

OFFICIAL SERVICE PROCEDURE

MY16 SPECIALIZED LEVO

BROSE MOTOR REMOVAL AND INSTALLATION

10 JUNE 2016



RIDER CARE

WHAT THIS MANUAL COVERS:

This service manual covers the removal and installation of the Brose motor drive unit on all Model Year 2016 Specialized Levo bicycles.

EXPECTED SERVICE TIME:

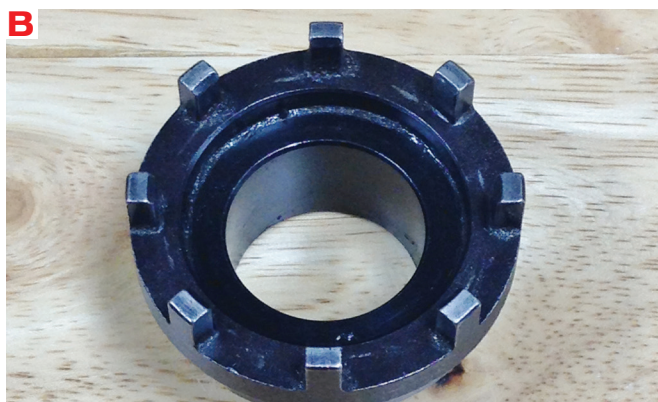
EST is the time that the entire service should take, assuming the mechanic has all proper tools, a clean and organized work area, no distractions, and no unforeseen problems.

Proficient: 30 minutes

First time: 60 minutes

TOOLS NEEDED:

- Allen Wrenches: 3, 4, 6, 8mm
- 2-Jaw external gear/pulley puller, 3"-4" in length **A**. Note that the jaw tips must be thin enough to fit behind spider
- 8-spline Octalink/ISIS-style BB tool (Park BBT-18, Shimano TL-UN98 or equivalent) **B**
- Wrench or socket and ratchet or breaker bar, to fit BB tool
- Needlenose or duckbill pliers
- Brose spindle cover (or 24mm socket with square opening covered with a plug or bolt) **C**
- Chain whip
- 13mm socket with extension and ratchet
- Toe strap
- Torque Wrench
- Rags, towels, cleaning agent (i.e. isopropyl alcohol), grease (Park, Phil's, or equivalent)

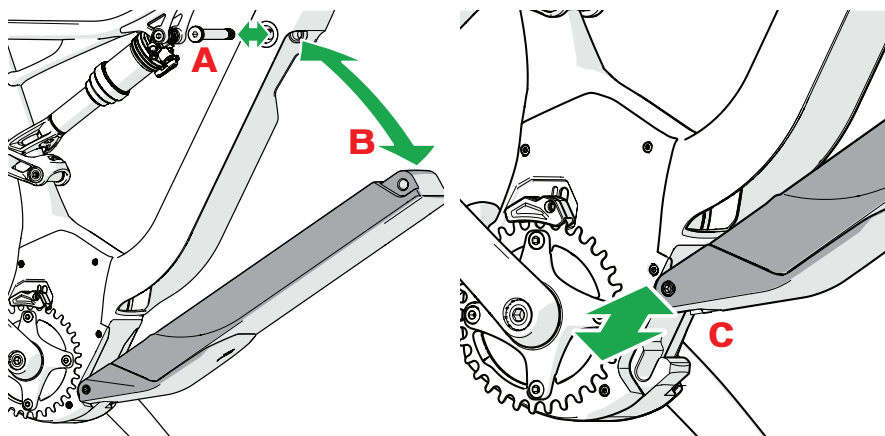


DISASSEMBLY

1. Remove wheels and battery

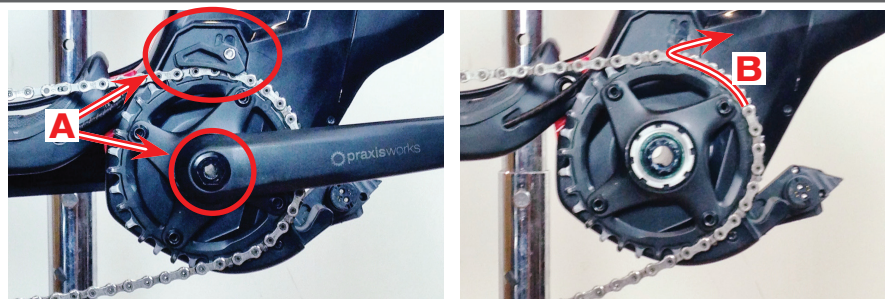
- Remove wheels
- Turn battery off
- Unplug harness from battery
- Remove battery axle and set aside **A**
- Rotate battery down **B**
- Slide cammed battery pin up to clear slot in frame **C**
- Set battery aside

