

SRAM® **DualDrive**

operating instructions

betriebsanleitung

notice d'utilisation

handleiding

brugsanvisning

bruksanvisning

SRAM.



These instructions contain important information on your DualDrive system.

Cycling with DualDrive is easy. It's true. It may surprise you just how many features your DualDrive system has.

To make the best possible use of your DualDrive please take the time to read these operating instructions carefully.

Your DualDrive system is almost maintenance-free. Should you have any queries that are not answered in these operating instructions, your qualified bicycle specialist will be pleased to help you.

Have a nice time and enjoy "dualdriving".

Please take particular note of the following:



Precautionary measures, which protect from possible accident, injury or danger to life, or which prevent possible damage to the bicycle.



Special advice to assist in the better handling of the operation, control and adjustment procedures.

© Copyright SRAM Corporation 2002

Publ. No. 5000 E/D/F/NI/Dk/Sv

Information may be enhanced without prior notice.

Released December 2002

SRAM Technical Documentation,
Schweinfurt/Germany

Shimano is a trademark of Shimano Inc., Japan.

CONTENTS

E

THE DUALDRIVE SYSTEM	4
-----------------------------	----------

OPERATION	7
------------------	----------

MAINTENANCE AND CARE

» Gear adjustment	8
-------------------	---

» Remove and fit rear wheel	10
-----------------------------	----

» Cleaning and Lubrication	11
----------------------------	----

» Cable change	12
----------------	----

ASSEMBLY OF COMPONENTS	14
-------------------------------	-----------

TECHNICAL DATA	18
-----------------------	-----------

ADDRESSES	110
------------------	------------

THE DUALDRIVE SYSTEM

WHAT IS DUALDRIVE

The general perception is that shifting requires a Zen-like touch from years of trial and error . . . mostly error. Many riders wanted something easier. We really love this kind of challenge. And DualDrive exceeds all the expectations.

DualDrive is a drive train consisting of a self-energized internal hub and rear derailleur for smooth adjustment. It's the market's most revolutionary transmission.

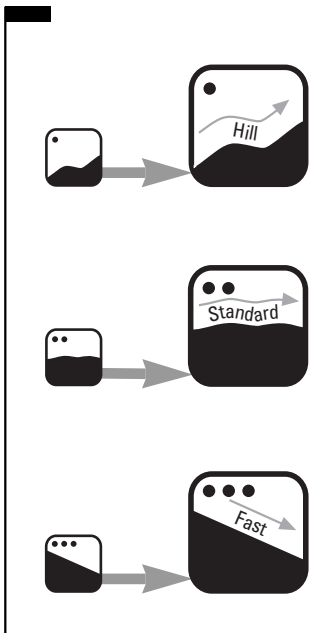
OPERATING PRINCIPLE

Single-side shifting allows the rider to use one-hand to easily click through a 27-, 24- or 21 gear option. And DualDrive's superior gear indication, featuring three intuitive riding modes, creates a smooth, comfortable ride for novice and masters alike. Easy shifting.

Advanced performance. Mission accomplished.

RIDING MODES

DualDrive has 3 intuitive shifting modes. Hill mode, standard mode, and fast mode. Each mode is designed to allow the rider to be in the proper mode wherever you go.



THE DUALDRIVE SYSTEM



DualDrive hub and cassette

Super light shifting forces, load shiftable. Stand-still shifting (mode selector): easy re-start at a traffic light



DualDrive Clickbox

Easy wheel removal: pre-adjusted gears for simplicity.



DualDrive single-sided shifter

Simple gear indication: one view for all information. Intuitive logical shifting.



DualDrive rear derailleur

Light, precise shifting. Larger pivots, links and cages: increased rigidity and durability.

THE DUALDRIVE SYSTEM

HOW LONG DID IT TAKE TO FINISH DUALDRIVE?

A big team of 25 engineers from all around the world worked for two years on this project.

HOW DID WE TEST DUALDRIVE?

Enthusiastic trekking riders did test the system under all weather circumstance for more than a year. Within these tests we finetuned the function of the system to perform to 100% of the comfort trekking riders expectations.

