



UNIVERSITAS INDONESIA

**PERHITUNGAN INDEK KOMPLEKSITAS FITUR PRODUK
MELALUI IDENTIFIKASI DAN REKOGNISI
INFORMASI GEOMETRI**

TESIS

MOCHAMAD SHOLEH

0906496213

**FAKULTAS TEKNIK
PROGRAM STUDI TEKNIK MESIN
DEPOK
JULI 2012**

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**Diajukan sebagai salah satu syarat untuk memperoleh gelar
Magister Teknik**

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0906496213

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PROGRAM STUDI TEKNIK MESIN
PERANCANGAN DAN MANUFAKTUR PRODUK
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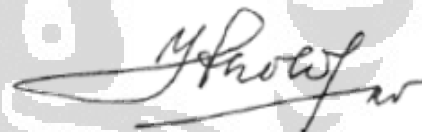
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KATA PENGANTAR

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ABSTRAK

Nama : Mochamad Sholeh
NPM : 0906496213
Judul : Perhitungan Indeks Kompleksitas Fitur Produk Melalui Identifikasi Dan Rekognisi Informasi Geometri

Kecepatan produk sampai ke pasaran menuntut kecepatan dalam pemilihan desain, dimana bentuk desain dipengaruhi oleh fitur, bentuk fitur berbeda bisa memiliki fungsi sama sehingga pilihan bentuk fitur akan ikut menentukan dalam proses permesinan dan biaya produksinya

Pada penelitian ini dilakukan penetapan identitas melalui pengenalan informasi geometri dari bentuk-bentuk fitur yang diklasifikasikan oleh Jong-Yun Jung kemudian digambar dengan model solid disimpan bentuk stp atau step file selanjutnya diekstrak dengan notepad sehingga diperoleh entity Advance_Face dan Edge_Curve, yang diolah menjadi koefisien relatif produk.

Indek kompleksitas fitur produk mekanik dihitung menggunakan model yang dikembangkan sebelumnya oleh El Maraghy dan diperoleh nilai kompleksitas tertinggi untuk fitur rotasional adalah bentuk Neck yaitu 6,30, fitur prismatic bentuk slot yaitu 6,05, fitur slab yaitu bentuk pocket sebesar 5,66 dan fitur revolving sebesar 4,94

Kata Kunci : fitur, informasi geometri, indeks kompleksitas fitur produk.

ABSTRACT

Name : Mochamad Sholeh
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Title : The Computation of Complexity Index Of Product Features Through Identification And Recognition Of Geometry Information

The speed of products demands speed in the selection of design where design is influenced by the shape of the feature, having different form of a feature can have the same functions so insiders features form options determine the process of machinery and production costs.

This research was conducted on identity determination through the introduction of information geometry forms features are classified by Jong-Yun Jung later drawn with CAD solid form, it saved on stp model or step file and then extracted with notepad so that retrieved entity Advance_Face and Edge_Curve, which are processed into relative complexity coefficients.

Feature product complexity index was calculated using a model developed by El Maraghy and accrues the highest complexity value for rotational features is a form of neck of 6.30, prismatic features form slots which of 6.05, the form of pocket features slab of 5.66 and revolving features of 4.94.

Keywords: features ,information geometry , feature product complexity index.

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BAB I

PENDAHULUAN

1.1. LATAR BELAKANG MASALAH

Adalah suatu kenyataan yang menarik jika ada seorang *mechanical / design engineer* yang telah bekerja bertahun-tahun mendesain berbagai macam *mechanical parts*, tapi masih juga terus belajar mengenai desain proses. Adalah sepatutnya bila seseorang telah lama menekuni suatu pekerjaan, maka dia menjadi seorang yang pakar / mahir dalam bidang tersebut. Di bidang desain proses, hal tersebut tidak sepenuhnya berlaku. Desain adalah proses yang berkelanjutan. Di dunia *product design*, perubahan adalah sesuatu keniscayaan (pasti). Konsumen dari suatu produk selalu dan pasti menginginkan perubahan / perbaikan dalam *style, design, low cost, high quality, good recycling* dll. Perkembangan teknologi yang luar biasa, suatu produk yang dulunya hanya terlihat biasa saja, tapi sekarang sudah berubah menjadi suatu produk yang lebih kompleks. Keinginan pasar yang berubah adalah salah satu faktor kenapa suatu desain dari produk terus berganti-ganti. Dan itulah alasannya kenapa seorang *mechanical/design engineer* harus senantiasa belajar ilmu desain proses secara berkesinambungan.

Industri otomotif diharapkan menjadi salah satu faktor pendorong pertumbuhan ekonomi Indonesia. Hal tersebut ditunjukkan oleh data pada Desember 2010 yang mana peningkatan penjualan mobil mencapai 700 ribu unit dan motor sebesar 7 juta unit. Perusahaan riset Frost & Sullivan memperkirakan tahun ini penjualan mobil di Indonesia akan naik moderat sebesar 6,5 persen dari tahun sebelumnya menjadi 948.500 unit. (ANTARA News, 12 Januari 2012) ^[1] dan kenyataannya angka penjualan mobil di Indonesia mengalami kenaikan hingga 43% pada bulan April 2012^[2] hal tersebut disebabkan oleh terjadinya penurunan penjualan mobil tahun lalu akibat bencana gempa dan tsunami yang melanda Jepang.

Berdasarkan data dari Gabungan Industri Kendaraan Bermotor Indonesia (Gaikindo), total penjualan mobil di bulan April mencapai 87.079 unit. Sementara untuk sepeda motor, produsen sepeda motor di Indonesia mencatatkan prestasi di

awal tahun 2012 ini. Pasalnya, tidak kurang dari 653.239 unit motor terjual di bulan Januari 2012. Jumlah ini meningkat dari penjualan Desember 2011 yang hanya sebanyak 463.431 unit atau naik 40,96%^[3] Asosiasi Industri Sepeda Motor Indonesia menargetkan penjualan sepeda motor nasional di 2012 dengan scenario optimistis naik 5% menjadi 8,7 juta unit dibanding proyeksi penjualan tahun 2011 sebanyak 8,3 juta unit (Jumat, 08 June 2012 , 03:21 WIB).

Menurut *Vice President Automotive Practice Frost & Sullivan* Asia Pasifik Vivek Vaidya di Jakarta, Rabu, perekonomian yang stabil, sentimen positif konsumen dan penawaran model-model baru akan menopang peningkatan penjualan mobil Tahun ini. Selama 2012, dia menambahkan, para produsen akan meluncurkan antara 25 sampai 30 model baru ke pasar Indonesia. Ini akan mendorong penjualan. Pencapaian fakta tersebut tidak terlepas dari Perpres. No. 28, Tahun 2008, tentang Kebijakan Industri Nasional yang merupakan regulasi lima tahunan dan mengatur tentang sasaran industri nasional yang harus dikembangkan beserta kriteria yang harus dipenuhi oleh industri hingga tahun 2025^[4]. Salah satu sasaran industri andalan Indonesia sampai dengan tahun 2025 adalah mampu melakukan disain dan manufaktur alat angkut seperti industri otomotif (kendaraan bermotor), perkapalan, kedirgantaraan dan perkeretaapian. Banyak sekali produk primadona rakyat Indonesia yang kini kandungan lokalnya sudah mencapai 75%. Untuk terus meningkatkan kandungan lokal dari industri otomotif maka riset-riset yang berhubungan dengan hal tersebut terus dikembangkan. Perkembangan lebih lanjut dengan akan dikembangkannya mobnas semua komponen harus murni buatan dalam negeri (lokal) maka ini lebih mendongkrak perkembangan otomotif di tanah air, yang hal ini ditunjukkan dengan jenis-jenis mobnas seperti GEA buatan INKA, Kiat Esemka buatan Solo, TAWON yang pabriknya berlokasi Kampung Sawah, Cilodong Depok.

Perkembangan tentu akan lebih meningkat karena pemerintah memberikan fasilitas kepada industry yang melakukan penelitian, pengembangan dan inovasi (ps 4 Perpres no 28-2008). Oleh karenanya proses desain sampai produksi diharapkan bisa cepat dan produk segera bisa dinikmati oleh masyarakat. Untuk mempercepat proses produksi, maka proses desain juga harus lebih cepat, dan

desain ini harus sudah memperhitungkan bagaimana proses selanjutnya yaitu produksi maupun perakitan.

Desain adalah proses menerjemahkan ide atau menterjemahkan kebutuhan pasar ke dalam informasi rinci bagaimana suatu produk dapat dibuat. Masing-masing tahapan memerlukan keputusan masing-masing dan tidak bisa bebas sesukanya tanpa memperhitungkan proses kelanjutannya. Pilihan desain tidak bisa dibuat secara independen, ia akan mempengaruhi terhadap proses manufaktur, pilihan jenis mesin atau perkakas yang digunakan, tingkat kesulitan permesinan, waktu untuk memproduksi, makin unik suatu bentuk makin rumit proses manufakturnya, begitu juga dengan proses perakitan. Keunikan desain ditentukan dengan ragam informasi, jumlah informasi yang ada dan persyaratan yang harus dipenuhi. Ini bisa diperoleh sedari awal desain itu dibentuk, dengan jalan menggambar desain tersebut menggunakan software Computer Aided Design / Computer Aided Manufacturing yang kemudian disimpan dalam bentuk file STEP (STAndart for the Exchange of Product model data) atau file stp yang berbasis pada STEP, selanjutnya untuk menjabarkan informasi yang ada pada file STEP atau file stp ini file hasil gambar dibuka dengan notepad sehingga informasi yang diperlukan bisa diperoleh.

Mengingat begitu strategisnya desain ini, peneliti tertarik untuk mengidentifikasi fitur sehingga dapat dikenali informasi geometrinya dan dapat dihitung indeks kompleksitas produknya.

1.2. PERUMUSAN MASALAH.

Dalam desain komponen otomotif suatu keniscayaan melibatkan fitur. Bentuk fitur ada berbagai macam bentuk dan hal ini tidak bisa lepas dengan proses permesinan yang dilakukan,. Keunikan bentuk fitur akan memberikan penilaian tersendiri terhadap indeks kompleksitas, makin besar indeks kompleksitas produk, makin rumit pula proses permesinannya. Disini seorang perancang / *mechanical design* harus bisa memilih bentuk fitur sebagai *alternative* pengganti bentuk suatu fitur yang fungsi tetap terpenuhi tetapi memiliki indeks kompleksitas produk

rendah agar bisa menurunkan waktu dan biaya permesinan sehingga produk bisa sampai kekonsumen lebih cepat dengan harga lebih murah.

Untuk itu perlu dirumuskan terlebih dahulu hal yang berkaitan dengan indeks kompleksitas fitur produk

- 1.2.1. Bagaimana mengidentifikasi bentuk fitur seperti yang telah diklasifikasikan oleh Jong-Yun Jung^[5]
- 1.2.2. Bagaimana merekognisi informasi geometri dari bentuk-bentuk fitur.
- 1.2.3. Bagaimana pengaruh perbedaan fitur terhadap indeks kompleksitas produk.

1.3.TUJUAN PENELITIAN.

Menghitung indeks kompleksitas fitur produk dari rancangan produk yang masih berbentuk gambar (desain produk) dengan cara mengidentifikasi fitur melalui rekognisi informasi geometri sehingga dapat dijadikan acuan/panduan

1.4. BATASAN MASALAH.

Luasnya ruang lingkup penelitian dan keterbatasan waktu, maka dalam penelitian ini diberikan batasan masalah.

- 1.4.1. Penggambaran desain produk mempergunakan software Computer Aided Design (CAD) .
- 1.4.2. Bentuk fitur yang diteliti adalah bentuk Rotational, Prismatic, Slab dan Revolving (“Manufacturing cost estimation parts based on manufacturing feature” , Jong – Yun Jung)^[5].
- 1.4.3. Identifikasi produk menggunakan STEP file menurut ISO 10303 – 214 core data untuk proses desain mekanikal otomotif.
- 1.4.4. Indeks kompleksitas produk dihitung dengan metode yang dikembangkan oleh El-Maraghy (Modelling of Manufacturing Systems Complexity).

1.5.SISTEMATIKA PENULISAN

Agar pembahasan proposal tesis ini lebih mudah dipahami, maka sistematika penulisan dilakukan sebagai berikut:

Bab 1 Pendahuluan, terdiri dari latar belakang, perumusan masalah, tujuan penelitian batasan masalah, metodologi penelitian dan sistematika penulisan.

Bab 2 Dasar teori, pada bab ini, dijelaskan teori yang dijadikan dasar dalam penerapan analisa tentang pengaruh perubahan fitur terhadap indek kompleksitas produk komponen otomotif.

Bab 3 Metodologi penelitian, Pada Bab ini dibahas tentang proses pengambilan data dari gambar yang dibentuk dengan software CAD/CAM kemudian disimpan dalam bentuk file stp atau file STEP yang selanjutnya dijabarkan dengan notepad sehingga terpaparkan informasi . Dengan adanya informasi ini, dipilih bagian mana yang diperlukan untuk perhitungan indek kompleksitas fitur produk.

Bab 4 Pengolahan data dan analisa, Dari data-data yang ada, kemudian diolah sedemikian rupa sehingga data tersebut bisa dimanfaatkan sebagai unsur pembentuk indek kompleksitas fitur produk. Kemudian dengan menggunakan rumus-rumus yang telah diajukan oleh : ElMaraghy dan Urbanic dihitung nilai kompleksitas dari bentuk fitur rotasional, fitur prismatic, fitur slab dan fitur revolving.

Dari hasil perhitungan nilai indek kompleksitas dapat dibuat pedoman yang dapat menjadi bahan rekomendasi untuk mechanical/design engineering dalam merancang produk, tentang bentuk fitur dan pengaruhnya terhadap kompleksitas fitur produk.

Bab 5 Kesimpulan dan saran, Pada bab ini disajikan kesimpulan yang diperoleh dari hasil penelitian dan saran untuk kelanjutannya

Daftar pustaka, Bagian ini memuat sumber data dan referensi yang digunakan sebagai bahan penulisan tesis ini seperti buku maupun jurnal.

BAB II.

TINJAUAN PUSTAKA

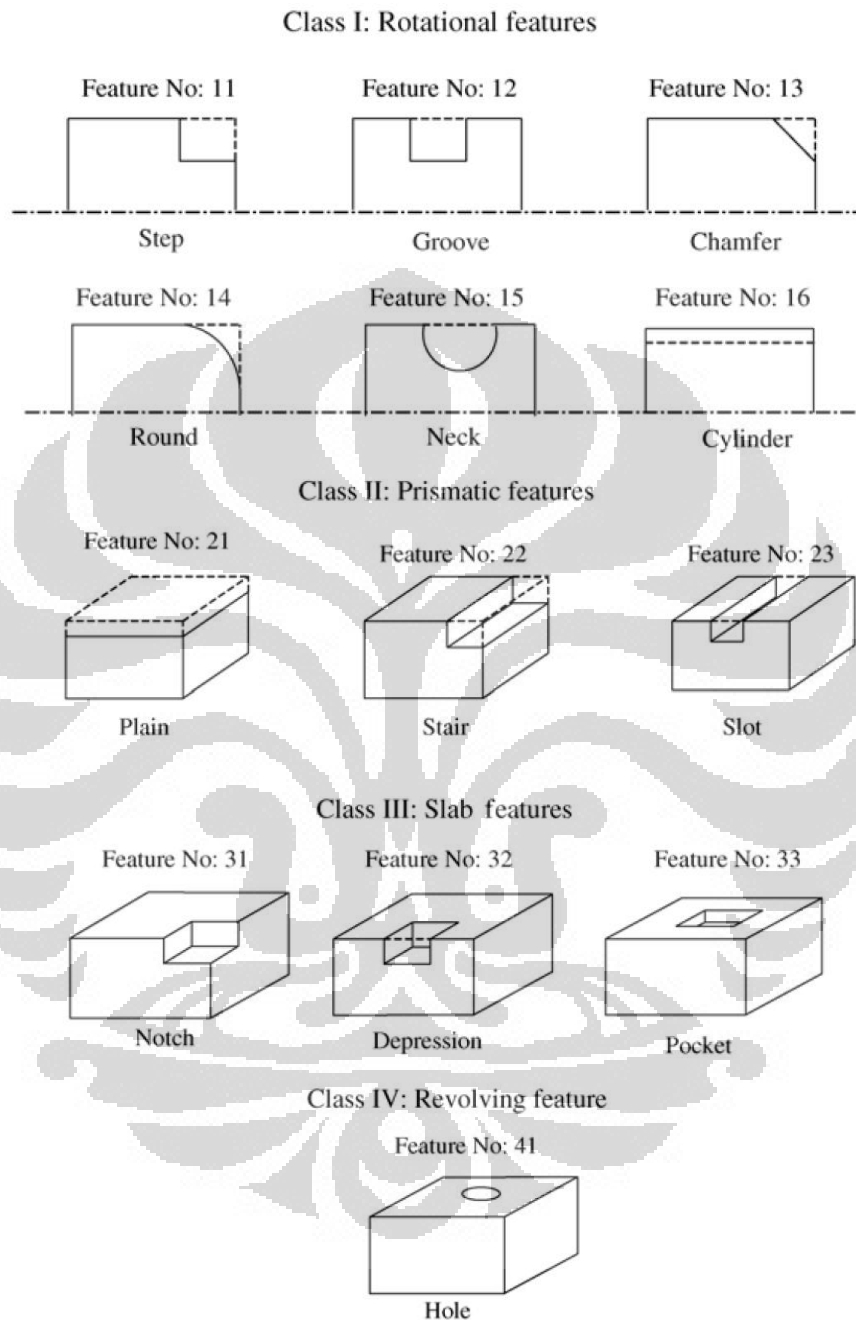
2.1. FITUR.

Fitur adalah elemen-elemen geometris dan orientasi yang mendefinisikan informasi permukaan dan volume tanpa ada kaitannya dengan proses permesinan untuk pengurangan volume material. Machining fitur: adalah kombinasi dari fitur dan kaitannya dengan proses permesinan.

Fitur tidak menyiratkan arti yang sama dalam disiplin ilmu teknik yang berbeda. Hal ini menyebabkan definisi yang tidak jelas beberapa fitur. Fitur merupakan karakteristik yang membedakan bentuk benda satu dengan yang lain sehingga dengan fitur inilah pembeda suatu komponen atau bentuk. Fitur menyediakan sarana alami untuk mengasosiasikan pengetahuan domain dengan representasi objek. Fitur ini sangat penting dalam konteks manufaktur karena fitur merupakan cerminan isi bagian. rekayasa Selain itu, fitur menyediakan sarana yang kuat menangkap maksud desain, memungkinkan pengguna untuk alasan pada tingkat abstraksi yang lebih tinggi dari yang disediakan oleh geometrik dan topologi entitas. Fitur berisi informasi geometris dan topological dan mewakili tingkat tinggi entitas berguna dalam analisis bagian. Ada spektrum yang luas dari kegiatan rekayasa menghasilkan berbagai definisi yang cocok untuk setiap kegiatan. Untuk desainer, fitur mungkin mewakili fungsionalitas, karena perencana permesian, fitur merupakan wilayah bagian yang akan cocok atau menghubungkan dengan fitur yang sesuai di pihak lain, dll.

Jong-Yun Jung dalam *Journal of Intelligent Manufacturing* berjudul “*Manufacturing cost estimation for machined parts based on manufacturing features*”^[5] mengklasifikasikan ada empat (4) kelas untuk fitur permesinan. Kelas pertama fitur rotasional dimana proses permesinan menggunakan mesin bubut, kelas ke dua fitur prismatik, yang umumnya pengerjaannya menggunakan *slab* atau *face milling*. Kelas ke tiga adalah slab, dimana umumnya pengerjaannya

menggunakan *end mill*. Kelas yang keempat adalah bentuk *revolving*, yang biasanya pengerjaannya menggunakan pengeboran.



Gambar 2.1 Feature Classification and Nomenclature [5].

Pada gambar 2.1, menunjukkan kelas fitur dan contoh. *Step*, *neck*, *chamfer*, *round*, *cylinder* dan *groove* semua masuk kelas 1. Kesemuanya ini dibentuk menggunakan operasi *turning*. *Step* memiliki dua ukuran diameter berbeda pada

bagian ujung batang. *Groove* mirip dengan *step* tetapi lokasi perbedaan ukuran dibagian tengah batang, *Neck* juga terletak dibagian tengah batang. *Chamfer* dan *round* terletak dibagian ujung dari masing-masing batang. Contoh *fitur prismatic* adalah *plain*, *stair* dan *slot*. *Noch*, *depression* dan *pocket* masuk kekelas tiga yang memiliki bentuk geometri lebih kompleks dari kelas dua. Pengerjaan mesin utamanya dengan menggunakan *end mill* dengan diameter umumnya lebih kecil dari *face mill* atau *slab mill*. Dengan demikian pengoperasian *end mill* memiliki kecepatan pembuangan material (MRR) lebih rendah sehingga meningkat waktu permesinan dan biaya permesinannya. Lobang (Hole) diklasifikasikan kelas ke empat yang pengoperasiannya menggunakan pengeboran dan *reaming*.

Dari survey berkaitan dengan pengerjaan metal (PERA) pengerjaan turning sekitar 24,9 % , milling 20,2 % dan pengeboran sekitar 28,2 % sehingga jumlah keseluruhan adalah 73,3 % dari proses permesinan.

Dalam penelitian ini, fitur yang dipergunakan adalah yang termasuk dalam penggolongan seperti yang disampaikan oleh Jong-Yun Jung.

2.2. GEOMETRI.

Geometri adalah bagian matematika dan selalu berkaitan dengan matematika yg menerangkan sifat-sifat garis, sudut, bidang, dan ruang. Berbicara tentang geometri pasti menyinggung masalah bangun geometri itu sendiri, garis, segi tiga, segi empat, balok, lingkaran, bola dan lain sebagainya.

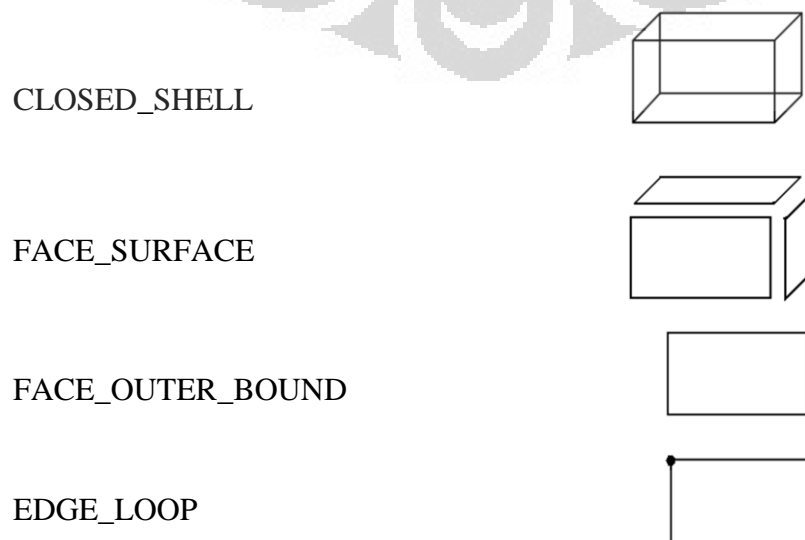
Sistem geometri modelling diklasifikasikan sebagai model sistem wireframe modelling system , surface modelling system, solid modelling system dan nonmanifold modelling system (Kunwoo Lee)^[6]

Metode Ekstraksi data yang digunakan dalam penelitian ini menggunakan bagian geometris dan topologi file STEP^[7]. Sebagai langkah pertama, jumlah pointer digunakan untuk membangun CLOSE_SHELL dihitung. Sejak pointer masing-masing mewakili satu FACE_SURFACE, jumlah pointer sama dengan persentase

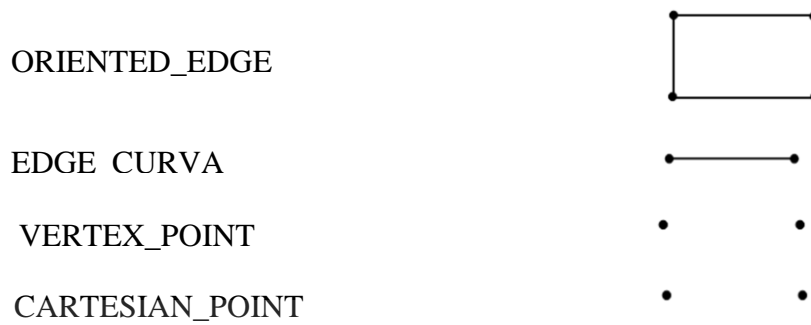
FACE_SURFACE dalam model. Kemudian masing-masing pointer FACE_SURFACE ditelusuri untuk mendapatkan alamat FACE_BOUND setiap pointer FACE_BOUND berisi alamat dari sebuah EDGE_LOOP. Pointer ini kemudian ditelusuri untuk mendapatkan set pointer diperlukan untuk menentukan ORIENTED_EDGE. Tiap ORIENTED_EDGE memberikan informasi dari alamat pointer untuk CURVE_EDGE. Pointer ini menyebabkan VERTEX_POINT yang pada gilirannya memberikan alamat pointer ke yang sesuai CARTESIAN_POINT. Akhirnya, alamat pointer dari CARTESIAN_POINT ditelusuri untuk mendapatkan koordinat titik dalam ruang tiga dimensi.

Sementara menelusuri ke bawah hiarki untuk mencari pointer untuk elemen hirarki berikutnya, pointer terkait dengan setiap elemen dicatat. Pointer ini membangun konektivitas dipercabangan. Sebagai contoh, jumlah pointer digunakan untuk membentuk EDGE_LOOP menentukan jumlah ORIENTED_EDGE yang harus ditelusuri. Jumlah pointer yang terkait juga menunjukkan bentuk permukaan (misalnya, empat pointer EDGE_LOOP menunjukkan poligon bersisi empat dan lima pointer EDGE_LOOP menunjukkan poligon lima sisi, dll).

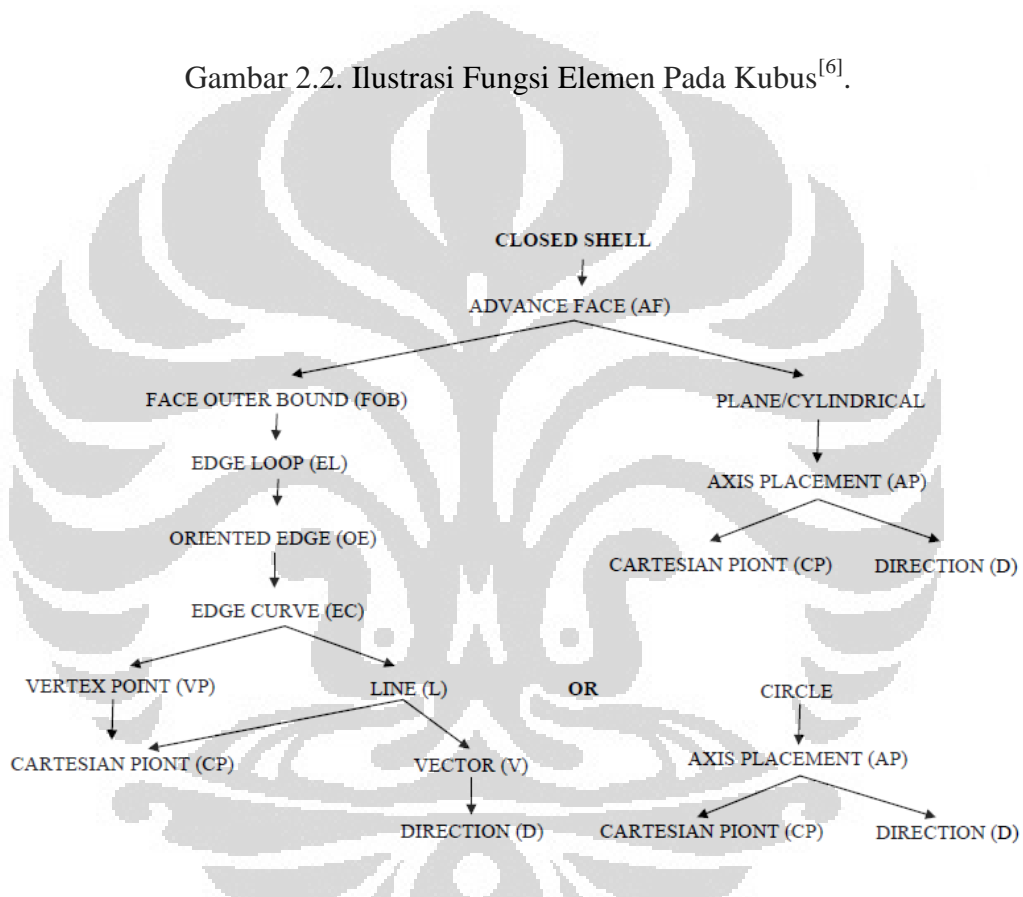
Sebuah kotak persegi panjang dipilih untuk menggambarkan proses ekstraksi data. Para elemen fungsional dari kotak seperti CLOSED-SHELL, FACE_SURFACE, dll dijelaskan pada Gambar. 2.2. Prosedur ekstraksi data digambarkan pada Gambar. 2.3.



Indonesia



Gambar 2.2. Ilustrasi Fungsi Elemen Pada Kubus^[6].



Gambar 2.3. Alur fungsi elemen STEP^[6]

2.3. STRUKTUR DATA B-Rep.^[5]

Elemen dasar komposisi batas dari bentuk solid adalah vertex, edges dan faces. Dengan demikian struktur data B-Rep adalah kesatuan dengan informasi tentang bagaimana keterhubungannya. Salah satu bentuk paling sederhana seperti pada

tabel 1, yang merupakan struktur data solid yang ditunjukkan pada gambar no. 2.4.

Tabel 1. Tiga Tabel Peletakan B-Rep^[5]

Face Table		Edge Table		Vertex Table	
Face	Edges	Edge	Vertices	Vertex	Coordinates
F ₁	E ₁ , E ₅ , E ₆	E ₁	V ₁ , V ₂	V ₁	x ₁ , y ₁ , z ₁
F ₂	E ₂ , E ₆ , E ₇	E ₂	V ₂ , V ₃	V ₂	x ₂ , y ₂ , z ₂
F ₃	E ₃ , E ₇ , E ₈	E ₃	V ₃ , V ₄	V ₃	x ₃ , y ₃ , z ₃
F ₄	E ₄ , E ₈ , E ₅	E ₄	V ₄ , V ₁	V ₄	x ₄ , y ₄ , z ₄
F ₅	E ₁ , E ₂ , E ₃ , E ₄	E ₅	V ₁ , V ₅	V ₅	x ₅ , y ₅ , z ₅
		E ₆	V ₂ , V ₅	V ₆	x ₆ , y ₆ , z ₆
		E ₇	V ₃ , V ₅		
		E ₈	V ₄ , V ₅		

Gambar 2.4. Peletakan Data pada geometri Solid^[5].

2.4. STEP FILE DAN STP FILE

STEP (STandard for Exchange of Product model data) adalah standart Internasional yang baru (ISO 10303)^[7] untuk mempresentasikan dan mengubah informasi *product model*, sedangkan stp adalah berbasis pada STEP. Hal ini

mencakup data objek yang diungkapkan secara khusus menggunakan bahasa tersirat, untuk memrepresentasi data. STEP juga mendefinisikan metode pelaksanaan, misalnya, perpindahan fisik file, dan menawarkan sumber yang berbeda, seperti geometris dan menyatakan penguraian system logika dalam penafsiran (*topological*).

Perkembangan STEP dimulai tahun 1984 sebagai sebuah kolaborasi seluruh dunia. Tujuannya adalah untuk mendefinisikan standar untuk mencakup semua aspek produk (misalnya geometri, topologi, toleransi, bahan, dll) ^[7], Penggunaan sebelumnya STEP adalah kumpulan standar untuk mempresentasikan dan menukar informasi produk. Bagian utama STEP sudah menjadi standar internasional, sementara banyak bagian yang masih dalam pengembangan. Pengembangan ini dilakukan di bawah kontrol dari *International Standard Organization (ISO)*.

Tujuan STEP adalah untuk menawarkan sistem mekanisme – independent untuk menggambarkan informasi produk dalam CAD system. Ini memisahkan penyajian informasi produk dari metode pelaksanaan yang digunakan untuk pertukaran data. Representasi ini menawarkan definisi informasi produk untuk berbagai macam penggunaan. STEP juga merupakan penyediaan dasar untuk pengarsipan informasi produk dan metodologi untuk pengujian kesesuaian penerapan.

STEP adalah spesifikasi bahasa data resmi yang digunakan untuk mempresentasikan informasi produk. Sebagai fasilitator dalam pengembangan implementasinya. Hal ini juga memungkinkan konsistensi pernyataan. STEP menentukan metode pelaksanaan yang digunakan untuk pertukaran data yang mendukung penyajian informasi produk.

2.5 STRUKTUR FILE STEP

Struktur file STEP ini berdasarkan bahasa dan dijelaskan oleh konteks tata bahasa bebas untuk memudahkan parsing oleh perangkat lunak. Tata bahasa yang

diekspresikan dalam notasi Syntax Wirth (S. Ma, Y. Marechal dan JL Coulomb, 2001). Informasi yang terkandung dengan file tersebut dalam format bebas dan dengan demikian tidak tergantung kolom. File STEP dimulai dengan kata kunci ISO-10303-21 dan diakhiri oleh kata kunci END-ISO-10303-21, dan di bagian cara yang sama yang dipisahkan oleh kata kunci. Isi bagian terbatas pada contoh entitas, yaitu, deskripsi objek yang menarik. Secara singkat format data adalah sebagai berikut. Setiap contoh entitas memiliki pengidentifikasi bentuk # N, dimana N adalah bilangan bulat unik.

Setiap entitas memiliki nama. Data untuk sebuah contoh entitas mengikuti nama jenis dan ditutupi dalam kurung. Datum dapat berupa baik "primitif" seperti integer, real atau string, dll, atau mungkin referensi ke contoh lain entitas dalam file. Referensi yang demikian itu memiliki bentuk # N dimana N adalah jumlah entitas dari contoh referensi. Entitas dapat dirujuk sebelum mereka didefinisikan dalam file.

