

FIG. 1

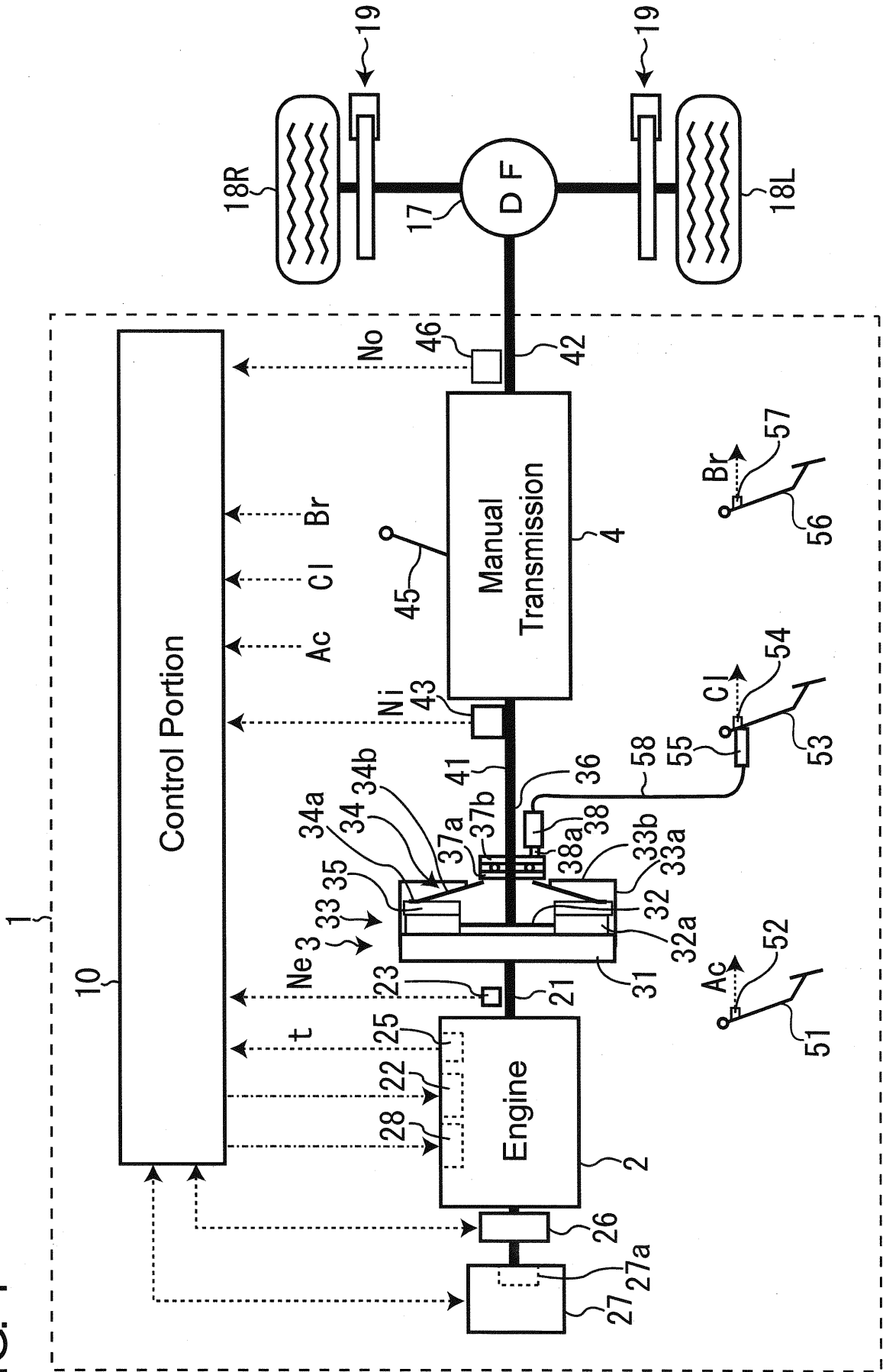


FIG. 2

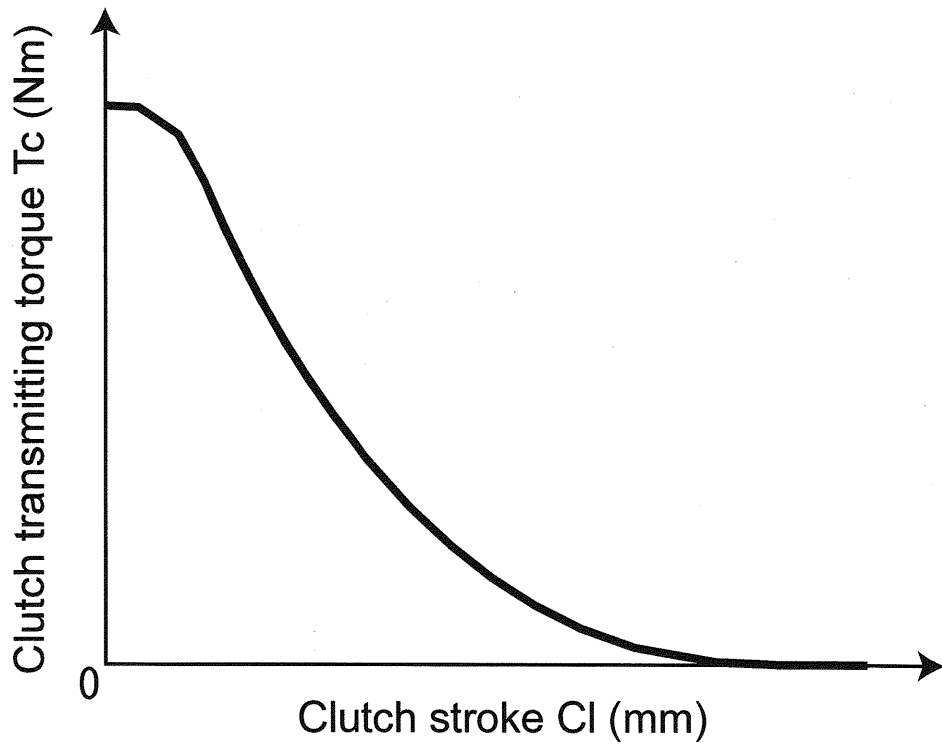


FIG. 3

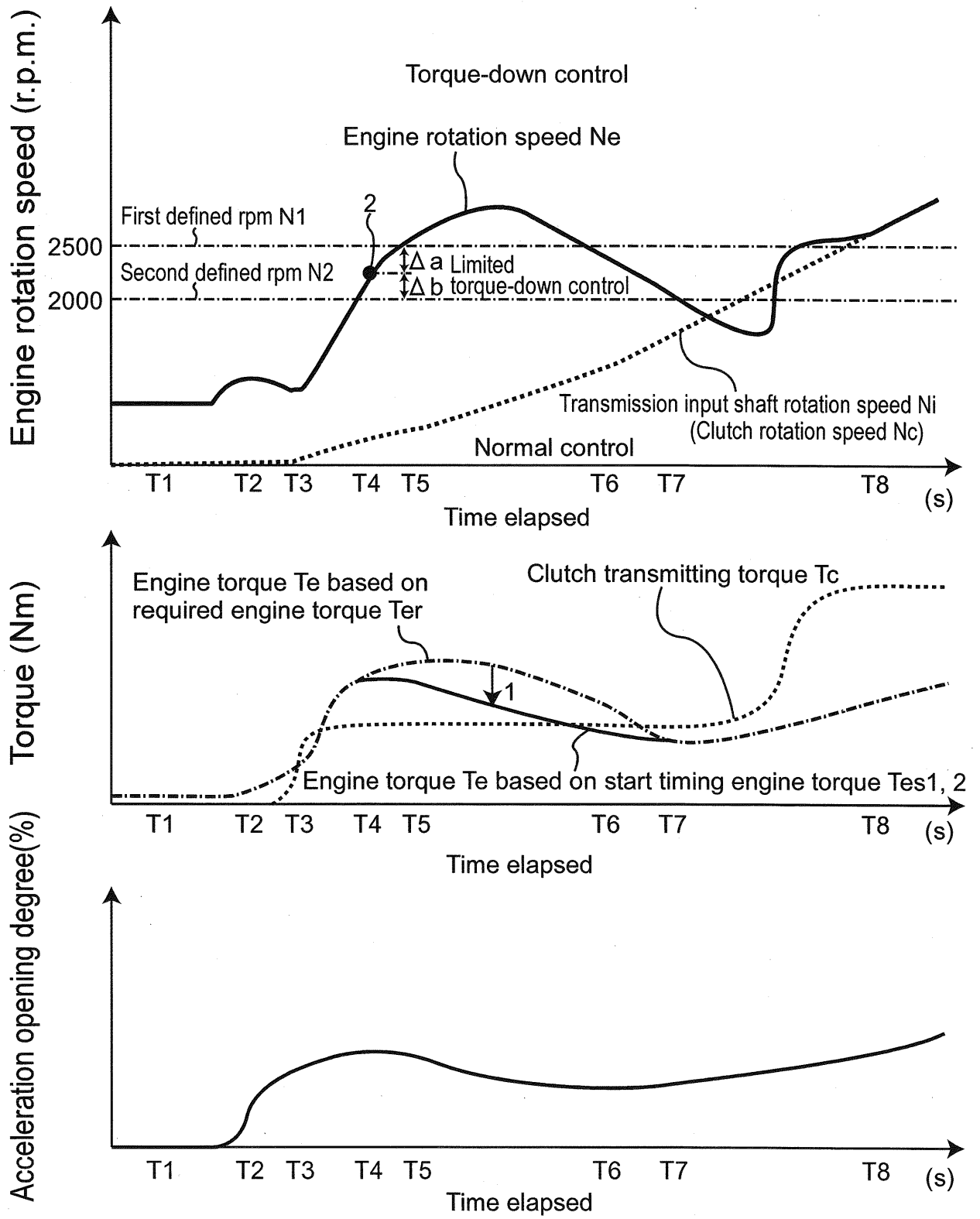


FIG. 4

