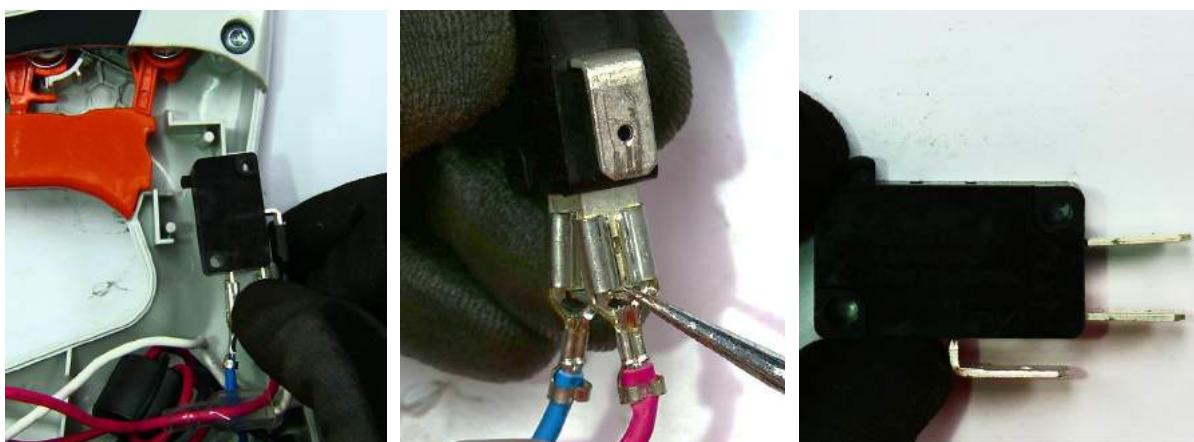
- Step 5 Visually inspect switch and wire connections.
 - To properly test the double pole switch used in this unit, you must test across all connections with a VOM in Ohm/Resistance mode.
 - COM – NC correct reading will show continuity—Activate switch, reading should show OL (open line – open circuit).
 - COM – NO correct reading should be OL –Activate switch, reading will show continuity.
 - The switch must be isolated from the wiring harness to properly test

AI Series BGA 45 Diagnostics

STIHL®

confidential

- Step 5 Continued: Isolate switch from wiring harness
 - Remove the switch from housing
 - Squeeze the tab on each connector to release it from the terminal



STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics

STIHL®

confidential

■ Step 6 Testing the switch

- Set DVOM to resistance mode.
- Place red test lead on (NC) terminal & black test lead on (COM) terminal; reading should show continuity.
- With test leads remaining in place, activate the switch; reading should now show OL (open circuit).
- If switch fails either test, replace and retest.



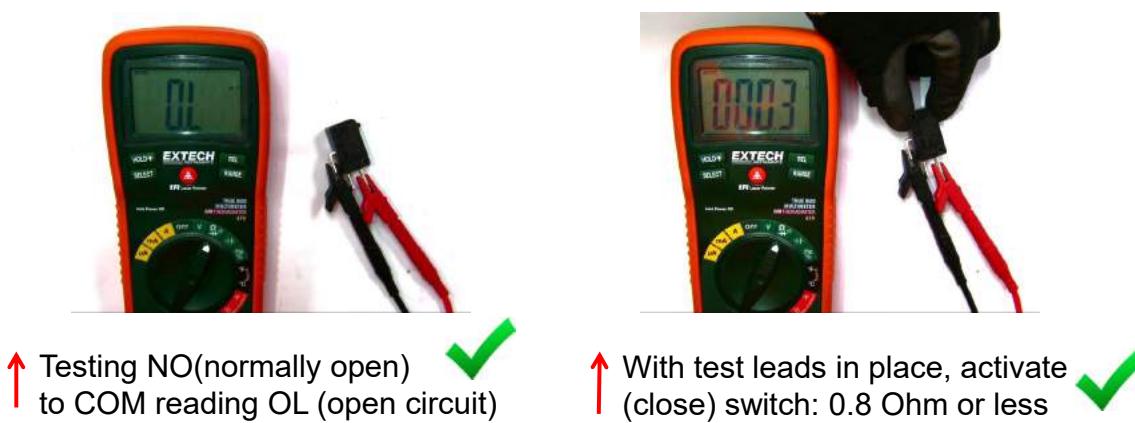
AI Series BGA 45 Diagnostics

STIHL®

confidential

■ Step 6 Continued: Testing the switch

- Now Place red test lead on (NO) terminal & black test lead on (COM) terminal; reading should be OL (open circuit).
- With test leads remaining in place, activate the switch; reading should now show continuity.
- If switch fails either test, replace and retest.



STIHL® Battery and Electric Segment

AI Series BGA 45 Diagnostics

STIHL®

confidential

- At this point, all electrical components have been tested.
- Based on the steps completed, make necessary repairs, reassemble and test unit.
- Be careful to route wiring harness correctly according to the workshop manual.
- If all components tested good and unit still does not operate, replace electronic module.



STIHL Battery Products AK Series Diagnostics Examples AK: Battery is Removable

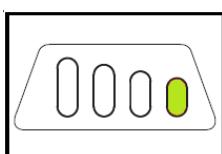


AK Series Battery Status LED's

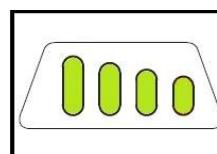
STIHL®

confidential

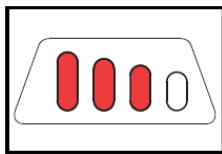
- Battery status is displayed by pressing the button.



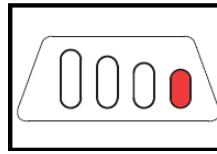
Low charge



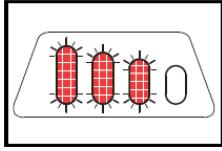
Full charge



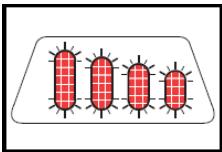
Machine too hot



Battery too hot
or too cold



Electronics issue



Battery issue



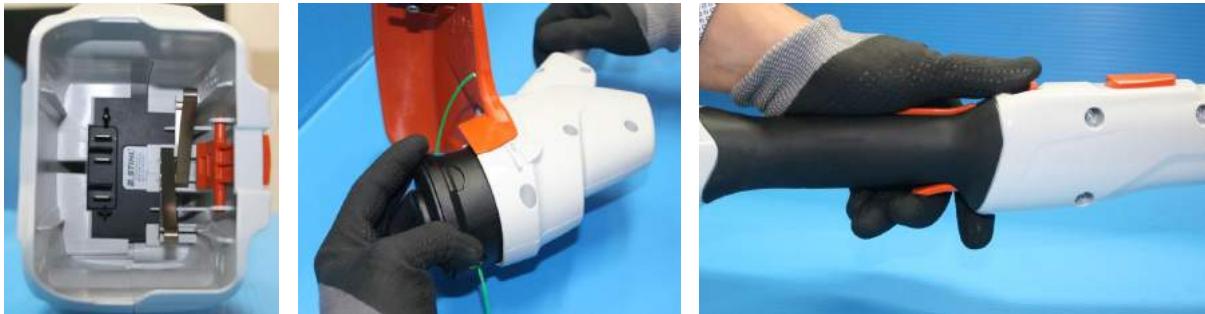
STIHL® Battery and Electric Segment

AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 1 Visual inspection of the complete unit:
 - Remove battery and inspect battery compartment – corrosion?
 - Inspect cutting attachment, **rotate to make sure it turns freely**
 - Slowly squeeze trigger, **listen for an audible “click”**
 - if not heard, unit will need to be opened and inspected



AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 2 Press battery status button:
 - Green LEDs indicate status of charge: 1= 25%, 2= 50%, etc.
 - If only one green light, place battery in charger to confirm it can be charged (green light should begin flashing)
 - Four flashing red LEDs indicate an internal issue with the battery, check purchase date of battery to see if warranty applies



STIHL® Battery and Electric Segment

AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 3 Install a “good” battery and test the unit:
 - Nothing happens – while squeezing the trigger, look at the LEDs on the battery
 - Three flashing red LEDs indicate an internal electronic issue – go to Step 4a
 - No lights – go to Step 4b
 - Remove battery

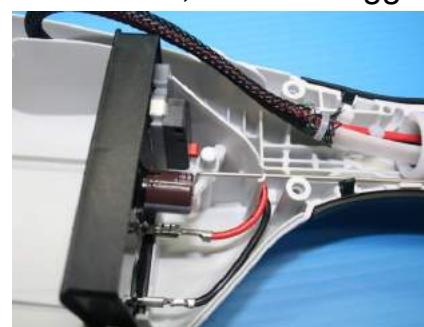


AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 4a (three flashing red LEDs) Open unit at control handle:
 - Remove loop handle and screws to separate control handle assembly
 - Inspect wiring harness, module connections, and that trigger linkage is connected properly



STIHL® Battery and Electric Segment

AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 4a Continued:
 - Disconnect red and black wires from electronic control module
 - Set VOM in Ohm/Resistance mode – connect the red test lead to red wire and black test lead to black wire
 - Value should be between 0.1 – 10.0 Ohms
 - Value will change as head is turned
 - **Yes** - motor is OK; so then issue must be with the control module
 - Replace control module with integral switch
 - **NO** - Go to Step 4b



AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 4b (no red LEDs)
Remove screws in motor housing and separate:
 - Set VOM in Ohm/Resistance mode
 - Unplug either lead and connect test leads to motor connections
 - Value should be between 0.1 – 10.0 Ohms
 - **NO** - If test fails replace electric motor
 - **YES** - If motor tests good then do a continuity check of wiring harness between motor and module
 - Repair / replace wiring harness if it shows no continuity from one side to the other.



STIHL® Battery and Electric Segment

AK Series FSA 56 Diagnostics

STIHL®

confidential

- Step 5 Reassemble and test unit.



AK Series HSA 56 Diagnostics

STIHL®

confidential

- Step 1 Visual inspection of complete unit:
 - Remove battery and inspect battery compartment – corrosion?
 - Inspect cutting blades for damage – verify blades are not jammed or gummed together with plant resin
 - Soak blades with hedge trimmer blade cleaner # 0782 420 1002
 - Slowly squeeze the trigger and front handle,
 - listen for an audible “click” of both switches –
 - if not heard, unit will need to be opened to inspect switch and linkage
 - **Switch is an integral part of the control module**
(switch can not be replaced separately)



STIHL® Battery and Electric Segment

AK Series HSA 56 Diagnostics



confidential

- Step 2 Press battery status button:
 - Green LED's indicate status of charge: 1= 25%, 2= 50%, etc.
 - If only one green light, place battery in charger to confirm it can be charged (green light should begin flashing)
 - Four flashing red lights indicate an internal issue with the battery, check purchase date of battery to see if warranty applies



AK Series HSA 56 Diagnostics



confidential

- Step 3 Install “good” battery and test unit:
 - If nothing happens while squeezing front handle and activating trigger, look at the battery status LEDs
 - Three flashing red lights indicate an internal electronic issue – open unit for inspection
 - No lights – open unit for visual inspection and to test electric motor
 - Remove battery



STIHL® Battery and Electric Segment

AK Series HSA 56 Diagnostics



confidential

- Step 4 Remove housing screws and remove top orange motor cover:
 - Set VOM in the Ohm/Resistance mode
 - Connect test leads from VOM to motor connections
 - Correct value should be between 0.1 – 10.0 Ohms
 - Yes – motor is OK; ...then issue must be with the control module
 - So replace control module with integral switch
 - No – OL reading, meaning: no continuity; then replace electric motor.



AK Series HSA 56 Diagnostics

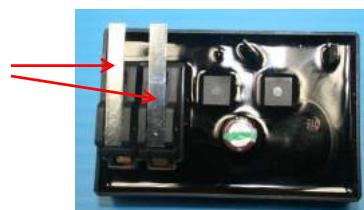


confidential

- Step 5 Replacing the electronic control module:
 - Remove the housing screws and separate housing
 - Inspect wiring harness and switch linkages
 - Disconnect red and black wires from module and replace



Switch levers



STIHL® Battery and Electric Segment

AK Series HSA 56 Diagnostics



confidential

- Step 6 Reassemble and test unit



AK Series MSA 120 C Diagnostics



confidential

- Step 1 Visual inspection of complete unit
 - Remove battery and inspect battery compartment - corrosion present?
 - With gloves on, make sure chain will rotate with chain brake disengaged, then remove bar and chain
 - While depressing the throttle interlock, slowly squeeze the trigger and listen for an audible “click” confirming that switch is mechanically working



STIHL® Battery and Electric Segment

AK Series MSA 120 C Diagnostics



confidential

- Step 2 Press battery status button
 - Green LED's indicate status of charge: 1 = 25%, 2 = 50%, etc.
 - If only one green light, place battery in charger to confirm it will take a charge (lights will begin flashing)
 - Four flashing red lights indicate an internal issue with the battery – check purchase date of battery to see if warranty applies



AK Series MSA 120 C Diagnostics



confidential

- Step 3 Install charged battery and test unit:
 - If nothing happens while depressing the throttle interlock and squeezing the trigger with the chain brake disengaged, then look at the battery status LEDs
 - Three flashing red LEDs indicate an internal electronic issue – open unit for inspection (**continue to Step 4**)
 - No lights at all – open unit for visual inspection & to test electric motor (**go to Step 5**)
 - Remove battery



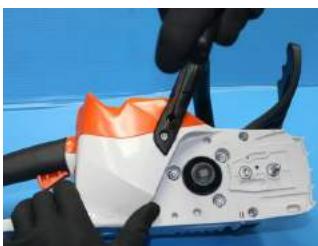
STIHL® Battery and Electric Segment

AK Series MSA 120 C Diagnostics

STIHL®

confidential

- Step 4 Three flashing red LEDs – open unit
 - Remove the (4) screws on the sprocket side, remove handlebar
 - Turn unit over and remove (8) screws to allow housing to separate



AK Series MSA 120 C Diagnostics

STIHL®

confidential

- Step 4 Continued – disconnect oil line
 - Drain oil tank or plug line connector once disconnected



STIHL® Battery and Electric Segment

AK Series MSA 120 C Diagnostics

STIHL®

confidential

- Step 4 Continued – visual inspection
 - Inspect wiring harness – properly routed, damaged, or signs of corrosion?
 - Connectors tight? Battery contacts secure?

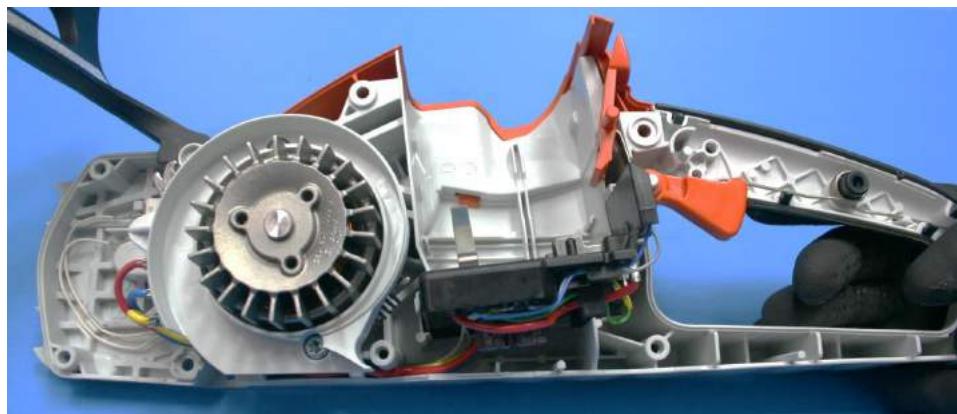


AK Series MSA 120 C Diagnostics

STIHL®

confidential

- Step 4 Continued – no issues identified with visual inspection
 - Replace electronic module
 - Properly route wiring harness
 - Reassemble and test unit



STIHL® Battery and Electric Segment

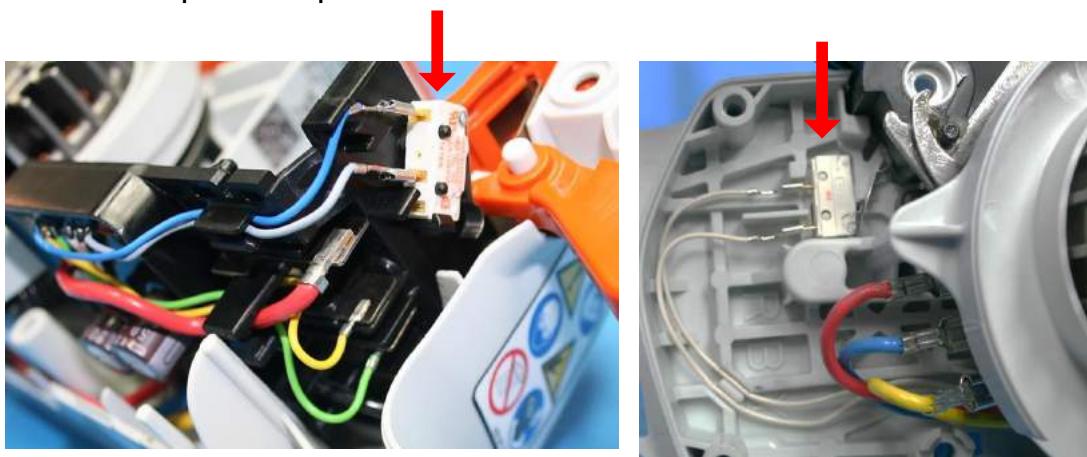
AK Series MSA 120 C Diagnostics

STIHL®

confidential

■ Step 5 Nothing happens, **NO lights from step 3**

- Disengage chain brake and squeeze trigger while depressing throttle interlock – nothing happens?
- Engage chain brake and test unit – nothing happens?
- Prepare to open unit to test main and chain brake switches



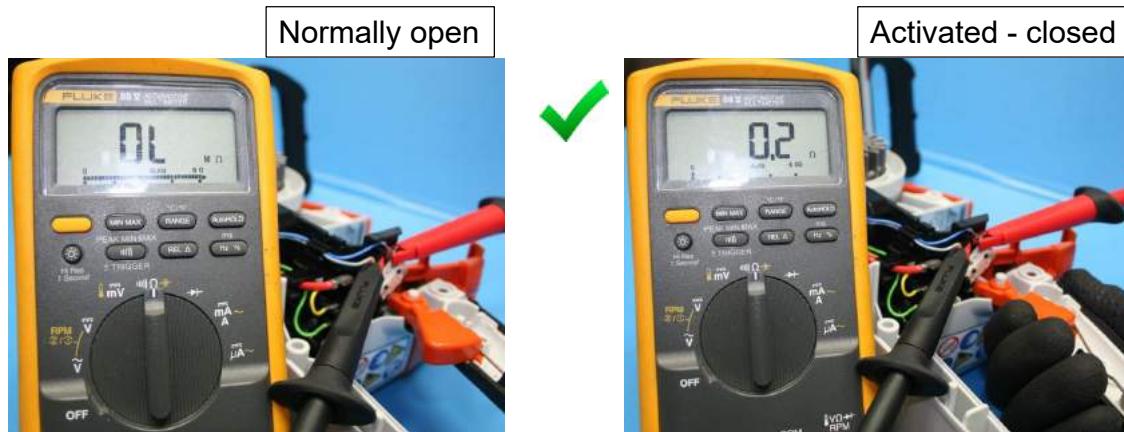
AK Series MSA 120 C Diagnostics

STIHL®

confidential

■ Step 5 Continued – testing trigger switch

- Place VOM in Resistance/Ohm mode
- Disconnect either wire from switch
- Place test leads on switch contacts, activate switch
- Correct reading should show continuity when closed, and OL (open circuit) when not activated
- If test fails, replace switch and retest



STIHL® Battery and Electric Segment

AK Series MSA 120 C Diagnostics



confidential

■ Step 5 Continued – testing chain brake switch

- Place VOM in Resistance/Ohm mode
- Disconnect either wire from switch
- Place test leads on switch contacts
- Correct reading should show continuity when chain brake lever is in run position, & OL (open circuit) when chain brake lever is activated
- If test fails, replace switch and retest



AK Series MSA 120 C Diagnostics



confidential

■ Step 5 Continued –

- If both switches tested correctly and electric motor shows no visual physical or mechanical damage, replace electronic module
- Reassemble and test unit



AP Battery Product Worksheet



Customer Name: _____

Date: _____

Unit Model # _____

Unit Serial # _____

Battery Model # _____

Battery Serial # _____

Technician: _____

Work Order # _____

If no fault or problem is found place a ✓ mark in the box

If a fault or problem is present place an ✗ in the box and write out details of what was found

1. Deflectors, shrouds, covers _____
 Fasteners loose or missing _____
 Condition of battery contacts in battery compartment _____
Other observations _____

 2. Verify battery LED readout:
 1-4 green LED lit – battery OK
 no LED function; check customer's charger, charge battery with known good charger and re-check
 1 glowing red LED – battery too hot or cold; allow to come to room temp and re-check
 3 glowing red LED – tool is too warm, allow to come to room temp and re-check
 4 flashing red LED – replace battery
 3 flashing red LED – problem in unit; troubleshoot and record findings
 Battery tests OK? _____
 Verify customer's charger is functional if customer battery needed charged and tests good
Battery faults codes displayed with ADG 1? _____

 3. Warning Labels _____

 4. Cutting Attachment (Battery Removed): HSA, HLA-verify blades are free; FSA-verify head turns freely; MSA, HTA-chain moves around bar freely; RMA-verify blade spins easily by hand; TSA-verify arbor shaft spins freely _____

 5. Eliminate risk from tool

 6. With battery at 80% charge, analyze AP product unit with ADG 2:
Unit tests OK? _____ Faults codes displayed? _____

 7. Repair as needed using Workshop Manual:

 8. Test run unit _____
- Comments: _____
-

STIHL Battery Products AP Series Diagnostics Example

AP: Battery is Removable



AP Series Service Tools and Equipment



confidential

- A quality digital VOM
- A good battery for reference
- A battery charger
- ADG 1 Analyzer (4850 840 0102)
- ADG 2 Analyzer (4850 840 0202)
- USB cable for ADG 1 and ADG 2 to PC (5910 840 0501)
- PC with STIHL Diagnostic Software and parts lookup installed; an internet connection for updating ADG 1 and ADG 2; also used for saving diagnostic log of findings

STIHL® Battery and Electric Segment

AP Series ADG 1 Battery Analyzer

STIHL®

confidential

- Plug in the ADG 1 power cord, allow it to run a self test, then plug in the battery to be tested
- Press the button at the lower right to advance through the prompts



AP Series ADG 2 Product Analyzer

STIHL®

confidential

- **Batteries cannot be tested using the ADG 2 analyzer**
- The ADG 2 analyzer is used to test the electrical components of all STIHL cordless machines with a brushless motor



STIHL® Battery and Electric Segment

AP Series ADG 2 Procedures



confidential

- The AP battery must be charged to at least 20% of its capacity
- Slide the battery into the analyzer
- If the battery is good the display will read "Eliminate risk from tool"
- The ADG 2 analyzer will run the equipment while it is being tested



AP Series ADG 2 Procedures



confidential

- Cutting attachments must be removed at this point
- Turn the BGA 85 blower away from people or anything that can interrupt the air stream
- Fit the blade scabbard on HSA 66 and HLA 65
- Remove cutting blade from RMA
- Refer to Technical Bulletin TI 20.2012 for codes



Technical Information

20.2012 / Version 3

Troubleshooting with analyzer STIHL ADG 2 – Series 4850

Overview

1. Information about diagnosis with the ADG 2
2. Overview of components of cordless machines
3. Overview of faults
4. Flow charts – Troubleshooting
5. Change log



ZT000 RU

STIHL® Battery and Electric Segment

1. Information about diagnosis with the ADG 2

The following information is provided for the specific diagnosis of electrical components in STIHL's cordless machines. The information supplements the TI 51.2010. The flow charts in the TI 51.2010 are replaced by the updated flow charts in this TI.