Sebuah file STEP terdiri dari tiga jenis data (David Loffredo, 2000) yaitu: Deskriptif, Geometri dan topologi, dan dibagi menjadi dua bagian utama: Header bagian dan bagian Data. Informasi tentang versi penerjemah STEP dan jenis perangkat lunak CAD digunakan untuk membangun model termasuk dalam bagian Header. Bagian Data terdiri dari definisi entitas geometris dan elemen topologi face, loop dan bounds Referensi antara elemen disediakan oleh id contoh atau pointer (yang dapat diulang). Id contoh ini atau pointer sendiri tidak memiliki arti semantik kecuali untuk mengidentifikasi sebuah contoh dalam file STEP. Urutan kejadian dalam file STEP tidak ditentukan oleh standar. Standar STEP terdiri dari banyak bagian. Seluruh model diwakili oleh berbagai entitas geometris dan elemen topologi diatur dalam, bagian data. Sebuah deskripsi singkat dari beberapa elemen STEP data penting diberikan di bawah ini ^[7].

Closed Shell: Kumpulan dari satu atau lebih face dengan batas suatu bentuk dalam ruang tiga dimensi dan membagi ruang menjadi dua bentuk, satu yang terbatas dan yang tak terbatas lainnya.

Face-surface : Suatu jenis face di mana geometri didefinisikan oleh surface, permukaan dan vertex.

Face-Bound: Sebuah loop digunakan membatasi face.

Edge-Loop: Sebuah jalan di mana awal dan titik akhir adalah sama.

Oriented-Edge: Sebuah tepi bangun dari tepi lain (asli) dan yang berisi arah (orientasi) informasi. Orientasi-edge akan setara dengan tepi asli jika tidak termasuk informasi orientasi .

Edge-Curve: Jenis tepi yang memiliki geometri sepenuhnya didefinisikan.

Vertex-Point: Sebuah titik yang mendefinisikan geometri dari simpul.

Cartesian-Point: Alamat dari sebuah titik dalam ruang Cartesian^[8]

(A New Methodology for Recognition of Milling Feature from STEP file –
D.Sreeramulu, National Institute of Technology, Warangal – India – 2008)

ISO-10303-21;

HEADER;

FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Kontrol-ukuran\\Bnt-Baku-
kubus.stp','2012-05-15T22:36:42+00:00','(none)','(none)','CATIA Version 5
Release 19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;

/* file written by CATIA V5R19 */

DATA;

#5=PRODUCT('Bnt-Baku-Dep','',(#2));

#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');

#14=PRODUCT_DEFINITION('','#6,#3);

```
#16=SECURITY_CLASSIFICATION(' ',#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));

#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CON
TEXT((#41,#42,#44))REPRESENTATION_CONTEXT(' '));
ENDSEC;
END-ISO-10303-21;
```

2.6. TOLERANSI LINIER.^[9]

Toleransi adalah suatu penyimpangan ukuran yang diperbolehkan atau diijinkan. Karena penyimpangan ini, benda yang dibuat dengan memakai toleransi masih dapat dipasang atau diasembling. Bagian-bagian atau peralatan dari suatu mesin dibuat oleh operator atau pekerja dalam suatu perusahaan sudah barang tentu dikerjakan dengan ukuran-ukuran yang bertoleransi. Kadang-kadang seorang pekerja hanya mengerjakan bagian mesin yang tertentu saja. Sedangkan pekerja yang lain mengerjakan bagian yang lainnya.

Jika kita akan membuat produk/benda kerja, baik dalam jumlah yang banyak maupun sedikit, terlebih dahulu kita harus menggambarannya dalam bentuk gambar kerja.

Untuk mencapai ukuran yang tepat, sesuai dengan yang tercantum dalam gambar, tidaklah mudah karena banyak faktor yang mempengaruhinya, misalnya :

1. Faktor alat (alat potong)
2. Faktor mesin (presisi tidaknya mesin yang digunakan)
3. Faktor alat ukur
4. Faktor temperatur dan faktor lainnya yang dapat mempengaruhi ketepatan ukuran dari benda kerja tersebut.

Selama penyimpangan tersebut dalam kategori memenuhi syarat, maka produk yang menyimpang dari ukuran dasarnya tersebut dapat diterima. sebaliknya jika

penyimpangan ukuran di luar kategori memenuhi syarat, maka produk tersebut tidak dapat diterima, karena ukurannya terlalu besar atau terlalu kecil dari ukuran yang diminta. Sebagaimana batasan kategori “*memenuhi syarat*” kita harus memberikan dua batasan ukuran yang diperbolehkan yaitu :

1. Batasan ukuran maksimum yang diperbolehkan.
2. Batasan ukuran minimum yang diperbolehkan/diizinkan.

2.6.1. Toleransi Khusus ^[9].

Untuk gambar-gambar yang memerlukan ketelitian khusus, dalam pencantuman ukurannya harus diberi toleransi khusus sesuai dengan standar ISO/R286 (ISO System of Limits and Fits-Sitem ISO untuk Limits dan Suaian). Toleransi ini disebut juga *toleransi Standar Internasional (IT)*. Toleransi khusus merupakan suatu toleransi yang nilainya di luar toleransi umum dan suaian. Nilai toleransinya lebih kecil daripada nilai toleransi umum, namun lebih besar daripada nilai toleransi suaian.

2.6.2. Toleransi Umum.

Toleransi umum diberikan untuk ukuran yang tidak memerlukan ketelitian atau bukan merupakan bagian dari benda berpasangan (suaian).

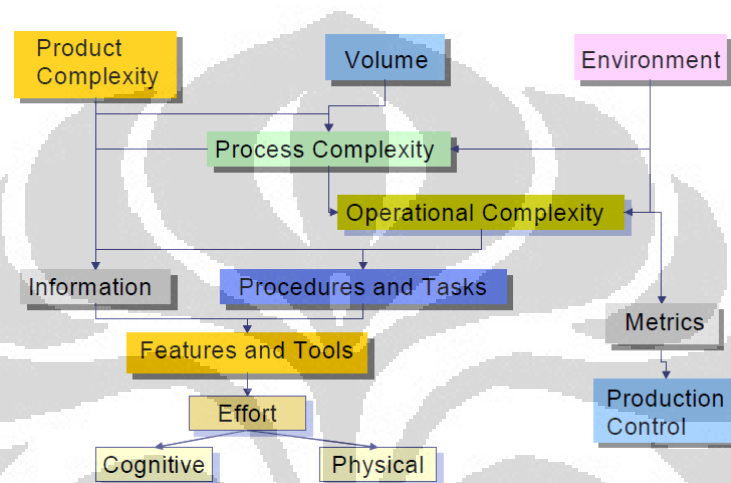
Nilai toleransi umum selalu memiliki batas penyimpangan atas dan batas penyimpangan bawah yang sama. Besarnya toleransi ini ditentukan oleh tingkat kualitas (kekasaran permukaan) dan ukuran dasar.

Tabel 1. Variasi yang diizinkan untuk ukuran linier (Menggambar Mesin menurut standar ISO, Sugiarto, N H) ^[9]

Ukuran nominal (mm)		0,5 - 3	3 - 6	6 - 30	30 - 120	120- 315	315- 1000	1000- 2000
Variasi yang diizinkan	Teliti	± 0,05	± 0,05	± 0,1	± 0,15	± 0,2	± 0,3	± 0,5
	Sedang	± 0,1	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2
	Kasar		± 0,2	± 0,5	± 0,8	± 1,2	± 2	± 3

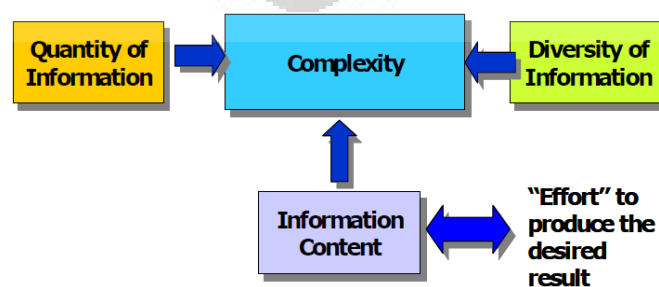
2.7. KOMPLEKSITAS SISTEM MANUFAKTUR ^[10]

Ada tiga jenis kompleksitas yang harus dipertimbangkan dalam lingkungan manufaktur, yaitu kompleksitas produk, kompleksitas proses dan kompleksitas operasional, masing-masing kompleksitas saling mendukung satu terhadap yang lain seperti yang ditunjukkan pada Gambar 2.5.



Gambar. 2.5. Bagan Aliran Kompleksitas Manufaktur^[10]

Elemen dasar dari kompleksitas terdiri dari tiga faktor utama yaitu jumlah informasi, keragaman informasi dan konten informasi, seperti yang digambarkan dalam gambar.4 ^[8] Kompleksitas terkait dengan pemahaman dan pengelolaan volume atau kuantitas informasi, dan keragaman informasi.



Gambar. 2.6. Elemen Dasar Kompleksitas Manufaktur^[10]

2.7.1. Kompleksitas Model.

Diasumsikan bahwa unsur-unsur kompleksitas terdiri dari tiga factor, yaitu : jumlah total informasi, keragaman informasi dan isi informasi , seperti yang diilustrasikan pada gambar 2.6. Kompleksitas dikaitkan dengan pemahaman dan mengatur volume besar atau jumlah informasi, serta berbagai macam informasi. Isi informasi yang digambarkan disini didefinisikan sebagai ukuran "relatif" upaya untuk mencapai hasil yang diperlukan

Faktor kompresi, ukuran informasi entropi H seperti yang diungkapkan oleh persamaan 2, digunakan untuk mewakili kuantitas unsur informasi:

$$H = \log_2 N + 1$$

dimana N adalah jumlah total informasi.

Ukuran keunikan atau rasio keragaman D_R didefinisikan sebagai rasio informasi yang berbeda untuk informasi total, seperti yang diberikan oleh:

$$D_R = \frac{n}{N}$$

dimana n adalah jumlah informasi yang unik

N adalah jumlah total informasi.

Kompleksitas relatif koefisien, c_j diperkenalkan untuk menangkap isi informasi. Kompleksitas meningkat fitur dengan peningkatan pengaruh (yaitu tahap-tahap yang lebih diperlukan atau alat). Sebuah metodologi matriks digunakan untuk menentukan koefisien kompleksitas relatif.

2.7.2. Kompleksitas Produk.

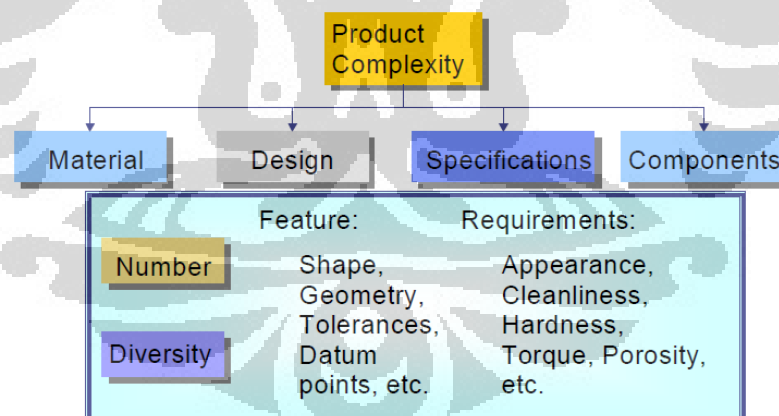
Kompleksitas produk memiliki pengaruh langsung terhadap kompleksitas proses, tetapi dibutuhkan pemahaman sifat kompleksitas untuk dapat menentukan karakteristik, yang efektif dan ukuran yang relatif. Kompleksitas semakin meningkat dengan meningkatnya jumlah dan keanekaragaman fitur yang akan diproduksi, dikumpulkan dan diuji dan semakin meningkatnya jumlah, jenis, dan tugas dan upaya untuk menghasilkan fitur.

Kompleksitas produk diwakili oleh indeks kompleksitas produk ($CI_{product}$) dan merupakan fungsi informasi / entropy produk, ($H_{product}$), rasio keragaman produk ($DR_{product}$) dan koefisien relatif kompleksitas produk ($c_{j, product}$). Nilai dari koefisien kompleksitas produk yang relatif berdasarkan pada prinsip-prinsip umum manufaktur dan bergantung pada jenis proses atau volume. Nilainya semakin meningkat dengan upaya yang diperlukan untuk menghasilkan komponen akhir dari produk. Indeks kompleksitas produk $CI_{product}$ untuk merupakan kombinasi rasio keragaman dan kompleksitas relatif, dan dinyatakan dengan informasinya entropi sebagai:

$$CI_{product} = DR_{product} + c_{j,product} * H_{product} \quad \text{atau}$$

$$CI_{product} = \frac{n}{N} + c_{j,product} * \log_2 N + 1$$

Faktor-faktor yang terkait dengan analisis kompleksitas, seperti bahan, toleransi, topologi, harus didefinisikan. Contoh kompleksitas produk diilustrasikan dalam Gambar 2.7.



Gambar. 2.7. Elemen Kompleksitas Produk^[10] (Sumber : ElMaraghy, Urbanic., 2003)

Koefisien pembuatan produk kompleksitas produk c_j . didefinisikan sebagai

$$c_{j,product} = \sum_{f=1}^F x_f * c_{f,feature}$$

dimana :

C_f = Koefisien kompleksitas feature relatif

x_f = Persentase bentuk kesekian x th yang tidak sama

Koefisien kompleksitas relatif adalah rata-rata yang terkait dengan kompleksitas relatif dari berbagai aspek spesifikasi dan fitur yang diberikan, dan diwakili oleh:

$$C_{f,feature} = \frac{F_N * F_{CF} + S_N * S_{CF}}{F_N + S_N}$$

dimana :

F_N = Jumlah feature

F_{CF} = Faktor kompleksitas feature

S_N = Jumlah aspek yang mempengaruhi spesifikasi

S_{CF} = Faktor kompleksitas spesifikasi

$$F_{CF} = \frac{\sum_{j=1}^J \text{factor_level}_j}{J}$$

dimana :

F_{CF} = faktor kompleksitas fitur

J = Jumlah aspek yang mempengaruhi feature

factor_level_j = Faktor untuk kategori ke j yang sekian (j^{th})

$$S_{CF} = \frac{\sum_{k=1}^K \text{factor_level}_k}{K}$$

dimana :

S_{CF} = faktor kompleksitas spesifikasi

K = Jumlah aspek yang mempengaruhi spesifikasi

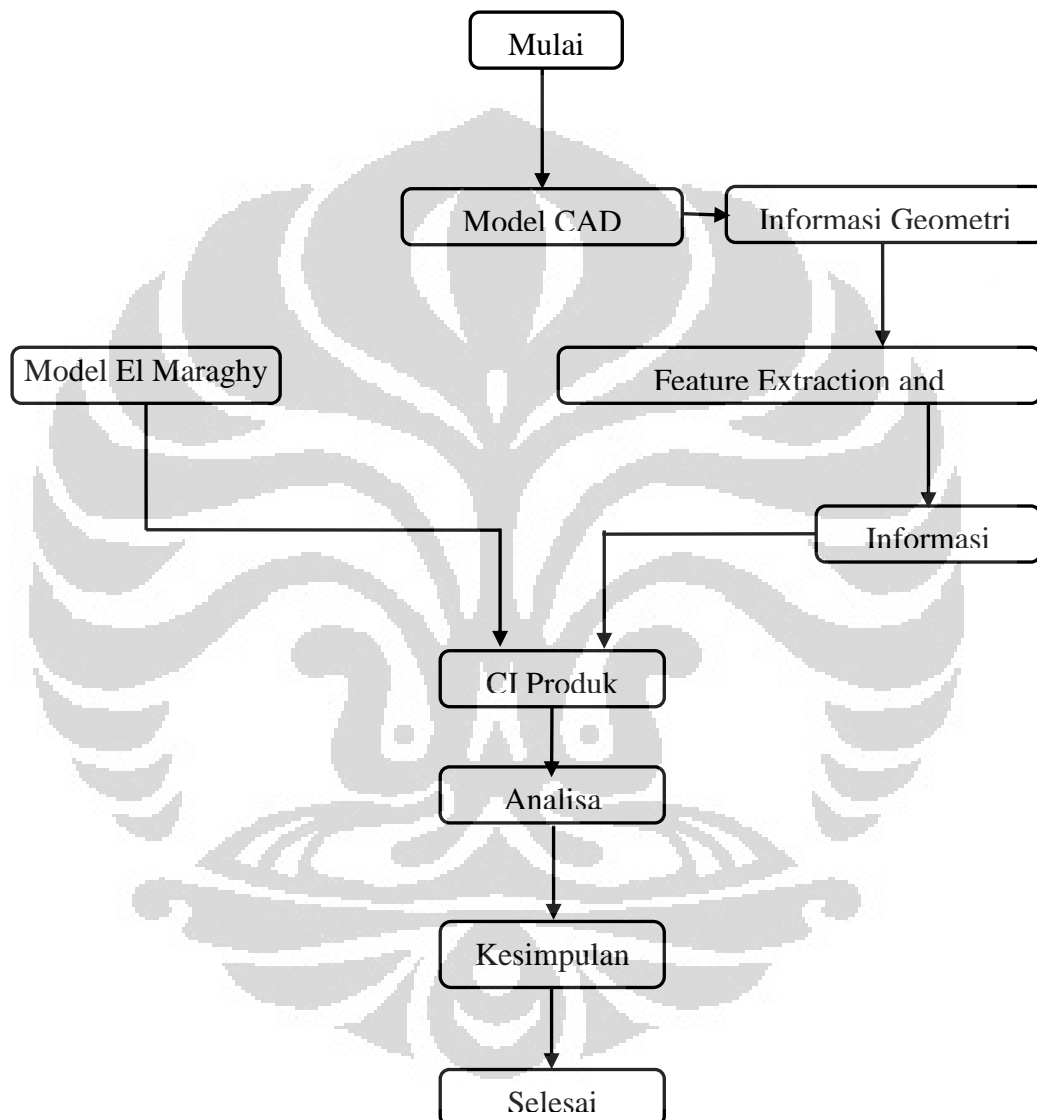
factor_level_k = Faktor untuk kategori ke k yang sekian (k^{th})

BAB III

METODOLOGI PENELITIAN

3.1. DIAGRAM ALIR PENELITIAN.

Diagram Alir.



Gambar 3.1. Diagram Alir Penelitian.

Pada penelitian ini , desain gambar produk dibuat dengan menggunakan software CAD dan diwujudkan sebagai model padat (solid model) menggunakan software CATIA sebagai sarana mendesain. Solid model yang dibuat adalah fitur-fitur yang proses permesinannya menggunakan mesin bubut, mesin milling dan mesin bor ,

dimana merupakan pengerjaan awal (primary process) yang mengambil porsi terbesar dari proses pengerjaan logam. Berdasarkan penelitian ini, terdiri dari empat (4) klasifikasi fitur manufaktur. Pada gambar 2.1, ditunjukkan bentuk step, neck, chamfer, round, cylinder dan groove pada kelas 1. Step memiliki dua diameter yang berbeda pada ujung batang. Bentuk groove sama dengan step tetapi perbedaan ukuran dibagian tengah batang. Neck perbedaan ukuran juga dibagian tengah. Chamfer dan round diposisikan dibagian ujung masing-masing batang. Contoh bentuk fitur prismatic antara lain plain, stair dan slot. Notch, depresi dan pocket menempati kelas 3 yang memiliki geometri lebih kompleks dari fitur di kelas 2. Umumnya pengerjaan menggunakan end mill yang umumnya berdiameter lebih kecil dari face mill atau slab mill. Lobang diklasifikasikan pada kelas 4 yang umumnya pembentukan fitur menggunakan proses bor atau reaming.

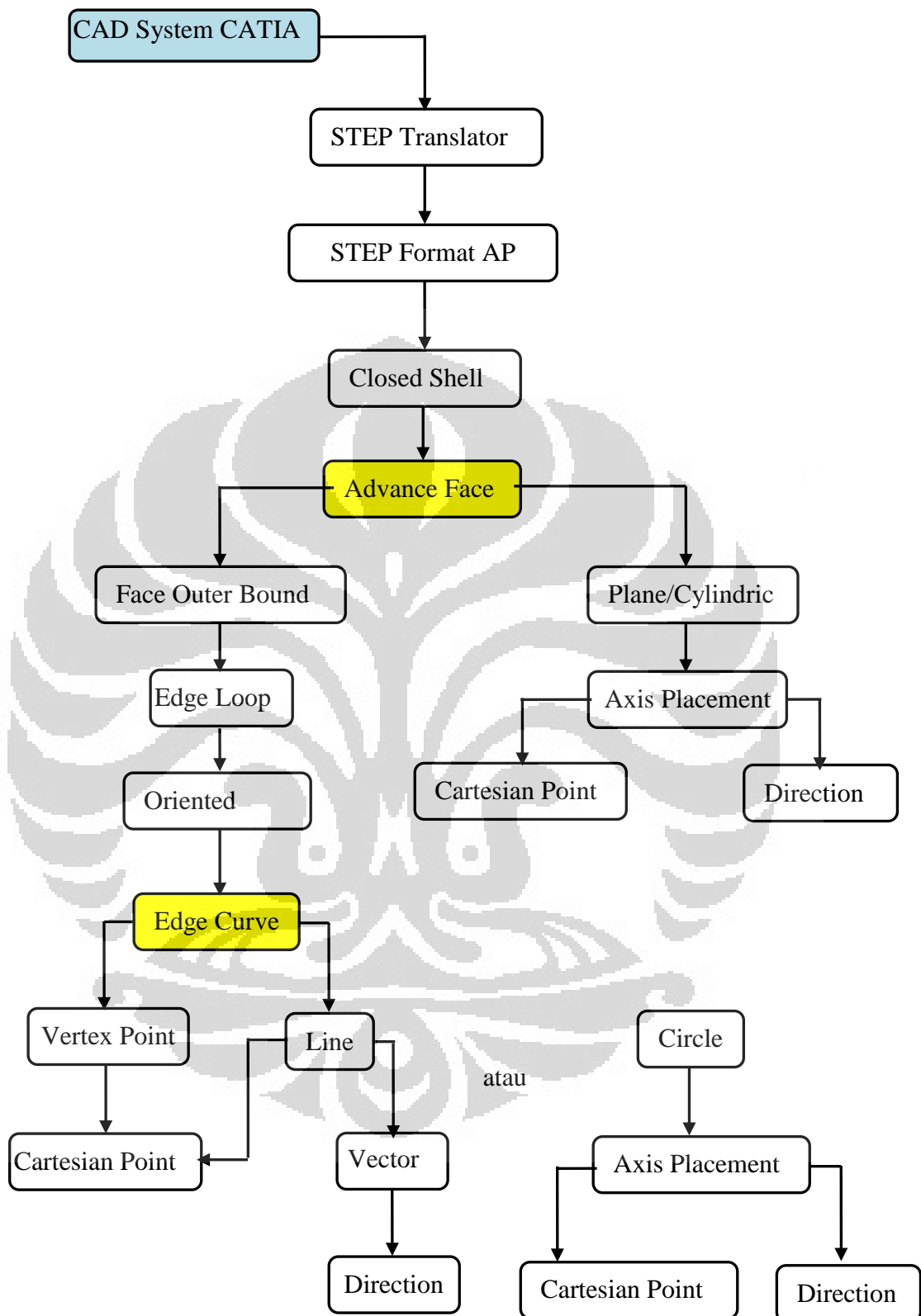
3.2. ALGORITMA RECOGNISI DATA SHAPE.

Setelah mendesain dengan software CAD kemudian disimpan menjadi file STEP, selanjutnya mengembangkan algoritma untuk mengekstrak informasi geometric (B-Rep database) dari file STEP. Dari algoritma ini diperoleh type and orientasi masing-masing face menggunakan data base B-Rep, termasuk semua topologi dan informasi geometris.

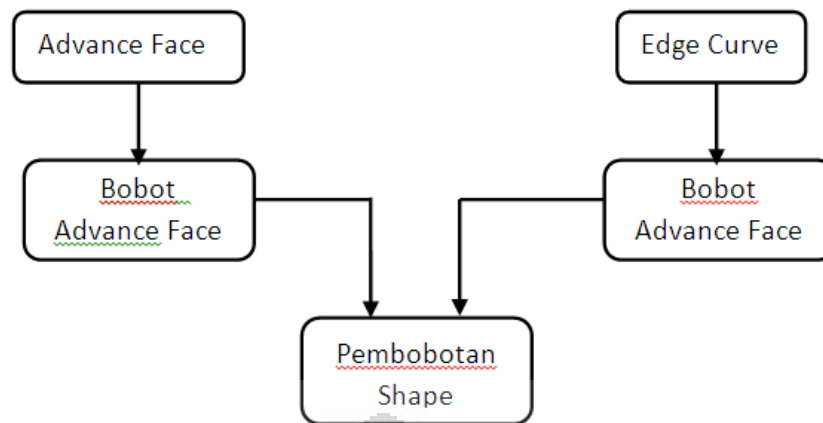
3.3. PENGOLAHAN INFORMASI GEOMETRI.

Setelah proses recognisi informasi diperoleh, perlu pengolahan sehingga informasi memberikan arti dan memiliki fungsi untuk menjadi unsur dalam perhitungan indek kompleksitas.

Geometri selalu dihubungkan dengan matematika, yang berkaitan dengan sifat garis, sudut, bidang dan ruang. Oleh karena itu informasi ini berkaitan dengan ukuran dari fitur yang dihitung kompleksitasnya.

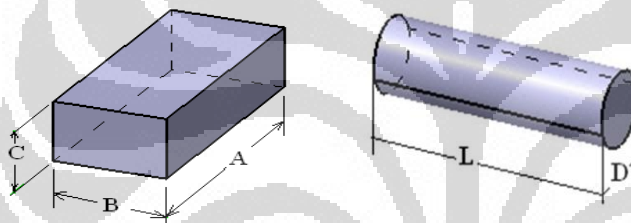


Gambar 3.2 : Algoritma untuk ekstrak informasi



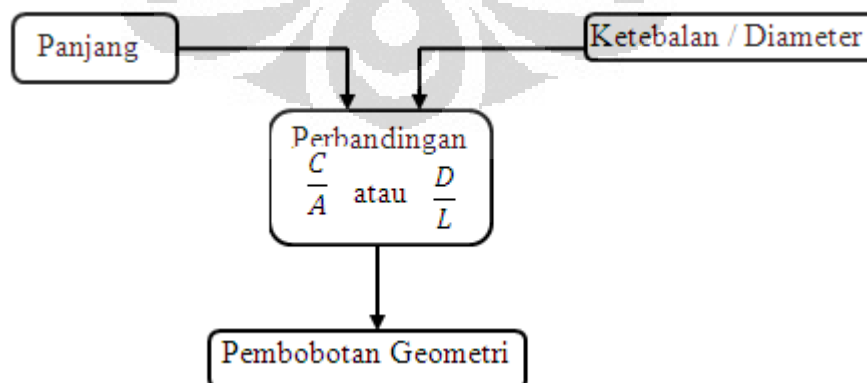
Gambar 3.3 : Algoritma Recognisi Data Shape

3.4. PENGOLAHAN INFORMASI GEOMETRI



Gambar 3.4. Bentuk Plain dan Silinder

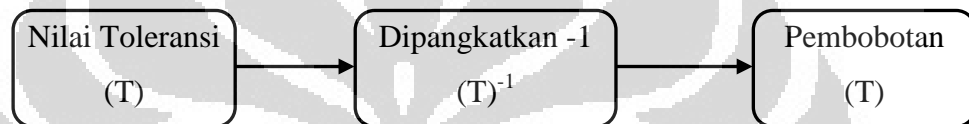
Informasi bobot untuk dan slab diambil nilai perbandingan antara ketebalan dengan panjang. Untuk bentuk prismatic $\frac{C}{A}$ sedang rotational $\frac{D}{L}$. Sehingga alur pengolahan data seperti dibawah ini



Gambar 3.5. Algoritma Rekognisi Data Geometri

3.5. PENGOLAHAN INFORMASI TOLERANSI.

Data toleransi mengikuti yang telah standart, yaitu ISO 2768, nilai toleransi teliti, sedang dan kasar ada dalam satu kolom untuk satu tingkat ukuran panjang, sementara kolom berikutnya untuk ukuran panjang yang lain. Agar data tersebut bisa bermanfaat dalam perhitungan kompleksitas, maka pembobotan untuk nilai teliti adalah terbesar (nilai 1), sementara untuk toleransi sedang dan kasar yang tingkat untuk mendapatkannya lebih mudah, maka nilainya harus lebih rendah. Untuk itu agar memperoleh nilai perlu diolah dengan mengikut alur sebagai berikut.



Gambar 3.6. Algoritma Pengolahan Informasi

BAB IV.

PENGOLAHAN DATA DAN ANALISA

4.1. DATA

Data adalah hasil recognisi STEP file, disini diambilkan contoh recognisi untuk bentuk gambar kubus, dengan ekstraksi sebagai berikut.

Ekstraksi Data bentuk Kubus

ISO-10303-21;

HEADER;

FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Prismatic
Feature\\Plain\\Kubus.stp','2012-05-08T05:22:46+00:00','(none)','(none)','CATIA
Version 5 Release 19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;

/* file written by CATIA V5R19 */

DATA;

#5=PRODUCT('Plain','',(#2)) ;

#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies') ;

#14=PRODUCT_DEFINITION('','#6,#3) ;

#16=SECURITY_CLASSIFICATION('','#15) ;

#15=SECURITY_CLASSIFICATION_LEVEL('unclassified') ;

#47=CARTESIAN_POINT('',(0.,0.,0.)) ;

#52=CARTESIAN_POINT('Axis2P3D Location',(-50.,40.,0.)) ;

#57=CARTESIAN_POINT('Line Origine',(-50.,40.,30.)) ;

#61=CARTESIAN_POINT('Vertex',(-50.,40.,0.)) ;

#63=CARTESIAN_POINT('Vertex',(-50.,40.,60.)) ;

#66=CARTESIAN_POINT('Line Origine',(-50.,0.,0.)) ;

#70=CARTESIAN_POINT('Vertex',(-50.,-40.,0.)) ;

#73=CARTESIAN_POINT('Line Origine',(-50.,-40.,30.)) ;

#77=CARTESIAN_POINT('Vertex',(-50.,-40.,60.)) ;

#80=CARTESIAN_POINT('Line Origine',(-50.,0.,60.)) ;

#92=CARTESIAN_POINT('Axis2P3D Location',(50.,-40.,0.)) ;

#97=CARTESIAN_POINT('Line Origine',(0.,-40.,0.)) ;

#101=CARTESIAN_POINT('Vertex',(50.,-40.,0.)) ;

#104=CARTESIAN_POINT('Line Origine',(50.,-40.,30.)) ;

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```

#108=CARTESIAN_POINT('Vertex',(50.,-40.,60.)) ;
#111=CARTESIAN_POINT('Line Origine',(0.,-40.,60.)) ;
#123=CARTESIAN_POINT('Axis2P3D Location',(50.,-40.,0.)) ;
#128=CARTESIAN_POINT('Line Origine',(50.,0.,0.)) ;
#132=CARTESIAN_POINT('Vertex',(50.,40.,0.)) ;
#135=CARTESIAN_POINT('Line Origine',(50.,40.,30.)) ;
#139=CARTESIAN_POINT('Vertex',(50.,40.,60.)) ;
#142=CARTESIAN_POINT('Line Origine',(50.,0.,60.)) ;
#154=CARTESIAN_POINT('Axis2P3D Location',(-50.,40.,0.)) ;
#159=CARTESIAN_POINT('Line Origine',(0.,40.,0.)) ;
#164=CARTESIAN_POINT('Line Origine',(0.,40.,60.)) ;
#176=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#188=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,60.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#94=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#98=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#105=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#112=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#124=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#125=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#136=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#143=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#156=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#160=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#165=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#177=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#178=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#189=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#190=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#126=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#123,#124,#125) ;
#157=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#154,#155,#156) ;
#179=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#176,#177,#178) ;
#191=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#188,#189,#190) ;
#40=PRODUCT_DEFINITION_SHAPE(' ','',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;

```

```

#23=ORGANIZATION('','');
#21=APPROVAL(#20,'');
#20=APPROVAL_STATUS('not_yet_approved');
#19=APPROVAL_ROLE('APPROVER');
#13=DATE_AND_TIME(#11,#12);
#12=LOCAL_TIME(12,22,45.,#10);
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.);
#86=ORIENTED_EDGE("*,*,#65,.F.);
#87=ORIENTED_EDGE("*,*,#72,.T.);
#88=ORIENTED_EDGE("*,*,#79,.T.);
#89=ORIENTED_EDGE("*,*,#84,.F.);
#117=ORIENTED_EDGE("*,*,#79,.F.);
#118=ORIENTED_EDGE("*,*,#103,.T.);
#119=ORIENTED_EDGE("*,*,#110,.T.);
#120=ORIENTED_EDGE("*,*,#115,.F.);
#148=ORIENTED_EDGE("*,*,#110,.F.);
#149=ORIENTED_EDGE("*,*,#134,.T.);
#150=ORIENTED_EDGE("*,*,#141,.T.);
#151=ORIENTED_EDGE("*,*,#146,.F.);
#170=ORIENTED_EDGE("*,*,#141,.F.);
#171=ORIENTED_EDGE("*,*,#163,.T.);
#172=ORIENTED_EDGE("*,*,#65,.T.);
#173=ORIENTED_EDGE("*,*,#168,.F.);
#182=ORIENTED_EDGE("*,*,#163,.F.);
#183=ORIENTED_EDGE("*,*,#134,.F.);
#184=ORIENTED_EDGE("*,*,#103,.F.);
#185=ORIENTED_EDGE("*,*,#72,.F.);
#194=ORIENTED_EDGE("*,*,#84,.T.);
#195=ORIENTED_EDGE("*,*,#115,.T.);
#196=ORIENTED_EDGE("*,*,#146,.T.);
#197=ORIENTED_EDGE("*,*,#168,.T.);
#51=CLOSED_SHELL('Closed Shell',(#91,#122,#153,#175,#187,#199));
#59=VECTOR('Line Direction',#58,1.);
#68=VECTOR('Line Direction',#67,1.);
#75=VECTOR('Line Direction',#74,1.);
#82=VECTOR('Line Direction',#81,1.);
#99=VECTOR('Line Direction',#98,1.);
#106=VECTOR('Line Direction',#105,1.);
#113=VECTOR('Line Direction',#112,1.);
#130=VECTOR('Line Direction',#129,1.);
#137=VECTOR('Line Direction',#136,1.);
#144=VECTOR('Line Direction',#143,1.);
#161=VECTOR('Line Direction',#160,1.);
#166=VECTOR('Line Direction',#165,1.);
#201=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#200),#46);
#49=SHAPE_REPRESENTATION('',(#48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);
#122=ADVANCED_FACE('PartBody',(#121),#96,.F.);

```

