Dealer Technical Manual 2001

MTB Components

english

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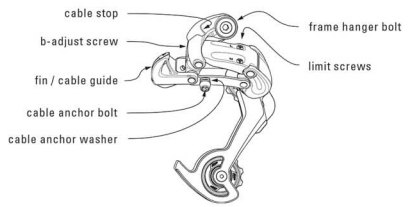
- Super Strong Pivots, Links And Knuckles
- ESP And DI.R.T. Combined Technologies
- Expanded Gear Range
- Re-Designed B-Adjust And Off-Set
- Improved Material Use
- New Appearance
- Outward Facing Limit Screws

9.0SL 9.0 7.0 5.0

		9.0SL NEW	9.0	7.0	5.0
	Part No.	—	—	—	—
	Speeds	9/8	9/8	9/8	8
	Shifter Compatibility	SRAM 9.0SL/9.0/7.0/5.0 ←	←	←	←
Chain Capacity	Total	37T	45T	45T	45T
	Cage Length	Short	Long	Long	Long
	Max Sprocket	34T	34T	34T	34T
	Min Sprocket	11T	11T	11T	11T
	Front Difference	N/A	22T	22T	22T
Design	Spring Enhancement	Yes	Yes	Yes	Yes
	Pulleys	Cartridge bearing	Bushing, hardened	Bushing, hardened	Bushing, hardened
	Cogsets & Chains	SRAM/IG & HG 9/8spd	SRAM/IG & HG 9/8spd	SRAM/IG & HG 9/8spd	SRAM/IG & HG 8spd
	Direct Mount	Yes	Yes	Yes	Yes
	Weight	N/A	N/A	N/A	N/A
	Knuckles	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite
	Outer Link	Forged Aluminum	Forged AL / Anodized	ZA8 Alloy / Paint	Grilon Composite
	Inner Link	Forged Aluminum	Steel / E-coat	Steel / E-coat	Steel / E-coat
	Outer Cage	Forged Aluminum	Stamped AL / Anodized	Stamped AL / Anodized	Steel / E-coat
	Inner Cage	Forged Aluminum	Grilon Composite	Grilon Composite	Grilon Composite
	Hanger Bolt	Aluminum	Aluminum	Aluminum	Steel

DERAILLEUR ANATOMY



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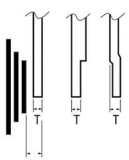

12.7 mm ± 1

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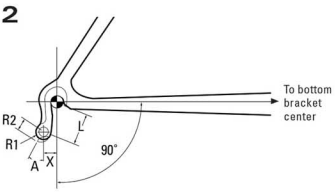


COMPATIBILITY

Shifters	SRAM® 9.0SL, 9.0, 7.0, 5.0, 3.0IBS shifters ONLY
Cogsets	11-30, 11-32, 12-32, 11-34, 12-34
Chains	SRAM Power Chain and Shimano® HG & IG
Chainrings	22-32-42/44, 24-34-46, 26-36-46/48
Cable	1.1 or 1.2 mm high quality cables
Housing	4 or 5 mm compressionless cable housing with end cap maximum diameter of 5.8 mm.

FRAME DIMENSIONS

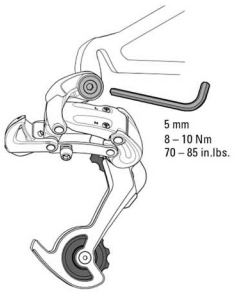
(see figure 1 and 2)

- For optimal ESP rear derailleur performance, the recommended rear derailleur hanger length (L) should be 28 – 30 mm.
- For a given L, use the chart below to determine other ESP rear derailleur hanger specifications.

L	X	A	R1	R2	T
28	6 – 10	25° – 30°	8.5 max	11.5 – 13.5	7 – 8
30	7.5 – 10	25° – 30°	8.5 max	11.5 – 13.5	7 – 8

9.0SL / 9.0 / 7.0 / 5.0 · REAR DERAILLEURS · ESP™ ASSEMBLY

1



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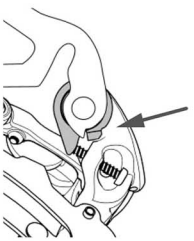

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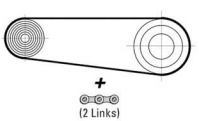

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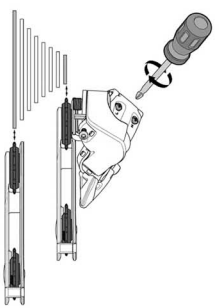


ASSEMBLY

Advice:

Check the rear derailleur hanger alignment. A bent rear derailleur hanger will result in inaccurate index shifting. Outboard side impacts are the most common causes of this type of damage.

- Attach the rear derailleur to the frame's rear derailleur hanger using a 5 mm hex head wrench ***(Fig. 1)***.
- Check that the b-adjust washer tab is clear of the rear derailleur dropout tab ***(Fig. 2)***.
- Tighten the 5 mm hex hanger bolt to 8 – 10 Nm (70–85 in.lbs.).

CHAIN LENGTH

A properly measured chain will prevent accidentally shifting to the largest chain ring and cog combination. This type of accidental shifting may cause harmful binding or seizure of the chain and potentially cause severe damage.

- Bypassing the rear derailleur, run the chain around the largest cog/large chainring combination ***(Fig. 3)***.
  – For rear suspension frames, position the rear suspension for the greatest chain length required.
- Add 2 LINKS or 1 link + Power Link to this length for proper chain length.

LIMIT SCREWS ADJUSTMENT

- View the rear derailleur and pulleys from behind the rear of the bicycle ***(Fig. 4)***.
- Using a small screwdriver, 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, center to center, by turning the limit screw marked 'L' on the outer link – clockwise moves the guide pulley outboard away from the spokes.

CHAIN GAP ADJUSTMENT

Chain gap is the distance between the upper guide pulley and the cog the chain is riding on. Optimal chain gap is small enough to allow quick, efficient shifts to and from any cog, but large enough to allow smooth shifts to and from the largest cog.

- Shift chain to the small chain ring.
- 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.
- Use a 3 mm hex wrench, turn the b-adjust screw until the chain gap equals approximately 6 mm ($^1/_4$") from tip of the cog to tip of upper guide pulley ***(Fig. 5)***.

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

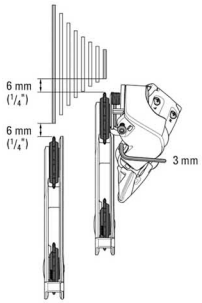
Advice:

- ***Bicycles equipped with an 11-28 cassette may require you to set the chain gap at the smallest cog. This is due to the shallow angle of the cassette in relation to the steeper movement of the 9spd rear derailleur.***
- ***It is best to measure the rear piece of cable housing between the frame and derailleur after the chain gap is determined. See figure and chart for recommended lengths.***
- ***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

- Check that the chain and the rear derailleur are in the smallest cog position.
- Measure and cut the rear piece of cable housing. Make sure that it is not too short or long ***(see figure and chart)***.
- Rotate the rear shifter until the largest number and gear indication tab/dash line up.
- Turn the rear shifter barrel adjust clockwise fully into the shifter, then turn counterclockwise 1 full turn.
- Feed the rear shifter cable through the rear derailleur cable housing, stops and cable guides.
- Feed the rear derailleur cable through the rear derailleur-housing stop and through the cable guide on the fin.
- Pull the cable tight and position it under the cable anchor washer ***(Fig. 6)***.
- Tighten the 5 mm hex cable anchor bolt to 4 – 5 Nm (35–45 in.lbs.).
  – Be careful not to crush or deform the cable.
- Rapidly shift the chain and derailleur up and down the cassette several times. If the cable slips repeat the two former steps.
- Shift the chain to the smallest cog.
- While pedaling, move the shifter up one detent.
  – If the chain hesitates or does not shift to the second cog, 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.

5



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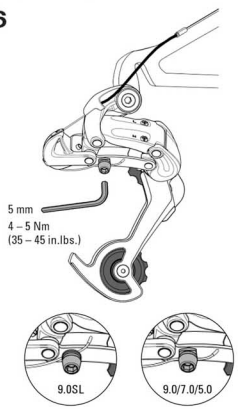

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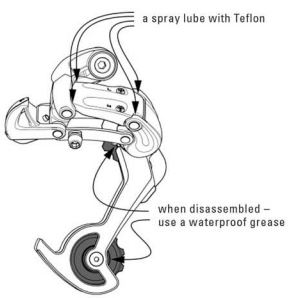


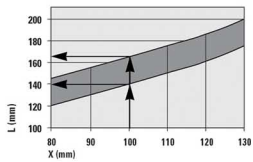
- Repeat the two former steps until shifting and cable tension is accurate.
- While turning the crank, shift the chain up and down the cassette and chain rings several times to ensure that your derailleur is indexing smoothly.

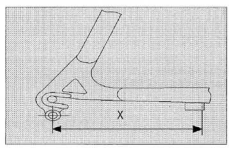
MAINTENANCE

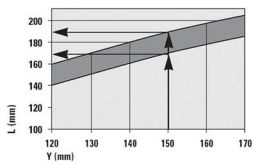
- Do not use solvants or corrosive materials to clean the components.
- Lubricate the shifting joints regularly ***(Fig. 7)***.
- Grease any cable guides (e.g. beneath the bottom bracket).

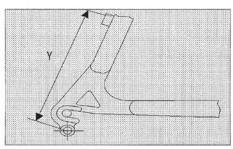
CHART / LENGTH OF CABLE HOUSINGS

Example: Distance X = 100 mm → cable housing length L = 140 – 165 mm.









Caution:
It is imperative to respect the values for the correct length of cable housing.

TROUBLESHOOTING

Problem	Cause	Remedy
Chain jumps from smallest sprocket to frame dropout.	High gear limit screw is not adjusted properly.	Turn in screw H until the guide pulley is aligned with the smallest sprocket.
Difficult or impossible to shift chain onto smallest sprocket.	High gear limit screw is not adjusted properly.	Unscrew screw H until the guide pulley is aligned with the smallest sprocket.
Chain jumps over largest sprocket and falls between the spokes and largest sprocket or inner cage plate scrapes on spokes.	Low gear limit screw is not adjusted properly.	Turn in screw L until the guide pulley is aligned with the largest sprocket.
	Rear derailleur or derailleur hanger is bent.	Straighten or replace.
Delayed shifting.	Clearance between guide pulley / sprocket is too large.	Adjust b-adjust screw by rotating counterclockwise.
Rough shifting behavior.	Clearance between guide pulley / sprocket is too small.	Adjust b-adjust screw by rotating clockwise.
Chain jumps two gears on small sprocket	Shift cable insufficiently tensioned.	Turn barrel adjuster on the shifter counterclockwise.
Delayed shifting onto larger sprocket	Shift cable insufficiently tensioned.	Turn barrel adjuster on the shifter counterclockwise.
Delayed shifting onto smaller sprocket	Shift cable is too tight.	Turn barrel adjuster on the shifter clockwise.
	Excessive cable friction, pinched or poorly routed cable.	Lubricate or replace cable and housing. Check for excessive bending of cable housing.

4.0 / 3.0 · REAR DERAILLEURS · ESP™
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

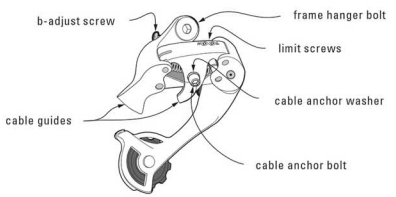
1:1

- 1:1 Actuation Ratio
- Larger Pivots, Links And Cages
- Expanded Gear Range
- New Appearance
- Slant Parallelogram Design
- Outward Facing Limit Screws

		4.0 NEW	3.0
	Part No.	—	—
	Speeds	8/7	8/7
	Shifter Compatibility	SRAM9.0SL/9.0/7.0/5.0/4.0/3.0IBS	
Chain Capacity	Total	45T	45T
	Cage Length	Long	Long
	Max Sprocket	34T	34T
	Min Sprocket	11T	11T
	Front Difference	22T	22T
Design	Spring Enhancement	Yes	Yes
	Pulleys	Bushing (replaceable)	Bushing
	Cogsets & Chains	SRAM / IG & HG 8/7spd	SRAM / IG & HG 8/7spd
	Direct Mount	Yes	Yes
	Weight	N/A	233 g
	Knuckles	Grilon Composite	Grilon Composite
	Outer Link	Grilon Composite	Grilon Composite
	Inner Link	Steel / Zinc Coat	Steel / Zinc Coat
	Outer Cage	Grilon Composite	Grilon Composite
	Inner Cage	Grilon Composite	Grilon Composite
	Hanger Bolt	Steel	Steel

4.0 3.0

DERAILLEUR ANATOMY



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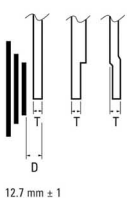

12.7 mm ± 1

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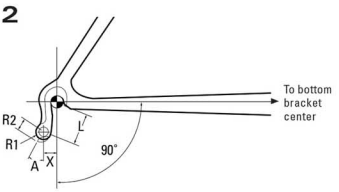


COMPATIBILITY

Shifters	SRAM 7 & 8spd ESP cable pull shifters only
Cogsets	Min. 11T, Max. 34T
Chains	SRAM Power Chain and Shimano® HG & IG
Chainrings	22-32-42/44, 24-34-46, 26-36-46/48
Cable	1.1 or 1.2 mm high quality cables
Housing	4 or 5 mm compressionless cable housing with end cap maximum diameter of 5.8 mm.

FRAME DIMENSIONS

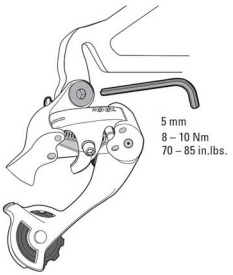
(see figure 1 and 2)

- For optimal ESP rear derailleur performance, the recommended rear derailleur hanger length (L) should be 28 – 30 mm.
- For a given L, use the chart below to determine other ESP rear derailleur hanger specifications.

L	X	A	R1	R2	T
28	6 – 10	25° – 30°	8.5 max	11.5 – 13.5	7 – 8
30	7.5 – 10	25° – 30°	8.5 max	11.5 – 13.5	7 – 8

4.0 / 3.0 · REAR DERAILLEURS · ESP™ ASSEMBLY

1



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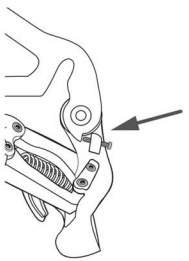

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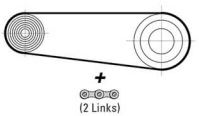

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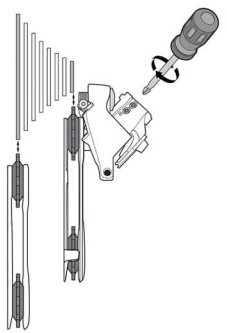


ASSEMBLY

Advice:

Check the rear derailleur hanger alignment. A bent rear derailleur hanger will result in inaccurate index shifting. Outboard side impacts are the most common causes of this type of damage.

- Attach the rear derailleur to the frame's rear derailleur hanger using a 5 mm hex head wrench ***(Fig. 1)***.
- Check that the b-adjust screw is clear of the rear derailleur dropout tab ***(Fig. 2)***.
- Tighten the 5 mm hex hanger bolt to 8 – 10 Nm (70–85 in.lbs.).

CHAIN LENGTH

A properly measured chain will prevent accidentally shifting to the largest chain ring and cog combination. This type of accidental shifting may cause harmful binding or seizure of the chain and potentially cause severe damage.

- Bypassing the rear derailleur, run the chain around the largest cog/large chainring combination ***(Fig. 3)***.
  – For rear suspension frames, position the rear suspension for the greatest chain length required.
- Add 2 LINKS or 1 link + Power Link to this length for proper chain length.

LIMIT SCREWS ADJUSTMENT

- View the rear derailleur and pulleys from behind the rear of the bicycle ***(Fig. 4)***.
- Using a small screwdriver, 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, center to center, by turning the limit screw marked 'L' on the outer link – clockwise moves the guide pulley outboard away from the spokes.

CHAIN GAP ADJUSTMENT

Chain gap is the distance between the upper guide pulley and the cog the chain is riding on. Optimal chain gap is small enough to allow quick, efficient shifts to and from any cog, but large enough to allow smooth shifts to and from the largest cog.

- Shift chain to the small chain ring.
- 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:
- Use a 3 mm hex wrench, turn the b-adjust screw until the chain gap equals approximately 6 mm (1/4") from tip of the cog to tip of upper guide pulley ***(Fig. 5)***.

