CLAIMS

1. A mounting arrangement for an oil pump in a refrigeration compressor which comprises a shell (1) containing lubricant oil and carrying a cylinder block (2) journalling a crankshaft (10); an electric motor having a stator (5) affixed to the cylinder block (20) and a rotor (6) mounted around the crankshaft (10); and an oil pump coupled to the crankshaft and having: a tubular sleeve (20) having an upper tubular portion (21) affixed to one of the parts of crankshaft (10) and rotor (6); and a pump body (30) disposed in the interior of the tubular sleeve (20) and having a lower end portion (31) carried by the assembly defined by the cylinder block (2) and stator (5), so as to be freely displaced in the interior of the tubular sleeve (20) in radial directions orthogonal to the rotation axis of the rotor (6) and rotatively locked in relation to the rotor (6), characterized in that it comprises a fixation rod (40) having an upper portion (40a) articulated to one of the parts of cylinder block (2) and stator (5), according to an articulation axis which is orthogonal and coplanar to the rotation axis of the rotor (6), and a lower portion (40b) angularly and freely displaced according to a direction orthogonal to said articulation axis and around which a lower end portion (31) do pump body (30) is axially retained and slidably mounted, according to a direction orthogonal and coplanar to the rotation axis of the rotor (6).

2. The arrangement, as set forth in claim 1, characterized in that the fixation rod (40) presents a U-shape having a pair of side legs (41), whose upper ends (41a) define the upper portion (40a) of the fixation rod (40) and whose lower ends (41b) are connected by a base leg (42) which defines the lower portion (40b) of the fixation rod (40).

3. The arrangement, as set forth in claim 2, characterized in that the side legs (41) of the fixation

rod (40) have their upper ends (41a) each incorporating an articulation shaft portion (41c), the two articulation shaft portions (41c) being mounted in respective bearings carried by one of the parts of cylinder block (2) and stator (5), according to the articulation axis.

4. The arrangement, as set forth in claim 1, characterized in that the stator (5) presents a lower end face (5a) carrying a motor protector (7) and the bearings being each defined by a cradle (7a) formed in the motor protector (7).

5. The arrangement, as set forth in claim 4, characterized in that the two cradles (7a) are formed in a face of the motor protector (7) that is turned and adjacent to the lower end face (5a) of the stator (5).

6. The arrangement, as set forth in any of claims 1 to 5, characterized in that the lower portion (31) of the pump body (30) is provided with a through-hole (34) having the axis orthogonal and coplanar to the rotation axis of the rotor (6) and through which the lower portion (40b) of the fixation rod (40) is slidably mounted.

7. The arrangement, as set forth in any of claims 1 to 6, characterized in that the upper tubular portion (21) of the tubular sleeve (20) is provided with a circumferential groove (25) inside which is fitted and rotatively and axially retained a tubular metallic connector (50) to be telescopically mounted and retained in one of the parts of rotor (6) and crankshaft (10).

8. The arrangement, as set forth in claim 7, in which the rotor (6) is provided with a central axial hole (6a) having a lower extension not occupied by the crankshaft (10), characterized in that the tubular metallic connector (50) presents an outer circumferential face (52) radially projecting beyond the contour of the tubular sleeve (20) and which is telescopically fitted and retained in the interior of the lower extension of the central axial hole (6a) of the rotor (6).

9. The arrangement, as set forth in claim 7, in which the

crankshaft (10) presents a lower end portion (10a) axially projecting downwardly and outwardly from the rotor (6), characterized in that the tubular metallic connector (50) incorporates a tubular axial extension (53) projecting beyond the upper tubular portion (21) of the tubular sleeve (20) and having an inner circumferential face (53) telescopically fitted and retained around the lower end portion (10a) of the crankshaft (10).

10. The arrangement, as set forth in any of claims 8 or 9, characterized in that the tubular metallic connector (50) is mounted and retained, by interference, to the respective part of crankshaft (10) and rotor (6).

11. The arrangement, as set forth in any of claims 1 to 10, characterized in that the tubular sleeve (20) is in plastic material and the tubular metallic connector (50) presents an uninterrupted annular cross-section.

12. The arrangement, as set forth in claim 11, characterized in that the tubular metallic connector (50) incorporates inner radial projections (51) embedded in the plastic material of the tubular sleeve (20), in order to provide the rotational locking between said parts.

