

# New Old School (NOS) Burrs

## by Frans de Vreugd

### Introduction

Gregory Benedetti is a puzzle designer from France who has designed some very nice and unusual puzzles. Several of his designs were entries in the Nob Yoshigahara puzzle design competition. One of Greg's fascinations is with puzzles that have a different internal mechanism than you might expect from the outside. His Blind Burr (entry in 2010) is a good example of that. A special group of puzzles he has been working on is called NOS burrs (New Old School Burrs). On the outside the puzzles look like a standard six piece burr (a.k.a. Chinese Knot), but hidden in the inside is a completely different mechanism.

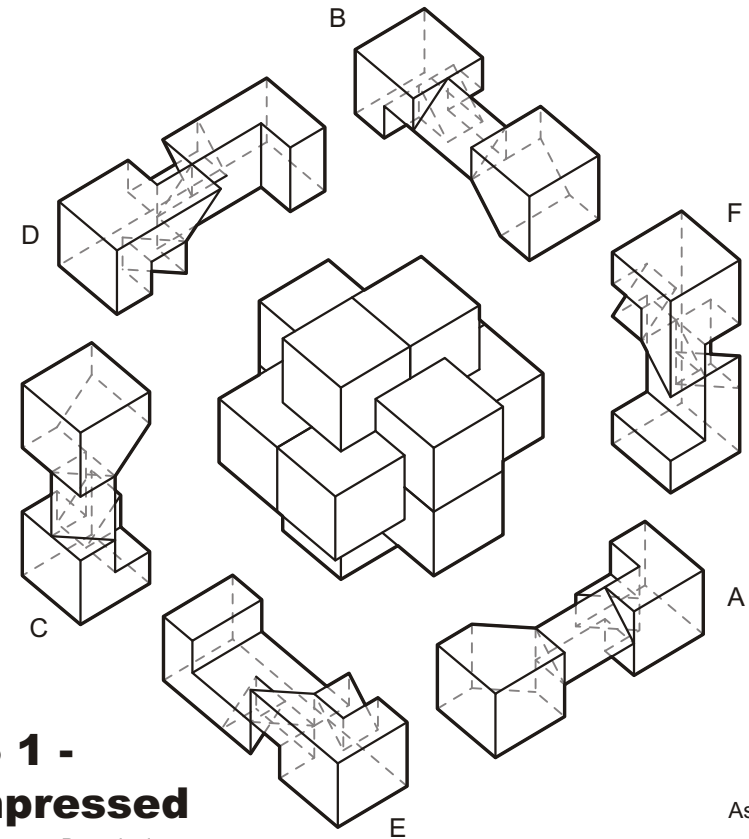
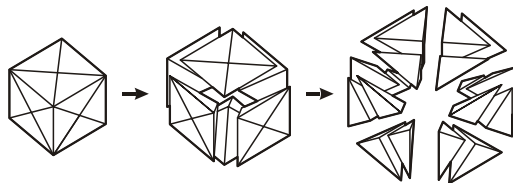
Interlocking puzzles can be classified in many different ways. One way to divide them into different classes is to look at the movement of the pieces. The vast majority of interlocking puzzles have rectilinear moves for the pieces. However, there is also a considerable group of puzzles that use coordinate motion (CM). For these puzzles, two or more pieces move at the same moment in different directions. The internal mechanism of such puzzles mostly use diagonal cuts in the pieces to allow this type of movement. Stewart Coffin (USA) has designed many of these in the past, and nowadays Vinco Obsivac (CZ) is the specialist in this type of puzzle.

CM puzzles are quite different from 'standard' interlocking puzzles. For disassembling a CM puzzle finding the exact positions to put your fingers can be quite a challenge, and for assembling it often requires some dexterity to align the pieces exactly to their correct position. In the NOS burrs normal rectilinear moves are combined with coordinated motion moves. This is a wonderful surprise while playing with the puzzle.

### Using non-orthogonal units

At IPP 32 in Washington in 2012, Greg brought prototypes of his NOS burrs. The puzzle looks like standard (and simple) six piece burrs, but looking at the pieces the average woodworker might get a heart attack! Apart from using cubical units many internal units are diagonal half-cubes. This may sound simple but it can result in really weird pieces. Greg made seven different NOS designs, six of them use these diagonal half-cubes, the seventh includes even more complicated notches. The basic building block is much smaller than a standard diagonal half-cube. Imagine that you subdivide a cube into six square pyramids, and then cutting each of these across both diagonals (see picture below).