Observe the operational instructions in the TI 51.2010 – New analyzer STIHL ADG 2 – Series 4850 and instruction manual for ADG 2!

Observe the safety instructions for using the ADG 2 and the cordless machine to be tested in the respective instruction manual!

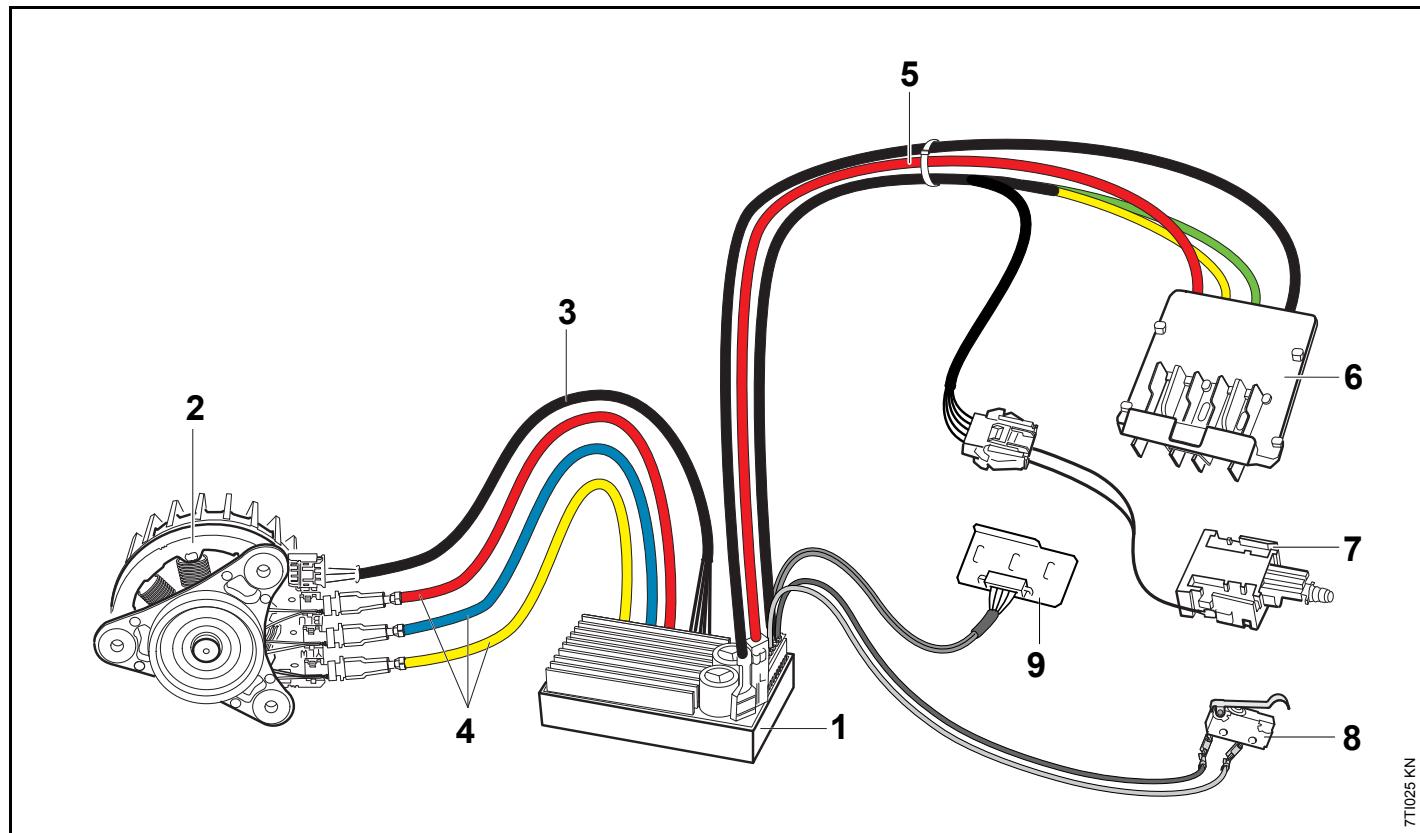
In future, the analyzer ADG 2 can be used with the STIHL diagnostic software.

The connection of the ADG 2 requires the updating of the STIHL diagnostic software.

The update will be available in the foreseeable future.

Only connect the analyzer ADG 2 to the computer after the updated STIHL diagnostic software has been installed.

2. Overview of components of cordless machines



Available depending on the cordless machine:

- 1 Electronic module
- 2 Electric motor
- 3 Sensor lead
- 4 Motor lead
- 5 Wiring harness
- 6 Contact plate
- 7 Potentiometer switch (control handle)
- 8 Switch
- 9 Control electronics

STIHL® Battery and Electric Segment

3. Overview of faults

3.1 Possible faults in STIHL cordless machine

If a fault occurs during the analysis of the cordless machine, depending on what the fault is, one of the following error messages appears on the display.

(xxx) or (Fxx) = damage code

3.1.1 Error message "Electronic module"

Electronic module	(xxx)
-------------------	-------

Damage code	Fault description	Remedy
1	Hardware defective	Replace the electronic module (1)
2 - 29	Internal electronic defect	
33		
50		
52		
53		
55 - 59		
61 - 72		
74 - 76		
78 - 99		
101		
103		
104		
107		
111 - 133		
141		
143 - 145		
32	Temperature measurement faulty	
35	Incorrect calibration values	
36	Incorrect operating parameters	
41 - 44	Voltage measurement faulty	

3.1.2 Error message "Sensor signal"

Sensor signal	(xxx)
---------------	-------

Damage code	Fault description	Remedy
31	Fault in motor temperature measurement	Test sensor lead (3) according to flow chart – see 4.1
60		
34	Fault in detection of motor position	
48		
77		
102		

STIHL® Battery and Electric Segment

3.1.3 Error message "Motor lead / motor"

Motor lead / motor	(xxx)
--------------------	-------

Damage code	Fault description	Remedy
0	Disconnection	Check motor lead (4) / motor (2) according to flow chart – see 4.2
45	Short circuit	
46	Motor lead interchanged	
51	Output power of electronics too high	
54	Braking time of tool too long	
73	Disconnection	
105	Resistances on motor too high	
142	Overcurrent cut-out	
146	Disconnection	

3.1.4 Error message "Motor lead / sensor signal"

Motor lead / sensor signal	(xxx)
----------------------------	-------

Damage code	Fault description	Remedy
47	Fault in detection of motor position	Check motor lead (4) / sensor lead (3) according to flow chart – see 4.3
49	Motor speed too low	

3.1.5 Error message "Wiring harness"

Wiring harness	(xxx)
----------------	-------

Damage code	Fault description	Remedy
37 - 40 100	Connection between wiring harness and contact plate faulty	Check wiring harness (5) according to flow chart – see 4.4
106	Resistances in wiring harness too high	Check wiring harness (5) according to flow chart – see 4.4

3.1.6 Error message "Wiring harness / switch"

Wiring harness / switch	(xxx)
-------------------------	-------

STIHL® Battery and Electric Segment

Damage code	Fault description	Remedy
30 134 - 140	Switch not detected	Check wiring harness (5) / switch (7) according to flow chart – see 4.5
F04	Switch not detected / electronics do not function	

3.1.7 Error message "Short circuit"

Short circuit (xxx)

Damage code	Fault description	Remedy
---	ADG 2 defective or short circuit in cordless machine	Test ADG 2 according to flow chart – see 4.7

3.1.8 Error message "Mechanical equipment"

Mechanical equipment (Fxx)

Damage code	Fault description	Remedy
F01	Required force during operation too high	Test machine according to flow chart – see 4.8.1
F30 - F34	Chain brake defective	Test machine according to flow chart – see 4.8.2
F35	Chain brake defective	Test machine according to flow chart – see 4.8.3

3.1.9 Error message "Switch"

Switch (Fxx)

Damage code	Fault description	Remedy
F10	Trigger switch not detected	Test switch (7) according to flow chart – see 4.6
F11	Potentiometer switch (7) not detected	Test switch (7) according to flow chart – see 4.6
F12	Chain brake switch (8) (MSA) not detected	Test switch (8) according to flow chart – see 4.6
F13	Switch lever switch (8) (HSA) not detected	Test switch (8) according to flow chart – see 4.6
F14	Switch in joint of cutter bar (HSA) not detected	Test switch according to flow chart – see 4.6
F15	Main switch (TSA) not detected	Test switch according to flow chart – see 4.6

STIHL® Battery and Electric Segment

3.1.10 Error message "Battery less suitable"

Battery less suitable

(F02)

Damage code	Fault description	Remedy
F02	Rated capacity of battery being used is too low	Use battery recommended for the cordless machine

3.1.11 Error message "Battery not suitable"

Battery not suitable

(XXX)

Damage code	Fault description	Remedy
108 - 110	Rated capacity of battery being used is too low	Use battery recommended for the cordless machine

3.1.12 Error message "Direction of rotation"

Direction of rotation

(F03)

Damage code	Fault description	Remedy
F03	The machine is turning in the wrong direction	Check connection of motor is correct

3.1.13 Error message "Control electronics"

Control electronics

(F05)

Damage code	Fault description	Remedy
F05	The power levels are not detected. The display of the power levels is defective.	Test control electronics (9) according to flow chart – see 4.9

3.2 Other possible faults (external influences)

Carry out troubleshooting from the chapter "Repairs" of the TI for the introduction of the relevant cordless machine

STIHL® Battery and Electric Segment

4. Flow charts – Troubleshooting

4.1 Flow chart / troubleshooting – Error message "Sensor signal"

- Disconnect the sensor lead plug from the electric motor.

		Yes	No
1	Are the plug or wires of the sensor lead damaged?	<ul style="list-style-type: none">• Replace electronic module.• Continue with 3.	<ul style="list-style-type: none">• Continue with 2.
2	Is the socket of the sensor lead on the electric motor damaged?	<ul style="list-style-type: none">• Replace electric motor.• Continue with 4.	<ul style="list-style-type: none">• Plug sensor lead plug back in.• Turn motor shaft.• Assemble the machine.• Test the machine with the ADG 2 so that the machine is started several times in succession.• Continue with 3.
3	Does the error still occur?	<ul style="list-style-type: none">• Replace electric motor.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 4.	Repairs completed.
4	Does the error still occur?	<ul style="list-style-type: none">• Replace electronic module. <p>Repairs completed.</p>	Repairs completed.

STIHL® Battery and Electric Segment

4.2 Flow chart / troubleshooting – Error message "Motor lead / motor"

- Disconnect wires (YLW, BLU, RED) from the electric motor

		Yes	No
1	Are the plug or wires of the sensor lead damaged?	<ul style="list-style-type: none">• Replace electronic module.• Continue with 3.	<ul style="list-style-type: none">• Continue with 2.
2	Are the connector tags on the electric motor damaged?	<ul style="list-style-type: none">• Replace electric motor.• Continue with 4.	<ul style="list-style-type: none">• Reconnect wires on electric module.• Turn motor shaft.• Assemble the machine.• Test the machine with the ADG 2 so that the machine is started several times in succession.• Continue with 3.
3	Does the error still occur?	<ul style="list-style-type: none">• Replace electric motor.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 4.	Repairs completed.
4	Does the error still occur?	<ul style="list-style-type: none">• Replace electronic module. <p>Repairs completed.</p>	Repairs completed.

4.3 Flow chart / troubleshooting – Error message "Motor lead / sensor signal"

- Disconnect wires (YLW, BLU, RED) and sensor lead plug from electric motor.

		Yes	No
1	Are the plug or wires of the sensor lead damaged?	<ul style="list-style-type: none">• Replace electronic module.• Continue with 3.	<ul style="list-style-type: none">• Continue with 2.
2	Are the connector tags or socket of the sensor lead on the electric motor damaged?	<ul style="list-style-type: none">• Replace electric motor.• Reconnect wires on electric motor and sensor lead plug.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 3.	<ul style="list-style-type: none">• Reconnect wires on electric motor and sensor lead plug.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 3.
3	Does the error still occur?	<ul style="list-style-type: none">• Continue with 4.8.1	Repairs completed.

STIHL® Battery and Electric Segment

4.4 Flow chart / troubleshooting – Error message "Wiring harness"

		Yes	No
1	Is the battery compartment dirty or damaged?	<ul style="list-style-type: none">• Clean battery compartment or replace damaged component.• Replace wires on electronic module.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 2.	<ul style="list-style-type: none">• Replace wires on electronic module.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 2.
2	Does the error still occur?	<ul style="list-style-type: none">• Replace wiring harness with contact plate.• Assemble the machine.• Test the machine again with the ADG 2.• Continue with 3.	Repairs completed.
3	Does the error still occur?	<ul style="list-style-type: none">• Replace electronic module.• Assemble the machine.• Test the machine again with the ADG 2. <p>Repairs completed.</p>	Repairs completed.

STIHL® Battery and Electric Segment

4.5 Flow chart / troubleshooting – Error message "Wiring harness/switch"

		Yes	No
1	Is the wiring harness visibly damaged from the outside?	<ul style="list-style-type: none">● Replace wiring harness.● Continue with 3.	<ul style="list-style-type: none">● Disconnect connections between wiring harness, switch and electronic module.● Continue with 2.
2	Are the wires or plug connections visibly damaged from the outside?	<ul style="list-style-type: none">● Replace wiring harness with contact plate.● Assemble the machine.● Test the machine again with the ADG 2.● Continue with 3.	<ul style="list-style-type: none">● Reconnect connections between wiring harness, switch and electronic module.● Continue with 3.
3	Does the error still occur?	<ul style="list-style-type: none">● Replace switch.● Assemble the machine.● Test the machine again with the ADG 2.● Continue with 4.	Repairs completed.
4	Does the error still occur?	<ul style="list-style-type: none">● If the wiring harness has not been replaced yet: Replace wiring harness.● Assemble the machine.● Test the machine again with the ADG 2.● Continue with 5.	Repairs completed.
5	Does the error still occur?	<ul style="list-style-type: none">● Replace electronic module.● Assemble the machine.● Test the machine again with the ADG 2. <p>Repairs completed.</p>	Repairs completed.

STIHL® Battery and Electric Segment

4.6 Flow chart / troubleshooting – Error message "Switch"

		Yes	No
1	Was the switch activated during the test run?	<ul style="list-style-type: none"> If the operating element is damaged: Replace operating element. Continue with 2. 	<ul style="list-style-type: none"> Test the switch again with the ADG 2. Continue with 2.
2	Are the wiring harness or plug connections damaged?	<ul style="list-style-type: none"> Replace wiring harness or plug connections. Continue with 3. 	<ul style="list-style-type: none"> Continue with 3.
3	Are the plug-in contacts damaged?	<ul style="list-style-type: none"> Replace plug-in contacts. Assemble the machine. Test the machine again with the ADG 2. Continue with 4. 	Continue with 4.
4	Does the error still occur?	<ul style="list-style-type: none"> If the machine has a control electronics: Check control electronics, 4.9 Continue with 5. 	<ul style="list-style-type: none"> Continue with 5.
5	Does the error still occur?	<p>In rare cases, the electronic module is defective.</p> <ul style="list-style-type: none"> Replace electronic module. <p>Repairs completed.</p>	Repairs completed.

4.7 Flow chart / troubleshooting – Error message "Short circuit"

		Yes	No
1	Is the adapter or connecting cable of the ADG 2 damaged?	<ul style="list-style-type: none"> Replace adapter or connecting cable of the ADG 2. Use this ADG 2 to test a different diagnosable cordless machine. Continue with 2. 	<ul style="list-style-type: none"> Use this ADG 2 to test a different diagnosable cordless machine. Continue with 2.
2	Does the error still occur?	<p>The ADG 2 is defective.</p> <ul style="list-style-type: none"> Observe service notes in TI 51 2010 	<ul style="list-style-type: none"> Test the original machine again, 4.4

STIHL® Battery and Electric Segment

4.8 Flow chart / troubleshooting – Error message "Mechanical equipment"

4.8.1 Damage code F01

		Yes	No
1	Is the cutting attachment or guide bar damaged or bent?	<ul style="list-style-type: none">● Replace cutting attachment or guide bar.● Test the machine again with the ADG 2.● Continue with 2.	<ul style="list-style-type: none">● Continue with 3.
2	Does the error still occur?	<ul style="list-style-type: none">● Continue with 3.	Repairs completed.
3	Is the electric motor dirty and stiff?	<ul style="list-style-type: none">● Clean the area around the electric motor.● Test the machine again with the ADG 2.● Continue with 4.	<ul style="list-style-type: none">● Continue with 4.
4	Does the error still occur?	<ul style="list-style-type: none">● Replace electric motor. <p>Repairs completed.</p>	Repairs completed.

STIHL® Battery and Electric Segment

4.8.2 Damage code F30 - F34

		Yes	No
1	Is the cutting attachment or guide bar damaged or bent?	<ul style="list-style-type: none"> Replace cutting attachment or guide bar. Test the machine again with the ADG 2. Continue with 2. 	<ul style="list-style-type: none"> Continue with 2.
2	Is the chain brake lever damaged?	<ul style="list-style-type: none"> Replace chain brake lever. Test the machine again with the ADG 2. Continue with 3. 	<ul style="list-style-type: none"> Continue with 3.
3	Is the brake band or tension spring damaged?	<ul style="list-style-type: none"> Replace brake band or tension spring. If the chain sprocket is worn: Replace chain sprocket. Test the machine again with the ADG 2. Continue with 4. 	<ul style="list-style-type: none"> If the chain sprocket is worn: Replace chain sprocket. Test the machine again with the ADG 2. Continue with 4.
4	Does the error still occur?	<ul style="list-style-type: none"> Continue with 5. 	Repairs completed.
5	Is the electric motor dirty and stiff?	<ul style="list-style-type: none"> Clean the area around the electric motor. Test the machine again with the ADG 2. Continue with 6. 	<ul style="list-style-type: none"> Test the machine again with the ADG 2. Continue with 6.
6	Does the error still occur?	<ul style="list-style-type: none"> If the damage code is "F30":  4.1. If the damage code is "F31": Replace electronic module. If the damage code is "F32":  4.3. If the damage code is "F33":  4.3. If the damage code is "F34":  4.2. Repairs completed. 	Repairs completed.

STIHL® Battery and Electric Segment

4.8.3 Damage code F35

		Yes	No
1	Is the chain brake lever damaged?	<ul style="list-style-type: none">Replace chain brake lever.Test the machine again with the ADG 2.Continue with 2.	<ul style="list-style-type: none">Continue with 2.
2	Is the brake band or tension spring damaged?	<ul style="list-style-type: none">Replace brake band or tension spring.If the chain sprocket is worn: Replace chain sprocket.Test the machine again with the ADG 2. <p>Repairs completed.</p>	<ul style="list-style-type: none">If the chain sprocket is worn: Replace chain sprocket.Test the machine again with the ADG 2. <p>Repairs completed.</p>

4.9 Flow chart / troubleshooting – Error message "Control electronics"

		Yes	No
1	Was the switch activated during the test run?	<ul style="list-style-type: none">Continue with 2.	<ul style="list-style-type: none">Test the switch again with the ADG 2.Continue with 1.
2	Is the control electronics magnet in the wrong position or damaged?	<ul style="list-style-type: none">Position magnet correctly or replace.Test the machine again with the ADG 2.Continue with 3.	<ul style="list-style-type: none">Continue with 3.
3	Is the wiring harness or plug connection damaged?	<ul style="list-style-type: none">Replace wiring harness or plug connection.Test the machine again with the ADG 2.Continue with 4.	<ul style="list-style-type: none">Continue with 4.
4	Does the error still occur?	<ul style="list-style-type: none">Replace control electronics. <p>Repairs completed.</p>	Repairs completed.

STIHL® Battery and Electric Segment

5. Change log

Technical information	Error message	Chapter	Damage code
Version 2, dated 12/2013:	Addition "Direction of rotation"	3.1.2	F03
	Addition "Wiring harness / switch"	3.1.6	F04
Version 3, dated 02/2015:	Addition "Electronic module"	3.1.1	107, 111 - 133, 141, 143 - 145
	Addition "Motor lead / motor"	3.1.3	105, 142 ,146
	Addition "Wiring harness"	3.1.5	106
	Addition "Wiring harness / switch"	3.1.6	134 - 140
	Renaming "Test base load" in "Mechanical equipment"	3.1.8	
	Addition "Mechanical equipment"	3.1.8	F30 - F35
	Addition "Switch"	3.1.9	F14, F15
	Addition "Battery not suitable"	3.1.11	108 - 110
	Addition "Control electronics"	3.1.3	F05

Technical Information

47.2016

Connecting cord with adapter AP – Series 4850

Belt bag AP with connecting cord – Series 4850

Adapter AP – Series 4850

Backpack battery STIHL AR 900 – Series 4865

Backpack battery STIHL AR 2000, 3000 – Series 4865

Cordless blower STIHL BGA 100 – Series 4866

Cordless trimmer STIHL FSA 130 – Series 4867

Cordless hedge trimmer STIHL HSA 94 – Series 4869

Contents

1. Technical description
2. Additional documents
3. Spare parts
4. Connecting cord
5. Socket

1. Technical description

The connecting cord is being replaced by a new, more robust version. The new version has a new plug with flat contacts.

