

OWNER'S MANUAL

5-12 SPEED BICYCLES
3 SPEED & COASTERS

UNIVEGA BICYCLE

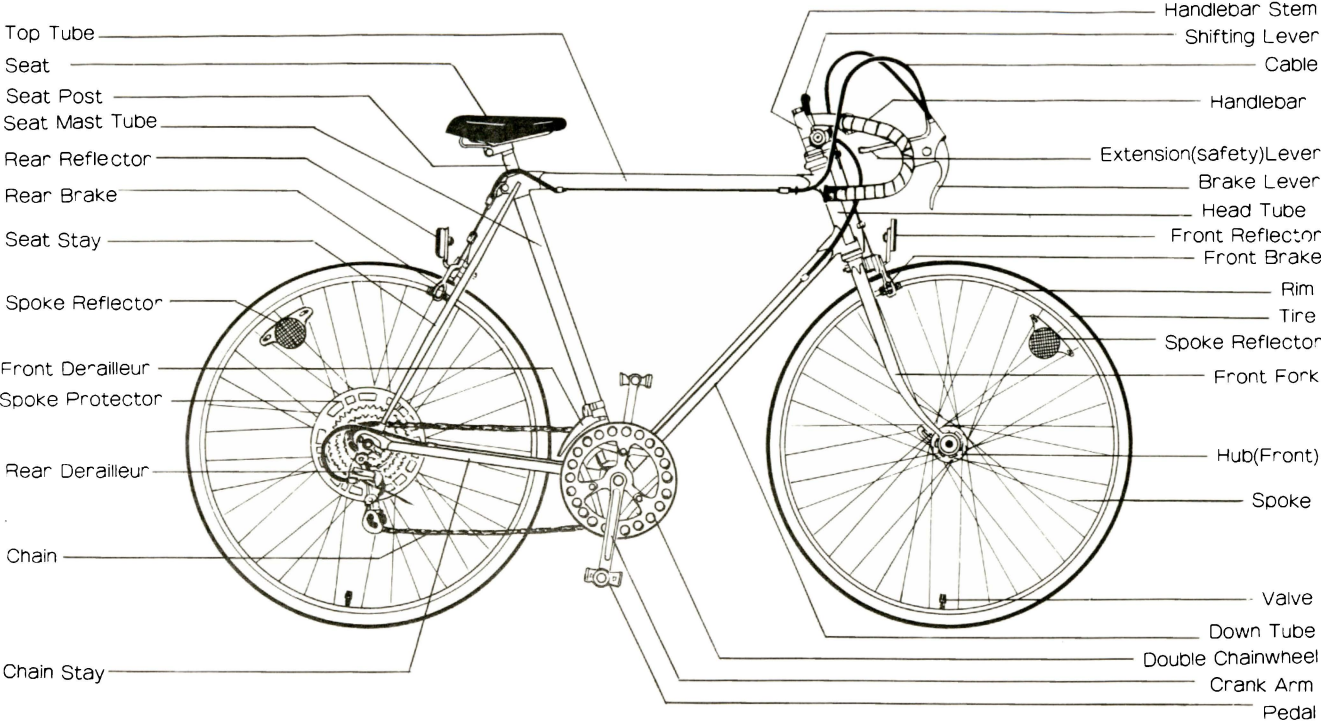


Those special components which are not described in this manual, please refer to the attached instruction of the specific parts respectively.

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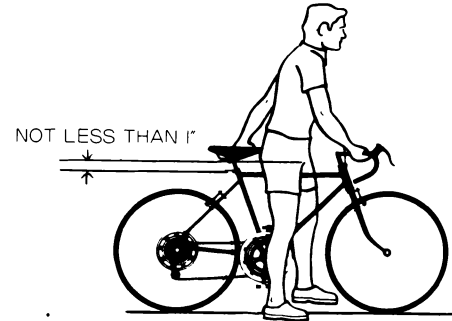
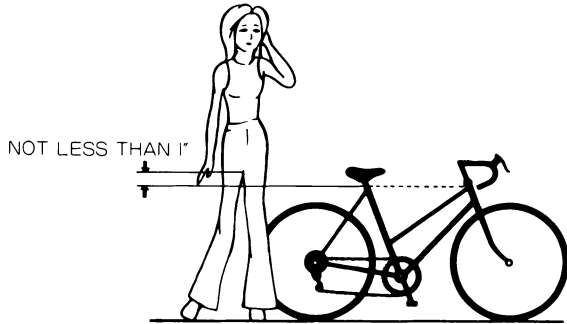
PARTS DESCRIPTION OF 10 OR 12-SPEED BICYCLE



IMPORTANT : Please carefully note the names of all parts of your bicycle for ease of assembly.

PROPER FRAME FIT

RIDER MUST BE ABLE TO STRADDLE BICYCLE WITH AT LEAST 1" CLEARANCE ABOVE THE HORIZONTAL BAR WHEN STANDING.



NOTE: Measurement for a female should be determined using a men's model as a basis.

OWNER'S RESPONSIBILITY

PROPER SIZE OF BICYCLE

FRAME SIZE	LEG LENGTH OF RIDER
17"	26" - 30"
18"	27" - 31"
19"	28" - 31"
21"	30" - 33"
22"	31" - 34"
23"	32" - 35"
25"	34" - 37"

1. **Bicycle Selection and Purchase** : Make sure this bicycle fits the intended rider. Bicycles come in a variety of sizes. Personal adjustment of seat and handlebars are necessary to assure maximum safety and comfort. Bicycles come with a wide variety of equipment and accessories. . . make sure the rider can operate them.

2. **Assembly** : Carefully follow all assembly instructions. Make sure that all nuts, bolts and screws are securely tightened.

3. **Fitting the Bicycle** : To ride safely and comfortably, the bicycle must fit the rider. Check the seat position, adjusting it up or down so that with the ball of rider's foot on the pedal in its lowest position the rider's knee is slightly bent.

Note : Specific charts illustrated at left detail the proper method of determining the correct frame size.

The manufacturer is not responsible for failure, injury, or damage caused by improper completion of assembly or improper maintenance after shipment.

Inspection & Maintenance

Inspection : Every week or two tighten all nuts and bolts. Check all hardware to see that no parts are worn or damaged, that there is correct fork and frame alignment, and that all components are seated in proper position.

1. Make frequent inspections of your bicycle to insure that all nuts, bolts and hardware items are tight and no parts are worn or damaged.
2. **Caliper Brakes :** Keep brake shoe adjusted to rim. Replace worn or missing shoes. Do not wax or oil rim. (Wipe oil off the rim before riding.)
 - 2-a. **Coaster Brake :** Be sure that brake operates smoothly without locking or grabbing when applied normally. Keep brake arm securely fastened to bicycle frame. Have checks made on brake periodically for wear on interior discs or shoes.
3. **Control Cables :** Replace worn or damaged cables. Do not kink cables. Cables stretch with use, adjust regularly.
4. **Front Fork :** Bent or damaged fork should be replaced. Never attempt to repair by straightening.
5. **Head Bearings :** Keep tight. The handlebar must turn freely.
6. **Front Wheel :** Keep axle nut tight. Wheel should be centered in fork. Keep wheel bearing adjusted and keep spoke tight and wheel in proper alignment.
7. **Cranks Bearing :** Crank assembly should turn freely without side play. Keep locknut tight and keep bearing clean and well adjusted.
8. **Cranks & Pedals :** Replace bent crank. Do not attempt to straighten. Replace pedals if bearings are tight or frozen and if thread is lost or badly worn.
9. **Sprockets :** Replace if sprocket teeth are bent or damaged. Keep sprocket tight on cranks.
10. **Rear Wheel :** Keep axle nuts tight and wheel centered in chain stays. Keep spoke tight and wheel properly aligned.
11. **Wheel Alignment :** Wheel should rotate smoothly without wobbling from side to side. Have it aligned if necessary. Keep axle nuts tight.

