29 – SEATS AND SEATPOSTS

ABOUT THIS CHAPTER

This chapter is about removing and installing seats and seatposts.

GENERAL INFORMATION

TERMINOLOGY

Seat: The platform on which the rider sits. It may also be called a "saddle."

Seatpost: The shaft that the seat is mounted too that inserts into the seat tube of the frame.

Seat clamp: The mechanism that clamps the seat to the seatpost.

Integral seat clamp: A seat clamp that is built into the seatpost.

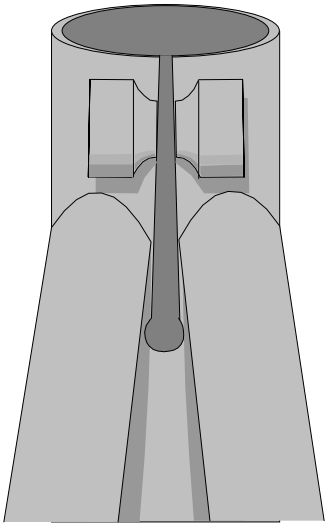
Non-integral seat clamp: A seat clamp that is separate from the seatpost.

Seat rails or **rails:** The rods or wires that are underneath the seat to which the seat clamp attaches.

Seatpost binder: The mechanism that secures the seatpost to the frame.

Seat lug: The portion of the frame where the seatpost inserts.

Compression slot: The slot in the seat lug that is compressed by the seatpost binder to secure the seatpost.



29.1 *The compression slot in the back of the seat tube.*

PREREQUISITES

There are no prerequisites for removing and installing seatposts and seats.

INDICATIONS

Seatposts

There are three reasons seatposts need to removed and installed; 1) because they are bent; 2) because they are undersized and will not secure; 3) or because they are being upgraded.

Seatposts can corrode and stick inside the seat tube so it is good preventive maintenance to remove them and grease them periodically.

Seats

Seats need to be removed and installed for the following reasons: 1) because the seatpost is being changed; 2) the seat rails are bent; 3) the seat is torn or worn out; 4) or because the seat is being upgraded.

TOOL CHOICES

There are no special tools required for servicing seatposts and seats, but Odyssey MS-200 sizing rods are extremely convenient for determining the correct seatpost size.

TIME AND DIFFICULTY RATING

Seatpost removal is a 1 minute job of little difficulty, unless it is stuck.

Seat removal and installation is a 1–3minute job of little difficulty.

COMPLICATIONS

Difficult seatpost removal

Seatposts can easily get stuck in the frame. They may even get permanently stuck. There is a section of this chapter about dealing with stuck seatposts.

Sizing seatposts

Because the seat lug may be deformed, it can be difficult to determine the correct size of seatpost. Because the hole may not be round, measuring with a caliper can give misinformation.

Difficult seatpost insertion

Corrosion and seat-tube distortion can make seatpost insertion difficult, even with the proper-size seatpost. Difficult insertion should *never* be used as proof of poor fit. See the **SEAT-TUBE MILLING** chapter (page 7-2), when a correctly-fit seatpost is difficult to insert.

Slipping seatposts

Slipping seatposts are almost always undersized. An undersized post has been installed usually because the correct-fit post was difficult to install.

Adjusting seat angle

Some seat clamps make it difficult to change the seat angle. Either the seat changes angle while the clamp is being tightened, or the clamp does not allow for fine adjustment of the seat angle. Always check the seat angle after securing the clamp, and if the correct angle is between two available settings, choose the setting with that leaves the nose of the seat higher.

ABOUT THE REST OF THIS CHAPTER

The rest of this chapter is divided into two sections. These are ***SEATPOSTS*** and ***SEATS.***

SEATPOSTS

REMOVAL

1. [ ] **Mark seatpost with tape or marking pen if height needs to be restored.**
2. [ ] **Loosen seatpost-binder bolt.**
3. [ ] **Remove seatpost with a gentle twisting and pulling motion.**
4. [ ] **Inspect inserted portion of seatpost for scratches that indicate seat tube should be honed and/or reamed.**
5. [ ] **Inspect inserted portion of seatpost for corrosion that indicates need for honing of seat tube and better greasing in future.**

DIFFICULT REMOVAL

If the seatpost will not remove easily in the previous step #3, extra measures will be required. These measures may be as simple as the application of penetrating oil and a little patience, or they may mean that the seat and clamp need to be removed so that the seatpost can be grasped in a vise (usually destroying the seatpost). In the worst-case scenario, it may mean that the seatpost will have to be deliberately destroyed to get it out. Follow this procedure only as far as necessary to get the post out.