In total Greg designed seven different NOS burrs, drawings of each of them can be found in the following pages.

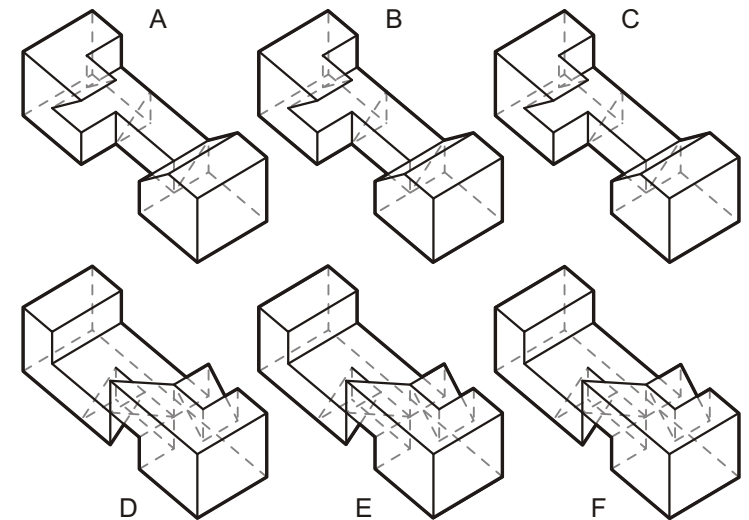


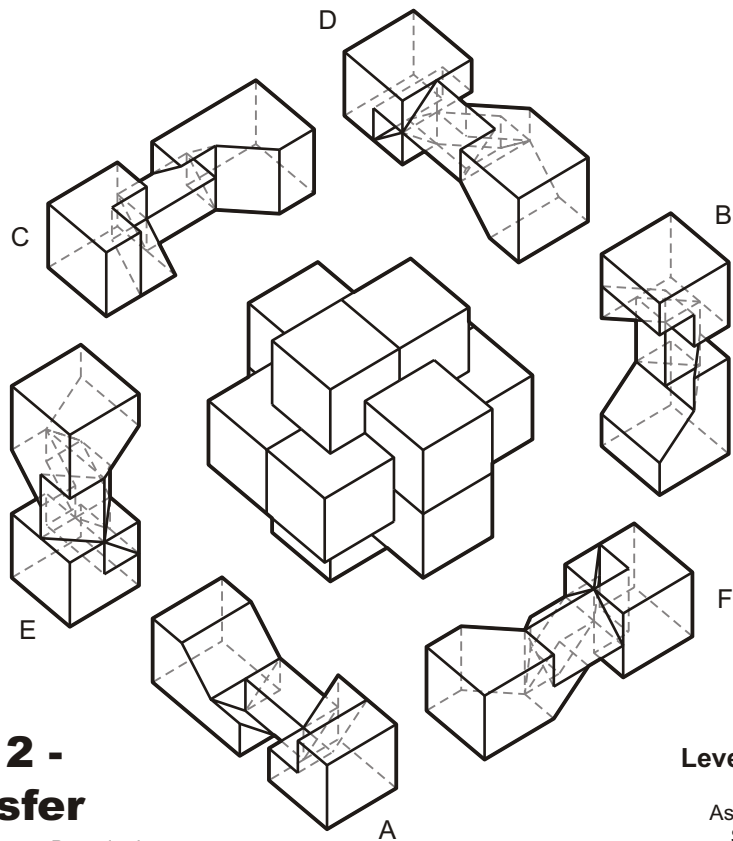
## NOS 1 - Compressed

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 2

Assemblies: 1  
Solutions: 1



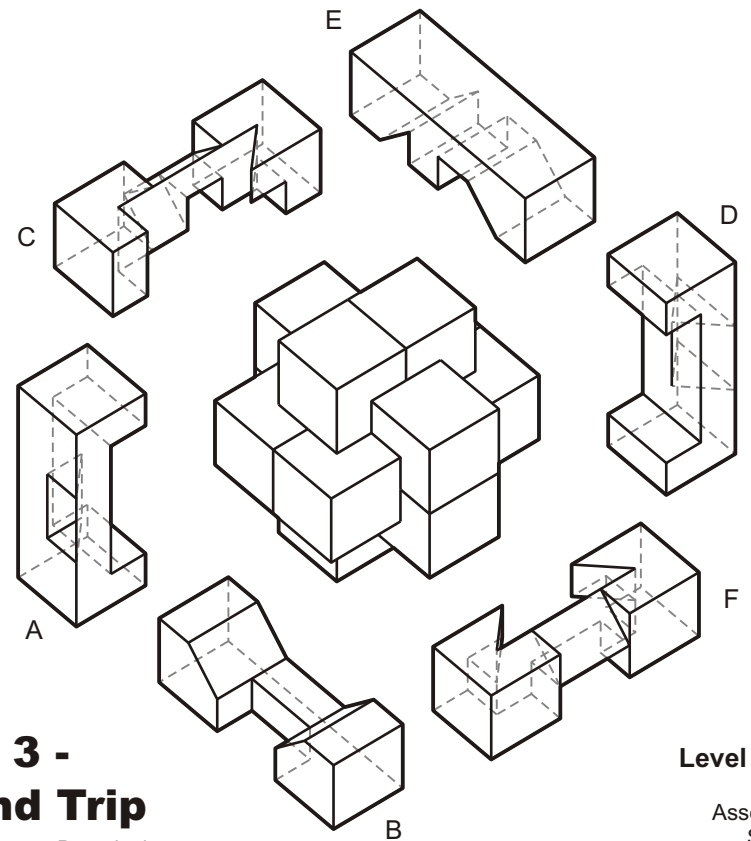
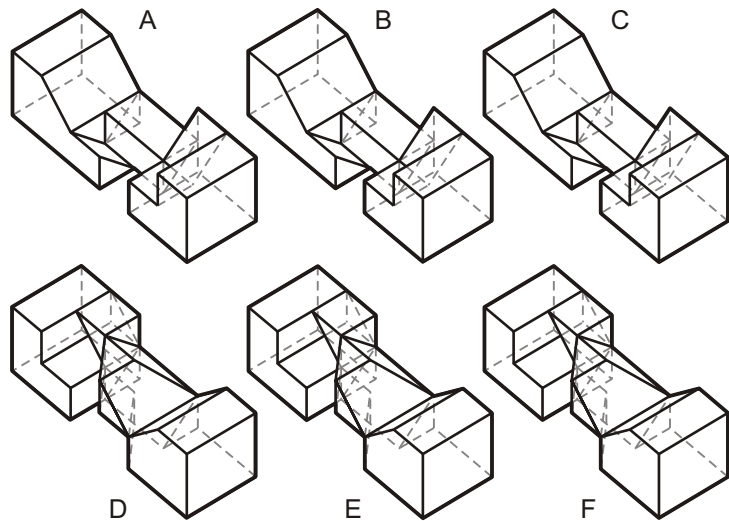


