INSTRUCTION MANUAL
Yamaha XV Rear-to-Front Wheel Conversion

Thank you for purchasing the ’81-83 Yamaha Virago rear-wheel-to front conversion kit!

This kit was designed to fit a ’81-83 (first-generation) Yamaha Virago XV with a shaft-drive, rear drum brake, and single front wheel disk brake. This kit allows the fitment of an OE 3x16” rear wheel in place of the OE 1.5x19” front wheel. The OE front wheel speedometer drive components are adaptable, but note that the actual speedometer speed will read faster than actual speed based on the smaller front tire OD.

Front tire recommendation is 120/90-16. A maximum front tire of 130/90-16 will just fit between the forks as long as the wheel is centered. Regardless of tire choice, ride and handling of the motorcycle will be different and it is up to the owner to determine if acceptable.

The OE 16” wheel modifications can be performed do-it-yourself style with a suitable cut-off and grinding wheel and a 7/16” drill bit or you may choose to take the wheel to a machine shop to perform the modifications. Once modified, however, the wheel cannot be re-used as a rear wheel.

REQUIRED

- ’81-83 Yamaha Virago XV 3x16” rear wheel
- 12 / 13 / 14 / 17 / 22 mm sockets and/or wrenches
- Torque wrench
- Needle nose pliers (to remove front axle cotter pin)
- Cut-off or body grinder with cut-off and grind wheels
- Philips screwdriver
- 30 / 32mm sockets or suitable OD tubing to use as bearing install driver
- Long drift to fit inside OE wheel bearings for removal
- Drill with 7/16” bit
- 1” wide masking tape
- Blue thread-locker (medium strength, removable)

PARTS INCLUDED

- One rotor adapter hub
- One drum filler cover
- One 6302 bearing
- One 6303 bearing
- Once 6303 bearing ID reducer
- Five grade 10.9 M10 bolts and washers
- Six grade 8.8 M8 bolts and washers

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Step #1
Remove tire from donor rear wheel and suitably degrease. Remove the original wheel bearings - a suggestion is tapping the drum side bearing in a bit to use the inner spacer sleeve to push the 2x drive side bearings a out bit. Once there is a little clearance, a long drift can be used thru the ID of the bearings/spacer sleeve to drive the opposite side bearings out. Because the bearings are being driven out via the ID races, they will be ruined and cannot be reused.

Step #2
Drive side: remove the 4 Philips screws that hold on the drive side outer trim ring and remove the ring (keep if you plan to reuse - your choice).

Step #3
Drive side: remove the 5x M10 bolts holding on the spline-drive hub and remove the hub (discard or save as a spare).