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

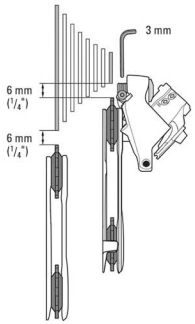
Advice:

- ***Bicycles equipped with an 11–28 or 14–28 cassette may require you to set the chain gap at the smallest cog. This is due to the shallow angle of the cassette in relation to the steeper movement of the rear derailleur.***
- ***Precision index shifting may require small changes of the b-adjustment while setting the proper cable tension.***
- ***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

- Check that the chain and the rear derailleur are in the smallest cog position.
- Measure and cut the rear piece of cable housing. Make sure that it is not too short or long.
- Rotate the rear shifter until the largest number and gear indication tab/dash line up.
- Turn the rear shifter barrel adjust clockwise fully into the shifter, then turn counterclockwise 1 full turn.
- Feed the rear shifter cable through the rear derailleur cable housing, stops and cable guides.
- Thread the rear derailleur cable through the rear derailleur-housing stop and through the cable guide on the fin ***(Fig. 6)***.
- Pull the cable tight and position it under the cable anchor washer ***(Fig. 6)***.
- Tighten the 5 mm hex cable anchor bolt to 4 – 5 Nm (35–45 in.lbs.)
  – Be careful not to crush or deform the cable.
- Rapidly shift the chain and derailleur up and down the cassette several times. If the cable slips repeat the two former steps.
- Shift the chain to the smallest cog.
- While pedaling, move the shifter up one detent.
  – If the chain hesitates or does not shift to the second cog, 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.

5

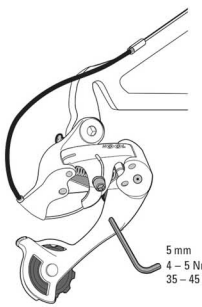


- Repeat the two former steps until shifting and cable tension is accurate.
- While turning the crank, shift the chain up and down the cassette and chain rings several times to ensure that your derailleur is indexing smoothly.

MAINTENANCE

- Do not use solvants or corrosive materials to clean the components.
- Lubricate the shifting joints regularly ***(Fig. 7)***.
- Grease any cable guides (e.g. beneath the bottom bracket).

6



7

TROUBLESHOOTING

Problem	Cause	Remedy
Chain jumps from smallest sprocket to frame dropout.	High gear limit screw is not adjusted properly.	Turn in screw H until the guide pulley is aligned with the smallest sprocket.
Difficult or impossible to shift chain onto smallest sprocket.	High gear limit screw is not adjusted properly.	Unscrew screw H until the guide pulley is aligned with the smallest sprocket.
Chain jumps over largest sprocket and falls between the spokes and largest sprocket or inner cage plate scrapes on spokes.	Low gear limit screw is not adjusted properly.	Turn in screw L until the guide pulley is aligned with the largest sprocket.
	Rear derailleur or derailleur hanger is bent.	Straighten or replace.
Delayed shifting.	Clearance between guide pulley / sprocket is too large.	Adjust b-adjust screw by rotating counterclockwise.
Rough shifting behavior.	Clearance between guide pulley / sprocket is too small.	Adjust b-adjust screw by rotating clockwise.
Chain jumps two gears on small sprocket	Shift cable insufficiently tensioned.	Turn barrel adjuster on the shifter counterclockwise.
Delayed shifting onto larger sprocket	Shift cable insufficiently tensioned.	Turn barrel adjuster on the shifter counterclockwise.
Delayed shifting onto smaller sprocket	Shift cable is too tight.	Turn barrel adjuster on the shifter clockwise.
	Excessive cable friction, pinched or poorly routed cable.	Lubricate or replace cable and housing. Check for excessive bending of cable housing.

PLASMA / QUARZ / NEOS / CENTERA · REAR DERAILLEURS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

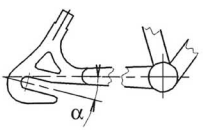
2:1

- 2:1 Actuation Ratio
- Direct Response Technology
- Oversize Design
- Constant Distance Geometry
- Simplified Construction With 30% Less Components

D·I·R·T· 2:1

		Plasma	Quarz	Neos	Centera
	Part No.	—	—	—	—
	Speeds	9/8/7	9/8/7	9/8/7	9/8/7
	Shifter Compatibility	SRAM Rocket/Attack/Centera, Shimano Rapidfire XTR/XT/LX/ST-RC/Alivio/Acera			
Chain Capacity	Total	40T	40T	40T	40T
	Cage Length	Long	Long	Long	Long
	Max Sprocket	34T	34T	34T	34T
	Min Sprocket	11T	11T	11T	11T
	Front Difference	22T	22T	22T	22T
	Pulleys	Bush. hard., sealed/Bear.	Bush. hard., sealed/Bear.	Bushing hardened, sealed	Bushing
	Cogsets & Chains	SRAM/IG & HG 9/8/7spd	SRAM/IG & HG 9/8/7spd	SRAM/IG & HG 9/8/7spd	SRAM/IG & HG 9/8/7spd
	Direct Mount	Yes	Yes	Yes	Yes
	Cable Housing	4 or 5 mm, compressionless, 5.8 mm end caps diameter			←
	Weight	195 g	200 g	247 g	265 g
Design	Knuckles	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite
	Outer Link	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite
	Inner Link	Aluminum	Aluminum	Aluminum	Steel
	Outer Cage	Aluminum	Aluminum	Steel	Steel
	Inner Cage	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite
	Hanger Bolt	Aluminum-hollow	Aluminum	Aluminum	Steel

1



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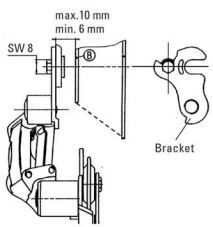

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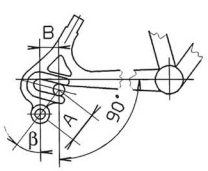

FRAME DIMENSIONS

Mounting with rear derailleur bracket:

- The angle α between the dropout and the centerline of the chainstay must be in the range of min. 20° and max. 30° ***(Fig. 1)***.
- If the maximum dimension of 10 mm is exceeded between the smallest sprocket and the outer side of dropout, a rear derailleur with an offset bracket must be used (Part No. 1120 441 020) ***(Fig. 2)***.

Direct mount:

- Important dimensions for rear dropout with integrated derailleur hangers ***(Fig. 3)*** are shown in the following table:

β	A	B	
25°–30°	25	max. 10	Road
25°–30°	26–30	6–10	MTB

- The distance between the smallest sprocket and the derailleur contacting surface must not exceed 9 to 13 mm ***(Fig. 4)***.
- On the dropout, the hanger to which the rear derailleur is attached may have a max. chamfer of 0.5 x 45°. The contacting surface for the rear derailleur must be completely level ***(Fig. 5)***.
- When the thickness of the frame dropout is ≤ 5.5 mm: use **washer with Part No. 1118 401 071** ***(Fig. 6)***
- Dropouts which are opened towards the bottom are useful too.

Direction of dropout:

- The differential between point A and point B must not exceed 10 mm ***(Fig. 7)***.

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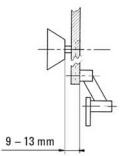

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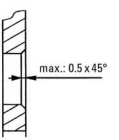

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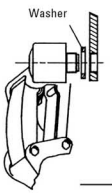

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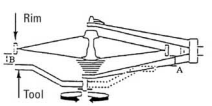
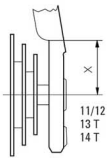


PLASMA / QUARZ / NEOS / CENTERA · REAR DERAILLEURS TECHNICAL DATA / ASSEMBLY REQUIREMENTS

8



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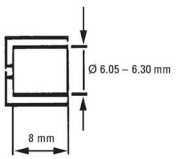


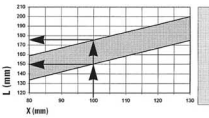
Geometry of rear dropout:

- The geometry of the seat stay and rear fork depends on the smallest sprocket used ***(Fig. 8)***.

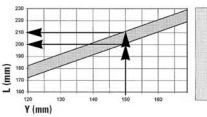
Outer stops for cable housings:
The inner diameter of the outer stop must be a minimum of 6.05 mm ***(Fig. 9)***.

CHART / LENGTH OF CABLE HOUSINGS

Example:
Distance X = 100 mm
→ cable housing length
L = 150 – 175 mm.



Caution:
It is imperative to respect the values for the correct length of cable housing.



PLASMA / QUARZ / NEOS / CENTERA · REAR DERAILLEURS ASSEMBLY

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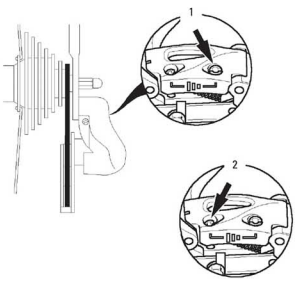

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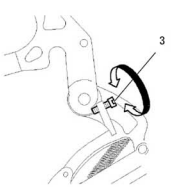


ASSEMBLY

Advice:
Check the rear derailleur hanger alignment. A bent rear derailleur hanger will result in inaccurate index shifting. Outboard side impacts are the most common causes of this type of damage.

- Attach the rear derailleur to the frame's rear derailleur hanger.
- Check that the b-adjust screw is clear of the rear derailleur dropout tab.
- Tighten the 5 or 6 mm hex hanger bolt to 8 – 10 Nm (70–85 in.lbs.).
- When fitting with a bracket, use an 8 mm wrench and a tightening torque of 4 – 5 Nm (35 – 44 in.lbs.).

CHAIN LENGTH

A properly measured chain will prevent accidentally shifting to the largest chain ring and cog combination. This type of accidental shifting may cause harmful binding or seizure of the chain and potentially cause severe damage.

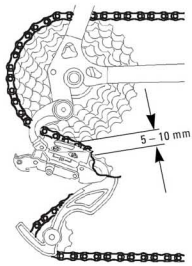
- Bypassing the rear derailleur, run the chain around the largest cog/large chainring combination.
  – For rear suspension frames, position the rear suspension for the greatest chain length required.
- Add 2 LINKS or 1 link + Power Link to this length for proper chain length.

LIMIT SCREWS ADJUSTMENT

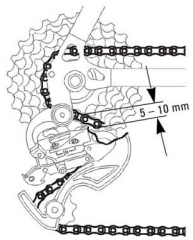
- View the rear derailleur and pulleys from behind the rear of the bicycle.
- Using a small screwdriver, turn the limit screw (1, ***Fig. 1)*** to align the upper guide pulley center with the outboard edge of the smallest cog – clockwise moves the guide pulley inboard towards the wheel.
- While turning the crank, push the rear derailleur towards the larger cogs by hand.
- Align the upper guide pulley under the largest cog, center to center, by turning the limit screw (2, ***Fig. 1)*** – clockwise moves the guide pulley outboard away from the spokes.

2:1

3 30 or 32 teeth



4 28 teeth



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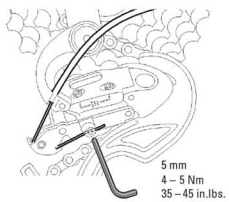

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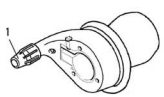


CHAIN GAP ADJUSTMENT

Chain gap is the distance between the upper guide pulley and the cog the chain is riding on. Optimal chain gap is small enough to allow quick, efficient shifts to and from any cog, but large enough to allow smooth shifts to and from the largest cog.

- Shift chain to the small chain ring.
- 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.
- Turn the b-adjust screw (3, ***Fig. 2)*** until the chain gap equals approximately 5-10 mm from tip of the cog to tip of upper guide pulley.

- For a cassette with a low gear (largest) sprocket of **30 or 32 teeth,** adjust the clearance between the tooth tip of the guide pulley and the tooth tip of the low gear **(largest) sprocket** ***(Fig. 3).***
- For a cassette with a low gear sprocket of **28 teeth,** adjust the clearance between the tooth tip of the guide pulley and the tooth tip of the high gear (smallest) sprocket ***(Fig. 4).***

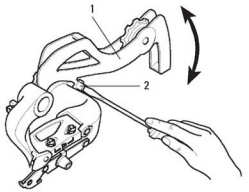
Advice:
Do not use the b-adjust screw to adjust the rear derailleur to act as a chain-tensioning device or to prevent chain suck. This increases the chain gap causing poor shifting performance.

INDEX SHIFTING ADJUSTMENT

- Check that the chain and the rear derailleur are in the smallest cog position.
- Measure and cut the rear piece of cable housing. Make sure that it is not too short or long ***(see figure and chart).***
- Rotate the rear shifter until the largest number and gear indication tab/dash line up.
- Turn the rear shifter barrel adjust clockwise fully into the shifter, then turn counterclockwise 1 full turn.
- Feed the rear shifter cable through the rear derailleur cable housing, stops and cable guides.
- Feed the rear derailleur cable through the rear derailleur-housing stop and through the cable guide on the fin.
- Pull the cable tight and position it under the cable anchor washer ***(Fig. 5)***.
- Tighten the 5 mm hex cable anchor bolt to 4 – 5 Nm (35 – 45 in.lbs.).
  – Be careful not to crush or deform the cable.
- Rapidly shift the chain and derailleur up and down the cassette several times. If the cable slips repeat the two former steps.
- Shift the chain to the smallest cog.
- While pedaling, move the shifter up one detent.
  – If the chain hesitates or does not shift to the second cog, increase the cable tension by turning the shifter barrel adjuster counterclockwise (1, ***Fig. 6)***.
  – 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 and chain rings several times to ensure that your derailleur is indexing smoothly.

PLASMA / QUARZ / NEOS / CENTERA · REAR DERAILLEURS MAINTENANCE

1



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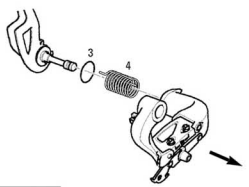

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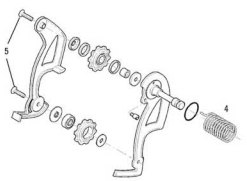

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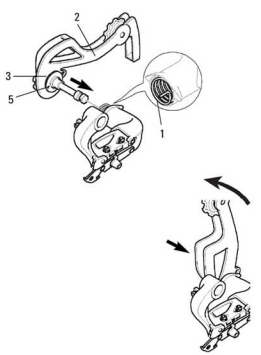


DISASSEMBLY & REASSEMBLY

Complete disassembly is only possible with the Plasma rear derailleur.

DISMOUNTING CAGE

Dismount cage (1, ***Fig. 1)***, to do so turn cage counterclockwise against spring until bolt (2) becomes accessible. Unscrew stop screw and turn cage clockwise into a vertical position ***(Fig. 2)***. This is the only position in which one can remove cage with O-ring (3) (seated relatively snug around cage) and spring (4) from the lower body.

DISASSEMBLING AND REASSEMBLING CAGE

- After loosening the two bolts (5, ***Fig. 3)*** disassemble cage entirely into individual parts. Clean and eventually replace defective or worn parts. Before reassembling, lightly grease all bearing areas and spring (4). The position and assembly direction of the individual parts should correspond to ***Fig. 3***.
- Tighten fastening bolts (5) with a torque of 2.5 – 3.5 Nm (22 – 31 in.lbs.). (We recommend the use of a safety device such as Loctite).

FITTING CAGE

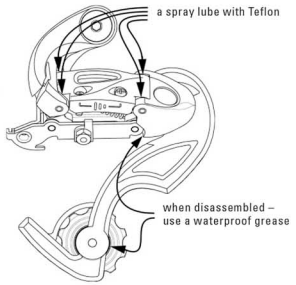
- Place spring (1, ***Fig. 4)*** in body and keep turning until you feel spring end snap into bore.
- Insert cage (2) with O-ring (3) in such a way as to make sure that spring end is seated in bore (5).
- Push cage against body and turn counter-clockwise to the "12 O'clock position". This is the only position in which the cage's axle will completely slide in.
- Keep tightening cage counter-clockwise until you are able to place stop screw (2, ***Fig. 1)***. Tightening torque: 1 Nm (9 in.lbs.).

MAINTENANCE

- Do not use solvants or corrosive materials to clean the components.
- Lubricate the shifting joints regularly ***(Fig. 5)***.
- Grease any cable guides (e.g. beneath the bottom bracket).

2:1

5



TROUBLESHOOTING

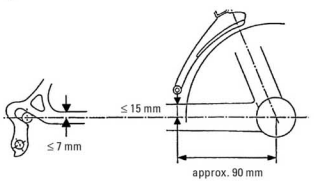
Problem	Cause	Remedy
Chain jumps from smallest sprocket to frame dropout.	High gear limit screw is not adjusted properly.	Turn in screw until the guide pulley is aligned with the smallest sprocket.
Difficult or impossible to shift chain onto smallest sprocket.	High gear limit screw is not adjusted properly.	Unscrew screw until the guide pulley is aligned with the smallest sprocket.
Chain jumps over largest sprocket and falls between the spokes and largest sprocket or inner cage plate scrapes on spokes.	Low gear limit screw is not adjusted properly.	Turn in screw until the guide pulley is aligned with the largest sprocket.
	Rear derailleur or derailleur hanger is bent.	Straighten or replace.
Delayed shifting.	Clearance between guide pulley / sprocket is too large.	Adjust b-adjust screw by rotating counterclockwise.
Rough shifting behavior.	Clearance between guide pulley / sprocket is too small.	Adjust b-adjust screw by rotating clockwise.
Chain jumps two gears on small sprocket	Shift cable insufficiently tensioned.	Turn barrel adjuster on the shifter counterclockwise.
Delayed shifting onto larger sprocket	Shift cable insufficiently tensioned.	Turn barrel adjuster on the shifter counterclockwise.
Delayed shifting onto smaller sprocket	Shift cable is too tight.	Turn barrel adjuster on the shifter clockwise.
	Excessive cable friction, pinched or poorly routed cable.	Lubricate or replace cable and housing. Check for excessive bending of cable housing.