**NOS 2 -  
Transfer**

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 2-2-2-2

Assemblies: 1  
Solutions: 1

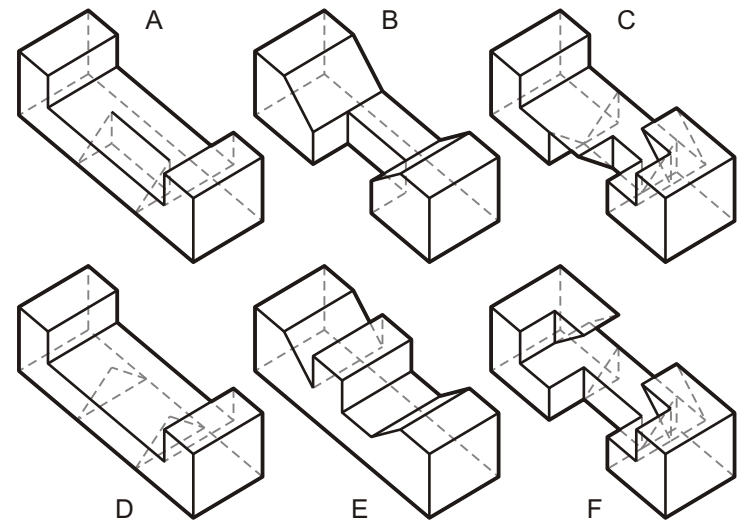


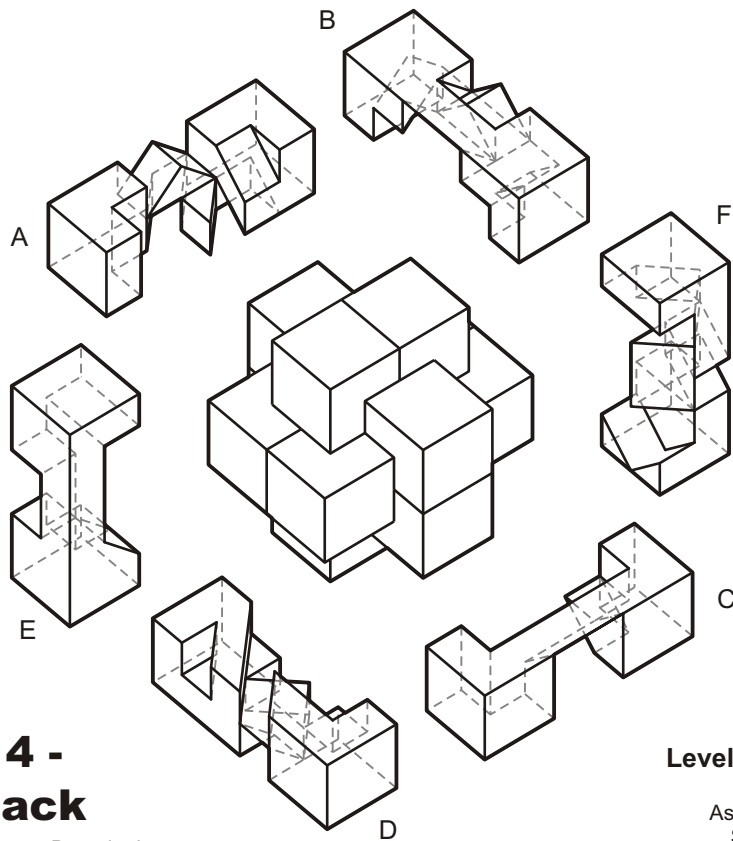