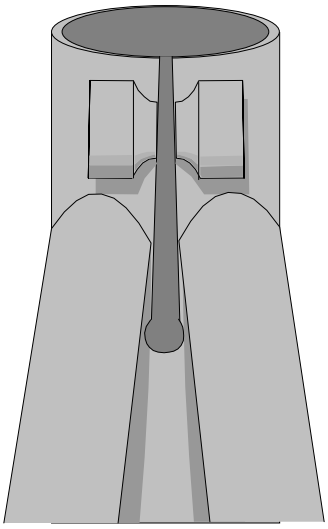
1. [ ] **Remove seatpost-binder bolt completely.**
2. [ ] **Use lever to spread compression slot so that it is slightly wider at the top than at the bottom.**
3. [ ] **Drip penetrating oil between seatpost and seat tube and allow 5 minutes for it to penetrate.**
4. [ ] **With the bike on the floor and one foot in crotch of seat tube and down tube (being careful to not damage derailleurs or chainrings), twist seat back-and-forth, while pulling up forcefully, for no more than 30–45 seconds.**
5. [ ] **Add more penetrating oil and allow the seatpost and frame to cool off for 15 minutes.**
6. [ ] **Repeat steps 4–5 as many times as necessary, unless progress is not being made.**
7. [ ] **If steps 1–6 are inadequate, disassemble seat clamp and remove seat.**
8. [ ] **With bike upside down in stand, strike bottom of integral clamp (if any) repeatedly with plastic mallet.**
9. [ ] **If previous step is not possible, or fails, take bike out of stand and clamp end of seatpost firmly in vise. Two people can pull and twist on frame to pull it off of seatpost.**
10. [ ] **If everything to this point has failed, use hacksaw to cut seat post off approximately 1" above seat lug.**
11. [ ] **Use jabsaw (special hacksaw holder), to cut 3–4 slots down inside of seatpost stub as deeply as possible without cutting into seat-tube material.**
12. [ ] **Crush protruding section of seatpost in vise and use twist and pull procedure to pull frame off of seat post.**

SIZING

The best way to measure a seat tube for the correct size of seatpost is to use an Odyssey MS-200 sizing rod. If this is not available, then a caliper can be used, but several measurements should be taken and averaged.

Because the seat lug may be deformed or contaminated, force may be required to install the MS-200 to the largest possible diameter that will fit. As long as the force is by hand (no impact), it is not possible to insert the tool to a larger dimension than will be correct. When inserting the tool, align the flatted side with the compression slot.

1. [ ] **Spread or compress compression slot to uniform width at top and bottom.**



29.2 The compression slot is narrow at the top due to previous installation of an undersized seatpost. Use stacks of feeler gauges to compare the slot width from top to bottom.

2. [ ] **Insert MS-200 sizing rod as far as it will go and read dimension off of largest segment that inserted.**

INSTALLATION

1. [ ] **If old seatpost was scratched or corroded, hone and ream seat tube as necessary. (See SEAT-TUBE MILLING, page 7-2.)**
2. [ ] **If re-installing old scratched or corroded seatpost, clean it thoroughly with emery cloth.**
3. [ ] **Grease inserted portion of seatpost thoroughly.**
4. [ ] **Grease inside of seat tube thoroughly.**
5. [ ] **Grease seatpost-binder-mechanism threads.**
6. [ ] **Oil quick-release pivot (if any).**

Seatposts have a mark for minimum insertion. It must never be left above the seat lug, even on a used seatpost that was being ridden that way before. If no mark can be found, insert the seatpost to a depth of at least 2.5".