9.0 / 7.0 / 5.0 · FRONT DERAILLEURS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

9.0 7.0 5.0

		9.0	7.0		5.0	
Part No. Clamp Size	28.6 mm	—	—	—	—	—
	31.8 mm	—	—	—	—	—
	34.9 mm	—	—	—	—	—
	Cable Routing	Twin Pull	Twin Pull	Twin Pull	Twin Pull	Twin Pull
	Cage Size	Compact	Compact	Compact	Compact	Compact
	Top Gear	44T	44T	44T	44T	44T
	Large - Small Capacity	22T	22T	22T	22T	22T
	Large - Middle Capacity	min. 10T	min. 10T	min. 10T	min. 10T	min. 10T
	Chainstay Angle	66-69°	66-69°	63-66°	66-69°	63-66°
Shifter	SRAM Micro adj.	●	●	●	●	●
	SRAM Indexing	●	●	●	●	●
	Shim. Rapidf. Plus	●	●	●	●	●
	Cable Housing	4 or 5 mm, compressionless, 5.8 mm end caps diameter			←	←
	Weight	125 g	125 g	125 g	125 g	125 g
Design	Outer Link	Steel	Steel	Steel	Steel	Steel
	Inner Link	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite
	Chain Cage	Steel / Chrome Plated	Steel / Chrome Plated	Steel / Chrome Plated	Steel / Chrome Plated	Steel / Chrome Plated
	Clamp	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite	Grilon Composite
	Snap On	●	●	●	●	●

1



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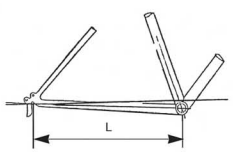

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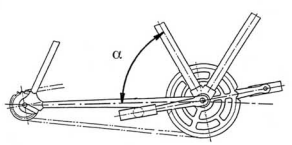


FRAME DIMENSIONS

(see Fig. 1)

On traditional (non elevated) lower chainstays, the measurement should generally not exceed 7 mm and 15 mm.
The seat tube should be positioned in the center of the bottom bracket shell.

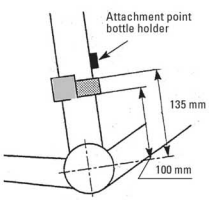
Length of chainstay:
(see Fig. 2)
- MTB/Trekking L > 420 mm.
- Rear frame alignment must be symmetrical.

Chainstay angle:
(see Fig. 3)
α = 66–69° (9.0 / 7.0 / 5.0)
α = 63–66° (7.0 / 5.0)

Chainline:
47.5 – 50 mm.
(Measurement from the center of the bracket to the center of middle chainring.)

Necessary clearance:
- Attachment of bottle holder ***(Fig. 4)***.
- Clearance between seat tube and mudguard or tire (striped area, ***Fig. 5)***.

4



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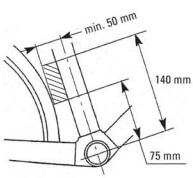
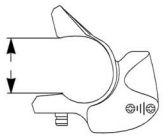


9.0 / 7.0 / 5.0 · FRONT DERAILLEURS ASSEMBLY / MAINTENANCE

1



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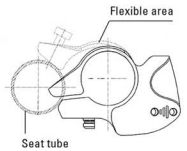

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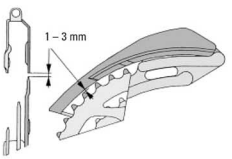

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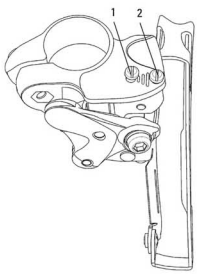


ASSEMBLY

Advice:
When fitting, do not open the clamp too far – as it may break.

Maximum width of opening ***(Fig. 1):***

Tube Ø (mm)	max. (mm)
28.6	28.6 + **5** = 33.6
31.8	31.8 + **5** = 36.8
34.8	34.8 + **5** = 39.8

- Open the clamp gently and applying a slight pressure, clip it onto the frame tubing ***(Fig. 2)***.
- Align the front derailleur on the seat tube, there must be a clearance of 1 – 3 mm ***(Fig. 3)*** between the head of the teeth on the large chainring and the lower edge of the outer cage plate. The outer cage plate must be parallel to the chainrings.
- Tighten clamping bolt with a 5 mm allen key to a torque of 4.5 Nm (40 in.lbs.).

LOW LIMIT ADJUSTMENT

- Place the chain on the largest sprocket and the smallest chainring.
- Adjust the high gear limit screw (1, ***Fig. 4)*** so that the chain is positioned close to the inner cage plate without actually touching it.

CONNECTING CABLE

- Check that the chain and the front derailleur are in the smallest chainring position.
- Rotate the front shifter so the indicator mark is aligned with the '1' mark.
- Turn the front shifter barrel adjuster clockwise fully into the shifter, then turn counterclockwise 1 full turn.

Top Pull ***(Fig. 5)***

- Guide shift cable (1), coming from above, behind guide lug (2) between the clamping washers (3). Tension cable in the direction of the arrow (4) and tighten clamping bolt (5). Allen key 5 mm – tightening torque 4 – 5 Nm (35 – 44 in.lbs.).

Bottom Pull ***(Fig. 6)***

- Place the cable (1), coming from below, in guide groove (2) on the Twin Pull cable cam and route through the clamping washers (3).
- Tension cable in the direction of the arrow (4) and tighten clamping bolt (5). Allen key 5 mm – tightening torque 4–5 Nm (35–44 in.lbs.).

- Shift the chain up and down the chainrings several times.

HIGH LIMIT ADJUSTMENT

(see Fig. 4)

- Shift the chain onto the smallest sprocket and the largest chainring.
- If the chain fails to shift onto the largest chainring, adjust the limit screw (2, ***Fig. 4)*** accordingly. The chain must not scrape against the outer cage plate and must not be thrown off the chainring.

INDEX SHIFTING ADJUSTMENT

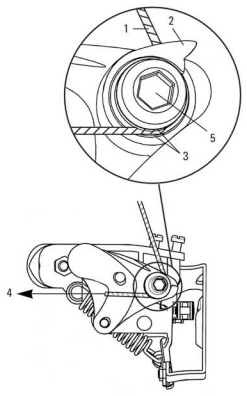
- Shift the chain onto the smallest sprocket and middle chainring – if the chain scrapes against the outer cage plate, turn the adjusting barrel (1, ***Fig. 7)*** on the shifter counter-clockwise until the chain shifts smoothly and free of obstruction.

- Shift the chain onto the largest chainring – if the chain scrapes against the inner cage plate, turn the adjusting barrel on the shifter clockwise until the chain shifts smoothly and free of obstruction.

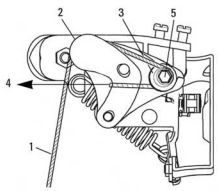
MAINTENANCE

- Do not use solvants or corrosive materials to clean the components.
- Lubricate the shifting joints regularly ***(Fig. 8)***.
- Grease any cable guides (e.g. beneath the bottom bracket).

5 **Top Pull**
(Cable coming from above)



6 **Bottom Pull**
(Cable coming from below)



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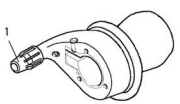

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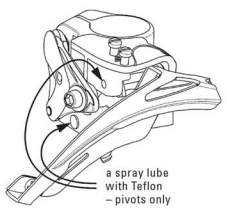


TROUBLESHOOTING

Problem	Cause	Remedy
Shifter actuated, chain fails to change chainring.	Shift cable incorrectly clamped.	Check shift cable and correct as necessary (cable clamp; cable housing stops; cable recess in shifter; cable tension).
	High / low limit screw poorly adjusted.	Correct limit screws.
	Clearance between cage and large chainring is too big / small.	Correct position (1–3 mm).
Chain falls over large / small chainring.	High / low limit screw poorly adjusted.	Correct limit screws.
Chain is on middle chainring and scrapes against the cage when the largest or smallest sprocket is selected.	Precise adjustment of cable tension is incorrect.	Readjust shifter barrel adjuster.
Force required to actuate gears is too high.	Excessive cable friction, pinched or poorly routed cable.	Lubricate or replace cable and housing. Check for excessive bending of cable housing.
Crank collides with front derailleur.	High gear limit screw incorrectly adjusted.	Correct high limit screw.
	Cage not parallel with chainring.	Correct the front derailleur position.

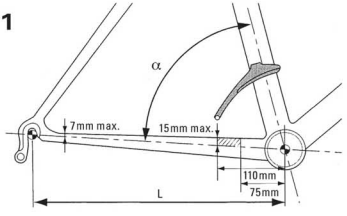
3.0 · FRONT DERAILLEURS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

- Solid Shifting Performance
- Torsion Return Spring
- Large Range Of Frame And Chainring Compatibility
- SRAM System Styling

3.0

		3.0	
Part No. Clamp Size	28.6 mm	—	—
	31.8 mm	—	—
	34.9 mm	—	—
	Cable Routing	Top Pull	Bottom Pull
	Cage Size	Compact	Compact
	Top Gear	44/42T	44/42T
	Large - Small Capacity	22T	22T
	Large - Middle Capacity	min. 10T	min. 10T
	Chainstay Angle	66-69°	66-69°
Shifter	SRAM Micro adj.	●	●
	SRAM Indexing	●	●
	Shim. Rapidf. Plus	●	●
	Cable Housing	4 or 5 mm, compressionl., 5.8 mm end caps diam.	
	Weight	123 g	123 g
Design	Outer Link	Steel / Grilon Composite	Steel / Grilon Composite
	Inner Link	Steel	Steel
	Chain Cage	Steel / Chrome Plated	Steel / Chrome Plated
	Clamp	Steel	Steel
	Band Clamp	●	●

1



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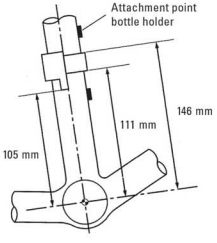


FRAME DIMENSIONS

(see Fig. 1)

- The seat tube should be positioned in the center of the bottom bracket shell.

Length of chainsty:

- MTB/Trekking L > 420 mm.
- Rear frame alignment must be symmetrical.

Chainstay angle:

$\alpha = 66° - 69°$.

Chainline:

47.5 – 50 mm.

(Measurement from the center of the bracket to the center of middle chainring.)

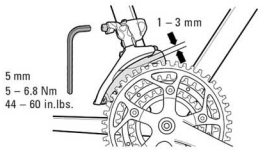
Necessary clearance:

(see Fig. 2)

- Attachment point bottle holder.
- Be sure to leave enough clearance between bottle cage holes and clamp location.

3.0 · FRONT DERAILLEURS ASSEMBLY / MAINTENANCE

1



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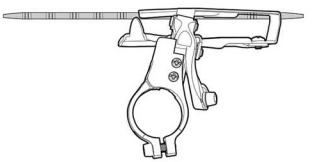

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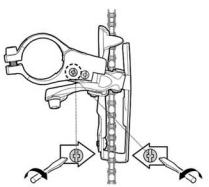

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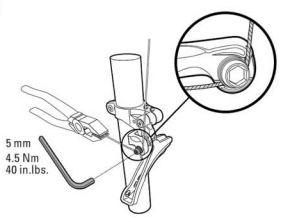


ASSEMBLY

SRAM 3.0 front derailleurs are designed to work with both compact chainwheels and full size chainwheels. Please note your chainwheel specific adjustment instructions below.

- Attach the front derailleur to the seat tube.
- Adjust the position along the seat tube so that clearance between the front derailleur cage and the large chainring is 1 – 3 mm ***(Fig. 1)***.
  At the same time, align the front derailleur cage outerplate to be parallel with the chainrings ***(Fig. 2)***.
- Tighten the 5 mm hex clamp bolt to 5 – 6.8 Nm (44 – 60 in.lbs.).
- If a set plug is present, remove it at this time ***(Fig. 3)***.

LOW LIMIT ADJUSTMENT

(see Fig. 4)

- Set the chain to the largest rear cog and the smallest front chainring.
- Adjust the low limit screw so that clearance between the front derailleur cage inner plate and the chain is:
  Compact 0 – 0.5 mm
  Full size 0 – 0.5 mm (46T Largest Chainr.)
  1 – 1.5 mm (48T Largest Chainr.)

CONNECTING CABLE

- Check that the chain and the front derailleur are in the smallest chainring position.
- Rotate the front shifter so the indicator mark is aligned with the '1' mark.
- Turn the front shifter barrel adjuster clockwise fully into the shifter, then turn counterclockwise 1 full turn.
- Feed the front shifter cable through the cable housing and stops.
- Run the cable under the cable anchor washer and hold taut.
  – Top pull ***(Fig. 5)***.
  – Bottom pull ***(Fig. 6)***.
- Tighten the 5 mm hex cable anchor bolt to 4.5 Nm (40 in.lbs.). Be careful not to crush or deform the cable.
- Shift the chain up and down the chainrings several times.

HIGH LIMIT ADJUSTMENT

(see Fig. 8)

- Set the chain to the smallest rear cog and the largest front chainring.
- Adjust the high limit screw so that clearance between the front derailleur cage outer plate and the chain is 0 – 0.5 mm.

INDEX SHIFTING ADJUSTMENT

(see Fig. 7)

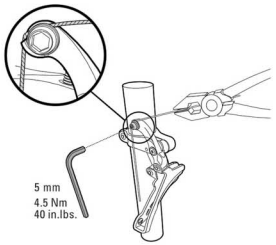
For SRAM indexing shifter models only (not micro adjust shifter):

- Set the chain to the largest rear cog and the middle front chainring.
- Adjust the front shifter barrel adjuster so that clearance between the front derailleur cage inner plate and the chain is 0 – 0.5 mm.

MAINTENANCE

- Do not use solvants or corrosive materials to clean the components.
- Lubricate the shifting joints regularly ***(Fig. 9)***.
- Grease any cable guides (e.g. beneath the bottom bracket).

6



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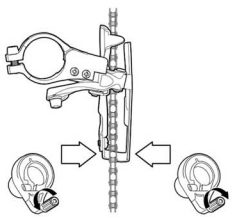

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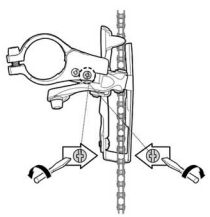


9

TROUBLESHOOTING

Problem	Cause	Remedy
Shifter actuated, chain fails to change chainring.	Shift cable incorrectly clamped.	Check shift cable and correct as necessary (cable clamp; cable housing stops; cable recess in shifter; cable tension).
	High / low limit screw poorly adjusted.	Correct limit screws.
	Clearance between cage and large chainring is too big / small.	Correct position (1– 3 mm).
Chain falls over large / small chainring.	High / low limit screw poorly adjusted.	Correct limit screws.
Chain is on middle chainring and scrapes against the cage when the largest or smallest sprocket is selected.	Precise adjustment of cable tension is incorrect.	Readjust shifter barrel adjuster.
Force required to actuate gears is too high.	Excessive cable friction, pinched or poorly routed cable.	Lubricate or replace cable and housing. Check for excessive bending of cable housing.
Crank collides with front derailleur.	High gear limit screw incorrectly adjusted.	Correct high limit screw.
	Cage not parallel with chainring.	Correct the front derailleur position.