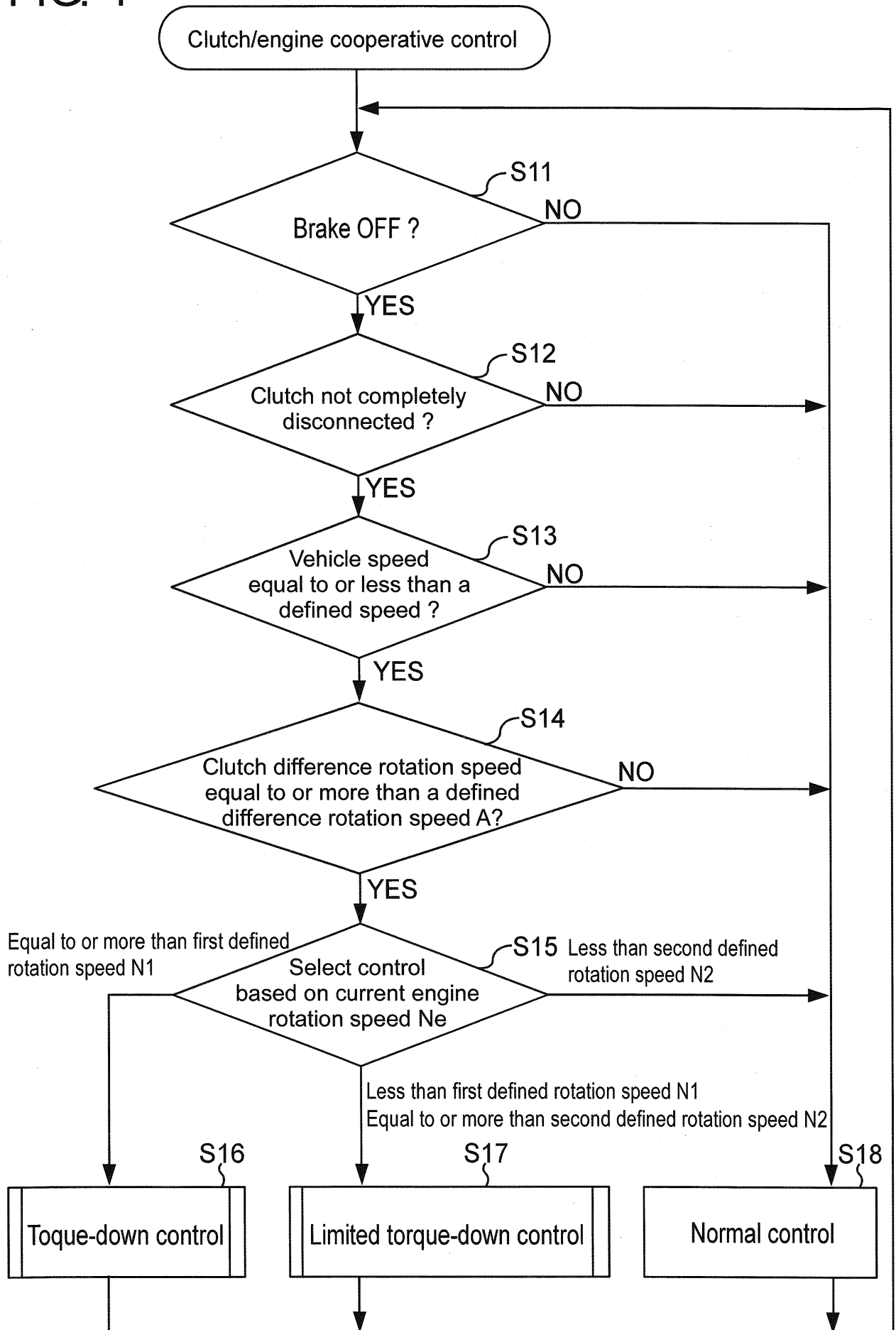


Fig. 5

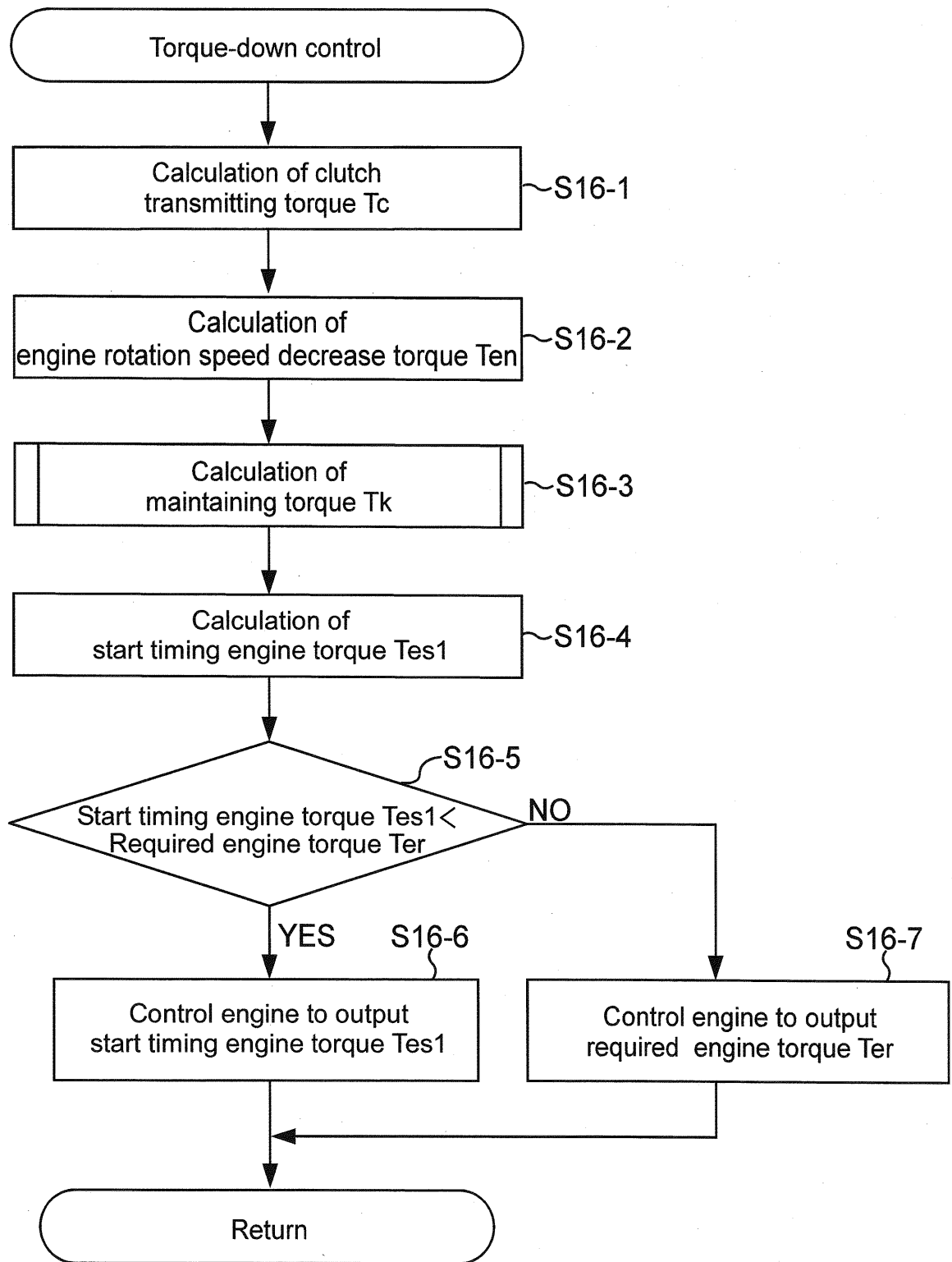


FIG. 6

Engine rotation speed decrease necessary torque calculating data