7. [ ] **Insert seatpost at least to *Minimum insert* or *Maximum height* mark, or to previous mark if restoring customer setting.**
8. [ ] **Gently secure post at desired height.**
9. [ ] **Install seat, if not already installed (see INSTALLATION, page 29-5).**
10. [ ] **Align nose of seat directly above center of top tube of frame.**

There is not a recommend torque in the following step for seatpost-binder mechanisms for several reasons. Variations in thread pitch, bolt size, and seat-lug design make if too difficult to establish a narrow range that is always acceptable. Quick-release mechanisms cannot be torqued at all. Quick-release mechanisms also require a wide variety of setups in order to secure them properly.

It is not required that a seatpost-binder mechanism make the seatpost immobile. It is likely that the seat lug will be damaged if immobilization is attempted. Step #122 requires putting a lateral load on the nose of the seat. The binder should be tightened until the post resists slipping at 50 pounds of force at the nose of the seat.

11. [ ] ***Bolt-type seatpost-binder mechanisms*: Secure bolt to 60in-lb minimum.**
    ***Quick-release mechanisms*: Adjust quick release so that force occurs through 45° of motion while closing lever to parallel-to-frame position.**
12. [ ] **Test seatpost security. It should withstand at least 50lbs applied to side of seat nose without seatpost rotating.**
13. **If seatpost fails step 12 test:**
    [ ] *Bolt-type seatpost-binder mechanisms*: Increase torque by 5in-lb increments, until test is passed.
    [ ] *Quick-release mechanisms*: Adjust quick release so that clamping force begins earlier by 15° increments, until test is passed.

SEATS

REMOVAL

Before removing any customer's seat that will be re-installed, measurements of its angle and fore-and-aft position should be taken.

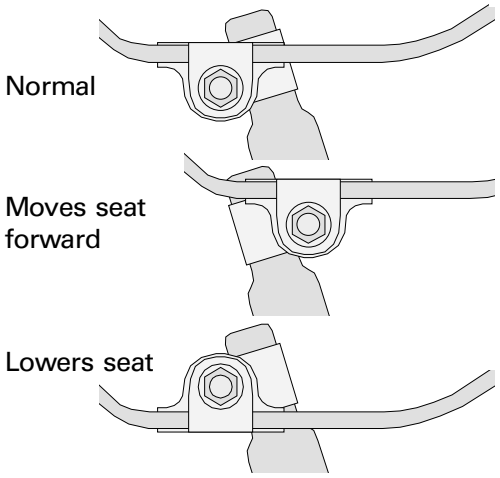
If the seat is being removed because a bent seatpost is being replaced, then it would do little good just to measure the seat angle. Instead, measure the difference between the seat angle and the seatpost angle. A dial protractor can be used for both of these angle measurements. To measure the seat angle accurately, place a long straight edge from seat nose to tail and place the protractor on top of it.

To measure fore-and-aft, just record the distance from the backside of the stem shaft to the seat nose.

1. [ ] **Measure and record seatpost angle: _____°**
2. [ ] **Measure and record seat angle: –_____°**
3. [ ] **Subtract to get angle difference: =_____°**
4. [ ] **Measure seat nose distance from back of stem shaft and record here: _____mm**
5. [ ] **Loosen clamp bolt and remove seat.**

NON-INTEGRAL CLAMPS

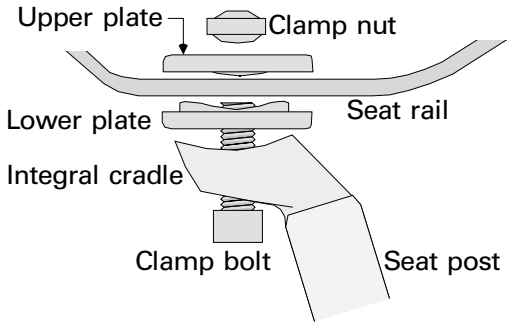
Non-integral clamps are the most primitive type and offer the least angle adjustment. Make sure the serrations on the facing plates are engaged before tightening the nut(s). If there are nuts on both sides, be sure to tighten them equally. Normal torque on nuts (threads greased) is 130–170in-lbs (11–14lbs@6"). See the following illustrations for clamp orientations.