9.0SL / 9.0 / 7.0 / ROCKET / ATTACK · TWIST SHIFTERS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

9.0SL 9.0

		9.0SL Half Pipe			9.0 Half Pipe	
Part No.		—	—	—	—	—
Shifter Type		Front / Micro adjust	Front / Index	Rear 1:1 / ESP	Front / Micro adjust	Front / Index
Speeds			3	9		3
Compatibility	Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 9.0SL / 9.0 / 7.0 / 5.0	SRAM & Shimano	SRAM & Shimano
	Crankset	Shimano	Shimano		Shimano	Shimano
Cable Pull Release		SRS	SRS	SRS	SRS	SRS
Cable		Teflon Coated	←	←	Teflon Coated	←
Gear Indication		Window	Window	Window	Window	Window
Barrel Adjuster		Indexing	Indexing	Indexing	Indexing	Indexing
Clamping Diameter		22.2 mm	22.2 mm	22.2 mm	22.2 mm	22.2 mm
Shifter Length		98 mm	←	←	98 mm	←

9.0 7.0 ROCKET

		9.0 Half Pipe	7.0 Half Pipe NEW			Rocket Half Pipe
Part No.		—	—	—	— —	—
Shifter Type		Rear 1:1 / ESP	Front / Micro adjust	Front / Index	Rear 1:1 / ESP	Front / Micro adjust
Speeds		9		3	9 8	
Compatibility	Derailleur	SRAM 9.0SL / 9.0 / 7.0 / 5.0	SRAM & Shimano	SRAM & Shimano	SRAM 9.0SL / 9.0 / 7.0 / 5.0	SRAM & Shimano
	Crankset		Shimano	Shimano		Shimano
Cable Pull Release		SRS	SRS	SRS	SRS	SRS
Cable		Teflon Coated	Teflon Coated	←	←	Teflon Coated
Gear Indication		Window	Window	Window	Window	Window
Barrel Adjuster		Indexing	Indexing	Indexing	Indexing	Indexing
Clamping Diameter		22.2 mm	22.2 mm	22.2 mm	22.2 mm	22.2 mm
Shifter Length		98 mm	98 mm	←	←	98 mm

ROCKET ATTACK

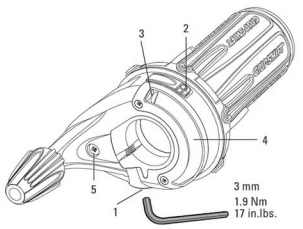
		Rocket Half Pipe		Attack Half Pipe NEW			
Part No.		—	—	—	—	—	—
Shifter Type		Front / Index	Rear 2:1	Front / Micro adjust	Front / Index	Rear 2:1	
Speeds		3	9		3	9	8
Compatibility	Derailleur	SRAM & Shimano	SRAM 2:1 & Shimano	SRAM & Shimano	SRAM & Shimano	SRAM 2:1 & Shimano	
	Crankset	Shimano		Shimano	Shimano		
Cable Pull Release		SRS	SRS	SRS	SRS	SRS	
Cable		Teflon Coated	←	Teflon Coated	←	←	
Gear Indication		Window	Window	Window	Window	Window	
Barrel Adjuster		Indexing	Indexing	Indexing	Indexing	Indexing	
Clamping Diameter		22.2 mm	22.2 mm	22.2 mm	22.2 mm	22.2 mm	
Shifter Length		98 mm	←	98 mm	←	←	

CABLE HOUSING

- Use only new high quality cable and compressionless cable housing with end caps.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

9.0SL / 9.0 / 7.0 / ROCKET / ATTACK · TWIST SHIFTERS ASSEMBLY / MAINTENANCE

1



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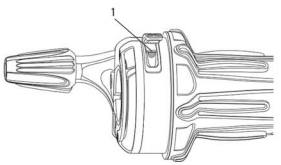

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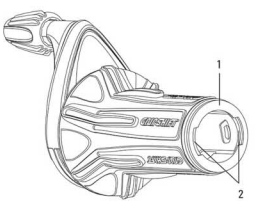

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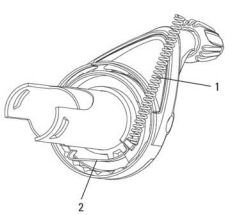
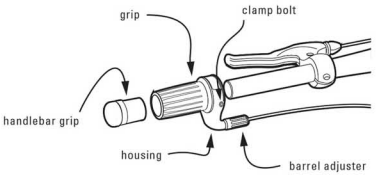


SHIFTER ANATOMY



ASSEMBLY

Front and Rear:

- Slide the shifter onto the handlebar.
  – If necessary, move the brake lever to allow for shifter and handlebar grip.
  – Bar end users – don't forget to leave room for the bar end.
- Rotate the shifter until the barrel adjuster is beneath (but out of the way of) the brake lever.
- Tighten the 3 mm hex clamp bolt (1, ***Fig. 1)*** to 1.9 Nm (17 in.lbs.).
- Slide the handlebar grip onto the handlebar.
  – **Solvents, lubricants or hair spray may damage handlebar grip!**
  – Use of a spray adhesive (e.g. 3M SUPER 77) or grip glue may help installation and may minimize grip rotation caused by wear or moisture.
- Feed the cable through the cable housing and stops.
- Attach cable to the derailleur.
- Adjust indexing per derailleur instruction.

Caution:

- ***Always check the front and rear brake levers for proper operation.***
- ***If there is interference between shifters and brake levers, re-adjust lever and shifter placement.***
- ***Check again for proper operation!***

CABLE CHANGE

Advice:

- ***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 and compressionless cable housing with end caps.***

Front and Rear:

- Detach the cable from the derailleur.
- Cut cable off 15 cm (6") from shifter barrel adjuster. Discard old cable and cable housing.
- From the edge (2, ***Fig. 1)***, pull open the cable change hatch. The hinge of the hatch should remain attached to the shifter.
- Rotate the shifter fully in the cable release direction (3). (Gear "1" on the front shifter, gear "9" on the rear shifter.)
- Look for cable head entry ***(Fig. 2)***.
- Using a small flat head screw driver, push back the tab (1, ***Fig. 2)*** covering the cable head.
- Push cable up/out of the shifter and discard.
- Feed the new cable through the cable entry and out the barrel adjuster.
- Pull cable snug to seat cable head under tab.
- Replace cable change hatch.
- Feed the cable through the new cable housing and frame stops.
- Attach cable to the derailleur.
- Adjust indexing per derailleur instruction.

GRIP REPLACEMENT

Advice:

Completely new: do not remove the triangular housing cover to make the change.

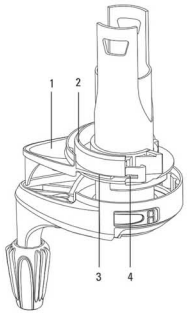
Removal:

- Rotate the shifter fully in the cable release direction (3, ***Fig. 1)***. (Gear "1" on the front shifter, gear "9" on the rear shifter.)
- Using a 3 mm hex wrench (1, ***Fig. 1)***, remove shifter from the handlebar.
- While holding shifter housing and grip together in one hand, remove axial fixture ring (1, ***Fig. 3)*** by squeezing together housing tabs (2).
- While pushing/rotating the grip lightly forward (release direction), slowly move the grip outward away from housing.
  – Pulling the grip quickly may cause the coil spring (1, ***Fig. 4)*** to move out of position.

Replacement:

- Replace front end of coil spring (1, ***Fig. 4)*** on to tab in groove if necessary.
- While sliding grip up towards the housing, align spring tab so that it catches the open end of the coil spring.
- Rotate grip forward slightly compressing the coil spring and engage grip and tab into the housing.
- Replace axial fixture ring (1, ***Fig. 3)*** over housing tabs (2).

5



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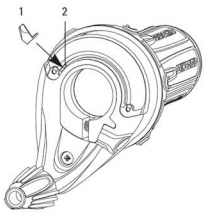


INTERNAL CLEANING

Advice:
When shifting performance is compromised, try replacing the cable and housing before you disassemble the shifter for cleaning.

Disassembly:

- Follow "GRIP REPLACEMENT/Removal".
- Remove lens cover (4, ***Fig. 1)***.
- Remove gear indicator needle (3) by pulling straight out.
- Remove the spool's coil spring (1, ***Fig. 4)***.
- Using small pliers, pull leaf spring (2) straight out. Take note of the shape of the spring so that you can replace it in the correct direction.
- Remove housing cover screw (5, ***Fig. 1)***. Slide housing cover (1, ***Fig. 5)*** and spool (2) out at the same time being careful not to break the tab (3) on the cover.
- Clean all parts with soapy water only.
- Using only Gip Shift Jonnisnot, grease housing tube, detentes and cable track at housing bend.

Reassembly:

- Slip tab (3, ***Fig. 5)*** on housing cover into groove (4) on spool.
- Slide spool and cover into housing and install cover screw (5, ***Fig. 1)***.
- Place leaf spring (2, ***Fig. 4)*** into spool. Push down slightly on opposite end of spring, then seat spring completely into spool and housing.
- Follow "GRIP REPLACEMENT/Replacement".
- Rotate shifter to full release position.
- Install gear indication needle (1, ***Fig. 6)*** in slot (2).
- Replace gear indicator lens (4, ***Fig. 1)*** and screws.
- Install shifter on to bars and check for proper function.

5.0 / CENTERA · TWIST SHIFTERS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

5.0

		5.0 Half Pipe NEW			
	Part No.	—	—	—	—
	Shifter Type	Front / Micro adjust	Front / Index	Rear 1:1 / ESP	Rear 1:1 / ESP
	Speeds		3	9	8
Compatibility	Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 9.0SL/9.0/7.0	SRAM9.0SL/9.0/7.0/5.0/3.0
Compatibility	Crankset	Shimano	Shimano		
	Cable Pull Release	FFS	FFS	Standard	Standard
	Cable	Stainless Steel	←	←	←
	Gear Indication	Printed	Printed	Printed	Printed
	Barrel Adjuster	Indexing	Indexing	Indexing	Indexing
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm	22.2 mm
	Shifter Length	100 mm	←	←	←
	Weight	N/A	N/A	N/A	N/A

5.0

		5.0 NEW			
	Part No.	—	—	—	—
	Shifter Type	Front / Micro adjust	Front / Index	Rear 1:1 / ESP	Rear 1:1 / ESP
	Speeds		3	9	8
Compatibility	Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 9.0SL / 9.0 / 7.0	SRAM 9.0SL / 9.0 / 7.0 / 5.0
Compatibility	Crankset	Shimano	Shimano		
	Cable Pull Release	FFS	FFS	Standard	Standard
	Cable	Stainless Steel	←	←	←
	Gear Indication	Printed	Printed	Printed	Printed
	Barrel Adjuster	IIndexing	Indexing	Indexing	Indexing
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm	22.2 mm
	Shifter Length	57 mm	←	←	←
	Weight	95 g	95 g	95 g	95 g

5.0 / CENTERA · TWIST SHIFTERS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

CENTERA

	Centera Half Pipe NEW			
Part No.	—	—	—	—
Shifter Type	Front / Micro adjust	Front / Index	Rear 2:1	Rear 2:1
Speeds		3	9	8
Compatibility: Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 2:1 & Shimano	SRAM 2:1 & Shimano
Compatibility: Crankset	Shimano	Shimano		
Cable Pull Release	FFS	FFS	Standard	Standard
Cable	Stainless Steel	←	←	←
Gear Indication	Printed	Printed	Printed	Printed
Barrel Adjuster	Indexing	Indexing	Indexing	Indexing
Clamping Diameter	22.2 mm	22.2 mm	22.2 mm	22.2 mm
Shifter Length	100 mm	←	←	←
Weight	N/A	N/A	N/A	N/A

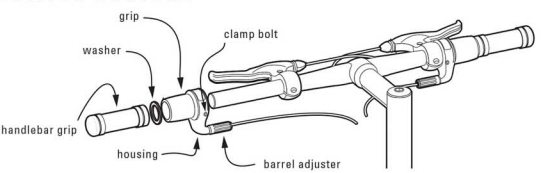
CENTERA

	Centera NEW			
Part No.	—	—	—	—
Shifter Type	Front / Micro adjust	Front / Index	Rear 2:1	Rear 2:1
Speeds		3	9	8
Compatibility: Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 2:1 & Shimano	SRAM 2:1 & Shimano
Compatibility: Crankset	Shimano	Shimano		
Cable Pull Release	FFS	FFS	Standard	Standard
Cable	Stainless Steel	←	←	←
Gear Indication	Printed	Printed	Printed	Printed
Barrel Adjuster	Indexing	Indexing	Indexing	Indexing
Clamping Diameter	22.2 mm	22.2 mm	22.2 mm	22.2 mm
Shifter Length	57 mm	←	←	←
Weight	90 g	90 g	90 g	90 g

CABLE HOUSING

- Use only new high quality cable and compressionless cable housing with end caps.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

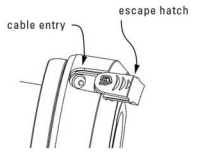
SHIFTER ANATOMY



5.0 / CENTERA · TWIST SHIFTERS ASSEMBLY / MAINTENANCE

1:1
2:1

1



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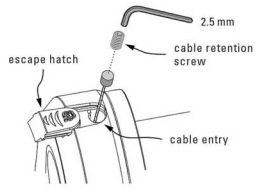

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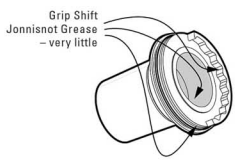
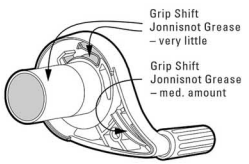




ASSEMBLY

Front and Rear:

- Slide the shifter onto the handlebar.
  – If necessary, move the brake lever to allow for shifter and handlebar grip.
  – Bar end users – don't forget to leave room for the bar end.
- Rotate the shifter until the barrel adjuster is beneath (but out of the way of) the brake lever.
- Tighten the 3 mm hex clamp bolt to 1.9 Nm (17 in.lbs.).
- Slide the plastic washer onto the handlebar.
- Slide the handlebar grip onto the handlebar.
  – **Solvents, lubricants or hair spray may damage the handlebar grips!**
  – Use **only** compressed air or water to aid installation.
- Feed the cable through the cable housing and stops.
- Attach the shifter cable to the derailleur.
- Adjust indexing per derailleur instructions.

Caution:

- ***Always check the front and rear brake levers for proper operation.***
- ***If there is interference between shifters and brake levers, re-adjust lever and shifter placement.***
- ***Check again for proper operation!***

CABLE CHANGE

Front and Rear:

Advice:

- ***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 and compressionless cable housing with end caps.***

- Detach the cable from the derailleur.
- Cut the cable off 15 cm (6") from shifter barrel adjuster. Discard old cable and cable housing.
- Remove the escape hatch ***(Fig. 1)***.
- Rotate the shifter so the indicator mark is aligned with the highlighted number. Look for the cable entry.
- **Only Rear shifter:** remove the 2.5 mm hex cable retention screw ***(Fig. 2)***.
- Remove and discard the rest of the old cable.
- Feed the new cable through the cable entry and out the barrel adjuster. Pull the cable snug.
- **Only Rear shifter:** replace the cable retention screw – be sure to turn until the screw contacts the cable head.
- Replace the escape hatch.
- Feed the cable through the new cable housing and stops.
- Attach the cable to the derailleur and adjust indexing per derailleur instruction.

MAINTENANCE

- ***Clean all shifter parts using only water and mild soap.***
- ***Use only Grip Shift Jonnisnot Grease for any shifter lubrication.***
- ***After proper cleaning relubricate the areas shown in Fig. 3.***

4.0 / 3.0 / MRX PLUS / MRX · TWIST SHIFTERS TECHNICAL DATA / ASSEMBLY REQUIREMENTS

4.0 3.0

		4.0 Half Pipe NEW				3.0	
	Part No.	—	—	—	—	—	—
	Shifter Type	Front / Micro adjust	Front / Index	Rear 1:1 / ESP		Front / Micro adjust	Front / Index
	Speeds		3	8	7		3
Compatibility	Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 7.0 / 5.0 / 4.0 / 3.0		SRAM & Shimano	SRAM & Shimano
Compatibility	Crankset	Shimano	Shimano			Shimano	Shimano
	Cable Pull Release	FFS direct	FFS direct	Standard		FFS	FFS
	Cable	Die Drawn Steel	←	←		Die Drawn Steel	←
	Gear Indication	Printed	Printed	Printed		Printed	Printed
	Barrel Adjuster	Indexing	Indexing	Indexing		Indexing	Indexing
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm		22.2 mm	22.2 mm
	Shifter Length	96 mm	←	←		64 mm	←
	Weight	N/A	N/A	N/A		58 g	58 g

3.0 MRX PLUS

		3.0		MRX Plus Half Pipe NEW					
	Part No.	—	—	—	—	—	—	—	—
	Shifter Type	Rear 1:1 / ESP		Front / Micro adjust	Front / Index	Rear 2:1		Rear Shimano Rapid Rise	
	Speeds	8	7		3	8	7	8	7
Compatibility	Derailleur	SRAM 7.0 / 5.0 / 4.0 / 3.0		SRAM & Shimano	SRAM & Shimano	SRAM 2:1 & Shimano		Shimano Rapid Rise	
Compatibility	Crankset			Shimano	Shimano				
	Cable Pull Release	Standard		FFS direct	FFS direct	Standard		Standard	
	Cable	Die Drawn Steel		Die Drawn Steel	←	←		←	
	Gear Indication	Printed		Printed	Printed	Printed		Printed	
	Barrel Adjuster	Indexing		Indexing	Indexing	Indexing		Indexing	
	Clamping Diameter	22.2 mm		22.2 mm	22.2 mm	22.2 mm		22.2 mm	
	Shifter Length	64 mm		96 mm	←	←		←	
	Weight	58 g		N/A	N/A	N/A		N/A	

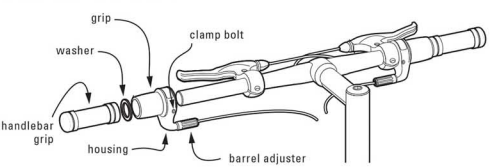
MRX

		MRX					
	Part No.	—	—	—	—	—	—
	Shifter Type	Front / Micro adjust	Front / Index	Rear 2:1			Rear Shimano Rapid Rise
	Speeds		3	8	7	6	7
Compatibility	Derailleur	SRAM & Shimano	SRAM & Shimano	SRAM 2:1 & Shimano			Shimano Rapid Rise
Compatibility	Crankset	Shimano	Shimano				
	Cable Pull Release	FFS	FFS	Standard			Standard
	Cable	Standard Steel	←	←			←
	Gear Indication	Printed	Printed	Printed			Printed
	Barrel Adjuster	Indexing	Indexing	Indexing			Indexing
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm			22.2 mm
	Shifter Length	64 mm	←	←			←
	Weight	58 g	58 g	58 g			58 g

CABLE HOUSING

- Use only new high quality cable and compressionless cable housing with end caps.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

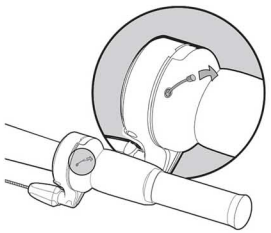
SHIFTER ANATOMY



4.0 / 3.0 / MRX PLUS / MRX · TWIST SHIFTERS ASSEMBLY / MAINTENANCE

1:1
2:1

1



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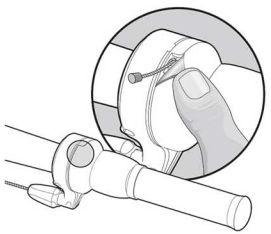

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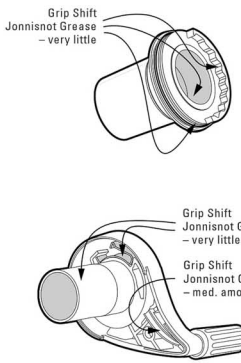


ASSEMBLY

Front and Rear:

- Slide the shifter onto the handlebar.
  – If necessary, move the brake lever to allow for shifter and handlebar grip.
  – Bar end users – don't forget to leave room for the bar end.
- Rotate the shifter until the barrel adjuster is beneath (but out of the way of) the brake lever.
- Tighten the 2.5 mm hex clamp bolt to 1.7 Nm (15 in.lbs.).
- Slide the plastic washer onto the handlebar.
- Slide the handlebar grip onto bar.
  – **Solvents, lubricants or hair spray may damage handlebar grips!**
  – Use **only** compressed air or water to aid installation.
- Feed the cable through the cable housing and frame stops.
- Attach cable to the derailleur.
- Adjust indexing per derailleur instructions.