WHAT PARTS DO I NEED TO COMPLETE A DUAL-DRIVE TRAIN?

A DualDrive train contains the following products:

- » **DualDrive hub:** in either without brake and disc brake version.
- » **Cassette:** 11-34 teeth, 9 speed for DualDrive 27 or 11-32 teeth, 8 speed for DualDrive 24 or 12-32 teeth, 7 speed for DualDrive 21.
- » **Derailleur:** DualDrive 9 speed for DualDrive 27, DualDrive 8 speed for DualDrive 24 or DualDrive 7 speed for DualDrive 21.

- » **Shifter with Clickbox:** 27 speed with gear indication window or 24 and 21 speed without gear indication window.
- » **Spoke protector:** There are two versions available: in versions for 36 or 32 spoke hole hubs.
- » **Crank:** DualDrive cranks offer the best performance with the DualDrive system.

I BELIEVE A DUAL-DRIVE SYSTEM HAS TO BE HEAVIER THAN A NORMAL EXTERNAL DRIVE SYSTEM!

In fact the DualDrive system weighs around 250 gr less than a standard derailleur drive train system.

WHAT IS THE BENEFIT OF THE SINGLE SIDED SHIFTER?

It is more intuitive due to the riding modes which explain the driver directly what mode to use in which terrain.

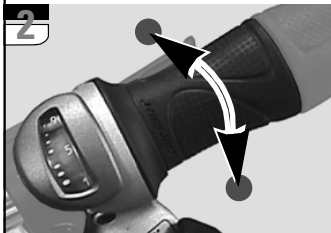
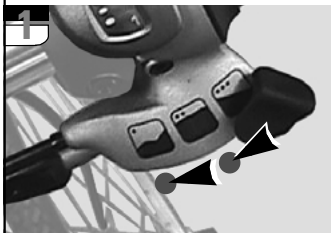
OPERATION

RIDING MODES

1 Use the thumb shifter to choose the gear ratio. You can operate it in stand still or while riding. The smoothest and fastest gear change happens when changing gears while pedaling.

DERAILLEUR

2 Use the rotating grip (to the right) to change gear of the derailleur system. The smoothest and fastest gear change happens when changing gears while pedaling with low force.



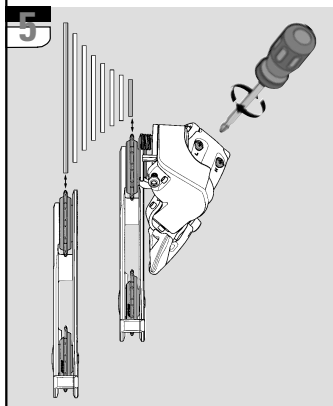
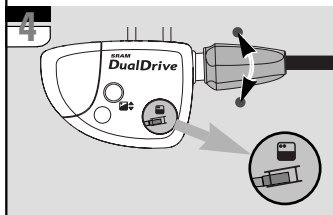
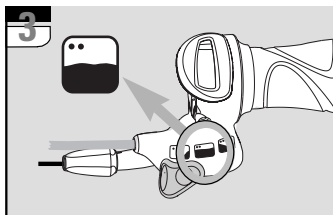
MAINTENANCE AND CARE

GEAR ADJUSTMENT

GEAR HUB

3 Place thumb shift lever in standard mode.

4 Match up the yellow marks in the Clickbox viewing window by twisting the barrel adjuster.



DERAILLEUR

Limit screw adjustment:

5 View the rear derailleur and pulleys from behind the rear of the bicycle.

- » Turn the limit screw marked 'H' on the outer link of the derailleur to align the upper guide pulley center with the outboard edge of the smallest cog – clockwise moves the guide pulley inboard towards the wheel.
- » While turning the crank, push the rear derailleur towards the larger cogs by hand.
- » Align the upper guide pulley under the largest cog, by turning the limit screw marked 'L' on the outer link – clockwise moves the guide pulley outboard away from the spokes.

MAINTENANCE AND CARE

GEAR ADJUSTMENT


Chain gap adjustment:

Chain gap is the distance between the upper guide pulley and the cog the chain is riding on. Optimal chain gap allows quick, efficient shifts.