13. A mounting arrangement for an oil pump in a refrigeration compressor which comprises a shell (1) containing lubricant oil and carrying a cylinder block (2) journalling a crankshaft (10); an electric motor having a stator (5) affixed to the cylinder block (2) and a rotor (6) mounted around the crankshaft (10); and an oil pump coupled to the crankshaft (10) and having: a tubular sleeve (20) having an upper tubular portion (21) affixed to one of the parts of crankshaft (10) and rotor (6); and a pump body (30) disposed in the interior of the tubular sleeve (20) and having a lower end portion (31) carried by the assembly defined by the cylinder block (2) and stator (5), so as to be freely displaced in the interior of the tubular sleeve (20) in radial directions orthogonal to the rotation axis of the rotor (6) and

rotatively locked in relation to the rotor (6), characterized in that the upper tubular portion (21) of the tubular sleeve (20) is provided with a circumferential groove (25) inside which a tubular metallic connector (50) is fitted and rotatively and axially retained, to be telescopically mounted and retained in one of the parts of rotor (6) and crankshaft (10).

14. The arrangement, as set forth in claim 13, in which the rotor is provided with a central axial hole (6a) having a lower extension not occupied by the crankshaft (10), characterized in that the tubular metallic connector (50) presents an outer circumferential face (52) radially projecting beyond the contour of the tubular sleeve (20) and which is telescopically fitted and retained in the interior of the lower extension of the central axial hole (6a) of the rotor (6).

15. The arrangement, as set forth in claim 13, in which the crankshaft (10) presents a lower end portion (10a) axially projecting downwardly and outwardly from the rotor (6), characterized in that the tubular metallic connector (50) incorporates a tubular axial extension (54) projecting beyond the upper tubular portion (21) of the tubular sleeve (20) and having an inner circumferential face (53) telescopically fitted and retained around the lower end portion (10a) of the crankshaft (10).

16. The arrangement, as set forth in any of claims 14 or 15, characterized in that the tubular metallic connector (50) is mounted and retained, by interference, to the respective part of crankshaft (10) and rotor (6).

17. The arrangement, as set forth in any of claims 13 to 16, characterized in that the tubular sleeve (20) is in plastic material and the tubular metallic connector (50) presents an uninterrupted annular cross-section.

18. The arrangement, as set forth in claim 17, characterized in that the tubular metallic connector (50)

incorporates inner radial projections (51) embedded in the plastic material of the tubular sleeve (20), in order to provide the rotational locking between said parts.

CLAIMS

1. A refrigeration compressor which comprises a shell containing lubricant oil and carrying a cylinder block journalling a crankshaft; an electric motor having a stator affixed to the cylinder block and a rotor mounted around the crankshaft; and an oil pump coupled to the crankshaft and having: a tubular sleeve having an upper tubular portion affixed to one of the parts of crankshaft and rotor; a pump body disposed in the interior of the tubular sleeve and having a lower end portion carried by the assembly defined by the cylinder block and stator, so as to be freely displaced in the interior of the tubular sleeve in radial directions orthogonal to the rotation axis of the rotor and rotatively locked in relation to the rotor; a fixation rod having an upper portion mounted to one of the parts of cylinder block and stator, and a lower portion around which a lower end portion of the pump body is axially retained and slidably mounted, according to a direction orthogonal and coplanar to the rotation axis of the rotor, wherein the upper portion of the fixation rod is mounted to one of the parts of cylinder block and stator in a manner that allows rotational movement of the fixation rod around an articulation axis which is orthogonal and coplanar to the rotation axis of the rotor, and the lower portion of the fixation rod being angularly and freely displaced according to a direction orthogonal to said articulation axis.

2. The refrigeration compressor, as set forth in claim 1, wherein the fixation rod presents a U-shape having a pair of side legs, whose upper ends define the upper portion of the fixation rod and whose lower ends are connected by a base leg which defines the lower portion of the fixation rod.

3. The refrigeration compressor, as set forth in claim 2, wherein the side legs of the fixation rod have their upper ends each incorporating an articulation shaft portion, the two articulation shaft portions being mounted in respective bearings carried by one of the parts of cylinder block and stator, according to the articulation axis.