12. **Handlebar :** Adjust for your comfort and growth. Make sure insertion mark should remain in the frame. Tighten securely. Replace worn grips or tapes. Make sure they fit snugly.
13. **Chain :** Check frequently for damage and stretch, and readjust if necessary. Lubricate several times each season. Use a lightweight all - purpose oil, being sure to oil each link.
14. **Multiple Speed Derailleur units :** Shift lever only while pedaling. Keep units adjusted. Do not allow bicycle to fall on derailleur units.
15. **Seat Adjustment :** Adjust for comfort of rider. Be sure that insertion mark on seat post should remain in the frame. Securely tighten the binder bolt on the seat post clamp, and position the angle of seat for comfort of the rider. Securely tighten seat clamp until seat will no longer turn.
16. **Tire :** Make sure that tires are inflated according to pressure indication on tire side wall. A foot or frame pump should be used. Pressurized unregulated pumps should not be used. The tire should be properly seated in the rim and the fitting of the tire bead and rim bead should be checked.
17. **Reflectors :** Should be securely fastened and positioned for bicycle identification at night time from front, rear and lateral visibility. Damaged units should be promptly replaced.
18. **FRAME :** Immediately replace a bent or broken frame. Frame damage can cause excess stress or failure in other bicycle parts.

Caution In Wet Weather Riding

No brakes work as well under wet conditions as they do under dry conditions.

In rainy or wet weather, special precautions must be taken to insure safety in stopping. Proper adjustment and cable lubrication will help but the major precaution rests with you. Increased lever forces are required on wet or rainy weather and care must be exercised to maintain safety under these conditions. Ride slower than normal and apply your brakes sooner than normal conditions would require.

Bicycle Safety Riding.
Listed below are rules of cycling.

1. Observe all traffic regulations, red and green lights, one-way streets, stop signs, etc.
2. Keep to the right and ride in a straight line. Always ride in single file.
3. Have white light on front and danger signal on rear for night riding.
4. Have satisfactory signaling device to warn of approach.
5. Give pedestrians the right of way. Avoid sidewalks, otherwise use extra care.
6. Look out for cars pulling out into traffic. Keep sharp look-out for sudden opening of auto doors.
7. Never hitch on other vehicles, "stunt" ride or race in traffic.
8. Never carry other riders--carry no packages that obstruct vision or proper control of bicycle.
9. Be sure your brakes are operating efficiently and keep your bicycle in perfect running condition.
10. Slow down at all street intersections and look to right and left before crossing.
11. Always use proper hand signals for turning and stopping.
12. Don't weave in or out of traffic or swerve from side to side.
13. Before riding bicycle check your brakes.

----Always Ride Carefully ----

ASSEMBLY INSTRUCTIONS

IMPORTANT

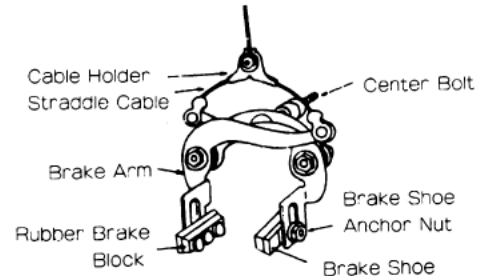
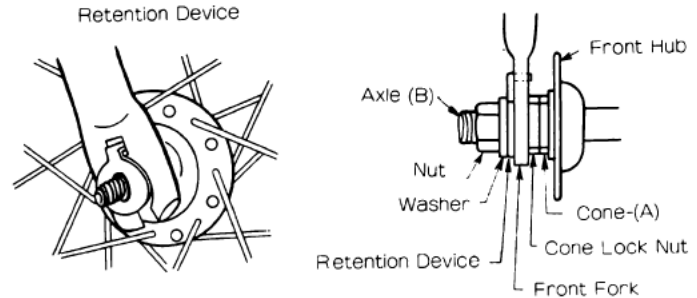
Remove bicycle from carton and carefully examine carton for loose parts before discarding. Turn bicycle upside down with front fork pointing forward, carefully unwind wrappings and parts attached to frame and set them aside. Be careful not to scratch frame or cut tire when removing above wrappings.

Have you recorded the model and serial number?

1. Attaching Front Wheel :

Remove axle nuts, washers and axle retention device from the ends of the axle. The axle cone bearing adjustment should permit smooth rotation of wheel. Cone locknut should be securely fastened against axle cone (A) to prevent loosening of cone. Place the front wheel between the fork blades with axle retention device on the axle (B) and the projecting prongs of the retention device securely fitting the slot in the fork. Reset locking washers and nuts on axle. Tighten axle nuts at both ends gradually and alternately in order to keep the wheel centered.

Caution : Front wheel must be installed with retention devices securely placed into slots of fork blades. This will ensure positive locking of front wheel to the front fork.

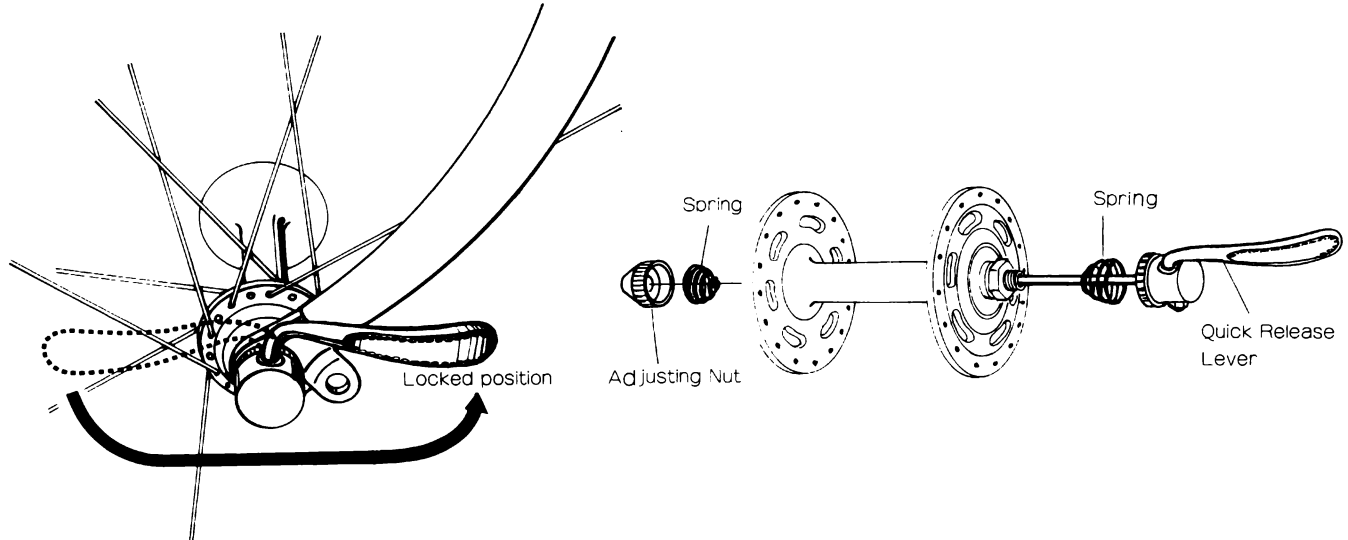


NOTE : On model bicycles fitted with sidepull or centerpull brakes inserting front wheel into fork may be tight fitting. In order to ease installation the following procedure is recommended. Unscrew brake shoes anchor nut and remove brake shoe. Upon completion of wheel insertion, reinstall brake shoe to its original position.

CAUTION : Tighten brake shoe anchor nut securely.

QUICK RELEASE WHEEL HUB.

The illustration below shows when quick release lever is fitted at the left hand side.



Great care should be taken when locking wheel into the frame using the Quick Release System in order to insure safe operation of your bicycle. First tighten the adjusting nut (see above illust,) in a clockwise direction while the quick release lever remains in an upright horizontal forward position. Next, move quick release lever 180° to upright horizontal rear position.

2. Attaching Handlebar Stem (With Stem Shifters) and Handlebar

Loosen expander bolt (1) so that expander wedge is not tight in bottom of handlebar stem (2). Install stem shifter on handlebar stem by sliding stem shifters on to stem (Illust. B). Be sure that levers face upwards and the cables are not twisted.

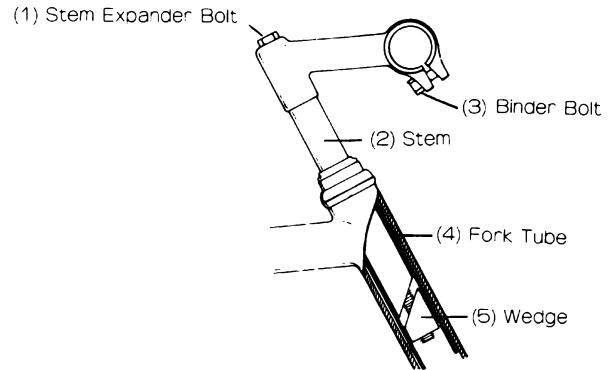
Then, securely tighten the binder bolt (3). Tighten stem shifters just enough to hold them in position near top of stem (tighten bolt 6). Tighten expander bolt (1) only making sure that dog on side of expander wedge is in the slots of the stem.