```

#153=ADVANCED_FACE('PartBody',(#152),#127,.T.) ;
#175=ADVANCED_FACE('PartBody',(#174),#158,.F.) ;
#187=ADVANCED_FACE('PartBody',(#186),#180,.F.) ;
#199=ADVANCED_FACE('PartBody',(#198),#192,.T.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#200=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,8,5) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#202=SHAPE_REPRESENTATION_RELATIONSHIP(' ','',#49,#201) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE("#62,#64,#60,.T.) ;
#72=EDGE_CURVE("#62,#71,#69,.T.) ;
#79=EDGE_CURVE("#71,#78,#76,.T.) ;
#84=EDGE_CURVE("#64,#78,#83,.T.) ;
#103=EDGE_CURVE("#71,#102,#100,.F.) ;
#110=EDGE_CURVE("#102,#109,#107,.T.) ;
#115=EDGE_CURVE("#78,#109,#114,.F.) ;
#134=EDGE_CURVE("#102,#133,#131,.T.) ;
#141=EDGE_CURVE("#133,#140,#138,.T.) ;
#146=EDGE_CURVE("#109,#140,#145,.T.) ;
#163=EDGE_CURVE("#133,#62,#162,.F.) ;
#168=EDGE_CURVE("#140,#64,#167,.F.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#116=EDGE_LOOP("#117,#118,#119,#120)) ;
#147=EDGE_LOOP("#148,#149,#150,#151)) ;
#169=EDGE_LOOP("#170,#171,#172,#173)) ;
#181=EDGE_LOOP("#182,#183,#184,#185)) ;
#193=EDGE_LOOP("#194,#195,#196,#197)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;

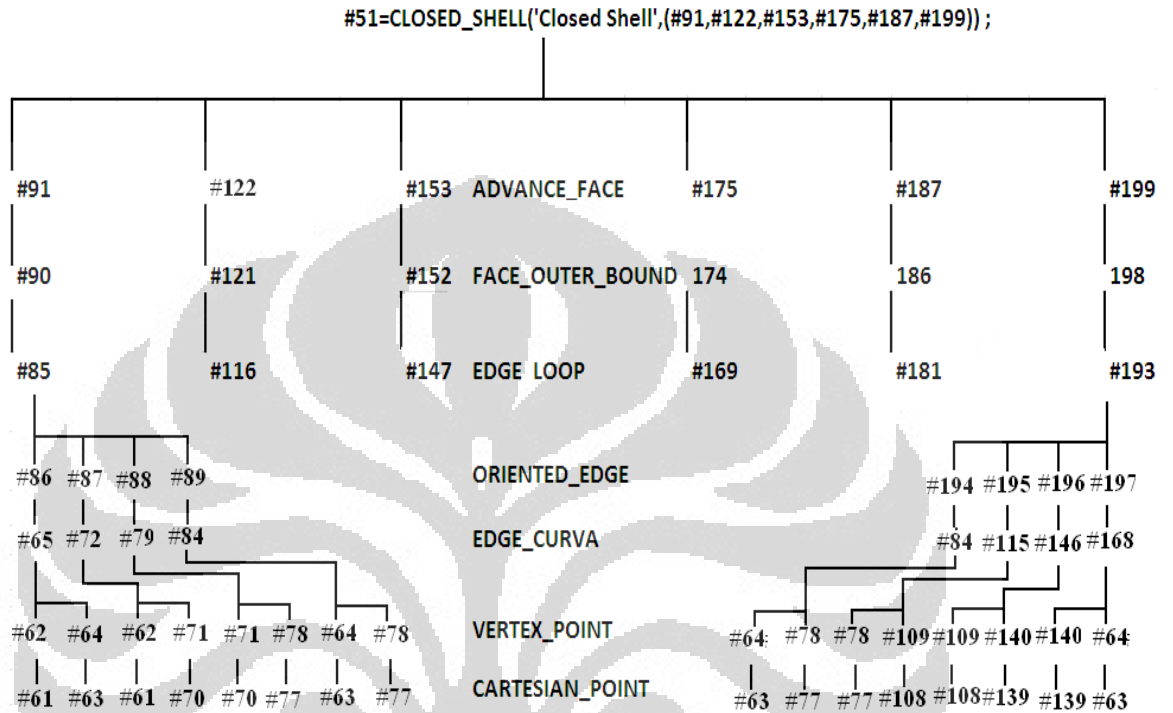
```

```

#121=FACE_OUTER_BOUND("#116,.T.) ;
#152=FACE_OUTER_BOUND("#147,.T.) ;
#174=FACE_OUTER_BOUND("#169,.T.) ;
#186=FACE_OUTER_BOUND("#181,.T.) ;
#198=FACE_OUTER_BOUND("#193,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#107=LINE('Line',#104,#106) ;
#114=LINE('Line',#111,#113) ;
#131=LINE('Line',#128,#130) ;
#138=LINE('Line',#135,#137) ;
#145=LINE('Line',#142,#144) ;
#162=LINE('Line',#159,#161) ;
#167=LINE('Line',#164,#166) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','',(#22),'') ;
#56=PLANE('Plane',#55) ;
#96=PLANE('Plane',#95) ;
#127=PLANE('Plane',#126) ;
#158=PLANE('Plane',#157) ;
#180=PLANE('Plane',#179) ;
#192=PLANE('Plane',#191) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('#',#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('#
,#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#,#61) ;
#64=VERTEX_POINT("#,#63) ;
#71=VERTEX_POINT("#,#70) ;
#78=VERTEX_POINT("#,#77) ;
#102=VERTEX_POINT("#,#101) ;
#109=VERTEX_POINT("#,#108) ;
#133=VERTEX_POINT("#,#132) ;
#140=VERTEX_POINT("#,#139) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;

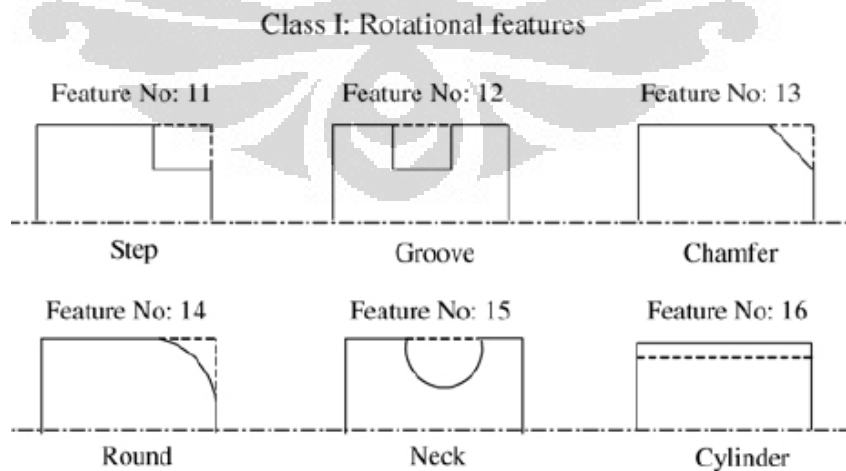
```

```
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT('',''));
ENDSEC;
END-ISO-10303-21;
```



Gambar 4.1. Ilustrasi Fungsi Elemen Pada Kubus

4.1.1. Rekognisi Fitur Rotasional



Gambar 4.2. Fitur Rotasional

4.1.1.1. Shape Fitur Rotasional

Dalam satu batang, dibuat 2 buah fitur, diperoleh data sbb:

Tabel 4.1.A . Data shape fitur Rotasional bagian 1

SHAPE	Step-1	Step-2	Groove-1	Groove-2	Chamfer-1	Chamfer-2
Edge Curva	6	12	8	16	4	8
Advance Face	3	6	4	8	2	4

Dari data diperoleh hubungan bahwa untuk setiap penambahan 1 buah STEP, diperoleh penambahan EC 6 buah dan AF 3 buah.

Sehingga diperoleh rumusan untuk STEP fitur

$EC = 6 \times n$, dimana n adalah jumlah STEP dalam desain produk.

$AF = 3 \times n$, dimana n adalah jumlah STEP dalam desain produk.

Hal yang sama juga berlaku untuk fitur Groove.

$EC = 8 \times n$, dimana n adalah jumlah Groove dalam desain produk.

$AF = 4 \times n$, dimana n adalah jumlah Groove dalam desain produk

Untuk Fitur Chamfer

$EC = 4 \times n$, dimana n adalah jumlah Groove dalam desain produk.

$AF = 2 \times n$, dimana n adalah jumlah Groove dalam desain produk

TABEL 4.1 B . Data shape fitur Rotasional bagian 2

SHAPE	Round-1	Round-2	Neck-1	Neck-2	Cylinder
Edge Curva	4	8	8	16	4
Advance Face	2	4	4	8	6

Dari data diperoleh hubungan bahwa untuk setiap penambahan 1 buah Round, diperoleh penambahan EC 4 buah dan AF 2 buah.

Sehingga diperoleh rumusan untuk fitur Round

$EC = 4 \times n$, dimana n adalah jumlah Round dalam desain produk.

$AF = 2 \times n$, dimana n adalah jumlah Round dalam desain produk.

Hal yang sama juga berlaku untuk fitur Neck.

$EC = 8 \times n$, dimana n adalah jumlah Neck dalam desain produk.

$AF = 4 \times n$, dimana n adalah jumlah Neck dalam desain produk

Untuk Fitur Cylinder

Jumlah EC dan AF tetap, karena bentuk silinder jika diproses dengan bentuk silinder, jumlah informasi tetap sama, yaitu

$EC = 6..$

$AF = 4.$

4.1.1.2. Geometri Fitur Rotasional.

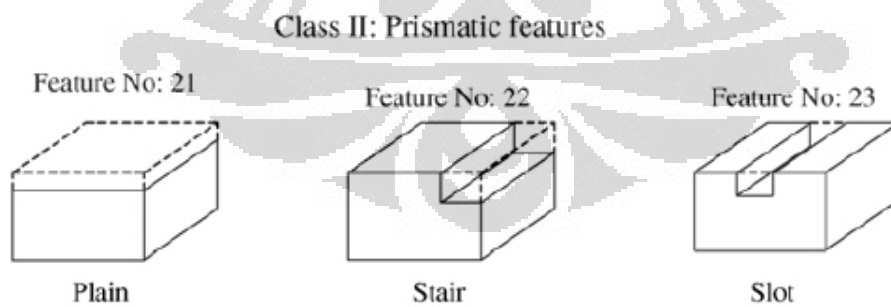
Geometri adalah ukuran, maka yang diperhitungkan disini adalah ukuran yang ada pada desain produk.

Tabel 4.2. Data Geometri Rotasional fitur

	Step	Groove	Chamfer	Round	Neck	Cylinder
Panjang (L)	60	40	20	20	40	80
Kedalaman	10	10	20	20	20	5

4.1.2. Rekognisi Fitur Prismatik

4.1.2.1. Shape Fitur Prismatik



Gambar 4.3. Fitur Prismatik

Dalam pengujian, dalam satu bentuk kubus atau balok, dibuat fitur sampai sejumlah 4 buah, karena memberikan kecenderungan informasi yang linier, maka dalam tabel diberikan hanya sampai 2 buah fitur

Tabel 4.3 Data shape fitur Prismatik

	Plain	1 - Stair	2 - Stair	1 - Slot	2 - Slot
Edge Curva	12	6	12	10	20
Advance Face	6	2	4	3	6

Dari data diperoleh hubungan bahwa untuk setiap penambahan 1 buah Stair , diperoleh penambahan EC 6 buah dan AF 2 buah.

Sehingga diperoleh rumusan untuk fitur Round

$EC = 6 \times n$, dimana n adalah jumlah Stair dalam desain produk.

$AF = 2 \times n$, dimana n adalah jumlah Stair dalam desain produk.

Hal yang sama juga berlaku untuk fitur Slot.

$EC = 10 \times n$, dimana n adalah jumlah Slot dalam desain produk.

$AF = 3 \times n$, dimana n adalah jumlah Slot dalam desain produk

Untuk Fitur Plain

Jumlah EC dan AF tetap, karena bentuk kubus/Balok jika diproses dengan bentuk Plain, jumlah informasi tetap sama, yaitu

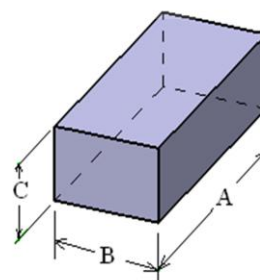
$EC = 12..$

$AF = 6.$

4.1.2.2. Geometri Fitur Prismatik

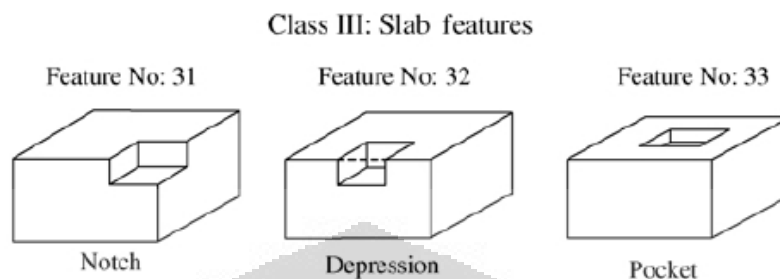
Tabel 4.4. Data Geometri fitur Prismatik

	Plain	Stair	Slot
A	160	160	160
B	160	70	40
C	40	40	70



4.1.3. Rekognisi Fitur Slab.

4.1.3.1. Shape Fitur Slab



Gambar 4.4. Fitur Slab

Dalam pengujian, dalam satu bentuk kubus atau balok, dibuat fitur sampai sejumlah 8 buah, karena memberikan kecenderungan informasi yang linier, maka dalam tabel diberikan hanya sampai 2 buah fitur

Tabel 4.5 Data shape fitur Slab

	1 Notch	2 Notch	1 - Depression	2 - Depression	1 Pocket	2 Pocket
Advance Face	9	18	11	22	12	24
Edge Curva	3	6	4	4	5	10

Dari data diperoleh hubungan bahwa untuk setiap penambahan 1 buah Notch , diperoleh penambahan EC 9 buah dan AF 3 buah.

Sehingga diperoleh rumusan untuk fitur Notch

$EC = 9 \times n$, dimana n adalah jumlah Notch dalam desain produk.

$AF = 3 \times n$, dimana n adalah jumlah Notch dalam desain produk.

Hal yang sama juga berlaku untuk fitur Depression .

$EC = 11 \times n$, dimana n adalah jumlah Depression dalam desain produk.

$AF = 4 \times n$, dimana n adalah jumlah Depression dalam desain produk

Pada fitur Pocket berlaku hal yang sama .

$EC = 12 \times n$, dimana n adalah jumlah Pocket dalam desain produk.

$AF = 5 \times n$, dimana n adalah jumlah Pocket dalam desain produk

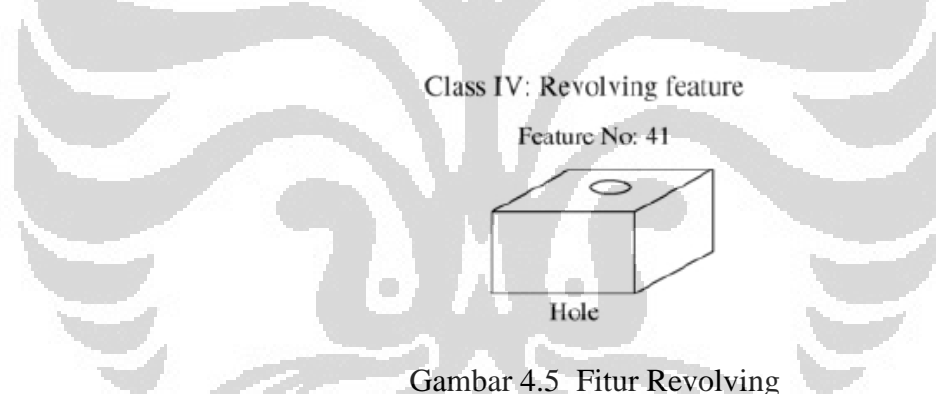
4.1.3.2. Geometri Fitur Slab.

Tabel 4.6 Data shape fitur Slab

	Notch	Depression	Pocket
A	60	60	60
B	40	40	40
C	70	70	70

4.1.4. Rekognisi Fitur Revolving

4.1.4.1. Shape Fitur Revolving.



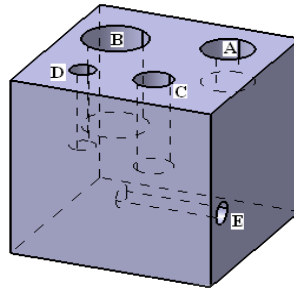
Gambar 4.5 Fitur Revolving

Dalam pengujian, dalam satu bentuk kubus atau balok, dibuat fitur revolving sampai sejumlah 5 buah, dan memberikan kecenderungan informasi yang linier.

Tabel 4.7. Data Shape fitur Revolving

	1 Lobang	2 Lobang	3 Lobang	4 Lobang	5 Lobang
Edge_Curva	6	12	18	24	30
Advance_Face	3	6	9	12	15

4.1.4.2. Geometri Fitur Revolving.



Gambar 4.6 Fitur Revolving dengan variasi ukuran lobang

Tabel 4.8. Data Geometri fitur Revolving

	Lobang-A	Lobang-B	Lobang-C	Lobang-D	Lobang-E
L	30	80	80	70	80
D	40	50	30	20	20

4.2. PENGOLAHAN DATA

4.2.1. Fitur Rotasional.

4.2.1.1. Shape Fitur Rotasional.

Pengolahan data dilakukan dengan pemberian bobot, dimana jumlah data terbesar diberikan bobot 1 (maksimum) sehingga nilai yang lain adalah jumlah data yang bersangkutan dibagi dengan jumlah maksimum.

Sebagai contoh: Bobot STEP-1

Untuk EDGE CURVA. Jumlah data maksimum 8

$$\text{Bobot} = \frac{6}{8} = 0,75$$

Untuk ADVANCE FACE, Jumlah maksimum adalah 4, untuk bobot ADVANCE FACE STEP-1

$$\text{Bobot} = \frac{3}{4} = 0,75.$$

$$\text{Pembobotan} = \frac{\text{Bobot EC} + \text{Bobot AF}}{2} = \frac{0,75 + 0,75}{2} = 0,75$$

Dengan cara yang sama dihitung secara keseluruhan sehingga diperoleh pembobotan seperti pada tabel 4.9. dibawah ini

Perhitungan untuk shape fitur yang dilakukan dengan cara yang sama.

Tabel 4.9. Hasil Pengolahan data shape fitur rotasional

SHAPE	Step	Groove	Chamfer	Round	Neck	Cylinder
Advance Face	3	4	2	2	4	4
Bobot	0.75	1	0.5	0.5	1	1
Edge Curva	6	8	4	4	8	6
Bobot	0.75	1	0.5	0.5	1	0.75
Pembobotan	0.75	1.00	0.50	0.50	1.00	0.88

4.2.1.2. Geometri Fitur Rotasional.

Perbandingan K/L diambil, karena Kedalaman fitur sedangkan L adalah panjang fitur.

Perbandingan $\frac{K}{L}$ dilakukan dalam rangka mendapatkan pembobotan, yaitu dengan membandingkan besar nilai yang bersangkutan dengan nilai maksimum.

Nilai maksimum perbandingan adalah nilai untuk fitur chamfer dan round, yaitu 1 (satu), maka misalkan untuk mendapatkan pembobotan untu STEP $Pembobotan = \frac{0,17}{1} = 1$ begitu selanjutnya, sehingga diperoleh pembobotan seperti pada tabel 4.10 dibawah ini.

TABEL 4.10. Hasil Pengolahan data Geometri fitur rotasional

	Step	Groove	Chamfer	Round	Neck	Cylinder
Panjang (L)	60	40	20	20	40	80
Kedalaman	10	10	20	20	20	5
Perband K/L	0.17	0.25	1	1	0.5	0.06
Pembobotan	0.17	0.25	1	1	0.5	0.06

4.2.2. Fitur Prismatik.

4.2.2.1. Shape Fitur Prismatik

Diambil kasus jumlah fitur terbanyak adalah 4 untuk slot, maka nilai dari 4 buah slot ini memiliki nilai maksimum, yaitu 1 (satu). Perhitungan selanjutnya sama prosesnya dengan kasus terdahulu

TABEL 4.11. Hasil Pengolahan data shape fitur Prismatik

	Plain	Stair	Slot	4 Slot
Advance Face	12	7	10	40
Bobot	0.30	0.18	0.25	1.00
Edge Curva	6	2	3	12
Bobot	0.50	0.17	0.25	1.00
Pembobotan	0.40	0.17	0.25	1.00

4.2.2.2. Geometri Fitur Prismatik

Pada geometri, dilakukan perbandingan antara kedalaman dengan panjang maksimum. Kedalaman adalah C dan panjang adalah A, proses perhitungan selanjutnya sama dengan cara terdahulu.

Tabel 4.12. Hasil Pengolahan data Geometri fitur Prismatik

	Plain	Stair	Slot
A	160	160	160
B	160	70	40
C	40	40	70
Bobot	0.25	0.25	0.44
Pembobotan	0.57	0.57	1.00

4.2.3. Fitur Slab

4.2.3.1. Shape Fitur Slab.

Diambil kasus jumlah fitur terbanyak adalah 8 untuk fitur pocket, maka nilai dari 8 buah pocket ini dibandingkan dengan 8 buah bentuk fitur yang lain, diperoleh

data seperti yang telah dipaparkan didepan. Perhitungan selanjutnya sama prosesnya dengan kasus yang lain untuk shape.

Tabel 4.13. Hasil Pengolahan data shape fitur Slab

	Notch	Depression	Pocket	8 - Pocket
Advance Face	9	11	12	96
Bobot	0.09	0.11	0.13	1.00
Edge Curva	3	4	5	40
Bobot	0.08	0.10	0.13	1.00
Pembobotan	0.08	0.11	0.13	1.00

4.2.3.2. Geometri Fitur Slab.

Tabel 4.14. Hasil Pengolahan data shape fitur Slab

	Notch	Depression	Pocket
A	60	60	60
B	40	40	40
C	70	70	70
Bobot	1.17	1.17	1.17
Pembobotan	1	1	1

4.2.4. Fitur Revolving

4.2.4.1. Shape Fitur Revolving

Diambil kasus jumlah fitur terbanyak adalah 5 untuk fitur revolving , maka nilai dari 5 buah lobang ini dibandingkan dengan satu terhadap yang lain, diperoleh data seperti yang telah dipaparkan didepan. Perhitungan selanjutnya sama prosesnya dengan kasus yang lain untuk shape.

TABEL 4.15. Hasil Pengolahan data shape fitur Revolving

SHAPE FITUR REVOLVING

SHAPE	Lobang A	Lobang B	Lobang C	Lobang D	Lobang E
Edge_Curva	6	12	18	24	30
Bobot	0.2	0.4	0.6	0.8	1
Advance_Face	3	6	9	12	15
Bobot	0.2	0.4	0.6	0.8	1
Pembobotan	0.2	0.4	0.6	0.8	1

4.2.4.2. Geometri Fitur Revolving

Tabel 4.16. Hasil Pengolahan data geometri fitur Revolving

GEOMETRI FITUR REVOLVING

GEOMETRI	Lobang-A	Lobang-B	Lobang-C	Lobang-D	Lobang-E
L	30	80	80	70	80
D	40	50	30	20	20
L/D	0.75	1.60	2.67	3.50	4.00
Pembobotan	0.19	0.40	0.67	0.88	1.00

4.3. TOLERANSI UMUM LINIER.

Tabel 4.17. Variasi yang diizinkan untuk ukuran linier (Menggambar Mesin menurut standar ISO, Sugiarto, N H)

Ukuran nominal (mm)		0,5 - 3	3 - 6	6 - 30	30 - 120	120- 315	315- 1000	1000- 2000
Variasi yang diizinkan	Teliti	± 0,05	± 0,05	± 0,1	± 0,15	± 0,2	± 0,3	± 0,5
	Sedang	± 0,1	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2
	Kasar		± 0,2	± 0,5	± 0,8	± 1,2	± 2	± 3

Tingkatan teliti, berarti paling kompleks dan memiliki nilai maksimum dalam pembobotannya, untuk itu dilakukan proses untuk membalik, dari semula

memiliki nilai tertinggi menjadi nilai terendah. Hal ini bisa dilaksanakan dengan memangkatkannya dengan pangkat -1 (minus satu)

Sebagai contoh, diambil untuk lajur panjang 3 – 6. Untuk lajur ini nilai toleransi untuk katagori teliti adalah 0,05. Nilai ini dipangkatkan dengan -1 menjadi

$$0,05^{-1} = 20$$

Kemudian untuk katagori adalah 0,1, menjadi $0,1^{-1} = 10$

Dan untuk kasar nilainya 0,2 menjadi $(0,2)^{-1} = 5$.

Setelah dilakukan perhitungan untuk keseluruhan, tabel 4.14 menjadi tabel 4.15.

Tabel 4.18 Hasil pemangkatan minus satu

Ukuran nominal (mm)	0,5 - 3	3 - 6	6 - 30	30 - 120	120-315	315-1000	1000-2000	
Variasi yang diizinkan	Teliti	20.00	20.00	10.00	6.67	5.00	3.33	2.00
	Sedang	10.00	10.00	5.00	3.33	2.00	1.25	0.83
	Kasar		5.00	2.00	1.25	0.83	0.50	0.33

Dari tabel ini diolah kembali dengan yang memiliki kelas sama adalah yang satu kolom. Contoh hitungan untuk kolom dengan ukuran toleransi 3-6

$$Teliti = \frac{20}{20} = 1$$

$$Sedang = \frac{10}{20} = 0,5$$

$$Kasar = \frac{5}{20} = 0,25$$

Dengan cara yang sama, maka tabel 4.15 akan berubah menjadi

TABEL 4.19. Pembobotan untuk Toleransi linier.

Ukuran nominal (mm)	0,5 - 3	3 - 6	6 - 30	30 - 120	120-315	315-1000	1000-2000	
Variasi yang diizinkan	Teliti	1.00	1.00	1.00	1.00	1.00	1.00	
	Sedang	0.50	0.50	0.50	0.50	0.40	0.38	0.42
	Kasar		0.25	0.20	0.19	0.17	0.15	0.17

4.3. KOMPLEKSITAS PRODUK.

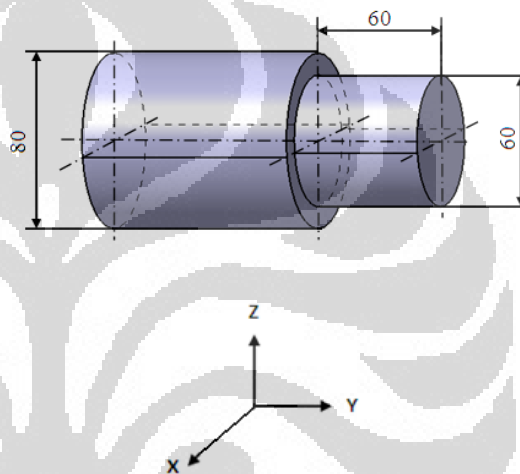
Dalam penelitian ini dilakukan perhitungan untuk semua bentuk fitur (Rotasional, Prismatik, Slab dan Revolving).

4.4.1. FITUR ROTASIONAL.

4.4.1.1. Fitur Step

STEP

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Diameter	2	2
Toleransi	4	2
Step	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	1	1
Nilai Z	2	2
<i>SUM</i>	<i>18</i>	<i>16</i>
<i>H</i>	<i>4.25</i>	
<i>D_{Rproduct}</i>	<i>0.89</i>	



Description	Feature J = 3						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances		
Step	1	0	0.75	0.17	0	0.19	1.11	0.37
Sum	1							
Feature	% Features	D/J		Relative Complexity				
Step	1.00	0.37		0.37				

C_j produk

0.37

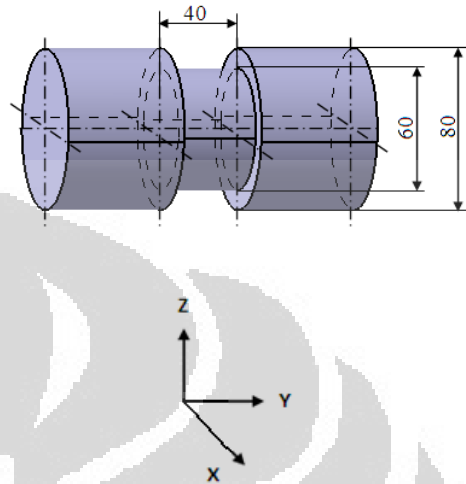
CI produk

5.34

4.4.1.2. Fitur Groove

GROOVE

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Diameter	2	2
Toleransi	4	2
Groove	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	2	2
Nilai Z	2	2
<i>SUM</i>	<i>19</i>	<i>17</i>
<i>H</i>	<i>4.32</i>	
<i>D_{Rproduct}</i>	<i>0.89</i>	



Description	Feature						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerance s		
Groove	1	0	1.00	0.25	0	0.19	1.44	0.48
Sum	1							
Feature	% Features	D/J	Relative Complexity					
Groove	1.00	0.48	0.48					

C_j produk

0.48

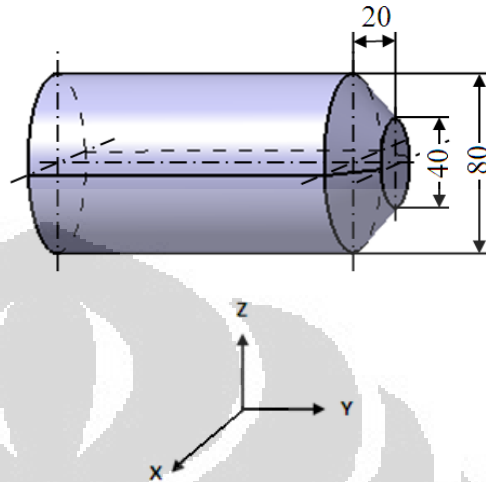
CI produk

5.94

4.4.1.3. Fitur Chamfer

CHAMFER

Description	Number	Diversity
Panjang	1	1
Toleransi	2	2
Diameter	2	2
Toleransi	4	2
Chamfer	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	0	0
Nilai Y	2	2
Nilai Z	1	1
<i>SUM</i>	<i>17</i>	<i>15</i>
<i>H</i>	<i>4.09</i>	
<i>D_{Rproduct}</i>	<i>0.88</i>	



Description	Feature $J = 5$							SUM D	D/J
	Number	Aspect							
		Material	Shape	Geometry	process steps	Tolerances			
Chamfer	1	0	0.50	1.00	0	0.20	1.70	0.57	
Sum	1								
Feature	% Features	D/J	Relative Complexity						
Chamfer	1.00	0.57	0.57						

C_j produk

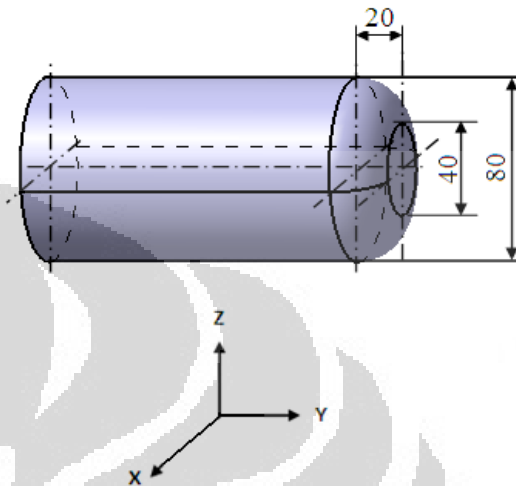
C_I produk

5.92

4.4.1.4. Fitur Round

ROUND

Description	Number	Diversity
Panjang	1	1
Toleransi	2	2
Diameter	2	2
Toleransi	4	2
Round	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X		
Nilai Y	1	1
Nilai Z	1	1
SUM	16	14
H	4.09	
$D_{Rproduct}$	0.88	



Description	Feature						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances		
Round	1	0	0.50	1.00	0	0.20	1.70	0.57

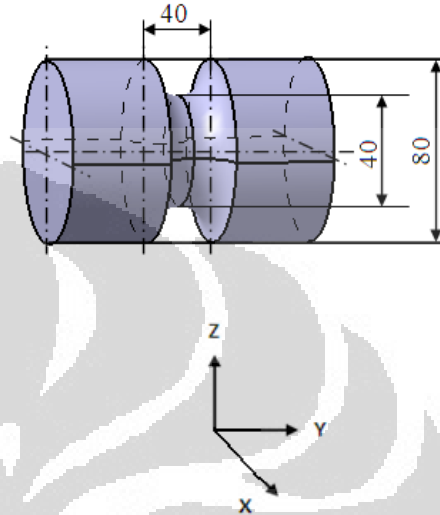
Sum	1		
Feature	% Features	D/J	Relative Complexity
Round	1.00	0.57	0.57
$C_j produk$			0.57

$CI produk$ 5.89

4.4.1.5. Fitur Neck

NECK

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Diameter	2	2
Toleransi	4	2
Neck	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	2	2
Nilai Z	2	2
<i>SUM</i>	<i>19</i>	<i>17</i>
<i>H</i>	<i>4.32</i>	
<i>D_{Rproduct}</i>	<i>0.89</i>	



Description	Feature						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances		
Neck	1	0	1.00	0.50	0	0.19	1.69	0.56

Feature	% Features	D/J	Relative Complexity
Neck	1.00	0.56	0.56

C_{j produk}

0.56

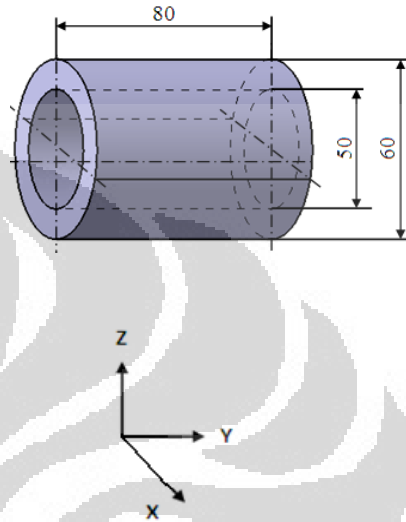
CI produk

6.30

4.4.1.6. Fitur Cylinder

CYLINDER

Description	Number	Diversity
Panjang	1	1
Toleransi	2	2
Diameter	2	1
Toleransi	4	2
Lobang		
Toleransi		
Kedalaman		
Posisi		
Nilai X		
Nilai Y		
Nilai Z		
SUM	9	6
H	3.17	
D_{Rproduct}	0.67	



Description	Feature						J = 3	
	Number	Diversity					SUM D	D/J
	Material	Shape	Geometry	In-process steps	Tolerances			
Cylinder	1	0	0.88	0.06	0	0.19	1.13	0.38

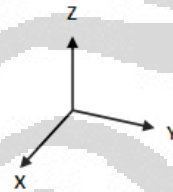
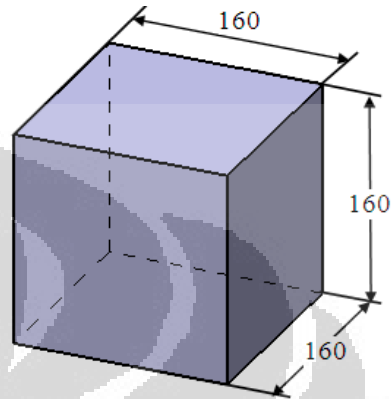
Feature	% Features	D/J	Relative Complexity
Cylinder	1.00	0.38	0.38
Cj produk			0.38

CI produk **3.31**

4.4.2. Fitur Prismatik.

4.4.2.1. Plain

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Lobang		
Toleransi		
Kedalaman		
Posisi		
Nilai X		
Nilai Y		
Nilai Z		
SUM	9	9
H	3.32	
$D_{Rproduct}$	1.0000	



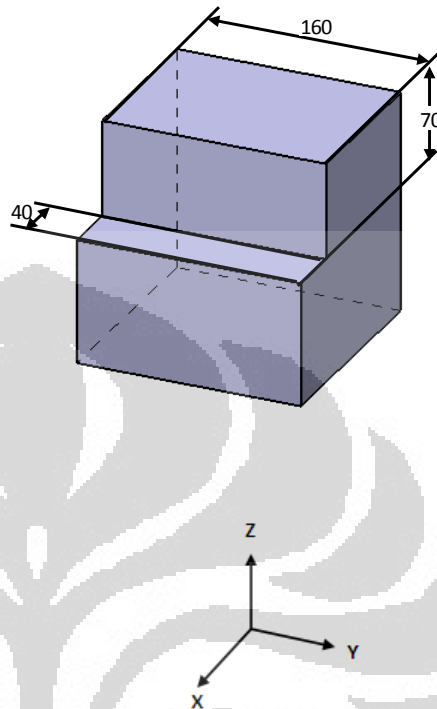
Description	Feature						SUM D	D/J
	Number	Diverstiy						
		Material	Shape	Geometry	In-process steps	Tolerances		
Plain	1	0	0.40	0.57	0	0.17	1.14	0.38

Feature	% Features	D/J	Relative Complexity
Plain	1.00	0.38	0.38
$C_j \text{ produk}$			0.38

$CI \text{ produk}$ 4.58

4.4.5.2. Fitur Stair

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Stair	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	0	0
Nilai Z	1	1
SUM	16	16
H	4.09	
D_{Rproduct}	1.0000	

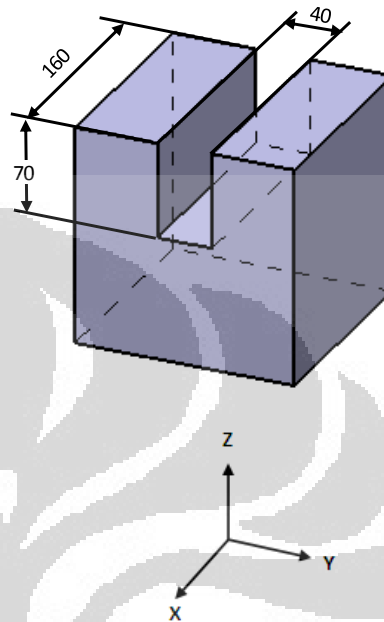


Description	Feature						J = 3	
	Number	Diverstiy						
		Material	Shape	Geometry	In-process steps	Tolerances	SUM D	D/J
Stair	1	0	0.17	0.57	0	0.19	0.93	0.31
Sum	1							
Feature	% Features	D/J	Relative Complexity					
Stair	1.00	0.31	0.31					
<i>C_j produk</i>			0.31					

CI produk 5.35

4.4.2.3. Fitur Slot.

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Slot	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	0	0
Nilai Y	2	1
Nilai Z	1	1
SUM	17	16
H	4.09	
D_{Rproduct}	0.9412	



Description	Feature						J = 3	
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances	SUM D	D/J
Slot	1	0	0.25	1.00	0	0.19	1.44	0.48

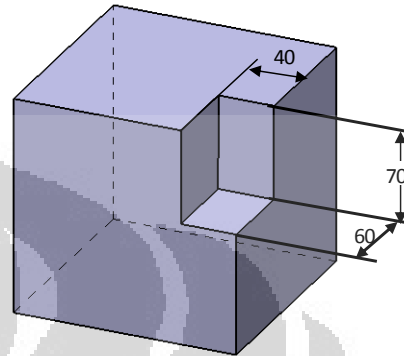
Feature	% Features	D/J	Relative Complexity
Slot	1.00	0.48	0.48
C_j produk			0.48

C_I produk 6.05

4.4.3. Fitur Slab.

4.4.3.1. Fitur Notch

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Notch	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	1	1
Nilai Z	1	1
<i>SUM</i>	17	17
<i>H</i>	4.17	
<i>D_{R product}</i>	1.0000	



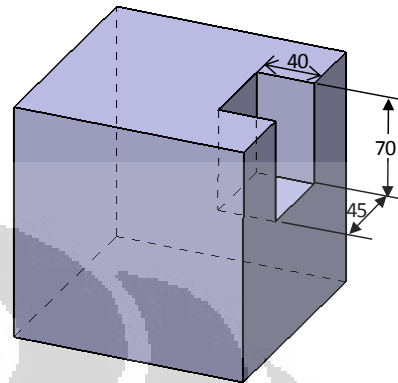
Description	Feature						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances		
Notch	1	0	0.08	0.50	0	0.19	0.77	0.26

Feature	% Features	D/J	Relative Complexit
Notch	1.00	0.26	0.26
<i>C_{j produk}</i>			0.26

CI produk 5.24

4.4.3.2. Fitur Depression.

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Depression	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	2	1
Nilai Z	1	1
<i>SUM</i>	18	17
<i>H</i>	4.25	
<i>D_{R product}</i>	0.9444	



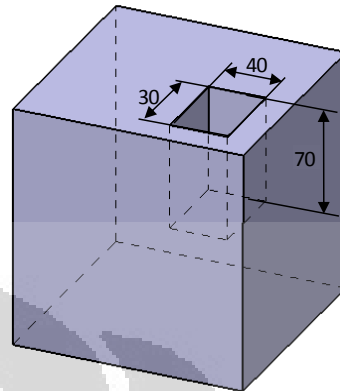
Description	Feature J = 3						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances		
Depression	1	0	0.11	0.67	0	0.19	0.96	0.32

Sum	1		
Feature	% Features	D/J	Relative Complexit
Depression	1.00	0.32	0.32
<i>C_{j produk}</i>			0.32

CI produk 5.37

4.4.3.3. Fitur Pocket

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Pocket	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	2	1
Nilai Z	2	1
<i>SUM</i>	<i>19</i>	<i>17</i>
<i>H</i>	<i>4.25</i>	
<i>D_{Rproduct}</i>	<i>0.8947</i>	

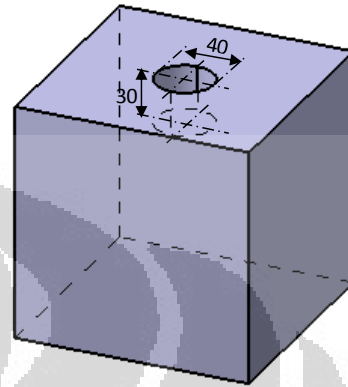


Description	Feature $J = 3$						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometry	In-process steps	Tolerances		
Pocket	1	0	0.13	1.00	0	0.19	1.31	0.44
Sum	1							
Feature	% Features	D/J	Relative Complexity					
Pocket	1.00	0.44	0.44					
<i>C_{j produk}</i>				0.44				

CI produk 5.66

4.4.4. Fitur Revolving

Description	Number	Diverstiy
Panjang	1	1
Toleransi	2	2
Lebar	1	1
Toleransi	2	2
Tinggi	1	1
Toleransi	2	2
Lobang	1	1
Toleransi	2	2
Kedalaman	1	1
Posisi	1	1
Nilai X	1	1
Nilai Y	1	1
Nilai Z	1	1
<i>SUM</i>	17	17
<i>H</i>	4.17	
<i>D_{Rproduct}</i>	1.0000	



Description	Feature						SUM D	D/J
	Number	Aspect						
		Material	Shape	Geometr y	In-process steps	Tolerances		
Lobang	1	0	0.20	0.19	0	0.17	0.55	0.18

Sum	1		
Feature	% Features	D/J	Relative Complexity
Lobang	1.00	0.18	0.18
<i>C_{j produk}</i>			0.18

CI produk 4.94

4.5. RANGKUMAN KOMPLEKSITAS PRODUK.

4.5.1. *Fitur Rotasional.*

Tabel 4.20. Indek Kompleksitas produk Fitur Rotasional

Nama Fitur	Nilai kompleksitas Produk
1. Step	5,34
2. Groove	5,94
3. Chamfer	5,92
4. Round	5,89
5. Neck	6,30
6. Cylinder	3,31

Untuk fitur kelas 1, bentuk yang paling kompleks adalah Neck

4.5.2. *Fitur Prismatik*

Tabel 4.21. Indek Kompleksitas produk Fitur Prismatik

Nama Fitur	Nilai kompleksitas Produk
1. Plain	4,58
2. Stair	5,35
3. Slot	6,05

Pada fitur Prismatik, bentuk yang paling kompleks adalah fitur Slot

4.5.3. *Fitur Slab*

Tabel 4.22. Indek Kompleksitas produk Fitur Slab

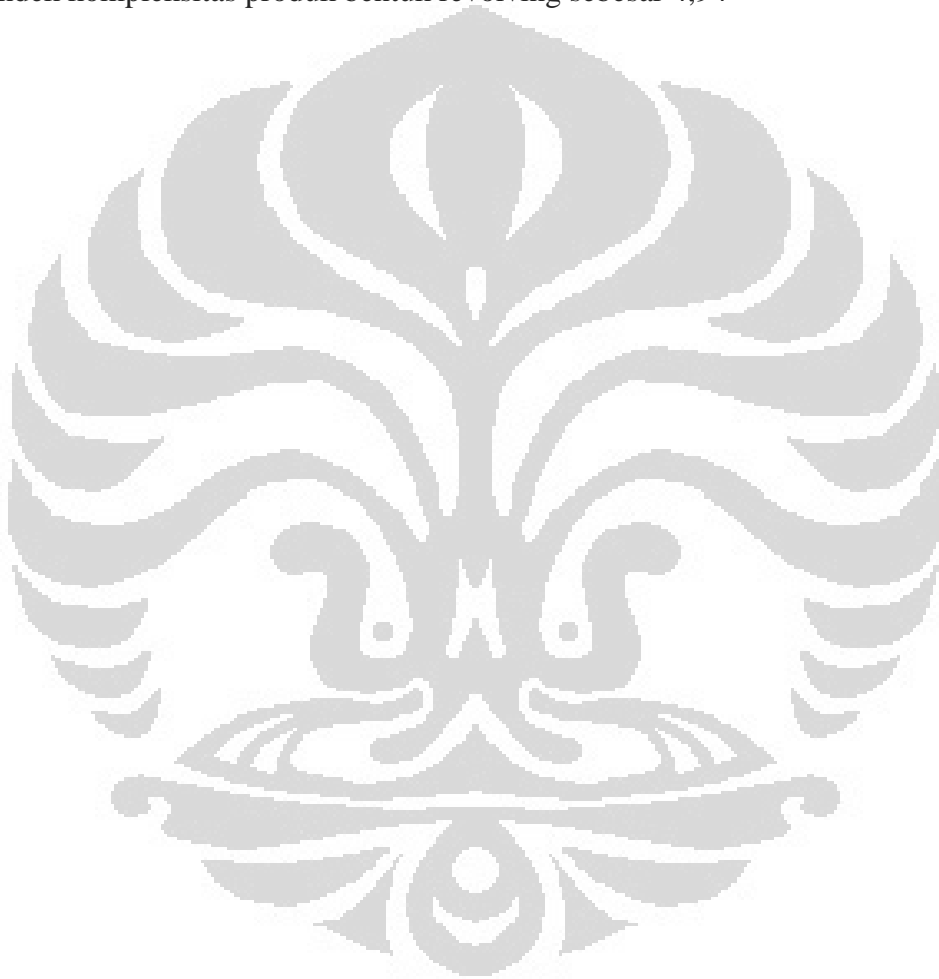
Nama Fitur	Nilai kompleksitas Produk
1. Notch	5,24
2. Depression	5,37
3. Pocket	5,66

Pada klasifikasi ke 3 ini, bentuk yang paling kompleks adalah fitur pocket.

4.5.4. *Fitur Revolving.*

Nama Fitur	Nilai kompleksitas Produk
Revolving	4,94

Indek kompleksitas produk bentuk revolving sebesar 4,94

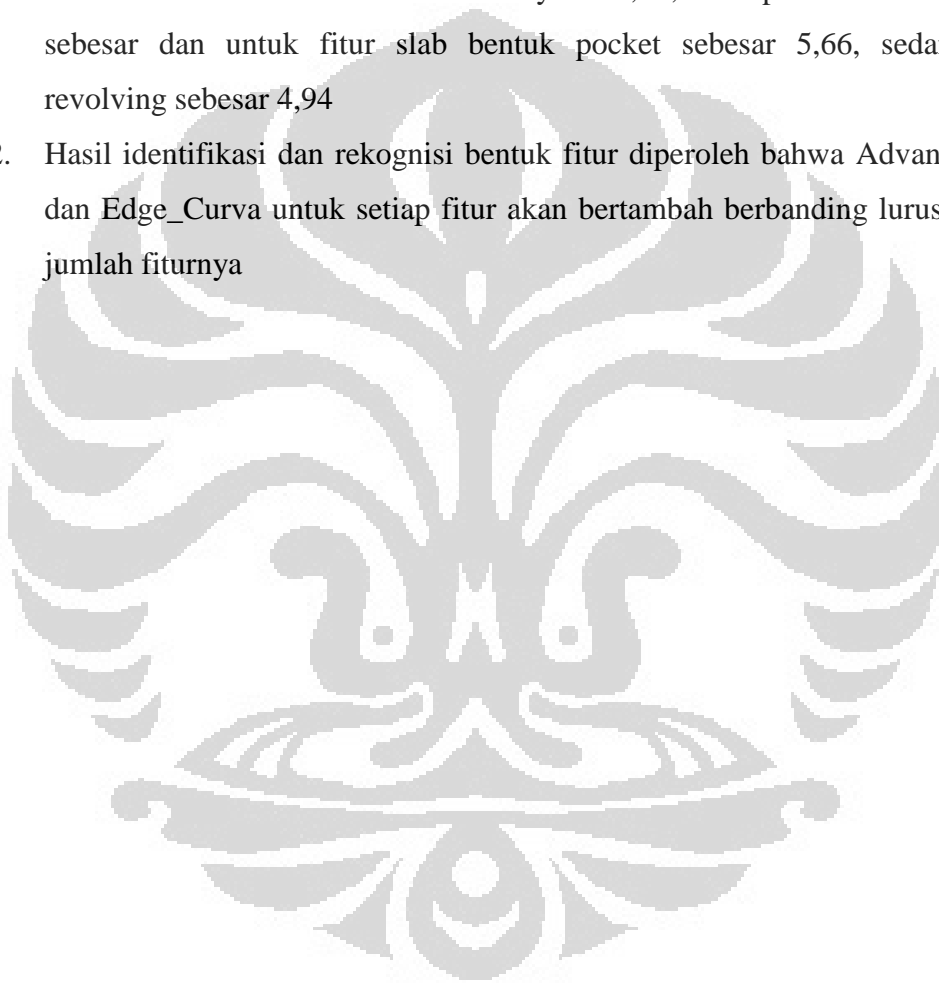


BAB V.

KESIMPULAN

5.1. KESIMPULAN.

1. Hasil perhitungan indek kompleksitas fitur produk melalui indentifikasi dan rekognisi informasi, diperoleh bahwa indek kompleksitas tertinggi untuk fitur rotasional adalah bentuk Neck yaitu 6,30, fitur prismatic bentuk slot sebesar dan untuk fitur slab bentuk pocket sebesar 5,66, sedang fitur revolving sebesar 4,94
2. Hasil identifikasi dan rekognisi bentuk fitur diperoleh bahwa Advance_Face dan Edge_Curva untuk setiap fitur akan bertambah berbanding lurus dengan jumlah fiturnya



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9. Sreeramulu. D, *A New methodology for recognition of milling feature from STEP File*, National Institute of technology, Warangal India, 2008.
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LAMPIRAN 1.

DATA STEP FILE FITUR ROTATIONAL, STEP TUNGGAL