Target engine rotation speed Net - Current engine rotation speed N_e (r.p.m.)	500	250	0	-250	-500
Engine rotation speed decrease necessary torque T_{en} (Nm)	0	0	0	-10	-25

FIG. 7

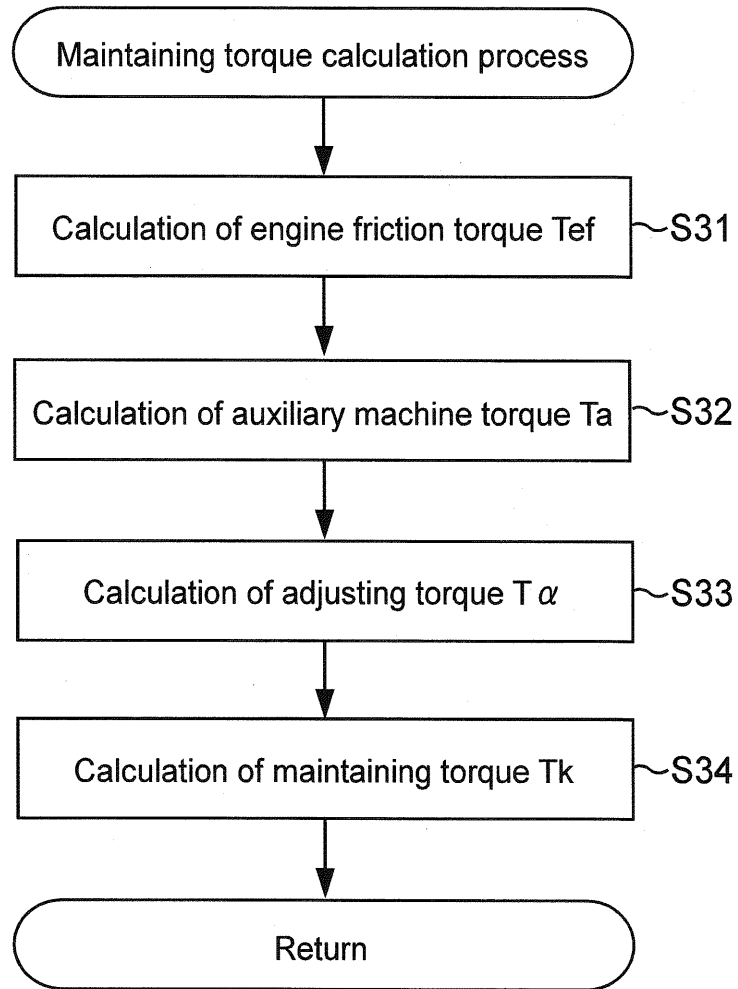


FIG. 8

Compressor auxiliary machine torque calculating data

Engine rotation speed (r.p.m.)	700	1200	1700	2200	2700
Compressor auxiliary machine torque (Nm) (Air conditioner OFF)	5	7	9	10	11
Compressor auxiliary machine torque (Nm) (Air conditioner ON)	13	14	15	16	16

