Design Specifications

Updated April 5, 2007

Specification Number	Customer Need Number	Design Specification	Importance	Unit of Measure	Marginal Value	Ideal Value
1	2, 6, 8, 10	Weight	10	lbs.	7	< 7
2	13	Shift Time	8	sec.	0.1	< 0.1
3	6, 7, 9	Cost	10	US$	250	< 200
4	11, 13	Shift Lever Rotation	9	Degrees	17	20
5	11, 13	Shift Lever Torque	9	in-lbs	150	150
6	11, 13	Shift Drum Rotation	9	Degrees	60	60
7	11, 13	Shift Drum Torque	9	in-lbs	30	50
8	11, 13	Shift Drum Rotation Time	9	Sec.	0.04	0.02
9	11, 13	Shift Fork Displacement	9	Inches	0.5	0.5
10	11, 13	Shift Fork Force	9	lbs.	25	50
11	11, 13	Minimum Upshift Speed	7	RPM	3000	3000
12	11, 13	Maximum Upshift Speed	7	RPM	9500	9500
13	11, 13	Maximum Downshift Speed (5 to 4)	8	RPM	7600	7500
14	11, 13	Maximum Downshift Speed (4 to 3)	8	RPM	7600	7500
15	11, 13	Maximum Downshift Speed (3 to 2)	8	RPM	7300	7200
16	11, 13	Maximum Downshift Speed (2 to 1)	8	RPM	7000	6900
17	6, 7, 8, 16, 17	Expected System Life	7	Years	5	10
18	5, 6	Voltage	5	Volts	12	12

Feature Number	Customer Need Number	Feature	Importance	Unit of Measure	Marginal Value	Ideal Value
1	1, 9	Push-Button Shift Control	9	binary	Yes	Yes
2	1, 3, 4	Reverse Lockout	10	binary	Yes	Yes

Goal Number	Customer Need Number	Goal	Importance	Unit of Measure	Marginal Value	Ideal Value
1	8, 12, 13	Acceleration	9	sec.	Comparible to Manual	Faster than Manual
2	5, 6, 9	Minimal Engine/ Transmission Case Modifications	10	subjective	Minor	Mounting Holes Only
3	7, 11	Shift Smoothness	9	subjective	Comparible to Manual	Faster than Manual