- » While turning the crank, push the rear derailleur inboard by hand to the largest cog.
- » Hold the derailleur in this position while making the following adjustment.

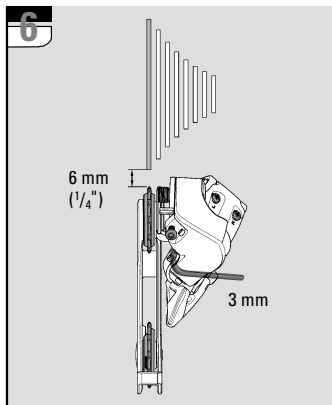
6 Use a 3 mm hex wrench, turn the b-adjust screw until the chain gap equals approximately 6 mm ($\frac{1}{4}$ ”).

- Turn the b-adjust screw clockwise to increase the chain gap.
- Turn the b-adjust screw counterclockwise to decrease the chain gap.

 Do not use the b-adjust screw to adjust the rear derailleur to act as a chain-tensioning device or to prevent chain suck. This increases the chain gap causing poor shifting performance.

Index shifting adjustment:

- » Make sure the chain is located on the smallest sprocket.



- » Shift the chain to the second cog.
 - If the chain hesitates or does not shift, increase the cable tension by turning the shifter barrel adjuster counterclockwise.
 - If the chain shifts beyond the second cog, decrease the cable tension by turning the shifter barrel adjuster clockwise.
- » Repeat the two former steps until shifting and cable tension is accurate.
- » While turning the crank, shift the chain up and down the cassette several times to ensure that your derailleur is indexing smoothly.

MAINTENANCE AND CARE

REMOVE AND FIT REAR WHEEL

REMOVE REAR WHEEL

- » Rotate the twist shifter to the highest gear position (speed „7/8/9“).

7 Place thumb shift lever in hill riding mode.

8 Push Clickbox button down.

- » Pull Clickbox off the axle.
- » Dismantle wheel.

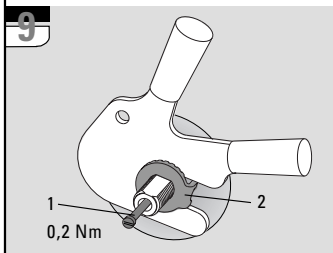
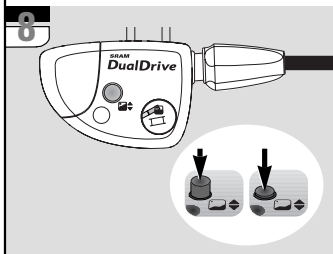
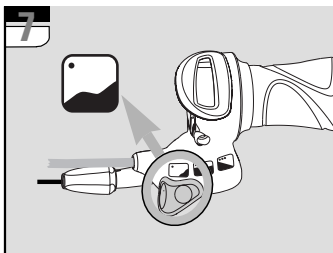
9 Unscrew shifting rod (1)

FIT REAR WHEEL

- » Fit wheel in frame dropouts.

9 Place retaining washers (2) on both sides of the axle – the serrations must bear against the dropout (washers with lugs: these must engage in the dropout slots).

- » Tighten up axle nuts. Tightening torque 30 – 40 Nm (266 – 350 in. lbs.).
- » Screw shifting rod (1) into the hub axle and thigthen it with 0.2 Nm (1.8 in. lbs.).
- » Push on Clickbox to the stop on the hub axle. The thumb shift lever must be positioned in the hill riding mode and Clickbox button must be pushed down.
- » Bring Clickbox button back to initial setting by pushing it up from underneath.
- » Check the gear settings.



MAINTENANCE AND CARE

CLEANING AND LUBRICATION

CLEANING

10 Your DualDrive components are well protected against adverse environmental influences. In order to avoid malfunction due to water penetration, pressurized jets (high pressure cleaners etc.) should not be used when cleaning the bicycle.