The new plug on the connecting cord requires a corresponding new socket on the cordless product or cordless accessory to be connected.

The appropriate socket has a clearly visible orange ring to differentiate it from the old socket, which was black.

The new connecting cord is orange and has kink protection.

STIHL® Battery and Electric Segment

2. Additional documents

Please refer to the following documents if needed:

- Technical Information 22.2016
- Technical Information 25.2015
- Service Manual STIHL BGA 100
- Service Manual STIHL FSA 130
- Service Manual STIHL HSA 94
- Spare parts list STIHL AR 900
- Spare parts list STIHL AR 2000
- Spare parts list STIHL AR 3000
- Spare parts list Belt bag AP with connecting cord
- Spare parts list STIHL BGA 100
- Spare parts list STIHL FSA 130
- Spare parts list HSA 94

3. Spare parts

Item	Description	Previous	New	Notes
1	Connecting cord, including Item 2	4865 440 2004	---	1) 8)
2	Warning plate	0000 967 7362	---	1)
3	Connecting cord including Item 4	---	4850 440 2012	7) 8)
4	Warning plate	---	0000 967 7372	
5	Connecting cord with AP adapter, including Items 1, 8	4850 440 5003	---	1) 8)
6	Belt bag AP with connecting cord	4850 440 5100		1) 8)
7	Belt bag AP with connecting cord		4850 440 5103	7) 8)
8	AP adapter including Item 10	4850 440 0503	---	1) 8)
9	AP adapter including Item 11	---	4850 440 0505	7) 8)
10	Instruction label	4850 967 4014	---	1)
11	Instruction label	---	4850 967 4020	
12	Socket (BGA 100)	4866 400 3400	---	1)
13	Socket (BGA 100)		4866 400 3401	5) 7)

Changes introduced at serial number 4 36 993 675 (BGA 100)

Notes

- 1) Previous part is no longer available from factory
- 2) Previous part remains available for older machines
- 3) Previous part is only available from factory while stocks last
- 4) Previous part can also be used with new machines
- 5) New part can also be used with older machines
- 6) New part cannot be used with older machines
- 7) See "Service notes"
- 8) Only contains parts affected by the modification. Parts not listed remain unchanged.

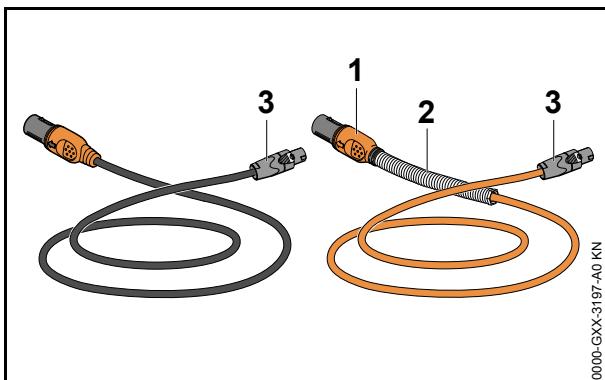
STIHL® Battery and Electric Segment

4. Connecting cord

4.1 Explanation

The connecting cord has a new plug with flat contacts and kink protection. The color of the connecting cord is changing from black to orange.

4.2 Spare parts supply



Left: previous connecting cord 4865 440 2004, black

Right: new connecting cord 4850 440 2012 with new plug (1) and kink protection (2), orange

The previous connecting cord is no longer available. The previous connecting cord can continue to be used for cordless products and cordless accessories with the previous version of the socket.

The new connecting cord can only be used with cordless products and cordless accessories that have the new socket.

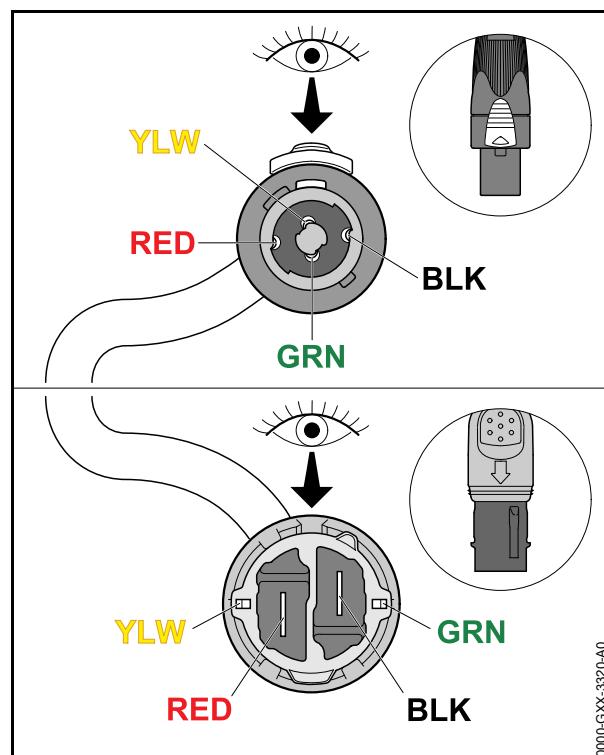
The connecting cord with AP adapter will no longer be supplied as part of the set. The new connecting cord and the new AP adapter are available individually.

4.3 Service notes

The previous connecting cord can be replaced by the new connecting cord.

The battery end plug (3) of the connecting cord remains unchanged and can be repaired – refer to TI 22.2016.

The contacts of the connecting cord can be tested for electrical continuity – refer to TI 25.2015.



- Using a Multimeter or other continuity testing device, check the contacts of the connecting cord for electrical continuity.

If there is no electrical continuity, the cable ends may have slipped out of the screw terminals in the plug, or the plug or connecting cord may be faulty.

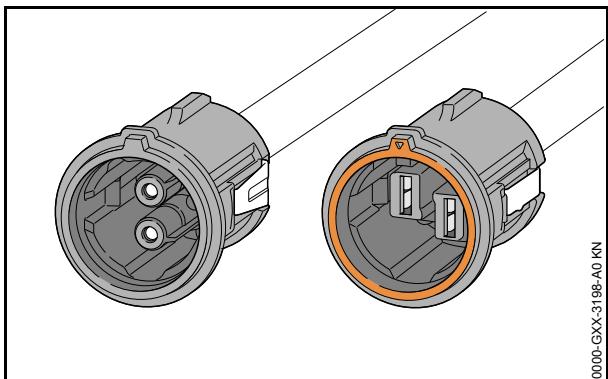
STIHL® Battery and Electric Segment

5. Socket

5.1 Explanation

The new socket is adapted to the flat contacts of the plug of the connecting cord and it has a clearly visible orange marking.

5.2 Spare parts supply



Left: previous socket 4866 400 3400
(BGA 100)

Right: new socket 4866 400 3401
(BGA 100) with orange marking

The previous socket is no longer available.
The previous socket can continue to be used with cordless products and cordless accessories that have the previous version of the connecting cord.

The new socket can be used with cordless products and cordless accessories that have the new version of the connecting cord.

The cordless trimmer STIHL FSA 130 and the cordless hedge trimmer STIHL HSA 94 will only be available with the new socket.

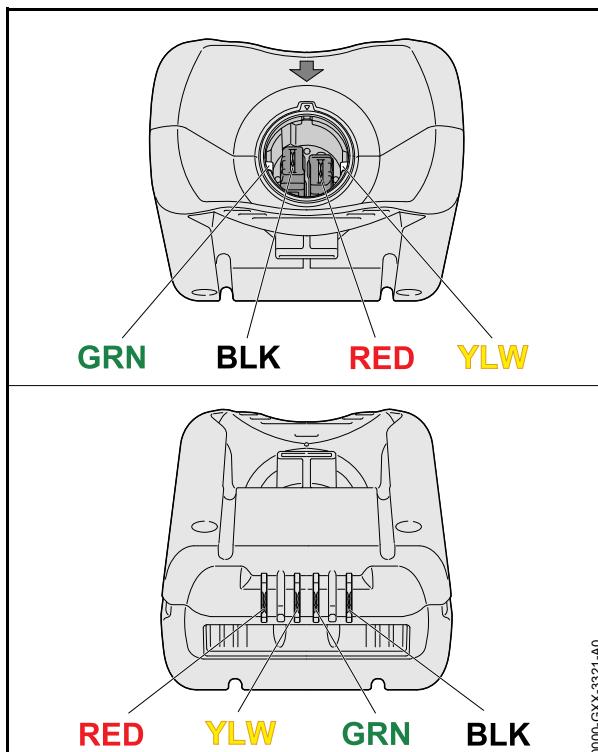
5.3 Service notes

On the cordless blower STIHL BGA 100 the previous socket can be converted to the new socket, refer to Service Manual STIHL BGA 100.

The socket on the AP adapter cannot be converted.
The AP adapter must be replaced.

5.3.1 Testing contacts of socket on AP adapter for electrical continuity

The contacts of the socket on the AP adapter can be tested for electrical continuity – refer to TI 25.2015.



- Using a measuring device, check the contacts of the new socket on AP adapter for electrical continuity.

If there is no electrical continuity, the AP adapter is faulty.

120 volt AC Diagnostics

STIHL®

Customer Name: _____

Model # _____

Technician: _____

Date: _____

Serial # _____

Work Order # _____

If no fault or problem is found place a ✓ mark in the box

If a fault or problem is present place an ✗ in the box and write out details of what was found

- | | |
|--|--|
| 1. <input type="checkbox"/> Deflectors, shrouds, covers _____
<input type="checkbox"/> Fasteners loose or missing _____
Other observations _____ | 13. <input type="checkbox"/> Verify function of any diodes present _____

14. <input type="checkbox"/> Verify continuity of motor _____

15. <input type="checkbox"/> Verify overload circuit breaker if present _____

16. <input type="checkbox"/> Any other observations about unit _____

17. <input type="checkbox"/> Repair as needed

18. <input type="checkbox"/> Verify wiring harness is routed properly _____

19. <input type="checkbox"/> Reassemble unit, plug in and verify operation _____

20. <input type="checkbox"/> Hi-Pot test pass _____

21. <input type="checkbox"/> Amperage draw test:
Specification on label _____
Actual amperage _____ |
| 2. <input type="checkbox"/> Warning Labels _____ | Comments: _____
_____ |
| 3. <input type="checkbox"/> Cutting Attachment: Note type & condition;
any accessories present? _____ | _____ |
| 4. <input type="checkbox"/> Burnt electrical smell present (sniff test)
_____ | _____ |
| 5. <input type="checkbox"/> Power cord condition _____ | _____ |
| 6. <input type="checkbox"/> Connect power cord to AC outlet, turn on
unit and record observations: _____ | _____ |
| 7. <input type="checkbox"/> Amperage draw test if unit operates, if no
operation occurs proceed to step 8:
Specification on label _____
Actual amperage _____ | _____ |
| 8. <input type="checkbox"/> Disconnect power cord from AC outlet,
open unit for internal inspection:
<input type="checkbox"/> Inspect wiring harness for obvious damage
_____ | _____ |
| 9. <input type="checkbox"/> Verify continuity of power cord _____ | _____ |
| 10. <input type="checkbox"/> Verify on/off function of main switch _____ | _____ |
| 11. <input type="checkbox"/> Verify continuity and function of interlock or
safety switches _____ | _____ |
| 12. <input type="checkbox"/> Verify value of any capacitors present _____ | _____ |

© 2016 STIHL Incorporated, Virginia Beach, VA.

All rights reserved.

STIHL dealers may copy this document for their use only.

US/STR

STIHL 120 Volt Products

AC Diagnostics for STIHL Corded Product



Precautions for Service Technician



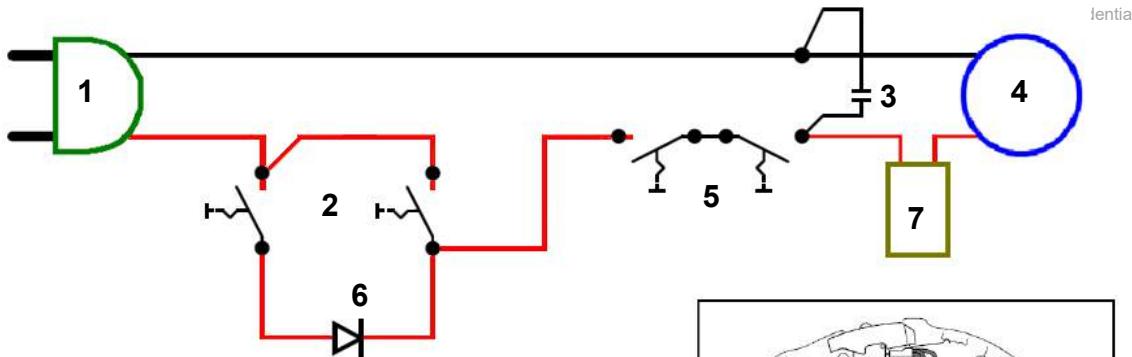
confidential

- When replacing components use only OEM replacement parts
- Always disconnect the power supply before maintenance, repair work, or cleaning any electrical product
- Never use water to clean the unit
- Place a non conductive mat underneath the unit being serviced
- Place a non conductive floor mat in the work area when servicing electrical equipment
- It is recommended to perform a Hi-Pot test if the motor housing has been opened up for inspection or repair
- Use precautions when servicing AC powered equipment

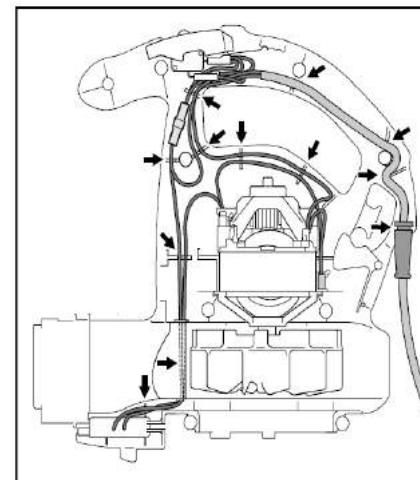
STIHL® Battery and Electric Segment

BGE 71 Electrical Diagram

STIHL®



1. Plug, power cord
2. Switch
3. Capacitor
4. Motor
5. Interlock Switch
6. Diode
7. Overload circuit breaker



STIHL AC Diagnostics

STIHL®

confidential

1. Visual inspection, damaged or missing fasteners
2. Warning labels readable
3. Verify condition of attachments



STIHL® Battery and Electric Segment

STIHL AC Diagnostics

STIHL®

confidential

4. Burnt electrical smell (Sniff Test)
5. Inspect for damage, cuts in insulation, any signs of overheating?



STIHL AC Diagnostics

STIHL®

confidential

6. Connect to power, will it start and run? Are there any unusual sounds? Humming, grinding
7. If unit appears to run OK verify Amp draw and compare to label on unit



STIHL® Battery and Electric Segment

Electrical Service Area



confidential



- Place a nonconductive mat underneath the unit being serviced
- Place a nonconductive floor mat in the work area when servicing electrical equipment
- Wear insulating gloves and safety glasses
- Work area should be dry and away from traffic area
- Work area should be clean and organized
- Keep bystanders out of the work area

STIHL AC Diagnostics



confidential

8. Disconnect from power supply; Remove the blower tube and screen from unit; remove the screws using a T 20 tool



STIHL® Battery and Electric Segment

STIHL AC Diagnostics

STIHL®

confidential



- Separate the motor housings by using a screwdriver in the pry point
- Visually inspect for any obvious faults

STIHL AC Diagnostics

STIHL®

confidential

9. Set the multimeter in Ohm's mode and check each side of the power cord for continuity
 - The meter is showing 00.00 kilohms indicating a CLOSED circuit so this side of the cord is OK
 - Meter could also be set to "buzzer" to indicate continuity
 - Wiggle the cord while testing



STIHL® Battery and Electric Segment

On/Off Switch Testing



confidential



- Set multimeter in Ohm's mode to measure resistance
- With switch not depressed, meter shows OL (open loop) no electrical flow (Good)
- With switch depressed, meter shows 0.000, no resistance (Good)

STIHL AC Diagnostics



confidential

10. Remove switches to test with multimeter



STIHL® Battery and Electric Segment

Interlock Switch

STIHL®

confidential

- Interlock switch in unit
- Prevents unit from operating when screen or tube is removed
- Interlock switch out of unit



STIHL AC Diagnostics

STIHL®

confidential

11. With meter set in Ohm's mode and switch depressed, meter shows no resistance (Good)



STIHL® Battery and Electric Segment

STIHL AC Diagnostics

STIHL®

confidential

12. Set multimeter to test capacitance in farads

- The tolerances are located on the front of the capacitor
- A bad capacitor could be open or out of range



STIHL AC Diagnostics

STIHL®

confidential

13. Set meter in Diode mode and attach leads

- The meter shows resistance indicating current flow
- By reversing the leads the meter shows OL, no current flow
- A bad diode could be open or allow current flow in both directions



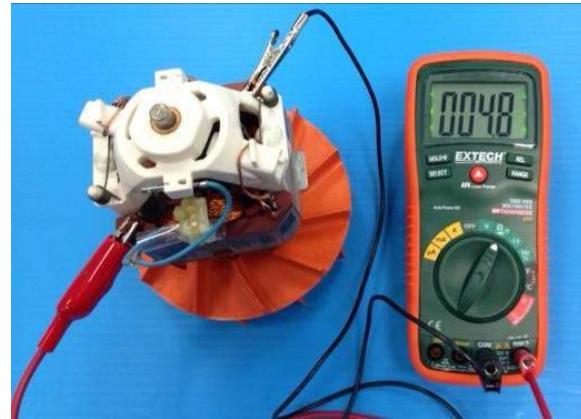
STIHL® Battery and Electric Segment

STIHL AC Diagnostics



confidential

- Set multimeter in Ohm's mode to measure resistance
 - Disconnect the overload circuit breaker from the motor
14. Connect the test leads to the terminals on the motor
- The reading shows motor having good resistance (no specific value, just anything other than OL)
 - Spin motor slowly by hand, readings will change but should not show OL meaning a bad or dead spot on the commutator

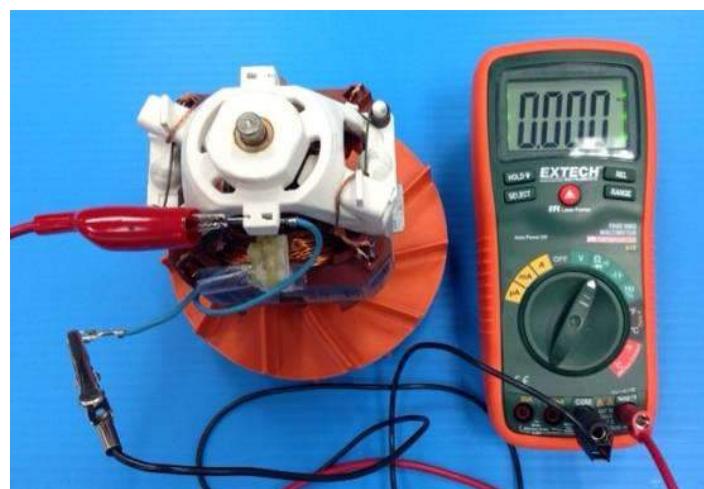


STIHL AC Diagnostics



confidential

15. Disconnect the overload circuit breaker from the motor
- Set multimeter in Ohm's mode
 - The reading is showing no resistance to current flow (Good)



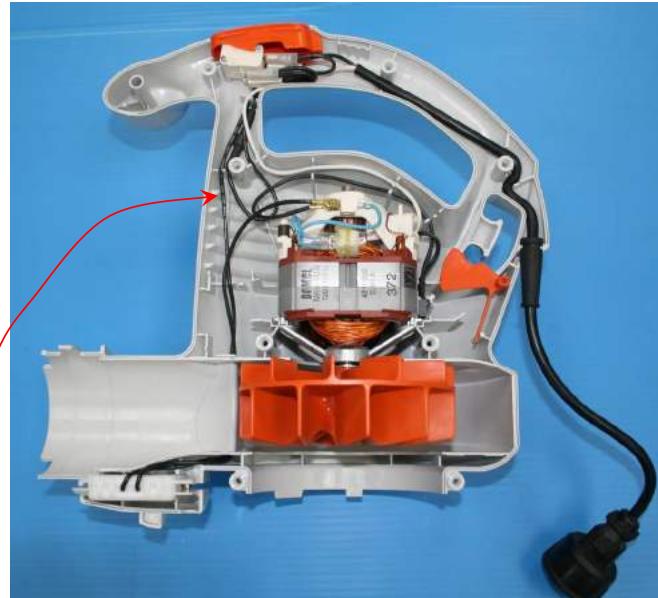
STIHL® Battery and Electric Segment

Final Steps

STIHL®

confidential

16. Any other observations
17. Repair as needed
18. Verify wiring harness is routed properly, use wire insert tool 5910 890 4000 to safely push wires into place



Final Steps

STIHL®

confidential

19. Reassemble unit, plug in and verify operation
20. Conduct a Hi-Pot test (recommended)
21. Conduct amperage draw test and record results



Electrical Equipment and Extension Cord Length Electric

Electric tools require the correct extension cord. Using the incorrect length extension cord may damage the electrical product or cause injury. Double insulated tools have 2-wire cords and can be used with 2-wire or 3-wire extension cords. Tools that have 3-wire cords requiring grounding must only be used with extension cords that have 3-prong grounding type plugs and 3-pole receptacles. Make sure which construction your tool is before choosing an extension cord. Only round jacketed extension cords should be used and we recommend that they be listed by Underwriters Laboratories (U.L. in the United States or C.S.A. in Canada). If the extension will be used outside, the cord must be suitable for outdoor use. Any cord marked as outdoor can also be used for indoor work. The letters "WA" on the cord jacket indicate that the cord is suitable for outdoor use.