29.3 *Normal and optional clamp orientations.*

SINGLE-BOLT INTEGRAL CLAMPS

Single-bolt integral clamps have a single bolt, usually accessed from below the clamp and behind the seatpost. The threads should be greased and the bolt should be torqued to 120–145in-lbs (20–24lbs@6"). Angle is adjusted by moving the seat when the clamp bolt is loose. Some models have a tendency for the angle to change while the clamp bolt is secured. Check the angle after securing the bolt.

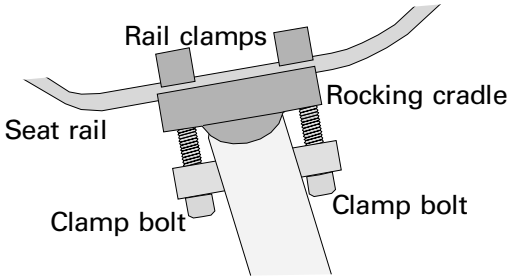


29.4 *Single-bolt integral seat clamp.*

DOUBLE-BOLT INTEGRAL CLAMPS

Double-bolt integral clamps have two clamp bolts that work in opposition. When one is loosened and the other is tightened, the seat angle will change. The two bolts are generally identical and are on opposite sides of the center of the cradle, with neither bolt going through the center of the cradle.

Grease threads, and alternate tightening whichever bolt is needed to change the seat angle to desired position. When angle is correct, alternate tightening both bolts equally until both have reached a torque of 85–95in-lbs (18–24lbs@4").

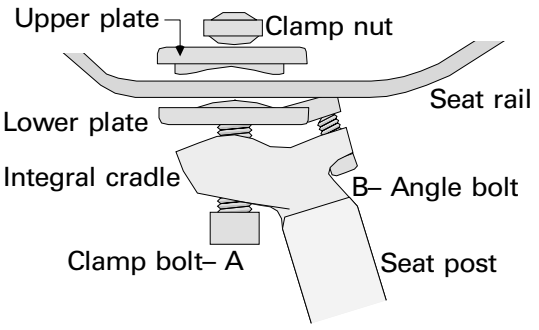


29.5 *Double-bolt integral seat clamp.*

CLAMPS WITH ANGLE-ADJUSTMENT SCREWS

Clamps with an angle-adjustment screw are variations of a single-bolt integral clamp. Like the single-bolt integral clamp, there is a large bolt that goes through the center of the cradle. There is a second bolt or screw (generally smaller), that is towards the front or back of the cradle. This is the angle-adjustment screw.

With the main clamp bolt loose, adjust the angle-adjustment screw to the desired location, then tighten the main clamp bolt is to 120–145in-lbs (20–24lbs@6").



29.6 *Single-bolt integral seat clamp with an angle-adjustment screw. To set angle, loosen A, then tighten or loosen B. To secure, tighten A.*

INSTALLATION

The customer's existing seat position should be maintained as closely as possible if the seat is removed and re-installed or replaced, no matter how unorthodox the position is. There's certainly no harm in bringing their unorthodox seat position up when they return for the bike, but don't be surprised if there adamant that its comfortable just the way it is.

When setting up bikes for sale, the seat should be set at a neutral position. This means that the fore-and-aft adjustment should be in the middle of the range, and that the angle should be as close to flat as possible. If serrations in the seat clamp do not allow a flat angle, set the nose at the first click *up*.

6. [ ] **Install seat in seat clamp, but do not secure.**
7. [ ] **Adjust seat to match original position, or to shop's angle and fore/aft standards.**
8. [ ] **Secure clamp to recommended torque.**
   Non-integral clamps:
   130–170in-lbs (11–14lbs@6")
   Single-bolt integral clamps:
   120–145in-lbs (20–24lbs@6")
   Double-bolt integral clamps:
   85–95in-lbs (18–24lbs@4")
   Single-bolt integral clamps with angle-adjustment screws (main bolt only):
   120–145in-lbs (20–24lbs@6")

Testing seat security

It is not sufficient to simply torque the seat clamp to the recommended torque and forget it. A seat that tips when the rider is on it can dump the rider on the top tube or rear tire with catastrophic results. *To test seat security, exert a downward pressure of at least 75 pounds on the nose of the seat. It should not slip at all.*

9. [ ] **Apply 75lb load down on nose of seat to check for slip.**