Note: Always turn battery off before unplugging connector to avoid damaging wiring harness terminals



2. Remove crankarms and spider

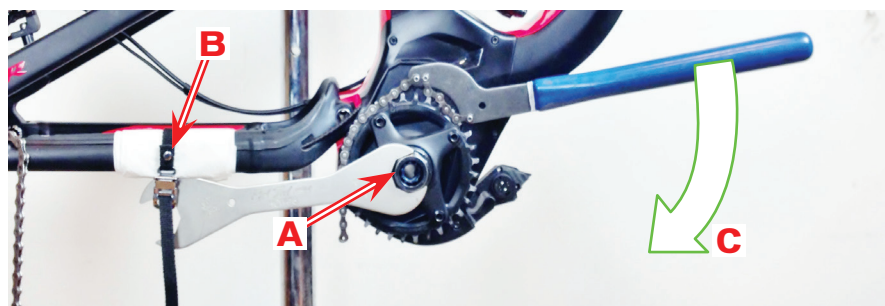
- Remove self-extracting crankarms and chainguide **A**
- Pull chain off chainring **B**
- Secure or remove chain



3. Remove spider locking:

- Place BB tool on locking **A**
- Attach wrench/socket and ratchet to underside of chainstay with padding and toe strap **B**
- While ensuring wrench does not slip, rotate chainring with chain whip clockwise **C**

Note: Locking is RH thread



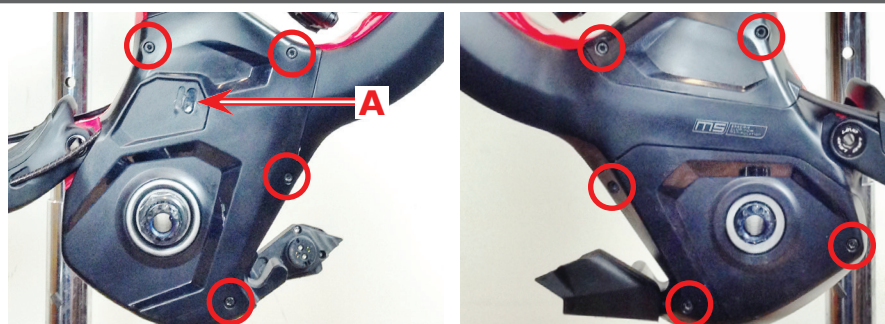
4. Remove spider

- Ensure Brose puller cap is in full contact with threaded portion of spider driver **A**
- Pull spider with gear puller, ensuring that puller arms are securely contacting spider on recessed areas between spider arms **B**



5. Remove all three motor covers

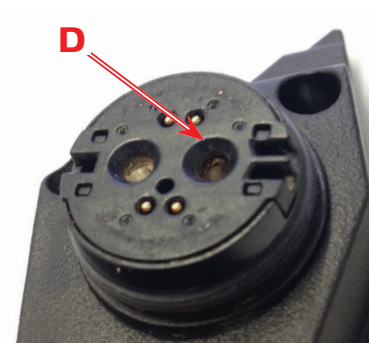
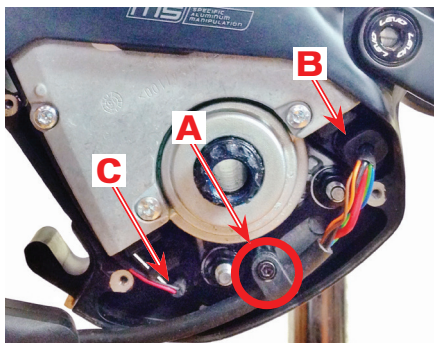
- Note threaded insert **A** for chainguide may fall out. Make sure it is retained if it does come out
- Note different length screws holding covers to frame