```

ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Juni-12\\Rotational\\poros
step.stp','2012-06-07T07:04:31+00:00','(none)','(none)','CATIA Version 5 Release
19 GA (IN-10)','CATIA V5 STEP AP203','(none)');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Part2','',( #2) );
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies' );
#14=PRODUCT_DEFINITION(' ', '#6, #3) );
#16=SECURITY_CLASSIFICATION(' ', '#15) );
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified' );
#47=CARTESIAN_POINT(' ', (0.,0.,0.)) );
#52=CARTESIAN_POINT('Axis2P3D Location', (0.,80.,0.)) );
#57=CARTESIAN_POINT('Axis2P3D Location', (0.,160.,0.)) );
#61=CARTESIAN_POINT('Vertex', (14.3827661581,160.,26.3274768567)) );
#63=CARTESIAN_POINT('Vertex', (-14.3827661581,160.,-26.3274768567)) );
#66=CARTESIAN_POINT('Line
Origine', (14.3827661581,130.,26.3274768567)) );
#70=CARTESIAN_POINT('Vertex', (14.3827661581,100.,26.3274768567)) );
#73=CARTESIAN_POINT('Axis2P3D Location', (0.,100.,0.)) );
#77=CARTESIAN_POINT('Vertex', (-14.3827661581,100.,-26.3274768567)) );
#80=CARTESIAN_POINT('Line
Origine', (-14.3827661581,130.,-
26.3274768567)) );
#92=CARTESIAN_POINT('Axis2P3D Location', (0.,160.,0.)) );
#97=CARTESIAN_POINT('Axis2P3D Location', (0.,100.,0.)) );
#109=CARTESIAN_POINT('Axis2P3D Location', (0.,80.,0.)) );
#114=CARTESIAN_POINT('Axis2P3D Location', (0.,100.,0.)) );
#118=CARTESIAN_POINT('Vertex', (19.1770215442,100.,35.1033024756)) );
#120=CARTESIAN_POINT('Vertex', (-19.1770215442,100.,-35.1033024756)) );
#123=CARTESIAN_POINT('Line
Origine', (19.1770215442,50.,35.1033024756)) );
#127=CARTESIAN_POINT('Vertex', (19.1770215442,0.,35.1033024756)) );
#130=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,0.)) );
#134=CARTESIAN_POINT('Vertex', (-19.1770215442,0.,-35.1033024756)) );
#137=CARTESIAN_POINT('Line
Origine', (-19.1770215442,50.,-
35.1033024756)) );

```

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#149=CARTESIAN_POINT('Axis2P3D Location',(0.,100.,0.)) ;
#154=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#166=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,30.)) ;
#176=CARTESIAN_POINT('Axis2P3D Location',(0.,100.,40.)) ;
#190=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#53=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#58=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#67=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#74=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#81=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#98=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#110=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#111=DIRECTION('Axis2P3D XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#115=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#124=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#131=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#138=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#150=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#167=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#168=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#177=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#178=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#191=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#192=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#52,#53,#54) ;
#59=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#57,#58,$) ;
#75=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#73,#74,$) ;
#94=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#92,#93,$) ;
#99=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#97,#98,$) ;
#112=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#109,#110,#111) ;
#116=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#114,#115,$) ;
#132=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#130,#131,$) ;
#151=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#149,#150,$) ;
#156=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#154,#155,$) ;
#169=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#166,#167,#168) ;
#179=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#176,#177,#178) ;
#193=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#190,#191,#192) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;

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```

#21=APPROVAL(#20,') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(14,4,31.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#103=ORIENTED_EDGE("*,*,#96,.F.) ;
#104=ORIENTED_EDGE("*,*,#84,.T.) ;
#105=ORIENTED_EDGE("*,*,#101,.T.) ;
#106=ORIENTED_EDGE("*,*,#72,.F.) ;
#143=ORIENTED_EDGE("*,*,#122,.F.) ;
#144=ORIENTED_EDGE("*,*,#129,.T.) ;
#145=ORIENTED_EDGE("*,*,#136,.T.) ;
#146=ORIENTED_EDGE("*,*,#141,.F.) ;
#160=ORIENTED_EDGE("*,*,#153,.F.) ;
#161=ORIENTED_EDGE("*,*,#141,.T.) ;
#162=ORIENTED_EDGE("*,*,#158,.T.) ;
#163=ORIENTED_EDGE("*,*,#129,.F.) ;
#172=ORIENTED_EDGE("*,*,#65,.T.) ;
#173=ORIENTED_EDGE("*,*,#96,.T.) ;
#182=ORIENTED_EDGE("*,*,#153,.T.) ;
#183=ORIENTED_EDGE("*,*,#122,.T.) ;
#186=ORIENTED_EDGE("*,*,#79,.F.) ;
#187=ORIENTED_EDGE("*,*,#101,.F.) ;
#196=ORIENTED_EDGE("*,*,#136,.F.) ;
#197=ORIENTED_EDGE("*,*,#158,.F.) ;
#188=FACE_BOUND("#185,.T.) ;
#51=CLOSED_SHELL('Closed Shell',(#91,#108,#148,#165,#175,#189,#199)) ;
#68=VECTOR('Line Direction',#67,1.) ;
#82=VECTOR('Line Direction',#81,1.) ;
#125=VECTOR('Line Direction',#124,1.) ;
#139=VECTOR('Line Direction',#138,1.) ;
#201=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#200),#46) ;
#49=SHAPE_REPRESENTATION('',(#48),#46) ;
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.) ;
#108=ADVANCED_FACE('PartBody',(#107),#56,.T.) ;
#148=ADVANCED_FACE('PartBody',(#147),#113,.T.) ;
#165=ADVANCED_FACE('PartBody',(#164),#113,.T.) ;
#175=ADVANCED_FACE('PartBody',(#174),#170,.T.) ;
#189=ADVANCED_FACE('PartBody',(#184,#188),#180,.T.) ;
#199=ADVANCED_FACE('PartBody',(#198),#194,.F.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard',config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;

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#200=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,7,6) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#60=CIRCLE('generated circle',#59,30.) ;
#76=CIRCLE('generated circle',#75,30.) ;
#95=CIRCLE('generated circle',#94,30.) ;
#100=CIRCLE('generated circle',#99,30.) ;
#117=CIRCLE('generated circle',#116,40.) ;
#133=CIRCLE('generated circle',#132,40.) ;
#152=CIRCLE('generated circle',#151,40.) ;
#157=CIRCLE('generated circle',#156,40.) ;
#202=SHAPE_REPRESENTATION_RELATIONSHIP(' ',#49,#201) ;
#56=CYLINDRICAL_SURFACE('generated cylinder',#55,30.) ;
#113=CYLINDRICAL_SURFACE('generated cylinder',#112,40.) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE("#62,#64,#60,.T.) ;
#72=EDGE_CURVE("#62,#71,#69,.F.) ;
#79=EDGE_CURVE("#71,#78,#76,.T.) ;
#84=EDGE_CURVE("#64,#78,#83,.F.) ;
#96=EDGE_CURVE("#64,#62,#95,.T.) ;
#101=EDGE_CURVE("#78,#71,#100,.T.) ;
#122=EDGE_CURVE("#119,#121,#117,.T.) ;
#129=EDGE_CURVE("#119,#128,#126,.F.) ;
#136=EDGE_CURVE("#128,#135,#133,.T.) ;
#141=EDGE_CURVE("#121,#135,#140,.F.) ;
#153=EDGE_CURVE("#121,#119,#152,.T.) ;
#158=EDGE_CURVE("#135,#128,#157,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#102=EDGE_LOOP("#103,#104,#105,#106)) ;
#142=EDGE_LOOP("#143,#144,#145,#146)) ;
#159=EDGE_LOOP("#160,#161,#162,#163)) ;

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#171=EDGE_LOOP(",(#172,#173)) ;
#181=EDGE_LOOP(",(#182,#183)) ;
#185=EDGE_LOOP(",(#186,#187)) ;
#195=EDGE_LOOP(",(#196,#197)) ;
#90=FACE_OUTER_BOUND(",#85,.T.) ;
#107=FACE_OUTER_BOUND(",#102,.T.) ;
#147=FACE_OUTER_BOUND(",#142,.T.) ;
#164=FACE_OUTER_BOUND(",#159,.T.) ;
#174=FACE_OUTER_BOUND(",#171,.T.) ;
#184=FACE_OUTER_BOUND(",#181,.T.) ;
#198=FACE_OUTER_BOUND(",#195,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#69=LINE('Line',#66,#68) ;
#83=LINE('Line',#80,#82) ;
#126=LINE('Line',#123,#125) ;
#140=LINE('Line',#137,#139) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','',(#22),'') ;
#170=PLANE('Plane',#169) ;
#180=PLANE('Plane',#179) ;
#194=PLANE('Plane',#193) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASURE
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE(''
'#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT(",#61) ;
#64=VERTEX_POINT(",#63) ;
#71=VERTEX_POINT(",#70) ;
#78=VERTEX_POINT(",#77) ;
#119=VERTEX_POINT(",#118) ;
#121=VERTEX_POINT(",#120) ;
#128=VERTEX_POINT(",#127) ;
#135=VERTEX_POINT(",#134) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT('')) ;
ENDSEC;
END-ISO-10303-21;

```

LAMPIRAN 2.