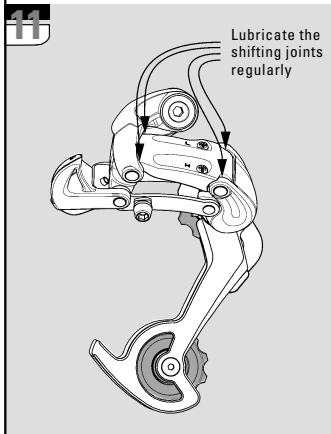
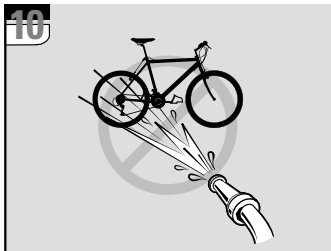
- » When using the bike during the winter more frequent cleaning is necessary to prevent damage caused by de-icing salt.
- » Do not use solvents or corrosive materials to clean the components.
- » Clean dirty chains before oiling. Do not use any grease-dissolving or acidic agents. Cleaning agent must be rinsed off after a few minutes with water. Apply oil after chain is completely dried.

LUBRICATION

» DualDrive hubs are provided with permanent lubrication and maintenance-free under normal conditions.

11 Lubricate the shifting joints regularly. Grease any cable guides (e.g. beneath the bottom bracket).

» Regular lubrication will extend the chain's service life.



MAINTENANCE AND CARE

CABLE CHANGE

CABLE CHANGE



Leave the shifter on the handlebar.

- » No need to move other components. The shifter does not need to be opened.
- » Use only new high quality cable (stainless) and compressionless cable housing with end caps.

Twist shifter (rear derailleur):

- » Detach the cable from the derailleur.
- » Cut cable off 15 cm (6") from shifter barrel adjuster. Discard old cable and cable housing.

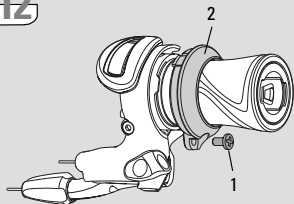
12 Remove screw (1) and pull open the cable change sleeve (2).

13 Rotate the shifter fully in the cable release direction (gear position "7/8/9"). Look for cable head entry (3).

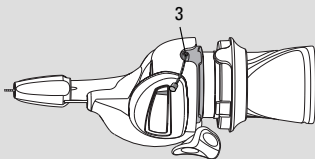
- » Push cable up/out of the shifter and discard.
- » Feed the new cable through the cable entry. Pull cable snug.

12 Install cable change sleeve (2) and fit screw (1).

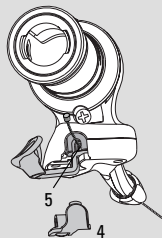
12



13



14



MAINTENANCE AND CARE

CABLE CHANGE

- » Feed the cable through the new cable housing and frame stops.
- » Attach cable to the derailleur and adjust indexing.

Thumb shifter (gear hub):

7 Place thumb shift lever in hill riding mode.

- » Remove Clickbox from the axle (see Page 10).

15 Snap open Clickbox-cover (6) as shown.

- » Unscrew clamping bolt (7), hex wrench 4 mm.

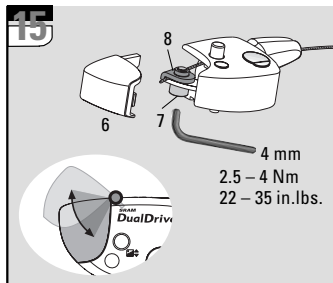
14 Remove the shifter escape hatch (4).

- » Remove and discard the old cable.
- » Feed the new cable through the cable entry (5), the new cable housing and pull the cable snug.
- » Attach the escape hatch.

15 Pull the cable tight and position it under the cable anchor washer (8).

- » Tighten the 4 mm hex cable anchor bolt to 2.5 – 4 Nm (22 – 35 in.lbs.).
- » Cut off cable end to 1 – 2 mm.
- » Snap in Clickbox-cover.

- » Install Clickbox (see Page 10).
- » Adjust gearshift.



REPAIR WORK

- !** Arrange for any work, which may become necessary on the DualDrive gear hub and shifter to be carried out by your qualified specialist dealer.
- » Non-authorized work on your DualDrive system could put you in danger and also lead to the loss of your guaranteed rights.
 - » If you have questions or problems please contact your qualified specialist dealer.