**NOS 3 -  
Round Trip**

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 4-8-2-2-1

Assemblies: 16  
Solutions: 1



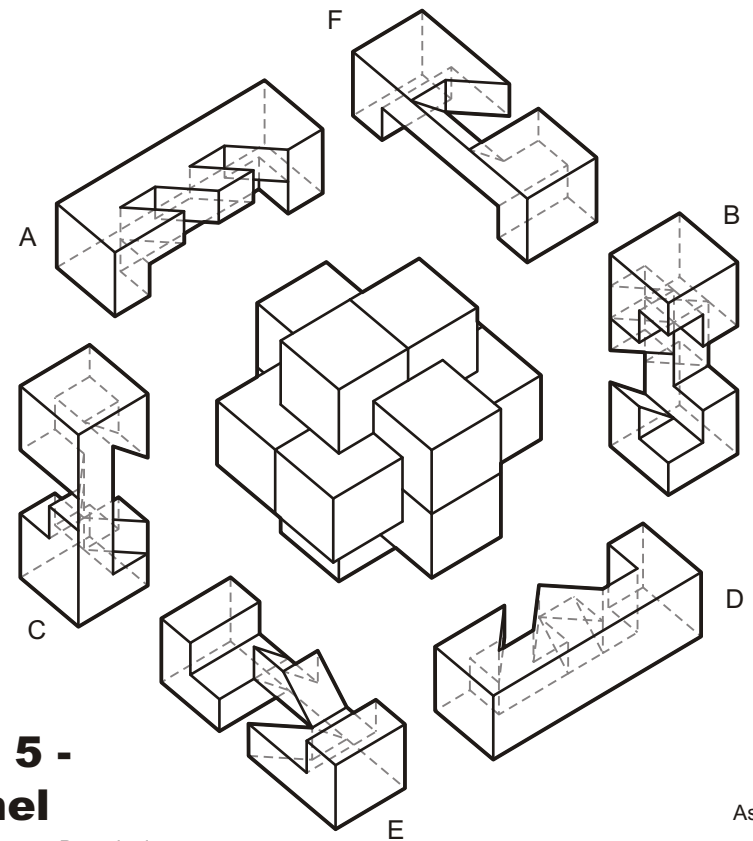
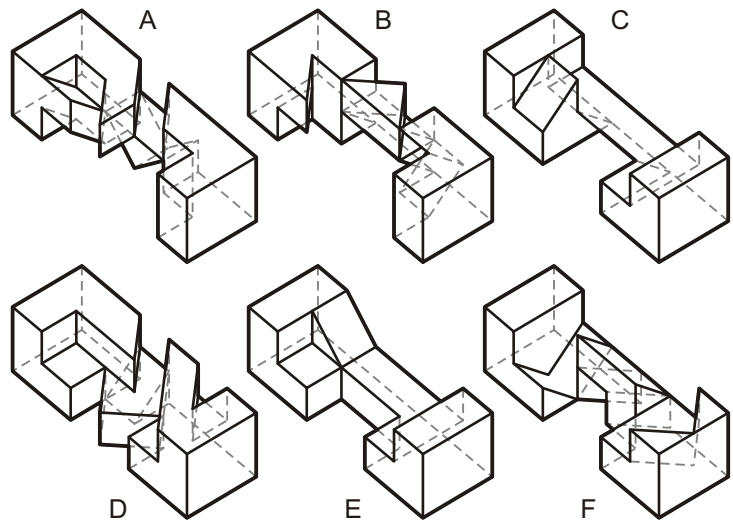