An extension cord must have adequate wire size (AWG or American Wire Gauge) for safety, and to prevent loss of power and overheating. Using the incorrect power cord may damage the motor. The smaller the gauge number of the wire, the greater the capacity of the cable, that is 16 gauge has more capacity than 18 gauge. When using more than one extension cord to make up the total length, be sure each individual extension contains at least the minimum wire size. Do not use a 2-prong adapter on a 3- prong cord to extend the cord.

To determine the minimum wire size required, refer to the chart below:

Model#	Extension Cord Sizes			
	Amp Draw @	Recommended AWG Wire Size @:		
		120 Volts	25 ft.	50 ft.
BE 55/BGE 60 Blower	9.6 amps	16	16	14
BGE 61/BGE 71	9.2 amps	16	16	14
FE 55/FSE 60 Trimmer	5.5 amps	16	16	16
EC 70/FCE 60 Edger	5.5 amps	16	16	16
HSE 52/HSE 60/HSE 70	3.8 / 4.5 amps.	16	16	16
RE 102K Washer	13 amps	14	12	12
RE 110K Washer	15 amps	12	12	12
SE 61 Vacuum	8.3 amps	16	16	14
SE 62 Vacuum	8.3 amps	16	16	14
SE 100 Vacuum	8 amps	16	16	14
SE 122 Vacuum	8.3 amps	16	16	14
E14 Chain Saw	11.7 amps	14	12	12
E 140/MSE 140 Chain Saw	11.7 amps	14	12	12
MSE 170 Chain Saw	13.1 amps	14	12	12
E 180/MSE 180 Chain Saw	15 amps	12	12	12
MSE 210 Chain Saw	15 amps	12	12	12
E 20 Chain Saw	15 amps	12	12	12
E 220/MSE 220 Chain Saw	15 amps	12	12	12
MSE 250 Chain Saw	15 amps	12	12	12

Before using an extension cord, inspect it for loose or exposed wires, damaged insulation, and defective fittings. Make any needed repairs or replace the extension cord if necessary.

Pressure Washer Spray Nozzles

Model	Off Load RPM's	On Load RPM's	Spraying Pressure	Bypass Pressure
RB 200	3900 max	3300-3500	2250-2350 psi	2800 psi
RB 400	3900 max	3300-3500	2400-2500 psi	3200 psi
RB 600	3900 max	3300-3500	2700-2800 psi	3400 psi
RB 800	3800 max	3300-3500	3700-3800 psi	4400 psi

Model	Min Hose Diameter	Max Hose Length	Min Water Supply	Max Water Temp
RB 200	¾"	50'	3.3 GPM	125° F
RB 400	¾"	50'	3.7 GPM	125° F
RB 600	¾"	50'	4 GPM	125° F
RB 800	¾"	50'	5 GPM	125° F



0° RED

15° YELLOW

25° GREEN

40° WHITE

65° BLACK

RB 200

Not Available	Nozzle #: 15027	Nozzle #: 25027	Not Available	Nozzle #: 65400
Not Available	STIHL P/N: 4925 502 1001	STIHL P/N: 4925 502 1000	Not Available	STIHL P/N: 4925 502 1002

RB 400

Nozzle #: 00030	Nozzle #: 15030	Nozzle #: 25030	Nozzle #: 40030	Nozzle #: 65400
STIHL P/N: 4925 502 1003	STIHL P/N: 4925 502 1004	STIHL P/N: 4925 502 1005	STIHL P/N: 4925 502 1006	STIHL P/N: 4925 502 1002

RB 600

Nozzle #: 00033	Nozzle #: 15033	Nozzle #: 25033	Nozzle #: 40033	Nozzle #: 65400
STIHL P/N: 4925 502 1007	STIHL P/N: 4925 502 1008	STIHL P/N: 4925 502 1009	STIHL P/N: 4925 502 1010	STIHL P/N: 4925 502 1002

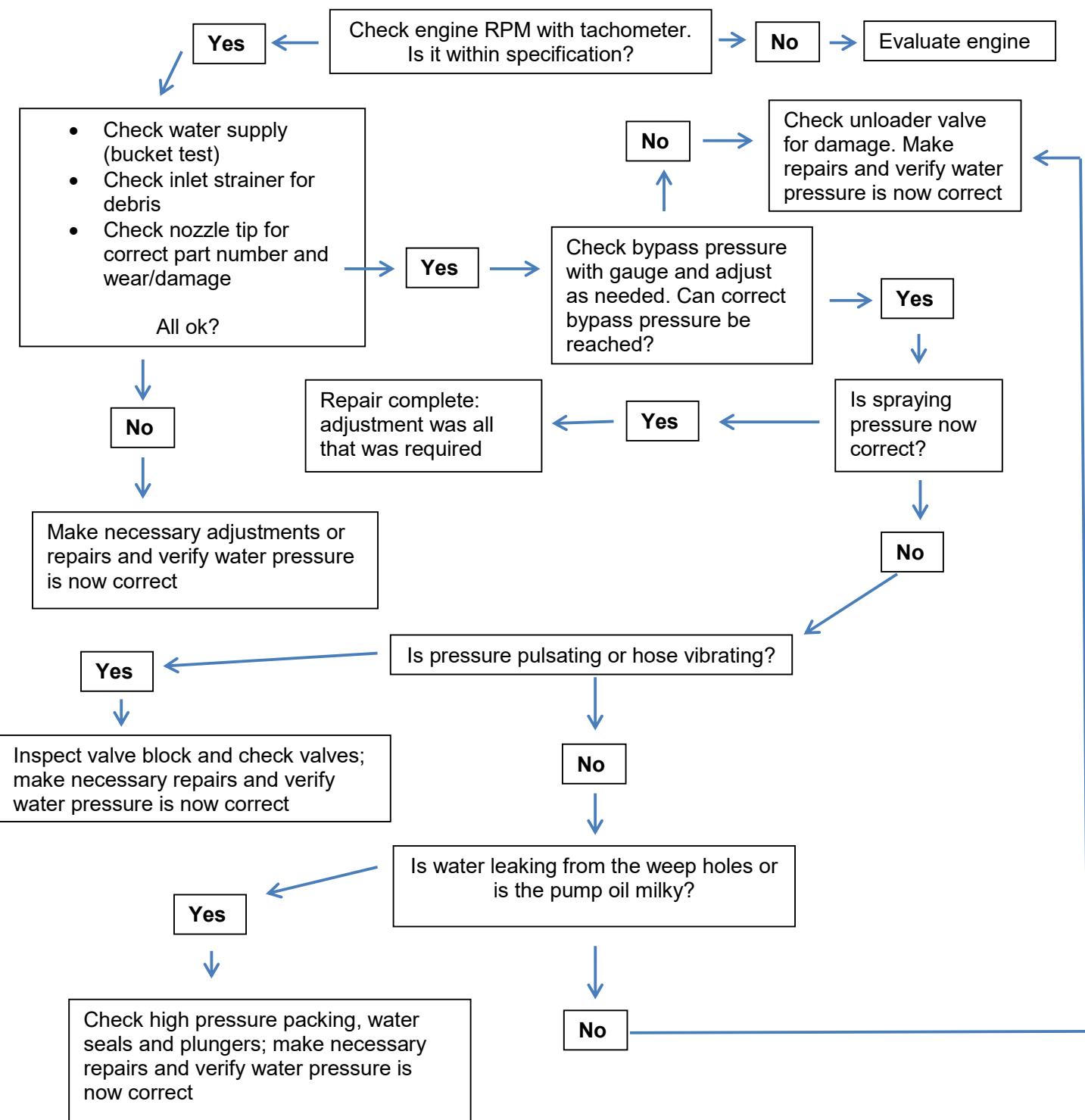
RB 800

Nozzle #: 00037	Nozzle #: 15037	Nozzle #: 25037	Nozzle #: 40037	Nozzle #: 65400
STIHL P/N: 4925 502 1011	STIHL P/N: 4925 502 1012	STIHL P/N: 4925 502 1013	STIHL P/N: 4925 502 1014	STIHL P/N: 4925 502 1002

Pressure Washer Troubleshooting

STIHL Pressure Washer Troubleshooting

Customer Complaint: Low Spraying Pressure



STIHL Pressure Washer Troubleshooting Guide

<u>PROBLEM</u>	<u>PROBABLE CAUSE</u>	<u>SOLUTION</u>
No discharge at nozzle:	Inadequate water supply Clogged Nozzle Clogged inlet filter	Ensure supply hose is 3/4" diameter and water supply is fully opened (water = unit flow + 25%) Clean nozzle Clean or replace filter
Low Pressure:	Inadequate water supply Worn or wrong nozzle Unloader misadjusted or damaged Unloader bypassing water in bypass Damaged or corroded valves Worn or damaged packings Incorrect engine RPM's	Ensure supply hose is 3/4" diameter and water supply is fully opened (water = unit flow + 25%) Check or replace with correct size nozzle Properly adjust or replace unloader valve Properly adjust, rebuild, or replace unloader Replace valves Replace packings Set engine 3600 RPM offload, 3450 on load
Pulsating pressure:	Valves worn or obstructed Worn or incorrect nozzle No or low inlet water pressure or volume Worn or damaged packings Blocked inlet supply Clogged nozzle	Clean or replace valves Check or replace with correct size nozzle Ensure supply hose is 3/4" diameter and water supply is fully opened (water = unit flow + 25%) Replace packings Remove blockage Clean or replace nozzle

<u>PROBLEM</u>	<u>PROBABLE CAUSE</u>	<u>SOLUTION</u>
Detergent won't siphon:	Detergent hose not submerge into solution Detergent strainer obstructed Detergent hose cut or kinked Detergent nozzle plugged Too many high pressure hose extension used Ball and spring in venturi stuck or corroded	Check and / or submerge detergent hose Clean or replace Inspect or replace Clean or replace nozzle Use only one extension, maximum Clean or replace injector kit
Water flows from nozzle when trigger is released	Gun is malfunctioning	Clean or replace gun valve
Water flows from heat dump valve	Inlet water temperature too high Pressure washer left in bypass too long	Do not exceed 125 F Do not let sit in bypass for more than 2 minutes
Water flows from pressure relief valve	Unloader not bypassing	Inspect, rebuild or replace unloader
Oil in pump appears milky	Water in Oil Worn or damaged packings Cracked or damaged plunger	Drain oil, flush pump crankcase, refill to proper level Replace packings Replace plunger
Oil leaking from Pump	Oil seal worn or damaged Crankcase over filled Wrong oil used	Replace oil seal Fill to proper level Use STIHL pump oil

STIHL Pressure Washer Troubleshooting Guide

<u>PROBLEM</u>	<u>PROBABLE CAUSE</u>	<u>SOLUTION</u>
Excessive noise	No or low inlet water pressure or volume (cavitation) Worn or damaged valves Loose or worn connecting rods Worn or damaged bearings Worn or damaged crankshaft	Ensure supply hose is 3/4" diameter and water supply is fully opened (water = unit flow + 25%) Replace valves Replace rods Replace bearings Replace pump
Excessive vibration:	No or low inlet water pressure or volume Loose or worn connecting rods Worn or damaged bearings Worn or damaged crankshaft	Ensure supply hose is 3/4" diameter and water supply is fully opened (water = unit flow + 25%) Replace rods Replace bearings Replace pump

Pressure Washers Pump Storage

- Winterization kit: 7010 871 0278
- Bottle screws onto inlet fitting
- For longer than 2 month storage:
 - Drain as much water from hose/trigger gun as possible
 - Screw winterizer bottle onto inlet fitting
 - Pull engine over several times with switch/lever in 'Off' position until fluid exiting from outlet fitting is 100% winterizer solution
- For RB 400 you will need short garden hose extension due to roll bar obstruction



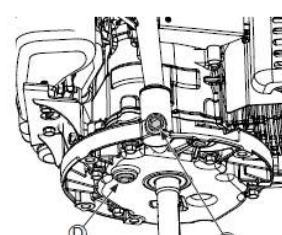
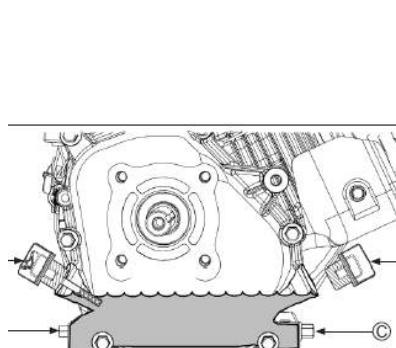
Pressure Washers Oil Type

STIHL®

confidential

Engine Oil Change Intervals

Model	Oil Fill Qty.	First Oil Change	Reg. Oil Change
RB 200	20 oz	After initial 5 hours	After 100 hours
RB 400	20 oz	After initial 5 hours	After 100 hours
RB 600	20 oz	After initial 5 hours	After 100 hours
RB 800	44 oz	After initial 5 hours	After 100 hours



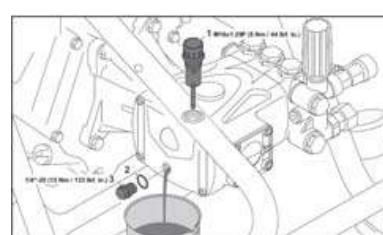
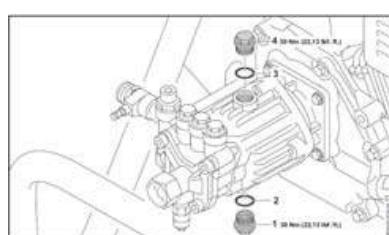
	Description	Part Number
Engine Oil	SAE 10w30	7010 319 0001

Pump Oil Change Intervals

STIHL®

confidential

Model	Pump Fill Qty.	First Oil Change	Reg. Oil Change
RB 200	2.2 oz	No change needed	No change needed
RB 400	3.5 oz	After initial 5 hours	After 100 hours
RB 600	16.9 oz	After initial 5 hours	After 250 hours
RB 800	13.35 oz	After initial 5 hours	After 250 hours



	Description	Part Number
Pump Oil	SAE 30ND (Non Detergent)	7010 871 0277

STIHL Engine Check 2019

Customer Name: _____

Service Technician: _____

Model: _____

Serial Number: _____

Date: _____

Work Order: _____

If no problem is found place a ✓ mark in the box

If a problem is present place an X in the box and write out details of what was found

Compression Check: Pull rope through slowly to feel "tight" spot of compression stroke, hold unit by starter handle and it should hang for several seconds against compression: Pass Fail
 If rope will not pull out at all, engine may be seized due to internal damage or mechanical blockage.
 Operating Data - if unit has a Diagnostic Socket (EX: BR 800, FS 91) connect MDG 1 diagnostic cable, open Data Tile and record operational data:

Operating Hours _____	Successful Starts _____	Operating RPM Range _____	% 1500-3500	% 3500-8500	% 8500-11000
-----------------------	-------------------------	---------------------------	----------------	----------------	-----------------

Other Available Information _____

1. Deflectors, shrouds, covers _____
 Fasteners loose or missing _____
 Other observations _____
2. Warning Labels _____
3. Cutting Attachment: Note type & condition;
 any accessories present? _____
4. Belt tension and condition (TS)

5. Throttle operates smoothly _____
 Multi-Function lever works smoothly

 Chain brake actuates properly
 Throttle trigger lockout works properly
 Choke operates properly
 Other observations _____
6. AV system condition _____
7. Starter rope worn, frayed, length &
 diameter OK _____
8. Air Filter worn or damaged _____
 Air Filter packed with dirt or debris _____
9. Dirt or debris on clean side of filter _____
 Evidence of dirt in carburetor bore or on
 choke butterfly _____
 Other observations _____
10. Carburetor Screw Settings:
 Limiter Caps Present if equipped _____
 Verify settings if caps are missing or unit
 does not use limiter caps:
 H _____ L _____
11. Spark plug connection, terminal spring, and
 high-tension lead condition _____
12. Spark present with STIHL ZAT4 tester
 No - install new plug and retest _____
 Other observations _____
 Ignition shut off function _____
13. Spark plug correct heat range _____
 Spark plug carbon fouled _____
 Sooted over _____
 Normal in appearance _____
 Spark plug gap _____
14. Muffler condition _____
 Spark arrester screen blocked or missing

 Other observations _____

15. Four-Stroke Only:

- Leak Down Test % of leakage _____
 If over 10%, location of leakage _____
 Valve clearance OK: intake, exhaust cold set at 0.1mm

16. Two-Stroke Only: Remove Muffler-

- Carbon deposits in exhaust port _____
 Piston condition _____
 Piston rings free _____
 Cylinder wall condition _____

17. Cooling fins blocked, cracked, broken off _____

18. Magneto air gap correct _____

19. Fuel have a stale odor _____
 Debris or water in tank _____
 Color of fuel _____
 Other observations _____

20. Fuel Filter appear dirty or restricted _____

- Filter torn or damaged _____
 Other observations _____

21. Pressure test fuel line (0.8 bar) _____

22. Pressure test tank for leaks _____

23. Tank vent opens under vacuum _____

24. Remove carb, inspect intake side of piston condition if visible: if not visible wait until step 26 is complete to remove intake flange _____

25. Impulse passage clear _____

26. Vacuum test crankcase to specifications and record results _____

- Pressure test crankcase to specifications and record results _____

If values do not meet specifications, locate leaks and note results _____

(On Four-Stroke re-install valve cover for above)

27. Crankshaft end play excessive _____
 Crankshaft side play excessive _____

28. Carb Check:

- Physical damage _____
 Throttle shaft loose in bore _____
 10 PSI pressure test of inlet needle _____
 Internal contamination present _____

- Condition of fuel inlet screen _____
 Condition of diaphragms: stiff, damaged _____

(Use carburetor worksheets for further evaluation if necessary)

29. Any other observations about unit _____

Final Running:

Check Specification Chart for RPM settings –

- Unit starts easily
 Set Idle RPM to: _____
 Verify WOT RPM to: _____
 Engine idle RPM change excessive at roll out
 Acceleration response OK
 Run under load satisfactory

Attachment:

- Chain oiler working
 Line advance operation OK
 Clutch disengaged at idle

Comments: _____

Log in to: <http://www.stihlacademy.com>

Click on Videos; Optional Videos to access a step by step video tutorial of these steps.

Click on Service Support; STIHL MasterWrench Service® Training; Diagnostics; DIA 201 for a .pdf download tutorial of these steps.

© 2018 - 2019 US/STR STIHL Incorporated, Virginia Beach, VA.
 All rights reserved.

STIHL 4-Stroke Engine Check

1. Check condition of cutting attachment or blower tube and nozzle.



2. Check throttle for proper operation, opens completely, returns to idle.
3. Empty fuel tank: check for debris, contamination, and verify if oil is mixed.
Warning! Gasoline is extremely flammable. Keep away from spark or other ignition source. Properly dispose of fuel per local regulations.
4. Inspect spark plug connector and high tension lead.
5. Check for spark with a ZAT 4 tester with plug installed, if no spark retest with new plug. Verify stop switch function.
6. Verify that spark plug is correct heat range and set electrode gap to .020" (0.5 mm).

FS 90/91/100/110/111 FC 90/91/95/96/110/111 HT 100/101/102/103 FB 131 STIHL 0000 400 7009 Bosch USR7AC No NGK Equivalent	FS 130/131/310/311 HT 130/131/132/133 BR 500/550/600/700//800
--	---

STIHL 0000 400 7011 NGK CMR6H No Bosch Equivalent

7. Remove shroud, loosen muffler and inspect fire screen, inspect air filter, remove carburetor.
8. Check for sheared flywheel key by verifying flywheel is in time with crankshaft (note flywheel markings in relation to ignition armature when piston is positioned at top dead center).



9. Verify proper air gap between ignition module and flywheel. Use tool 4118 890 6401.



10. Set valve clearance on both valves to 0.1 mm (0.004") when cold.



11. Perform cylinder leak down test. Maximum of 10% leakage is acceptable.

12. Install valve cover and new gasket. Install spark plug; perform crankcase pressure and vacuum test.



Pressure specification:
Pressurize to 0.5 bar (7 psi). Leakage to 0.3 bar (4 psi) in 20 seconds is acceptable.



Vacuum specification:
Apply vacuum of -0.5 bar (-7 psi). Leakage to -0.3 bar (-4 psi) in 20 seconds is acceptable.

13. Verify impulse signal



Connect a second gauge to impulse hose while performing pressure and vacuum tests. Gauge needle should move while performing tests, or spin flywheel back and forth and needle should move.

STIHL 4-Stroke Engine Check

14. Perform carburetor check-shafted products:



Step 1: Attach tester to fuel supply fitting. Pressurize carburetor to 0.7 bar (10 psi). If pressure holds, the fuel pump components and inlet needle are sealing. Go to step 2.



Step 2: With pressure present from step 1, pump primer bulb and the gauge needle should go down. Put tester in vacuum mode and pump bulb 3 times and the needle should show a vacuum for a minimum of 1 second. If not, carburetor has an internal leak.



Step 3: Attach tester to return line fitting in pressure mode. Pump primer bulb and gauge should indicate pressure and hold. If not, purge primer flange is faulty.

14. Perform carburetor check-backpack blowers:



Step 1: Attach tester to fuel line fitting. Pressurize carburetor to 0.7 bar (10 psi). If pressure holds, the fuel pump components and inlet needle are sealing. Go to step 2.



Step 2: With pressure present from step 1, pump primer bulb and the gauge needle should go down. Put tester in vacuum mode and pump bulb 3 times and the needle should show a vacuum for a minimum of 1 second. If not, carburetor has an internal leak.



Step 3: Attach tester to primer return hose. Push primer bulb; gauge should indicate pressure and hold. If not, purge primer is faulty.

15. Pressure test tank to 0.3 bar (5 psi). There should be no leakage

16. Vacuum test tank, it should slowly leak back to atmospheric pressure. If not, tank vent is faulty.

17. Inspect or replace fuel filter. **Important:** use only STIHL fuel filters.



18. Pressure test fuel lines to 0.3 bar (5 psi). There should be no leakage

19. Perform necessary repairs and re-assemble.

20. Set the carb H and L screws with limiter cap removed to initial start-up setting of H = 3 turns out from lightly seated, L = 2 turns out from lightly seated (refer to repair specification charts for detailed settings). Final adjustment may vary significantly.