DISASSEMBLY, CONTINUED

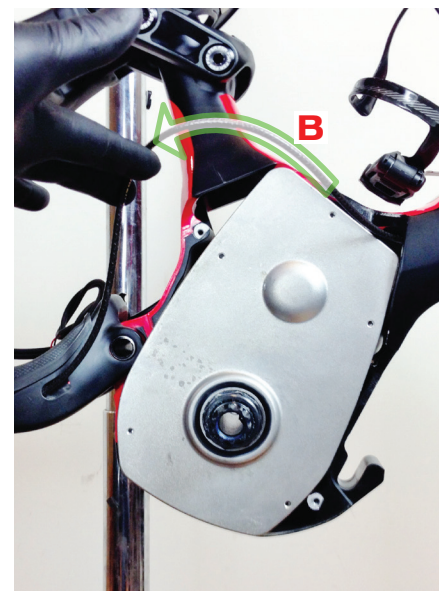
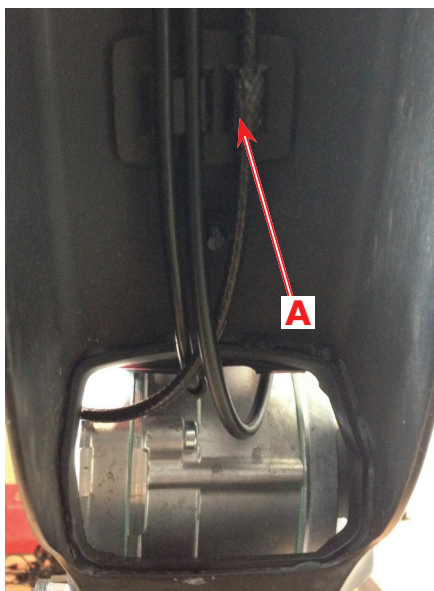
6. Disconnect wires from motor unit

- Remove 3mm harness support screw **A**
- Unplug and remove harness **B**, grasping plug securely with pliers when pulling
- Unplug speed sensor wire **C** and secure away from motor area
- Inspect harness contacts **D**; if there is any evidence of arcing (burnt female connector), it must be replaced



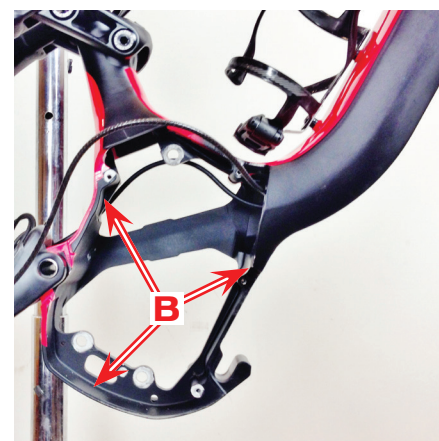
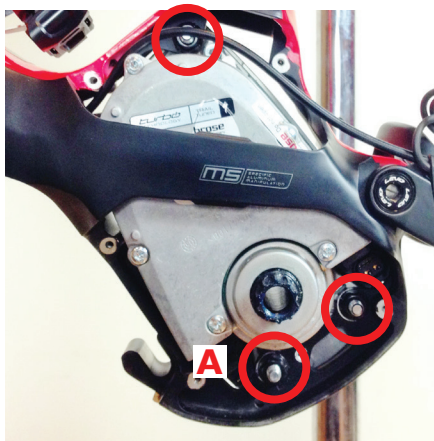
7. Prepare to remove motor unit from frame

- Unclip rear derailleur cable from all three cable guides in downtube **A**
- Pull enough cable from front towards rear to allow motor to clear cable **B**



8. Remove motor unit

- Remove three 13mm motor mount nuts **A**
- Pull motor out from frame from drive side
- With motor unit out, thoroughly clean inside of frame **B**