4. The refrigeration compressor, as set forth in claim 1, wherein the stator presents a lower end face carrying a motor protector and the bearings being each defined by a cradle formed in the motor protector.

5. The refrigeration compressor, as set forth in claim 4, wherein the two cradles are formed in a face of the motor protector that is turned and adjacent to the lower end face of the stator.

6. The refrigeration compressor, as set forth in any of claims 1 to 5, wherein the lower portion of the pump body is provided with a through-hole having the axis orthogonal and coplanar to the rotation axis of the rotor and through which the lower portion of the fixation rod is slidably mounted.

7. The refrigeration compressor, as set forth in any of claims 1 to 6, wherein the upper tubular portion of the tubular sleeve is provided with a circumferential groove inside which is fitted and rotatively and axially retained a tubular metallic connector to be mounted and retained in one of the parts of rotor and crankshaft.

8. The refrigeration compressor, as set forth in claim 7, in which the rotor is provided with a central axial hole having a lower extension not occupied by the crankshaft, wherein the tubular metallic connector presents an outer circumferential face radially projecting beyond the contour of the tubular sleeve and which is fitted and retained in the interior of the lower extension of the central axial hole of the rotor.

9. The refrigeration compressor, as set forth in claim 7, in which the crankshaft presents a lower end portion axially projecting downwardly and outwardly from the rotor, wherein the tubular metallic connector incorporates a tubular axial extension projecting beyond the upper tubular portion of the tubular sleeve and having an inner circumferential face fitted and retained around the lower end portion of the crankshaft.

10. The refrigeration compressor, as set forth in any of claims 8 or 9, wherein the tubular metallic connector is mounted and retained, by interference, to the respective part of crankshaft and rotor.

11. The refrigeration compressor, as set forth in any of claims 1 to 10, wherein the tubular sleeve is in plastic material and the tubular metallic connector presents an uninterrupted annular cross-section.

12. The refrigeration compressor, as set forth in claim 11, wherein the tubular metallic connector incorporates inner radial projections embedded in the plastic material of the tubular sleeve, in order to provide the rotational locking between said parts.

13. A refrigeration compressor which comprises a shell containing lubricant oil and carrying a cylinder block journalling a crankshaft; an electric motor having a stator affixed to

the cylinder block and a rotor mounted around the crankshaft; an oil pump coupled to the crankshaft and having: a tubular sleeve having an upper tubular portion affixed to one of the parts of crankshaft and rotor; a pump body disposed in the interior of the tubular sleeve and having a lower end portion carried by the assembly defined by the cylinder block and stator, so as to be freely displaced in the interior of the tubular sleeve in radial directions orthogonal to the rotation axis of the rotor and rotatively locked in relation to the rotor; and a tubular connector mounting and retaining the tubular sleeve in one of the parts of rotor and crankshaft, wherein the tubular connector is a metallic connector, and the upper tubular portion of the tubular sleeve is provided with a circumferential groove inside which the tubular metallic connector is fitted and rotatively and axially retained.

14. The refrigeration compressor, as set forth in claim 13, in which the rotor is provided with a central axial hole having a lower extension not occupied by the crankshaft, wherein the tubular metallic connector presents an outer circumferential face radially projecting beyond the contour of the tubular sleeve and which is fitted and retained in the interior of the lower extension of the central axial hole of the rotor.

15. The refrigeration compressor, as set forth in claim 13, in which the crankshaft presents a lower end portion axially projecting downwardly and outwardly from the rotor, wherein the tubular metallic connector incorporates a tubular axial extension projecting beyond the upper tubular portion of the tubular sleeve and having an inner circumferential face fitted and retained around the lower end portion of the crankshaft.

16. The refrigeration compressor, as set forth in any of claims 14 or 15, wherein the tubular metallic connector is mounted and retained, by interference, to the respective part of crankshaft and rotor.

17. The refrigeration compressor, as set forth in any of claims 13 to 16, wherein the tubular sleeve is in plastic material and the tubular metallic connector presents an uninterrupted annular cross-section.

18. The refrigeration compressor, as set forth in claim 17, wherein the tubular metallic connector incorporates inner radial projections embedded in the plastic material of the tubular sleeve, in order to provide the rotational locking between said parts.