21. Verify throttle cable adjustment.

22. Start engine, warm up and perform final carburetor adjustments. Verify idle speed and maximum RPM (refer to repair specification charts). Seat limiter caps in place.

23. Test run machine under load.

24. Verify stop switch function.

Checklist complete.

STIHL®

EXPLANATION OF 4 MIX TRIMMER TIMING GEAR AND VALVE ADJUSTMENT

1. Technical description

1.1 STIHL 4-MIX engine

The 4-MIX engine works with mixed lubrication. Unlike a conventional four-stroke engine, the 4-MIX engine does not have any supply of oil in the crankcase. The engine is lubricated entirely with a mixture of gasoline and engine oil.

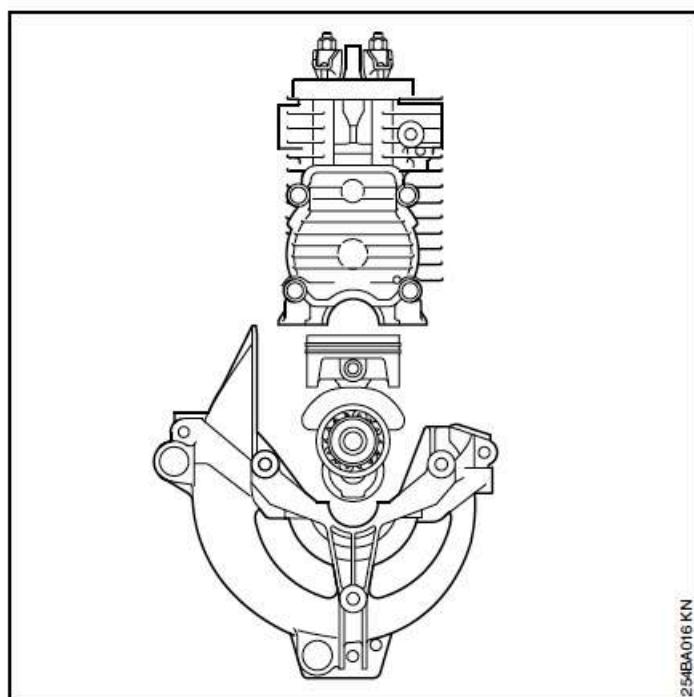
This design yields the following advantages:

- Same fuel as two-stroke STIHL products
- Lower fuel consumption
- Can be operated in all positions
- Good acceleration
- Compact size – attractive design
- Advantageous power-to-weight ratio
- Easy maintenance – easy to service
- Automatic compression release

1.1.1 Engine design

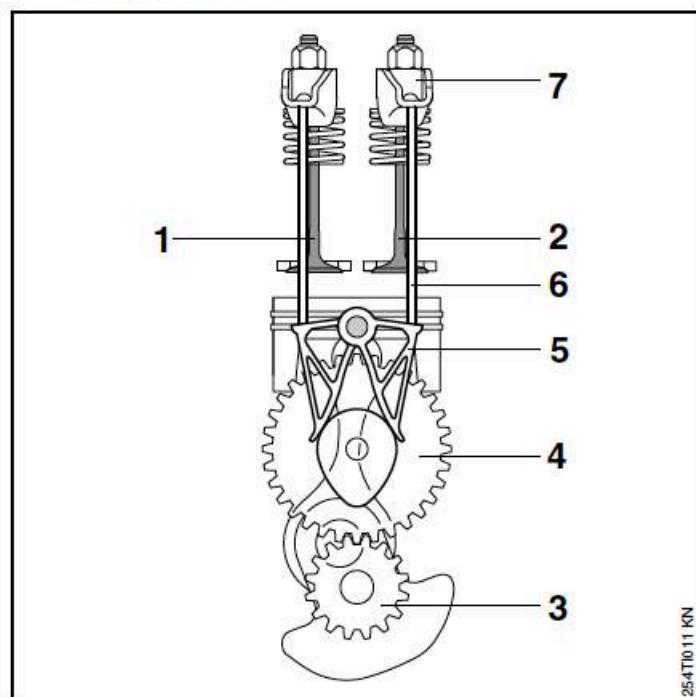
Single-cylinder engine with overhead valves, Cylinder head, cylinder and upper half of crankcase have been combined into a single unit.

The crankcase is horizontally split along the crankshaft.



254BA016 KN

1.1.2 Engine control



254T011 KN

- Overhead valves (OHV), one intake valve (1) and one exhaust valve (2)
- Valve actuation via crankshaft gear (3), cam gear (4), lever (5), pushrod (6) and rocker arm (7)

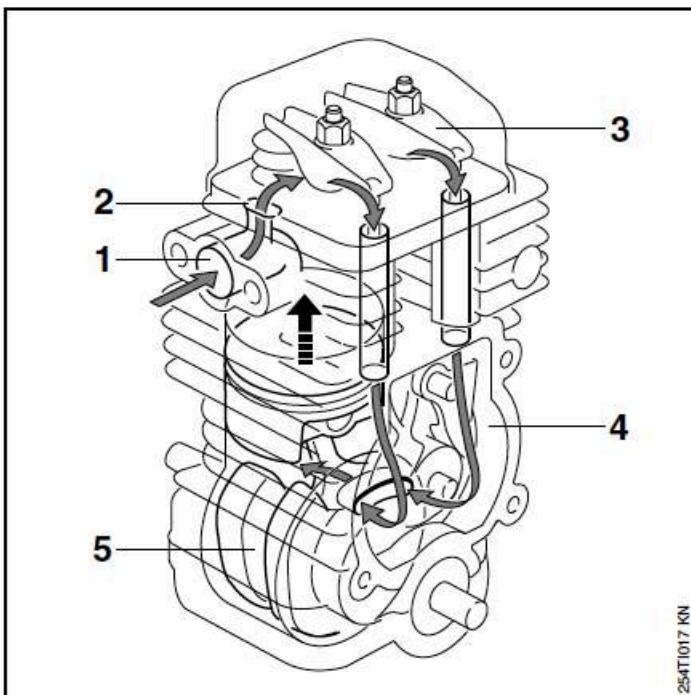
EXPLANATION OF 4 MIX TRIMMER TIMING GEAR AND VALVE ADJUSTMENT

1.1.3 Engine lubrication

The engine is lubricated in two phases during each revolution of the crankshaft.

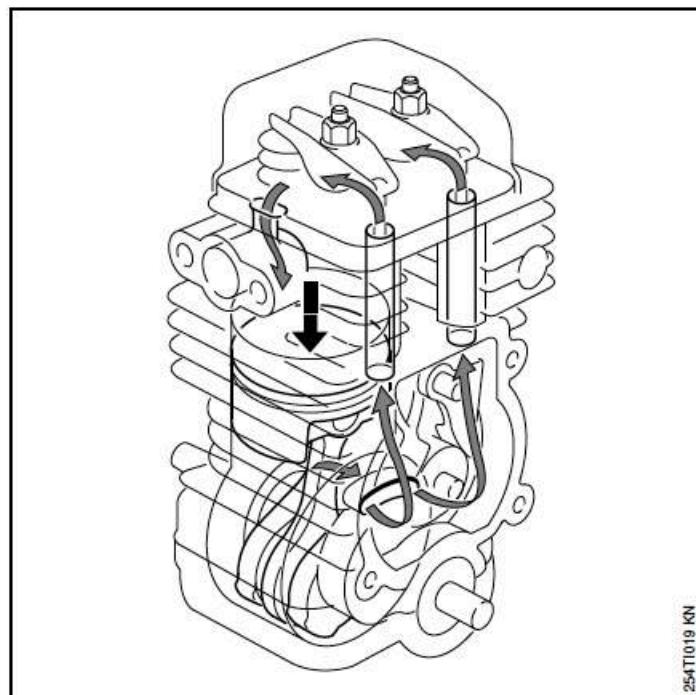
Phase 1

The piston rises to top dead center (TDC).



Phase 2

The piston descends to bottom dead center (BDC).



The increase in volume in the crankcase produces a vacuum. The mixture of air, fuel and oil is drawn from the intake duct (1) via the lubrication port (2), valve train (3) and cam gear (4) into the crankcase (5). The oil contained in this mixture lubricates the crankshaft, timing gear, valve train and cylinder wall.

Pressure builds up in the crankcase due to the decrease in volume.

The mixture of air, fuel and oil in the crankcase is returned to the intake duct via the cam gear, valve train and lubrication port, lubricating the engine in the process.

1.2 Fuel filler cap

The new fuel filler cap with hinged grip permits quick and easy handling.

EXPLANATION OF 4 MIX TRIMMER TIMING GEAR AND VALVE ADJUSTMENT

6. Service notes

Specific national safety regulations and the safety instructions in the User Manual must be observed when starting the machine.

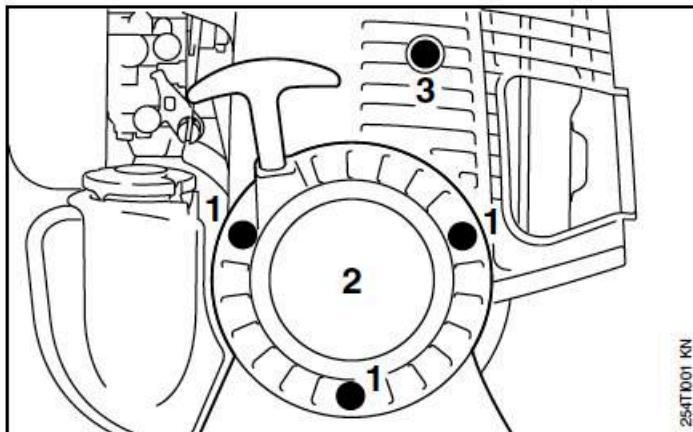
6.1 Check valve clearance

The valve clearance should be checked once after approx. 135 hours of operation and adjusted if necessary. The valve clearance is checked and adjusted when the engine is cold.

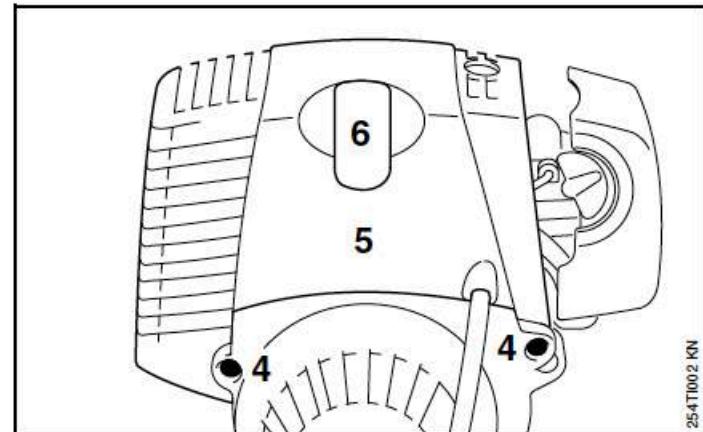
Kit 4180 007 1005 "Parts for adjusting valve clearance" can be used for this purpose. The kit contains a feeler gage, sealing washer and gasket.

6.1.1 Preparatory steps

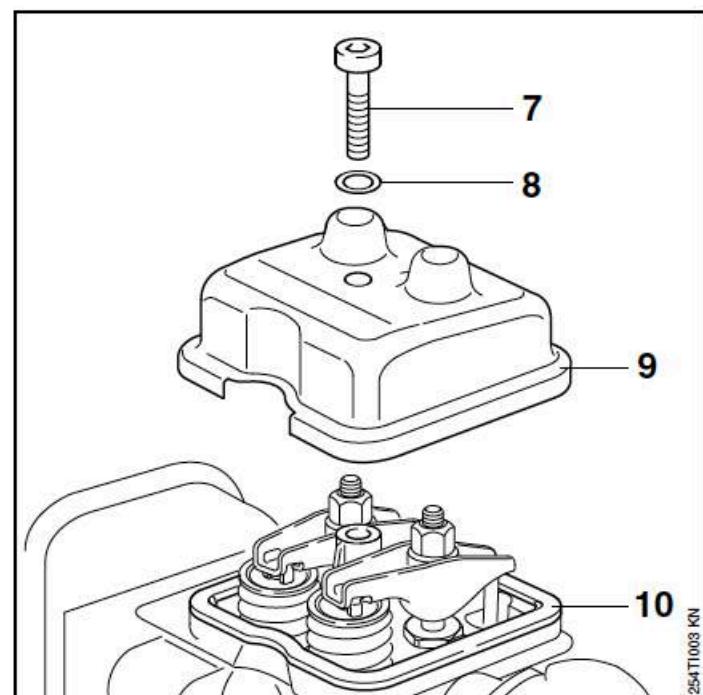
The piston can be moved to top dead center more easily when the rewind starter has been removed. However, the crankshaft can also be turned via the rewind starter with the starter cover fitted.



- Move slide control in direction of arrow towards STOP ■
- Undo screws (1)
- Remove starter cover (2) from housing
- Undo screw (3)



- Undo screws (4)
- Remove shroud (5)
- Unplug spark plug boot (6)
- Clean area around spark plug
- Unscrew spark plug



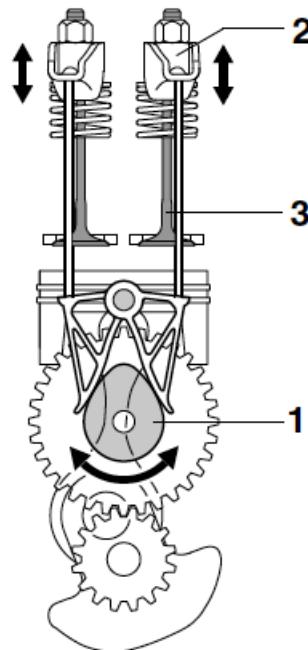
- Clean area around valve cover
- Undo screw (7)
- Remove sealing washer (8), valve cover (9) and gasket (10)

EXPLANATION OF 4 MIX TRIMMER TIMING GEAR AND VALVE ADJUSTMENT

6.1.2 Top dead center

Top dead center (TDC) is defined as the point at which the piston ends its upward stroke and starts its downward stroke. In a 4-MIX engine, the power stroke is executed once in every two revolutions of the crankshaft. The piston consequently passes through the top dead center twice in order to execute one power stroke. Refer to the STIHL Service Training System "Carburetor", under the heading four-stroke principle.

Top dead center, valve overlap



Cam (1) points upwards.

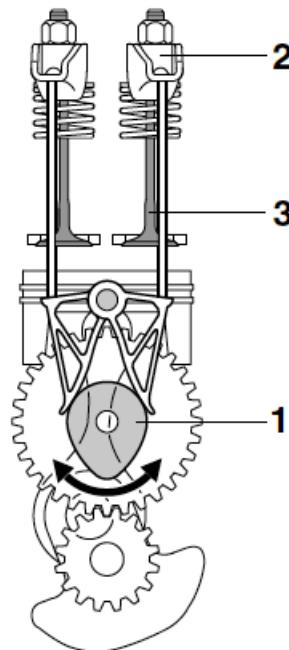
The rocker arms (2) and valve stems (3) move up and down (see arrows above) when the crankshaft is turned back and forth a few degrees.

This represents the change of cycle between the exhaust stroke and intake stroke.

IMPORTANT

LUBRICATE THE CAM LOBE DURING ASSEMBLY WITH WHITE LITHIUM GREASE

Top dead center, ignition



Cam (1) points downwards.

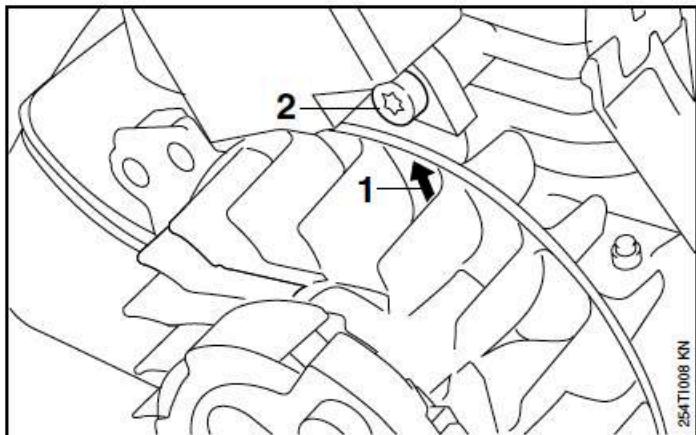
The rocker arms (2) and valve stems (3) do not move up and down when the crankshaft is turned back and forth a few degrees.

This represents the change of cycle between the compression stroke and power stroke when ignition occurs.

The valve clearance must be set at top dead center for ignition. The intake and exhaust valves are completely closed in this position.

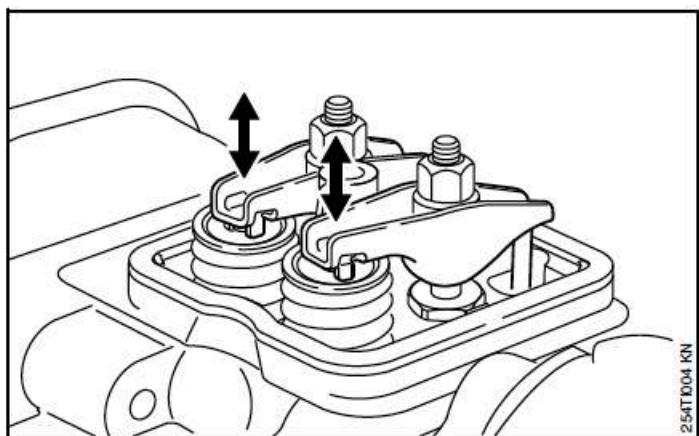
EXPLANATION OF 4 MIX TRIMMER TIMING GEAR AND VALVE ADJUSTMENT

6.1.3 Determine top dead center



- Turn crankshaft until arrow (1) is lined up with the right-hand screw (2) of the ignition coil

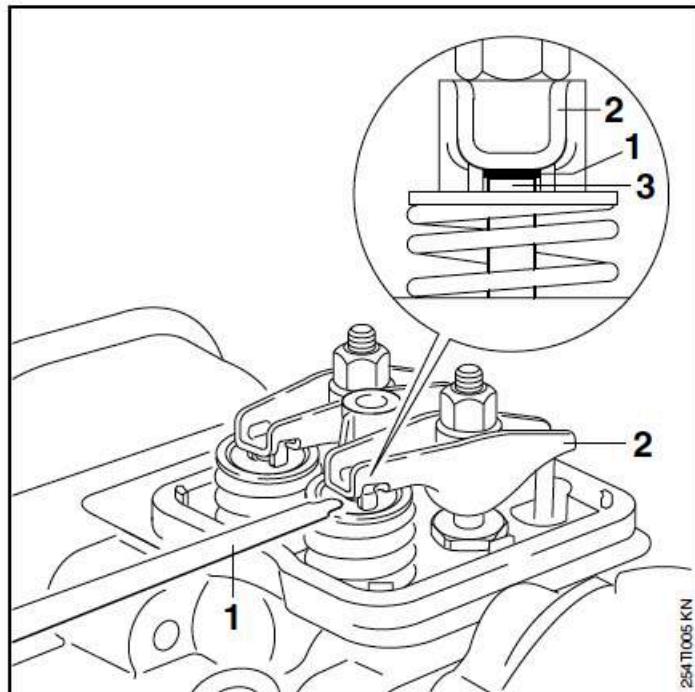
The piston is now at top dead center.



- Turn the crankshaft back and forth a few degrees – if the rocker arms and valve stems move up and down (see arrows), the piston is at top dead center when the valve movements overlap
- Turn the crankshaft once more until the arrow is again lined up with the right-hand screw of the ignition coil

Rocker arms and valve stems do not move and the piston is now in the top dead center where ignition occurs.

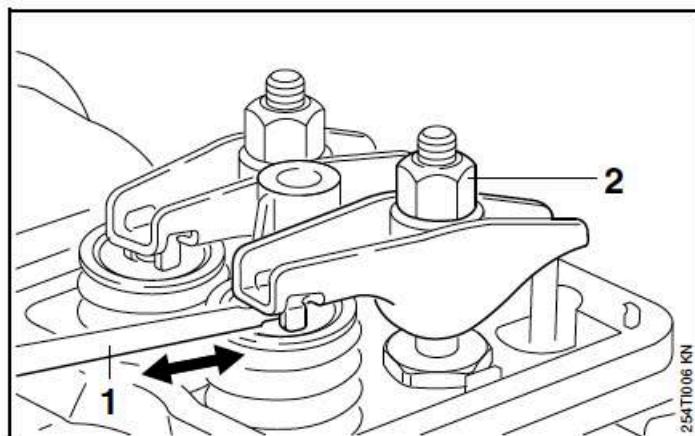
6.1.4 Check valve clearance



- Insert the feeler gage (1) between rocker arm (2) and valve stem (3) – the feeler gage must have a **slight tension** between the rocker arm and valve stem as it is pulled through

The valve clearance must be adjusted if it is found to be too large or too small.