## NOS 4 - Go Back

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 15-2-1-1

Assemblies: 2  
Solutions: 1

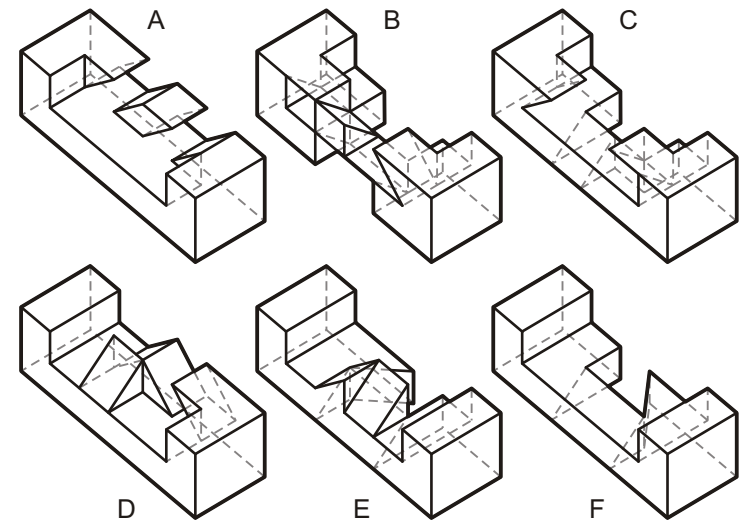


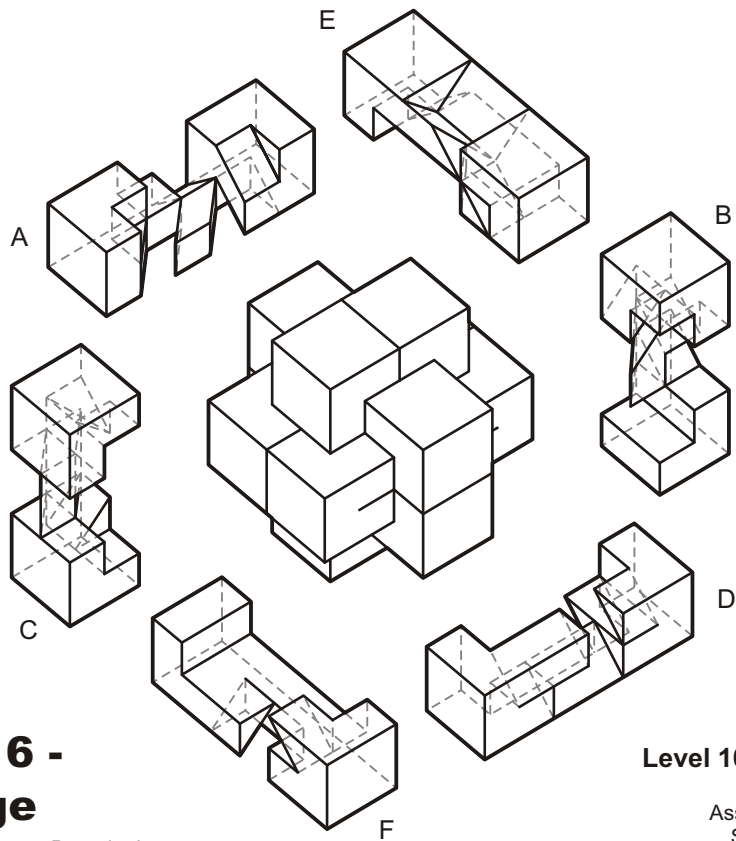
## NOS 5 - Crenel

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 7-2

Assemblies: 1  
Solutions: 1