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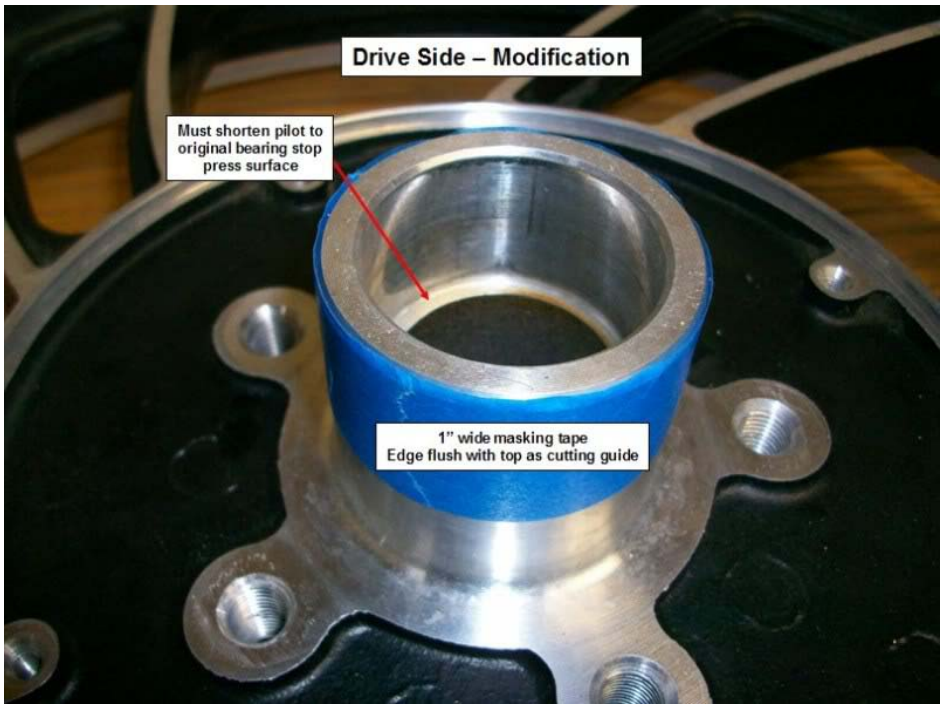
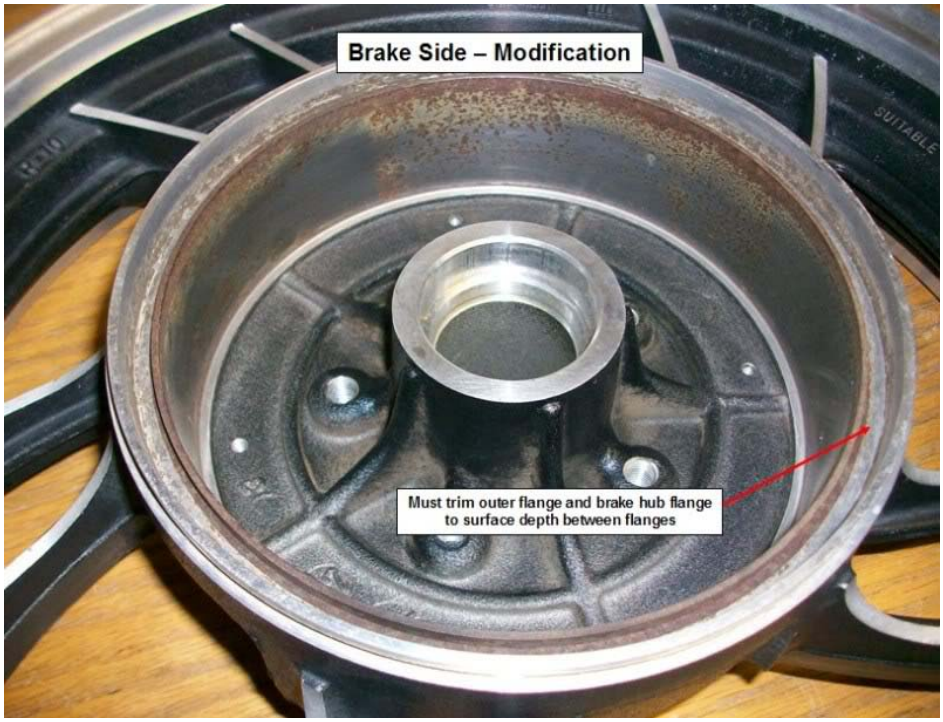
Drive Side Modification Plan



Drum Side Modification Plan



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Step #4

Remove drive side material. A body grinder with a 4.5" cutoff and grind wheels is suitable. This is a clearance cut and critical part mating surfaces aren't affected - hence lathe-type accuracy isn't required – but you may choose to have machined

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Step #5

Remove brake side material. Again a body grinder setup is sufficient. This is a clearance cut to the drum filler cover, but some fine tuning may need to be made once the wheel is installed (the drum filler cover doesn't turn with the wheel so it needs ~1-2mm clearance to the final surface).

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Step #6
Clearance drill the original spline-drive hub mounting holds with a 7/16" drill bit.