6.2 Set valve clearance



- Insert feeler gage (1) between rocker arm and valve stem

Depending on the amount of valve clearance:

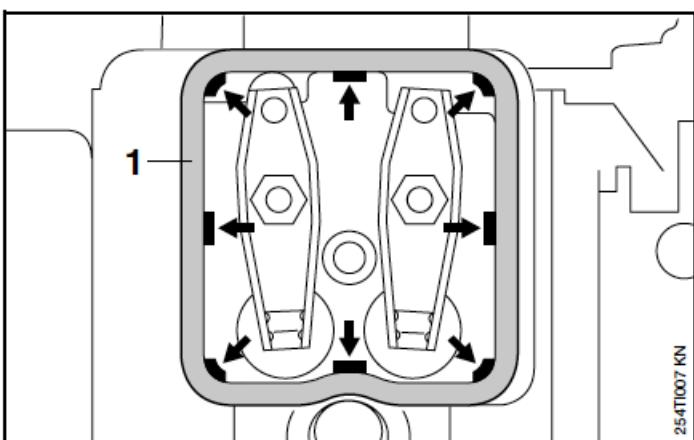
- Turn nut (2) clockwise to reduce the valve clearance or counterclockwise to increase it – until the feeler gage has a slight amount of tension effect when it is pulled through

EXPLANATION OF 4 MIX TRIMMER TIMING GEAR AND VALVE ADJUSTMENT

- Turn the crankshaft through **two** turns until the arrow is **once again** lined up with the right-hand screw of the ignition coil
- Check the valve clearance again and re-adjust if necessary

6.3 Assembly

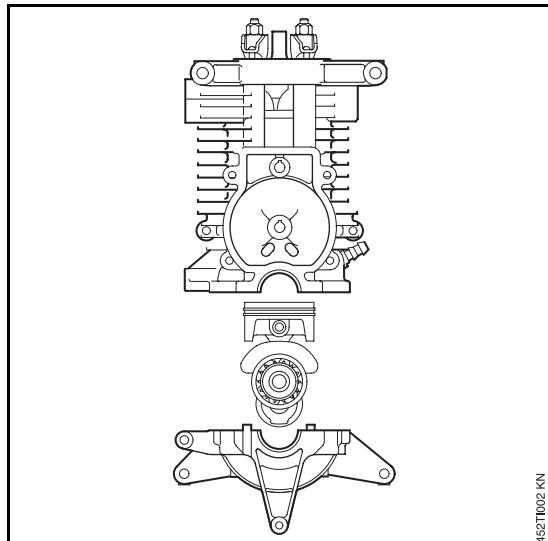
Use the gaskets in kit 4180 007 1005
"Parts for adjusting valve clearance".



- Fit gasket (1) in position (arrows)
- Fit valve cover, install the new sealing washer and tighten screw with a torque of 3.5 Nm (30 inch pounds)
- Check spark plug electrode gap, screw in spark plug, fit shroud and plug in spark plug boot
- Fit starter cover and tighten down screws
- Start engine and let it warm up, check for proper operation
- Switch off engine

EXPLANATION OF 4 MIX BLOWER TIMING GEAR AND VALVE ADJUSTMENT

1.5.1 Engine design



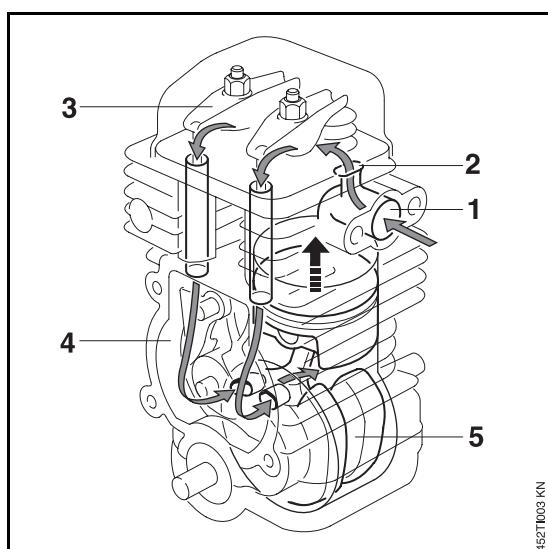
Single-cylinder motor with overhead valves. Cylinder head, cylinder and upper half of crankcase have been combined into a single unit. The crankcase is horizontally split along the crankshaft.

1.5.3 Engine lubrication

The engine is lubricated in two phases during each revolution of the crankshaft.

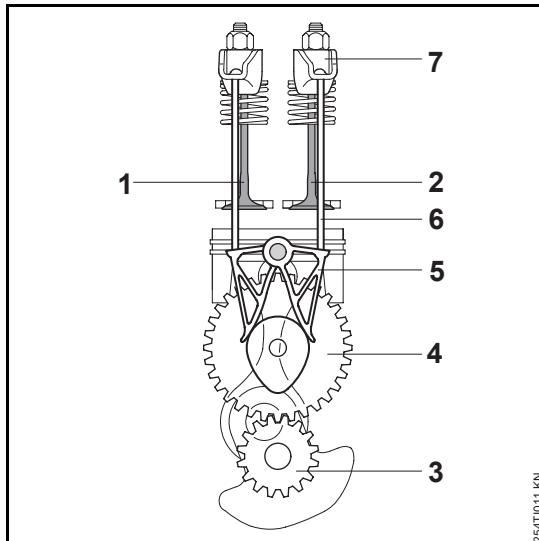
Phase 1

The piston rises to the top dead center.



The increase in volume in the crankcase produces a vacuum. From the intake duct (1), the air-fuel-oil mixture is drawn through the bypass port (2), valve train (3) and valve control (4) into the crankcase (5). The oil contained in this mixture lubricates the crank sequence, timing gear, valve train and cylinder wall.

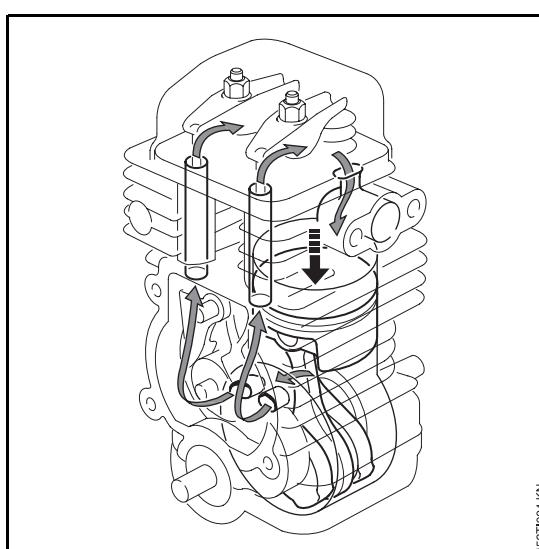
1.5.2 Engine control



- Overhead valves (OHV), one exhaust valve (1) and one inlet valve (2)
- Valve control via crankshaft gear (3), cam disk (4), lever (5), pushrod (6) and rocker arm (7)

Phase 2

The piston descends to the bottom dead center.



Excess pressure builds up in the crankcase due to the decrease in volume.

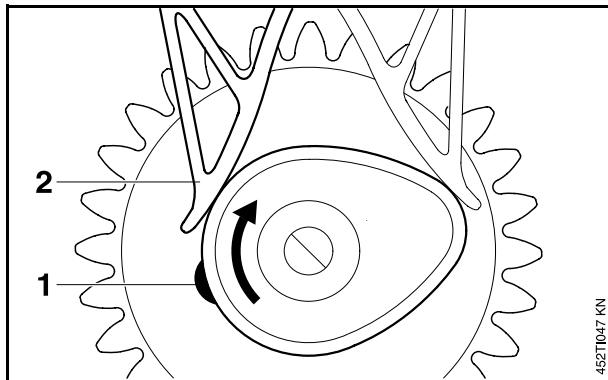
The mixture of air, fuel and oil in the crankcase is returned to the intake duct via the timing gear, valve train and bypass bore. This rewets the lubrication points.

EXPLANATION OF 4 MIX BLOWER TIMING GEAR AND VALVE ADJUSTMENT

1.6 Decompression system

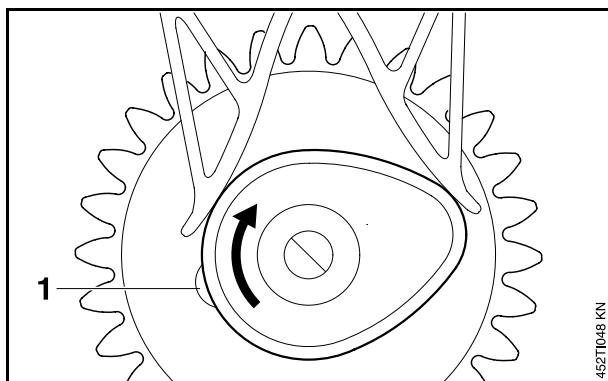
The automatic decompression system reduces the compression upon starting and hence the required pull on the starter rope.

Cam disk at low speed (starting):



- Decompression cam (1) projects and actuates the lever (2)
- this lengthens the valve opening time, which reduces the compression

Cam disk when the motor has started:



- The centrifugal mechanism retracts the compression cam (1) – this cancels the effect of the decompression cam

IMPORTANT

LUBRICATE THE CAM LOBE
DURING ASSEMBLY WITH
WHITE LITHIUM GREASE

1.7 Carburetor

- All position diaphragm carburetor with independent idle
- The range of the high-speed adjusting screw (H) and the low-speed adjusting screw (L) is limited by limiter caps (approx. 3/4 turn).
- Accelerator pump for faster and spontaneous acceleration (see 5.3).
- Choke knob with integrated starting throttle position

1.8 Ignition System

- Microprocessor-controlled with ignition timing adjustment

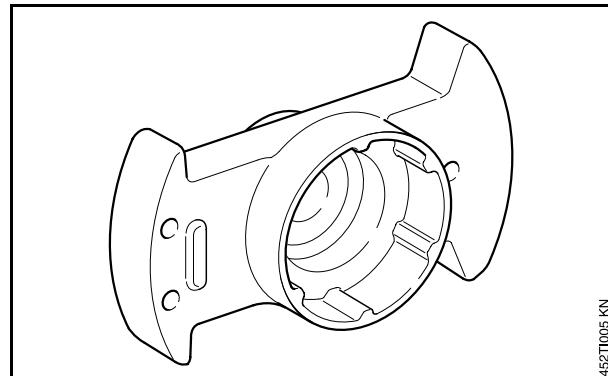
1.9 Air filter

- Large-area paper air filter for long filter service life
- Easily accessible

1.10 Muffler

- Two-chamber muffler with spark arresting screen.

1.11 Flywheel



- Weight-optimized geometry

EXPLANATION OF 4 MIX BLOWER TIMING GEAR AND VALVE ADJUSTMENT

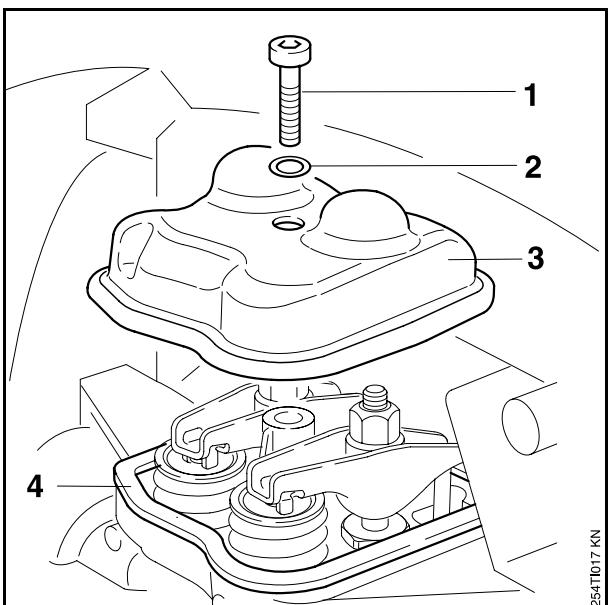
5.4 Valve clearance

The valve clearance should be checked **once** after approx. 139 hours of operation and adjusted if necessary.

The valve clearance may only be checked and adjusted when the engine is cold. Kit 4282 007 1001 "Parts for adjusting valve clearance" must be used for this purpose. The kit comprises a setting gage, O-ring and gasket.

5.4.1 Preparatory steps

- Remove the shroud and rewind starter
- Remove the wires from the ignition module
- Remove the air guide shroud.
- Unscrew spark plug

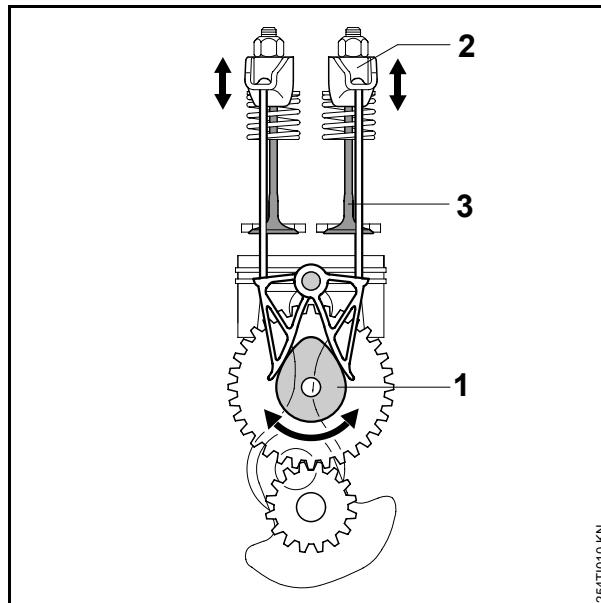


- Clean area around valve cover
- Remove screw (1)
- Remove O-ring (2), valve cover (3) and gasket (4)
- Determine top dead center

5.4.2 Top dead center

The top dead center (TDC) is defined as the point at which the piston ends its upward stroke and starts its downward stroke. In a 4-MIX® engine, the power stroke is executed once in every two revolutions of the crankshaft. The piston consequently passes through the top dead center twice in order to execute one power stroke. Refer to the STIHL Service Training System "Carburetor", under the heading four-stroke principle.

Top dead center, valve overlap



Cam (1) points upwards.

The rocker arms (2) and valve stems (3) move up and down (see arrows above) when the crankshaft is turned back and forth a few degrees.

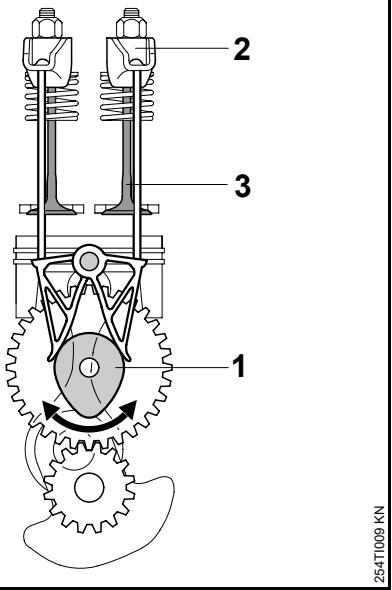
This represents the change of cycle between exhaust and intake.

EXPLANATION OF 4 MIX BLOWER TIMING GEAR AND VALVE ADJUSTMENT

IMPORTANT

LUBRICATE THE CAM LOBE
DURING ASSEMBLY WITH
WHITE LITHIUM GREASE

Top dead center, ignition



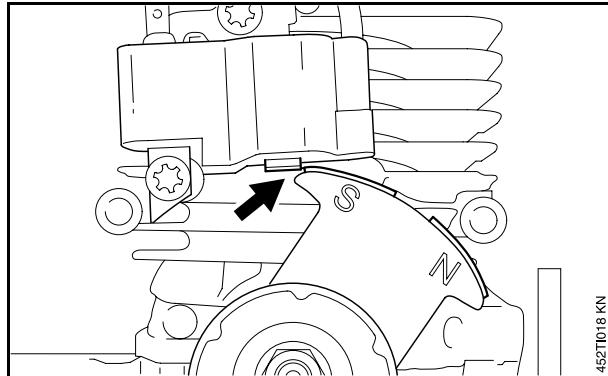
Cam (1) points downward.

The rocker arms (2) and valve stems (3) do **not** move up and down when the crankshaft is turned back and forth a few degrees.

This represents the change of cycle between compression and power stroke.

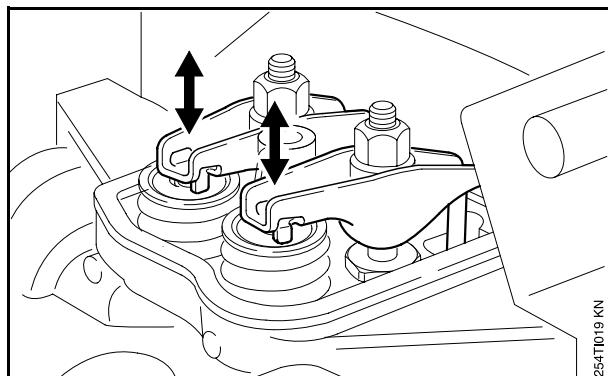
The valve clearance must be set at the top dead center for ignition. The inlet and exhaust valves are completely closed in this position.

5.4.3 Determine top dead center



- Rotate the crankshaft until the tip of the flywheel (**arrow**) is flush with the ignition coil as shown

The piston is now at the top dead center, valve overlap, **or** in top dead center, ignition.



- Turn the crankshaft back and forth a few degrees – if the rocker arms and valve stems move up and down (see **arrows**), the piston is in the **top dead center for valve overlap**
- Rotate the crankshaft **once** more until the tip of the flywheel is flush with the ignition coil.

Rocker arms and valve stems do not move and the piston is now in the **top dead center for ignition**.

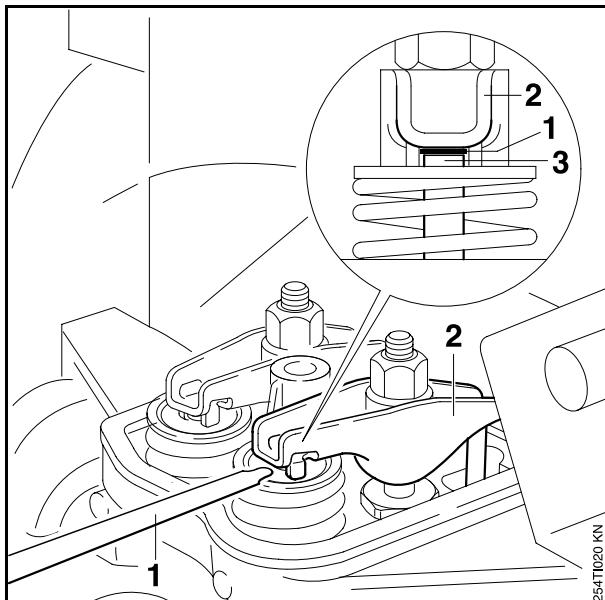
- Turn the crankshaft back counterclockwise approx. 1/4 turn and then slowly turn it clockwise again until the tip of the flywheel is lined up with the ignition coil.

The crankshaft must be turned backwards in order to eliminate the backlash from the timing gear.

EXPLANATION OF 4 MIX BLOWER TIMING GEAR AND VALVE ADJUSTMENT

5.4.4 Check valve clearance

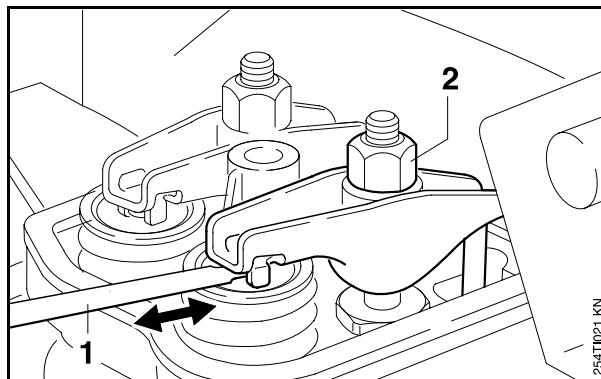
The cam disk cover must be installed to "Check the valve play" and "Set the valve play".



- Insert setting gage (1) between rocker arm (2) and valve stem (3) – the setting gage must produce a **slight tension** effect when it is pulled through

The valve clearance must be adjusted if it is found to be too large or too small.

5.4.5 Set valve clearance



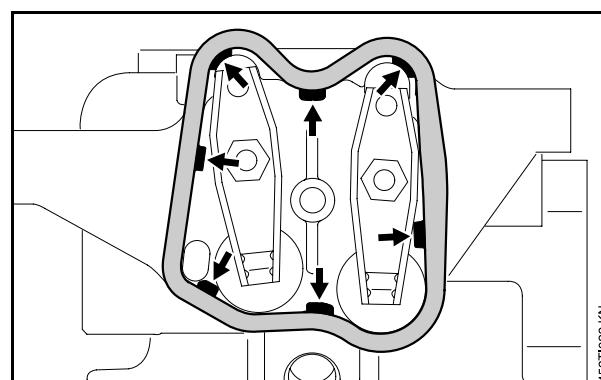
- Insert setting gage (1) between rocker arm and valve stem

Depending on the valve clearance:

- Turn nut (2) clockwise to reduce the valve clearance or counterclockwise to increase it – the setting gage must produce a **slight tension** effect when it is pulled through
- Rotate the crankshaft **twice** until the tip of the flywheel is flush with the ignition coil.
- Check the valve clearance again and re-adjust if necessary

5.4.6 Assembly

Use the gaskets in kit 4282 007 1001 "Parts for adjusting valve clearance".



- Fit gasket (1) in position (**arrows**)
- Fit valve cover and tighten screw with a torque of 4.5 lb ft (6 Nm)
- Mounting the air guide shroud
- Screw in spark plug, fit shroud, and plug in spark plug boot
- Fit starter cover and tighten down screws
- Start engine and let it warm up
- Switch off engine

Technical Information

37.2016

New brushcutters FS 91, 91 R, 111, 111 R, 111 RX, 131, 131 R – Series 4180

New clearing saw FS 311 – Series 4180

New KombiEngines KM 91 R, 111 R, 131 R – Series 4180

New lawn edgers FC 91, 96, 111 – Series 4180

New bed redefiner FB 131 – Series 4180

Contents

1. Product description
2. Additional documents
3. Specifications
4. New special tools
5. Repairs and service
6. Repair times



1. Product description

The 4180 series models are receiving an update and new model designations:

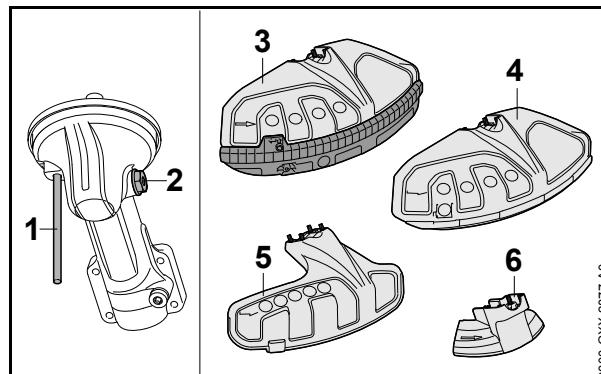
Previous models	New models
FS 90, FS 90 R	FS 91, FS 91 R
FS 110, FS 110 R	FS 111, FS 111 R
FS 100 RX	FS 111 RX
FS 130, FS 130 R	FS 131, FS 131 R
FS 310	FS 311
KM 90 R	KM 91 R
KM 110 R	KM 111 R
KM 130 R	KM 131 R
FC 90	FC 91
FC 95	FC 96
FC 110	FC 111
-	FB 131

Distinguishing features:

- Updated engine
- New control handles and one touch stop
- New interlocked choke simplifies starting - the choke automatically returns to the run
- Bigger fuel tank with 710 cc (24 ounces) capacity
- All models come standard with a paper air filter
- Simplified valve adjustment access
- Diagnostic port for reading operating data with the MDG 1
- Single point throttle cable adjustment via adjusting screw on throttle trigger
- New gearhead and deflector
- New rider plate simplifies mounting of metal blades on the new gearhead

The same cutting attachments or KombiAttachments, harnesses and other accessories can be used with the new models as with the previous models.

