possibly in a year or so, and redirects efforts engine to boost acceleration, for example.

1. Power loads anticipated in 2005 model year cars

Feature	Peak load, W	Average load, W
Electromechanical valves (six cylinders at 6000 rpm) *	2400	800
Water pump	300	80
Engine cooling fan	800	300
Power steering (all electric)	1000	100
Heated windshield	2500	200
Catalytic converter pre-heat	3000	60
Active suspension	12 000	360
Communications, navigation, and entertainment	100	100
TOTAL	N.A.	2000

* May not be available in production vehicles until 2010.
Source: MIT Consortium on Advanced Automotive Electrical/Electronic Systems and Components

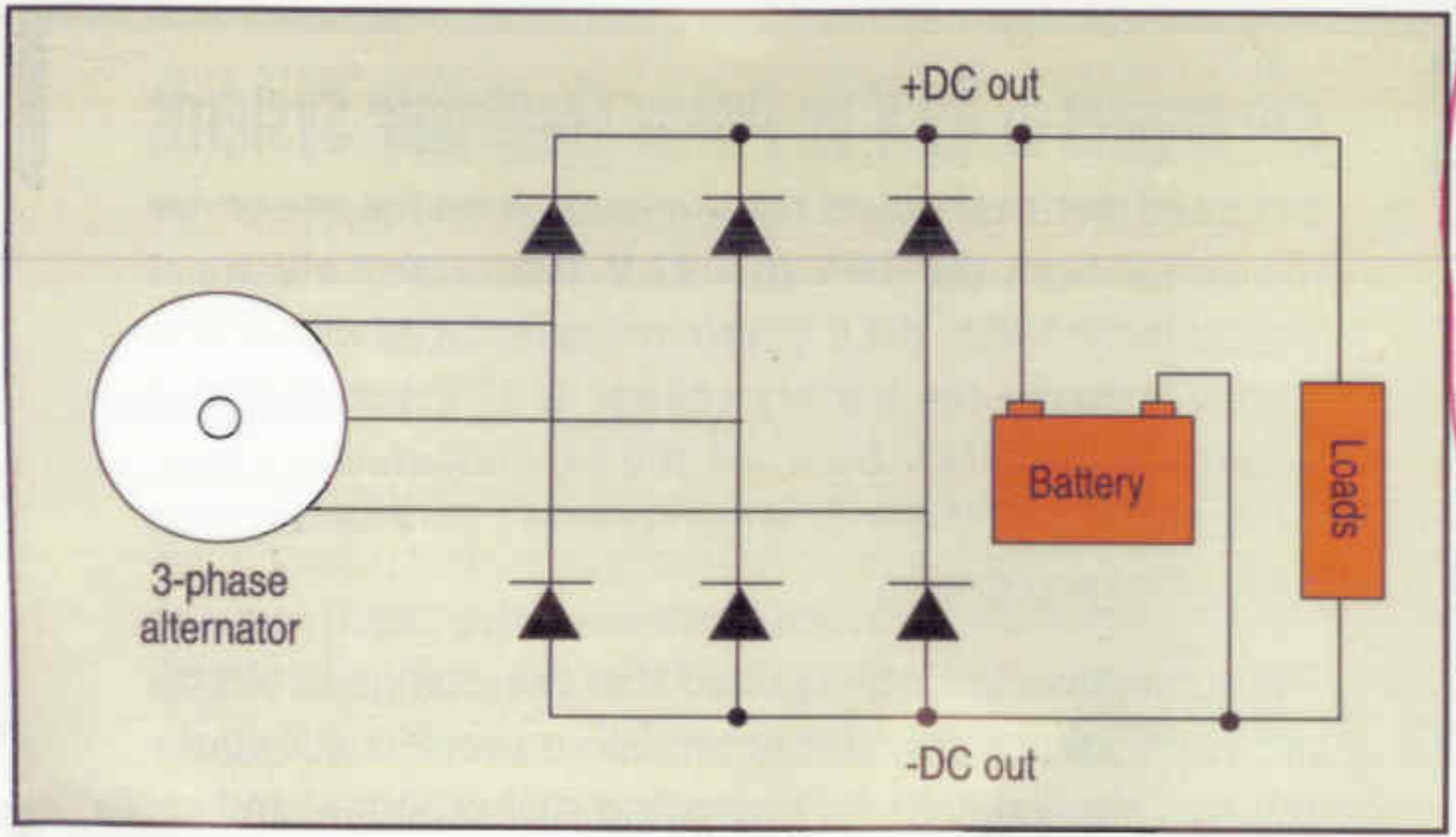
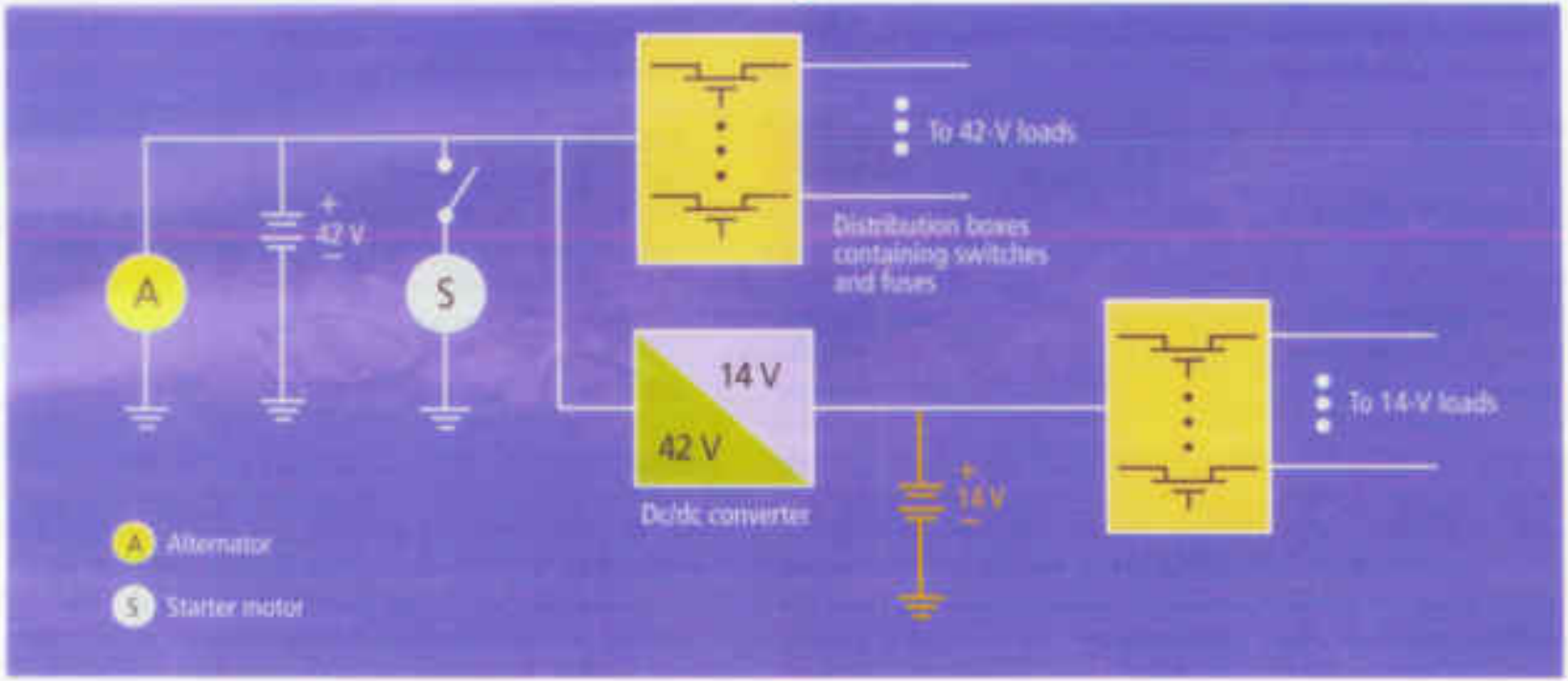


Fig. 2a. *Alternator power management—passive diodes.*



[1] Both the single- and dual-battery approaches to a 42-V system place the 42-V power source (a 36-V lead-acid battery today) between the starter motor and alternator. And the dual-battery version puts a 14-V source (a 12-V lead-acid battery in today's cars) between the converter and 14-V load. Both schemes use a dc-to-dc converter for the 14-V and 42-V loads. Distribution boxes handle switching and fuse functions between load demand points and power supplies.