Insert stem (2) into fork tube (4) to the minimum insertion line of the stem. Align handlebar with front wheel and securely tighten expander bolt. (1)

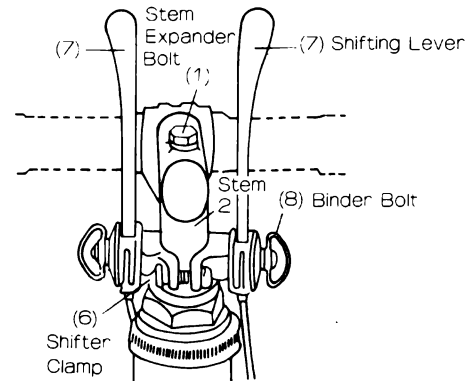
Caution: Extremely important to tighten to minimum 15 foot pounds torque (to use 6" adjustable wrench is recommended) tight enough so that when wheel is held between your legs and turn pressure is applied to handlebar, the handlebar will not move. **Caution** Do not over tighten. Over-tightening may cause the risk of injury to the rider. Now set stem shifters into position and tighten shifter clamp (6) and binder bolt (8) to prevent gear slippage.

Caution: A minimum insertion ring is marked on the handlebar stem and this marking should remain in the fork tube (4).

ILLUST. A



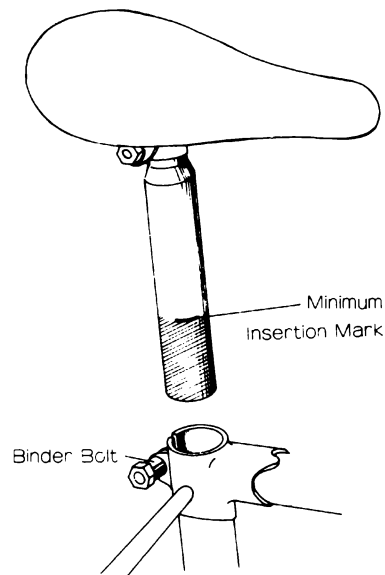
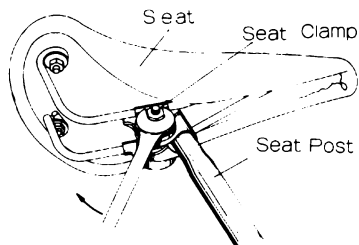
ILLUST. B



3. Attaching Seat.

Place the small end of the seat post into the clamp beneath the seat and tighten the clamp. Now, insert the seat post into the bicycle frame and adjust to the height of the rider.

Caution: Insert the seat post at least more than insertion mark on the seat post. Securely tighten seat post binder bolt / nut with about 15 ft.-lbs. by using 6"-8" wrench or allen key wrench. Test by grasping seat and attempt to turn. Keep tightening until seat will no longer turn.



4. Attaching Pedals.

Each pedal has a different thread. Forcing the wrong pedal into the wrong crank arm will destroy the threads in the crank arm. To prevent this error, insert "L" marked pedal to the left crank arm. Never try to force pedal axle into crank arm, because they can be inserted smoothly once the threads are correctly aligned with each other. Turn pedal axle counterclockwise and finger

tighten to insure proper matching of threads. Then tighten securely with wrench. Insert "R" marked pedal into right crank arm and turn pedal axle clockwise.

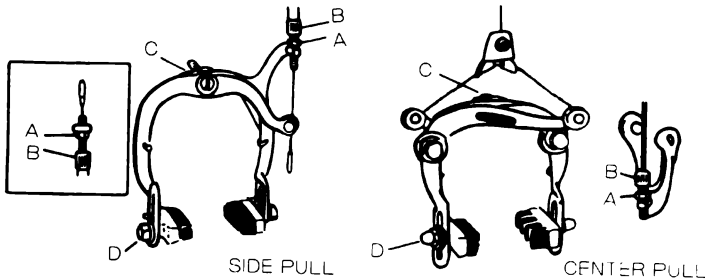
PEDAL MUST NOT BE RIDDEN WHEN LOOSE.

Note : Left & Right are determined from riding position on the bicycle.

5. Attaching and Adjustments of Caliper Brakes.

Caliper Brakes

The bicycle will be fitted with either centerpull or sidepull brakes. Both types of brakes are highly efficient when correctly adjusted.



Brake Adjustment

The correct adjustment of the brakes is when a minimum movement of the brake lever brings the brake blocks into contact with the rim. The brake should not be so closely adjusted that the brake blocks touch the rim when in the off position.

Sidepull Brakes.

The sidepull brake fine adjustment is made by the following procedure : –

1. Loosen lock nut A.
 2. Turn adjuster B to set blocks just clear of the rim.
 3. Tighten lock nut A.
 4. If one brake block is closer to the rim than the other, adjust this by tapping spring on the opposite side. For alloy brakes loosen rear nut and recentre.
 5. Tighten nuts D so that the brake blocks meet the rim squarely, and not touching the tire when the brake is applied.
- In the case of ladies' rear brakes, the cable enters the adjuster from below.

Centerpull Brakes.

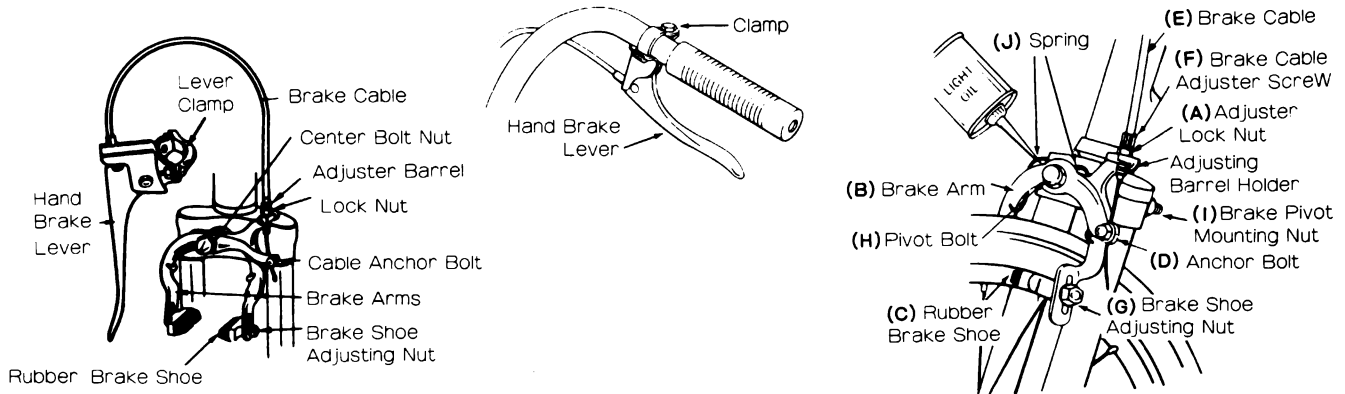
The centerpull fine adjustment is made by the following procedure : –

1. Loosen lock nut A.
2. Turn adjuster B to set blocks just clear of the rim.
3. Tighten lock nut A.
4. If one brake block is closer to the rim than the other, loosen the center bolt nut C and centralise the entire brake body. Then tighten nut C.
5. Tighten nuts D so that the brake blocks meet the rim squarely and not touching the tire when the brake is applied.

IMPORTANT : Do not ride this bicycle until brakes are checked and functioning properly.

CAUTION : Always apply rear brake first when stopping. For safe riding, always apply brakes before going into turns. Braking while turning can be dangerous due to unstable road conditions.

CALIPER BRAKE ADJUSTMENTS



- a. By hand, close both brake arms (B) together against the rim to make sure that the brake shoes (C) meet snugly against the wheel rim. If the brake shoes do not meet the wheel rim, loosen nut (G) and adjust position of brake block vertically so that it fits tightly against the wheel rim.
- b. After adjusting brake block position, screw brake cable adjuster screw (F) almost all the way down, again close both brake arms in this position, loosen anchor bolt (D) and pull control cable (E) downwards until no slack is left in the cable. Then retighten anchor bolt (D) securely.
- c. Work the lever and if you find the brake blocks do not grip the rim simultaneously and evenly, adjust the block tension by prying the shoes (C) slightly with a screw driver so that it will become even or prod brake arm spring (J) to equalize balance. Then lubricate where indicated. The rear hand brake is assembled and adjusted in the same manner. The rear caliper arms are inserted and positioned into the rear stay and positioned by fastening the pivot bolt through the rear stays. Again the brake blocks are pressed against the rim surface and the control cable pulled downward until there is no slack in the cable and the anchor bolt is then firmly tightened.