FIG. 9

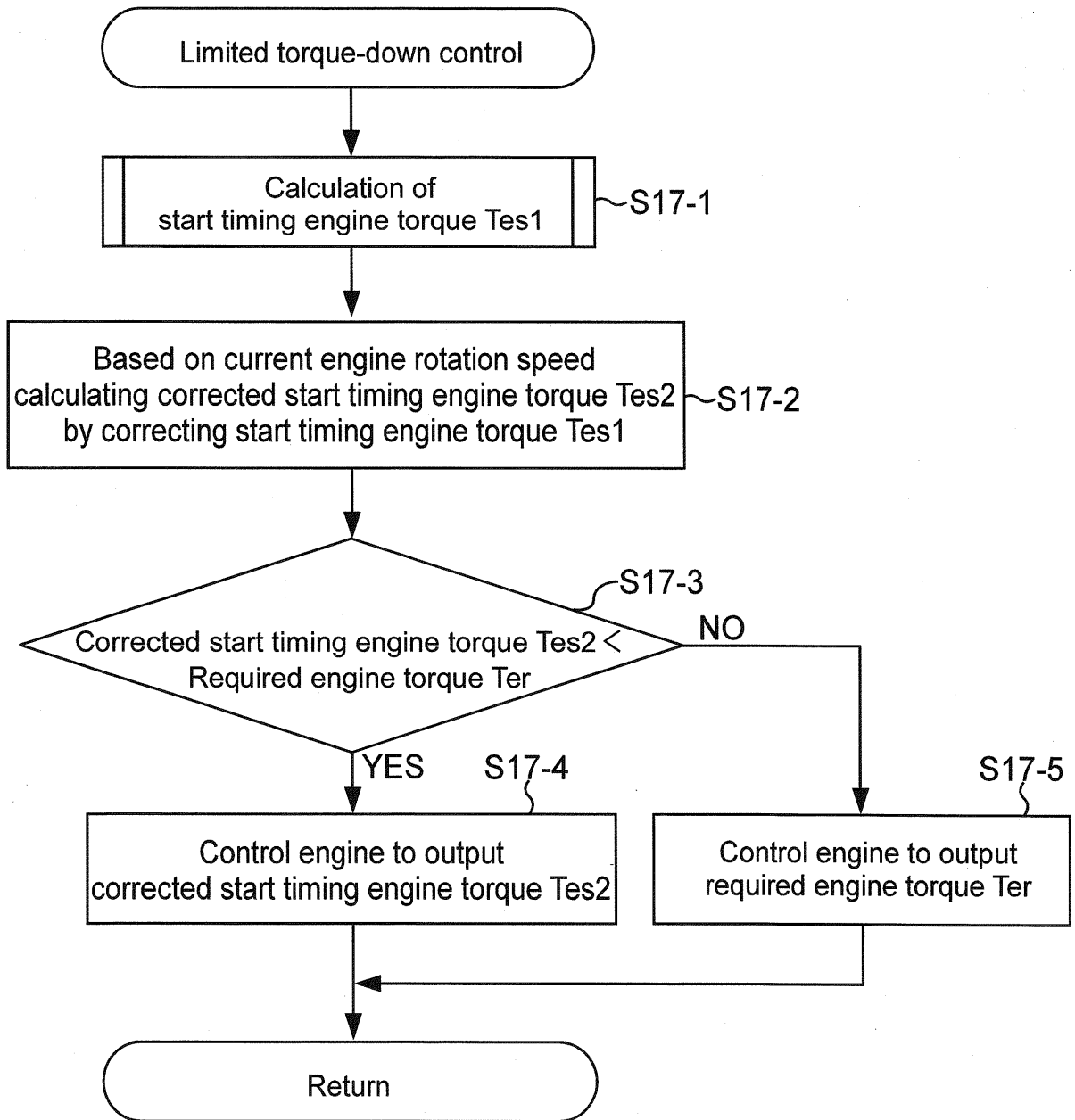


FIG. 10

Elapsed time	Vehicle condition	Operation by operator	Various rotation speeds (r.p.m.)	Torque (N)
T1	Vehicle stopping, engine idling Normal engine control Engine rotation speed $N_e =$ Idling rotation speed	Acceleration: OFF Clutch: Full disconnection Brake: ON	$N_e: 700$ $N_i: 0$ $\Delta c: 700$	$T_e: 0 \sim 5$ $T_{er}: 0$ $T_{es1}, 2: x$ $T_c: 0$
T2	Acceleration ON, brake OFF for preparing for start Normal engine control Engine controlled by required engine torque T_{er}	Acceleration: ON Clutch: Full disconnection Brake: OFF	$N_e: 1000$ $N_i: 0$ $\Delta c: 1000$	$T_e: 15$ $T_{er}: 20$ $T_{es1}, 2: x$ $T_c: 0$
T3	Clutch transmitting torque increase by half clutch \rightarrow Starting Normal engine control Engine controlled by required engine torque T_{er}	Acceleration: ON Clutch: Half clutch Brake: OFF	$N_e: 920$ $N_i: 0$ $\Delta c: 920$	$T_e: 27$ $T_{er}: 24$ $T_{es1}, 2: x$ $T_c: 10$
T4	Engine rotation speed N_e exceeds second defined rotation speed N_2 Normal control to limited torque-down control Corrected start timing engine torque $T_{es2} <$ Required engine torque T_{er} Engine controlled by corrected start timing engine torque T_{es2}	Acceleration: ON Clutch: Half clutch Brake: OFF	$N_e: 2050$ $N_i: 450$ $\Delta c: 1600$	$T_e: 60$ $T_{er}: 65$ $T_{es2}: 55$ $T_c: 30$