DATA STEP FILE FITUR ROTATIONAL, GROOVE TUNGGAL

```

ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Juni-
12\\Rotational\\groove.stp','2012-06-07T07:10:33+00:00','(none)','(none)','CATIA
Version 5 Release 19 GA (IN-10)','CATIA V5 STEP AP203','(none)');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Part3','',( #2) );
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies' );
#14=PRODUCT_DEFINITION(' ', '#6, #3) );
#16=SECURITY_CLASSIFICATION(' ', '#15) );
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified' );
#47=CARTESIAN_POINT(' ', (0., 0., 0.)) );
#52=CARTESIAN_POINT('Axis2P3D Location', (0., 80., 0.)) );
#57=CARTESIAN_POINT('Axis2P3D Location', (0., 160., 0.)) );
#61=CARTESIAN_POINT('Vertex', (19.1770215442, 160., 35.1033024756)) );
#63=CARTESIAN_POINT('Vertex', (-19.1770215442, 160., -35.1033024756)) );
#66=CARTESIAN_POINT('Line Origine', (19.1770215442, 80., 35.1033024756)) );
#70=CARTESIAN_POINT('Vertex', (19.1770215442, 100., 35.1033024756)) );
#73=CARTESIAN_POINT('Axis2P3D Location', (0., 100., 0.)) );
#77=CARTESIAN_POINT('Vertex', (-19.1770215442, 100., -35.1033024756)) );
#80=CARTESIAN_POINT('Line Origine', (-19.1770215442, 80., -
35.1033024756)) );
#92=CARTESIAN_POINT('Axis2P3D Location', (0., 160., 0.)) );
#97=CARTESIAN_POINT('Axis2P3D Location', (0., 100., 0.)) );
#109=CARTESIAN_POINT('Axis2P3D Location', (0., 80., 0.)) );
#114=CARTESIAN_POINT('Axis2P3D Location', (0., 100., 0.)) );
#118=CARTESIAN_POINT('Vertex', (14.3827661581, 100., 26.3274768567)) );
#120=CARTESIAN_POINT('Vertex', (-14.3827661581, 100., -26.3274768567)) );
#123=CARTESIAN_POINT('Line
Origine', (14.3827661581, 80., 26.3274768567)) );
#127=CARTESIAN_POINT('Vertex', (14.3827661581, 60., 26.3274768567)) );
#130=CARTESIAN_POINT('Axis2P3D Location', (0., 60., 0.)) );
#134=CARTESIAN_POINT('Vertex', (-14.3827661581, 60., -26.3274768567)) );
#137=CARTESIAN_POINT('Line Origine', (-14.3827661581, 80., -
26.3274768567)) );
#149=CARTESIAN_POINT('Axis2P3D Location', (0., 100., 0.)) );

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#154=CARTESIAN_POINT('Axis2P3D Location',(0.,60.,0.)) ;
#166=CARTESIAN_POINT('Axis2P3D Location',(0.,60.,0.)) ;
#170=CARTESIAN_POINT('Vertex',(19.1770215442,60.,35.1033024756)) ;
#172=CARTESIAN_POINT('Vertex',(-19.1770215442,60.,-35.1033024756)) ;
#175=CARTESIAN_POINT('Line
Origine',(19.1770215442,80.,35.1033024756)) ;
#179=CARTESIAN_POINT('Vertex',(19.1770215442,0.,35.1033024756)) ;
#182=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#186=CARTESIAN_POINT('Vertex',(-19.1770215442,0.,-35.1033024756)) ;
#189=CARTESIAN_POINT('Line
Origine',(-19.1770215442,80.,-
35.1033024756)) ;
#201=CARTESIAN_POINT('Axis2P3D Location',(0.,60.,0.)) ;
#206=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#218=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,40.)) ;
#228=CARTESIAN_POINT('Axis2P3D Location',(0.,100.,30.)) ;
#242=CARTESIAN_POINT('Axis2P3D Location',(0.,60.,40.)) ;
#256=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#53=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#54=DIRECTION('Axis2P3D
XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#58=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#67=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#74=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#81=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#98=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#110=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#111=DIRECTION('Axis2P3D
XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#115=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#124=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#131=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#138=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#150=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#167=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#176=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#183=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#190=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#202=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#207=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#219=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#220=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#229=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#230=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#243=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#244=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#257=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;

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#258=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#52,#53,#54) ;
#59=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#57,#58,$) ;
#75=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#73,#74,$) ;
#94=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#92,#93,$) ;
#99=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#97,#98,$) ;
#112=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#109,#110,#111) ;
#116=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#114,#115,$) ;
#132=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#130,#131,$) ;
#151=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#149,#150,$) ;
#156=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#154,#155,$) ;
#168=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#166,#167,$) ;
#184=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#182,#183,$) ;
#203=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#201,#202,$) ;
#208=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#206,#207,$) ;
#221=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#218,#219,#220) ;
#231=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#228,#229,#230) ;
#245=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#242,#243,#244) ;
#259=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#256,#257,#258) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;
#21=APPROVAL(#20,'') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(14,10,33.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#103=ORIENTED_EDGE("*,*,#96,.F.) ;
#104=ORIENTED_EDGE("*,*,#84,.T.) ;
#105=ORIENTED_EDGE("*,*,#101,.T.) ;
#106=ORIENTED_EDGE("*,*,#72,.F.) ;
#143=ORIENTED_EDGE("*,*,#122,.F.) ;
#144=ORIENTED_EDGE("*,*,#129,.T.) ;
#145=ORIENTED_EDGE("*,*,#136,.T.) ;
#146=ORIENTED_EDGE("*,*,#141,.F.) ;
#160=ORIENTED_EDGE("*,*,#153,.F.) ;
#161=ORIENTED_EDGE("*,*,#141,.T.) ;
#162=ORIENTED_EDGE("*,*,#158,.T.) ;
#163=ORIENTED_EDGE("*,*,#129,.F.) ;
#195=ORIENTED_EDGE("*,*,#174,.F.) ;

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#196=ORIENTED_EDGE("*,*,#181,.T.);
#197=ORIENTED_EDGE("*,*,#188,.T.);
#198=ORIENTED_EDGE("*,*,#193,.F.);
#212=ORIENTED_EDGE("*,*,#205,.F.);
#213=ORIENTED_EDGE("*,*,#193,.T.);
#214=ORIENTED_EDGE("*,*,#210,.T.);
#215=ORIENTED_EDGE("*,*,#181,.F.);
#224=ORIENTED_EDGE("*,*,#65,.T.);
#225=ORIENTED_EDGE("*,*,#96,.T.);
#234=ORIENTED_EDGE("*,*,#79,.F.);
#235=ORIENTED_EDGE("*,*,#101,.F.);
#238=ORIENTED_EDGE("*,*,#153,.T.);
#239=ORIENTED_EDGE("*,*,#122,.T.);
#248=ORIENTED_EDGE("*,*,#205,.T.);
#249=ORIENTED_EDGE("*,*,#174,.T.);
#252=ORIENTED_EDGE("*,*,#136,.F.);
#253=ORIENTED_EDGE("*,*,#158,.F.);
#262=ORIENTED_EDGE("*,*,#188,.F.);
#263=ORIENTED_EDGE("*,*,#210,.F.);
#240=FACE_BOUND("#237,.T.);
#254=FACE_BOUND("#251,.T.);
#51=CLOSED_SHELL('Closed
Shell',(#91,#108,#148,#165,#200,#217,#227,#241,#255,#265));
#68=VECTOR('Line Direction',#67,1.);
#82=VECTOR('Line Direction',#81,1.);
#125=VECTOR('Line Direction',#124,1.);
#139=VECTOR('Line Direction',#138,1.);
#177=VECTOR('Line Direction',#176,1.);
#191=VECTOR('Line Direction',#190,1.);
#267=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#266),#46);
#49=SHAPE_REPRESENTATION(' ',(#48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);
#108=ADVANCED_FACE('PartBody',(#107),#56,.T.);
#148=ADVANCED_FACE('PartBody',(#147),#113,.T.);
#165=ADVANCED_FACE('PartBody',(#164),#113,.T.);
#200=ADVANCED_FACE('PartBody',(#199),#56,.T.);
#217=ADVANCED_FACE('PartBody',(#216),#56,.T.);
#227=ADVANCED_FACE('PartBody',(#226),#222,.T.);
#241=ADVANCED_FACE('PartBody',(#236,#240),#232,.F.);
#255=ADVANCED_FACE('PartBody',(#250,#254),#246,.T.);
#265=ADVANCED_FACE('PartBody',(#264),#260,.F.);
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1);
#32=APPROVAL_DATE_TIME(#13,#21);
#266=MANIFOLD_SOLID_BREP('PartBody',#51);
#11=CALENDAR_DATE(2012,7,6);
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14));
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16));

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#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
 #17=DATE_TIME_ROLE('classification_date') ;
 #28=DATE_TIME_ROLE('creation_date') ;
 #27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#26,(#16)) ;
 #33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#34,(#6)) ;
 #35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#36,(#6,#14)) ;
 #37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#38,(#5)) ;
 #26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
 #34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
 #36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
 #38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
 #39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
 #60=CIRCLE('generated circle',#59,40.) ;
 #76=CIRCLE('generated circle',#75,40.) ;
 #95=CIRCLE('generated circle',#94,40.) ;
 #100=CIRCLE('generated circle',#99,40.) ;
 #117=CIRCLE('generated circle',#116,30.) ;
 #133=CIRCLE('generated circle',#132,30.) ;
 #152=CIRCLE('generated circle',#151,30.) ;
 #157=CIRCLE('generated circle',#156,30.) ;
 #169=CIRCLE('generated circle',#168,40.) ;
 #185=CIRCLE('generated circle',#184,40.) ;
 #204=CIRCLE('generated circle',#203,40.) ;
 #209=CIRCLE('generated circle',#208,40.) ;
 #268=SHAPE_REPRESENTATION_RELATIONSHIP(' ','',#49,#267) ;
 #56=CYLINDRICAL_SURFACE('generated cylinder',#55,40.) ;
 #113=CYLINDRICAL_SURFACE('generated cylinder',#112,30.) ;
 #3=DESIGN_CONTEXT(' ',#1,'design') ;
 #65=EDGE_CURVE("#62,#64,#60,.T.) ;
 #72=EDGE_CURVE("#62,#71,#69,.F.) ;
 #79=EDGE_CURVE("#71,#78,#76,.T.) ;
 #84=EDGE_CURVE("#64,#78,#83,.F.) ;
 #96=EDGE_CURVE("#64,#62,#95,.T.) ;
 #101=EDGE_CURVE("#78,#71,#100,.T.) ;
 #122=EDGE_CURVE("#119,#121,#117,.T.) ;
 #129=EDGE_CURVE("#119,#128,#126,.F.) ;
 #136=EDGE_CURVE("#128,#135,#133,.T.) ;
 #141=EDGE_CURVE("#121,#135,#140,.F.) ;
 #153=EDGE_CURVE("#121,#119,#152,.T.) ;
 #158=EDGE_CURVE("#135,#128,#157,.T.) ;
 #174=EDGE_CURVE("#171,#173,#169,.T.) ;
 #181=EDGE_CURVE("#171,#180,#178,.F.) ;
 #188=EDGE_CURVE("#180,#187,#185,.T.) ;
 #193=EDGE_CURVE("#173,#187,#192,.F.) ;

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#205=EDGE_CURVE(",#173,#171,#204,.T.) ;
#210=EDGE_CURVE(",#187,#180,#209,.T.) ;
#85=EDGE_LOOP(",(#86,#87,#88,#89)) ;
#102=EDGE_LOOP(",(#103,#104,#105,#106)) ;
#142=EDGE_LOOP(",(#143,#144,#145,#146)) ;
#159=EDGE_LOOP(",(#160,#161,#162,#163)) ;
#194=EDGE_LOOP(",(#195,#196,#197,#198)) ;
#211=EDGE_LOOP(",(#212,#213,#214,#215)) ;
#223=EDGE_LOOP(",(#224,#225)) ;
#233=EDGE_LOOP(",(#234,#235)) ;
#237=EDGE_LOOP(",(#238,#239)) ;
#247=EDGE_LOOP(",(#248,#249)) ;
#251=EDGE_LOOP(",(#252,#253)) ;
#261=EDGE_LOOP(",(#262,#263)) ;
#90=FACE_OUTER_BOUND(",#85,.T.) ;
#107=FACE_OUTER_BOUND(",#102,.T.) ;
#147=FACE_OUTER_BOUND(",#142,.T.) ;
#164=FACE_OUTER_BOUND(",#159,.T.) ;
#199=FACE_OUTER_BOUND(",#194,.T.) ;
#216=FACE_OUTER_BOUND(",#211,.T.) ;
#226=FACE_OUTER_BOUND(",#223,.T.) ;
#236=FACE_OUTER_BOUND(",#233,.T.) ;
#250=FACE_OUTER_BOUND(",#247,.T.) ;
#264=FACE_OUTER_BOUND(",#261,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#69=LINE('Line',#66,#68) ;
#83=LINE('Line',#80,#82) ;
#126=LINE('Line',#123,#125) ;
#140=LINE('Line',#137,#139) ;
#178=LINE('Line',#175,#177) ;
#192=LINE('Line',#189,#191) ;
#2=MECHANICAL_CONTEXT(",#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','',(#22),'') ;
#222=PLANE('Plane',#221) ;
#232=PLANE('Plane',#231) ;
#246=PLANE('Plane',#245) ;
#260=PLANE('Plane',#259) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE(",
'#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT(",#61) ;
#64=VERTEX_POINT(",#63) ;

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#71=VERTEX_POINT("#70) ;
#78=VERTEX_POINT("#77) ;
#119=VERTEX_POINT("#118) ;
#121=VERTEX_POINT("#120) ;
#128=VERTEX_POINT("#127) ;
#135=VERTEX_POINT("#134) ;
#171=VERTEX_POINT("#170) ;
#173=VERTEX_POINT("#172) ;
#180=VERTEX_POINT("#179) ;
#187=VERTEX_POINT("#186) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT(',')) ;
ENDSEC;
END-ISO-10303-21;

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LAMPIRAN 3.
DATA STEP FILE FITUR ROTATIONAL, CHAMFER

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Juni-
12\\Rotational\\chamfer.stp','2012-06-
07T07:26:42+00:00','(none)','(none)','CATIA Version 5 Release 19 GA (IN-
10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Part7','',( #2) );
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION(' ', '#6, #3) );
#16=SECURITY_CLASSIFICATION(' ', '#15) );
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT(' ', (0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location', (0.,160.,0.));
#57=CARTESIAN_POINT('Axis2P3D Location', (0.,160.,0.));
#61=CARTESIAN_POINT('Vertex', (9.58851077208,160.,17.5516512378));
#63=CARTESIAN_POINT('Vertex', (-9.58851077208,160.,-17.5516512378));
#66=CARTESIAN_POINT('Line
Origine', (14.3827661581,150.,26.3274768567));
#70=CARTESIAN_POINT('Vertex', (19.1770215442,140.,35.1033024756));
#73=CARTESIAN_POINT('Axis2P3D Location', (0.,140.,0.));
#77=CARTESIAN_POINT('Vertex', (-19.1770215442,140.,-35.1033024756));
#80=CARTESIAN_POINT('Line
Origine', (-14.3827661581,150.,-
26.3274768567));
#92=CARTESIAN_POINT('Axis2P3D Location', (0.,160.,0.));
#97=CARTESIAN_POINT('Axis2P3D Location', (0.,140.,0.));
#109=CARTESIAN_POINT('Axis2P3D Location', (0.,80.,0.));
#114=CARTESIAN_POINT('Line
Origine', (19.1770215442,70.,35.1033024756));
#118=CARTESIAN_POINT('Vertex', (19.1770215442,0.,35.1033024756));
#121=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,0.));
#125=CARTESIAN_POINT('Vertex', (-19.1770215442,0.,-35.1033024756));
#128=CARTESIAN_POINT('Line
Origine', (-19.1770215442,70.,-
35.1033024756));
#140=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,0.));
#152=CARTESIAN_POINT('Axis2P3D Location', (0.,160.,20.));

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#162=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#53=DIRECTION('Axis2P3D Direction',(-0.,-1.,-0.)) ;
#54=DIRECTION('Axis2P3D
XDirection',(0.479425538604,0.,0.87758256189)) ;
#58=DIRECTION('Axis2P3D Direction',(0.,-1.,-0.)) ;
#67=DIRECTION('Vector
Direction',(0.339005049421,-
0.707106781187,0.620544580564)) ;
#74=DIRECTION('Axis2P3D Direction',(0.,-1.,-0.)) ;
#81=DIRECTION('Vector
Direction',(-0.339005049421,-0.707106781187,-
0.620544580564)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,-1.,-0.)) ;
#98=DIRECTION('Axis2P3D Direction',(0.,-1.,-0.)) ;
#110=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#111=DIRECTION('Axis2P3D
XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#115=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#122=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#141=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#153=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#154=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#163=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#164=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#48=AXIS2_PLACEMENT_3D('','#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Cone Axis2P3D',#52,#53,#54) ;
#59=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#57,#58,$) ;
#75=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#73,#74,$) ;
#94=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#92,#93,$) ;
#99=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#97,#98,$) ;
#112=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#109,#110,#111) ;
#123=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#121,#122,$) ;
#142=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#140,#141,$) ;
#155=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#152,#153,#154) ;
#165=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#162,#163,#164) ;
#40=PRODUCT_DEFINITION_SHAPE('','#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON('','', '$,$,$) ;
#23=ORGANIZATION('','',) ;
#21=APPROVAL(#20,') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(14,26,42.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,..AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;

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#89=ORIENTED_EDGE("*,*,#84,.F.);
#103=ORIENTED_EDGE("*,*,#96,.F.);
#104=ORIENTED_EDGE("*,*,#84,.T.);
#105=ORIENTED_EDGE("*,*,#101,.T.);
#106=ORIENTED_EDGE("*,*,#72,.F.);
#134=ORIENTED_EDGE("*,*,#79,.F.);
#135=ORIENTED_EDGE("*,*,#120,.T.);
#136=ORIENTED_EDGE("*,*,#127,.T.);
#137=ORIENTED_EDGE("*,*,#132,.F.);
#146=ORIENTED_EDGE("*,*,#101,.F.);
#147=ORIENTED_EDGE("*,*,#132,.T.);
#148=ORIENTED_EDGE("*,*,#144,.T.);
#149=ORIENTED_EDGE("*,*,#120,.F.);
#158=ORIENTED_EDGE("*,*,#65,.T.);
#159=ORIENTED_EDGE("*,*,#96,.T.);
#168=ORIENTED_EDGE("*,*,#127,.F.);
#169=ORIENTED_EDGE("*,*,#144,.F.);
#51=CLOSED_SHELL('Closed Shell',(#91,#108,#139,#151,#161,#171));
#68=VECTOR('Line Direction',#67,1.);
#82=VECTOR('Line Direction',#81,1.);
#116=VECTOR('Line Direction',#115,1.);
#130=VECTOR('Line Direction',#129,1.);
#173=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#172),#46);
#49=SHAPE_REPRESENTATION('',(#48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);
#108=ADVANCED_FACE('PartBody',(#107),#56,.T.);
#139=ADVANCED_FACE('PartBody',(#138),#113,.T.);
#151=ADVANCED_FACE('PartBody',(#150),#113,.T.);
#161=ADVANCED_FACE('PartBody',(#160),#156,.T.);
#171=ADVANCED_FACE('PartBody',(#170),#166,.F.);
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard',config_control_design',1994,#1);
#32=APPROVAL_DATE_TIME(#13,#21);
#172=MANIFOLD_SOLID_BREP('PartBody',#51);
#11=CALENDAR_DATE(2012,7,6);
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14));
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16));
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14));
#17=DATE_TIME_ROLE('classification_date');
#28=DATE_TIME_ROLE('creation_date');
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16));
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6));
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14));
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5));

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#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#60=CIRCLE('generated circle',#59,20.) ;
#76=CIRCLE('generated circle',#75,40.) ;
#95=CIRCLE('generated circle',#94,20.) ;
#100=CIRCLE('generated circle',#99,40.) ;
#124=CIRCLE('generated circle',#123,40.) ;
#143=CIRCLE('generated circle',#142,40.) ;
#56=CONICAL_SURFACE('Cone',#55,20.,0.785398163397) ;
#174=SHAPE_REPRESENTATION_RELATIONSHIP(' ', '#49,#173) ;
#113=CYLINDRICAL_SURFACE('generated cylinder',#112,40.) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE("#62,#64,#60,.F.) ;
#72=EDGE_CURVE("#62,#71,#69,.T.) ;
#79=EDGE_CURVE("#71,#78,#76,.F.) ;
#84=EDGE_CURVE("#64,#78,#83,.T.) ;
#96=EDGE_CURVE("#64,#62,#95,.F.) ;
#101=EDGE_CURVE("#78,#71,#100,.F.) ;
#120=EDGE_CURVE("#71,#119,#117,.F.) ;
#127=EDGE_CURVE("#119,#126,#124,.T.) ;
#132=EDGE_CURVE("#78,#126,#131,.F.) ;
#144=EDGE_CURVE("#126,#119,#143,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#102=EDGE_LOOP("#103,#104,#105,#106)) ;
#133=EDGE_LOOP("#134,#135,#136,#137)) ;
#145=EDGE_LOOP("#146,#147,#148,#149)) ;
#157=EDGE_LOOP("#158,#159)) ;
#167=EDGE_LOOP("#168,#169)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#107=FACE_OUTER_BOUND("#102,.T.) ;
#138=FACE_OUTER_BOUND("#133,.T.) ;
#150=FACE_OUTER_BOUND("#145,.T.) ;
#160=FACE_OUTER_BOUND("#157,.T.) ;
#170=FACE_OUTER_BOUND("#167,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#69=LINE('Line',#66,#68) ;
#83=LINE('Line',#80,#82) ;
#117=LINE('Line',#114,#116) ;
#131=LINE('Line',#128,#130) ;
#2=MECHANICAL_CONTEXT(' ',#1,'mechanical') ;
#24=PERSONAL_ADDRESS(' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',(#22),' ') ;
#156=PLANE('Plane',#155) ;
#166=PLANE('Plane',#165) ;

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#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('
','#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#,#61) ;
#64=VERTEX_POINT("#,#63) ;
#71=VERTEX_POINT("#,#70) ;
#78=VERTEX_POINT("#,#77) ;
#119=VERTEX_POINT("#,#118) ;
#126=VERTEX_POINT("#,#125) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT('')) ;
ENDSEC;
END-ISO-10303-21;

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LAMPIRAN 4
DATA STEP FILE FITUR ROTATIONAL, ROUND

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Juni-
12\\Rotational\\round.stp','2012-06-07T07:34:24+00:00','(none)','(none)','CATIA
Version 5 Release 19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Part8','',( #2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION('','#6,#3);
#16=SECURITY_CLASSIFICATION('','#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(0.,140.,0.));
#57=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,0.));
#61=CARTESIAN_POINT('Vertex',(9.58851077208,160.,17.5516512378));
#63=CARTESIAN_POINT('Vertex',(-9.58851077208,160.,-17.5516512378));
#66=CARTESIAN_POINT('Axis2P3D
Location',(9.58851077208,140.,17.5516512378));
#70=CARTESIAN_POINT('Vertex',(19.1770215442,140.,35.1033024756));
#73=CARTESIAN_POINT('Axis2P3D Location',(0.,140.,0.));
#77=CARTESIAN_POINT('Vertex',(-19.1770215442,140.,-35.1033024756));
#80=CARTESIAN_POINT('Axis2P3D
Location',(-9.58851077208,140.,-
17.5516512378));
#92=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,0.));
#97=CARTESIAN_POINT('Axis2P3D Location',(0.,140.,0.));
#109=CARTESIAN_POINT('Axis2P3D Location',(0.,80.,0.));
#114=CARTESIAN_POINT('Line
Origine',(19.1770215442,70.,35.1033024756));
#118=CARTESIAN_POINT('Vertex',(19.1770215442,0.,35.1033024756));
#121=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));
#125=CARTESIAN_POINT('Vertex',(-19.1770215442,0.,-35.1033024756));
#128=CARTESIAN_POINT('Line
Origine',(-19.1770215442,70.,-
35.1033024756));
#140=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));
#152=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,0.));
#162=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));

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#53=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#54=DIRECTION('Axis2P3D
XDirection',(0.479425538604,0.,0.87758256189)) ;
#58=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#67=DIRECTION('Axis2P3D Direction',(-0.87758256189,0.,0.479425538604)) ;
#74=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#81=DIRECTION('Axis2P3D Direction',(0.87758256189,0.,-0.479425538604)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#98=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#110=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#111=DIRECTION('Axis2P3D
XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#115=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#122=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#141=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#153=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#154=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#163=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#164=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#48=AXIS2_PLACEMENT_3D('','#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Torus Axis2P3D','#52,#53,#54) ;
#59=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#57,#58,$) ;
#68=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#66,#67,$) ;
#75=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#73,#74,$) ;
#82=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#80,#81,$) ;
#94=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#92,#93,$) ;
#99=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#97,#98,$) ;
#112=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D','#109,#110,#111) ;
#123=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#121,#122,$) ;
#142=AXIS2_PLACEMENT_3D('Circle Axis2P3D','#140,#141,$) ;
#155=AXIS2_PLACEMENT_3D('Plane Axis2P3D','#152,#153,#154) ;
#165=AXIS2_PLACEMENT_3D('Plane Axis2P3D','#162,#163,#164) ;
#40=PRODUCT_DEFINITION_SHAPE('','#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON('','', '$,$,$) ;
#23=ORGANIZATION('','',) ;
#21=APPROVAL(#20,') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(14,34,24.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;

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#103=ORIENTED_EDGE("*,*,#96,.F.);
#104=ORIENTED_EDGE("*,*,#84,.T.);
#105=ORIENTED_EDGE("*,*,#101,.T.);
#106=ORIENTED_EDGE("*,*,#72,.F.);
#134=ORIENTED_EDGE("*,*,#79,.F.);
#135=ORIENTED_EDGE("*,*,#120,.T.);
#136=ORIENTED_EDGE("*,*,#127,.T.);
#137=ORIENTED_EDGE("*,*,#132,.F.);
#146=ORIENTED_EDGE("*,*,#101,.F.);
#147=ORIENTED_EDGE("*,*,#132,.T.);
#148=ORIENTED_EDGE("*,*,#144,.T.);
#149=ORIENTED_EDGE("*,*,#120,.F.);
#158=ORIENTED_EDGE("*,*,#65,.T.);
#159=ORIENTED_EDGE("*,*,#96,.T.);
#168=ORIENTED_EDGE("*,*,#127,.F.);
#169=ORIENTED_EDGE("*,*,#144,.F.);
#51=CLOSED_SHELL('Closed Shell',(#91,#108,#139,#151,#161,#171));
#116=VECTOR('Line Direction',#115,1.);
#130=VECTOR('Line Direction',#129,1.);
#173=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#172),#46);
#49=SHAPE_REPRESENTATION(' ',(#48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);
#108=ADVANCED_FACE('PartBody',(#107),#56,.T.);
#139=ADVANCED_FACE('PartBody',(#138),#113,.T.);
#151=ADVANCED_FACE('PartBody',(#150),#113,.T.);
#161=ADVANCED_FACE('PartBody',(#160),#156,.T.);
#171=ADVANCED_FACE('PartBody',(#170),#166,.F.);
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1);
#32=APPROVAL_DATE_TIME(#13,#21);
#172=MANIFOLD_SOLID_BREP('PartBody',#51);
#11=CALENDAR_DATE(2012,7,6);
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14));
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16));
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14));
#17=DATE_TIME_ROLE('classification_date');
#28=DATE_TIME_ROLE('creation_date');
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16));
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6));
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14));
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5));
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer');
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier');
#36=PERSON_AND_ORGANIZATION_ROLE('creator');

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#38=PERSON_AND_ORGANIZATION_ROLE('design_owner');
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6));
#60=CIRCLE('generated circle',#59,20.);
#69=CIRCLE('generated circle',#68,20.);
#76=CIRCLE('generated circle',#75,40.);
#83=CIRCLE('generated circle',#82,20.);
#95=CIRCLE('generated circle',#94,20.);
#100=CIRCLE('generated circle',#99,40.);
#124=CIRCLE('generated circle',#123,40.);
#143=CIRCLE('generated circle',#142,40.);
#174=SHAPE_REPRESENTATION_RELATIONSHIP('','',#49,#173);
#113=CYLINDRICAL_SURFACE('generated cylinder',#112,40.);
#56=TOROIDAL_SURFACE('homeo Torus',#55,20.,20.);
#3=DESIGN_CONTEXT('','#1,'design');
#65=EDGE_CURVE("","#62,#64,#60,.T.);
#72=EDGE_CURVE("","#62,#71,#69,.F.);
#79=EDGE_CURVE("","#71,#78,#76,.T.);
#84=EDGE_CURVE("","#64,#78,#83,.F.);
#96=EDGE_CURVE("","#64,#62,#95,.T.);
#101=EDGE_CURVE("","#78,#71,#100,.T.);
#120=EDGE_CURVE("","#71,#119,#117,.F.);
#127=EDGE_CURVE("","#119,#126,#124,.T.);
#132=EDGE_CURVE("","#78,#126,#131,.F.);
#144=EDGE_CURVE("","#126,#119,#143,.T.);
#85=EDGE_LOOP("","#86,#87,#88,#89);
#102=EDGE_LOOP("","#103,#104,#105,#106);
#133=EDGE_LOOP("","#134,#135,#136,#137);
#145=EDGE_LOOP("","#146,#147,#148,#149);
#157=EDGE_LOOP("","#158,#159);
#167=EDGE_LOOP("","#168,#169);
#90=FACE_OUTER_BOUND("","#85,.T.);
#107=FACE_OUTER_BOUND("","#102,.T.);
#138=FACE_OUTER_BOUND("","#133,.T.);
#150=FACE_OUTER_BOUND("","#145,.T.);
#160=FACE_OUTER_BOUND("","#157,.T.);
#170=FACE_OUTER_BOUND("","#167,.T.);
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY');
#117=LINE('Line',#114,#116);
#131=LINE('Line',#128,#130);
#2=MECHANICAL_CONTEXT('','#1,'mechanical');
#24=PERSONAL_ADDRESS('','','','','','','','','','',(22),');
#156=PLANE('Plane',#155);
#166=PLANE('Plane',#165);
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASURE
E(0.0174532925199),#42);
#7=PRODUCT_CATEGORY('part',$);
#9=PRODUCT_CATEGORY_RELATIONSHIP('','',#7,#8);

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#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE(",'
'#5,.NOT_KNOWN.);
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$(#5));
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49);
#62=VERTEX_POINT("#,#61);
#64=VERTEX_POINT("#,#63);
#71=VERTEX_POINT("#,#70);
#78=VERTEX_POINT("#,#77);
#119=VERTEX_POINT("#,#118);
#126=VERTEX_POINT("#,#125);
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,METRE.));
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.));
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT());
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT('!'));
ENDSEC;
END-ISO-10303-21;

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LAMPIRAN 5
DATA STEP FILE FITUR ROTATIONAL, NECK

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Juni-
12\\Rotational\\neck.stp','2012-06-07T07:15:32+00:00','(none)','(none)','CATIA
Version 5 Release 19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Part4','',(#2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION('','#6,#3);
#16=SECURITY_CLASSIFICATION('','#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(0.,80.,0.));
#57=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,0.));
#61=CARTESIAN_POINT('Vertex',(19.1770215442,160.,35.1033024756));
#63=CARTESIAN_POINT('Vertex',(-19.1770215442,160.,-35.1033024756));
#66=CARTESIAN_POINT('Line Origine',(19.1770215442,80.,35.1033024756));
#70=CARTESIAN_POINT('Vertex',(19.1770215442,100.,35.1033024756));
#73=CARTESIAN_POINT('Axis2P3D Location',(0.,100.,0.));
#77=CARTESIAN_POINT('Vertex',(-19.1770215442,100.,-35.1033024756));
#80=CARTESIAN_POINT('Line Origine',(-19.1770215442,80.,-
35.1033024756));
#92=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,0.));
#97=CARTESIAN_POINT('Axis2P3D Location',(0.,100.,0.));
#109=CARTESIAN_POINT('Axis2P3D Location',(0.,80.,0.));
#114=CARTESIAN_POINT('Axis2P3D
Location',(19.1770215442,80.,35.1033024756));
#118=CARTESIAN_POINT('Vertex',(19.1770215442,60.,35.1033024756));
#121=CARTESIAN_POINT('Axis2P3D Location',(0.,60.,0.));
#125=CARTESIAN_POINT('Vertex',(-19.1770215442,60.,-35.1033024756));
#128=CARTESIAN_POINT('Axis2P3D Location',(-19.1770215442,80.,-
35.1033024756));
#140=CARTESIAN_POINT('Axis2P3D Location',(0.,60.,0.));
#152=CARTESIAN_POINT('Line
Origine',(19.1770215442,80.,35.1033024756));
#156=CARTESIAN_POINT('Vertex',(19.1770215442,0.,35.1033024756));

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#159=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#163=CARTESIAN_POINT('Vertex',(-19.1770215442,0.,-35.1033024756)) ;
#166=CARTESIAN_POINT('Line                               Origine',(-19.1770215442,80.,-
35.1033024756)) ;
#178=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#190=CARTESIAN_POINT('Axis2P3D Location',(0.,160.,40.)) ;
#200=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#53=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#54=DIRECTION('Axis2P3D                               XDirection',(0.479425538604,-
0.,0.87758256189)) ;
#58=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#67=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#74=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#81=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#98=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#110=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#111=DIRECTION('Axis2P3D
XDirection',(0.479425538604,0.,0.87758256189)) ;
#115=DIRECTION('Axis2P3D                               Direction',(-
0.87758256189,0.,0.479425538604)) ;
#122=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#129=DIRECTION('Axis2P3D                               Direction',(0.87758256189,0.,-
0.479425538604)) ;
#141=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#153=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#160=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#167=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#179=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#191=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#192=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#201=DIRECTION('Axis2P3D Direction',(0.,1.,0.)) ;
#202=DIRECTION('Axis2P3D XDirection',(1.,-0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#52,#53,#54) ;
#59=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#57,#58,$) ;
#75=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#73,#74,$) ;
#94=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#92,#93,$) ;
#99=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#97,#98,$) ;
#112=AXIS2_PLACEMENT_3D('Torus Axis2P3D',#109,#110,#111) ;
#116=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#114,#115,$) ;
#123=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#121,#122,$) ;
#130=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#128,#129,$) ;
#142=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#140,#141,$) ;
#161=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#159,#160,$) ;
#180=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#178,#179,$) ;
#193=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#190,#191,#192) ;
#203=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#200,#201,#202) ;

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#40=PRODUCT_DEFINITION_SHAPE(' ', '#14');
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19);
#25=PERSON_AND_ORGANIZATION(#22,#23);
#22=PERSON(' ',' ', '$,$,$');
#23=ORGANIZATION(' ',' ');
#21=APPROVAL(#20,' ');
#20=APPROVAL_STATUS('not_yet_approved');
#19=APPROVAL_ROLE('APPROVER');
#13=DATE_AND_TIME(#11,#12);
#12=LOCAL_TIME(14,15,32.,#10);
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,..AHEAD.);
#86=ORIENTED_EDGE(" *, *, #65,.F.);
#87=ORIENTED_EDGE(" *, *, #72,.T.);
#88=ORIENTED_EDGE(" *, *, #79,.T.);
#89=ORIENTED_EDGE(" *, *, #84,.F.);
#103=ORIENTED_EDGE(" *, *, #96,.F.);
#104=ORIENTED_EDGE(" *, *, #84,.T.);
#105=ORIENTED_EDGE(" *, *, #101,.T.);
#106=ORIENTED_EDGE(" *, *, #72,.F.);
#134=ORIENTED_EDGE(" *, *, #79,.F.);
#135=ORIENTED_EDGE(" *, *, #120,.T.);
#136=ORIENTED_EDGE(" *, *, #127,.T.);
#137=ORIENTED_EDGE(" *, *, #132,.F.);
#146=ORIENTED_EDGE(" *, *, #101,.F.);
#147=ORIENTED_EDGE(" *, *, #132,.T.);
#148=ORIENTED_EDGE(" *, *, #144,.T.);
#149=ORIENTED_EDGE(" *, *, #120,.F.);
#172=ORIENTED_EDGE(" *, *, #127,.F.);
#173=ORIENTED_EDGE(" *, *, #158,.T.);
#174=ORIENTED_EDGE(" *, *, #165,.T.);
#175=ORIENTED_EDGE(" *, *, #170,.F.);
#184=ORIENTED_EDGE(" *, *, #144,.F.);
#185=ORIENTED_EDGE(" *, *, #170,.T.);
#186=ORIENTED_EDGE(" *, *, #182,.T.);
#187=ORIENTED_EDGE(" *, *, #158,.F.);
#196=ORIENTED_EDGE(" *, *, #65,.T.);
#197=ORIENTED_EDGE(" *, *, #96,.T.);
#206=ORIENTED_EDGE(" *, *, #165,.F.);
#207=ORIENTED_EDGE(" *, *, #182,.F.);
#51=CLOSED_SHELL('Closed
Shell',(#91,#108,#139,#151,#177,#189,#199,#209));
#68=VECTOR('Line Direction',#67,1.);
#82=VECTOR('Line Direction',#81,1.);
#154=VECTOR('Line Direction',#153,1.);
#168=VECTOR('Line Direction',#167,1.);
#211=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#210),#46);
#49=SHAPE_REPRESENTATION(' ',(#48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);

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#108=ADVANCED_FACE('PartBody',(#107),#56,.T.) ;
#139=ADVANCED_FACE('PartBody',(#138),#113,.F.) ;
#151=ADVANCED_FACE('PartBody',(#150),#113,.F.) ;
#177=ADVANCED_FACE('PartBody',(#176),#56,.T.) ;
#189=ADVANCED_FACE('PartBody',(#188),#56,.T.) ;
#199=ADVANCED_FACE('PartBody',(#198),#194,.T.) ;
#209=ADVANCED_FACE('PartBody',(#208),#204,.F.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#210=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,7,6) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#60=CIRCLE('generated circle',#59,40.) ;
#76=CIRCLE('generated circle',#75,40.) ;
#95=CIRCLE('generated circle',#94,40.) ;
#100=CIRCLE('generated circle',#99,40.) ;
#117=CIRCLE('generated circle',#116,20.) ;
#124=CIRCLE('generated circle',#123,40.) ;
#131=CIRCLE('generated circle',#130,20.) ;
#143=CIRCLE('generated circle',#142,40.) ;
#162=CIRCLE('generated circle',#161,40.) ;
#181=CIRCLE('generated circle',#180,40.) ;
#212=SHAPE_REPRESENTATION_RELATIONSHIP(' ',#49,#211) ;
#56=CYLINDRICAL_SURFACE('generated cylinder',#55,40.) ;
#113=TOROIDAL_SURFACE('homeo Torus',#112,40.,20.) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE(' ',#62,#64,#60,.T.) ;
#72=EDGE_CURVE(' ',#62,#71,#69,.F.) ;
#79=EDGE_CURVE(' ',#71,#78,#76,.T.) ;
#84=EDGE_CURVE(' ',#64,#78,#83,.F.) ;

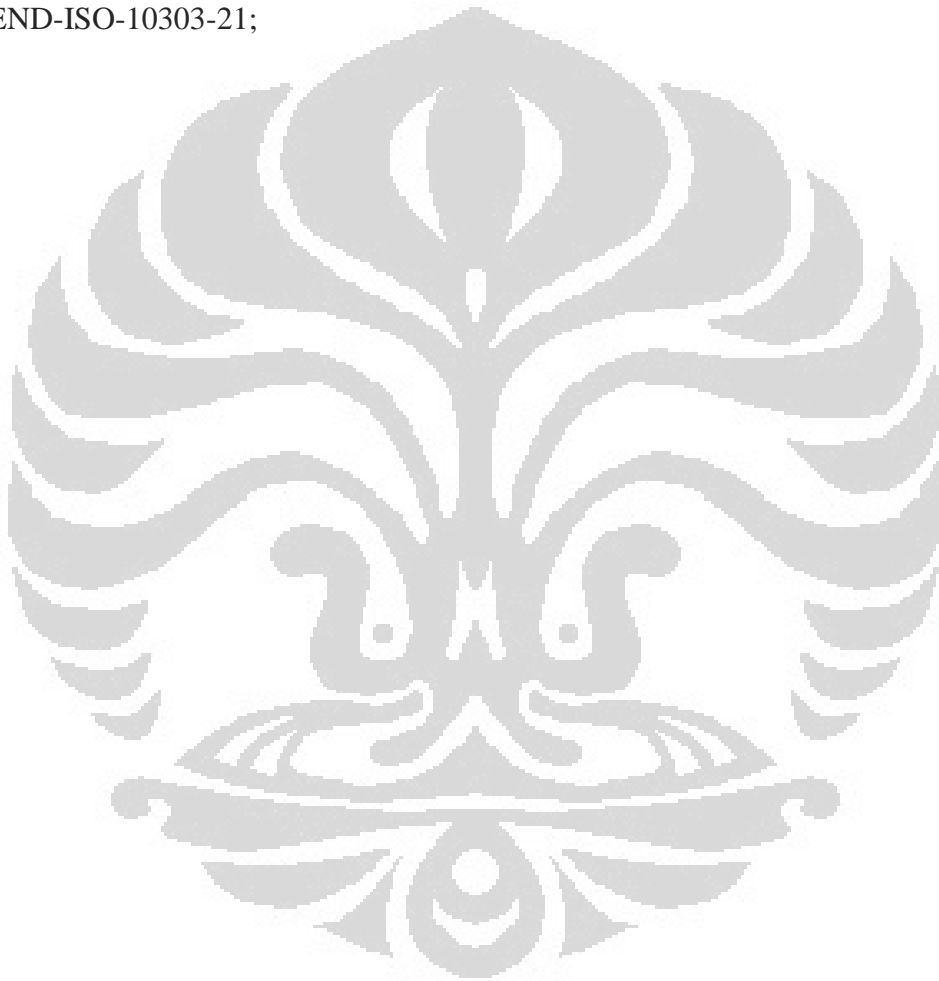
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#96=EDGE_CURVE("#64,#62,#95,.T.) ;
#101=EDGE_CURVE("#78,#71,#100,.T.) ;
#120=EDGE_CURVE("#71,#119,#117,.T.) ;
#127=EDGE_CURVE("#119,#126,#124,.T.) ;
#132=EDGE_CURVE("#78,#126,#131,.T.) ;
#144=EDGE_CURVE("#126,#119,#143,.T.) ;
#158=EDGE_CURVE("#119,#157,#155,.F.) ;
#165=EDGE_CURVE("#157,#164,#162,.T.) ;
#170=EDGE_CURVE("#126,#164,#169,.F.) ;
#182=EDGE_CURVE("#164,#157,#181,.T.) ;
#85=EDGE_LOOP(",(#86,#87,#88,#89)) ;
#102=EDGE_LOOP(",(#103,#104,#105,#106)) ;
#133=EDGE_LOOP(",(#134,#135,#136,#137)) ;
#145=EDGE_LOOP(",(#146,#147,#148,#149)) ;
#171=EDGE_LOOP(",(#172,#173,#174,#175)) ;
#183=EDGE_LOOP(",(#184,#185,#186,#187)) ;
#195=EDGE_LOOP(",(#196,#197)) ;
#205=EDGE_LOOP(",(#206,#207)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#107=FACE_OUTER_BOUND("#102,.T.) ;
#138=FACE_OUTER_BOUND("#133,.T.) ;
#150=FACE_OUTER_BOUND("#145,.T.) ;
#176=FACE_OUTER_BOUND("#171,.T.) ;
#188=FACE_OUTER_BOUND("#183,.T.) ;
#198=FACE_OUTER_BOUND("#195,.T.) ;
#208=FACE_OUTER_BOUND("#205,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#69=LINE('Line',#66,#68) ;
#83=LINE('Line',#80,#82) ;
#155=LINE('Line',#152,#154) ;
#169=LINE('Line',#166,#168) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','','(#22),') ;
#194=PLANE('Plane',#193) ;
#204=PLANE('Plane',#203) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASURE
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE("
'#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#61) ;
#64=VERTEX_POINT("#63) ;
#71=VERTEX_POINT("#70) ;
#78=VERTEX_POINT("#77) ;

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#119=VERTEX_POINT("#118) ;  
#126=VERTEX_POINT("#125) ;  
#157=VERTEX_POINT("#156) ;  
#164=VERTEX_POINT("#163) ;  
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;  
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;  
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;  
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA  
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX  
T((#41,#42,#44))REPRESENTATION_CONTEXT(' ')) ;  
ENDSEC ;  
END-ISO-10303-21 ;
```