1.1 New gearbox – FS 91 111 131



Like the previous gearhead, the new gearhead has a screw plug (2). Check the gear lubricant every 25 hours of operation and add grease if necessary.

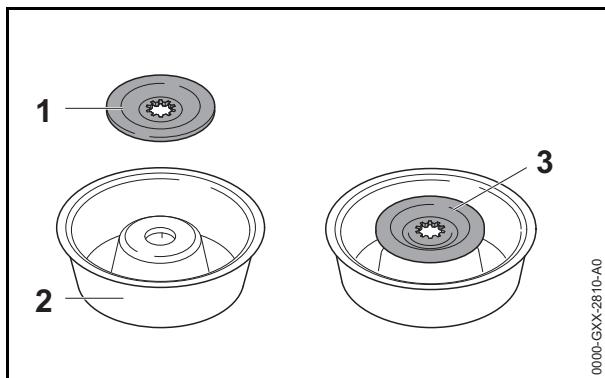
The locking pin (1) is held in place by a rubber insert and does not fall out when the gearbox is inverted.

Deflectors

The following deflectors are available for the 4180 gearhead:

- Universal (large skirted) deflector for mowing heads and metal cutting attachments
4180 007 1028 (3)
- Deflector for metal grass blades
4180 710 8106 (4)
- Deflector for trimmer heads
4180 007 1030 (5)
- Limit stop for circular saw blades
4180 710 8201 (6)

New rider plate with integrated thrust washer for mounting metal blades



The previous thrust washer 4130 713 1600 (1) and rider plate 4126 713 3100 (2) have been combined in the new rider plate 4180 710 8500 (3).

1.2 Gearhead – FS 311

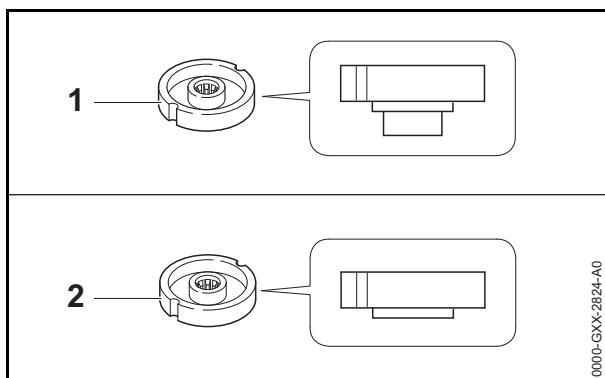
The new clearing saw FS 311 is equipped with the 4147 gearhead. The 4147 gearhead is lubricated for life and does not have a screw plug.

Deflectors

The following deflectors are available for the 4147 gearhead:

- Deflector for mowing heads 4147 710 8100,
- Deflector for metal cutting attachments 4147 710 8101
- Deflector for circular saw blades 4147 710 8200

1.3 New rider plate – FS 111 RX



The new brushcutter FS 111 RX is equipped with a new rider plate 4180 713 1502 (2).

The rider plate was modified in order to attach the new AutoCut mowing heads C 26-2 and C 36-2. The previous rider plate 4180 713 1500 (1) remains available for the brushcutter FS 100 RX.

1.4 New bed redefiner FB 131



The new FB 131 expands the product line as a stand-alone bed redefiner.

Bed edges are easily shaped with this new stand-alone unit. The user pulls the machine backwards, against the direction of blade rotation. This creates a well defined bed edge.

Gearbox, blades and deflector are the same as with the KombiTool FBD-KM.

For further information on service and repair of the FBD gearbox and deflector, please see TI 22.2012.

2. Additional documents

- Instruction manuals
- Spare parts lists
- Service Manual for the basic engine 4180
- Service Manual for the FS gearbox 4180
- Service Manual for STIHL KombiAttachments
- Technical Information 22.2012 (FBD-KM)

3. Specifications

Technical data for new models is similar to previous models.

Differences:

3.1 Fuel tank capacity

New models	Previous models
24 oz. (710 cc)	17.9 oz. (530 cc) (FS 310: 24 oz. / 710 cc)

3.2 Cut-off speed

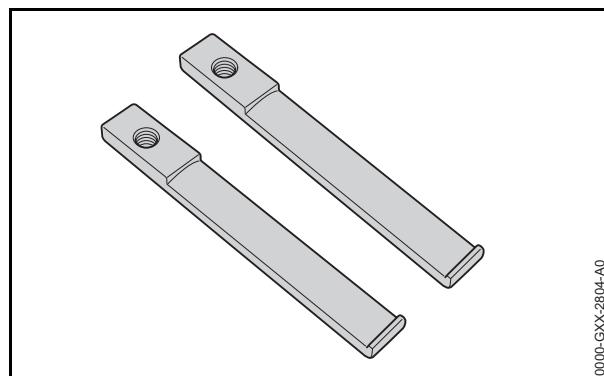
New models	Previous models
9,500 rpm (FS 311: 10,200 rpm)	10,200 rpm (FS 310: 10,500 rpm) (KM 130 R: 9,500 rpm)

3.3 Weight:

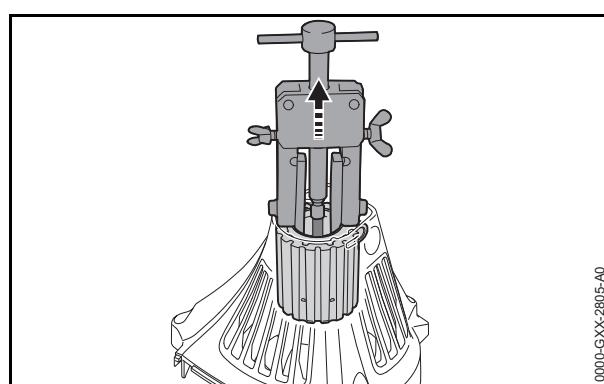
New models	Previous models		
FS 91:	12.8 lbs. (5.8 kg)	FS 90:	12.8 lbs. (5.8 kg)
FS 91 R:	12.1 lbs. (5.5 kg)	FS 90 R:	12.1 lbs. (5.5 kg)
FS 111:	12.8 lbs. (5.8 kg)	FS 110:	12.8 lbs. (5.8 kg)
FS 111 R:	12.1 lbs. (5.5 kg)	FS 110 R:	12.1 lbs. (5.5 kg)
FS 111 RX:	11.0 lbs. (5.0 kg)	FS 110 RX:	10.8 lbs. (4.9 kg)
FS 131:	12.8 lbs. (5.8 kg)	FS 130:	12.8 lbs. (5.9 kg)
FS 131 R:	12.1 lbs. (5.5 kg)	FS 130 R:	12.3 lbs. (5.6 kg)
FS 311:	15.9 lbs. (7.2 kg)	FS 310:	15.9 lbs. (7.2 kg)
KM 91 R:	9.7 lbs. (4.4 kg)	KM 90 R:	9.9 lbs. (4.5 kg)
KM 111 R:	9.7 lbs. (4.4 kg)	KM 110 R:	9.9 lbs. (4.5 kg)
KM 131 R:	9.7 lbs. (4.4 kg)	KM 130 R:	10.1 lbs. (4.6 kg)
FC 91:	13.2 lbs. (6.0 kg)	FC 90:	13.7 lbs. (6.2 kg)
FC 96:	13.7 lbs. (6.2 kg)	FC 95:	15.4 lbs. (7.0 kg)
FC 111:	13.7 lbs. (6.2 kg)	FC 110:	15.4 lbs. (7.0 kg)
FB 131:	17.2 lbs. (7.8 kg)	-	-

4. New special tools

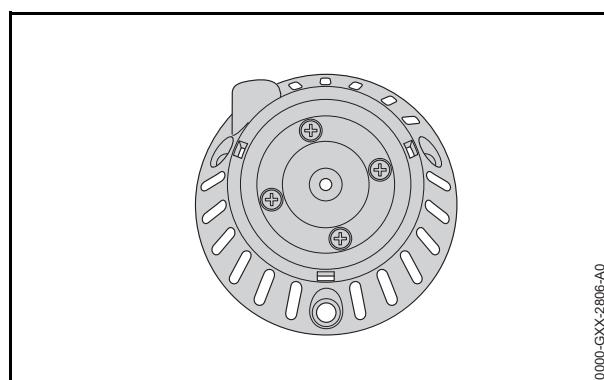
4.1 Jaws (profile No. 9)



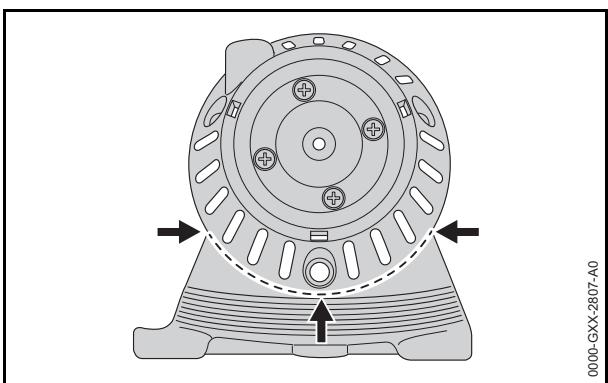
The new jaws (profile no. 9) 0000 893 3707 are needed to remove the rubber insert from the fan housing.



4.2 Holder for leakage tester



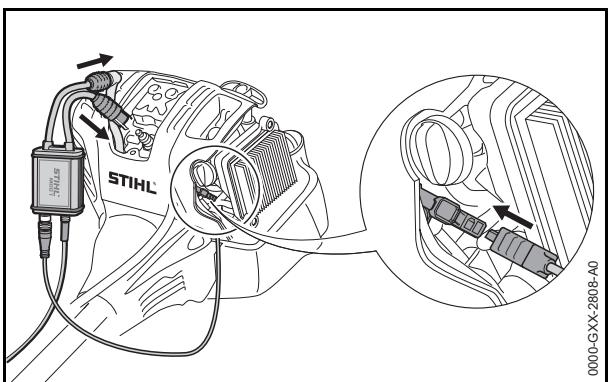
The holder 4180 890 8600 in the leakage tester kit 5910 007 1000 has been modified for use with the new engine. The holder can now be used for both the previous and the new models.



The previous holder 4180 890 8600 can be reworked by cutting it along the dashed line. The reworked holder can be used for both the new and the previous models.

5. Repairs and service

5.1 Diagnostics



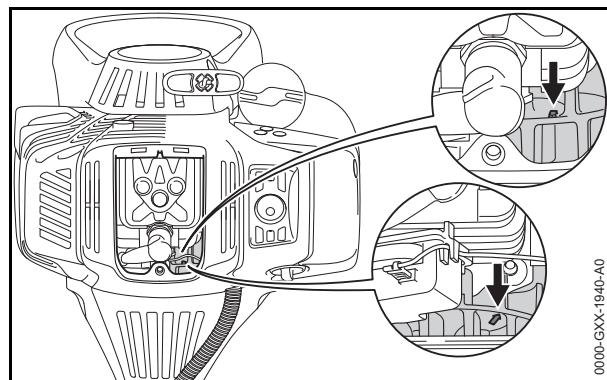
The new models have a diagnostic port. Operating data can be read out with the MDG 1.

The following data can be retrieved:

- Machine identification (model designation, serial number, part number of ignition module)
- Last contact with MDG 1
- (total run time and broken down by time run at idle speed, mid range and wide open throttle)
- Number of successful starts

5.2 Checking / adjusting the valve clearance

Additional mark



There is an additional mark on the flywheel for top dead center. The correct flywheel position can thus be determined even with the shroud installed. Only the service cover needs to be removed.

Interval

In the event of power loss or increase of required pulling force while starting, check the valve clearance and adjust it if necessary.

5.3 Setting the carburetor

5.3.1 Basic setting during service

Carburetor "4180/15x"
(models with 28.4 and 31.4 cc displacement)

- High speed adjusting screw (H):
3 1/2 turns open
- Low speed adjusting screw (L):
1 3/4 turns open

Carburetor "4180/14x"
(models with 36.3 cc displacement)

- High speed adjusting screw (H):
3 1/2 turns open
- Low speed adjusting screw (L):
1 1/4 turns open

For idle speed adjustment, refer to the 4180 powerhead service manual.

- Idle speed: 2,800 rpm

5.3.2 Default setting

The user can only set the idle speed of the engine on the carburetor via the idle speed adjusting screw LA.

6. Repair times

Repair times are unchanged from previous 4180 family models.

IND 201a TS 500i Engine Check

Customer Name: _____

Date: _____

Serial # _____

Technician: _____

Work Order # _____

If no fault or problem is found place a ✓ mark in the box; if a fault or problem is present place an ✗ in the box and write out details of what was found

Quick Check: Does the unit have compression? Is the air filter clogged? Is the fuel fresh?

With a new spark plug does the unit have spark? If no spark proceed to MDG 1 evaluation

- | | |
|--|---|
| <p>1. <input type="checkbox"/> Wheel guard, covers _____
 <input type="checkbox"/> Fasteners loose or missing _____
 Other observations _____</p> <hr/> <p>2. <input type="checkbox"/> Warning Labels _____</p> <hr/> <p>3. <input type="checkbox"/> Cutting attachment condition if present _____</p> <hr/> <p>4. <input type="checkbox"/> Belt tension and condition _____</p> <hr/> <p>5. <input type="checkbox"/> Decompression valve "clicks" in open and closed position _____</p> <hr/> <p>6. <input type="checkbox"/> On/Off switch and throttle interlock works properly _____</p> <hr/> <p>7. <input type="checkbox"/> Throttle operates smoothly _____</p> <hr/> <p>8. <input type="checkbox"/> AV system condition _____</p> <hr/> <p>9. <input type="checkbox"/> Starter rope worn, frayed, length & diameter OK _____</p> <hr/> <p>10. <input type="checkbox"/> Air filter worn, damaged or packed with dirt or debris _____</p> <hr/> <p>11. <input type="checkbox"/> Dirt or debris on clean side of air filter _____</p> <hr/> <p>12. <input type="checkbox"/> Inspect intake side of piston, machine marks visible _____</p> | <p>13. <input type="checkbox"/> Spark plug connection, terminal spring and high-tension lead condition _____</p> <hr/> <p>14. <input type="checkbox"/> Spark present with STIHL ZAT4 tester
 No - install new plug and retest _____
 <input type="checkbox"/> Ignition shut off function _____
 <input type="checkbox"/> Spark plug correct: Bosch WSR6F or NGK BPMR7A
 <input type="checkbox"/> Spark plug condition _____</p> <hr/> <p>15. <input type="checkbox"/> Crankshaft end play excessive _____
 <input type="checkbox"/> Crankshaft side play excessive _____</p> <hr/> <p>16. <input type="checkbox"/> Remove flywheel with 5910 890 4504 puller & 4238 894 1100 spacer, verify index key and inspect generator and flywheel magnets; clear out debris if required _____</p> <hr/> <p>17. <input type="checkbox"/> Cooling system: cylinder fins blocked; flywheel fins cracked, broken off, caked _____</p> <hr/> <p>18. <input type="checkbox"/> Muffler condition _____
 <input type="checkbox"/> Spark arrester screen blocked or missing _____</p> <hr/> <p>19. Remove Muffler-
 <input type="checkbox"/> Carbon deposits in exhaust port _____
 <input type="checkbox"/> Piston condition _____
 <input type="checkbox"/> Piston rings appear free in the ring lands _____
 <input type="checkbox"/> Cylinder wall condition _____</p> <hr/> <p>20. <input type="checkbox"/> Fuel appears fresh _____
 <input type="checkbox"/> Debris or water in tank _____</p> |
|--|---|

21. Fuel Filter appears dirty or damaged _____

Backflow filter with slight pressure to verify
filter is not restricted _____

22. Pressure test fuel line to 0.8 bar _____

23. Pressure test fuel tank with adapter 5910
890 4100 to 0.8 bar for 20 seconds min _____

24. Reinstall tank vent; vacuum test tank; vent
should allow vacuum to bleed off _____;
Pressure test vent with 0.3 bar and tank
should hold for 20 seconds minimum _____

25. Impulse signal present _____

26. Vacuum test crankcase with adapter 5910
890 4100 to -0.5 bar and record results; spec
is not to drop by .3 bar within 20 seconds
(always rotate crankshaft back and forth about $\frac{1}{4}$ turn
while under vacuum to test seals) _____

Pressure test crankcase to 0.5 bar and
record results _____
locate leaks and note findings _____

27. Expose wiring harness: wires are routed
correctly; insulation in good condition _____

Verify each holding tab on each connector
to the ECU is intact and keeps the connector
in place

28. Test fuel pump:

- A. Connect tester in vacuum mode to inlet
fitting, pump primer bulb; holds -0.2 bar at
inlet fitting
- B. Connect tester in pressure mode to
outlet fitting, pump primer bulb; gauge
must hold at 0.8 bar
- C. Connect tester in pressure mode to
fitting on back of pump, gently pump tester;
gauge must hold at 0.8 bar pressure

29. Test fuel injection nozzle _____

GENTLY pump tester: pressure should
build to about 0.3 to 0.4 bar and bleed
down to 0.2 bar; Pressure must not bleed
back down to zero

30. Perform MDG 1 evaluation; make note of
any component failures; repair as needed

31. Any other observations about unit _____

Final Running

- Unit starts easily _____
 Clutch must be disengaged at idle; engage at
approx. 4000 RPM _____
 Acceleration response OK _____
 Run under load satisfactory _____

Comments: _____

© 2018 STIHL Incorporated, Virginia Beach, VA.

All rights reserved.

STIHL dealers may copy this document for their use only.
US/STR

STIHL® Injection Section

TS 500i STIHL Engine Check Step # 14. Verify Spark

STIHL®

confidential

- With inline spark tester:
 - On/off switch in **I** position test for spark
 - On/off switch in **O** position test for no spark

- If no spark in **I** position with new spark plug, ignition system will require MDG 1 evaluation



14. Verify Spark Plug Heat Range

STIHL®

confidential

- Correct spark plug is:
Bosch WSR6F
NGK BPMR7A
- Resistor type plug is required for all STIHL products
 - Spark plug gap: 0.020" (0.5 mm)
 - Normal appearance: tan color on ceramic portion of plug



1110 400 7005



0000 400 7000

STIHL® Injection Section

16. Remove Flywheel

STIHL®

confidential

- Use flywheel puller 5910 890 4504 with spacer 4238 894 1100
- Inspect index key and seat



- Clean magnet ring as required
- Metal and concrete dust may interfere with generator function
- Clean and de-grease tapered mounting surfaces
- Torque to specification of 33 Nm (24 lb-ft) during install



21. Fuel Filter

STIHL®

confidential

- Inspect filter for contamination
- A magnet (orange ring) is present to prevent fine metal particles from damaging the injector
- Filter is non-serviceable; replace if necessary



STIHL® Injection Section

22. Pressure Test Fuel line

STIHL®

confidential

- Pressure test fuel line to 0.8 bar
- If it does not hold, remove and test from both ends to verify if fuel line has a leak, or if fuel pump leaks
(Step 28 details fuel pump testing)



24. Pressure and Vacuum Test Fuel Tank

STIHL®

confidential

- **WARNING:** Remove all fuel from tank before vacuum testing
- Reinstall tank vent with Press Fluid
- Plug one of two hoses from connecting element on fuel tank; connect tester to second hose
- In vacuum mode, pump the tester and negative pressure should not build up in the tank; if it does replace vent
- Now pump positive pressure to 0.3 bar and it must hold for 20 seconds; if pressure drops replace the vent



STIHL® Injection Section

25. Verify Impulse Signal

STIHL®

confidential

- Hook tester to crankcase impulse hose with tester in vacuum mode
- Pull starter rope rapidly
- Tester needle should bounce back and forth
- Reconnect impulse hose to pump for next step



Impulse Hose from Crankcase

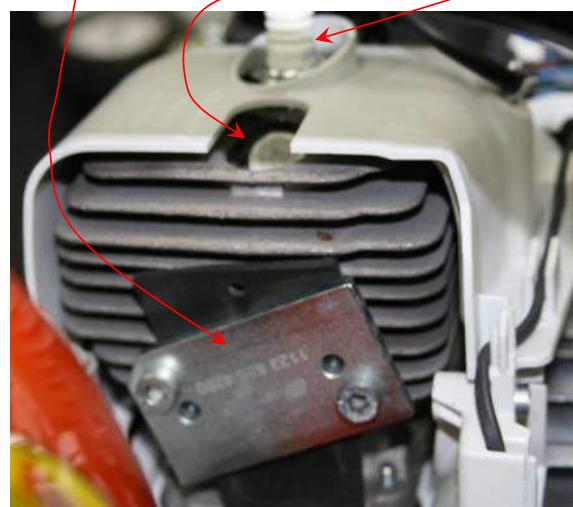


26. Vacuum and Pressure Test Crankcase

STIHL®

confidential

- Spark plug in tight
- Replace deco valve with plug 4221 025 2200
- Seal exhaust port with rubber sealing plate and 1123 855 4200 adapter