T5	Engine rotation speed N_e exceeds first defined rotation speed N_1 Limited torque-down to torque-down control Start timing engine torque $T_{es1} <$ Required engine torque T_{er} Engine controlled by start timing engine torque T_{es1}	Acceleration: ON Clutch: Half clutch Brake: OFF	$N_e: 2550$ $N_i: 850$ $\Delta c: 1700$	$T_e: 55$ $T_{er}: 70$ $T_{es1}: 50$ $T_c: 30$
T6	Engine rotation speed N_e smaller than first defined rotation speed N_1 Torque-down to limited torque-down control Corrected start timing engine torque $T_{es2} <$ required engine torque T_{er} Engine controlled by corrected start timing engine torque T_{es2}	Acceleration: ON Clutch: Half clutch Brake: OFF	$N_e: 2450$ $N_i: 1000$ $\Delta c: 1450$	$T_e: 50$ $T_{er}: 65$ $T_{es1}: 45$ $T_c: 30$
T7	Clutch difference rotation speed Δc becomes smaller than defined rotation speed A Limited torque-down control to normal engine control Engine controlled by required engine torque T_{er}	Acceleration: ON Clutch: Half clutch Brake: OFF	$N_e: 2100$ $N_i: 1700$ $\Delta c: 400$	$T_e: 40$ $T_{er}: 40$ $T_{es1}: x$ $T_c: 30$
T8	Clutch completely engaged Normal engine control Engine controlled by required engine torque T_{er}	Acceleration: ON Clutch: Full engagement Brake: OFF	$N_e: 2600$ $N_i: 2600$ $\Delta c: 0$	$T_e: 60$ $T_{er}: 62$ $T_{es1}: x$ $T_c: 150$

N_e : Engine rotation speed
 N_i : Transmission input shaft rotation speed
 Δc : Clutch difference rotation speed
 T_e : Engine torque
 T_{er} : Required engine torque
 T_{es1} : Start timing engine torque (at torque-up control)
 T_{es2} : Corrected start timing engine torque (at limited torque-up control)
 T_c : Clutch transmitting torque