Claims

1. A coupling assembly (13, 19, 23, 24, 25, 26) for a machine (10) comprising:

a pin (27) comprising;

a first end (34);

a second end;

an outer surface (35) extending between the first and second ends;

at least a first pin passageway (31) for a lubricant extending between a first pin passageway inlet (32) located at the first end (34) of the pin (27) and a first pin passageway outlet (33) located at the outer surface (35) of the pin (27) for directing the lubricant outside of the pin to the outer surface (35); and

at least a second pin passageway (36) for the lubricant extending between a second pin passageway inlet (37) and a second pin passageway outlet (38); and

a distribution device (28) for distributing the lubricant comprising at least one distribution device inlet (45) for receiving the lubricant and at least one distribution device outlet (46),

wherein the distribution device (28) is mounted to the pin (27) and the at least one distribution device outlet (46) is arranged to direct the lubricant into the first pin passageway inlet (32),

characterised in that the second pin passageway inlet (37) is located in the outer surface (35) of the pin (27) and the second pin passageway outlet (38) is located in the first end (34) of the pin (27) for directing the lubricant from the outer surface (35) of the pin (27) to the second pin passageway outlet (38) and further characterised in that the at least one distribution device inlet (45) is aligned

with the second pin passageway outlet (38) for directing the lubricant from the second pin passageway (36) into the at least one distribution device inlet (45).

2. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in claim 1 wherein the distribution device (28) is integrated inside the pin (27) or the distribution device (28) is positioned outside the pin (27).

3. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in claim 1 or claim 2 wherein the distribution device (28) is configured to receive the lubricant from the at least one distribution device inlet (45) and distribute a quantity of the lubricant to the at least one distribution device outlet (46).

4. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in any one of the preceding claims wherein the pin (27) further comprises a third pin passageway (39) extending between a third pin passageway inlet (40) and a third pin passageway outlet (41) and the distribution device (28) comprises first and third distribution device outlets (46, 47), wherein the first distribution device outlet (46) is arranged to direct the lubricant into the first pin passageway inlet (32) and the third distribution device outlet (47) is arranged to direct the lubricant into the third pin passageway inlet (40).

5. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in claim 4 wherein the distribution device (28) is configured to distribute the same or different quantities of the lubricant to the first and third distribution device outlets (46, 47).

6. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in any one of the preceding claims further comprising one or more bearing housings (29, 30) in which the pin (27) is rotatably mounted.

7. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in claims 1 and 6 wherein the one or more bearing housings (29, 30) comprises at least one housing input passageway (52) arranged for communicating the lubricant from the distribution device (28) to the second pin passageway inlet (37).

8. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in claims 4 and 7 wherein the one or more bearing housings (29, 30) comprises at least one housing outlet passageway (57) arranged for communicating the lubricant from the third pin passageway outlet (41) to the distribution device (28).

9. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in claim 7 or claim 8 wherein the one or more bearing housings (29, 30) comprises external grooves (60) arranged for communicating the lubricant between the distribution device (28) and the at least one housing inlet and/or outlet passageway (52, 57).

10. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in any one of claims 7 to 9 wherein the one or more bearing housings (29, 30) comprises:

a first internal seal (51) for sealing the lubricant communicated between the at least one housing input passageway (52) and the second pin passageway inlet (37); and/or

a second internal seal (56) for sealing the lubricant communicated between the third pin passageway outlet (41) and the housing input passageway (52).

11. The coupling assembly (13, 19, 23, 24, 25, 26) as claimed in any one of claims 6 to 10 wherein the one or more bearing housings (29, 30) comprises internal grooves (58) for distributing the lubricant received from the first

pin passageway outlet (33) to between the pin (27) and one or more bearing housings (29, 30).

12. A machine comprising at least one coupling assembly (13, 19, 23, 24, 25, 26) according to any one of the preceding claims, at least one first component (70) and at least one second component (21) rotatable relative to one another about the pin (27) and the distribution device (28) for delivering and/or receiving the lubricant from the at least one coupling assembly (13, 19, 23, 24, 25, 26).

13. A method of lubricating a coupling assembly (13, 19, 23, 24, 25, 26) of any of the preceding claims, the method comprising:

receiving the lubricant through at least one distribution device inlet (45) of the distribution device (28);

directing the lubricant through the at least one distribution device outlet (46) of the distribution device (28);

directing the lubricant from the distribution device outlet (46) to the pin (27) through the first pin passageway inlet (32), along the first pin passageway (31) and to the first pin passageway outlet (33);

directing the lubricant outside of the pin (27) to the outer surface (35) or the pin (27) via the first pin passageway outlet (33); and

directing the lubricant from the second pin passageway outlet (38) to the at least one distribution device inlet (45).