On both the front and rear brakes there is an adjusting cable screw which controls cable tension and adjusts the position of the brake shoe with respect to the rim surface.

Brake Cable Fitting

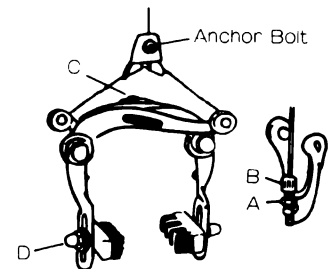
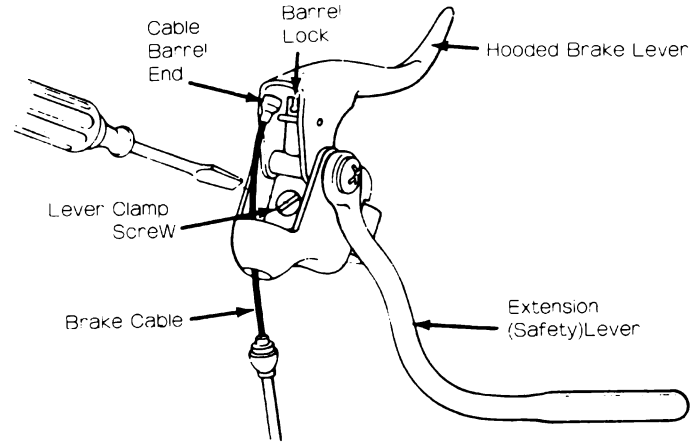
Connect the cable with barrel end into barrel lock in the brake lever firmly. Pull the other end of the cable through the cable hanger, thence insert into the anchor bolt and tighten at right position so that the brake works perfectly. Be sure that the longer cable to be fixed to the right lever (rear brake) and shorter cable to the left (front brake).

Extension Lever Adjustments

Dual Position Extension (Safety) Levers Racing Handlebars.

Lever marked "F" or "LH" mounts on left handlebar. Lever marked "R" or "RH" mounts on right handlebar. Slightly loosen lever clamp screws and slide clamps onto handlebars. Mount approximately in position on the handlebars. Connect barrel end on cable to barrel lock in brake lever. If additional cable slack is required loosen anchor nut of cable holder and pull cable up.

Refer to side or center pull brake adjustment. Page 10.



Brake Maintenance

BRAKE PAD

Rubber brake pad will wear out in normal usage and will have to be replaced. These are available at your dealer. When replacing, make certain that the closed end of the brake shoe is pointing towards the front of the bicycle. Before final tightening of the brake shoe bolt, check the alignment of the brake pad with the wheel rim. If set too high, the pad can rub against the tire sidewall. If set too low, the brake pad can slip under the rim and foul the spokes.

If the brake pads do not fit squarely against the rim with equal distance on both sides, first check the position of the wheel, making certain that the wheel is correctly centered within the frame drop-outs. If the brake arms are still offset in relationship to the rim, loosen the brake center-bolt, re-position the brake and re-tighten.

BRAKE CABLE

Occasionally, due to brake cable stretch and to brake pad wear, you will find it necessary to tighten the brake cables. Minor adjustment can be done by turning the adjusting barrel, which is located either at the end of the cable housing or on top of the brake levers. Major adjustment of the cable length is made at the brake body by loosening the anchor bolt and pulling more of the cable through it.

While doing any brake work, you will find it helpful to release the brakes by the quick release mechanism.

Don't forget however, to reset the release mechanism when you are finished.

Tighten all brake nuts and bolts.

Check brake cables for fraying or kinking and replace when worn or frayed. If cables stick—squirt a drop or two of oil where the cable enters the housing.

Test brakes by squeezing brake levers. before riding.

IF YOU FIND IT DIFFICULT TO DO THE BRAKE FITTING AND ADJUSTMENT, IT IS RECOMMENDED THAT THE WORK BE DONE BY A QUALIFIED BICYCLE MECHANIC.

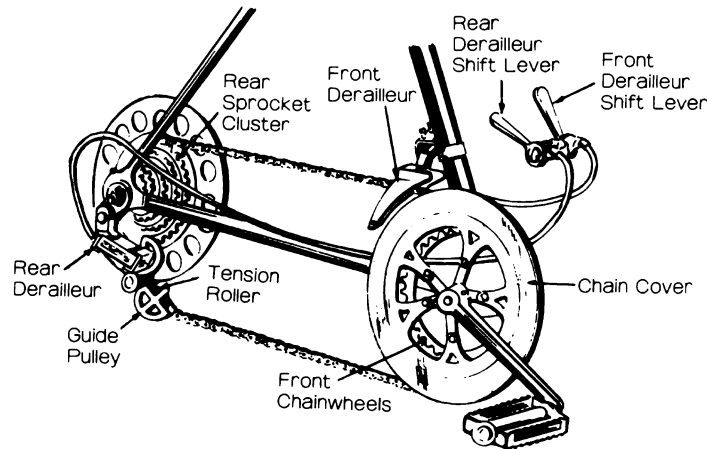
6. Multiple Speed Derailleur Unit

Shimano or Sun-Tour derailleur systems utilize the same method of adjustments. However, the location of adjusting screws vary from model to model. Attached to the bicycle frame, you will find a service instruction pamphlet issued by the manufacturer of the derailleur on the bicycle. This pamphlet clearly illustrates the location of all adjusting screws and adjusting instructions.

Caution: Due to the requirements for special tools, it is recommended that major adjustments be given to a qualified bicycle mechanic.

Adjusting the Rear Derailleur :

The rear derailleur mechanism for 5 or 10 speed bicycles should be in adjustment when you receive it, so that the chain will engage on all five rear sprockets when the shift is placed in the five different speed positions. To check the gears, hold the rear part of the bicycle off the ground, so that the wheel moves freely. Then while turning the right hand pedal forward, put the shift lever in the five positions. When the gears are in proper adjustment, the shifting mechanism which guides the chain back and forth should locate the chain so that it is on the proper gear. Same execution applies incase of 6-12 speed. However, numbers rear sprocket changes into 6 speed.



HOW TO SHIFT DERAILLEUR BICYCLES

On 5-6 speed bicycle, the rear sprockets with different teeth numbers are fitted in parallel row and transfer the chain on sprockets by operating the shift lever during driving, thus changes the gear ratio into 5-6 steps.

On 10-12 speed bicycle there is two row of front chainwheels and also to be shifted by operating the front derailleur. This means in compliance with different row of rear sprocket, different speed obtainable as 2x5 steps.

For 15-18 speed bicycle there is 3 row of front chainwheels and consequently can obtain 3x5 -- 3x6 steps. The shift lever for the rear derailleur is fitted at right hand side of bicycle and the shift lever for front derailleur locate at the left hand side.

As you may see from the Gear Chart on Page 21, as smaller as number of teeth of rear sprocket (smaller diameter) and/or as larger as number of teeth of front chainwheel (larger diameter) on which the chain hung on will result "High" Gear ratio and in case of opposit way the Gear ratio will become "Low".

The rear sprockets are fixed in parallel row in such a manner as smaller one in outside and large one at inner side. The chainwheels are fixed larger one at outside and smaller size one at inside. Consequently, when you want high Gear ratio for high speed driving or down hill driving, shift the derailleur of front and rear to outside, and in case of climbing hill or against wind driving shift both sprockets into inner sides by that the Gear ratio become Low and secure easy or smooth driving. The most cleaver way in to select most suitable ccombination of Gear ratio by operating two levers so as to fit to the road condition or physical strength.