ASSEMBLY OF COMPONENTS

ASSEMBLY HUB

» Spoke the hub as normal.

16 Place spoke protector disc (1) on shoulder of hub, fit cassette (2) onto driver profile. Screw lock nut (3) with cassette tool (Park Tool FR-5 or SRAM Part No. 4624 411 010), tightening torque: 40 Nm (350 in.lbs.).

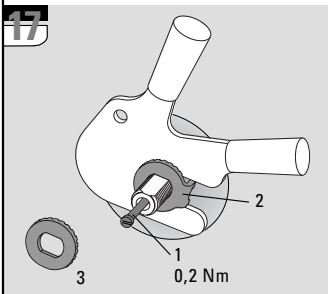
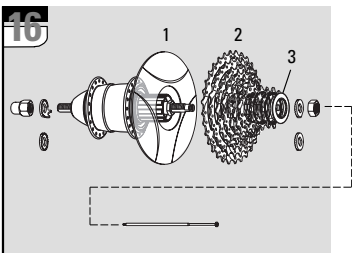
17 Screw shifting rod (1) into the hub axle and tighten it with 0.2 Nm (1.8 in.lbs.).

» Fit wheel in frame dropouts.

17 Place retaining washers (2) on both sides of the axle – the serrations must bear against the dropout.


- Version for horizontal dropouts (2): the lug must engage in the dropout slot.
- Version for vertical dropouts (3): without lug.

» Tighten up axle nuts. Tightening torque 30 – 40 Nm (266 – 350 in. lbs.).



ASSEMBLY OF COMPONENTS

ASSEMBLY DERAILLEUR

 Check the rear derailleur hanger alignment. A bent rear derailleur hanger will result in inaccurate index shifting.

18 Attach the rear derailleur to the frame's rear derailleur hanger.

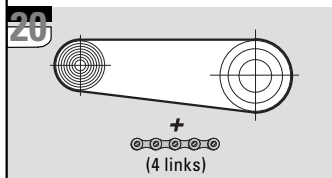
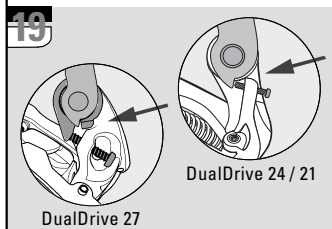
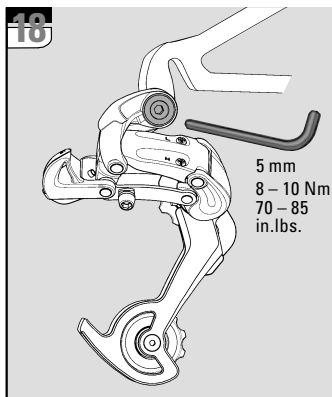
19 Check that the b-adjust washer tab (b-adjust screw at DualDrive 24 and 21) is clear of the rear derailleur dropout tab.

» Tighten the 5 mm hex hanger bolt to 8 – 10 Nm (70–85 in.lbs.).

CHAIN LENGTH

20 Bypassing the rear derailleur, run the chain around the largest cog chaining combination. Add 4 LINKS or 3 links + connecting link to this length for proper chain length.

» For rear suspension frames, position the rear suspension for the greatest chain length required.




ASSEMBLY OF COMPONENTS

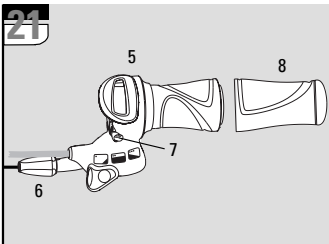
ASSEMBLY SHIFTER

21 Slide the shifter (5) onto the handlebar.

- » Rotate the shifter until the barrel adjuster (6) is beneath (but out of the way of) the brake lever.
- » Tighten the 3 mm hex clamp bolt (7) to 1.9 – 2.5 Nm (17 – 22 in.lbs.).
- » Slide the handlebar grip (8) onto the handlebar.

 Never use lubricants or solvents to install handlebar grips. Handlebar grips provide an axial safety function. For this reason, they should be mounted in such a way as to make sure they do not slip off handlebar.