Not recommended for use on thin walled alluminum handlebars such as Hyperlite® type handlebars.

Advice:

- ***Always check the front and rear brake levers for proper operation.***
- ***If there is interference between shifters and brake levers, re-adjust lever and shifter placement.***
- ***Check again for proper operation!***

CABLE CHANGE

Front and Rear:

Caution:

- ***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 and compressionless cable housing with endcaps.***

See Figure 1 (4.0 / MRX Plus) or 2 (3.0 / MRX)

- Detach the cable from the derailleur.
- Cut the cable off 15 cm (6") from shifter barrel adjuster. Discard old cable and cable housing.
- Line up the "1" (front) or HIGHEST gear number (rear) mark with the indicator mark.
- 3.0 / MRX only: Carefully peel back the corner of the grip cover shown in ***Fig. 2***. Use your fingernail or a small screwdriver.
- Remove and discard the rest of the old cable.
- Feed the new cable through the cable entry in the grip and out through the barrel adjuster.
- Feed the cable through the new cable housing and stops.
- Attach the cable to the derailleur and adjust indexing per derailleur instruction.

MAINTENANCE

- ***Clean all shifter parts using only water and mild soap.***
- ***Use only Grip Shift Jonnisnot Grease for any shifter lubrication.***
- ***After proper cleaning relubricate the areas shown in Fig. 3.***

9.0 / 7.0 / GEMINI PRO / GEMINI · TRIGGER SHIFTERS TECHNICAL DATA / ASSEMBLY REQUIREMENTS

9.0 / 7.0

		9.0 NEW			7.0 NEW		
	Part No.	—	—	—	—	—	—
	Shifter Type	Front / Index	Rear 1:1 / ESP		Front / Index	Rear 1:1 / ESP	
	Speeds	3	9	8	3	9	8
Compatibility	Derailleur	SRAM & Shimano	SRAM 9.0SL / 9.0 / 7.0		SRAM & Shimano	SRAM 9.0SL / 9.0 / 7.0	
Compatibility	Crankset	Shimano			Shimano		
	Cable Pull Release	IT	IT		IT	IT	
	Cable	Stainless Steel	←		←	←	
	Gear Indication	Window	Window		Window	Window	
	Barrel Adjuster	Indexing	Indexing		Indexing	Indexing	
	Clamping Diameter	22.2 mm	22.2 mm		22.2 mm	22.2 mm	
	Shifter Length	26 mm	←		←	←	
	Weight	N/A	N/A		N/A	N/A	

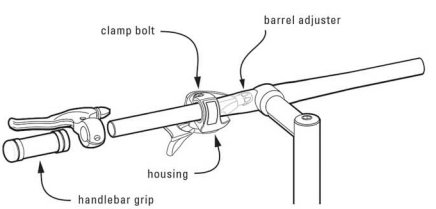
GEMINI & PRO

		Gemini Pro NEW			Gemini NEW		
	Part No.	—	—	—	—	—	—
	Shifter Type	Front / Index	Rear 2:1		Front / Index	Rear 2:1	
	Speeds	3	9	8	3	9	8
Compatibility	Derailleur	SRAM & Shimano	SRAM 2:1 & Shimano		SRAM & Shimano	SRAM 2:1 & Shimano	
Compatibility	Crankset	Shimano			Shimano		
	Cable Pull Release	IT	IT		IT	IT	
	Cable	Stainless Steel	←		←	←	
	Gear Indication	Window	Window		Window	Window	
	Barrel Adjuster	Indexing	Indexing		Indexing	Indexing	
	Clamping Diameter	22.2 mm	22.2 mm		22.2 mm	22.2 mm	
	Shifter Length	26 mm	←		←	←	
	Weight	N/A	N/A		N/A	N/A	

CABLE HOUSING

- Use only new high quality cable and compressionless cable housing with end caps.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

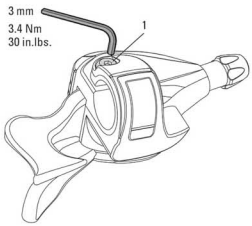
SHIFTER ANATOMY



9.0 / 7.0 / GEMINI PRO / GEMINI · TRIGGER SHIFTERS ASSEMBLY / MAINTENANCE

1:1
2:1

1



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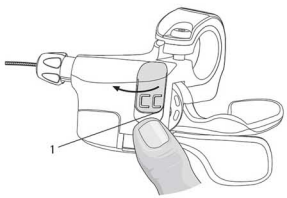

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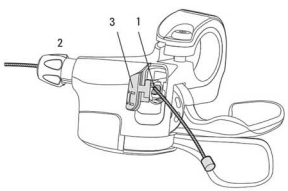


ASSEMBLY

Front and Rear:

- Slide the shifter onto the handlebar.
- Tighten the 3 mm hex clamp bolt (1, ***Fig. 1)*** to 1.9 Nm (17 in.lbs.).
- Slide the handlebar grip onto the handlebar (external diameter must not exceed 32 mm in the area of the shifter).
  – **Solvents, lubricants or hair spray may damage the handlebar grips!**
  – Use **only** compressed air or water to aid installation.
- Feed the cable through the cable housing and stops.
- Attach the shifter cable to the derailleur.
- Adjust indexing per derailleur instructions.

Caution:

- ***Always check the front and rear brake levers for proper operation.***
- ***If there is interference between shifters and brake levers, re-adjust lever and shifter placement.***
- ***Check again for proper operation!***

CABLE CHANGE

Front and Rear:

Advice:

- ***Leave the shifter on the handlebar.***
- ***The shifter does not need to be opened.***
- ***Use only new high quality cable and compressionless cable housing with endcaps.***

- Detach the cable from the derailleur.
- Cut the cable off 15 cm (6") from shifter barrel adjuster. Discard old cable and cable housing.
- Line up the "1" (front) or HIGHEST gear number (rear) mark with the indicator mark.
- From the edge (1, ***Fig. 2)***, pull open the cable change hatch. The hinge of the hatch should remain attached to the shifter.
- Look for cable head entry (1, ***Fig. 3)***.
- Push cable up/out of the shifter and discard.
- Feed the new cable through the cable entry and out the barrel adjuster (2).
- Replace cable change hatch (3).
- Feed the cable through the new cable housing and frame stops.
- Attach cable to the derailleur.
- Adjust indexing per derailleur instruction.

MAINTENANCE

- ***Do not disassemble the shifter.***

3.0 IBS / MRX IBS · INTEGRATED BRAKE SHIFTERS TECHNICAL DATA / ASSEMBLY REQUIREMENTS

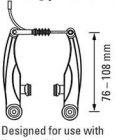
3.0 IBS

		3.0 IBS			
	Part No.	—	—	—	—
	Shifter Type	Front / Micro adjust	Front / Index	Rear 1:1 / ESP	Rear 1:1 / ESP
	Speeds		3	8	7
Compati-bility	Derailleur	SRAM or Shimano	SRAM or Shimano	SRAM9.0SL/9.0/7.0/5.0/3.0	SRAM9.0SL/9.0/7.0/5.0/3.0
Compati-bility	Crankset	SRAM or Shimano	SRAM or Shimano		
Compati-bility	Brake Compatib.	Linear Pull	←	←	←
	Cable Pull Release	FFS	FFS	Standard	Standard
	Cable	Die Drawn Steel	←	←	←
	Gear Indication	Printed	Printed	Printed	Printed
	Barrel Adjuster	Indexing	Indexing	Indexing	Indexing
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm	22.2 mm
	Shifter Length	75 mm	←	←	←
Brake	Lever Size	3 Finger	←	←	←
Brake	Cable Pull	24 mm	←	←	←
Brake	Leverage Adjust	Single Position	←	←	←
Brake	Reach Adjust	Yes	Yes	Yes	Yes
Brake	Barrel Adjuster	Lock Ring	Lock Ring	Lock Ring	Lock Ring
	Weight	N/A	N/A	N/A	N/A

MRX IBS

		MRX IBS		
	Part No.	—	—	—
	Shifter Type	Front / Micro adjust	Front / Index	Rear 2:1
	Speeds		3	7
Compati-bility	Derailleur	SRAM or Shimano	SRAM or Shimano	SRAM 2:1 or Shimano
Compati-bility	Crankset	SRAM or Shimano	SRAM or Shimano	
Compati-bility	Brake Compatib.	Linear Pull	←	←
	Cable Pull Release	FFS	FFS	Standard
	Cable	Standard Steel	←	←
	Gear Indication	Printed	Printed	Printed
	Barrel Adjuster	Indexing	Indexing	Indexing
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm
	Shifter Length	75mm	←	←
Brake	Lever Size	3 Finger	←	←
Brake	Cable Pull	24 mm	←	←
Brake	Leverage Adjust	Single Position	←	←
Brake	Reach Adjust	Yes	Yes	Yes
Brake	Barrel Adjuster	Lock Ring	Lock Ring	Lock Ring
	Weight	N/A	N/A	N/A

Caution:
SRAM Integrated Brake Shifters are designed for use with linear-pull brakes. Do not use SRAM Integrated Brake Shifters with conventional cantilever brakes (those with arms measuring less than 76 mm and utilizing a non-linear straddle cable). Use of SRAM Integrated Brake Shifters with conventional cantilever brakesets will result in faulty braking performance.



Designed for use with linear-pull brakes.


Do not use conventional cantilever brakes.

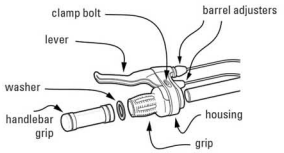
CABLE HOUSING

- Use only new high quality cable and compressionless cable housing with end caps.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

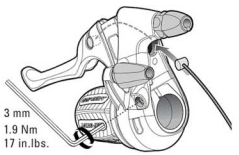
3.0 IBS / MRX IBS · INTEGRATED BRAKE SHIFTERS ASSEMBLY / MAINTENANCE

1:1
2:1

SHIFTER ANATOMY



1



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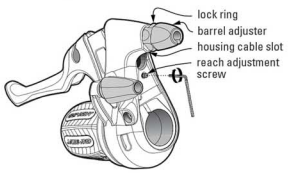

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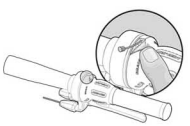

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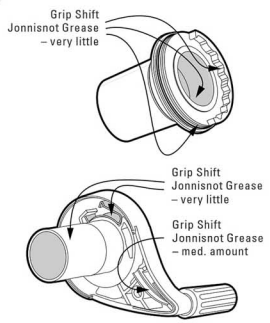


ASSEMBLY

Front and Rear:

- Slide the shifter onto the handlebar.
  - Leave room for the handlebar grip.
  - Bar end users – don't forget to leave room for the bar end.
- Tighten the 3 mm hex clamp bolt to 1.9 Nm (17 in.lbs.) ***(Fig. 1)***.
- Slide the plastic washer onto the handlebar.
- Slide the handlebar grip onto the handlebar.
  - **Solvents, lubricants or hair spray may damage handlebar grips!**
  - Use **only** compressed air or water to aid installation.

Shifter:

- Feed the shifter cable through the shifter cable housing and stops.
- Attach the cable to the derailleur.
- Adjust indexing per derailleur instructions.

Brake lever:

- Line up the brake lever barrel adjuster, lock ring and housing cable slots ***(Fig. 2)***.
- Pull on the lever and push the brake cable head through the opening in the brake lever housing ***(Fig. 1)***.
- Install the cable head into the cable socket in the lever.
- Set up the brakes and brake pads per brake instructions.
- Actuate each brake lever 5–10 times.
  - **Check that all brake system components are functioning properly.**

Reach adjustment:

- Using a 2 mm hex wrench ***(Fig. 2)***.
- Turn the reach adjustment screw clockwise to bring the lever closer to the handlebars.
- Turn the screw counterclockwise to move the lever further away.

Caution:

- ***Do not turn reach adjust screw past flush with the housing!***
- ***After any ajustment to the reach, always check the brake cable tension to ensure proper braker system performance. Re-adjust the cable tension if necessary.***
- ***Always check the front and rear brake levers for proper operation.***

CABLE CHANGE

Front and Rear:

Advice:

- ***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 and compressionless cable housing with end caps.***
- Detach the cable from the derailleur.
- Cut the cable off 15 cm (6") from shifter barrel adjuster. Discard old cable and cable housing.
- Line up the "1" (front) or HIGHEST gear number (rear) mark with the indicator mark.
- Carefully peel back the corner of the grip cover shown in ***Fig. 3***. Use your fingernail or a small screwdriver.
- Remove and discard the rest of the old cable.
- Feed the new cable through the cable entry in the grip and out through the barrel adjuster.
- Feed the cable through the new cable housing and stops.
- Attach the cable to the derailleur and adjust indexing per derailleur instruction.

MAINTENANCE

- ***Clean all shifter parts using only water and mild soap.***
- ***Use only Grip Shift Jonnisnot Grease for any shifter lubrication.***
- ***After proper cleaning relubricate the areas shown in Fig. 4.***

REAR HUBS / FRONT HUBS / QUICK RELEASES
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

REAR HUBS

		9.0SL		9.0		7.0		5.0			3.0/TRAXX						
	Speed	9/8		9/8		9/8		9/8		7	8	7			6		
	Driver Type	Cassette		Cassette		Cassette		Cassette			Freewheel[1]						
	Over Locknut Dim.	135 mm	130 mm	135 mm	130 mm	135 mm	130 mm	135 mm	130 mm	126 mm	135	135	130	126			
Axle	Length	145 mm	139 mm	145 mm	139 mm	145 mm	139 mm	145 mm	139 mm	168 mm	145	177	145	177	140	173	136	169
Axle	Type	Hollow / for Quick Rel.		Hollow / for Quick Rel.		Hollow / for Quick Rel.		Hollow / for Q. R.		Solid	H.	S.	H.	S.	H.	S.	H.	S.
Axle	Material	Aluminum		Steel		Steel		Steel			Steel							
Axle	Ends Diameter	10 mm		10 mm		10 mm		10 mm		M10x1	10 mm / M10x1							
Spoke	Holes	36 / 32	36 / 32	36 / 32	36 / 32	36 / 32	36 / 32	32 / 36	32 / 36	36	36/32	36		36/32	36/32			
Spoke	Diameter	1.8 / 2.0 mm		1.8 / 2.0 mm		1.8 / 2.0 mm		2.0 mm			2.0 mm							
Spoke	Hole Reference ø	45 mm		45 mm		45 mm		45 mm			45 mm							
	Bearing	Cartridge		Cartridge		Cone		Cone			Cone							
	Sealing	Cartrid./Labyrinth/DustCap		Cartrid./Labyrinth/Dust Cap		Lip Seal/Labyrinth/DustCap		Labyrinth/Dust Cap			Dust Cap							
	Option: Disc Br. Hub	Magura / Hayes / Shimano[2] compatible																
	Weight	380 g		380 g		380 g		380 g			N/A							
Finish	Standard	White Pearl		Charcoal Grey painted		Silver light		Aluminum Turned			Aluminum Turned							
Finish	Option	Blue Pearl / Red Pearl		Black		Black		Black[3]										

[1] Thread = 1.375x24 · [2] 32 spoke holes only · [3] OLD 135 only

FRONT HUBS

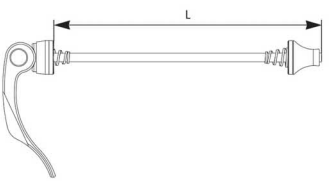
		9.0SL		9.0		7.0		5.0			3.0/TRAXX					
	Over Locknut Dim.	100 mm		100 mm		100 mm		100 mm		100 mm	100 mm			100 mm		
Axle	Length	107 mm		107 mm		107 mm		107 mm		136 mm	107 mm			136 mm		
Axle	Type	Hollow / for Quick Rel.		Hollow / for Quick Rel.		Hollow / for Quick Rel.		Hollow / for Q. R.		Solid	H. / for Q. R.			Solid		
Axle	Material	Aluminum		Steel		Steel		Steel			Steel					
Axle	Ends Diameter	9 mm		9 mm		9 mm		9 mm		M9x1	9 mm			M9x1		
Spoke	Holes	36	32	36	32	36	32	32	36	36	36	32		36	32	ø2.8
Spoke	Diameter	1.8 / 2.0 mm		1.8 / 2.0 mm		1.8 / 2.0 mm		2.0 mm			2.0 mm					
Spoke	Hole Reference ø	39 mm		39 mm		39 mm		39 mm			39 mm					
	Bearing	Cartridge		Cartridge		Cone		Cone			Cone					
	Sealing	Cartrid./Labyrinth/DustCap		Cartrid./Labyrinth/Dust Cap		Lip Seal/Labyrinth/DustCap		Labyrinth/Dust Cap			Dust Cap					
	Option: Disc Br. Hub	Magura / Hayes / Shimano[1] compatible														
	Weight	150 g		180 g		190 g		190 g		210 g	200 g			230 g		
Finish	Standard	White Pearl		Charcoal Grey painted		Silver light		Aluminum Turned			Aluminum Turned					
Finish	Option	Blue Pearl / Red Pearl		Black		Black		Black								

[1] 32 spoke holes only

Advice: All hubs are not suitable for tandem use.