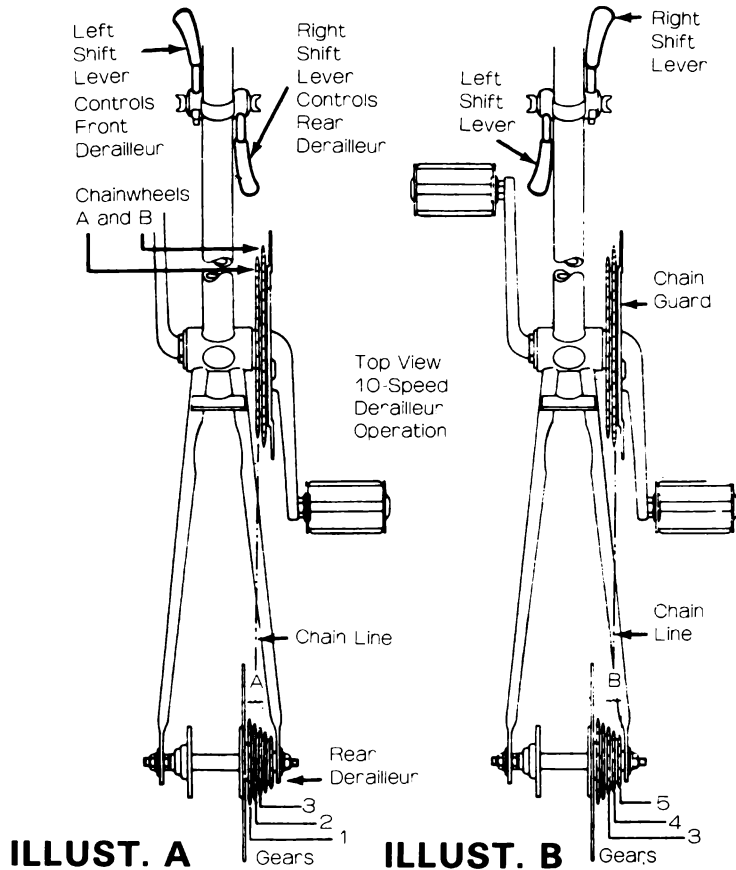
The illustrations "A" and "B" on the following page are the instance in case of 10 Speed.

The shifting examples of 10 speed derailleur are : Starting on level ground in medium gear (B-3), as momentum is built up shift gear lever back to (4) next to highest gear. When you feel top speed is reached with combination of (B-4) shift to (5) which is maximum high gear. For low gears, shift left lever forward onto small front chainwheel, and shift right lever to (3) which is the combination of a series of low gears (A-3). If pedaling is too difficult in (A-3), then shift to (A-2) next low gear. If pedaling is still too difficult, then shift to maximum low gear.

In case of 12 Speed the same operationg method as above will be applied and prevent impropriety caused by too far inclined angle of the chain.

IMPORTANT: TO AVOID DAMAGE, OBSERVE THESE FOUR PRECAUTIONS.

1. REDUCE PEDALING PRESSURE WHILE SHIFTING.
2. SHIFT ONLY WHEN PEDALS & WHEELS ARE IN MOTIN.
3. NEVER BACK - PEDAL WHILE SHIFTING GEARS.
4. NEVER FORCE THE SHIFT LEVERS.

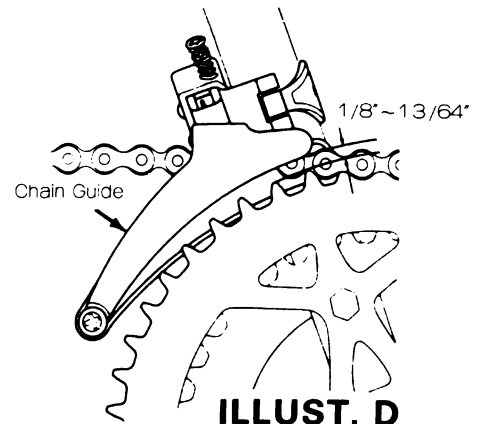
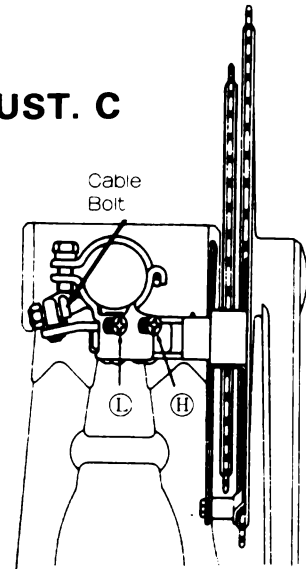


ILLUST. A

ILLUST. B

**Illust. A and B are shifting
Example of 10 speed
Refer to page 15**

ILLUST. C



ILLUST. D

DERAILLEUR CABLE ADJUSTMENTS

Cable should be routed so it will not bind and will be free to operate smoothly inside cable housing. Move control lever forward, loosen cable attachment and retighten after slack is removed from cable. Check operation on control throughout range of travel to be sure that control permits complete movement. Reposition cable in clamp if necessary to permit adequate movement. **LIMIT STOPS**: Limit stops are provided to keep derailleur from overshifting the chain past sprockets or chainwheels. The exact location of these stops varies with the make. Refer to individual illustrations for locations. The low speed adjustment stop is made by "L" and high speed stop by "H" in all of the drawings of specific derailleur. The high speed limit stop on rear derailleur controls shifting onto the small high speed sprocket. Chain will be permitted to come out past the small sprocket and lodge between sprocket and frame if high speed stop (H) doesn't stop the derailleur soon enough. The chain won't shift onto small high speed sprocket if high speed stop (H) is screwed in too far. Similarly, low speed stop (L) should prevent chain from shifting past large sprocket and lodging between hub flange and low speed sprocket. Derailleur cage may also shift into the wheel and catch spokes if incorrect. The chain may not move onto large sprocket if low speed stop screw (L) is screwed in too far. Since the chain is usually slightly out of line, stops for rear derailleur should be adjusted so they operate correctly regardless of the position of the front derailleur. Limit stops for front derailleur operate like those on the rear. Check operation carefully with the bicycle on a stand to be sure that all gears can be easily engaged.

DERAILLEUR MAINTENANCE

All derailleur parts and controls should be lubricated frequently. Aluminum derailleur parts can corrode and prevent free, easy movement. Steel will, of course, rust if not properly protected and lubricated. Control cables and housings are susceptible to rust, which can prevent smooth shifts. Cable wear may make it necessary to adjust the cable before all gears can be engaged. Many parts of the derailleur may be obtained and installed individually; however, it may be more desirable and sometimes less expensive to install a complete new derailleur assembly.

FURTHER INSTRUCTION: PLEASE REFER TO THE MANUFACTURERS INSTRUCTION PAMPHLET.

ADJUSTMENT OF FRONT DERAILLEUR CABLE (10 OR 12-SPEED BICYCLES)

Pull the wire through cable inlet to cable bolt and cable nut and tighten. Adjust the adjusting bolt (L) until the chain guide comes to the right on the small chainwheel. (ref. to Illust. C on page 16)

Change the lever from small chainwheel to large chainwheel and adjust the adjusting bolt (H). (ref. to Illust. C on page 16)

WARNING : Make sure the adjustment is such that the chain cannot be derailed completely off to the left of the inside chainwheel or completely off to the right of the outside large chainwheel.

FRONT DERAILLEUR TROUBLE CHART.

Condition (1) : Chain does not stay on large chainwheel.

Cause (1) : High gear adjusting bolt is out of adjustment.

Cause (2) : Wire has stretched or loosened.

Remedy (1) : Readjust high gear adjusting bolt properly.

Remedy (2) : Tighten wire to correct tension.

Condition (2) : Chain does not shift, onto large chainwheel.

Cause (1) : High gear adjusting bolt is out of adjustment.

Cause (2) : Wire has stretched or loosened.

Remedy (1) : Readjust high gear adjusting bolt properly.

Remedy (2) : Tighten wire to correct tension.

Condition (3) : Abnormal noise.

Cause (1) : Improper installation of chain and guide plate.

Cause (2) : Improper adjustment.

Remedy (1) : Reinstall properly. Loosen the clamp nut to open the clamp, then fit it around the tube at the proper position. Retighten nut to secure it in place, secure the clamp bolt on the other side very tightly.

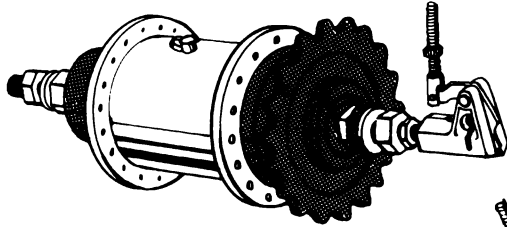
Remedy (2) : Arrange the guide plate and chainwheels in parallel.

Remedy (3) : Adjust the chainwheel teeth and guide plate to the proper clearance. (Refer to Illust. D on page 16)

Remedy (4) : Readjust the adjusting bolt H or L.