LAMPIRAN 6

DATA STEP FILE FITUR ROTATIONAL, CYLINDER

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Juni-
12\\Rotational\\Silinder.stp','2012-06-
11T01:09:52+00:00','(none)','(none)','CATIA Version 5 Release 19 GA (IN-
10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Part1','',(#2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION('','',#6,#3);
#16=SECURITY_CLASSIFICATION('','',#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));
#57=CARTESIAN_POINT('Axis2P3D Location',(70.,0.,0.));
#61=CARTESIAN_POINT('Vertex',(70.,17.5516512378,9.58851077208));
#63=CARTESIAN_POINT('Vertex',(70.,-17.5516512378,-9.58851077208));
#66=CARTESIAN_POINT('Line Origine',(0.,17.5516512378,9.58851077208));
#70=CARTESIAN_POINT('Vertex',(-70.,17.5516512378,9.58851077208));
#73=CARTESIAN_POINT('Axis2P3D Location',(-70.,0.,0.));
#77=CARTESIAN_POINT('Vertex',(-70.,-17.5516512378,-9.58851077208));
#80=CARTESIAN_POINT('Line Origine',(0.,-17.5516512378,-
9.58851077208));
#92=CARTESIAN_POINT('Axis2P3D Location',(70.,0.,0.));
#97=CARTESIAN_POINT('Axis2P3D Location',(-70.,0.,0.));
#109=CARTESIAN_POINT('Axis2P3D Location',(70.,0.,0.));
#119=CARTESIAN_POINT('Axis2P3D Location',(-70.,20.,0.));
#53=DIRECTION('Axis2P3D Direction',(1.,0.,0.));
#54=DIRECTION('Axis2P3D
XDirection',(0.,0.87758256189,0.479425538604));
#58=DIRECTION('Axis2P3D Direction',(1.,0.,0.));
#67=DIRECTION('Vector Direction',(1.,0.,0.));
#74=DIRECTION('Axis2P3D Direction',(1.,0.,0.));
#81=DIRECTION('Vector Direction',(1.,0.,0.));
#93=DIRECTION('Axis2P3D Direction',(1.,0.,0.));
#98=DIRECTION('Axis2P3D Direction',(1.,0.,0.));

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#110=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#111=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#120=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#121=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#52,#53,#54) ;
#59=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#57,#58,$) ;
#75=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#73,#74,$) ;
#94=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#92,#93,$) ;
#99=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#97,#98,$) ;
#112=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#109,#110,#111) ;
#122=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#119,#120,#121) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;
#21=APPROVAL(#20,'') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(8,9,52.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,..AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#103=ORIENTED_EDGE("*,*,#96,.F.) ;
#104=ORIENTED_EDGE("*,*,#84,.T.) ;
#105=ORIENTED_EDGE("*,*,#101,.T.) ;
#106=ORIENTED_EDGE("*,*,#72,.F.) ;
#115=ORIENTED_EDGE("*,*,#65,.T.) ;
#116=ORIENTED_EDGE("*,*,#96,.T.) ;
#125=ORIENTED_EDGE("*,*,#79,.F.) ;
#126=ORIENTED_EDGE("*,*,#101,.F.) ;
#51=CLOSED_SHELL('Closed Shell',(#91,#108,#118,#128)) ;
#68=VECTOR('Line Direction',#67,1.) ;
#82=VECTOR('Line Direction',#81,1.) ;
#130=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#129),#46) ;
#49=SHAPE_REPRESENTATION(' ',(#48),#46) ;
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.) ;
#108=ADVANCED_FACE('PartBody',(#107),#56,.T.) ;
#118=ADVANCED_FACE('PartBody',(#117),#113,.T.) ;
#128=ADVANCED_FACE('PartBody',(#127),#123,.F.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard',config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#129=MANIFOLD_SOLID_BREP('PartBody',#51) ;

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#11=CALENDAR_DATE(2012,11,6) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16))
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#60=CIRCLE('generated circle',#59,20.) ;
#76=CIRCLE('generated circle',#75,20.) ;
#95=CIRCLE('generated circle',#94,20.) ;
#100=CIRCLE('generated circle',#99,20.) ;
#131=SHAPE_REPRESENTATION_RELATIONSHIP('',#49,#130) ;
#56=CYLINDRICAL_SURFACE('generated cylinder',#55,20.) ;
#3=DESIGN_CONTEXT('#1','design') ;
#65=EDGE_CURVE("#62,#64,#60,.T.) ;
#72=EDGE_CURVE("#62,#71,#69,.F.) ;
#79=EDGE_CURVE("#71,#78,#76,.T.) ;
#84=EDGE_CURVE("#64,#78,#83,.F.) ;
#96=EDGE_CURVE("#64,#62,#95,.T.) ;
#101=EDGE_CURVE("#78,#71,#100,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#102=EDGE_LOOP("#103,#104,#105,#106)) ;
#114=EDGE_LOOP("#115,#116)) ;
#124=EDGE_LOOP("#125,#126)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#107=FACE_OUTER_BOUND("#102,.T.) ;
#117=FACE_OUTER_BOUND("#114,.T.) ;
#127=FACE_OUTER_BOUND("#124,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#69=LINE('Line',#66,#68) ;
#83=LINE('Line',#80,#82) ;
#2=MECHANICAL_CONTEXT('#1','mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','',(22),') ;
#113=PLANE('Plane',#112) ;
#123=PLANE('Plane',#122) ;

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#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASURE(0.0174532925199),#42);
#7=PRODUCT_CATEGORY('part',$);
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8);
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('','#5,.NOT_KNOWN.);
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5));
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49);
#62=VERTEX_POINT("#,#61);
#64=VERTEX_POINT("#,#63);
#71=VERTEX_POINT("#,#70);
#78=VERTEX_POINT("#,#77);
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.));
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.));
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT());
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTAINTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEXT((#41,#42,#44))REPRESENTATION_CONTEXT(''));
ENDSEC;
END-ISO-10303-21;

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LAMPIRAN 8.
DATA STEP FILE FITUR PRISMATIK, STAIR

```

ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Prismatic Feature\\Stair\\Stair-
1.stp','2012-05-08T05:27:49+00:00','(none)','(none)','CATIA Version 5 Release
19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Plain','',( #2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION(' ', '#6, #3);
#16=SECURITY_CLASSIFICATION(' ', '#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT(' ', (0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(-50.,40.,0.));
#57=CARTESIAN_POINT('Line Origine',(-50.,40.,30.));
#61=CARTESIAN_POINT('Vertex',(-50.,40.,0.));
#63=CARTESIAN_POINT('Vertex',(-50.,40.,60.));
#66=CARTESIAN_POINT('Line Origine',(-50.,0.,0.));
#70=CARTESIAN_POINT('Vertex',(-50.,-40.,0.));
#73=CARTESIAN_POINT('Line Origine',(-50.,-40.,30.));
#77=CARTESIAN_POINT('Vertex',(-50.,-40.,60.));
#80=CARTESIAN_POINT('Line Origine',(-50.,0.,60.));
#92=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));
#97=CARTESIAN_POINT('Line Origine',(0.,40.,0.));
#101=CARTESIAN_POINT('Vertex',(50.,40.,0.));
#104=CARTESIAN_POINT('Line Origine',(50.,0.,0.));
#108=CARTESIAN_POINT('Vertex',(50.,-40.,0.));
#111=CARTESIAN_POINT('Line Origine',(0.,-40.,0.));
#123=CARTESIAN_POINT('Axis2P3D Location',(50.,-40.,0.));
#128=CARTESIAN_POINT('Line Origine',(50.,-40.,20.));
#132=CARTESIAN_POINT('Vertex',(50.,-40.,40.));
#135=CARTESIAN_POINT('Line Origine',(50.,40.,20.));
#139=CARTESIAN_POINT('Vertex',(50.,40.,40.));
#142=CARTESIAN_POINT('Line Origine',(50.,0.,40.));
#154=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,60.));
#159=CARTESIAN_POINT('Line Origine',(-15.,40.,60.));

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#163=CARTESIAN_POINT('Vertex',(20.,40.,60.)) ;
#166=CARTESIAN_POINT('Line Origine',(-15.,-40.,60.)) ;
#170=CARTESIAN_POINT('Vertex',(20.,-40.,60.)) ;
#173=CARTESIAN_POINT('Line Origine',(20.,0.,60.)) ;
#185=CARTESIAN_POINT('Axis2P3D Location',(50.,-40.,0.)) ;
#190=CARTESIAN_POINT('Line Origine',(35.,-40.,40.)) ;
#194=CARTESIAN_POINT('Vertex',(20.,-40.,40.)) ;
#197=CARTESIAN_POINT('Line Origine',(20.,-40.,50.)) ;
#211=CARTESIAN_POINT('Axis2P3D Location',(-50.,40.,0.)) ;
#216=CARTESIAN_POINT('Line Origine',(20.,40.,50.)) ;
#220=CARTESIAN_POINT('Vertex',(20.,40.,40.)) ;
#223=CARTESIAN_POINT('Line Origine',(35.,40.,40.)) ;
#237=CARTESIAN_POINT('Axis2P3D Location',(20.,40.,60.)) ;
#242=CARTESIAN_POINT('Line Origine',(20.,0.,40.)) ;
#254=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,40.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#94=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#98=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#105=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#112=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#124=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#125=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#136=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#143=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#156=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#160=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#167=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#174=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#186=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#187=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#191=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#198=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#212=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#213=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#217=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#224=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#238=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#239=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#243=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#255=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;

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#256=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#126=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#123,#124,#125) ;
#157=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#154,#155,#156) ;
#188=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#185,#186,#187) ;
#214=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#211,#212,#213) ;
#240=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#237,#238,#239) ;
#257=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#254,#255,#256) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;
#21=APPROVAL(#20,'') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(12,27,49.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#117=ORIENTED_EDGE("*,*,#103,.F.) ;
#118=ORIENTED_EDGE("*,*,#110,.F.) ;
#119=ORIENTED_EDGE("*,*,#115,.F.) ;
#120=ORIENTED_EDGE("*,*,#72,.F.) ;
#148=ORIENTED_EDGE("*,*,#134,.F.) ;
#149=ORIENTED_EDGE("*,*,#110,.T.) ;
#150=ORIENTED_EDGE("*,*,#141,.T.) ;
#151=ORIENTED_EDGE("*,*,#146,.F.) ;
#179=ORIENTED_EDGE("*,*,#165,.T.) ;
#180=ORIENTED_EDGE("*,*,#84,.T.) ;
#181=ORIENTED_EDGE("*,*,#172,.T.) ;
#182=ORIENTED_EDGE("*,*,#177,.F.) ;
#203=ORIENTED_EDGE("*,*,#196,.F.) ;
#204=ORIENTED_EDGE("*,*,#201,.F.) ;
#205=ORIENTED_EDGE("*,*,#172,.F.) ;
#206=ORIENTED_EDGE("*,*,#79,.F.) ;
#207=ORIENTED_EDGE("*,*,#115,.T.) ;
#208=ORIENTED_EDGE("*,*,#134,.T.) ;
#229=ORIENTED_EDGE("*,*,#222,.T.) ;
#230=ORIENTED_EDGE("*,*,#227,.F.) ;
#231=ORIENTED_EDGE("*,*,#141,.F.) ;
#232=ORIENTED_EDGE("*,*,#103,.T.) ;
#233=ORIENTED_EDGE("*,*,#65,.T.) ;

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#234=ORIENTED_EDGE("*,*,#165,.F.);
#248=ORIENTED_EDGE("*,*,#222,.F.);
#249=ORIENTED_EDGE("*,*,#177,.T.);
#250=ORIENTED_EDGE("*,*,#201,.T.);
#251=ORIENTED_EDGE("*,*,#246,.F.);
#260=ORIENTED_EDGE("*,*,#246,.T.);
#261=ORIENTED_EDGE("*,*,#196,.T.);
#262=ORIENTED_EDGE("*,*,#146,.T.);
#263=ORIENTED_EDGE("*,*,#227,.T.);
#51=CLOSED_SHELL('Closed
Shell',(#91,#122,#153,#184,#210,#236,#253,#265));
#59=VECTOR('Line Direction',#58,1.);
#68=VECTOR('Line Direction',#67,1.);
#75=VECTOR('Line Direction',#74,1.);
#82=VECTOR('Line Direction',#81,1.);
#99=VECTOR('Line Direction',#98,1.);
#106=VECTOR('Line Direction',#105,1.);
#113=VECTOR('Line Direction',#112,1.);
#130=VECTOR('Line Direction',#129,1.);
#137=VECTOR('Line Direction',#136,1.);
#144=VECTOR('Line Direction',#143,1.);
#161=VECTOR('Line Direction',#160,1.);
#168=VECTOR('Line Direction',#167,1.);
#175=VECTOR('Line Direction',#174,1.);
#192=VECTOR('Line Direction',#191,1.);
#199=VECTOR('Line Direction',#198,1.);
#218=VECTOR('Line Direction',#217,1.);
#225=VECTOR('Line Direction',#224,1.);
#244=VECTOR('Line Direction',#243,1.);
#267=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#266),#46);
#49=SHAPE_REPRESENTATION(' ',(#48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);
#122=ADVANCED_FACE('PartBody',(#121),#96,.F.);
#153=ADVANCED_FACE('PartBody',(#152),#127,.T.);
#184=ADVANCED_FACE('PartBody',(#183),#158,.T.);
#210=ADVANCED_FACE('PartBody',(#209),#189,.F.);
#236=ADVANCED_FACE('PartBody',(#235),#215,.F.);
#253=ADVANCED_FACE('PartBody',(#252),#241,.T.);
#265=ADVANCED_FACE('PartBody',(#264),#258,.T.);
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1);
#32=APPROVAL_DATE_TIME(#13,#21);
#266=MANIFOLD_SOLID_BREP('PartBody',#51);
#11=CALENDAR_DATE(2012,8,5);
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14));
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16));
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14));
#17=DATE_TIME_ROLE('classification_date');

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#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#268=SHAPE_REPRESENTATION_RELATIONSHIP(' ','',#49,#267) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE("#62,#64,#60,.T.) ;
#72=EDGE_CURVE("#62,#71,#69,.T.) ;
#79=EDGE_CURVE("#71,#78,#76,.T.) ;
#84=EDGE_CURVE("#64,#78,#83,.T.) ;
#103=EDGE_CURVE("#102,#62,#100,.F.) ;
#110=EDGE_CURVE("#109,#102,#107,.T.) ;
#115=EDGE_CURVE("#71,#109,#114,.F.) ;
#134=EDGE_CURVE("#109,#133,#131,.T.) ;
#141=EDGE_CURVE("#102,#140,#138,.T.) ;
#146=EDGE_CURVE("#133,#140,#145,.T.) ;
#165=EDGE_CURVE("#164,#64,#162,.F.) ;
#172=EDGE_CURVE("#78,#171,#169,.F.) ;
#177=EDGE_CURVE("#164,#171,#176,.T.) ;
#196=EDGE_CURVE("#195,#133,#193,.F.) ;
#201=EDGE_CURVE("#171,#195,#200,.T.) ;
#222=EDGE_CURVE("#164,#221,#219,.T.) ;
#227=EDGE_CURVE("#140,#221,#226,.F.) ;
#246=EDGE_CURVE("#221,#195,#245,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#116=EDGE_LOOP("#117,#118,#119,#120)) ;
#147=EDGE_LOOP("#148,#149,#150,#151)) ;
#178=EDGE_LOOP("#179,#180,#181,#182)) ;
#202=EDGE_LOOP("#203,#204,#205,#206,#207,#208)) ;
#228=EDGE_LOOP("#229,#230,#231,#232,#233,#234)) ;
#247=EDGE_LOOP("#248,#249,#250,#251)) ;
#259=EDGE_LOOP("#260,#261,#262,#263)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#121=FACE_OUTER_BOUND("#116,.T.) ;
#152=FACE_OUTER_BOUND("#147,.T.) ;
#183=FACE_OUTER_BOUND("#178,.T.) ;
#209=FACE_OUTER_BOUND("#202,.T.) ;
#235=FACE_OUTER_BOUND("#228,.T.) ;

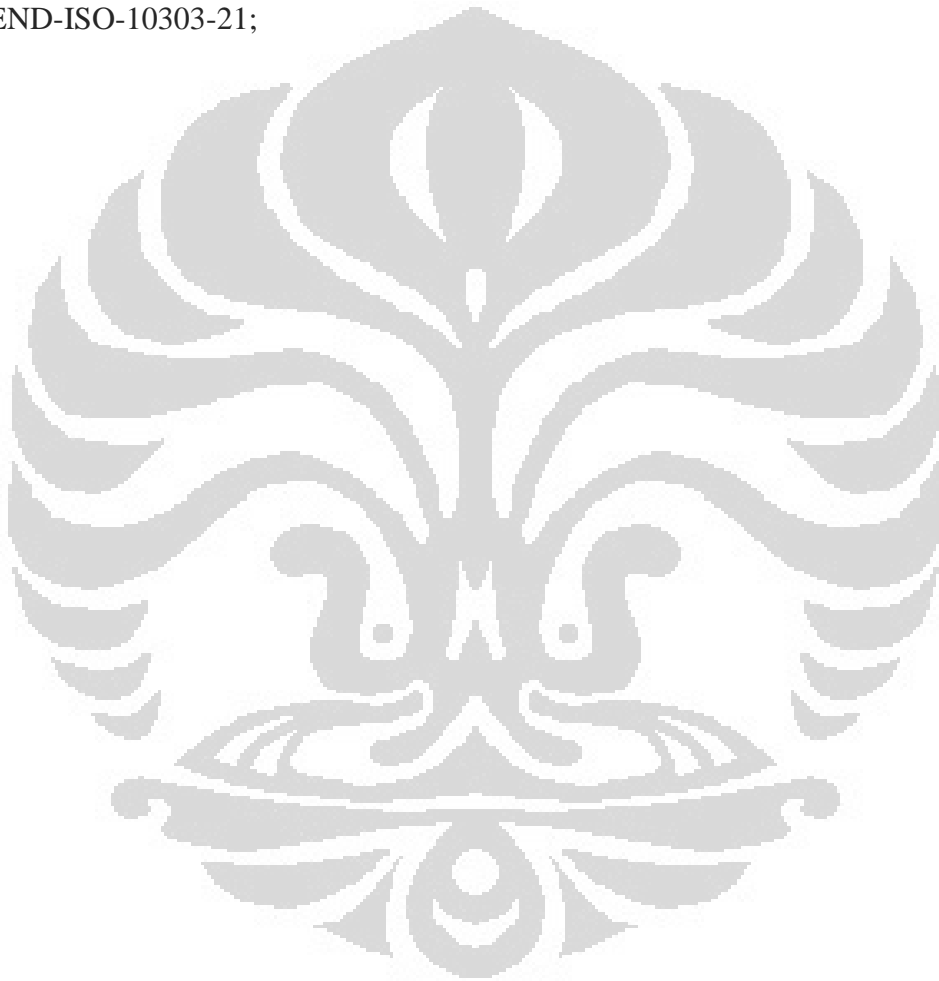
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#252=FACE_OUTER_BOUND("#247,.T.) ;
#264=FACE_OUTER_BOUND("#259,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#107=LINE('Line',#104,#106) ;
#114=LINE('Line',#111,#113) ;
#131=LINE('Line',#128,#130) ;
#138=LINE('Line',#135,#137) ;
#145=LINE('Line',#142,#144) ;
#162=LINE('Line',#159,#161) ;
#169=LINE('Line',#166,#168) ;
#176=LINE('Line',#173,#175) ;
#193=LINE('Line',#190,#192) ;
#200=LINE('Line',#197,#199) ;
#219=LINE('Line',#216,#218) ;
#226=LINE('Line',#223,#225) ;
#245=LINE('Line',#242,#244) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','','(#22),'') ;
#56=PLANE('Plane',#55) ;
#96=PLANE('Plane',#95) ;
#127=PLANE('Plane',#126) ;
#158=PLANE('Plane',#157) ;
#189=PLANE('Plane',#188) ;
#215=PLANE('Plane',#214) ;
#241=PLANE('Plane',#240) ;
#258=PLANE('Plane',#257) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#,#61) ;
#64=VERTEX_POINT("#,#63) ;
#71=VERTEX_POINT("#,#70) ;
#78=VERTEX_POINT("#,#77) ;
#102=VERTEX_POINT("#,#101) ;
#109=VERTEX_POINT("#,#108) ;
#133=VERTEX_POINT("#,#132) ;
#140=VERTEX_POINT("#,#139) ;

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#164=VERTEX_POINT("#163) ;  
#171=VERTEX_POINT("#170) ;  
#195=VERTEX_POINT("#194) ;  
#221=VERTEX_POINT("#220) ;  
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;  
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;  
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;  
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA  
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX  
T((#41,#42,#44))REPRESENTATION_CONTEXT(' ')) ;  
ENDSEC;  
END-ISO-10303-21;
```