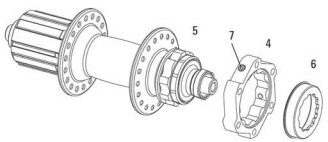
Q.R.

	for 9.0SL / 9.0	NEW
Part No.	—	—
Type	Front	Rear
Length, L	112 mm	148 mm
Over Locknut Dim.	100	135
Frame Dropout	Steel or Aluminum	Steel or Aluminum
Suspension Approved	Yes	Yes
Weight	59 g	64 g
Lever Material	Aluminum	Aluminum



REAR HUBS / FRONT HUBS / QUICK RELEASES ASSEMBLY

1



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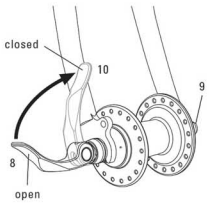

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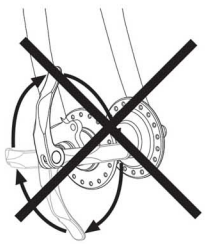


ASSEMBLY HUB

Spoking:

Cross spokes 3 times at
- rear hubs, drive side.
- disc brake hubs, both sides.

Assembly disc brake adaptor:

Adaptor width: rear wheel 9 mm („R")
front wheel 11 mm („F")

- Mount adaptor (4, ***Fig. 1)*** on hub shell (5). If adaptor doesn't slide onto hubshell unscrew set screws (7) with a 2 mm allen key.
- Screw adaptor nut (6) onto hubshell. Tighten by handforce only.
- Screw in smoothly all 3 set screws to centre the adaptor.
- Tighten 3 set screws with a torque of 1.5 – 2 Nm (13 – 17 in.lbs.).
- Screw adaptor nut with standard cassette tool, tightening torque: 35 – 40 Nm (310 – 350 in.lbs.).
- Mount brake disc on adaptor. See disc supplier manual.

Freewheel hub:
- Snap spoke protector disc onto the hub flange or slide it onto threaded hub shell shoulder.
- Screw freewheel sprocket onto threaded part of hub shoulder.

Installing wheel:
- Fit wheel into dropouts and align.

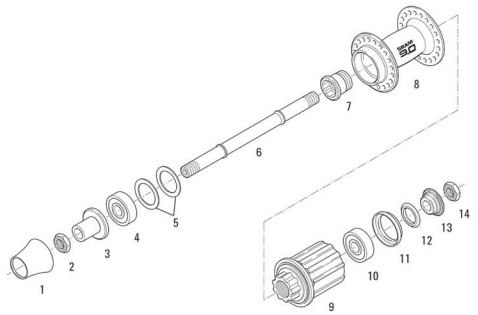
Fastening wheel/solid axle:
- Slide washers onto axle ends.
- Fit axle nuts: Torque 30 – 40 Nm (265 – 350 in.lbs.).

Fastening wheel/quick release ***(Fig. 2):***
- Only use quick release devices with the correct length.
- Turn release lever (8) outwards until it is at least at a right angle to the bike.
- Tighten adjusting nut (9) as much as possible by hand.
- Turn release lever (8) to the closed position (10) (the word "close" is visible from the outside).
  After closure, the release lever should be parallel to the fork. If the release lever can be closed relatively easily, the tension force is inadequate.
  In this case, open release lever again, tighten adjusting nut (9) slightly and close release lever again.
  If considerable force is required to close the lever, open the lever again, undo the adjusting nut slightly and close lever again.

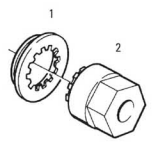
Warning:
- ***Do not tighten wheel by turning the quick release device right round (Fig. 3)!***
- ***Only use hand force with the skewer.***
- ***By incorrectly mounting the skewer or the wheel in the dropout, or by wrongly adjusting the closing force, the wheel may come loose and fall off during the ride. This may lead to severe rider injury or death.***

REAR HUBS
MAINTENANCE 9.0SL / 9.0

1



2



Disassembly:

- Remove rubber cap (1, ***Fig. 1)***.
- Unscrew and remove axle nut (14) using a 17 mm wrench on the driver side, while holding the opposite side in place with a 17 mm wrench.
- Remove dust cap (13) and rubber lip seal (12).
- Remove axle (6) using a plastic or rubber hammer.
  Take care of the adjusting washers (5) under the outer bearing ring.
- Clean all parts if necessary – replace damaged/worn parts.
- After unscrewing the nut (2), the bearing (5) on the axle can be removed with the spacer and the dust cap (3).
- From the non-drive side of the hub, use a 12 mm hex wrench to unscrew and remove the cassette driver bolt (7) from the hub shell (8).
- In order to replace the cartridge bearing in the cassette driver body, place the driver body non-drive side up on a flat work surface. Using a 12 mm or 13 mm ($^1/_2$") diameter 'draft pin' punch, tap the bearing (10) out of the body. The cover (11) is driven out at the same time.

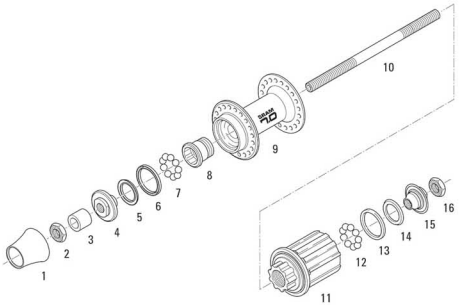
Assembly:

- Press bearing (10, ***Fig. 1)*** as far as it will go into body (9).
- Press in dust cap (11) with the larger diameter first – the lockring (1, ***Fig. 2)*** for the cassette and assembly tool (2) will be required – tighten lockring completely and the dust cap will be in exactly the right position.
- Fit cassette driver body (9, ***Fig. 1)*** and tighten bolt (7) to a torque of 45 – 60 Nm (400 – 530 in.lbs.).
- Push the bearing (4) completely onto the longer end of the axle. Fit cover and spacer (3) and tighten axle nut (2) to a torque of 15 – 20 Nm (130 – 180 in.lbs.).
- Before fitting the axle with left bearing, the adjusting washers provided must be inserted into the hub shell. These washers prevent undesirable bearing play.
- Insert preassembled axle with bearing into the hub shell and press in bearing completely.

Advice:
The following applies to both bearings:
When pressing in the bearing, only exert force via the outer bearing ring.

- Push rubber lip seal (12) completely onto the spacer with pressed-on labyrinth cover (13) – the sealing lip should point towards the labyrinth cover.
- Fit spacer (13) onto axle.
- Tighten axle nut (14) – hold the opposite side in position with a 17 mm wrench and tighten nut to a torque of 15 – 20 Nm (130 – 180 in.lbs.).
- Fit rubber cap onto left hub side.

3



Disassembly:

- If version has a rubber cap (1, ***Fig. 3)*** remove it.
- Unscrew axle nut (2) on the non-drive side and remove, using a 17 mm wrench, while holding the adjusting cone (4) in place with a 15 mm wrench.
- Unscrew adjusting cone (4) and pull out axle (10).
  (Only remove dust cap (13) and cone (15) with plastic cover (14) if damaged.)
  When replacing the cone (15) measure the distance to the axle end so that the new part is fitted in the same position.
- Remove 9 balls each side (7+12) from the hub shell.
- Unscrew casstte driver bolt (8) from the hub shell using a 12 mm hex and remove body (11).
  The non-drive side bearing shell would have to be disassembled before the bolt can be removed.
- In case of a worn bearing shell, use a suitable tool to drive the bearing shell out of the hub shell (9). Press new bearing shell in completely.
- The body (11) should not be dismantled and must, if necessary, be replaced completely.
- Clean all parts if necessary – replace damaged/worn parts.

Differences specific to type:

- On the 5.0 9/8-speed version, a labyrinth cover pressed onto the cone (4+15) seals the hub on drive and non-drive side – the 5.0 7-speed version has no dust cap on the cone (15).
- On the 7.0, the rubber lip seal (5+14) is fitted on both sides. It is fitted completely onto the labyrinth cover; the sealing lip must point towards the labyrinth cover.

Assembly:

- If dust cap (13) has been removed press in dust cap with the closed face first – the lockring (1, ***Fig. 2)*** for the cassette and assembly tool (2) will be required – tighten lockring completely and the dust cap will be in exactly the right position.
- Fit cassette driver body (9, ***Fig. 1)*** and tighten bolt (7) to a torque of 45 – 60 Nm (400 – 530 in.lbs.).
- Grease ball running surfaces on both sides and insert 9 balls on each side.
- Insert preassembled axle with cone (15) and axle nut (16).
- On the non-drive side, tighten adjusting cone (4) on the balls so that it is free from play but without exerting pressure. Fit spacer (3). Hold adjusting cone in place with a 15 mm wrench and tighten axle nut (2) to a torque of 15 – 20 Nm (130 – 180 in.lbs.).
- If version has a rubber cap fit it onto left hub side.

MAINTENANCE

- When cleaning your bike, do not expose hub to compressed water (i.e. high pressure hose, etc). If water gets into system, malfunction may occur.
- The hubs have been factory lubricated and are nearly maintenance-free.

CASSETTES
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

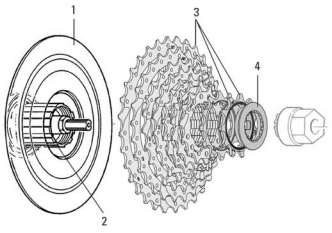
9.0 7.0

		9.0 Spider NEW		7.0 NEW	
	Part No.	—	—	—	—
	Largest Cog	34 T	32 T	34 T	32 T
Compatibility	Speeds	9	9	9	9
Compatibility	Chains	SRAM / Shimano	SRAM / Shimano	SRAM / Shimano	SRAM / Shimano
Compatibility	Hubs	SRAM / Shimano	SRAM / Shimano	SRAM / Shimano	SRAM / Shimano
Compatibility	Cogs	11/12/14/16/18/21/24/28/34	11/12/14/16/18/21/24/28/32	11/12/14/16/18/21/24/28/34	11/12/14/16/18/21/24/28/32
	Lockring torque	40 Nm	40 Nm	40 Nm	40 Nm
	Weight	300 g	290 g	340 g	330 g
Design	Cogs	SAPH 440 steel	SAPH 440 steel	SAPH 440 steel	SAPH 440 steel
Design	Spider	Grilon Composite	Grilon Composite		
Design	Rivets	Stainless Steel	Stainless Steel		
Design	Screws			Steel / Zinc Coat	Steel / Zinc Coat
Design	Finish	Matte Ni-Chrome Plated	Matte Ni-Chrome Plated	Matte Ni-Chrome Plated	Matte Ni-Chrome Plated

5.0 XF-8

		5.0 NEW		XF-8 NEW	
	Part No.	—	—	—	
	Largest Cog	32 T	28 T	32 T	
Compatibility	Speeds	8	8	8	
Compatibility	Chains	SRAM / Shimano	SRAM / Shimano	SRAM / Shimano	
Compatibility	Hubs	SRAM / Shimano	SRAM / Shimano	SRAM / Shimano	
Compatibility	Cogs	11/12/14/16/18/21/26/32	11/12/14/16/18/21/24/28	11/12/14/16/18/21/26/32	
	Lockring torque	40 Nm	40 Nm	40 Nm	
	Weight	280 g	250 g	400 g	
Design	Cogs	SAPH 440 steel	SAPH 440 steel	SAPH P&O steel	
Design	Spider				
Design	Rivets			Steel / Zinc Coat	
Design	Screws	Steel / Zinc Coat	Steel / Zinc Coat		
Design	Finish	Nickel-Chrome Plated	Nickel-Chrome Plated	Nickel-Chrome Plated	

1



ASSEMBLY

- Snap spoke protector disc (1, ***Fig. 1)*** onto the hub flange.
- Fit cassette (3) onto driver profile (2).
- Screw lock nut (4) with cassette tool (Park Tool FR-5 or SRAM Part No. 4624 411 010), tightening torque: 40 Nm (350 in.lbs.).

Advice:
Due to the optimized stability of the rear wheel, there is less space between the right spoke flange and the sprocket cassette. This means that not all spoke protector discs available on the market will fit. Please carry out a trial assembly run before specifying spoke protector discs (spoke protector discs must not rub against the sprocket cassette).

POWER CHAINS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

POWER CHAINS

		PC 99	PC 89R	PC 69	PC 59	PC 68
	Part No. (116 links)	—	—	—	—	—
	Application	MTB	Road	MTB	MTB	MTB
	Compatibility Front	HG / EXA-Drive	HG / EXA-Drive	HG / EXA-Drive	HG / EXA-Drive	HG / IG / PG / EXA-Drive
	Compatibility Rear	HG / EXA-Drive	HG / EXA-Drive	HG / EXA-Drive	HG / EXA-Drive	HG/HG-I/IG/PG/EXA-Drive
	Max. No. of sprockets	9 only	9 only	9 only	9 only	max. 8
	Dimension	$^1/_2$" x $^{11}/_{128}$"	$^1/_2$" x $^{11}/_{128}$"	$^1/_2$" x $^{11}/_{128}$"	$^1/_2$" x $^{11}/_{128}$"	$^1/_2$" x $^3/_{32}$"
Pin	Length	6.7 mm	6.7 mm	6.7 mm	6.7 mm	7.1 mm
Pin	Riveting	Cross Step	Step	Step	Step	Cross Step
Pin	Chrome Hardened	Yes	Yes	Yes	Yes	Yes
	Push Power	2000 N / 450 in.lbs.	1500 N / 340 in.lbs.	1500 N / 340 in.lbs.	1500 N / 340 in.lbs.	2000 N / 450 in.lbs.
	Tensile Strength	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.
	Weight (116 links)	300 g	295 g	300 g	300 g	315 g
Design	External Pin Plate	Silver / Nickel Plated	Silver / Nickel Plated	Silver / Nickel Plated	Silver / Nickel Plated	Silver / Nickel Plated
Design	Internal Pin Plate	Silver / Nickel Plated	Silver / Nickel Plated	Silver / Nickel Plated	Grey / Polished	Silver / Nickel Plated
Design	Weight Reduced		Yes			
	Connecting Method	Power Link 9SPD	Power Link 9SPD or Pin	Power Link 9SPD or Pin	Power Link 9SPD or Pin	Power Link S or Pin

POWER CHAINS

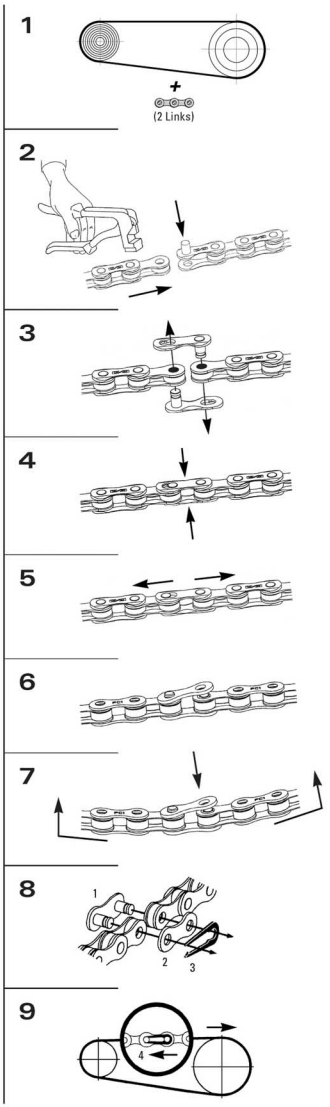
		PC 58	PC 48	PC 38 Saltshaker NEW	PC 38	PC 10 Saltshaker NEW
	Part No. (116 links)	—	—	—	—	—
	Application	MTB	MTB	MTB	MTB	MTB
	Compatibility Front	HG / IG / PG / EXA-Drive	HG / IG / PG / EXA-Drive	HG / IG / EXA-Drive	HG / IG / EXA-Drive	HG
	Compatibility Rear	HG/HG-I/IG/PG/EXA-Drive	HG/HG-I/IG/PG/EXA-Drive	HG/HG-I/IG/PG/EXA-Drive	HG/HG-I/IG/PG/EXA-Drive	HG
	Max. No. of sprockets	max. 8	max. 8	max. 8	max. 8	max. 7
	Dimension	$^1/_2$" x $^3/_{32}$"	$^1/_2$" x $^3/_{32}$"	$^1/_2$" x $^3/_{32}$"	$^1/_2$" x $^3/_{32}$"	$^1/_2$" x $^3/_{32}$"
Pin	Length	7.1 mm	6.8 mm	6.9 mm	6.9 mm	6.9 mm
Pin	Riveting	Step	Step	Step	Step	Step
Pin	Chrome Hardened	Yes	Yes			
	Push Power	1500 N / 340 in.lbs.	1500 N / 340 in.lbs.	1100 N / 350 in.lbs.	1100 N / 350 in.lbs.	1000 N / 225 in.lbs.
	Tensile Strength	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.	9800 N / 2200 in.lbs.
	Weight (116 links)	315 g	305 g	305 g	305 g	305 g
Design	External Pin Plate	Silver / Nickel Plated	Grey / Polished	Grey / Dacromet	Grey / Polished	Grey / Dacromet
Design	Internal Pin Plate	Grey / Polished	Black / Burnished	Grey / Dacromet	Brown / Annealed	Grey / Dacromet
	Connecting Method	Power Link S or Pin	Power Link S or Pin	Power Link G or Pin	Power Link G or Pin	Power Link G or Pin