7. 3-Speed Hub

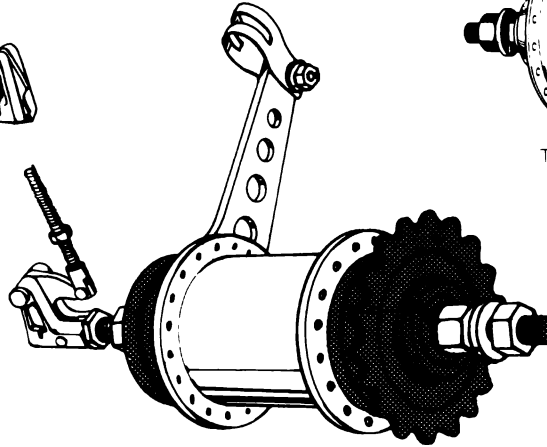
"Shimano" 3-Speed Hub



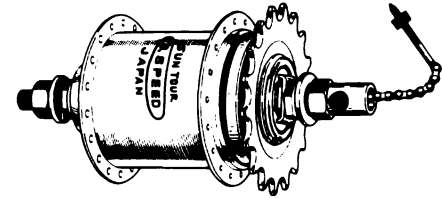
Trigger Control Lever

Alternatively:
Grip Control Lever

"Shimano" 3-Speed
Coaster Hub



"Sun Tour" 3-Speed Hub



Trigger Control Lever

The new hub must be oiled before use through lubricator on the hub shell. Afterwards add one or two drops of oil at least every month.

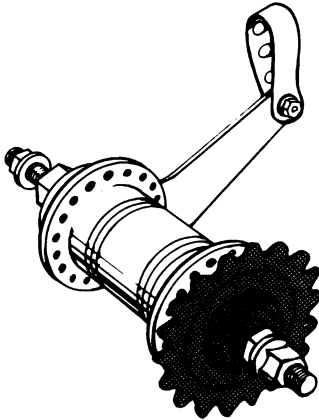
The internal mechanism of above hub is quite complicated and we recommend you bring the bicycle to a qualified bicycle mechanic whenever you get in trouble with the hub.

Please read carefully the manufacturer's instructions attached to each bicycle for detailed information and maintenance.

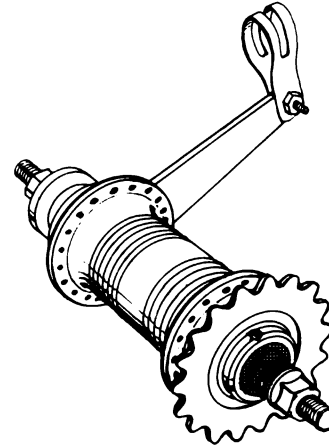
8. Coaster Hub

Single Speed

"Shimano" Coaster Hub



"NK" Coaster Hub



The new hub must be oiled before use through lubricator on the hub shell . Afterwards add one or two drops of oil at least every month.

The internal mechanism of above hub is quite complicated and we recommend you bring the bicycle to a qualified bicycle mechanic whenever you get in trouble with the hub.

Please read carefully the manufacturer's instructions attached to each bicycle for detailed information and maintenance.

TECHNICAL DATA FOR YOUR CONVENIENCE

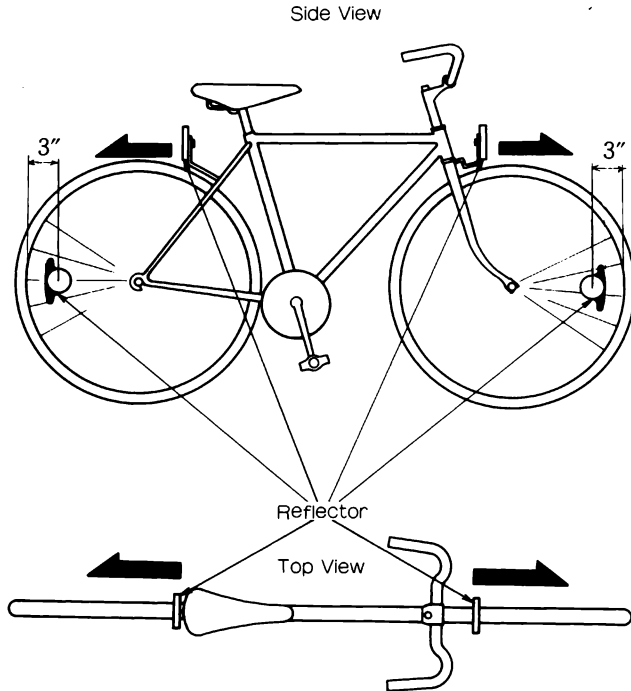
GEAR CHART FOR 26" WHEEL

TEETH REAR SPROCKET	Number of teeth, Chainwheel (large front sprocket)														
	36	38	40	42	44	45	46	47	48	49	50	51	52	53	54
14	66.9	70.6	74.3	78.0	81.7	83.6	85.4	87.3	89.1	91.0	92.9	94.7	96.6	98.4	100.3
15	62.4	65.9	69.3	72.8	76.3	78.0	79.7	81.5	83.2	84.9	86.7	88.4	90.1	91.9	93.6
16	58.5	61.8	65.0	68.3	71.5	73.1	74.8	76.4	78.0	79.6	81.3	82.8	84.5	86.1	87.5
17	55.1	58.1	61.2	64.2	67.3	68.8	70.4	71.9	73.4	74.9	76.5	78.0	79.5	81.1	82.9
18	52.0	54.9	57.8	60.7	63.6	65.0	66.4	67.9	69.3	70.8	72.2	73.7	75.1	76.6	78.0
19	49.3	52.0	54.7	57.5	60.2	61.6	62.9	64.3	65.7	67.1	68.4	69.8	71.2	72.5	73.9
20	46.8	49.4	52.0	54.6	57.2	58.5	59.8	61.1	62.4	63.7	65.0	66.3	67.6	68.9	70.2
21	44.6	47.0	49.5	52.0	54.5	55.7	57.0	58.2	59.4	60.7	61.9	63.1	64.4	65.6	66.9
22	42.5	44.9	47.3	49.6	52.0	53.2	54.4	55.5	56.7	57.9	59.1	60.3	61.5	62.6	63.8
23	40.7	43.0	45.2	47.5	49.7	50.9	52.0	53.1	54.3	55.4	56.5	57.6	58.8	59.9	61.0
24	39.0	41.2	43.3	45.5	47.7	48.8	49.8	50.9	52.0	53.1	54.2	55.3	56.3	57.4	58.5
25	37.4	39.5	41.6	43.7	45.8	46.8	47.8	48.9	49.9	51.0	52.0	53.0	54.1	55.1	56.2
26	36.0	38.0	40.0	42.0	44.0	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0	54.0
27	34.7	36.6	38.5	40.4	42.4	43.3	44.3	45.3	46.2	47.2	48.1	49.1	50.1	51.0	52.0
28	33.4	35.3	37.1	39.0	40.9	41.8	42.7	43.6	44.6	45.5	46.4	47.4	48.3	49.2	50.1
29	32.3	34.1	35.9	37.7	39.4	40.3	41.2	42.1	43.0	43.9	44.8	45.7	46.6	47.5	48.4
30	31.2	32.9	34.7	36.4	38.1	39.0	39.9	40.7	41.6	42.5	43.3	44.2	45.1	45.9	46.8
31	30.2	31.9	33.5	35.2	36.9	37.7	38.6	39.4	40.3	41.1	41.9	42.8	43.6	44.5	45.3
32	29.3	30.8	32.5	34.1	35.8	36.6	37.4	38.2	39.0	39.8	40.6	41.4	42.3	43.1	43.9
33	28.4	29.9	31.5	33.1	34.7	35.5	36.2	37.0	37.8	38.6	39.4	40.2	41.0	41.8	42.5
34	27.5	29.1	30.6	32.1	33.6	34.4	35.2	35.9	36.7	37.5	38.2	39.0	39.8	40.5	41.3