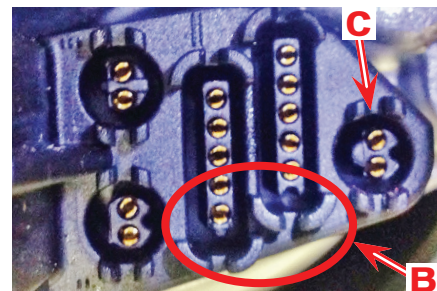


ASSEMBLY

9. Prep new motor for installation

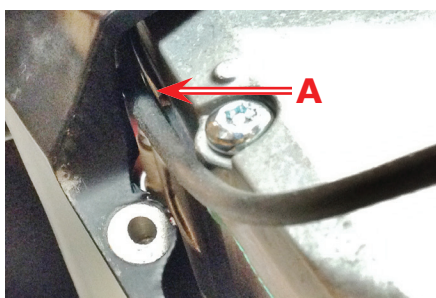
- Using pliers, remove blind plugs **A** from old motor unit
- Install blind plugs on new motor unit, ensuring they are in the proper terminals, orientation is correct, **B** and seals are in place (Speed sensor: **C**)

Note: Use of Levo without blind plugs installed can cause damage that is not covered by warranty.



10. Install motor in frame

- Insert motor unit in frame from the drive side
- Ensure that cables, brake line and speed sensor wire are not pinched **A**
- Install and tighten three 13mm nuts **B** to 30 Nm (265 in-lbf)

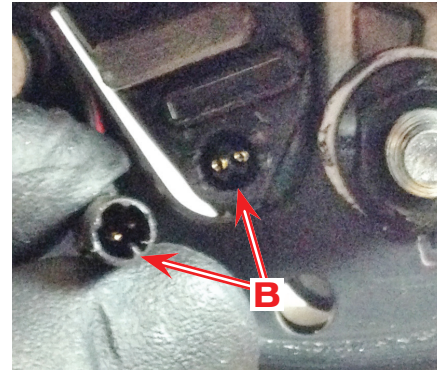
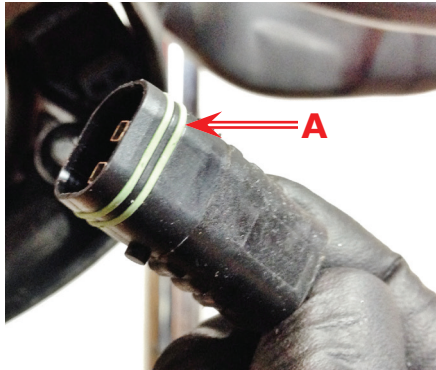


11. Install motor harness and speed sensor wire

- Inspect condition of wiring harness seals **A**
- Insert harness and speed sensors in motor
- Install harness support bracket and screw

Important:

- All plugs are keyed and directional **B**
- The motor plug takes a firm push when installing due to the dual O-ring seal **A**

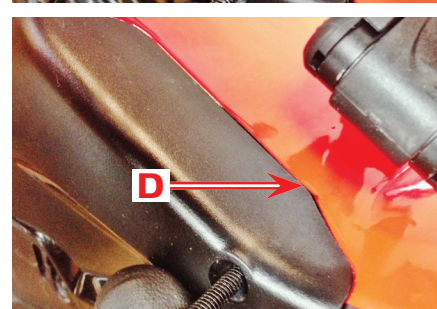
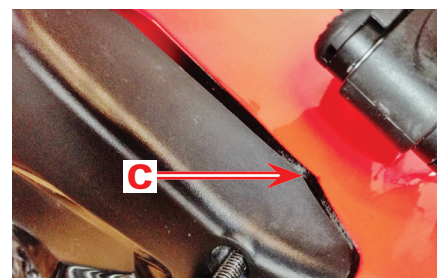
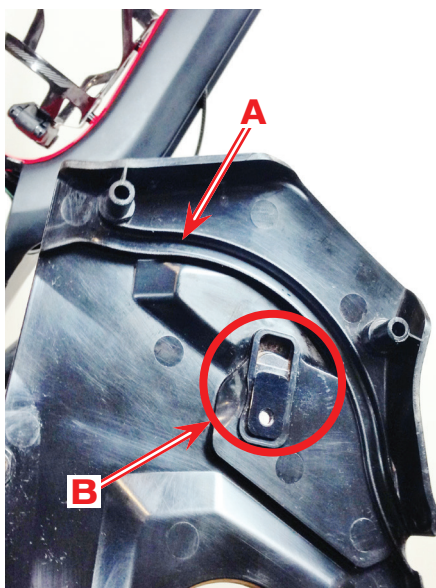


12. Install motor covers

- Installation of left side motor covers is reverse of removal in step 5
- When installing right side cover rear derailleur, cable must fit in groove on inside of right cover (**A**); adjust cable position with cable hanging from downtube