POWER CHAINS

		PC 10	PC 7X[1] NEW	PC 1 Saltshaker NEW	PC 1 Ni	PC 1
	Part No. (116 links)	—	—	—	—	—
	Application	MTB	BMX / Track	Gear Hubs	Gear Hubs	Gear Hubs
	Compatibility Front	HG	Single	Single	Single	Single
	Compatibility Rear	HG	Single	Single	Single	Single
	Max. No. of sprockets	max. 7	1	1	1	1
	Dimension	$^1/_2$" x $^3/_{32}$"	$^1/_2$" x $^1/_8$"	$^1/_2$" x $^1/_8$"	$^1/_2$" x $^1/_8$"	$^1/_2$" x $^1/_8$"
Pin	Length	6.9 mm	8.2 mm	7.8 mm	7.8 mm	7.8 mm
Pin	Riveting	Step	Step	Step	Step	Step
	Push Power	1000 N / 225 in.lbs.	1500 N / 340 in.lbs.	800 N / 180 in.lbs.	800 N / 180 in.lbs.	800 N / 180 in.lbs.
	Tensile Strength	9800 N / 2200 in.lbs.	11000 N / 2500 in.lbs.	8000 N / 1800 in.lbs.	8000 N / 1800 in.lbs.	8000 N / 1800 in.lbs.
	Weight (116 links)	305 g	345 g (114 links)	350 g	350 g	350 g
Design	External Pin Plate	Brown / Annealed	Gold / Gold Plated	Grey / Dacromet	Silver / Nickel Plated	Brown / Annealed
Design	Internal Pin Plate	Brown / Annealed	Black / Burnished	Grey / Dacromet	Silver / Nickel Plated	Brown / Annealed
	Connecting Method	Power Link G or Pin	3 pcs. Connecting Link	Snap Lock or Pin	Snap Lock or Pin	Snap Lock or Pin

[1] PC 7X 114 links only

POWER CHAINS
ASSEMBLY / MAINTENANCE



1/2" x 3/32" AND 1/2" x 11/128" (DERAILLEURS / SINGLE AND MULTI-SPEED HUBS)

Chain length:
- Shorten chain to the length specified by the derailleur manufacturer.

SRAM derailleurs:
- Place chain over largest front chainwheel and largest rear sprocket and add 2 links or 1 link + Power Link ***(Fig. 1)***.
- For rear suspension frame, position the rear suspension for the greatest chain length required.

Closing standard version with clamping pin:
- Fit chain, bring the two ends together and press pin ***(Fig. 2)*** through with assembly tool. **The pin must extend by the same amount at both outer plates. It must be possible to move the connecting link slightly.**
- The use of the SRAM assembly plier (Part No. 00 2799 980 001) is recommended for PC 68, PC 58 and PC 48.

Power Link connecting links:
Caution:
Use only as specified, to avoid material damage or the rider to fall off his bicycle resulting in injury.

Power Link G	grey coloured
	for PC 38, PC 10
Power Link S	silver coloured
	for PC 68, PC 58, PC 48
Power Link 9SPD	gold coloured
	for PC 99, PC 89R, PC 69, PC 59

Closing:
- Fit chain, bring the ends together and insert both halves of the Power Link into the chain ends. ***(Fig. 3)***
- Press both halves of the Power Link together ***(Fig. 4)*** and lock in place by pulling the chain apart. ***(Fig. 5)***

Opening:
- Press both plates of the Power Link together ***(Fig. 4)*** while sliding the chain ends together (unlock). Remove the two halves of the link from the chain ends.

Caution:
Always use a new Power Link when fitting a new chain. Failure to shorten the chain properly or to lock it exactly into place may cause damage to the chain and eventually total chain failure, material damage or the rider to fall off his bicycle resulting in injury.

PC 1 1/2" x 1/8" (SINGLE AND MULTI-SPEED HUBS)

Closing chain with Snap Lock:
- Fit the shortened chain, bring the ends together and connect with the Snap Lock. Place the outer plate on one pin ***(Fig. 6)***.
- Gently flex the chain until the outside connector plate snaps into position over the second pin ***(Fig. 7)***.

Caution:
- ***Make sure plate is fully seated in the pin channel and plates are parallel to each other.***
- ***If movement of the connector plate is noticed a new Snap Lock must be used.***
- ***Always use a new Snap Lock when fitting a new chain. Failure to shorten the chain properly or to lock it exactly into place may cause damage to the chain and eventually total chain failure, material damage or the rider to fall off his bicycle resulting in injury.***

PC 7X 1/2" x 1/8" (BMX / TRACK)

Closing chain:
- Fit the shortened chain, bring the two ends together and connect with the chain lock. The chain lock consists of an outer plate with pins (1, ***Fig. 8***), an outer plate (2) and a retaining spring (3).
- Insert outer plate with pins (1) into the chain ends, attach outer plate (2) and press chain lock together (1+2).
- Attach retaining spring (3) with the closed end of the retaining ring pointing in the direction of chain travel ***(Fig. 9)***.
- Slide retaining spring in the direction of arrow (4, ***Fig. 9)*** to engage it in the grooves in the pins.

MAINTENANCE
- Regular lubrication will extend the chain's service life.
- Apply oil to the chain rollers and allow to work in.
- 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.

9.0 / 7.0 / 5.0 LINEAR PULL BRAKES
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

- Low Flex Truss Arm Design
- Forged Alloy Arms
- Brakecrawler Seal Quick Release
- Easy Adjust Spring Tension
- Single Bolt Pad Adjustment

9.0

		9.0			
	Part No.	—	—	—	—
	Brake	Front	Rear	Front	Rear
	Brake Type	Linear Pull			
	Washer Setup	Inside Thick		Inside Thin	
	Brake Shoe	Cartridge		Cartridge	
	Pad Post Type	Threaded		Threaded	
	Brake Boss Bolt Length	16 mm	25 mm	16 mm	25 mm
	Weight	N/A			
Design	Arm	Forged AL / Anodized		←	
Design	Pad Holder	Forged AL / Anodized		←	

7.0

		7.0			
	Part No.	—	—	—	—
	Brake	Front	Rear	Front	Rear
	Brake Type	Linear Pull			
	Washer Setup	Inside Thick		Inside Thin	
	Brake Shoe	Low Profile – 70 mm		Low Profile – 70 mm	
	Pad Post Type	Threaded		Threaded	
	Brake Boss Bolt Length	16 mm	25 mm	16 mm	25 mm
	Weight	N/A			
Design	Arm	Forged AL / Anodized		←	
Design	Pad Holder	Steel		←	

5.0

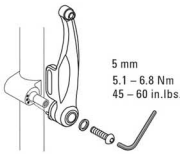
		5.0			
	Part No.	—	—	—	—
	Brake	Front	Rear	Front	Rear
	Brake Type	Linear Pull			
	Washer Setup	Inside Thick		Inside Thin	
	Brake Shoe	Low Profile – 60 mm		Low Profile – 60 mm	
	Pad Post Type	Threaded		Threaded	
	Brake Boss Bolt Length	16 mm	25 mm	16 mm	25 mm
	Weight	198 g			
Design	Arm	Forged AL / Anodized		←	
Design	Pad Holder	Steel		←	

CABLE HOUSING

- Use only new brake cable and cable housing.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

9.0 / 7.0 / 5.0 LINEAR PULL BRAKES ASSEMBLY

1



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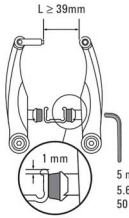

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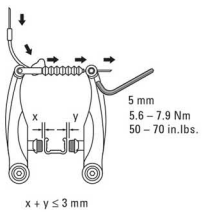

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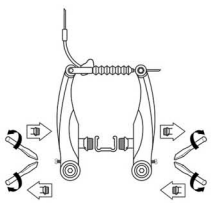
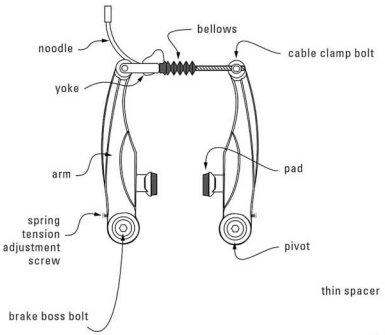
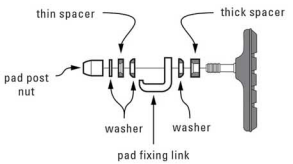


LINEAR PULL BRAKE ANATOMY





INSTALLATION

(5.0 Linear-Pull Brakes only:
Do not remove the plastic 'plug' in the pivot. The plug will pop free when the arm is installed onto the brake boss. You may discard the plug!)

- Slide the right linear-pull brake arm ***(Fig. 1)*** onto the right brake boss.
- Align the stopper pin with the center-spring hole.
- Using a 5 mm hex wrench, tighten the brake boss bolt to 5.1– 6.8 Nm (45–60 in.lbs.).
- Repeat the former 3 steps for the left arm.
- Arrange the thick and thin spacers – for each pad – so when the pads are pushed against the rim, **L** is at least 39 mm ***(Fig. 2)***.

Caution:
Too small dimension L will not allow the brake pads to come into full contact with the rims. The brakes will not work.

- Hold one pad against the rim using the arm ***(Fig. 2)***.
- Using a 5 mm hex wrench, tighten the pad post nut to 5.6 – 7.9 Nm (50 – 70 in.lbs.).
- Repeat the former 2 steps for the other pad.

Be sure to leave about 1 mm between the top of the brake pad and the top of the rim! (Fig. 2)
Use only new brake cable and cable housing.

- Run the brake cable through the noodle and the bellows ***(Fig. 3)***.
- Using a 5 mm hex wrench, tighten the cable clamp bolt to 5.6 – 7.9 Nm (50 – 70 in.lbs.).
  Leave a total clearance of 3mm (maximum) between the brake pads and the rim!
- Using a small screw driver, turn the spring tension adjustment screws to balance the arms and equalize the pad offsets ***(Fig. 4)***.
  – turn the spring tension adjustment screw clockwise to pull the pad away from the rim.
  – turn the spring tension adjustment screw counterclockwise to push the pad closer to the rim.
- Pull each brake lever – hard – at least 5 – 10 times.

Caution:
Check that all the brake system components are functioning properly!

9.0SL / 9.0 / 7.0 / 5.0 BRAKE LEVERS
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

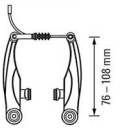
9.0SL 9.0 7.0

		9.0SL		9.0		7.0
	Part No.	—	—	—	—	—
	Brake Lever	Left	Right	Left	Right	Left
	Lever Size	2.5 Finger	←	2.5 Finger	←	2.5 Finger
	Brake Compatibility	i-Brake/Linear Pull/Cable Actuated Disc		i-Brake/Linear Pull/Cable Actuated Disc		i-Br./Lin.-P./Cab. Actu. Disc
	Leverage Adjust	Infinite Adjust	←	Infinite Adjust	←	3 Position
	Cable Pull	N/A	←	N/A	←	26.0/24.3/22.4
	Pivot Bushing	I-Glide	←	I-Glide	←	Acetal
	Reach Adjust	Yes	Yes	Yes	Yes	Yes
	Barrel Adjuster	Indexing	Indexing	Indexing	Indexing	Lock Ring
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm	22.2 mm	22.2 mm
	Weight	77 g	77 g	77 g	77 g	70 g
Design	Housing	Grilon Composite	←	Grilon Composite	←	Grilon Composite
Design	Lever	Grilon Composite	←	Grilon Composite	←	Grilon Composite

7.0 5.0

		7.0	5.0	
	Part No.	—	—	—
	Brake Lever	Right	Left	Right
	Lever Size	2.5 Finger	2.5 Finger	←
	Brake Compatibility	i-Br./Lin.-P./Cab.Actu.Disc	i-Brake/Linear Pull	←
	Leverage Adjust	3 Position	Single Position	←
	Cable Pull	26.0/24.3/22.4	N/A	←
	Pivot Bushing	Acetal	Acetal	←
	Reach Adjust	Yes	Yes	Yes
	Barrel Adjuster	Lock Ring	Lock Ring	Lock Ring
	Clamping Diameter	22.2 mm	22.2 mm	22.2 mm
	Weight	70 g	80 g	80 g
Design	Housing	Grilon Composite	Grilon Composite	←
Design	Lever	Grilon Composite	Grilon Composite	←

Caution:
SRAM Brake Levers are designed for use with i-Brakes and linear-pull brakes. Do not use SRAM Brake Levers with conventional cantilever brakes (those with arms measuring less than 76 mm and utilizing a non-linear straddle cable). Use of SRAM Brake Levers with conventional cantilever brakesets, drum brakes or roller brakes will result in faulty braking performance.



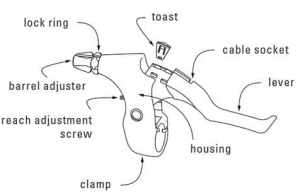
Designed for use with linear-pull brakes.

Do not use conventional cantilever brakes.

CABLE HOUSING

- Use only new brake cable and cable housing.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

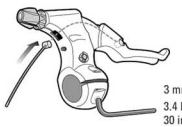
7.0 BRAKE LEVER ANATOMY



9.0SL / 9.0 / 7.0 / 5.0 BRAKE LEVERS ASSEMBLY / MAINTENANCE

1

2



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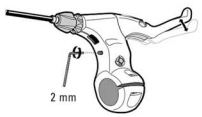

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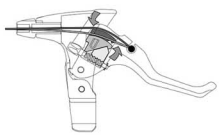

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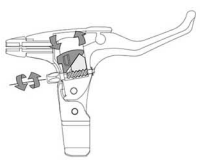

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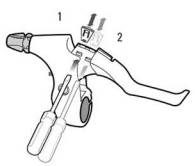


INSTALLATION

- When sliding the brake lever onto the handlebar, allow enough room for the shifter, the handlebar grip, and the bar end.
- Using a 3 mm hex wrench, tighten the clamp bolt to 3.4 Nm (30 in.lbs.) ***(Fig. 1/2)***. ***Be careful not to over tighten!***
- Line up the barrel adjuster, the lock ring, and the brake lever housing cable slots.
- Pull on the lever and push the brake cable head through the opening in the brake lever housing ***(Fig. 2)***. ***Use only new cable and cable housing.***
- Install the brake cable head into the cable socket in the lever.
- Set up the brakes and brake pads per brake instructions.
- Actuate each brake lever 5 – 10 times.

Caution:
Check that all the brake system components are functioning properly!

REACH ADJUSTMENT

Using a 2 mm hex wrench ***(Fig. 3)***:

- Turn the reach adjustment screw clockwise to bring the lever closer to the handlebars.
- Turn the screw counterclockwise to move the lever further away.

Caution:
Do NOT turn the screw past flush with the housing!
After any adjustment to the reach always check the brake cable tension to ensure proper brake system performance. Readjust the cable tension if necessary.

LEVERAGE ADJUSTMENT

9.0SL / 9.0 Brake Levers only:
To view the leverage setting ***(Fig. 4)***:
Pull the brake lever toward the handlebar to expose the leverage indication window from under the housing. The position of the red indicator shows the brake leverage settings.

- The **+** sign indicates the highest leverage. Moving the adjuster toward this position increases system leverage. This position has the greatest stopping power for a given amount effort.
- The **-** sign indicates the lowest leverage. Moving the adjuster toward this position decreases system leverage. This position is the standard configuration for most braking conditions.

To adjust the leverage setting ***(Fig. 5)***:
Use the Control Cam adjuster knob to fine-tune the feel of your levers. The adjuster knob may be positioned at **+**, **-** or anywhere in between ...

- Turn the adjuster knob **counter clockwise** to **increase** leverage. This adjustment moves the red indicator toward the **+** sign and gives increased leverage and increased stopping power.
- Turn the adjuster knob **clockwise** to **decrease** leverage. This adjustment moves the red indicator toward the **-** sign and returns the lever to standard leverage and standard stopping power.

There is positive stop at both ends of the leverage adjustment. Use only hand force to adjust the knob. Do not force the adjustment knob past these stops!

7.0 Brake Levers only ***(Fig. 6)***:

- STANDARD LEVERAGE OPTION – The brake lever is packaged with the toast installed in position 1. This option is the standard configuration for most braking conditions.
- MID LEVERAGE OPTION – Moving the toast to position 2 gives you greater brake system leverage. This option increases your stopping power for a given amount of effort.
- HIGH LEVERAGE OPTION – Removing the toast results in the highest brake system leverage. This option has the greatest stopping power for a given amount of effort.