- » Check that the shifter and brake lever function properly and are unobstructed.
- » Never ride without the handlebar grips, this can result in severe injury or death.



ASSEMBLY OF COMPONENTS

INSTALLING CLICKBOX

- » Fit the cable and avoid small radius.
- » Cable housing must be movable inside attachment.

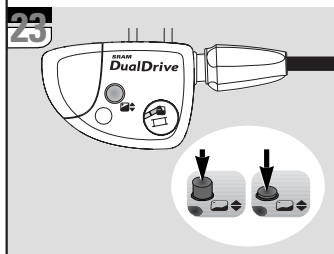
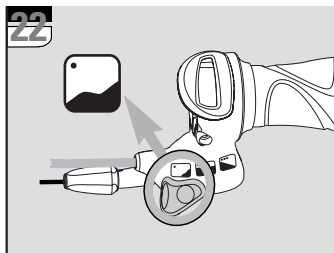
22 Place thumb shift lever in hill riding mode.

23 Push Clickbox button down.

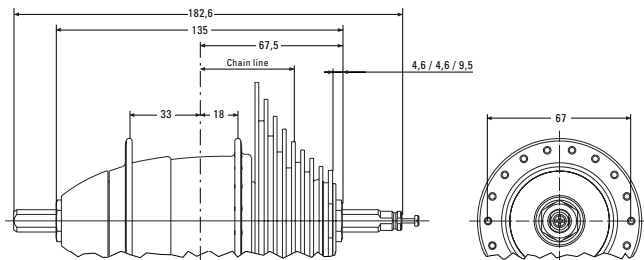
- » Push on Clickbox to the stop on the hub axle.
- » Bring Clickbox button back to initial setting by pushing it up from underneath.

GEAR ADJUSTMENT

See MAINTENANCE AND CARE



TECHNICAL DATA



GEAR HUB

	DualDrive 27	DualDrive 24	DualDrive 21
--	--------------	--------------	--------------

	Over Locknut Dim.	135 mm		
Axle	Length	182.6 mm		
	Ends Diameter	FG 10.5		
Spoke	Holes	36 or 32		
	Hole Diameter	2.6 mm		
	Hole Ref. \varnothing	67 mm		
	Flange Dist. to $\frac{1}{2}$ OLD	33 mm / 18 mm		
Ratio	Totally	576 %	542 %	509 %
	Totally hub	186 %		
	Speed 1	73 %		
	Speed 2	100 %		
	Speed 3	136 %		
	Chainline	45 mm	45 mm	42 mm
	Crankset	33 / 38 Teeth		
	Cogset	9 / 8 / 7 speed, 11-34 / 11-32 / 12-32 Teeth		
	Cogset Compatib.	DualDrive 27	DualDrive 24	DualDrive 21
	Shifter Compatib.	DualDrive 27	DualDrive 24	DualDrive 21
	Tandem compatib.	Not suitable for tandems and delivery bicycles		

TECHNICAL DATA

CASSETTE



Largest Cog
Speeds
Cogs
Spacers
Chain compatib.

DualDrive 27	DualDrive 24	DualDrive 21
34 Teeth	32 Teeth	32 Teeth
9	8	7
11/34	11/32	12/32
Blue	Black	Grey
9spd, SRAM/Shim.	8spd, SRAM/Shim.	7spd, SRAM/Shim.

DERAILLEUR



Speeds
Shifter Compatibility
Cage Length
Sprocket, max.
Sprocket, min.
Pulleys
Direct Mount

DualDrive 27	DualDrive 24	DualDrive 21
9	8	7
DualDrive 27	DualDrive 24	DualDrive 21
Short, 75 mm	Short, 75 mm	Short, 75 mm
34 Teeth	32 Teeth	32 Teeth
11 Teeth	11 Teeth	11 Teeth
Exchangea. / Bushing		←
●	●	●

SHIFTER



Shifter Type
Com-pat. Gear Hub
Derailleur
Gear Indication Der.
Riding Mode Indic.
Barrel Adj. Derailleur
Clamping Diameter
Handlebar, Straight Area
Cable Routing, Gear Hub
Cable Routing, Der.