GEAR CHART FOR 27" WHEEL

TEETH REAR SPROCKET	Number of teeth, Chainwheel (large front sprocket)														
	36	38	40	42	44	45	46	47	48	49	50	51	52	53	54
14	69.4	73.3	77.1	81.0	84.9	86.8	88.7	90.6	92.6	94.5	96.4	98.4	100.3	102.3	104.1
15	64.8	68.4	72.0	75.6	79.2	81.0	82.8	84.6	86.4	88.2	90.0	91.8	93.6	95.4	97.2
16	60.8	64.1	67.5	70.9	74.3	76.0	77.6	79.3	81.0	82.7	84.4	86.1	87.8	89.4	91.1
17	57.2	60.4	63.5	66.7	69.9	71.5	73.1	74.6	76.2	77.8	79.4	81.0	82.6	84.2	85.8
18	54.0	57.0	60.0	63.0	66.0	67.5	69.0	70.5	72.0	73.5	75.0	76.5	78.0	79.5	81.0
19	51.2	54.0	56.8	59.7	62.5	64.0	65.4	66.8	68.2	69.6	71.1	72.5	73.9	75.3	76.7
20	48.6	51.3	54.0	56.7	59.4	60.8	62.1	63.5	64.8	66.2	67.5	68.9	70.2	71.6	72.9
21	46.4	48.9	51.4	54.0	56.6	57.9	59.1	60.4	61.7	63.0	64.3	65.6	66.9	68.1	69.4
22	44.2	46.6	49.1	51.5	54.0	55.2	56.5	57.7	58.9	60.1	61.4	62.6	63.8	65.0	66.3
23	42.3	44.6	47.0	49.3	51.6	52.8	54.0	55.2	56.3	57.5	58.7	59.9	61.0	62.2	63.4
24	40.5	42.8	45.0	47.3	49.5	50.6	51.8	52.9	54.0	55.1	56.3	57.4	58.5	59.6	60.8
25	38.9	41.0	43.2	45.4	47.5	48.6	49.7	50.8	51.8	52.9	54.0	55.1	56.2	57.2	58.3
26	37.4	39.5	41.5	43.6	45.7	46.7	47.8	48.8	49.8	50.9	51.9	53.0	54.0	55.0	56.1
27	36.0	38.0	40.0	42.0	44.0	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0	54.0
28	34.7	36.6	38.6	40.5	42.4	43.4	44.4	45.3	46.3	47.2	48.2	49.2	50.1	51.1	52.1
29	33.5	35.4	37.2	39.1	41.0	41.9	42.8	43.8	44.7	45.6	46.6	47.5	48.4	49.3	50.3
30	32.4	34.2	36.0	37.8	39.6	40.5	41.4	42.3	43.2	44.1	45.0	45.9	46.8	47.7	48.6
31	31.4	33.1	34.8	36.6	38.3	39.2	40.1	41.0	41.8	42.6	43.5	44.4	45.2	46.2	47.0
32	30.4	32.1	33.8	35.4	37.1	38.0	38.8	39.7	40.5	41.3	42.2	43.0	43.9	44.7	45.6
33	29.5	31.1	32.7	34.4	36.0	36.8	37.6	38.5	39.3	40.1	40.9	41.7	42.5	43.4	44.2
34	28.6	30.2	31.8	33.3	34.9	35.7	36.5	37.3	38.1	38.9	39.7	40.5	41.3	42.1	42.9

9. Reflectorization



The Bicycle comes equipped with mounting reflector brackets (or When newly mounting). Carefully follow mounting instruction listed below.

FRONT

1. Securely fix reflector (top marked upright position) to the bracket.
2. Remove the fixing nut from the center bolt and place the reflector/bracket so that it comes into direct with the square front fixing and retighten the nut.

REAR

1. Securely fix the reflector (top marked upright position) to the bracket.
2. Remove the nut from the rear of reflector assembly and secure the square concave washer so that it is completely covered by reflector bracket.

CAUTION

To be directed forward or rearward within 5° of the horizontal - vertical alignment of the bicycle when the wheel are traveling in a straight line.

SIDE REFLECTORS :

To be mounted within 76 mm (3 inches) of the inside of the rim. (see the sketch)

RETRO-REFLECTIVE tire sidewalls are approved for lateral reflectivity and if these are installed then spoke reflectors may not be required.

10. Bearing Adjustments.

There are four places on the bicycle that contain bearings that may require adjustment. They are the steering head, front wheel, crank and rear wheel.

Each of these bearings, is adjustable and must be kept in proper adjustment to insure the long life and riding ease of the bicycle. In order for you to know when the bearings are out of adjustment, the following procedure is used for checking each bearing:

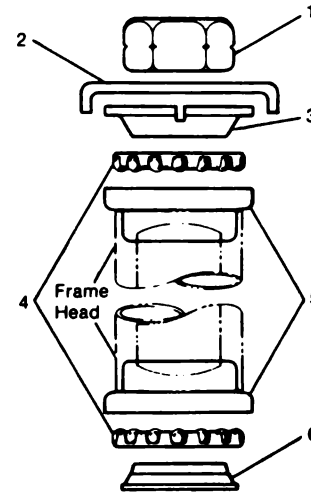
10-1. Checking Steering Head.

Lift up handlebar at the handlebar ends (grips)

There should be no play of the handlebar stem and fork within the frame, but the handlebar must be able to turn freely and easily.

Steering Head Adjustment.

Remove head lock nut and reflector bracket, if any. Turn the adjusting cone clockwise until finger-tight, replace reflector bracket and tighten head lock nut setting the adjustment.



Part Name

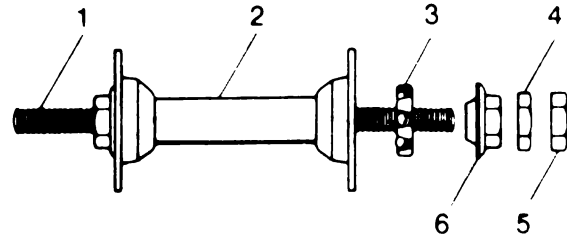
- 1 Head lock nut
- 2 Reflector bracket (or Tongue Washer)
- 3 Adjusting cone
- 4 Head bearing (2 required)
- 5 Head Cup (2 required)
- 6 Unthreaded Fork Cone

10- 2. Checking Wheel Bearings.

The front and rear wheel bearings are both checked in the same manner. Hold the wheel bearings checked off the ground and try rotating it. The wheel bearings adjustment must be set so that the wheel can turn easily and freely with only a trace of side play at the wheel rim.

Wheel Bearing Adjustment.

Remove the wheel from the frame and loosen locknut (4) on one side of the wheel while holding the adjusting cone (6) on the same side of the hub with a flat open-end wrench and rotate the adjusting cone as needed to eliminate side play. Tighten the locknut while holding the adjusting cone in the desired position. An adjusted hub must allow the wheel to rotate freely without friction or side play.



Part Name

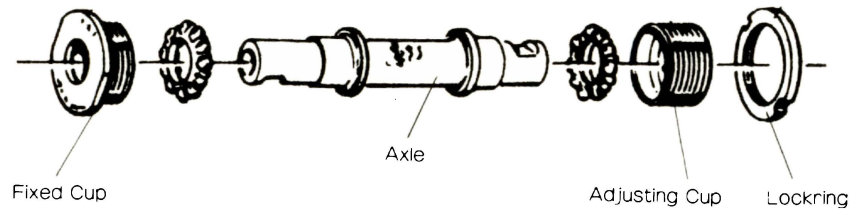
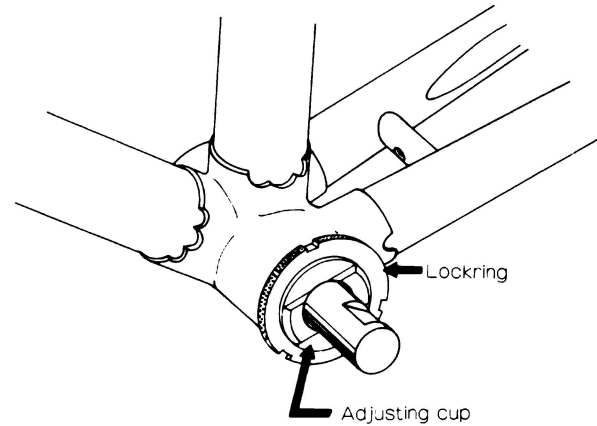
- 1 Axle
- 2 Hub Shell
- 3 Bearing & Retainer
- 4 Locknut
- 5 Axlenut
- 6 Adjusting Cone

10-3. Checking Crank Bearings.

Test for play in the crank by taking hold of one end of the crank and trying to move it sideways. There should be only a trace of play. The crank bearing adjustment must be set so that the crank can turn easily and freely.

Crank Bearing Adjustment.

Remove the lockring and loosen or tighten adjusting cup at left side. Then, check proper rotation and side play. Reset lockring and tighten it. An adjusted crankset assembly should rotate freely and should not have any side play.