Notes:

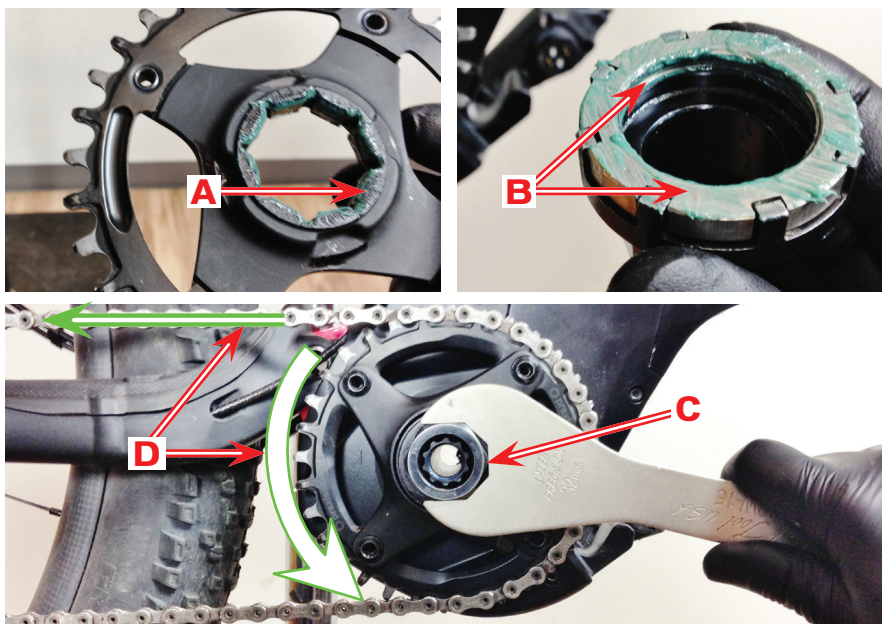
- Ensure that chainguide threaded insert is securely inserted in motor cover **B**
- If derailleur cable is not located in cable groove **A**, right side motor cover will not sit flush with frame
- **C**: Bad, Cable is not fully inserted
- **D**: Good



ASSEMBLY, CONTINUED

13. Install spider and chainring assembly

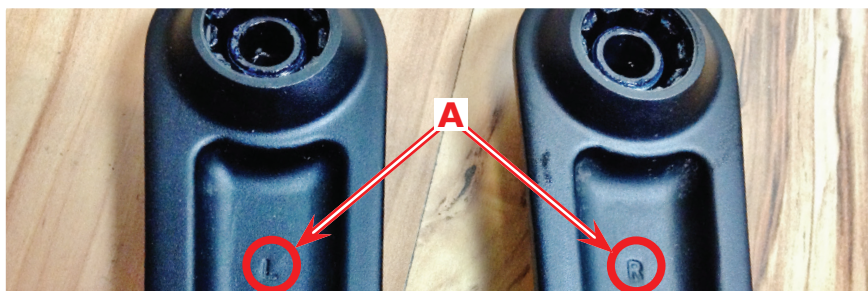
- Install rear wheel (and chain if removed) and shift derailleur to small cog
- Apply grease to inner faces of spider **A**
- Slide spider on to spider driver on motor
- Grease threads and inner face of spider locking **B**, then thread on to spider driver with splined BB tool
- Put chain on chainring
- Hold BB tool securely with wrench **C** (or socket/ratchet) and rotate rear wheel backwards **D** to tighten locking
- Tighten until spider is bottomed out



14. Install crankarms

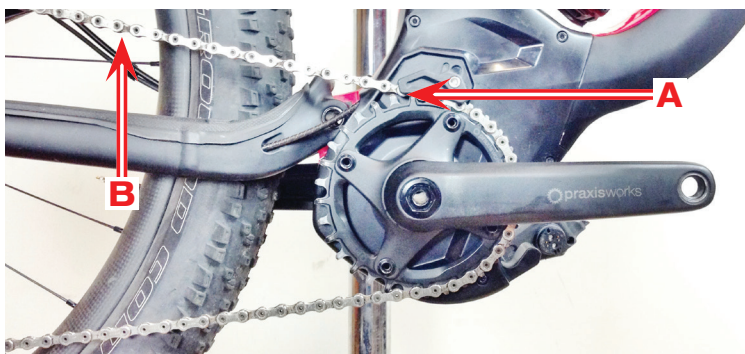
- Apply grease to threads and ISIS splines on crankarms
- Tighten crankarm bolts to 50 Nm (442 in-lbf) or until they bottom out

Important: ensure that right and left crankarms are installed on proper sides of bike **A**.