LAMPIRAN 9

DATA STEP FILE FITUR PRISMATIK, SLOT

```

ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Prismatic Feature\\Slot\\Slot-
1.stp','2012-05-08T05:45:39+00:00','(none)','(none)','CATIA Version 5 Release
19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Plain','',( #2) );
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies' );
#14=PRODUCT_DEFINITION(' ', '#6, #3) );
#16=SECURITY_CLASSIFICATION(' ', '#15) );
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified' );
#47=CARTESIAN_POINT(' ', (0.,0.,0.)) );
#52=CARTESIAN_POINT('Axis2P3D Location', (-50.,40.,0.)) );
#57=CARTESIAN_POINT('Line Origine', (-50.,40.,30.)) );
#61=CARTESIAN_POINT('Vertex', (-50.,40.,0.)) );
#63=CARTESIAN_POINT('Vertex', (-50.,40.,60.)) );
#66=CARTESIAN_POINT('Line Origine', (-50.,0.,0.)) );
#70=CARTESIAN_POINT('Vertex', (-50.,-40.,0.)) );
#73=CARTESIAN_POINT('Line Origine', (-50.,-40.,30.)) );
#77=CARTESIAN_POINT('Vertex', (-50.,-40.,60.)) );
#80=CARTESIAN_POINT('Line Origine', (-50.,0.,60.)) );
#92=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,0.)) );
#97=CARTESIAN_POINT('Line Origine', (0.,40.,0.)) );
#101=CARTESIAN_POINT('Vertex', (50.,40.,0.)) );
#104=CARTESIAN_POINT('Line Origine', (50.,0.,0.)) );
#108=CARTESIAN_POINT('Vertex', (50.,-40.,0.)) );
#111=CARTESIAN_POINT('Line Origine', (0.,-40.,0.)) );
#123=CARTESIAN_POINT('Axis2P3D Location', (50.,-40.,0.)) );
#128=CARTESIAN_POINT('Line Origine', (50.,-40.,30.)) );
#132=CARTESIAN_POINT('Vertex', (50.,-40.,60.)) );
#135=CARTESIAN_POINT('Line Origine', (50.,40.,30.)) );
#139=CARTESIAN_POINT('Vertex', (50.,40.,60.)) );
#142=CARTESIAN_POINT('Line Origine', (50.,0.,60.)) );
#154=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,60.)) );

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#159=CARTESIAN_POINT('Line Origine',(30.,-40.,60.)) ;
#163=CARTESIAN_POINT('Vertex',(10.,-40.,60.)) ;
#166=CARTESIAN_POINT('Line Origine',(30.,40.,60.)) ;
#170=CARTESIAN_POINT('Vertex',(10.,40.,60.)) ;
#173=CARTESIAN_POINT('Line Origine',(10.,0.,60.)) ;
#185=CARTESIAN_POINT('Line Origine',(-30.,40.,60.)) ;
#189=CARTESIAN_POINT('Vertex',(-10.,40.,60.)) ;
#192=CARTESIAN_POINT('Line Origine',(-30.,-40.,60.)) ;
#196=CARTESIAN_POINT('Vertex',(-10.,-40.,60.)) ;
#199=CARTESIAN_POINT('Line Origine',(-10.,0.,60.)) ;
#211=CARTESIAN_POINT('Axis2P3D Location',(50.,-40.,0.)) ;
#216=CARTESIAN_POINT('Line Origine',(10.,-40.,50.)) ;
#220=CARTESIAN_POINT('Vertex',(10.,-40.,40.)) ;
#223=CARTESIAN_POINT('Line Origine',(0.,-40.,40.)) ;
#227=CARTESIAN_POINT('Vertex',(-10.,-40.,40.)) ;
#230=CARTESIAN_POINT('Line Origine',(-10.,-40.,50.)) ;
#246=CARTESIAN_POINT('Axis2P3D Location',(-50.,40.,0.)) ;
#251=CARTESIAN_POINT('Line Origine',(-10.,40.,50.)) ;
#255=CARTESIAN_POINT('Vertex',(-10.,40.,40.)) ;
#258=CARTESIAN_POINT('Line Origine',(0.,40.,40.)) ;
#262=CARTESIAN_POINT('Vertex',(10.,40.,40.)) ;
#265=CARTESIAN_POINT('Line Origine',(10.,40.,50.)) ;
#281=CARTESIAN_POINT('Axis2P3D Location',(-10.,40.,60.)) ;
#286=CARTESIAN_POINT('Line Origine',(-10.,0.,40.)) ;
#298=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,40.)) ;
#303=CARTESIAN_POINT('Line Origine',(10.,0.,40.)) ;
#315=CARTESIAN_POINT('Axis2P3D Location',(10.,-40.,60.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#94=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#98=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#105=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#112=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#124=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#125=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#136=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#143=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#156=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#160=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#167=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#174=DIRECTION('Vector Direction',(0.,1.,0.)) ;

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#186=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#193=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#200=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#212=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#213=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#217=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#224=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#231=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#247=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#248=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#252=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#259=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#266=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#282=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#283=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#287=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#299=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#300=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#304=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#316=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#317=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#126=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#123,#124,#125) ;
#157=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#154,#155,#156) ;
#214=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#211,#212,#213) ;
#249=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#246,#247,#248) ;
#284=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#281,#282,#283) ;
#301=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#298,#299,#300) ;
#318=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#315,#316,#317) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;
#21=APPROVAL(#20,'') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(12,45,39.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#117=ORIENTED_EDGE("*,*,#103,.F.) ;
#118=ORIENTED_EDGE("*,*,#110,.F.) ;

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#119=ORIENTED_EDGE("*,*,#115,.F.);
#120=ORIENTED_EDGE("*,*,#72,.F.);
#148=ORIENTED_EDGE("*,*,#134,.F.);
#149=ORIENTED_EDGE("*,*,#110,.T.);
#150=ORIENTED_EDGE("*,*,#141,.T.);
#151=ORIENTED_EDGE("*,*,#146,.F.);
#179=ORIENTED_EDGE("*,*,#165,.T.);
#180=ORIENTED_EDGE("*,*,#146,.T.);
#181=ORIENTED_EDGE("*,*,#172,.T.);
#182=ORIENTED_EDGE("*,*,#177,.F.);
#205=ORIENTED_EDGE("*,*,#191,.T.);
#206=ORIENTED_EDGE("*,*,#84,.T.);
#207=ORIENTED_EDGE("*,*,#198,.T.);
#208=ORIENTED_EDGE("*,*,#203,.F.);
#236=ORIENTED_EDGE("*,*,#222,.T.);
#237=ORIENTED_EDGE("*,*,#229,.F.);
#238=ORIENTED_EDGE("*,*,#234,.F.);
#239=ORIENTED_EDGE("*,*,#198,.F.);
#240=ORIENTED_EDGE("*,*,#79,.F.);
#241=ORIENTED_EDGE("*,*,#115,.T.);
#242=ORIENTED_EDGE("*,*,#134,.T.);
#243=ORIENTED_EDGE("*,*,#165,.F.);
#271=ORIENTED_EDGE("*,*,#257,.T.);
#272=ORIENTED_EDGE("*,*,#264,.F.);
#273=ORIENTED_EDGE("*,*,#269,.F.);
#274=ORIENTED_EDGE("*,*,#172,.F.);
#275=ORIENTED_EDGE("*,*,#141,.F.);
#276=ORIENTED_EDGE("*,*,#103,.T.);
#277=ORIENTED_EDGE("*,*,#65,.T.);
#278=ORIENTED_EDGE("*,*,#191,.F.);
#292=ORIENTED_EDGE("*,*,#257,.F.);
#293=ORIENTED_EDGE("*,*,#203,.T.);
#294=ORIENTED_EDGE("*,*,#234,.T.);
#295=ORIENTED_EDGE("*,*,#290,.F.);
#309=ORIENTED_EDGE("*,*,#290,.T.);
#310=ORIENTED_EDGE("*,*,#229,.T.);
#311=ORIENTED_EDGE("*,*,#307,.T.);
#312=ORIENTED_EDGE("*,*,#264,.T.);
#321=ORIENTED_EDGE("*,*,#222,.F.);
#322=ORIENTED_EDGE("*,*,#177,.T.);
#323=ORIENTED_EDGE("*,*,#269,.T.);
#324=ORIENTED_EDGE("*,*,#307,.F.);
#51=CLOSED_SHELL('Closed
Shell',(#91,#122,#153,#184,#210,#245,#280,#297,#314,#326));
#59=VECTOR('Line Direction',#58,1.);
#68=VECTOR('Line Direction',#67,1.);
#75=VECTOR('Line Direction',#74,1.);
#82=VECTOR('Line Direction',#81,1.);

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#99=VECTOR('Line Direction',#98,1.) ;
#106=VECTOR('Line Direction',#105,1.) ;
#113=VECTOR('Line Direction',#112,1.) ;
#130=VECTOR('Line Direction',#129,1.) ;
#137=VECTOR('Line Direction',#136,1.) ;
#144=VECTOR('Line Direction',#143,1.) ;
#161=VECTOR('Line Direction',#160,1.) ;
#168=VECTOR('Line Direction',#167,1.) ;
#175=VECTOR('Line Direction',#174,1.) ;
#187=VECTOR('Line Direction',#186,1.) ;
#194=VECTOR('Line Direction',#193,1.) ;
#201=VECTOR('Line Direction',#200,1.) ;
#218=VECTOR('Line Direction',#217,1.) ;
#225=VECTOR('Line Direction',#224,1.) ;
#232=VECTOR('Line Direction',#231,1.) ;
#253=VECTOR('Line Direction',#252,1.) ;
#260=VECTOR('Line Direction',#259,1.) ;
#267=VECTOR('Line Direction',#266,1.) ;
#288=VECTOR('Line Direction',#287,1.) ;
#305=VECTOR('Line Direction',#304,1.) ;
#328=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#327),#46) ;
#49=SHAPE_REPRESENTATION('',( #48),#46) ;
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.) ;
#122=ADVANCED_FACE('PartBody',(#121),#96,.F.) ;
#153=ADVANCED_FACE('PartBody',(#152),#127,.T.) ;
#184=ADVANCED_FACE('PartBody',(#183),#158,.T.) ;
#210=ADVANCED_FACE('PartBody',(#209),#158,.T.) ;
#245=ADVANCED_FACE('PartBody',(#244),#215,.F.) ;
#280=ADVANCED_FACE('PartBody',(#279),#250,.F.) ;
#297=ADVANCED_FACE('PartBody',(#296),#285,.T.) ;
#314=ADVANCED_FACE('PartBody',(#313),#302,.T.) ;
#326=ADVANCED_FACE('PartBody',(#325),#319,.T.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#327=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,8,5) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;

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#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5));
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer');
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier');
#36=PERSON_AND_ORGANIZATION_ROLE('creator');
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner');
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6));
#329=SHAPE_REPRESENTATION_RELATIONSHIP(' ','',#49,#328);
#3=DESIGN_CONTEXT(' ',#1,'design');
#65=EDGE_CURVE("#62,#64,#60,.T.);
#72=EDGE_CURVE("#62,#71,#69,.T.);
#79=EDGE_CURVE("#71,#78,#76,.T.);
#84=EDGE_CURVE("#64,#78,#83,.T.);
#103=EDGE_CURVE("#102,#62,#100,.F.);
#110=EDGE_CURVE("#109,#102,#107,.T.);
#115=EDGE_CURVE("#71,#109,#114,.F.);
#134=EDGE_CURVE("#109,#133,#131,.T.);
#141=EDGE_CURVE("#102,#140,#138,.T.);
#146=EDGE_CURVE("#133,#140,#145,.T.);
#165=EDGE_CURVE("#164,#133,#162,.F.);
#172=EDGE_CURVE("#140,#171,#169,.F.);
#177=EDGE_CURVE("#164,#171,#176,.T.);
#191=EDGE_CURVE("#190,#64,#188,.F.);
#198=EDGE_CURVE("#78,#197,#195,.F.);
#203=EDGE_CURVE("#190,#197,#202,.T.);
#222=EDGE_CURVE("#164,#221,#219,.T.);
#229=EDGE_CURVE("#228,#221,#226,.F.);
#234=EDGE_CURVE("#197,#228,#233,.T.);
#257=EDGE_CURVE("#190,#256,#254,.T.);
#264=EDGE_CURVE("#263,#256,#261,.F.);
#269=EDGE_CURVE("#171,#263,#268,.T.);
#290=EDGE_CURVE("#256,#228,#289,.T.);
#307=EDGE_CURVE("#221,#263,#306,.T.);
#85=EDGE_LOOP("#86,#87,#88,#89));
#116=EDGE_LOOP("#117,#118,#119,#120));
#147=EDGE_LOOP("#148,#149,#150,#151));
#178=EDGE_LOOP("#179,#180,#181,#182));
#204=EDGE_LOOP("#205,#206,#207,#208));
#235=EDGE_LOOP("#236,#237,#238,#239,#240,#241,#242,#243));
#270=EDGE_LOOP("#271,#272,#273,#274,#275,#276,#277,#278));
#291=EDGE_LOOP("#292,#293,#294,#295));
#308=EDGE_LOOP("#309,#310,#311,#312));
#320=EDGE_LOOP("#321,#322,#323,#324));
#90=FACE_OUTER_BOUND("#85,.T.);
#121=FACE_OUTER_BOUND("#116,.T.);
#152=FACE_OUTER_BOUND("#147,.T.);
#183=FACE_OUTER_BOUND("#178,.T.);
#209=FACE_OUTER_BOUND("#204,.T.);

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#244=FACE_OUTER_BOUND("#235,.T.) ;
#279=FACE_OUTER_BOUND("#270,.T.) ;
#296=FACE_OUTER_BOUND("#291,.T.) ;
#313=FACE_OUTER_BOUND("#308,.T.) ;
#325=FACE_OUTER_BOUND("#320,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#107=LINE('Line',#104,#106) ;
#114=LINE('Line',#111,#113) ;
#131=LINE('Line',#128,#130) ;
#138=LINE('Line',#135,#137) ;
#145=LINE('Line',#142,#144) ;
#162=LINE('Line',#159,#161) ;
#169=LINE('Line',#166,#168) ;
#176=LINE('Line',#173,#175) ;
#188=LINE('Line',#185,#187) ;
#195=LINE('Line',#192,#194) ;
#202=LINE('Line',#199,#201) ;
#219=LINE('Line',#216,#218) ;
#226=LINE('Line',#223,#225) ;
#233=LINE('Line',#230,#232) ;
#254=LINE('Line',#251,#253) ;
#261=LINE('Line',#258,#260) ;
#268=LINE('Line',#265,#267) ;
#289=LINE('Line',#286,#288) ;
#306=LINE('Line',#303,#305) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','','(#22),') ;
#56=PLANE('Plane',#55) ;
#96=PLANE('Plane',#95) ;
#127=PLANE('Plane',#126) ;
#158=PLANE('Plane',#157) ;
#215=PLANE('Plane',#214) ;
#250=PLANE('Plane',#249) ;
#285=PLANE('Plane',#284) ;
#302=PLANE('Plane',#301) ;
#319=PLANE('Plane',#318) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('
'#5,.NOT_KNOWN.) ;

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#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#,#61) ;
#64=VERTEX_POINT("#,#63) ;
#71=VERTEX_POINT("#,#70) ;
#78=VERTEX_POINT("#,#77) ;
#102=VERTEX_POINT("#,#101) ;
#109=VERTEX_POINT("#,#108) ;
#133=VERTEX_POINT("#,#132) ;
#140=VERTEX_POINT("#,#139) ;
#164=VERTEX_POINT("#,#163) ;
#171=VERTEX_POINT("#,#170) ;
#190=VERTEX_POINT("#,#189) ;
#197=VERTEX_POINT("#,#196) ;
#221=VERTEX_POINT("#,#220) ;
#228=VERTEX_POINT("#,#227) ;
#256=VERTEX_POINT("#,#255) ;
#263=VERTEX_POINT("#,#262) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT(' ')) ;
ENDSEC;
END-ISO-10303-21;303-21;

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LAMPIRAN 10

DATA STEP FILE FITUR SLAB, NOTCH

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Fitur-Notch\\Notch-1.stp','2012-
04-26T22:10:35+00:00','none','none','CATIA Version 5 Release 19 GA (IN-
10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('N-N-N','',( #2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION(' ', '#6, #3);
#16=SECURITY_CLASSIFICATION(' ', '#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT(' ', (0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location', (-80.,80.,0.));
#57=CARTESIAN_POINT('Line Origine', (-80.,80.,80.));
#61=CARTESIAN_POINT('Vertex', (-80.,80.,0.));
#63=CARTESIAN_POINT('Vertex', (-80.,80.,160.));
#66=CARTESIAN_POINT('Line Origine', (-80.,0.,0.));
#70=CARTESIAN_POINT('Vertex', (-80.,-80.,0.));
#73=CARTESIAN_POINT('Line Origine', (-80.,-80.,80.));
#77=CARTESIAN_POINT('Vertex', (-80.,-80.,160.));
#80=CARTESIAN_POINT('Line Origine', (-80.,0.,160.));
#92=CARTESIAN_POINT('Axis2P3D Location', (-80.,80.,0.));
#97=CARTESIAN_POINT('Line Origine', (80.,80.,80.));
#101=CARTESIAN_POINT('Vertex', (80.,80.,0.));
#103=CARTESIAN_POINT('Vertex', (80.,80.,160.));
#106=CARTESIAN_POINT('Line Origine', (0.,80.,0.));
#111=CARTESIAN_POINT('Line Origine', (0.,80.,160.));
#123=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,0.));
#128=CARTESIAN_POINT('Line Origine', (80.,0.,0.));
#132=CARTESIAN_POINT('Vertex', (80.,-80.,0.));
#135=CARTESIAN_POINT('Line Origine', (0.,-80.,0.));
#147=CARTESIAN_POINT('Axis2P3D Location', (0.,0.,160.));
#152=CARTESIAN_POINT('Line Origine', (80.,40.,160.));
#156=CARTESIAN_POINT('Vertex', (80.,0.,160.));

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#159=CARTESIAN_POINT('Line Origine',(-40.,-80.,160.)) ;
#163=CARTESIAN_POINT('Vertex',(0.,-80.,160.)) ;
#166=CARTESIAN_POINT('Line Origine',(0.,-40.,160.)) ;
#170=CARTESIAN_POINT('Vertex',(0.,0.,160.)) ;
#173=CARTESIAN_POINT('Line Origine',(40.,0.,160.)) ;
#187=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.)) ;
#192=CARTESIAN_POINT('Line Origine',(80.,-80.,40.)) ;
#196=CARTESIAN_POINT('Vertex',(80.,-80.,80.)) ;
#199=CARTESIAN_POINT('Line Origine',(80.,0.,120.)) ;
#203=CARTESIAN_POINT('Vertex',(80.,0.,80.)) ;
#206=CARTESIAN_POINT('Line Origine',(80.,-40.,80.)) ;
#220=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.)) ;
#225=CARTESIAN_POINT('Line Origine',(40.,-80.,80.)) ;
#229=CARTESIAN_POINT('Vertex',(0.,-80.,80.)) ;
#232=CARTESIAN_POINT('Line Origine',(0.,-80.,120.)) ;
#246=CARTESIAN_POINT('Axis2P3D Location',(80.,0.,160.)) ;
#251=CARTESIAN_POINT('Line Origine',(0.,0.,120.)) ;
#255=CARTESIAN_POINT('Vertex',(0.,0.,80.)) ;
#258=CARTESIAN_POINT('Line Origine',(40.,0.,80.)) ;
#270=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,160.)) ;
#275=CARTESIAN_POINT('Line Origine',(0.,-40.,80.)) ;
#287=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,80.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#94=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#98=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#107=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#112=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#124=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#125=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#136=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#148=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#149=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#153=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#160=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#167=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#174=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#188=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#189=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#193=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#200=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#207=DIRECTION('Vector Direction',(0.,1.,0.)) ;

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#221=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#222=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#226=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#233=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#247=DIRECTION('Axis2P3D Direction',(-0.,-1.,-0.)) ;
#248=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#252=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#259=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#271=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#272=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#276=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#288=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#289=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#126=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#123,#124,#125) ;
#150=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#147,#148,#149) ;
#190=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#187,#188,#189) ;
#223=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#220,#221,#222) ;
#249=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#246,#247,#248) ;
#273=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#270,#271,#272) ;
#290=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#287,#288,#289) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;
#21=APPROVAL(#20,'') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(5,10,34.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0.,AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#117=ORIENTED_EDGE("*,*,#105,.F.) ;
#118=ORIENTED_EDGE("*,*,#110,.T.) ;
#119=ORIENTED_EDGE("*,*,#65,.T.) ;
#120=ORIENTED_EDGE("*,*,#115,.F.) ;
#141=ORIENTED_EDGE("*,*,#110,.F.) ;
#142=ORIENTED_EDGE("*,*,#134,.F.) ;
#143=ORIENTED_EDGE("*,*,#139,.F.) ;
#144=ORIENTED_EDGE("*,*,#72,.F.) ;
#179=ORIENTED_EDGE("*,*,#158,.T.) ;
#180=ORIENTED_EDGE("*,*,#115,.T.) ;

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#181=ORIENTED_EDGE("*,*,#84,.T.);
#182=ORIENTED_EDGE("*,*,#165,.T.);
#183=ORIENTED_EDGE("*,*,#172,.F.);
#184=ORIENTED_EDGE("*,*,#177,.F.);
#212=ORIENTED_EDGE("*,*,#198,.F.);
#213=ORIENTED_EDGE("*,*,#134,.T.);
#214=ORIENTED_EDGE("*,*,#105,.T.);
#215=ORIENTED_EDGE("*,*,#158,.F.);
#216=ORIENTED_EDGE("*,*,#205,.T.);
#217=ORIENTED_EDGE("*,*,#210,.F.);
#238=ORIENTED_EDGE("*,*,#231,.F.);
#239=ORIENTED_EDGE("*,*,#236,.F.);
#240=ORIENTED_EDGE("*,*,#165,.F.);
#241=ORIENTED_EDGE("*,*,#79,.F.);
#242=ORIENTED_EDGE("*,*,#139,.T.);
#243=ORIENTED_EDGE("*,*,#198,.T.);
#264=ORIENTED_EDGE("*,*,#205,.F.);
#265=ORIENTED_EDGE("*,*,#177,.T.);
#266=ORIENTED_EDGE("*,*,#257,.T.);
#267=ORIENTED_EDGE("*,*,#262,.F.);
#281=ORIENTED_EDGE("*,*,#257,.F.);
#282=ORIENTED_EDGE("*,*,#172,.T.);
#283=ORIENTED_EDGE("*,*,#236,.T.);
#284=ORIENTED_EDGE("*,*,#279,.F.);
#293=ORIENTED_EDGE("*,*,#231,.T.);
#294=ORIENTED_EDGE("*,*,#210,.T.);
#295=ORIENTED_EDGE("*,*,#262,.T.);
#296=ORIENTED_EDGE("*,*,#279,.T.);
#51=CLOSED_SHELL('Closed
Shell',( #91,#122,#146,#186,#219,#245,#269,#286,#298));
#59=VECTOR('Line Direction',#58,1.);
#68=VECTOR('Line Direction',#67,1.);
#75=VECTOR('Line Direction',#74,1.);
#82=VECTOR('Line Direction',#81,1.);
#99=VECTOR('Line Direction',#98,1.);
#108=VECTOR('Line Direction',#107,1.);
#113=VECTOR('Line Direction',#112,1.);
#130=VECTOR('Line Direction',#129,1.);
#137=VECTOR('Line Direction',#136,1.);
#154=VECTOR('Line Direction',#153,1.);
#161=VECTOR('Line Direction',#160,1.);
#168=VECTOR('Line Direction',#167,1.);
#175=VECTOR('Line Direction',#174,1.);
#194=VECTOR('Line Direction',#193,1.);
#201=VECTOR('Line Direction',#200,1.);
#208=VECTOR('Line Direction',#207,1.);
#227=VECTOR('Line Direction',#226,1.);
#234=VECTOR('Line Direction',#233,1.);

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#253=VECTOR('Line Direction',#252,1.) ;
#260=VECTOR('Line Direction',#259,1.) ;
#277=VECTOR('Line Direction',#276,1.) ;
#300=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#299),#46) ;
#49=SHAPE_REPRESENTATION(' ',(#48),#46) ;
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.) ;
#122=ADVANCED_FACE('PartBody',(#121),#96,.F.) ;
#146=ADVANCED_FACE('PartBody',(#145),#127,.F.) ;
#186=ADVANCED_FACE('PartBody',(#185),#151,.T.) ;
#219=ADVANCED_FACE('PartBody',(#218),#191,.T.) ;
#245=ADVANCED_FACE('PartBody',(#244),#224,.F.) ;
#269=ADVANCED_FACE('PartBody',(#268),#250,.T.) ;
#286=ADVANCED_FACE('PartBody',(#285),#274,.T.) ;
#298=ADVANCED_FACE('PartBody',(#297),#291,.T.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#299=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,27,4) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#301=SHAPE_REPRESENTATION_RELATIONSHIP(' ',',',#49,#300) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE(",#62,#64,#60,.T.) ;
#72=EDGE_CURVE(",#62,#71,#69,.T.) ;
#79=EDGE_CURVE(",#71,#78,#76,.T.) ;
#84=EDGE_CURVE(",#64,#78,#83,.T.) ;
#105=EDGE_CURVE(",#102,#104,#100,.T.) ;
#110=EDGE_CURVE(",#102,#62,#109,.F.) ;
#115=EDGE_CURVE(",#104,#64,#114,.F.) ;
#134=EDGE_CURVE(",#133,#102,#131,.T.) ;
#139=EDGE_CURVE(",#71,#133,#138,.F.) ;

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#158=EDGE_CURVE("#157,#104,#155,.T.) ;
#165=EDGE_CURVE("#78,#164,#162,.F.) ;
#172=EDGE_CURVE("#171,#164,#169,.T.) ;
#177=EDGE_CURVE("#157,#171,#176,.T.) ;
#198=EDGE_CURVE("#133,#197,#195,.T.) ;
#205=EDGE_CURVE("#157,#204,#202,.T.) ;
#210=EDGE_CURVE("#197,#204,#209,.T.) ;
#231=EDGE_CURVE("#230,#197,#228,.T.) ;
#236=EDGE_CURVE("#164,#230,#235,.T.) ;
#257=EDGE_CURVE("#171,#256,#254,.T.) ;
#262=EDGE_CURVE("#204,#256,#261,.T.) ;
#279=EDGE_CURVE("#256,#230,#278,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#116=EDGE_LOOP("#117,#118,#119,#120)) ;
#140=EDGE_LOOP("#141,#142,#143,#144)) ;
#178=EDGE_LOOP("#179,#180,#181,#182,#183,#184)) ;
#211=EDGE_LOOP("#212,#213,#214,#215,#216,#217)) ;
#237=EDGE_LOOP("#238,#239,#240,#241,#242,#243)) ;
#263=EDGE_LOOP("#264,#265,#266,#267)) ;
#280=EDGE_LOOP("#281,#282,#283,#284)) ;
#292=EDGE_LOOP("#293,#294,#295,#296)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#121=FACE_OUTER_BOUND("#116,.T.) ;
#145=FACE_OUTER_BOUND("#140,.T.) ;
#185=FACE_OUTER_BOUND("#178,.T.) ;
#218=FACE_OUTER_BOUND("#211,.T.) ;
#244=FACE_OUTER_BOUND("#237,.T.) ;
#268=FACE_OUTER_BOUND("#263,.T.) ;
#285=FACE_OUTER_BOUND("#280,.T.) ;
#297=FACE_OUTER_BOUND("#292,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#109=LINE('Line',#106,#108) ;
#114=LINE('Line',#111,#113) ;
#131=LINE('Line',#128,#130) ;
#138=LINE('Line',#135,#137) ;
#155=LINE('Line',#152,#154) ;
#162=LINE('Line',#159,#161) ;
#169=LINE('Line',#166,#168) ;
#176=LINE('Line',#173,#175) ;
#195=LINE('Line',#192,#194) ;
#202=LINE('Line',#199,#201) ;
#209=LINE('Line',#206,#208) ;

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LAMPIRAN 11

DATA STEP FILE FITUR SLAB, DEPRESSION

```

ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Fitur-Depression\\D.stp','2012-04-
26T22:33:31+00:00','(none)','(none)','CATIA Version 5 Release 19 GA (IN-
10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Depression',"",(#2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION('','#6,#3);
#16=SECURITY_CLASSIFICATION('','#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(-80.,80.,0.));
#57=CARTESIAN_POINT('Line Origine',(-80.,80.,80.));
#61=CARTESIAN_POINT('Vertex',(-80.,80.,0.));
#63=CARTESIAN_POINT('Vertex',(-80.,80.,160.));
#66=CARTESIAN_POINT('Line Origine',(-80.,0.,0.));
#70=CARTESIAN_POINT('Vertex',(-80.,-80.,0.));
#73=CARTESIAN_POINT('Line Origine',(-80.,-80.,80.));
#77=CARTESIAN_POINT('Vertex',(-80.,-80.,160.));
#80=CARTESIAN_POINT('Line Origine',(-80.,0.,160.));
#92=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.));
#97=CARTESIAN_POINT('Line Origine',(80.,-80.,80.));
#101=CARTESIAN_POINT('Vertex',(80.,-80.,0.));
#103=CARTESIAN_POINT('Vertex',(80.,-80.,160.));
#106=CARTESIAN_POINT('Line Origine',(80.,0.,0.));
#110=CARTESIAN_POINT('Vertex',(80.,80.,0.));
#113=CARTESIAN_POINT('Line Origine',(80.,80.,80.));
#117=CARTESIAN_POINT('Vertex',(80.,80.,160.));
#120=CARTESIAN_POINT('Line Origine',(80.,0.,160.));
#132=CARTESIAN_POINT('Axis2P3D Location',(-80.,80.,0.));
#137=CARTESIAN_POINT('Line Origine',(0.,80.,0.));
#142=CARTESIAN_POINT('Line Origine',(0.,80.,160.));
#154=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));
#159=CARTESIAN_POINT('Line Origine',(0.,-80.,0.));

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#171=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,160.)) ;
#176=CARTESIAN_POINT('Line Origine',(55.,-80.,160.)) ;
#180=CARTESIAN_POINT('Vertex',(30.,-80.,160.)) ;
#183=CARTESIAN_POINT('Line Origine',(-50.,-80.,160.)) ;
#187=CARTESIAN_POINT('Vertex',(-20.,-80.,160.)) ;
#190=CARTESIAN_POINT('Line Origine',(-20.,-65.,160.)) ;
#194=CARTESIAN_POINT('Vertex',(-20.,-50.,160.)) ;
#197=CARTESIAN_POINT('Line Origine',(5.,-50.,160.)) ;
#201=CARTESIAN_POINT('Vertex',(30.,-50.,160.)) ;
#204=CARTESIAN_POINT('Line Origine',(30.,-65.,160.)) ;
#220=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.)) ;
#225=CARTESIAN_POINT('Line Origine',(30.,-80.,140.)) ;
#229=CARTESIAN_POINT('Vertex',(30.,-80.,120.)) ;
#232=CARTESIAN_POINT('Line Origine',(5.,-80.,120.)) ;
#236=CARTESIAN_POINT('Vertex',(-20.,-80.,120.)) ;
#239=CARTESIAN_POINT('Line Origine',(-20.,-80.,140.)) ;
#255=CARTESIAN_POINT('Axis2P3D Location',(30.,-80.,160.)) ;
#260=CARTESIAN_POINT('Line Origine',(30.,-50.,140.)) ;
#264=CARTESIAN_POINT('Vertex',(30.,-50.,120.)) ;
#267=CARTESIAN_POINT('Line Origine',(30.,-65.,120.)) ;
#279=CARTESIAN_POINT('Axis2P3D Location',(30.,-50.,160.)) ;
#284=CARTESIAN_POINT('Line Origine',(-20.,-50.,140.)) ;
#288=CARTESIAN_POINT('Vertex',(-20.,-50.,120.)) ;
#291=CARTESIAN_POINT('Line Origine',(5.,-50.,120.)) ;
#303=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,120.)) ;
#308=CARTESIAN_POINT('Line Origine',(-20.,-65.,120.)) ;
#320=CARTESIAN_POINT('Axis2P3D Location',(-20.,-50.,160.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#94=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#98=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#107=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#114=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#121=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#133=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#134=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#138=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#143=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#156=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#160=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#172=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#173=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;

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#177=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#184=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#191=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#198=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#205=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#221=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#222=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#226=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#233=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#240=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#256=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#257=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#261=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#268=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#280=DIRECTION('Axis2P3D Direction',(-0.,-1.,-0.)) ;
#281=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#285=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#292=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#304=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#305=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#309=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#321=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#322=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#135=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#132,#133,#134) ;
#157=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#154,#155,#156) ;
#174=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#171,#172,#173) ;
#223=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#220,#221,#222) ;
#258=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#255,#256,#257) ;
#282=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#279,#280,#281) ;
#306=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#303,#304,#305) ;
#323=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#320,#321,#322) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',',',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','', '$,$,$) ;
#23=ORGANIZATION(' ','',') ;
#21=APPROVAL(#20,'') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(5,33,31.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,..AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;

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#89=ORIENTED_EDGE("*,*,#84,.F.);
#126=ORIENTED_EDGE("*,*,#105,.F.);
#127=ORIENTED_EDGE("*,*,#112,.T.);
#128=ORIENTED_EDGE("*,*,#119,.T.);
#129=ORIENTED_EDGE("*,*,#124,.F.);
#148=ORIENTED_EDGE("*,*,#119,.F.);
#149=ORIENTED_EDGE("*,*,#141,.T.);
#150=ORIENTED_EDGE("*,*,#65,.T.);
#151=ORIENTED_EDGE("*,*,#146,.F.);
#165=ORIENTED_EDGE("*,*,#141,.F.);
#166=ORIENTED_EDGE("*,*,#112,.F.);
#167=ORIENTED_EDGE("*,*,#163,.F.);
#168=ORIENTED_EDGE("*,*,#72,.F.);
#210=ORIENTED_EDGE("*,*,#182,.T.);
#211=ORIENTED_EDGE("*,*,#124,.T.);
#212=ORIENTED_EDGE("*,*,#146,.T.);
#213=ORIENTED_EDGE("*,*,#84,.T.);
#214=ORIENTED_EDGE("*,*,#189,.T.);
#215=ORIENTED_EDGE("*,*,#196,.F.);
#216=ORIENTED_EDGE("*,*,#203,.F.);
#217=ORIENTED_EDGE("*,*,#208,.F.);
#245=ORIENTED_EDGE("*,*,#231,.T.);
#246=ORIENTED_EDGE("*,*,#238,.F.);
#247=ORIENTED_EDGE("*,*,#243,.F.);
#248=ORIENTED_EDGE("*,*,#189,.F.);
#249=ORIENTED_EDGE("*,*,#79,.F.);
#250=ORIENTED_EDGE("*,*,#163,.T.);
#251=ORIENTED_EDGE("*,*,#105,.T.);
#252=ORIENTED_EDGE("*,*,#182,.F.);
#273=ORIENTED_EDGE("*,*,#231,.F.);
#274=ORIENTED_EDGE("*,*,#208,.T.);
#275=ORIENTED_EDGE("*,*,#266,.T.);
#276=ORIENTED_EDGE("*,*,#271,.F.);
#297=ORIENTED_EDGE("*,*,#266,.F.);
#298=ORIENTED_EDGE("*,*,#203,.T.);
#299=ORIENTED_EDGE("*,*,#290,.T.);
#300=ORIENTED_EDGE("*,*,#295,.F.);
#314=ORIENTED_EDGE("*,*,#238,.T.);
#315=ORIENTED_EDGE("*,*,#271,.T.);
#316=ORIENTED_EDGE("*,*,#295,.T.);
#317=ORIENTED_EDGE("*,*,#312,.T.);
#326=ORIENTED_EDGE("*,*,#290,.F.);
#327=ORIENTED_EDGE("*,*,#196,.T.);
#328=ORIENTED_EDGE("*,*,#243,.T.);
#329=ORIENTED_EDGE("*,*,#312,.F.);
#51=CLOSED_SHELL('Closed
Shell',(#91,#131,#153,#170,#219,#254,#278,#302,#319,#331));
#59=VECTOR('Line Direction',#58,1.);

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#68=VECTOR('Line Direction',#67,1.) ;
#75=VECTOR('Line Direction',#74,1.) ;
#82=VECTOR('Line Direction',#81,1.) ;
#99=VECTOR('Line Direction',#98,1.) ;
#108=VECTOR('Line Direction',#107,1.) ;
#115=VECTOR('Line Direction',#114,1.) ;
#122=VECTOR('Line Direction',#121,1.) ;
#139=VECTOR('Line Direction',#138,1.) ;
#144=VECTOR('Line Direction',#143,1.) ;
#161=VECTOR('Line Direction',#160,1.) ;
#178=VECTOR('Line Direction',#177,1.) ;
#185=VECTOR('Line Direction',#184,1.) ;
#192=VECTOR('Line Direction',#191,1.) ;
#199=VECTOR('Line Direction',#198,1.) ;
#206=VECTOR('Line Direction',#205,1.) ;
#227=VECTOR('Line Direction',#226,1.) ;
#234=VECTOR('Line Direction',#233,1.) ;
#241=VECTOR('Line Direction',#240,1.) ;
#262=VECTOR('Line Direction',#261,1.) ;
#269=VECTOR('Line Direction',#268,1.) ;
#286=VECTOR('Line Direction',#285,1.) ;
#293=VECTOR('Line Direction',#292,1.) ;
#310=VECTOR('Line Direction',#309,1.) ;
#333=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#332),#46) ;
#49=SHAPE_REPRESENTATION(' ',(#48),#46) ;
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.) ;
#131=ADVANCED_FACE('PartBody',(#130),#96,.T.) ;
#153=ADVANCED_FACE('PartBody',(#152),#136,.F.) ;
#170=ADVANCED_FACE('PartBody',(#169),#158,.F.) ;
#219=ADVANCED_FACE('PartBody',(#218),#175,.T.) ;
#254=ADVANCED_FACE('PartBody',(#253),#224,.F.) ;
#278=ADVANCED_FACE('PartBody',(#277),#259,.T.) ;
#302=ADVANCED_FACE('PartBody',(#301),#283,.T.) ;
#319=ADVANCED_FACE('PartBody',(#318),#307,.T.) ;
#331=ADVANCED_FACE('PartBody',(#330),#324,.T.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#332=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,27,4) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;
#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;

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```

#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6));
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14));
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5));
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer');
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier');
#36=PERSON_AND_ORGANIZATION_ROLE('creator');
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner');
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6));
#334=SHAPE_REPRESENTATION_RELATIONSHIP(' ',#49,#333);
#3=DESIGN_CONTEXT(' ',#1,'design');
#65=EDGE_CURVE("#62,#64,#60,.T.);
#72=EDGE_CURVE("#62,#71,#69,.T.);
#79=EDGE_CURVE("#71,#78,#76,.T.);
#84=EDGE_CURVE("#64,#78,#83,.T.);
#105=EDGE_CURVE("#102,#104,#100,.T.);
#112=EDGE_CURVE("#102,#111,#109,.T.);
#119=EDGE_CURVE("#111,#118,#116,.T.);
#124=EDGE_CURVE("#104,#118,#123,.T.);
#141=EDGE_CURVE("#111,#62,#140,.F.);
#146=EDGE_CURVE("#118,#64,#145,.F.);
#163=EDGE_CURVE("#71,#102,#162,.F.);
#182=EDGE_CURVE("#181,#104,#179,.F.);
#189=EDGE_CURVE("#78,#188,#186,.F.);
#196=EDGE_CURVE("#195,#188,#193,.T.);
#203=EDGE_CURVE("#202,#195,#200,.T.);
#208=EDGE_CURVE("#181,#202,#207,.T.);
#231=EDGE_CURVE("#181,#230,#228,.T.);
#238=EDGE_CURVE("#237,#230,#235,.T.);
#243=EDGE_CURVE("#188,#237,#242,.T.);
#266=EDGE_CURVE("#202,#265,#263,.T.);
#271=EDGE_CURVE("#230,#265,#270,.T.);
#290=EDGE_CURVE("#195,#289,#287,.T.);
#295=EDGE_CURVE("#265,#289,#294,.T.);
#312=EDGE_CURVE("#289,#237,#311,.T.);
#85=EDGE_LOOP(",(#86,#87,#88,#89));
#125=EDGE_LOOP(",(#126,#127,#128,#129));
#147=EDGE_LOOP(",(#148,#149,#150,#151));
#164=EDGE_LOOP(",(#165,#166,#167,#168));
#209=EDGE_LOOP(",(#210,#211,#212,#213,#214,#215,#216,#217));
#244=EDGE_LOOP(",(#245,#246,#247,#248,#249,#250,#251,#252));
#272=EDGE_LOOP(",(#273,#274,#275,#276));
#296=EDGE_LOOP(",(#297,#298,#299,#300));
#313=EDGE_LOOP(",(#314,#315,#316,#317));
#325=EDGE_LOOP(",(#326,#327,#328,#329));
#90=FACE_OUTER_BOUND("#85,.T.);

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#130=FACE_OUTER_BOUND("#125,.T.) ;
#152=FACE_OUTER_BOUND("#147,.T.) ;
#169=FACE_OUTER_BOUND("#164,.T.) ;
#218=FACE_OUTER_BOUND("#209,.T.) ;
#253=FACE_OUTER_BOUND("#244,.T.) ;
#277=FACE_OUTER_BOUND("#272,.T.) ;
#301=FACE_OUTER_BOUND("#296,.T.) ;
#318=FACE_OUTER_BOUND("#313,.T.) ;
#330=FACE_OUTER_BOUND("#325,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#109=LINE('Line',#106,#108) ;
#116=LINE('Line',#113,#115) ;
#123=LINE('Line',#120,#122) ;
#140=LINE('Line',#137,#139) ;
#145=LINE('Line',#142,#144) ;
#162=LINE('Line',#159,#161) ;
#179=LINE('Line',#176,#178) ;
#186=LINE('Line',#183,#185) ;
#193=LINE('Line',#190,#192) ;
#200=LINE('Line',#197,#199) ;
#207=LINE('Line',#204,#206) ;
#228=LINE('Line',#225,#227) ;
#235=LINE('Line',#232,#234) ;
#242=LINE('Line',#239,#241) ;
#263=LINE('Line',#260,#262) ;
#270=LINE('Line',#267,#269) ;
#287=LINE('Line',#284,#286) ;
#294=LINE('Line',#291,#293) ;
#311=LINE('Line',#308,#310) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','','(#22),') ;
#56=PLANE('Plane',#55) ;
#96=PLANE('Plane',#95) ;
#136=PLANE('Plane',#135) ;
#158=PLANE('Plane',#157) ;
#175=PLANE('Plane',#174) ;
#224=PLANE('Plane',#223) ;
#259=PLANE('Plane',#258) ;
#283=PLANE('Plane',#282) ;
#307=PLANE('Plane',#306) ;
#324=PLANE('Plane',#323) ;

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#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('
','#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#,#61) ;
#64=VERTEX_POINT("#,#63) ;
#71=VERTEX_POINT("#,#70) ;
#78=VERTEX_POINT("#,#77) ;
#102=VERTEX_POINT("#,#101) ;
#104=VERTEX_POINT("#,#103) ;
#111=VERTEX_POINT("#,#110) ;
#118=VERTEX_POINT("#,#117) ;
#181=VERTEX_POINT("#,#180) ;
#188=VERTEX_POINT("#,#187) ;
#195=VERTEX_POINT("#,#194) ;
#202=VERTEX_POINT("#,#201) ;
#230=VERTEX_POINT("#,#229) ;
#237=VERTEX_POINT("#,#236) ;
#265=VERTEX_POINT("#,#264) ;
#289=VERTEX_POINT("#,#288) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT(' ')) ;
ENDSEC;
END-ISO-10303-21;0303-21;10303-21;303-21;

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LAMPIRAN 12

DATA STEP FILE FITUR SLAB, POCKET

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\\S2-UI\\Tesis\\Tesis-Sholeh\\Fitur-Pocket\\Pocket-1.stp','2012-
04-26T23:00:22+00:00','none'),('none'),'CATIA Version 5 Release 19 GA (IN-
10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Pocket','',( #2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION('','#6,#3);
#16=SECURITY_CLASSIFICATION('','#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(-80.,80.,0.));
#57=CARTESIAN_POINT('Line Origine',(-80.,80.,80.));
#61=CARTESIAN_POINT('Vertex',(-80.,80.,0.));
#63=CARTESIAN_POINT('Vertex',(-80.,80.,160.));
#66=CARTESIAN_POINT('Line Origine',(-80.,0.,0.));
#70=CARTESIAN_POINT('Vertex',(-80.,-80.,0.));
#73=CARTESIAN_POINT('Line Origine',(-80.,-80.,80.));
#77=CARTESIAN_POINT('Vertex',(-80.,-80.,160.));
#80=CARTESIAN_POINT('Line Origine',(-80.,0.,160.));
#92=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.));
#97=CARTESIAN_POINT('Line Origine',(0.,-80.,0.));
#101=CARTESIAN_POINT('Vertex',(80.,-80.,0.));
#104=CARTESIAN_POINT('Line Origine',(80.,-80.,80.));
#108=CARTESIAN_POINT('Vertex',(80.,-80.,160.));
#111=CARTESIAN_POINT('Line Origine',(0.,-80.,160.));
#123=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.));
#128=CARTESIAN_POINT('Line Origine',(80.,0.,0.));
#132=CARTESIAN_POINT('Vertex',(80.,80.,0.));
#135=CARTESIAN_POINT('Line Origine',(80.,80.,80.));
#139=CARTESIAN_POINT('Vertex',(80.,80.,160.));
#142=CARTESIAN_POINT('Line Origine',(80.,0.,160.));
#154=CARTESIAN_POINT('Axis2P3D Location',(-80.,80.,0.));
#159=CARTESIAN_POINT('Line Origine',(0.,80.,0.));