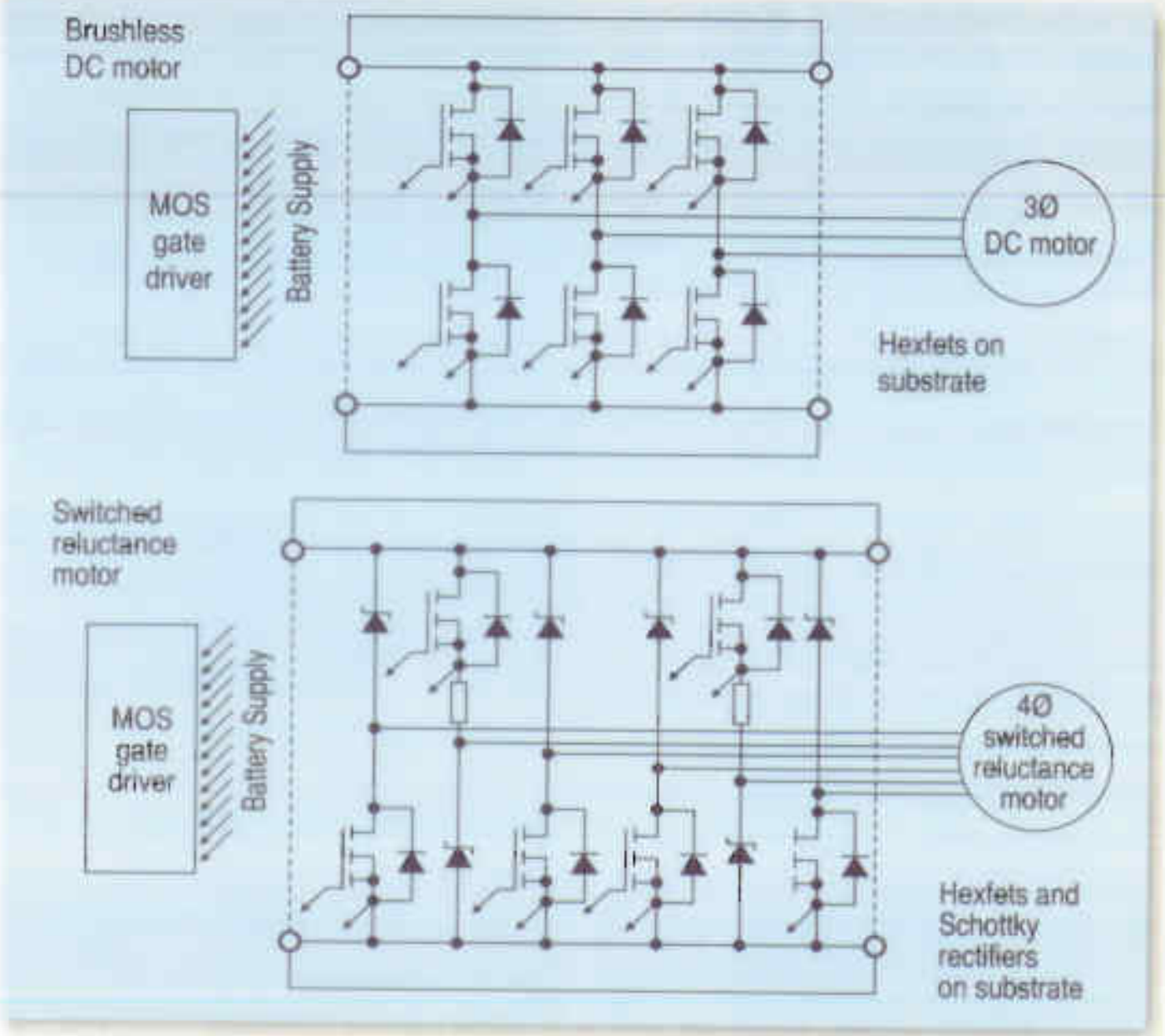


Figure 3. Electric power steering power stage/motor control.