15. Install chainguide

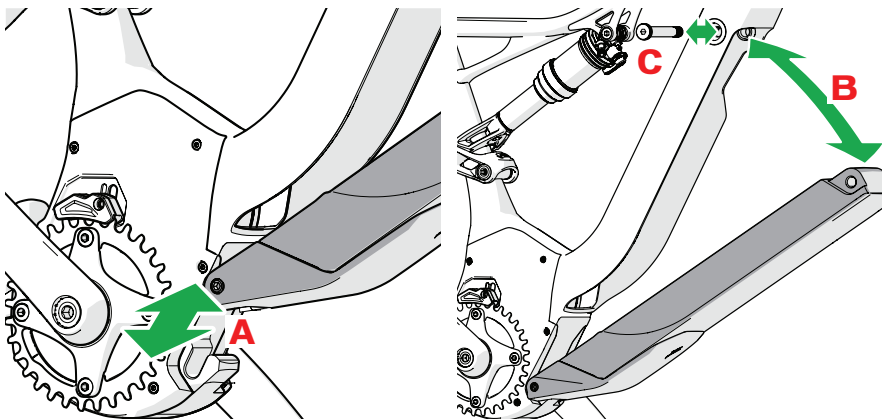
- If there was a metal shim with chainguide, set aside and install chainguide without it
- Chainguide should be as low as possible **A** without contacting chain in lowest (largest) gear **B** and with suspension bottomed out
- When adjusted to ideal position tighten chainguide bolt with 4mm allen wrench



16. Install battery and front wheel

- Make sure all cables are clipped into downtube cable guides with enough slack from frame to handlebar
- Slide battery pin into slot in frame **A**
- Rotate battery into place **B**; if there is resistance or battery does not fully insert into frame, inspect cable routing to ensure there is no cable interference
- Install battery axle **C** and tighten to 10 Nm (89 in-lbf)

17. Install front wheel and test ride



RESOURCES

For detailed technical information on Specialized Levo, please visit service.specialized.com and login with your shop's B2B credentials (or link from B2B site)
Select either Serial Number lookup or Product Finder **A**

WELCOME TO SERVICE.SPECIALIZED.COM

Easily find service parts, spare parts, and technical information for Specialized bicycles, Roval wheels, Command Post, cranks, pedals, and shoes.


SN LOOKUP

Lookup a bicycle's model year, name, and family by entering its serial number

WSBC95037CA15130

02/2014 MH

GO TO THE PRODUCT FINDER **A**




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On the Product Finder page type "Levo" in search field and select the model you are working with **B**

PRODUCT FINDER

B  Levo

Enter the name of a bike, wheel, Command Post, or shoe model below.
Click **FILTER**, and select filter(s) to refine the results.
Press **RESET** to remove all filters and start a new search.
Only the first 30 results are displayed. Refine the results until you find that one product!
Click on the tile to display associated tech specs, service parts, videos, tech docs, and more.

<p>2016 LEVO FSR COMP 6FATTIE</p> 	<p>2016 LEVO FSR EXPERT 6FATTIE</p> 	<p>2016 LEVO FSR S-WORKS 6FATTIE</p> 	<p>2016 LEVO FSR WOMEN'S COMP 6FATTIE</p> 
<p>2016 LEVO HT 29</p> 	<p>2016 LEVO HT COMP 6FATTIE</p> 	<p>2016 LEVO HT COMP FAT</p> 	<p>2016 LEVO HT WOMEN'S 29</p> 

Technical information will be displayed below the tabs **C**

- Original Specs
- Service items (with part numbers and photos)
- Documentation, manuals and technical bulletins
- Videos
- Firmware (when applicable)
- Turbo Family Support (Market-specific Turbo Retail Care experts)



C ORIGINAL EQUIPMENT SPECS SERVICE PARTS DOCUMENTS VIDEOS FIRMWARE UPDATES TURBO SUPPORT



2016 Levo FSR Comp 6Fattie