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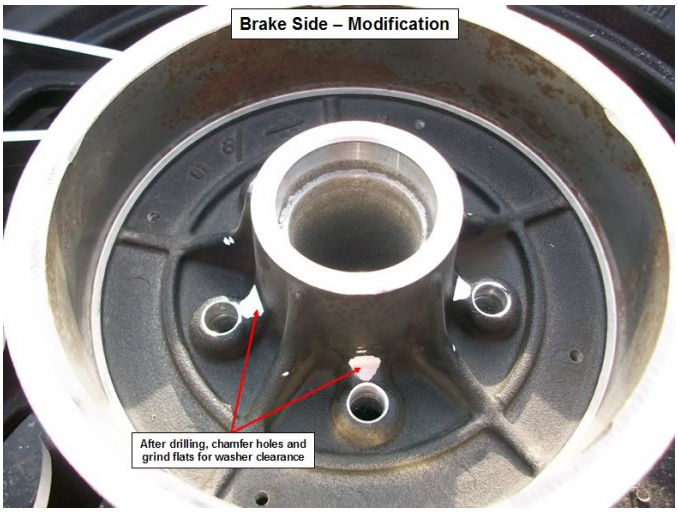
Step #7
Brake side hole cleanup: chamfers and washer-clearance grind a flat surface around the drilled hole webs. A body grinder fits if careful. Clean the wheel of all chips and grind dust.



Step #8
Install rotor hub adapter over drive side pilot and insert 5x M10 bolts/washers from drum side lightly torqued. Suggest a trial fit of the wheel assembly to the bike before final assembly. Final assembly of these bolts should include blue thread-locker and a final torque.

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Step #9

Suitably support bike on centerstand and position front wheel off the ground with suitable blocks under the front of the engine case.
Remove the front axle by:

- Removing cotter pin and LH axle nut
- Loosen axle pinch bolt on RH fork
- Slide axle out from the RH side
- Roll wheel forward to remove from brake caliper (may be easier to re-install if brake caliper is removed from LH fork – not necessary to break hydraulic line connection)
- Take care to remove and set-aside the speedo drive unit

Step #10

Remove brake rotor from OE 19" front wheel and clean for re-assembly. Lock tabs under original rotor bolts can be re-used instead of the M8 washers supplied in the kit. Noting assembly, carefully remove LH speedo seal and drive parts from the OE 19" front wheel and clean / re-grease for re-installation into the rotor hub adapter.

If you intend to reuse the inner bearing spacer sleeve, remove one of the front wheel bearings (similar to how removed from the donor rear wheel) and then extract inner spacer sleeve.

Or a new inner spacer sleeve can be made per Step #16.

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Step #11
Install rotor onto hub adapter with 6x M8 bolts/washers and lightly torque. Suggest a trial fit of the wheel assembly to the bike. Final assembly will include blue thread-locker and a final torque.

Step #12
Install flanged ID reducer into 6303 bearing and then install bearing into drum side of wheel with the flange of the ID reducer towards the center of the wheel. A press is ideal, but a 32mm socket and hammer works well.

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Step #13
Install 6302 bearing into rotor hub adapter. A press is ideal, but a 30mm socket and hammer works well.

It is not necessary to fit the speedo drive parts and seals for trial fitment unless desired.

