CLAIMS

1. A connecting rod for being used in a reciprocating compressor, the connecting rod comprising:

a connecting portion having at least a connecting hole formed at a distal end of the connecting portion,

wherein the at least one connecting hole has an interior surface area that operationally experiencing non-linear operating load across the interior surface area,

wherein the non-linear operating load includes a high operating load at a high load region of the interior surface area, the at least one connecting hole is adapted with at least the high load region with a structural strength to withstand the high operating load, and

wherein the interior surface area has a non-uniform height across the surface area adapted based on the non-linear operating load, and the height over the high load region is higher than a region off the high load region, the high load region being arranged asymmetrically with respect to a main axis of the connecting portion.

2. The connecting rod of claim 1, wherein the high load region is at a distal part of the at least one connecting hole in relation to the connection portion.

3. The connecting rod of claim 1, wherein the connecting portion has a second connecting hole at another distal end, wherein the second connecting hole has a smaller diameter than that of the at least one connecting hole.

4. The connecting rod of claim 3, wherein an interior surface area of the second connecting hole has a non-uniform height across the surface area, and the height over a high operation load region of the second connecting hole is higher than a region off the high load operating region.

5. The connecting rod of claim 1, wherein a distal part of the at least one connecting hole is tapered toward a distal point.

6. The connecting rod of claim 5, wherein, when the top and bottom of the at least one connecting hole are tapered, the gradient of tapering on the bottom is different from the one at the top.

7. The connecting rod of claim 1, wherein, when the top and bottom of the at least one connecting hole are tapered, the gradient of tapering on the top symmetrical as the one at the bottom.

8. The connecting rod of claim 1, wherein, when the top and bottom of the at least one connecting hole are tapered, the gradient of tapering at the top is the same as the one at the bottom.

9. The connecting rod of claim 1, further comprising a recession in the top interior surface over at the region off the high load region, resulting the height over the high load region is higher than the remaining region at the at least one connecting hole.

10. The connecting rod of claim 9, further comprising another recession in the bottom interior surface over at the region off the high load region.

11. The connecting rod of claim 10, wherein, when the interior recessions are symmetrical in the top and the bottom.

12. The connecting rod of claim 10, wherein the interior recession in the bottom is smaller than the one in the top.

13. The connecting rod of claim 10, wherein the interior recession at the top is smaller than the one on the top.

14. The connecting rod of claim 1, further comprising a step in the top interior surface over a remaining region off the high load region, resulting the height over the high load region is higher than the remaining region at the at least one connecting hole.

15. The connecting rod of claim 14, further comprising another step in the bottom interior surface over at the region off the high load region.

16. The connecting rod of claim 15, wherein, when the top and bottom interior surface of the at least one connecting hole have the steps, the step at the bottom has a different size from the one on the top.

17. The connecting rod of claim 15, wherein, when the top and the bottom interior surface of the at least one connecting hole have the steps, the step at the bottom is the same as the one on the top.

18. A reciprocating compressor, comprising:

a hermetic casing;

a compression unit; and

a driving unit;

wherein the compression unit and the driving unit are installed in the hermetic casing;

wherein the compression unit comprises a connecting rod for connecting an eccentric shaft of the driving unit and a piston pin of a piston in the compression unit so as to convert a rotational force into a rectilinear force; and

wherein the connecting rod comprises a connecting portion, the connecting portion having at least a connecting hole formed at a distal end of the connecting portion, wherein the at least one connecting hole has an interior surface area that operationally experiencing non-linear operating load across the interior surface area, the non-linear operating load includes a high operating load at a high load region of the interior surface area, the at least one connecting hole is adapted with at least the high load region with a structural strength to withstand the high operating load, wherein the interior surface area has a non-uniform height across the surface area adapted based on the non-linear operating load, and the height over the high load region is higher than a region off the high load region, the high load region being arranged asymmetrically with respect to a main axis of the connecting portion.

19. The reciprocating compressor of claim 18, wherein the connecting portion has a smaller diameter hole and a larger diameter hole and the smaller diameter connecting hole has a non-uniform height interior surface across the circumferential, a distal end of the

interior surface area has a height lower than that of the proximal end in relation to the connecting portion.

20. The reciprocating compressor of claim 19, wherein a distal part of the larger diameter connecting hole is tapered toward a distal point.

21. The reciprocating compressor of claim 18, wherein, when the top and bottom of the at least one connecting hole are tapered, the gradient of tapering at the bottom is symmetrical as the one on the top.

22. The reciprocating compressor of claim 18, wherein, when the top and bottom of the at least one connecting hole are tapered, the gradient of tapering at the top is different from the one on the bottom.

23. The reciprocating compressor of claim 18, wherein a distal part of the at least one connecting hole has a recession in the interior surface thereon.

24. The reciprocating compressor of claim 18, wherein, when the top and bottom of the at least one connecting hole have interior recessions, the interior recessions are symmetrical in the top and the bottom.

25. The reciprocating compressor of claim 18, wherein, when the top and bottom of the at least one connecting hole have interior recessions, the interior recession in the bottom has a different size from the one in the top.

26. The reciprocating compressor of claim 18, wherein a distal part of the at least one connecting hole has a step.

27. The reciprocating compressor of claim 18, wherein, when the top and bottom of the at least one connecting hole have steps, the steps are symmetrical at the top and the bottom.

28. The reciprocating compressor of claim 18, wherein, when the top and bottom of the at least one connecting hole have steps, the step at the bottom has a different size from the one on the top.