DualDrive 27	DualDrive 24	DualDrive 21
SRS Twisting-Thumbshifter-Combo (2in1)		
DualDrive		
DualDrive 27	DualDrive 24	DualDrive 21
Window	Printed	Printed
Printed	Printed	Printed
Index		
22,3 mm		
Minimum length = 150 mm		
Continuous housing (preassembled)		
Open or continuous		

ADDRESSES

EUROPE

DANMARK

Dan Agentur
Stationsvej 77
5792 Årslev
Tel.: +45 65 99 24 11
Fax: +45 65 99 28 42

DEUTSCHLAND

Epple Zweirad GmbH
Mittereschweg 1
87700 Memmingen
Tel.: +49 (0) 83 31 7 51 411
Fax: +49 (0) 83 31 7 51 450

Hermann Hartje KG
Deichstraße 120-122
27318 Hoya/Weser
Tel.: +49 (0) 42 51 81 12 40
Fax: +49 (0) 42 51 81 12 49

ESPAÑA

Casa Masferrer, s.a.
Pol. Ind. Congost.Avda.
San Julian, s/n
E-08400 Granollers (Barcelona)
Tel.: +34 9 38 46 60 51
Fax: +34 9 38 46 53 56

FRANCE

Savoie, S.A.
Rue de l'industrie
01470 Serrières de Briord
Tel.: +33 4 74 36 13 77
Fax: +33 4 74 36 15 14

ITALIA

A.M.G. s.r.l.
Via Piave 10
23871 Lomagna (Como)
Tel.: +39 039 5 30 11 67
Fax: +39 039 9 22 02 70

NEDERLAND

Koch Kleeberg B.V.
Dukdalfweg 25
1332 BJ Almere
Tel.: +31 36 532 05 04
Fax: +31 36 532 25 48

Vertex Cycle Systems BV
Delfweg 12
2211 VM Noordwijkerhout
Tel.: +31 252 340611
Fax: +31 252 345030

ADDRESSES

ÖSTERREICH

KTM Fahrrad GmbH
Harlochnerstrasse 13
5230 Mattighofen
Tel.: +43 7742 409 10
Fax: +43 7742 409 172

SCHWEIZ

Amsler & CO AG
Lindenstraße 16
8245 Feuerthalen
Tel.: +41 5 26 47 36 36
Fax: +41 5 26 47 36 66

SUOMI

J. Syväranta Oy
Nervanderinkatu 5E 47/PL 64
F-00101 Helsinki
Tel.: +358 9 434 2030
Fax: +358 9 493 890

SVERIGE

Vartex AB
Batterivägen 14
43232 Varberg
Tel.: +46 340 64 60 00
Fax: +46 340 61 11 90

UNITED KINGDOM

Fisher Outdoor Leisure Plc
Unit 8/9 Brick Knoll Park
Ashley Road Industrial Estate
Ashley Road
St. Albans, Hertfordshire
AL1 5UG
Tel.: +44 1727 798345
Fax: +44 8009 807129

UNITED STATES

World Headquarters Chicago, Illinois U.S.A.

SRAM Corporation
1333 North Kingsbury, 4th floor
Chicago, Illinois 60622
Tel.: +1-312-664-8800
Fax: +1-312-664-8826

WORLD HEADQUARTERS

Chicago, Illinois U.S.A.

SRAM Corporation

1333 North Kingsbury, 4th floor

Chicago, Illinois 60622

phone: +1-312-664-8800

fax: +1-312-664-8826

EUROPEAN HEADQUARTERS

Amersfoort, The Netherlands

SRAM Europe

Basicweg 12-D

3821 BR Amersfoort

The Netherlands

phone: +31-33+-450-6060

fax: +31-33-457-0200

ASIAN HEADQUARTERS

Taichung, Taiwan

SRAM Taiwan

No. 1598-8 Chung Shan Road

Shen Kang Hsiang, Taichung

County 429

Taiwan R.O.C.

phone: +886-4-2561-3678

fax: +886-4-2561-3686

www.sram.com

SRAM®

