

WE CLAIM:

1. (Amended) A shift control apparatus (70) for a vehicle (10) including an automatic transmission (18) which comprises a plurality of coupling devices (B1, B2, C1) for transmitting a rotary motion and a torque between an input shaft (16) provided to receive a drive force from a drive power source (12) and an output shaft (20) provided to transmit the drive force to drive wheels (26), and which is configured to be shifted with concurrently performed engaging and releasing actions of the respective coupling devices, said control apparatus being configured to implement a shifting control of said automatic transmission according to a predetermined shifting model for determining manipulated amounts to establish shifting target values, the control apparatus ~~being characterized by~~ comprising:

a shifting target value calculating portion (80) configured to set ~~setting~~, as said shifting target values, two values of a torque (T_o) of a rotary member disposed on the side of said output shaft (20), and a rate of change of a rotating speed ($d\omega/dt$) of a rotary member disposed on the side of said input shaft (16);

a manipulated amount calculating portion (76) configured to set ~~setting~~, as said manipulated amounts, three values of a torque (T_t) of the rotary member disposed on the side of said input shaft, a torque capacity (T_{clow} , T_{chi}) of one of the coupling devices (B1, B2, C1) which is to be engaged for a shifting action of said automatic transmission, and a torque capacity (T_{chi} , T_{clow}) of the other of the coupling devices which is to be released for the shifting action; and

a torque assignment ratio calculating portion (78) configured to set ~~setting~~ torque assignment ratios (x_{low} , x_{hi}) which are ratios of torques to be transferred through the respective coupling devices to be engaged and released for the shifting action,=

~~whereby the shifting control of said automatic transmission is implemented according to the predetermined shifting model.~~

2. (Amended) The shift control apparatus according to claim 1, characterized in that said manipulated amount calculating portion (76) is operated according to said shifting model which is formulated to calculate said manipulated amounts on the basis of said shifting target values, and according to motion equations of the automatic transmission, and a

relationship representative of said torque assignment ratios, the motion equations including said shifting target values and said manipulated amounts.

3. (Amended) The shift control apparatus according to claim 1 or 2, characterized in that said torque assignment ratio calculating portion (78) sets the torque capacity of each of selected at least one of said torque assignment ratios used for determining the torque capacities of said coupling devices (B1, B2, C1) to be respectively engaged and released is determined on the basis of the, such that said each torque assignment ratio which includes an added tie-up amount (α).

4. (Amended) The shift control apparatus according to claim 3, characterized in that said each of selected at least one of said coupling devices (B1, B2, C1) which corresponds to said each of selected at least one of said torque assignment ratios does not have a speed difference between two rotary members between which said each coupling device is disposed.

5. (Amended) The shift control apparatus according to claim 3 or 4, characterized in that said torque assignment ratio calculating portion (78) increases said tie-up amount is increased with a decrease of an amount of torque reduction by the drive power source (12) in an inertia phase of the shifting action of said automatic transmission (18), or with an increase of a delay in a response of said torque reduction to a control for the torque reduction by said drive power source.

6. (Amended) The shift control apparatus according to any one of claims 3-5, characterized in that the shifting control of said automatic transmission (18) according to said shifting model in an inertia phase of the shifting action is implemented by reversing a sign of the torque assignment ratio which is used to determine the torque capacity of said each of selected at least one of said coupling devices, the torque assignment ratio including said added tie-up amount (α).

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