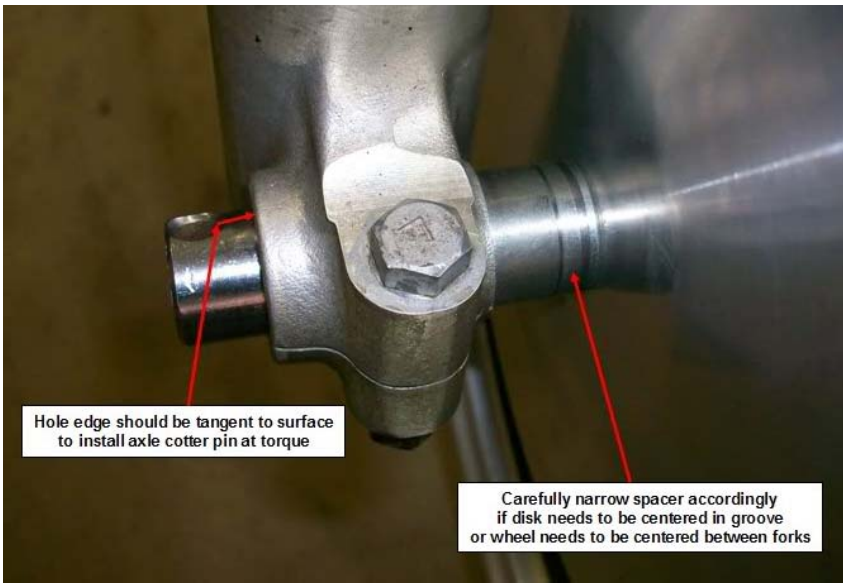
TRIAL FITMENT

Step #14
Loosely install drum filler cover over drum side of wheel and install wheel in reverse order of removal of Step #9. Take care to include the RH side axle spacer and align the speedo drive unit. Apply light torque to axle nut to establish and note final position of axle. Brake rotor should be centered in the LH fork groove.

DO NOT apply axle nut final torque without a bearing inner spacer sleeve installed (ref. Step #16)

The RH end of the axle and/or the RH axle spacer may need to be modified as shown to tune-in the wheel/rotor centering position and allow the axle nut to be final torqued and cotter pinned. Carefully modify the axle as required.

Rotate the wheel and address any drum filler cover contact issues with more drum side flange clearance grinding – the drum filler cover should remain stationary relative to the wheel and maintain a ~1-2mm clearance to the drum side flange on the wheel.



Step #15
When satisfied with fitment, remove rotor hub adapter by removing the five M10 bolts/washers. Additionally remove the six M8 bolts/washers to remove the brake rotor.

Refinish wheel, rotor adapter hub, and drum filler cover to personal preference. Suggest a minimum of a clear coat paint as the bare CNC aluminum finish will oxidize over time - you can choose to anodize, paint, or powdercoat to your color choice.

Mount the tire of choice to the wheel. Recommend loosely installing the rotor hub adapter (with rotor) to the wheel for final wheel balancing.

FINAL ASSEMBLY

Step #16
Apply a coating of grease and install a 65 mm long bearing inner sleeve spacer (modify original front inner spacer or use a ¾" OD x 1/16" wall tube) into center of wheel against the 6303 ID reducer flange.

Re-assemble the rotor hub adapter over the shortened drive side pilot.

Re-assemble five M10 bolts with blue thread-locker and torque in a criss-cross pattern to 40 Nm.

Re-assemble the brake rotor over the adapter hub pilot and secure with six M8 bolts/washers (or lock tabs) with blue thread-locker and torque in a criss-cross pattern to 20 Nm.

STEP #17
Re-assemble the wheel/tire assembly to the bike
As in Step #14.

Lightly torque the axle nut to seat axle.

Torque RH fork axle pinch bolt to 20 Nm

Torque axle nut to 107 Nm and insert cotter pin

Re-assemble brake caliper to fork (if removed).
Caliper to LH fork bolt torque is 25 Nm.
Caliper bolt nut torque is 20 Nm.

Lower bike to ground and test ride – use caution as the ride and handling dynamics of the bike will be changed. Perform a few medium brake stops and allow rotor to sufficiently cool. Check for any play of the hub adapter to the wheel and check six M8 rotor bolts to make sure they have retained the 15 ft-lb torque. If loose, wheel should be disassembled and all bolt and tap threads cleaned and degreased, thread-locker re-applied and bolts re-torqued to respective values.

No Warranty of any kind, express or implied, is made respecting this product. Because modifying an OE motorcycle can be dangerous, the buyer assumes all risk and liability whatsoever resulting from use.