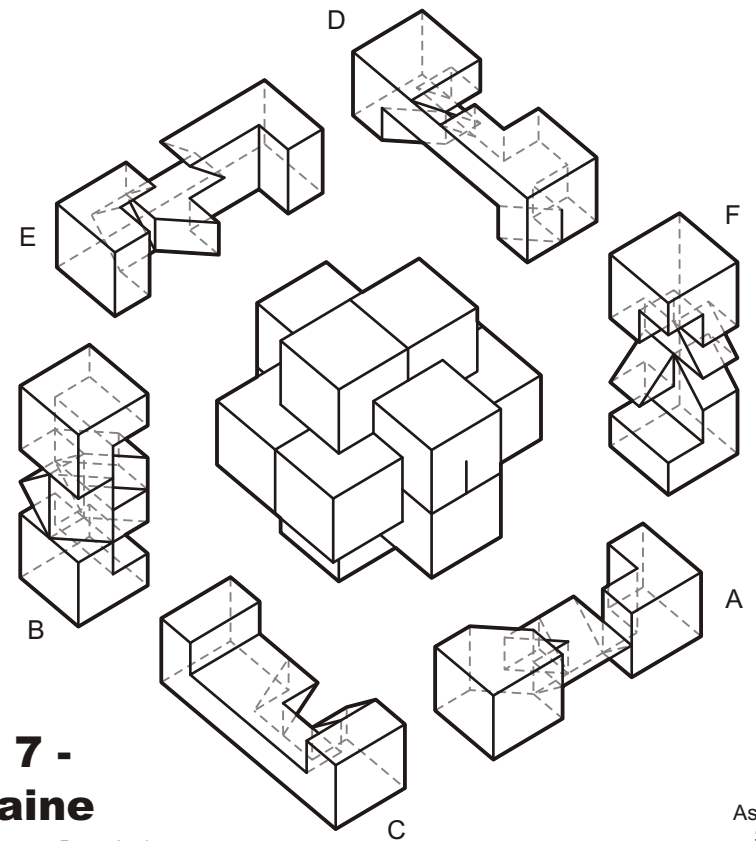
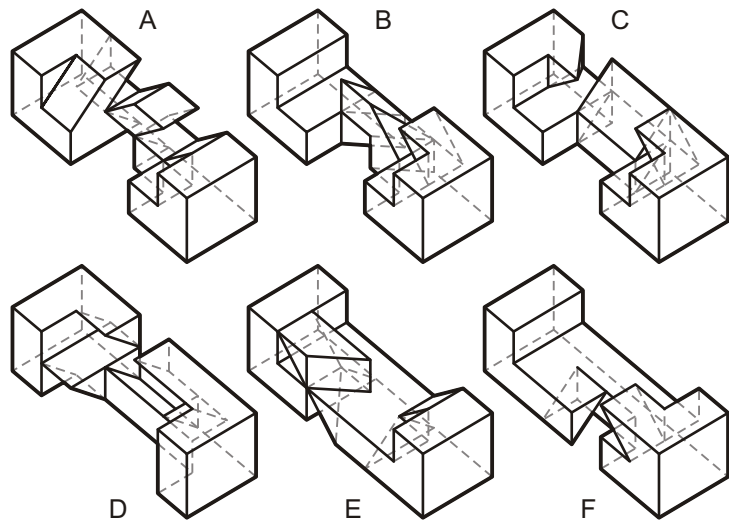


**NOS 6 -  
Dodge**

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 10-5-1-2-2

Assemblies: 3  
Solutions: 1



**NOS 7 -  
Seizaine**

Design: Gregory Benedetti  
Drawing by Frans de Vreugd

Level 16

Assemblies: 1  
Solutions: 5