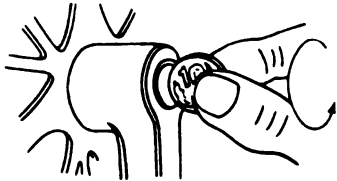


11. Cotterless Cranks

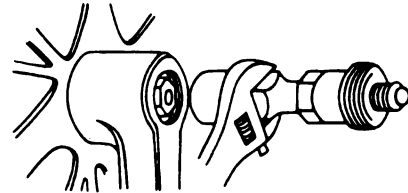
The best way to identify Cotterless Cranks would be by not seeing a crank cotter pin attachment. Also, most cotterless cranks utilize alloy material for lightness. Illustrated below are the steps required to remove or adjust the cotterless gear and crank. On the following pages are illustrations for fitting cotterless cranks.

TO REMOVE CRANKS

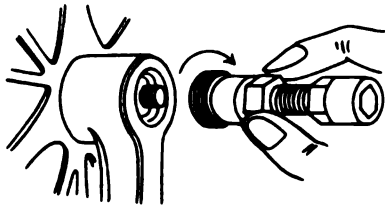
1) Take off the dust cap.



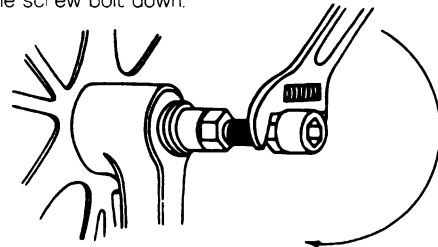
2) Loosen the flange nut or bolt and take off.



3) Screw in the removing tool to the depth.

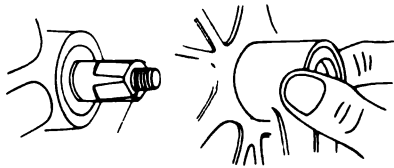


4) Turn the screw bolt down.

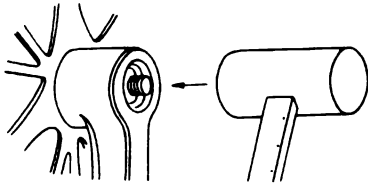


TO FIT CRANKS

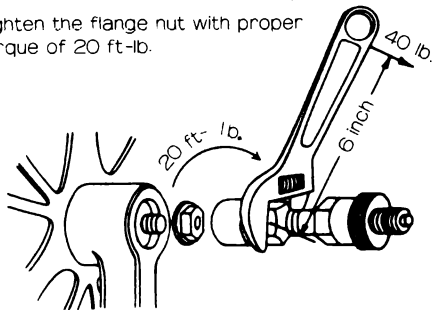
- 1) Insert the bracket axle to the crank.



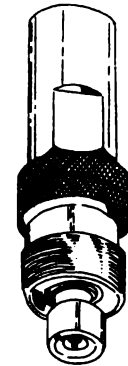
- 2) Tap in the crank lightly with mallet.



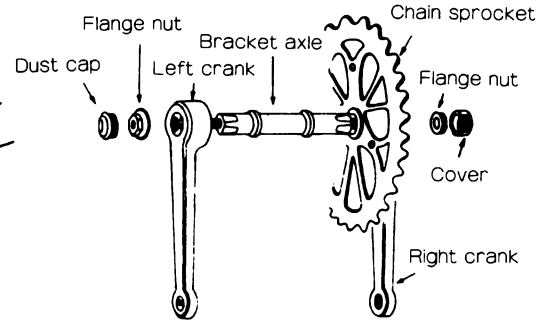
- 3) Tighten the flange nut with proper torque of 20 ft.-lb.



- 4) Screw in the dust cap.



TOOL



COTTERLESS CHAINWHEEL & CRANKS

Cotterless means that no crank pin is used, also the crank axle has a square taper and the gear crank taper is fitted onto this taper and the two are fastened together. In order to remove the cotterless gear and cranks the special tool shown herein must be used.

DUE TO THE COMPLEXITY OF REPAIR AND ADJUSTMENT, IT IS RECOMMENDED THAT THIS WORK BE DONE BY A QUALIFIED BICYCLE MECHANIC.

12. Tire Care and Wheel Adjustments.

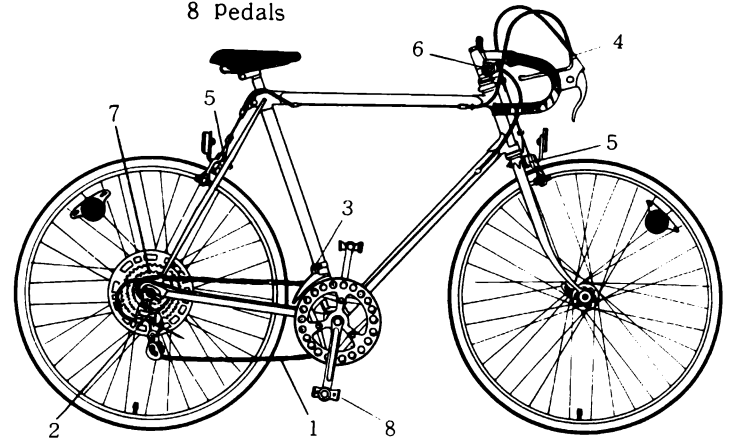
1. Tire pressure is indicated on the sidewall of the tire.
2. Inflate the tire upto the pressure indicated on the sidewall of the tire.
3. Use hand or foot pump to inflate the tire.
4. Never ride a bicycle with under inflated tire.
5. Improper tire pressure will cause excessive wear, causing premature replacement.
6. Blowouts of the tire are the result of over infiation, or also may be caused by the tire not being properly on the rim when inflated.
7. Whenever you hear any irregular noise on wheels, or the brakes touch to the rim it is necessary to check and repair the wheels.
8. In case of any minor loosening of spokes happens, you may repair by yourself by tightening the nipples, but we recommend you take the bicycle to a bicycle mechanic.
9. Wheels should be checked regularly for spoke tightness and true alignment. Perform this check more frequently if the bicycle is used on rough roads.

13. Lubrication

Your bicycle has many moving parts which are exposed to the elements. Cleaning and lubrication will keep it running smoother and longer. This chart indicates the parts that require oil.

Indicated points require lubrication

1. Chain
2. Rear derailleur
3. Front derailleur
4. Brake control cables
5. Brake pivot bushing(Front & Rear)
6. Shift control cables
7. Gear clusters
8. Pedals



Attach this card to your receipt and present both to dealer if service is required.

Owner's Name _____

Address _____

City _____ **State** _____ **Zip** _____

Date Purchased _____ **Model No.** _____ **Serial No.** _____

Dealer's Name _____

Address _____

City _____ **State** _____ **Zip** _____

For customer's use

Attach this card to your receipt and present both to dealer if service is required.

Owner's Name _____

Address _____

City _____ State _____ Zip _____

Date Purchased _____ Model _____ Serial No. _____

Dealer's Name _____

Address _____

City _____ State _____ Zip _____

For Dealer's use

UNIVEGA BICYCLE LIMITED WARRANTY

Warranty: This warranty warrants only to the original retail purchaser of the bicycle and is not transferable.

UNIVEGA bicycle frames are warranted to be free from defects in materials and workmanship under normal use of the bicycle for the life time.

Defective parts: All original parts, except tires, tubes & cables, are warranted for one year from the date of purchase. During the warranty period, all parts found to be defective in workmanship or materials will be repaired or replaced free of charge except for shipping and dealer labor charges.

How to claim warranty: All claims under this warranty must be made through your authorized UNIVEGA dealer during the relevant warranty period. To obtain warranty service, the owner must return the defective bicycle to an authorized UNIVEGA dealer for inspection with this warranty.

If the original dealer is no longer available or is inconveniently located, the name of an authorized dealer nearest to you can be obtained (in writing) from UNIVEGA CYCLE CO., whose address is stated below.

Warranty exclusions: This warranty does not cover failure due to accident, abuse, neglect, normal wear, improper assembly, improper fit, maintenance by any other than an authorized UNIVEGA dealer, or use of parts inconsistent with the use originally intended for the bicycle as sold.

This warranty is expressly in lieu of any other express warranty and any implied warranty including any warranty of merchantability or fitness is limited in duration to the duration of this express warranty (Some states do not allow limitation on how long implied warranty lasts so the above limitation may not apply to you).

We shall not be responsible for consequential or special damages nor for transportation charges or for dealer labor charges except as set forth above.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

UNIVEGA CYCLE CO.,
899 CowLES ST.,
Long Beach, California 90813

Name of Dealer:



UNIVEGA CYCLE CO., LONG BEACH, CALIFORNIA U.S.A.

9470061

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