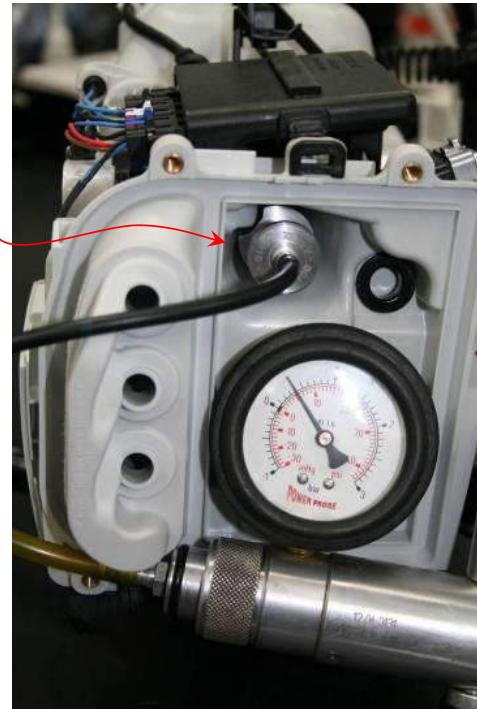
STIHL® Injection Section

26. Vacuum and Pressure Test Crankcase

STIHL®

confidential

- Using Press Fluid, place 5910 890 4100 tool securely into intake duct paying attention to alignment notch
- Specification for vacuum is 0.5 bar not to leak to 0.2 bar within 20 seconds, rotate crankshaft back and forth $\frac{1}{4}$ turn while under vacuum to verify crankshaft seals
- Pressure must hold at 0.5 bar for 20 seconds
- Locate pressure leaks with soapy water solution
- Tank housing removal may be needed to verify case gasket, injector and pressure sensor

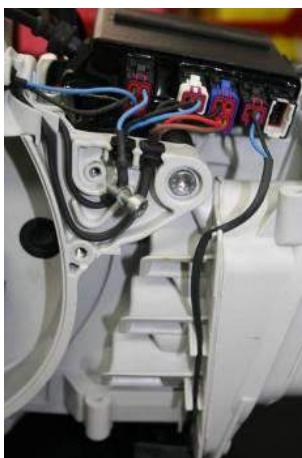


27. Wiring Harness

STIHL®

confidential

- Pay attention to wires and routing as evaluation is being done
- Verify any portions of wiring harness that have not been previously inspected



STIHL® Injection Section

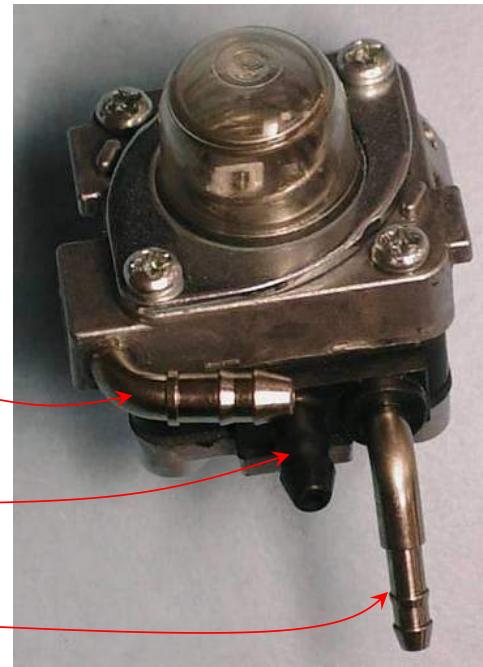
Injection Pump with Manual Fuel Pump
4250 130 0300

STIHL®

confidential

- Equipped with a manual pump-pump bulb is replaceable
- No internal parts are available

- Fuel intake fitting from fuel tank
- Impulse fitting from crankcase
- Fuel supply fitting to injector



28. Pump Testing

STIHL®

confidential

- A. Connect tester in vacuum mode to inlet fitting, pump primer bulb; gauge must hold -0.2 bar minimum



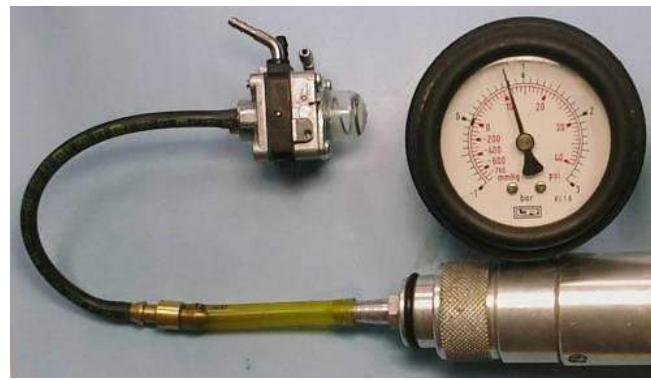
STIHL® Injection Section

STIHL®

confidential

28. Pump Testing

- B. Connect tester to outlet fitting in pressure mode, pump primer bulb; gauge must hold at 0.8 bar
- C. Connect tester to fitting on back of pump, gently pump tester; must hold 0.8 bar pressure



- If pump fails any of these steps, replace it

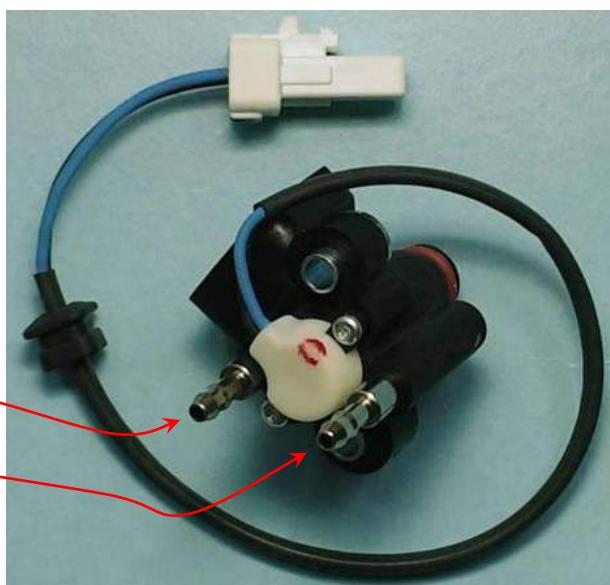
Fuel Injection Valve 4250 130 3300

STIHL®

confidential

- Injection valve is normally closed and ECU determines open dwell time
- Connection lead must be carefully routed to ECU

- Fuel supply line from injection pump
- Fuel return to tank



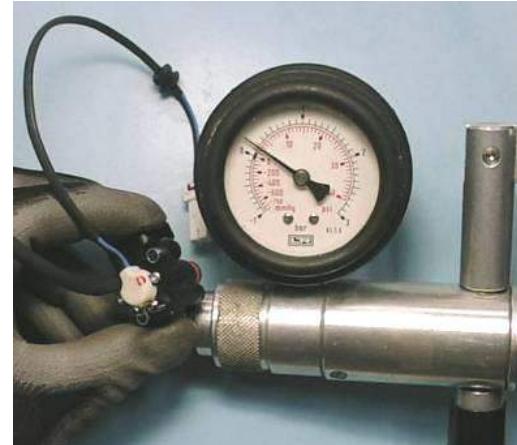
STIHL® Injection Section

29. Injection Valve Testing

STIHL®

confidential

- A. Connect to injector supply hose at this location with tester in pressure mode
- GENTLY pump tester: pressure should release at around 0.3 to 0.4 bar and drop down and hold steady at around 0.2 bar
- B. Gently pull a vacuum: should hold steady at -0.5 bar
- If it fails any part of this test, replace injection valve



STIHL TS 500i Connecting the MDG 1 Analyzer

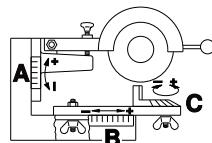
STIHL®

confidential

- Connect MDG 1 inline with spark plug lead (gently twist connectors when removing to avoid damage)
- Diagnostic cable connects inline with generator connection (far left connector)
- Conduct electrical diagnostics with MDG1 only after first conducting STIHL Engine Check
- Must use MDG1 to recalibrate. Cannot recalibrate manually.

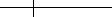
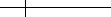
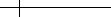
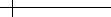
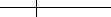
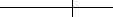
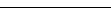


STIHL USG



STIHL

0457 716 0000 G13

		 		 A		 B		 C				 		 	
mm	inch														
6,35	1/4 P	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5203 750 7017 5203 750 7015	R = 1,7 mm α = 30°	0000 893 4005 b = 0,45 mm (0.018")	75°						
6,35	1/4	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5203 750 7013 5203 750 7015	R = 2,0 mm α = 30°	1110 893 4000 b = 0,65 mm (0.025")	PS...: 60° PM...: 75°						
9,32	3/8 P PMN	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5203 750 7013 5203 750 7015	R = 2,0 mm α = 30°	0000 893 4000 b = 0,45 mm (0.018")	75°						
8,25	0.325	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5203 750 7010 5203 750 7015	R = 2,4 mm α = 30°	1110 893 4000 b = 0,65 mm (0.025")	RS...: 60° RM...: 75°						
9,32	3/8	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5203 750 7010 5203 750 7015	R = 2,6 mm α = 30°	1110 893 4000 b = 0,65 mm (0.025")	RS...: 60° RM...: 75°						
10,26	0.404	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5202 750 7010 5203 750 7015	R = 2,8 mm α = 30°	1106 893 4000 b = 0,80 mm (0.030")	RS...: 60° RM...: 75°						
9,32	3/8 P PMX	① / ② ③	+40° / +40° +40°	-15 / +15 0	-10° / +10° 0°	5203 750 7013 5203 750 7015	R = 2,0 mm α = 30°	1110 893 4000 b = 0,65 mm (0.025")	75°						
9,32	3/8 RMX	① / ② ③	+40° / +40° +40°	-15 / +15 0	-10° / +10° 0°	5203 750 7010 5203 750 7015	R = 2,6 mm α = 30°	1110 893 4000 b = 0,65 mm (0.025")	75°						
10,26	0.404 RCX / RMX	① / ② ③	+40° / +40° +40°	-15 / +15 0	-10° / +10° 0°	5202 750 7010 5203 750 7015	R = 2,8 mm α = 30°	1106 893 4000 b = 0,80 mm (0.030")	75°						
10,26	0.404 RMH	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5202 750 7010 5203 750 7015	R = 2,8 mm α = 30°	0000 893 4003 b = 1,50 mm (0.060")	75°						
10,26	0.404 RMHS	① / ② ③	+40° / +40° +40°	-15 / +15 0	-30° / +30° 0°	5202 750 7010 5203 750 7015	R = 2,8 mm α = 30°	0000 893 4004 b = 1,0 mm (0.040")	75°						
9,32	3/8 P PD3	① / ② ③	+30° / +30° +40°	-15 / +15 0	-30° / +30° 0°	5203 757 0906 5203 750 7015	— α = 30°	1110 893 4000 b = 0,65 mm (0.025")	75°						
8,25	0.325	① / ② ③	+30° / +30° +40°	-15 / +15 0	-30° / +30° 0°	5203 757 0906 5203 750 7015	— α = 30°	1110 893 4000 b = 0,65 mm (0.025")	75°						
9,32	3/8 RD3	① / ② ③	+20° / +20° +40°	0 / 0 0	-25° / +25° 0°	5203 757 0901 5203 750 7015	— α = 30°	1110 893 4000 b = 0,65 mm (0.025")	65°						
9,32	3/8 RD	① / ② ③	+10° / +10° +40°	0 / 0 0	-15° / +15° 0°	5203 757 0901 5203 750 7015	— α = 30°	1110 893 4000 b = 0,65 mm (0.025")	85°						

Summary of Extended Warranty Coverage Past to Present

The following is a summary of some extended warranty coverage policies and effective dates to use for reference when repairing machines sold in prior years. Refer to the STIHL Incorporated Limited Warranty Policy that was in effect at the time of sale for detailed limitations, exclusions and restrictions to type of use. Note: any changes to STIHL Incorporated's limited warranty time period coverage are not retroactive to machines purchased prior to the change unless specifically described in STIHL Incorporated's Limited Warranty Statement.

IMPORTANT ELECTRONIC IGNITION EXTENDED WARRANTY INFORMATION:

Extended warranty coverage for electronic ignition systems applies to the electronic trigger module only, hereinafter referred to as "ignition module". Breaker points, condensers, and ignition coils are not included in this warranty coverage unless the electronic trigger module is an integral component of the ignition coil.

Electronic Ignition Modules-Chain Saws Sold July 1, 1986 – June 30, 1995:

Models 009, 011, 012, 020T, 021, 023, 024, 025, 026, 028, 029, 034, 036, 039, 044, 064, 066, & 084 sold between July 1, 1986 and June 30, 1995 have limited lifetime electronic ignition module warranty coverage for parts & labor to replace the electronic ignition module to the original purchaser until the appropriate spare part is no longer available from STIHL.

Electronic Ignition Modules-Power Tools Sold January 1, 1989 – June 30, 1995:

Models FS 36, FS 40, FS 44, FS 48, FS 52, FS 62, FS 66, FS 72, FS 74, FS 76, FS 81, FS 86, FS 88, FS 106, FS 160, FS 180, FS 220, FS 280, FS 360, FS 420, FC 44, FC 72, BG 75, BR 106, BR 320, BR 400, BT106 sold between January 1, 1989 and June 30, 1995 have limited ignition warranty coverage for parts & labor to replace the electronic ignition module to the original purchaser until the appropriate spare part is no longer available from STIHL.

Electronic Ignition Modules-All Products Sold July 1, 1995 – March 2, 2003:

All models sold between July 1, 1995 and March 2, 2003 had limited electronic ignition warranty coverage for parts & labor to replace the electronic ignition module during the normal warranty period of the machine. The normal warranty period has expired, however the electronic ignition module part only is covered to the original purchaser until the appropriate spare part is no longer available from STIHL.

Electronic Ignition Modules-All Products Sold March 3, 2003 – December 31, 2010:

All models sold between March 3, 2003 and December 31, 2010 had limited electronic ignition warranty coverage for parts & labor to replace the electronic ignition module for the first 2 years after purchase. For an additional 3 years, replacement cost of the electronic ignition module part only is covered under the limited warranty policy.

Electronic Ignition Modules-All Products Sold on or After January 1, 2011:

All models sold on or after January 1, 2011 have limited electronic ignition warranty coverage for parts & labor to replace the electronic ignition module for 2 years after the date of purchase or the warranty time period of the machine, whichever is greater.

Electronic Ignition Modules-Replacement Parts:

If the machine was originally covered by a limited lifetime electronic ignition warranty policy and the electronic ignition module was replaced, the replacement electronic ignition module used for the repair continues to be covered to the original retail purchaser until the appropriate spare part is no longer available from STIHL. For products not having extended electronic ignition warranty coverage, the replacement electronic ignition module used to repair the machine has limited warranty coverage for 3 months or the remaining warranty time period of the machine, whichever is greater.

Summary of Extended Warranty Coverage Past to Present

Power Tool Drive Shafts-Products Sold October 1, 1993 – June 30, 1995:

All power tools with a flexible drive shaft except FS 106, 108 models sold between October 1, 1993 and June 30, 1995 are covered under a limited lifetime warranty for the flexible drive shaft (**does not apply to products with solid drive shafts**). This warranty covers the cost of parts & labor to the original purchaser for the life of the product or until the appropriate spare part is no longer available from the factory. The warranty only applies if the drive shaft has been maintained and lubricated as recommended in the product's instruction manual.

Power Tool Drive Cables-Products Sold On or After July 1, 1995:

All power tools with a flexible or solid drive cable **except any HT pole pruner models with extendable length shafts** sold on or after July 1, 1995 are covered under an extended limited warranty. This warranty covers the cost of parts & labor to replace the drive cable to the original purchaser until the appropriate spare part is no longer available from STIHL. The warranty only applies if the drive cable has been maintained and lubricated as recommended in the product's instruction manual.

Drive Shaft Warranty for HT Pole Pruner Models with Extendable Length Shafts:

The drive shaft warranty for any HT pole pruner models with extendable length shafts have the same limited warranty time period coverage as the machine.

Power Tool Clutch Systems-Products Sold January 1, 2000– December 31, 2015:

All STIHL FS trimmer, brushcutter, clearing saw, FC edger, fixed length HT pole pruner, KM and MM multi-task machines, KW powered sweeper, HS, HL and FH hedge trimmer, BT 45, BT 120 and BT 121 boring gear models purchased between January 1, 2000 and December 31, 2015 come with centrifugal clutch shoes which are warranted until the appropriate spare part is no longer available from STIHL while owned by the original purchaser.

Machines Sold With 6-Pack of STIHL HP Ultra Engine Oil or a minimum of 1 gallon of STIHL MotoMix® Pre-Mixed Fuel On or After January 1, 2012:

For all STIHL gasoline powered machines (with the exception of STIHL TS cut-off machines, GS concrete cutter pressure washers, and top handle chain saw models) sold on or after January 1, 2012 **that are used for personal non-income producing household purposes**; the standard warranty coverage period will be doubled if the original consumer purchases a 6-pack of STIHL HP Ultra 2-cycle engine oil (any size containers) or a minimum of 1-gallon of STIHL MotoMix® pre-mixed fuel at the time the machine is purchased. Refer to the STIHL Incorporated Limited Warranty Policy in effect at the time of sale for detailed time period coverage, limitations, exclusions and restrictions.

3-Year Warranty Coverage for Battery Products in Household Use – Products Sold After January 1, 2017:

Battery products sold on or after January 1, 2017 have three years of warranty coverage if used for non-income producing personal household use. The coverage period includes rechargeable batteries and chargers. Battery products sold prior to January 1, 2017 have two years of limited warranty coverage.

Notes

STIHL® Cutquik® Wheel Selection Warning

Only STIHL-branded composite and diamond wheels are recommended. Although certain other wheels may fit and be usable with the STIHL powerhead, their use may, in fact, be extremely dangerous. Wheels that are not STIHL-branded may be more likely to shatter or break or cause other problems, such as wheel wobble and/or increased reactive forces. Use only wheels with approved RPM ratings for your cut-off machine. Consult the instruction manual for your STIHL cut-off machine or current STIHL Cut-Off Machine Safety Manual for more details.



Photos #1 and #2 show examples of recommended STIHL diamond abrasive wheels that grind material.
Note that the cooling slots and segments on such diamond wheels are NOT cutting teeth.



WARNING - Never use a carbide-tipped, wood-cutting or circular saw blade on STIHL Cutquik® cut-off machines. Such blades can greatly increase the risk of loss of control and cause severe or fatal injury from reactive forces, including kickback, blade contact or thrown objects/carbide tips.



Photos #3, #4 and #5 are examples of carbide-tipped, rescue or circular saw blades which are **NOT AUTHORIZED** for use on STIHL cut-off machines.



WARNING - Diamond wheels with abrasive material on the sides are not authorized by STIHL. Such abrasive material may increase reactive forces in a pinch situation and the risk of serious or fatal injury.



Photos #6, #7 and #8 are examples of diamond wheels with abrasive material on the side of the wheels.
These types of diamond wheels are **NOT AUTHORIZED** for use on STIHL cut-off machines.



WARNING - Some diamond wheels that are not STIHL-branded are prone to wobble during use. This condition may be caused by poor quality steel used in the core, lack or loss of tensioning, or other design or manufacturing problems. Wheel wobble can lead to binding, loss of control and/or kickback.
To reduce the risk of serious or fatal injury, never use a wheel that wobbles or has previously wobbled.

Warranty Time Periods by Product



Product Type	Personal Household Use	Commercial, Professional Use
MS Chain Saws (excluding top handle models)	1 year	3 months
MS Chain Saws With a Top Handle (i.e. MS xxx T or MSA xxx T) <i>Top handle chain saws are for in-tree professional use only!</i>	Not Applicable	3 months
MSE 120 Volt A.C. Electric Chain Saws	1 year	3 months
FS Trimmers, Brushcutters and Clearing Saws	2 years	
FSE 120 Volt A.C. Electric Trimmers	Flexible and solid drive cables on FS trimmers, brushcutters, clearing saws, FC edgers, HL hedge trimmers, KM and MM multi-task tools, KM attachments, and fixed length HT pole pruners will be covered by limited warranty to the original retail purchaser for as long as the appropriate spare part continues to remain available from STIHL.	
FC Edgers	2 years	
HL Extended Reach Hedge Trimmers	2 years	
KM Multi-Task Tools & KM Attachments	2 years	
MM Multi-Task Tools & MM Attachments	2 years	
HT Pole Pruners Fixed Length Models	2 years	
HT Pole Pruners Telescoping Models	2 years	
HS Hedge Trimmers	2 years	
HSE 120 Volt A.C. Electric Hedge Trimmers	2 years	
BG Handheld Blowers	2 years	
BGE 120 Volt A.C. Electric Handheld Blowers	2 years	
SH Shredder Vac/Blowers	2 years	
BR Backpack Blowers	2 years	
SR Backpack Sprayers	2 years	
BT Augers & Drill	2 years	
SE Vacuum Cleaners	2 years	

Product Type	Personal Household Use	Commercial, Professional Use	
SG Manual Pump Sprayers	1 year	1 year	
TS Cut-Off Machines	Not Applicable	3 months	
TSA Cordless Electric Cut-Off Machine			
GS Concrete Cutters			
Cordless Electric Battery Products			
MSA Chain Saws With a Top Handle (i.e. MSA xxx T) <i>Top handle chain saws are for in-tree professional use only!</i>	Not Applicable	3 months	
TSA Cut-Off Machines			
MSA Chain Saws (excluding top handle models)	3 years	2 years	
FSA Trimmers and Brushcutters			
BGA Handheld Blowers			
HSA Hedge Trimmers			
HLA Extended Reach Hedge Trimmers			
HTA Pole Pruners			
RMA Lawnmowers			
RMI Robotic Lawnmowers			
Batteries & Chargers	3 years	2 years	
Pressure Washers	2 years	1 year	

All STIHL products & components are warranted for three months, or the applicable emission-related parts warranty period, when the product is used for rental purposes.

NOTE: All TS, TSA, GS, pressure washer, and robotic lawnmower models do not qualify for the STIHL 7-Day Satisfaction Guarantee.

DOUBLE WARRANTY COVERAGE PROGRAM

For all STIHL gasoline powered machines (with the exception of STIHL TS cut-off machines, GS concrete cutter, top handle chainsaws and pressure washers) sold after January 1, 2011 that are used for personal non-income producing household purposes; the standard warranty coverage period will be doubled if the original consumer purchases a 6-pack of STIHL HP Ultra 2-cycle engine oil (any size containers) or a minimum of 1 gallon of STIHL MotoMix® pre-mixed fuel at the time the machine is purchased.