

As JohnD has advised you will need to consider the current methods of fixing the new latches and face plates.

Your biggest challenge is the fact that the wood has been removed from the door to make the mortice (the hole in the wood that a tenon joint may fit into, or in this case into which the mortise latch is being placed) and has resulted in some very thin mortise walls. These have broken away over time and wood wear/degradation leaving the damage (a hole). You have lost structural strength in this area.

Looking at the picture I can see a horizontal mid rail and a vertical stile. The rail is split, so a repair of any kind is going to conflict with this split unless that is addressed first (very possible to do effectively, but I have not gone into that here).

You will need to repair the damaged wood to get some structural integrity back into the door, and there are various methods. I won't describe them or the most ideal as they are not really DIY, and involves disassembling the door to make the repair and reassembling. Not quite 'open heart surgery', but quite a bit of work none the less. Best left to a professional or with someone with bench space and some key resources.

Options:

1. Make a cosmetic repair to the damaged area (see pic 1& 2) and flip the door so that the edge / stile with the existing hinges is used to fit a new mortise and latch into. The old damaged edge with the existing lock is now used to fit the hinges. **Pros:** you will be working with solid wood to fit the new lock (assuming the 'hinge side' stiles are of the right dimension). **Cons:** the symmetry/design of the door may not allow for this option, and there will be some remedial work to fill in the old hinge slots (depending on the use of the door (e.g. if it is an old pantry / cupboard door then is there a need to make it look pretty ? - you are after all adding to the history of the door furniture)
2. Make a cosmetic repair to the damaged area (see pic 1& 2) and replace the latch, possibly with some reinforcement

from inside the mortice. In this method I am suggesting making a fillet piece and using it to fill the holes. A method of doing this is to make an accurately made 'fillet' piece, e.g from 9-12 mm ply. Use a carpenters. engineers or combination square and block plane to make sure the piece is SQUARE. Then use this fillit piece to determine the shape of the hole that the fillet is going to go into. You will need to work at least 20mm out side of the damaged area to determine the size of the fillet. The idea is that you use the fillet piece as a template and, after placing the fillet it the best position to cover the hole, with a knife (a Stanley knife or scapel will do) mark around the fillet piece, starting with some light marks then finishing off with a firmer mark. Then remove the fillit/template and with your sharp chisel and mallet start to remove the wood. You place the chisel into the knife lines. Once all wood is removed to the thickness of the fillet it should drop in place perfectly (the door will move over time, but you will be surprised how well the marriage of ply and pine will be in an old/acclimatised door). The fillet should be about 35% the depth of the door rail, but work with stock sizes of ply (9, 12, 18 mm). I would use an electric router to remove the bulk of the wood, but it can be done fine with a chisel. You can use a drill to remove some of the wood within the bounds of the knife marks, and also a Stanley knife to chop away some wood. Remember to not to touch the knife lies with anything else than the chisel - the combination of sharp chisel and knifed lines is what gives sharp, crisp joints. Leave the pencil to the Decking ! To help achieve the correct depth remove about 95 % of the damaged wood - say around 8mm, for a 9 mm deep filit (9mm thick ply), then using a length of softwood (say 25mm, 35mm nominal) chop a slot in it half way along(using the 6mm chisel from your chisel set) perpendicular to the face that allows for the 25mm chisel to be pushed into with a good tight fit. Then push the chisel in to the exact depth of the fillet piece (or .5 mm less if you are not confident), and with the 25mm chisel blade in the repair hole and the pine stock flat on the door rail use this tool as a scraper (what you have just made is a basic hand router) to remove the

last 5 % of timber. The 'hand router' will not allow you to go over deep (assuming the chisel is well tight in the pine stock). Now because you have sized the repair to the right size, made the fillit accurately, marked it out accurately, worked to the knife lines and used the hand router, (and taken your time) the fillit piece will drop in perfectly and will need a few taps with a hammer and block to fit it flush (if you decided to make it .5 mm shallow the you will have to remove the bit of the fillit that is now proud of the door surface. Remember you are using ply, so sanding/planing the wood away will remove most if not all of the top layer of veneer (it is always best to cut right on marked lines and fit things exactly using the correct method if you can). NOTE: The fillit can be made of solid wood, but that is just another piece to dimension accurately at the start of the job, so ply is a more practical option for DIY. Now, last thing to mention is that before you fit the fillit you need to cut it into two (see pic 4 of one such repair a did for a neighbour about 8 years ago in a solid front door)- this is because the fillit, once fitted, will span the joint between the rail and stile of the door, and you need to let the door move. Because of the age of the door (there will be gaps in the joint between the rail and stile) you can get away with not compensating for the saw cut (assuming you use a tenon saw (preferably a Rip Tenon saw rather than a cross cut (I'll let you look that one up)). Just make sure your knife a line (or parallel ones) to cut to, before you cut, in order to get a clean surface line. Once you have 2 halves (draw some location marks on the fillet before you cut it (in case it is not square so the 2 halves can be placed in the right orientation ) , clean up the saw cut edges lightly and glue the fillit into the repair using PVA (if you have a good tight fit) or epoxy (araldite is fine) if not. At this point I should mention that in some ways you are breaking some cardinal rules using this method, because you are (unless you use a solid wood fillit) using a manmade board (which is effectively inert) to make a repair in a solid wood door. What this means is that the door may move in response to changes in humidity and the ply fillit will not move. This could break the glue joint, but with modern glues you can

get away with it, especially epoxy. Similarly the door may try to shrink and the ply will not shrink in unison. The risk is low and other unrelated problems will arise with door probably anyway. The door in pic 4 has been exposed to all weathers for 8 years and you can see the ply fillit is still as tight as it was when I fitted it and the door is not complaining.

3. More advanced - see pic 3 - for ideas. If you use this method you need to avoid a feather edge by setting the thin edge of the wedge 2-3 mm below the surface i.e by forming a 'step down' into the internal scarf.

I would be taking the door part and doing a bit more 'open heart surgery', but I have been making furniture and working on boats and historic building restoration for many many years and have the facilities and tools to do a bit more.

I hope all this makes sense. Try the door flipping method first ?