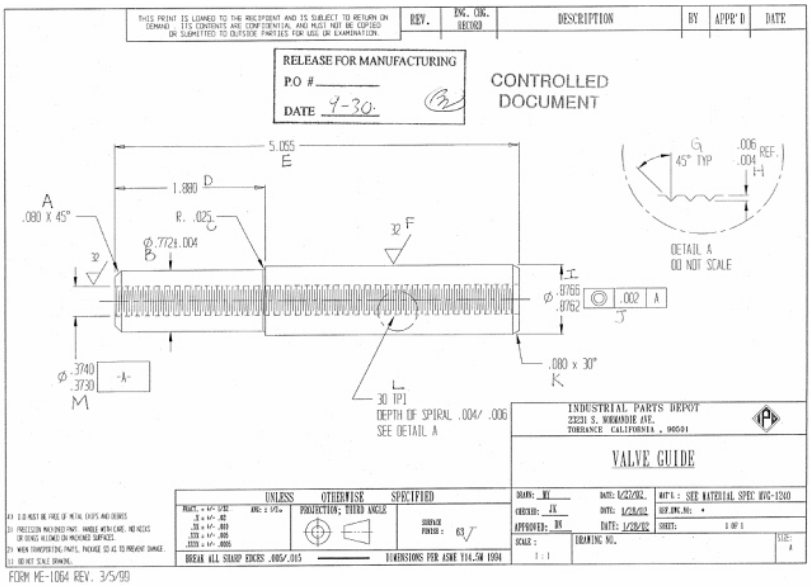
IPD DIFFERENTIATION BULLETIN

October 2007

IPDDB-0003

IPD Differentiation:

IPD VALVE GUIDES



Typical IPD valve guide drawing

Many suppliers claim to offer valve guides for diesel and natural gas engines. Often the origin of these products is an “automotive” type manufacture that may use the same materials and specifications that are applicable in lighter duty applications for all their guides.

Our view is that diesel and natural gas heavy duty engines require a high level of sophistication and design, as well as tightly controlled tolerances. All of these issues plus others are required in order to meet the rigorous demands that are the nature of our industry. Today’s engines run higher horsepower, higher temperatures and are expected to run longer.

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Failure to properly engineer, and manufacture these guides will affect the guide's ability to:

1. Consistently guide the valve
2. Transfer heat to the cooling system
3. Adequately lubricate the valve while maintaining acceptable oil control

These are all areas that can suffer as a result of lack of detail to this important item. At IPD we take the extra steps necessary to provide our customers with a high quality, yet cost competitive valve train program. In particular on valve guides, some of the areas that IPD pays extra attention to include:

- **Spiral depth and pitch** (i.e. how deep and how many threads per inch are required)
- **Outside diameter size and surface finish** (for ease of installation, proper heat transfer)
- **Inside diameter** size (proper valve clearance, adequate heat transfer)
- **Concentricity of ID to OD** (is the bore in the guide straight?)
- **Length** (too long interferes with other components, too short can reduce heat transfer)
- **Does guide require phosphate coating?** (wrong coating or lack of coating will reduce life in some applications)
- **Hardness specifications** (too soft reduces life, too hard makes reaming difficult)
- **Chemistry** (there are different metallurgical contents for various applications)
- **Visual** defects such as casting flaws, porosity, cracks (all can result in failures)

Why bother? Our goal, as we hope is yours, is to provide the engine owner with a cost savings alternative to the OEM, ***but without risk*** to engine life or performance

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