Removing the toast:
1. Remove the brake cable.
2. Insert a small screw driver into the adjuster window.
3. Depress the tab and push the toast out.

Installing the toast:

- Remove the brake cable.
- Determine which option fits your riding needs.
- Align the runner on the toast with the curved track in the lever.
- Press the toast into the slot until it clicks.

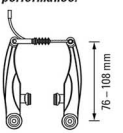
Caution:
After any adjustment to the reach or leverage, always check the brake cable tension to insure proper brake system performance. Readjust the cable tension if necessary.

TWO-AXIS BRAKE LEVER
TECHNICAL DATA / ASSEMBLY REQUIREMENTS

TWO-AXIS

		Two-Axis NEW	
	Part No.	—	—
	Brake Lever	Left	Right
	Lever Size	4 Finger	←
	Brake Compatibility	i-Brake/Linear Pull	←
	Leverage Adjust	Single Position	←
	Cable Pull	28 mm	←
	Pivot Bushing	I-Glide	←
	Reach Adjust	Yes	Yes
	Barrel Adjuster	Ergonomic Indexing	Ergonomic Indexing
	Clamping Diameter	22.2 mm	22.2 mm
	Weight	155 g	155 g
Design	Housing	Grilon Composite	←
	Lever	Forged Aluminum	←

Caution:
SRAM Brake Levers are designed for use with i-Brakes and linear-pull brakes. Do not use SRAM Brake Levers with conventional cantilever brakes (those with arms measuring less than 76 mm and utilizing a non-linear straddle cable). Use of SRAM Brake Levers with conventional cantilever brakesets, drum brakes or roller brakes will result in faulty braking performance.



Designed for use with linear-pull brakes.

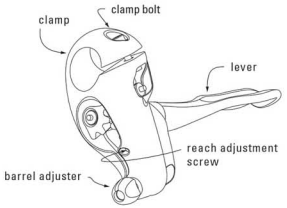

Do not use conventional cantilever brakes.

CABLE HOUSING

- Use only new brake cable and cable housing.
- When choosing cable housing lengths, be sure to allow enough housing for an extreme turn of the handlebars in both directions.
- Note also, that different stem lengths and cable stop positions effects cable housing length.

TWO-AXIS BRAKE LEVER ASSEMBLY / MAINTENANCE

BRAKE LEVER ANATOMY



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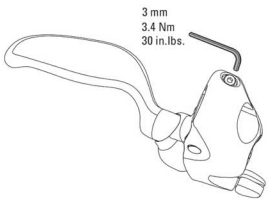

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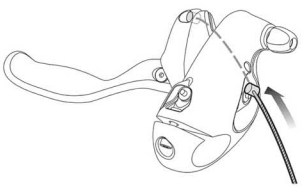

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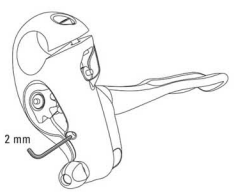


INSTALLATION

- When sliding the brake lever onto the handlebar, allow enough room for the shifter, the handlebar grip, and the bar end.
- Using a 3 mm hex wrench, tighten the clamp bolt to 3.4 Nm (30 in.lbs.) ***(Fig. 1)***. ***Be careful not to over tighten!***
- Line up the barrel adjuster and the brake lever housing cable slots.
- Pull on the lever and push the brake cable head through the opening in the brake lever housing ***(Fig. 2)***.
- Install the brake cable head into the cable socket in the lever.
- Set up the brakes and brake pads per brake instructions.
- Actuate each brake lever 5 – 10 times.

Caution:
Check that all the brake system components are functioning properly!

REACH ADJUSTMENT

Using a 2 mm hex wrench ***(Fig. 3)***:

- Turn the reach adjustment screw clockwise to bring the lever closer to the handlebars.
- Turn the screw counterclockwise to move the lever further away.

Caution:
After any adjustment to the reach always check the brake cable tension to ensure proper brake system performance. Readjust the cable tension if necessary.

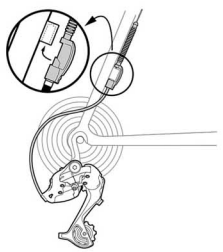
NIGHTCRAWLER / BRAKECRAWLER TECHNICAL DATA / ASSEMBLY REQUIREMENTS

SEALS

		Nightcrawler	Brakecrawler			
	Part No.	—	—	—	—	—
	Type	Cable Seal	Sealing Quick Release	←	←	←
	Cable Type	Derailleur Cables Only	Brake Cables Only	←	←	←
	Cable Size	1.1mm/1.2mm	1.6mm	←	←	←
	Housing	Compressionless	Compressionless or Standard Brake Housing		←	←
	Housing Ferrule/Max.	5.8mm	5.8mm	←	←	←
	Cable Stop/Slit Minim.	2.1mm	2.2mm	←	←	←
	Guide Pipe		Chrome Plated	←	Stainless Steel	←
	Bend		90°	130°	90°	130°
	Weight	6g	N/A		N/A	
Design	Rigger	Acetal	Acetal	Acetal	Acetal	Acetal
	Bellows	Silicon	Silicon	Silicon	Silicon	Silicon

NIGHTCRAWLER

1



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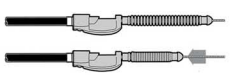
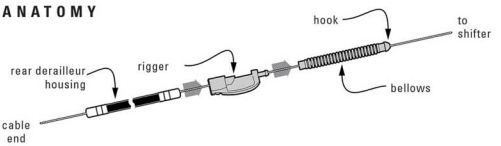


ANATOMY



COMPATIBILITY

- Fits most frames
- Use with derailleur cables ONLY

SETUP

- No tools needed
- Cable detached from the rear derailleur
- Rigger separate from the bellows

INSTALLATION

(see figure 1)

- Feed the cable through the bellows – hook end first.
- Feed the cable through the rigger – bellows end first.
- Join the rigger to the bellows.
- Feed the cable through the rear derailleur housing.
- Seat the rear derailleur housing into the rigger.
- Slide the rigger into the rear derailleur cable stop.
- Re-attach the cable to the rear derailleur.
- Check that the chain is on the smallest cog.
- Using your fingers, slide the hook end of the bellows towards the rigger until fully compressed ***(fig. 2)***.

BRAKECRAWLER

1

Features and Benefits:

- Complete cable sealing.
- Maintains smooth braking performance in all conditions.
- Easy to grab quick release finger tab: allows for easy wheel removal.
- Integrated bellows design: bellows stays attached even during wheel removal and replacement.

Detailed specifications:

- Fits SRAM, Shimano and most other linear pull brakes.
- Replaces existing noodle guide tube and bellows.
- Stainless steel or Chrome plated.
- 90 degree or 130 degree bend.

SUPPORT
DISTRIBUTORS

UNITED STATES

Action Bicycle USA
217 Washington Avenue -A
Carlstadt, NJ, 07072
Ph: +1 800.284.2453

Bicycle Tech International
3201 B Richards Lane
Sante Fe, NM, 87505
Ph: +1 800.558.8324

DiamondBack, Distributor
300 Camarillo Ranch Rd.
Camarillo, CA, 93012
Ph: +1 800.776.7641

Downeast Bicycle Specialists
Porter Road, P.O. Box 226
Fryeburg, ME, 04037
Ph: +1 800.242.1043

Euro-Asia Imports
3935 FootHill
La Crescenta, CA, 91214
Ph: +1 818.248.1814

Giant Bicycle, Inc.
737 W. Artesia Boulevard
Rancho Dominguez, CA, 90220
Ph: +1 800.874.4268

Great Northwest
2335 North West Savier
Portland, OR, 97210
Ph: +1 800.927.9242

Hans Johnsen Company
8901 Chancellor Row
Dallas, TX, 75248-5326
Ph: +1 800.879.1515

The Hawley Company
One Hawley Drive
Lexington, SC, 29074-7812
Ph: +1 800.822.1980

Island Cycle Supply
425 Washington Avenue North
Minneapolis, MN, 55401
Ph: +1 800.627.2453

J&B Importers, Inc.
P.O. Box 161859
Miami, FL, 33116-1859
Ph: +1 800.666.5000

J&B Importers West, Inc.
P.O. Box 1248
Englewood, CO, 80150
Ph: +1 800.999.9228

J&B Importers Pacific, Inc.
P.O. Box 88808
Seattle, WA, 98138-2808
Ph: +1 800.627.2453

KHS Inc., Distributor
1264 East Walnut Street
Carson, CA, 90746
Ph: +1 800.347.7854

The Merry Sales Company
1415 San Mateo Avenue
San Francisco, CA, 94080
Ph: +1 800.245.9959

Olympic Cycle Supply
5711 West Douglass Avenue
Milwaukee, WI, 53218
Ph: +1 800.236.8380

Performance Cycle Products
22 South 6th Avenue
Mount Vernon, NY, 10550
Ph: +1 888.269.1846

Quality Bicycle Products
6400 West 105th Street
Bloomington, MN, 55438
Ph: +1 800.346.0004

Quantum
400 Venture Court, Suite 101
Verona, WI, 53593-1821
Ph: +1 800.545.1229

Quentin
454 Scott Drive
Bloomingdale, IL, 60108
Ph: +1 800.323.1741

Raleigh Bicycle Co., USA
22710 72nd Avenue South
Kent, WA, 98032
Ph: +1 800.222.5527

Riteway Products
2001 East Dyer
Santa Ana, CA, 92705-5709
Ph: +1 800.869.9866

Schwinn Cycling and Fitness
1690 38th Street
Boulder, CO, 80301
Ph: +1 800.SCHWINN

Seattle Bike Supply
7620 South 192nd
Kent, WA, 98032
Ph: +1 800.955.2453

Security Bicycle
32 Intersection Street
Hempstead, NY, 11550-1332
Ph: +1 800.645.2990

Sinclair Imports
2755 Highway 40
Verdi, NV, 89439
Ph: +1 800.654.8052

Trek Bicycle Corporation
801 West Madison St.
Waterloo, WI, 53594-0183
Ph: +1 800.369.8735

United Bicycle Parts
691 Washington Street
Ashland, OR, 97520
Ph: +1 800.482.1984

Wilson Bicycle Sales
31157 Wiegman Road
Hayward, CA, 94544
Ph: +1 800.877.0077

World Wide Cycle Supply
100 D Executive Drive
Edgewood, NY, 11717
Ph: +1 800.330.2550

EUROPE

AUSTRIA

KTM Fahrrad GmbH
Harlochnerstrasse 13
5230 Mattighofen
Ph: +43 7742 409 132
Fx: +43 7742 409 126

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Transmission S.A.
Boulevard du Centenaire 4
1325 Dion-Valmont
Ph: +32 10 24 46 46
Fx: +32 10 24 47 77

CZECH REPUBLIC

Vokolek Import
Rezlerova 308
10900 Praha-Petrovice
Ph: +420 2692 3399
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Zitny
Ceskobratske Nam. 133
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1470 Serrières de briord
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Lapierre Cycles S.A.
Eurostar
SUNN

GERMANY

Hartje KG
Deichstraße 120-122
27318 Hoya
Ph: +49 42 51 81 11 15
Fx: +49 42 51 81 12 49

Epple Zweirad GmbH
Mittereschweg 1
87700 Memmingen
Ph: +49 83 31 7 51 41
Fx: +49 83 31 7 51 97

Bico
E. Wiener Bike parts
GZR
Rabeneick/Schlote
Veloring
ZEG

GREECE

Gatsoulis Imports
8, Thessalonikis Street
14342 New Filadelfia-Athens
Ph: +30 1 25 12 779
Fx: +30 1 25 33 960

HUNGARY

Biker Kft.
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1211 Budapest
Ph: +36 1278 1021
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ICELAND

Oerninn Hjol LTD.
P.O. Box 8036, Skeifan 11
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Ph: +354 1 88 98 92
Fx: +354 5 88 98 96

ITALY

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

NETHERLANDS

Koch Kleeberg B.V.
Postbus 1069, Dukdalfweg 25
1300 BB Almere
Ph: +31 36 532 05 04
Fx: +31 36 532 25 48

Vertex Cycle Systems

SUPPORT
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1324 Lysaker
Ph: +47 67 11 00 20
Fx: +47 67 11 00 42

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Harfa-Harryson
Ul. Ks. Witolda 48
50203 wroclaw
Ph: +48 7 13 72 15 70
Fx: +48 7 13 27 80 92

PORTUGAL

Ciclo Coimbroes
Parca Manuel Da Silva Reis 122
4400 Vila Nova De Gaia
Ph: +351 23 79 4461
Fx: +351 23 06 163

RUSSIA

Sportclub Triatlon

SLOVAKIA

Excelia s.r.o.

SLOVENIA & CROATIA

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64000 Kranj
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Fx: +386 64 38 02 022

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Casa Masferrer
Pol. Ind. Congost-Avda.
San Julian, S/N Apdo Correos 89
E-08400 Granollers
Ph: +34 9 38 46 60 51
Fx: +34 9 38 46 53 56

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Vartex
Batterivägen 14
43232 Varberg
Ph: +46 340 850 80
Fx: +46 340 61 11 90

SWITZERLAND

Intercycle
Industriegebiet, Haldemattstr. 3
6210 Sursee
Ph: +41 41 92 66 511
Fx: +41 41 92 66 352

Amsler & CO AG
Lindenstraße 16
8245 Feuerthalen
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Fx: +41 5 26 47 36 37

U.K.

Raleigh P&A
Triumph Road
NG 72 DD Nottingham
Ph: +44 115 9420202
Fx: +44 115 9282044

Fisher Outdoor Leisure PLC
Unit 2, Haslemore Business Centre
Lincolnway off Lincoln Road
EN 11 TE Enfield, Middx
Ph: +44 181 8053088
Fx: +44 181 8058821

Chickens & Sons
Bisley Works/Landpark Lane
LU 62 PP Kensworth, Beds
Ph: +44 1582 873329
Fx: +44 1582 873583

AUSTRALIA

Groupe Sportif Pty. Ltd.
20 Harker Street
Burwood, Victoria 3125
Ph: +61.3.9888.9882

Velo-Vita Pty. Ltd.
Unit A, 602-612 Botany Road
NSW 2015 Alexandria
Ph: +61.2.9700.8177

CANADA

Bell Sports Canada
700 Chemin Bernard
Granby, PQ, J2G 9H7
Ph: +1 800.661.1662

Kempter Marketing
1271 St Louis
St Lazare, PQ, J7T 1Z9
Ph: +1 514.424.4600

Norco Products Limited
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Port Coquitlam, BC, V3C 6L3
Ph: +1 800.663.8916

ISRAEL

Hobby's LTD.
POB 1231
53111 Givataim
Ph: +972 5 24 299 05
Fx: +972 35 75 45 29

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Kawashima Cycle Supply Corp.
No. 4-2-4 Kushiya-Cho Higashi
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Ph: +81-722 381 557

Nichinao Shokai Co., Ltd.
6-16-8 Sotokanda Chiyoda-ku
Tokyo 101
Ph: +81-3 3382 6251

NEW ZEALAND

Cycle Supplies
PO Box 33051
Christchurch
Ph: +64.3.338.6803

H.S. White & Sons
7C Anwen Place, East Tamacki
PO Box 58331 Greemouni
Auckland
Ph: +64.9273.7690

SOUTH AFRICA

Cape Cycle Systems (PTY) LTD.
10/12 Argo Road, Wetton
7780 Cape Town
Ph: +27.21.761.3528

SUPPORT
WHO TO CALL / SRAM WARRANTY / SPARE PARTS

WHO TO CALL

For fast SRAM dealer warranty and technical support help, please contact us at the appropriate locations.

NORTH AMERICA

Dealer Helpdesk Number:

(800)-346-2928

EUROPE

Please contact your local distributor.

SRAM 2 YEAR WARRANTY

In addition to standard legal warranty entitlements, SRAM components include a two year full warranty beginning on the date of purchase. This warranty is subject to the following conditions:

1. During the warranty period, SRAM components with material or production defects which as a result adversely affect the proper functioning of such components, shall either be repaired or replaced with a functioning SRAM component free of charge, whereby we are free to determine whether repair or replacement should take place. If a component cannot be replaced or repaired, the purchaser shall receive, free of charge, a component of higher value from the current SRAM product line. Defective components which have been replaced become the sole property of SRAM.
2. Any other warranty claims not included in this statement are void. This especially includes any disassembly or assembly costs (for instance by the dealer), which shall not be covered by SRAM.
3. Warranty claims are only valid upon presentation of a proper proof of purchase.
4. Parts subject to normal wear and tear (for example brake sleeves, brake pads, chains etc.) and damage which is caused by improper use, specifically caused by disregard for our assembly and operating instructions, shall not be covered by this warranty. Furthermore, this warranty shall not cover damages caused by the use of parts of different manufacturers or otherwise which are not compatible or suitable for use with SRAM components.
5. The servicing of a valid warranty claim shall neither extend this warranty nor establish a warranty period.
6. If a defect is discovered, please contact the dealer where the bicycle or the SRAM component in question was purchased.

SPARE PARTS

You can find an extensive spare parts program in SRAM's Spare Parts List Model Year 2001 · Publ. Number 8501.

SRAM ORIGINAL PARTS

Installation of parts and accessories not originally intended could result in less than optimal performance and/or injury.

www.sram.com

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