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#164=CARTESIAN_POINT('Line Origine',(0.,80.,160.)) ;
#176=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.)) ;
#188=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,160.)) ;
#199=CARTESIAN_POINT('Line Origine',(20.,0.,160.)) ;
#203=CARTESIAN_POINT('Vertex',(20.,-20.,160.)) ;
#205=CARTESIAN_POINT('Vertex',(20.,20.,160.)) ;
#208=CARTESIAN_POINT('Line Origine',(0.,-20.,160.)) ;
#212=CARTESIAN_POINT('Vertex',(-20.,-20.,160.)) ;
#215=CARTESIAN_POINT('Line Origine',(-20.,0.,160.)) ;
#219=CARTESIAN_POINT('Vertex',(-20.,20.,160.)) ;
#222=CARTESIAN_POINT('Line Origine',(0.,20.,160.)) ;
#234=CARTESIAN_POINT('Axis2P3D Location',(-20.,20.,160.)) ;
#239=CARTESIAN_POINT('Line Origine',(-20.,20.,140.)) ;
#243=CARTESIAN_POINT('Vertex',(-20.,20.,120.)) ;
#246=CARTESIAN_POINT('Line Origine',(-20.,-20.,140.)) ;
#250=CARTESIAN_POINT('Vertex',(-20.,-20.,120.)) ;
#253=CARTESIAN_POINT('Line Origine',(-20.,0.,120.)) ;
#265=CARTESIAN_POINT('Axis2P3D Location',(-20.,20.,160.)) ;
#270=CARTESIAN_POINT('Line Origine',(20.,20.,140.)) ;
#274=CARTESIAN_POINT('Vertex',(20.,20.,120.)) ;
#277=CARTESIAN_POINT('Line Origine',(0.,20.,120.)) ;
#289=CARTESIAN_POINT('Axis2P3D Location',(20.,-20.,160.)) ;
#294=CARTESIAN_POINT('Line Origine',(20.,-20.,140.)) ;
#298=CARTESIAN_POINT('Vertex',(20.,-20.,120.)) ;
#301=CARTESIAN_POINT('Line Origine',(0.,-20.,120.)) ;
#313=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,120.)) ;
#318=CARTESIAN_POINT('Line Origine',(20.,0.,120.)) ;
#330=CARTESIAN_POINT('Axis2P3D Location',(20.,-20.,160.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#94=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#98=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#105=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#112=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#124=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#125=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#136=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#143=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#155=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#156=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#160=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#165=DIRECTION('Vector Direction',(1.,0.,0.)) ;

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#177=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#178=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#189=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#190=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#200=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#209=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#216=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#223=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#235=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#236=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#240=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#247=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#254=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#266=DIRECTION('Axis2P3D Direction',(-0.,1.,0.)) ;
#267=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#271=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#278=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#290=DIRECTION('Axis2P3D Direction',(-0.,-1.,-0.)) ;
#291=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#295=DIRECTION('Vector Direction',(0.,0.,-1.)) ;
#302=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#314=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#315=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#319=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#331=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#332=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#126=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#123,#124,#125) ;
#157=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#154,#155,#156) ;
#179=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#176,#177,#178) ;
#191=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#188,#189,#190) ;
#237=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#234,#235,#236) ;
#268=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#265,#266,#267) ;
#292=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#289,#290,#291) ;
#316=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#313,#314,#315) ;
#333=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#330,#331,#332) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ','','$,$,$) ;
#23=ORGANIZATION(' ','') ;
#21=APPROVAL(#20,') ;
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(6,0,22.,#10) ;

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#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE("*,*,#65,.F.) ;
#87=ORIENTED_EDGE("*,*,#72,.T.) ;
#88=ORIENTED_EDGE("*,*,#79,.T.) ;
#89=ORIENTED_EDGE("*,*,#84,.F.) ;
#117=ORIENTED_EDGE("*,*,#79,.F.) ;
#118=ORIENTED_EDGE("*,*,#103,.T.) ;
#119=ORIENTED_EDGE("*,*,#110,.T.) ;
#120=ORIENTED_EDGE("*,*,#115,.F.) ;
#148=ORIENTED_EDGE("*,*,#110,.F.) ;
#149=ORIENTED_EDGE("*,*,#134,.T.) ;
#150=ORIENTED_EDGE("*,*,#141,.T.) ;
#151=ORIENTED_EDGE("*,*,#146,.F.) ;
#170=ORIENTED_EDGE("*,*,#141,.F.) ;
#171=ORIENTED_EDGE("*,*,#163,.T.) ;
#172=ORIENTED_EDGE("*,*,#65,.T.) ;
#173=ORIENTED_EDGE("*,*,#168,.F.) ;
#182=ORIENTED_EDGE("*,*,#163,.F.) ;
#183=ORIENTED_EDGE("*,*,#134,.F.) ;
#184=ORIENTED_EDGE("*,*,#103,.F.) ;
#185=ORIENTED_EDGE("*,*,#72,.F.) ;
#194=ORIENTED_EDGE("*,*,#84,.T.) ;
#195=ORIENTED_EDGE("*,*,#115,.T.) ;
#196=ORIENTED_EDGE("*,*,#146,.T.) ;
#197=ORIENTED_EDGE("*,*,#168,.T.) ;
#228=ORIENTED_EDGE("*,*,#207,.F.) ;
#229=ORIENTED_EDGE("*,*,#214,.F.) ;
#230=ORIENTED_EDGE("*,*,#221,.F.) ;
#231=ORIENTED_EDGE("*,*,#226,.F.) ;
#259=ORIENTED_EDGE("*,*,#245,.F.) ;
#260=ORIENTED_EDGE("*,*,#221,.T.) ;
#261=ORIENTED_EDGE("*,*,#252,.T.) ;
#262=ORIENTED_EDGE("*,*,#257,.F.) ;
#283=ORIENTED_EDGE("*,*,#276,.F.) ;
#284=ORIENTED_EDGE("*,*,#226,.T.) ;
#285=ORIENTED_EDGE("*,*,#245,.T.) ;
#286=ORIENTED_EDGE("*,*,#281,.F.) ;
#307=ORIENTED_EDGE("*,*,#252,.F.) ;
#308=ORIENTED_EDGE("*,*,#214,.T.) ;
#309=ORIENTED_EDGE("*,*,#300,.T.) ;
#310=ORIENTED_EDGE("*,*,#305,.F.) ;
#324=ORIENTED_EDGE("*,*,#257,.T.) ;
#325=ORIENTED_EDGE("*,*,#305,.T.) ;
#326=ORIENTED_EDGE("*,*,#322,.T.) ;
#327=ORIENTED_EDGE("*,*,#281,.T.) ;
#336=ORIENTED_EDGE("*,*,#300,.F.) ;
#337=ORIENTED_EDGE("*,*,#207,.T.) ;
#338=ORIENTED_EDGE("*,*,#276,.T.) ;
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#339=ORIENTED_EDGE("*,*,#322,.F.);
#232=FACE_BOUND("#227,.T.);
#51=CLOSED_SHELL('Closed
Shell',(#91,#122,#153,#175,#187,#233,#264,#288,#312,#329,#341));
#59=VECTOR('Line Direction',#58,1.);
#68=VECTOR('Line Direction',#67,1.);
#75=VECTOR('Line Direction',#74,1.);
#82=VECTOR('Line Direction',#81,1.);
#99=VECTOR('Line Direction',#98,1.);
#106=VECTOR('Line Direction',#105,1.);
#113=VECTOR('Line Direction',#112,1.);
#130=VECTOR('Line Direction',#129,1.);
#137=VECTOR('Line Direction',#136,1.);
#144=VECTOR('Line Direction',#143,1.);
#161=VECTOR('Line Direction',#160,1.);
#166=VECTOR('Line Direction',#165,1.);
#201=VECTOR('Line Direction',#200,1.);
#210=VECTOR('Line Direction',#209,1.);
#217=VECTOR('Line Direction',#216,1.);
#224=VECTOR('Line Direction',#223,1.);
#241=VECTOR('Line Direction',#240,1.);
#248=VECTOR('Line Direction',#247,1.);
#255=VECTOR('Line Direction',#254,1.);
#272=VECTOR('Line Direction',#271,1.);
#279=VECTOR('Line Direction',#278,1.);
#296=VECTOR('Line Direction',#295,1.);
#303=VECTOR('Line Direction',#302,1.);
#320=VECTOR('Line Direction',#319,1.);
#343=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#342),#46);
#49=SHAPE_REPRESENTATION('',( #48),#46);
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.);
#122=ADVANCED_FACE('PartBody',(#121),#96,.F.);
#153=ADVANCED_FACE('PartBody',(#152),#127,.T.);
#175=ADVANCED_FACE('PartBody',(#174),#158,.F.);
#187=ADVANCED_FACE('PartBody',(#186),#180,.F.);
#233=ADVANCED_FACE('PartBody',(#198,#232),#192,.T.);
#264=ADVANCED_FACE('PartBody',(#263),#238,.T.);
#288=ADVANCED_FACE('PartBody',(#287),#269,.F.);
#312=ADVANCED_FACE('PartBody',(#311),#293,.F.);
#329=ADVANCED_FACE('PartBody',(#328),#317,.T.);
#341=ADVANCED_FACE('PartBody',(#340),#334,.T.);
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1);
#32=APPROVAL_DATE_TIME(#13,#21);
#342=MANIFOLD_SOLID_BREP('PartBody',#51);
#11=CALENDAR_DATE(2012,27,4);
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14));
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16));

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#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#344=SHAPE_REPRESENTATION_RELATIONSHIP(' ',#49,#343) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE("#62,#64,#60,.T.) ;
#72=EDGE_CURVE("#62,#71,#69,.T.) ;
#79=EDGE_CURVE("#71,#78,#76,.T.) ;
#84=EDGE_CURVE("#64,#78,#83,.T.) ;
#103=EDGE_CURVE("#71,#102,#100,.F.) ;
#110=EDGE_CURVE("#102,#109,#107,.T.) ;
#115=EDGE_CURVE("#78,#109,#114,.F.) ;
#134=EDGE_CURVE("#102,#133,#131,.T.) ;
#141=EDGE_CURVE("#133,#140,#138,.T.) ;
#146=EDGE_CURVE("#109,#140,#145,.T.) ;
#163=EDGE_CURVE("#133,#62,#162,.F.) ;
#168=EDGE_CURVE("#140,#64,#167,.F.) ;
#207=EDGE_CURVE("#204,#206,#202,.T.) ;
#214=EDGE_CURVE("#213,#204,#211,.F.) ;
#221=EDGE_CURVE("#220,#213,#218,.T.) ;
#226=EDGE_CURVE("#206,#220,#225,.F.) ;
#245=EDGE_CURVE("#220,#244,#242,.T.) ;
#252=EDGE_CURVE("#213,#251,#249,.T.) ;
#257=EDGE_CURVE("#244,#251,#256,.T.) ;
#276=EDGE_CURVE("#206,#275,#273,.T.) ;
#281=EDGE_CURVE("#275,#244,#280,.F.) ;
#300=EDGE_CURVE("#204,#299,#297,.T.) ;
#305=EDGE_CURVE("#251,#299,#304,.F.) ;
#322=EDGE_CURVE("#299,#275,#321,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#116=EDGE_LOOP("#117,#118,#119,#120)) ;
#147=EDGE_LOOP("#148,#149,#150,#151)) ;
#169=EDGE_LOOP("#170,#171,#172,#173)) ;
#181=EDGE_LOOP("#182,#183,#184,#185)) ;
#193=EDGE_LOOP("#194,#195,#196,#197)) ;

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#227=EDGE_LOOP(",(#228,#229,#230,#231)) ;
#258=EDGE_LOOP(",(#259,#260,#261,#262)) ;
#282=EDGE_LOOP(",(#283,#284,#285,#286)) ;
#306=EDGE_LOOP(",(#307,#308,#309,#310)) ;
#323=EDGE_LOOP(",(#324,#325,#326,#327)) ;
#335=EDGE_LOOP(",(#336,#337,#338,#339)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#121=FACE_OUTER_BOUND("#116,.T.) ;
#152=FACE_OUTER_BOUND("#147,.T.) ;
#174=FACE_OUTER_BOUND("#169,.T.) ;
#186=FACE_OUTER_BOUND("#181,.T.) ;
#198=FACE_OUTER_BOUND("#193,.T.) ;
#263=FACE_OUTER_BOUND("#258,.T.) ;
#287=FACE_OUTER_BOUND("#282,.T.) ;
#311=FACE_OUTER_BOUND("#306,.T.) ;
#328=FACE_OUTER_BOUND("#323,.T.) ;
#340=FACE_OUTER_BOUND("#335,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#107=LINE('Line',#104,#106) ;
#114=LINE('Line',#111,#113) ;
#131=LINE('Line',#128,#130) ;
#138=LINE('Line',#135,#137) ;
#145=LINE('Line',#142,#144) ;
#162=LINE('Line',#159,#161) ;
#167=LINE('Line',#164,#166) ;
#202=LINE('Line',#199,#201) ;
#211=LINE('Line',#208,#210) ;
#218=LINE('Line',#215,#217) ;
#225=LINE('Line',#222,#224) ;
#242=LINE('Line',#239,#241) ;
#249=LINE('Line',#246,#248) ;
#256=LINE('Line',#253,#255) ;
#273=LINE('Line',#270,#272) ;
#280=LINE('Line',#277,#279) ;
#297=LINE('Line',#294,#296) ;
#304=LINE('Line',#301,#303) ;
#321=LINE('Line',#318,#320) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','','(#22),') ;
#56=PLANE('Plane',#55) ;
#96=PLANE('Plane',#95) ;
#127=PLANE('Plane',#126) ;

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#158=PLANE('Plane',#157) ;
#180=PLANE('Plane',#179) ;
#192=PLANE('Plane',#191) ;
#238=PLANE('Plane',#237) ;
#269=PLANE('Plane',#268) ;
#293=PLANE('Plane',#292) ;
#317=PLANE('Plane',#316) ;
#334=PLANE('Plane',#333) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASURE(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP(' ','',#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE(' ',#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#,#61) ;
#64=VERTEX_POINT("#,#63) ;
#71=VERTEX_POINT("#,#70) ;
#78=VERTEX_POINT("#,#77) ;
#102=VERTEX_POINT("#,#101) ;
#109=VERTEX_POINT("#,#108) ;
#133=VERTEX_POINT("#,#132) ;
#140=VERTEX_POINT("#,#139) ;
#204=VERTEX_POINT("#,#203) ;
#206=VERTEX_POINT("#,#205) ;
#213=VERTEX_POINT("#,#212) ;
#220=VERTEX_POINT("#,#219) ;
#244=VERTEX_POINT("#,#243) ;
#251=VERTEX_POINT("#,#250) ;
#275=VERTEX_POINT("#,#274) ;
#299=VERTEX_POINT("#,#298) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTAINTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEXT((#41,#42,#44))REPRESENTATION_CONTEXT(' ')) ;
ENDSEC;
END-ISO-10303-21;0303-21;10303-21;303-21;

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LAMPIRAN 13

DATA STEP FILE FITUR REVOLVING

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ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('CATIA V5 STEP Exchange'),'2;1');

FILE_NAME('D:\S2-UI\Tesis\Tesis-Sholeh\24-Mei-12\Gambar\Kbs-
silinder\Kbs-1-silider.stp','2012-06-07T03:38:35+00:00','(none)','(none)','CATIA
Version 5 Release 19 GA (IN-10)','CATIA V5 STEP AP203','none');

FILE_SCHEMA(('CONFIG_CONTROL_DESIGN'));

ENDSEC;
/* file written by CATIA V5R19 */
DATA;
#5=PRODUCT('Periksa','',( #2));
#1=APPLICATION_CONTEXT('configuration controlled 3D design of
mechanical parts and assemblies');
#14=PRODUCT_DEFINITION('','#6,#3);
#16=SECURITY_CLASSIFICATION('','#15);
#15=SECURITY_CLASSIFICATION_LEVEL('unclassified');
#47=CARTESIAN_POINT('',(0.,0.,0.));
#52=CARTESIAN_POINT('Axis2P3D Location',(-80.,80.,0.));
#57=CARTESIAN_POINT('Line Origine',(-80.,80.,80.));
#61=CARTESIAN_POINT('Vertex',(-80.,80.,0.));
#63=CARTESIAN_POINT('Vertex',(-80.,80.,160.));
#66=CARTESIAN_POINT('Line Origine',(-80.,0.,0.));
#70=CARTESIAN_POINT('Vertex',(-80.,-80.,0.));
#73=CARTESIAN_POINT('Line Origine',(-80.,-80.,80.));
#77=CARTESIAN_POINT('Vertex',(-80.,-80.,160.));
#80=CARTESIAN_POINT('Line Origine',(-80.,0.,160.));
#92=CARTESIAN_POINT('Axis2P3D Location',(-80.,80.,0.));
#97=CARTESIAN_POINT('Line Origine',(80.,80.,80.));
#101=CARTESIAN_POINT('Vertex',(80.,80.,0.));
#103=CARTESIAN_POINT('Vertex',(80.,80.,160.));
#106=CARTESIAN_POINT('Line Origine',(0.,80.,0.));
#111=CARTESIAN_POINT('Line Origine',(0.,80.,160.));
#123=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,0.));
#128=CARTESIAN_POINT('Line Origine',(80.,0.,0.));
#132=CARTESIAN_POINT('Vertex',(80.,-80.,0.));
#135=CARTESIAN_POINT('Line Origine',(0.,-80.,0.));
#147=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.));
#152=CARTESIAN_POINT('Line Origine',(80.,-80.,80.));
#156=CARTESIAN_POINT('Vertex',(80.,-80.,160.));
#159=CARTESIAN_POINT('Line Origine',(0.,-80.,160.));

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#171=CARTESIAN_POINT('Axis2P3D Location',(80.,-80.,0.)) ;
#176=CARTESIAN_POINT('Line Origine',(80.,0.,160.)) ;
#188=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,160.)) ;
#199=CARTESIAN_POINT('Axis2P3D Location',(-30.,30.,160.)) ;
#203=CARTESIAN_POINT('Vertex',(-10.,30.,160.)) ;
#205=CARTESIAN_POINT('Vertex',(-50.,30.,160.)) ;
#208=CARTESIAN_POINT('Axis2P3D Location',(-30.,30.,160.)) ;
#218=CARTESIAN_POINT('Axis2P3D Location',(-30.,30.,125.)) ;
#223=CARTESIAN_POINT('Line Origine',(-10.,30.,125.)) ;
#227=CARTESIAN_POINT('Vertex',(-10.,30.,90.)) ;
#230=CARTESIAN_POINT('Line Origine',(-50.,30.,125.)) ;
#234=CARTESIAN_POINT('Vertex',(-50.,30.,90.)) ;
#237=CARTESIAN_POINT('Axis2P3D Location',(-30.,30.,90.)) ;
#249=CARTESIAN_POINT('Axis2P3D Location',(-30.,30.,90.)) ;
#261=CARTESIAN_POINT('Axis2P3D Location',(0.,0.,90.)) ;
#53=DIRECTION('Axis2P3D Direction',(-1.,0.,0.)) ;
#54=DIRECTION('Axis2P3D XDirection',(0.,-1.,0.)) ;
#58=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#67=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#74=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#81=DIRECTION('Vector Direction',(0.,-1.,0.)) ;
#93=DIRECTION('Axis2P3D Direction',(0.,-1.,0.)) ;
#94=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#98=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#107=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#112=DIRECTION('Vector Direction',(1.,0.,0.)) ;
#124=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#125=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#129=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#136=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#148=DIRECTION('Axis2P3D Direction',(0.,1.,-0.)) ;
#149=DIRECTION('Axis2P3D XDirection',(-1.,0.,0.)) ;
#153=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#160=DIRECTION('Vector Direction',(-1.,0.,0.)) ;
#172=DIRECTION('Axis2P3D Direction',(1.,0.,0.)) ;
#173=DIRECTION('Axis2P3D XDirection',(0.,1.,0.)) ;
#177=DIRECTION('Vector Direction',(0.,1.,0.)) ;
#189=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#190=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#200=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#209=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#219=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#220=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#224=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#231=DIRECTION('Vector Direction',(0.,0.,1.)) ;
#238=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#250=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;
#262=DIRECTION('Axis2P3D Direction',(0.,0.,1.)) ;

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#263=DIRECTION('Axis2P3D XDirection',(1.,0.,0.)) ;
#48=AXIS2_PLACEMENT_3D(' ',#47,$,$) ;
#55=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#52,#53,#54) ;
#95=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#92,#93,#94) ;
#126=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#123,#124,#125) ;
#150=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#147,#148,#149) ;
#174=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#171,#172,#173) ;
#191=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#188,#189,#190) ;
#201=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#199,#200,$) ;
#210=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#208,#209,$) ;
#221=AXIS2_PLACEMENT_3D('Cylinder Axis2P3D',#218,#219,#220) ;
#239=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#237,#238,$) ;
#251=AXIS2_PLACEMENT_3D('Circle Axis2P3D',#249,#250,$) ;
#264=AXIS2_PLACEMENT_3D('Plane Axis2P3D',#261,#262,#263) ;
#40=PRODUCT_DEFINITION_SHAPE(' ',',',#14) ;
#31=APPROVAL_PERSON_ORGANIZATION(#25,#21,#19) ;
#25=PERSON_AND_ORGANIZATION(#22,#23) ;
#22=PERSON(' ',' ',$,,$,$) ;
#23=ORGANIZATION(' ',' ',' ');
#21=APPROVAL(#20,' ');
#20=APPROVAL_STATUS('not_yet_approved') ;
#19=APPROVAL_ROLE('APPROVER') ;
#13=DATE_AND_TIME(#11,#12) ;
#12=LOCAL_TIME(10,38,35.,#10) ;
#10=COORDINATED_UNIVERSAL_TIME_OFFSET(0,0,.AHEAD.) ;
#86=ORIENTED_EDGE(" ,*,*,#65,.F.) ;
#87=ORIENTED_EDGE(" ,*,*,#72,.T.) ;
#88=ORIENTED_EDGE(" ,*,*,#79,.T.) ;
#89=ORIENTED_EDGE(" ,*,*,#84,.F.) ;
#117=ORIENTED_EDGE(" ,*,*,#105,.F.) ;
#118=ORIENTED_EDGE(" ,*,*,#110,.T.) ;
#119=ORIENTED_EDGE(" ,*,*,#65,.T.) ;
#120=ORIENTED_EDGE(" ,*,*,#115,.F.) ;
#141=ORIENTED_EDGE(" ,*,*,#110,.F.) ;
#142=ORIENTED_EDGE(" ,*,*,#134,.F.) ;
#143=ORIENTED_EDGE(" ,*,*,#139,.F.) ;
#144=ORIENTED_EDGE(" ,*,*,#72,.F.) ;
#165=ORIENTED_EDGE(" ,*,*,#79,.F.) ;
#166=ORIENTED_EDGE(" ,*,*,#139,.T.) ;
#167=ORIENTED_EDGE(" ,*,*,#158,.T.) ;
#168=ORIENTED_EDGE(" ,*,*,#163,.F.) ;
#182=ORIENTED_EDGE(" ,*,*,#158,.F.) ;
#183=ORIENTED_EDGE(" ,*,*,#134,.T.) ;
#184=ORIENTED_EDGE(" ,*,*,#105,.T.) ;
#185=ORIENTED_EDGE(" ,*,*,#180,.F.) ;
#194=ORIENTED_EDGE(" ,*,*,#84,.T.) ;
#195=ORIENTED_EDGE(" ,*,*,#163,.T.) ;
#196=ORIENTED_EDGE(" ,*,*,#180,.T.) ;

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#197=ORIENTED_EDGE("*,*,#115,.T.) ;
#214=ORIENTED_EDGE("*,*,#207,.F.) ;
#215=ORIENTED_EDGE("*,*,#212,.F.) ;
#243=ORIENTED_EDGE("*,*,#229,.F.) ;
#244=ORIENTED_EDGE("*,*,#207,.T.) ;
#245=ORIENTED_EDGE("*,*,#236,.T.) ;
#246=ORIENTED_EDGE("*,*,#241,.F.) ;
#255=ORIENTED_EDGE("*,*,#236,.F.) ;
#256=ORIENTED_EDGE("*,*,#212,.T.) ;
#257=ORIENTED_EDGE("*,*,#229,.T.) ;
#258=ORIENTED_EDGE("*,*,#253,.F.) ;
#267=ORIENTED_EDGE("*,*,#241,.T.) ;
#268=ORIENTED_EDGE("*,*,#253,.T.) ;
#216=FACE_BOUND("#213,.T.) ;
#51=CLOSED_SHELL('Closed
Shell',(#91,#122,#146,#170,#187,#217,#248,#260,#270)) ;
#59=VECTOR('Line Direction',#58,1.) ;
#68=VECTOR('Line Direction',#67,1.) ;
#75=VECTOR('Line Direction',#74,1.) ;
#82=VECTOR('Line Direction',#81,1.) ;
#99=VECTOR('Line Direction',#98,1.) ;
#108=VECTOR('Line Direction',#107,1.) ;
#113=VECTOR('Line Direction',#112,1.) ;
#130=VECTOR('Line Direction',#129,1.) ;
#137=VECTOR('Line Direction',#136,1.) ;
#154=VECTOR('Line Direction',#153,1.) ;
#161=VECTOR('Line Direction',#160,1.) ;
#178=VECTOR('Line Direction',#177,1.) ;
#225=VECTOR('Line Direction',#224,1.) ;
#232=VECTOR('Line Direction',#231,1.) ;
#272=ADVANCED_BREP_SHAPE_REPRESENTATION('NONE',(#271),#46) ;
#49=SHAPE_REPRESENTATION('',(#48),#46) ;
#91=ADVANCED_FACE('PartBody',(#90),#56,.T.) ;
#122=ADVANCED_FACE('PartBody',(#121),#96,.F.) ;
#146=ADVANCED_FACE('PartBody',(#145),#127,.F.) ;
#170=ADVANCED_FACE('PartBody',(#169),#151,.F.) ;
#187=ADVANCED_FACE('PartBody',(#186),#175,.T.) ;
#217=ADVANCED_FACE('PartBody',(#198,#216),#192,.T.) ;
#248=ADVANCED_FACE('PartBody',(#247),#222,.F.) ;
#260=ADVANCED_FACE('PartBody',(#259),#222,.F.) ;
#270=ADVANCED_FACE('PartBody',(#269),#265,.T.) ;
#4=APPLICATION_PROTOCOL_DEFINITION('international
standard','config_control_design',1994,#1) ;
#32=APPROVAL_DATE_TIME(#13,#21) ;
#271=MANIFOLD_SOLID_BREP('PartBody',#51) ;
#11=CALENDAR_DATE(2012,7,6) ;
#30=CC_DESIGN_APPROVAL(#21,(#16,#6,#14)) ;
#18=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#17,(#16)) ;

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#29=CC_DESIGN_DATE_AND_TIME_ASSIGNMENT(#13,#28,(#14)) ;
#17=DATE_TIME_ROLE('classification_date') ;
#28=DATE_TIME_ROLE('creation_date') ;
#27=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#2
6,(#16)) ;
#33=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
4,(#6)) ;
#35=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
6,(#6,#14)) ;
#37=CC_DESIGN_PERSON_AND_ORGANIZATION_ASSIGNMENT(#25,#3
8,(#5)) ;
#26=PERSON_AND_ORGANIZATION_ROLE('classification_officer') ;
#34=PERSON_AND_ORGANIZATION_ROLE('design_supplier') ;
#36=PERSON_AND_ORGANIZATION_ROLE('creator') ;
#38=PERSON_AND_ORGANIZATION_ROLE('design_owner') ;
#39=CC_DESIGN_SECURITY_CLASSIFICATION(#16,(#6)) ;
#202=CIRCLE('generated circle',#201,20.) ;
#211=CIRCLE('generated circle',#210,20.) ;
#240=CIRCLE('generated circle',#239,20.) ;
#252=CIRCLE('generated circle',#251,20.) ;
#273=SHAPE_REPRESENTATION_RELATIONSHIP(' ',#49,#272) ;
#222=CYLINDRICAL_SURFACE('generated cylinder',#221,20.) ;
#3=DESIGN_CONTEXT(' ',#1,'design') ;
#65=EDGE_CURVE("#62,#64,#60,.T.) ;
#72=EDGE_CURVE("#62,#71,#69,.T.) ;
#79=EDGE_CURVE("#71,#78,#76,.T.) ;
#84=EDGE_CURVE("#64,#78,#83,.T.) ;
#105=EDGE_CURVE("#102,#104,#100,.T.) ;
#110=EDGE_CURVE("#102,#62,#109,.F.) ;
#115=EDGE_CURVE("#104,#64,#114,.F.) ;
#134=EDGE_CURVE("#133,#102,#131,.T.) ;
#139=EDGE_CURVE("#71,#133,#138,.F.) ;
#158=EDGE_CURVE("#133,#157,#155,.T.) ;
#163=EDGE_CURVE("#78,#157,#162,.F.) ;
#180=EDGE_CURVE("#157,#104,#179,.T.) ;
#207=EDGE_CURVE("#204,#206,#202,.T.) ;
#212=EDGE_CURVE("#206,#204,#211,.T.) ;
#229=EDGE_CURVE("#204,#228,#226,.F.) ;
#236=EDGE_CURVE("#206,#235,#233,.F.) ;
#241=EDGE_CURVE("#228,#235,#240,.T.) ;
#253=EDGE_CURVE("#235,#228,#252,.T.) ;
#85=EDGE_LOOP("#86,#87,#88,#89)) ;
#116=EDGE_LOOP("#117,#118,#119,#120)) ;
#140=EDGE_LOOP("#141,#142,#143,#144)) ;
#164=EDGE_LOOP("#165,#166,#167,#168)) ;
#181=EDGE_LOOP("#182,#183,#184,#185)) ;
#193=EDGE_LOOP("#194,#195,#196,#197)) ;
#213=EDGE_LOOP("#214,#215)) ;

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#242=EDGE_LOOP(",(#243,#244,#245,#246)) ;
#254=EDGE_LOOP(",(#255,#256,#257,#258)) ;
#266=EDGE_LOOP(",(#267,#268)) ;
#90=FACE_OUTER_BOUND("#85,.T.) ;
#121=FACE_OUTER_BOUND("#116,.T.) ;
#145=FACE_OUTER_BOUND("#140,.T.) ;
#169=FACE_OUTER_BOUND("#164,.T.) ;
#186=FACE_OUTER_BOUND("#181,.T.) ;
#198=FACE_OUTER_BOUND("#193,.T.) ;
#247=FACE_OUTER_BOUND("#242,.T.) ;
#259=FACE_OUTER_BOUND("#254,.T.) ;
#269=FACE_OUTER_BOUND("#266,.T.) ;
#45=UNCERTAINTY_MEASURE_WITH_UNIT(LENGTH_MEASURE(0.005)
,#41,'distance_accuracy_value','CONFUSED CURVE UNCERTAINTY') ;
#60=LINE('Line',#57,#59) ;
#69=LINE('Line',#66,#68) ;
#76=LINE('Line',#73,#75) ;
#83=LINE('Line',#80,#82) ;
#100=LINE('Line',#97,#99) ;
#109=LINE('Line',#106,#108) ;
#114=LINE('Line',#111,#113) ;
#131=LINE('Line',#128,#130) ;
#138=LINE('Line',#135,#137) ;
#155=LINE('Line',#152,#154) ;
#162=LINE('Line',#159,#161) ;
#179=LINE('Line',#176,#178) ;
#226=LINE('Line',#223,#225) ;
#233=LINE('Line',#230,#232) ;
#2=MECHANICAL_CONTEXT('#1,'mechanical') ;
#24=PERSONAL_ADDRESS('','','','','','','','','','(#22)') ;
#56=PLANE('Plane',#55) ;
#96=PLANE('Plane',#95) ;
#127=PLANE('Plane',#126) ;
#151=PLANE('Plane',#150) ;
#175=PLANE('Plane',#174) ;
#192=PLANE('Plane',#191) ;
#265=PLANE('Plane',#264) ;
#43=PLANE_ANGLE_MEASURE_WITH_UNIT(PLANE_ANGLE_MEASUR
E(0.0174532925199),#42) ;
#7=PRODUCT_CATEGORY('part',$) ;
#9=PRODUCT_CATEGORY_RELATIONSHIP('','#7,#8) ;
#6=PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE('
','#5,.NOT_KNOWN.) ;
#8=PRODUCT_RELATED_PRODUCT_CATEGORY('detail',$,(#5)) ;
#50=SHAPE_DEFINITION_REPRESENTATION(#40,#49) ;
#62=VERTEX_POINT("#61) ;
#64=VERTEX_POINT("#63) ;
#71=VERTEX_POINT("#70) ;

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#78=VERTEX_POINT("#77) ;
#102=VERTEX_POINT("#101) ;
#104=VERTEX_POINT("#103) ;
#133=VERTEX_POINT("#132) ;
#157=VERTEX_POINT("#156) ;
#204=VERTEX_POINT("#203) ;
#206=VERTEX_POINT("#205) ;
#228=VERTEX_POINT("#227) ;
#235=VERTEX_POINT("#234) ;
#41=(LENGTH_UNIT()NAMED_UNIT(*)SI_UNIT(.MILLI.,.METRE.)) ;
#42=(NAMED_UNIT(*)PLANE_ANGLE_UNIT()SI_UNIT($,.RADIAN.)) ;
#44=(NAMED_UNIT(*)SI_UNIT($,.STERADIAN.)SOLID_ANGLE_UNIT()) ;
#46=(GEOMETRIC_REPRESENTATION_CONTEXT(3)GLOBAL_UNCERTA
INTY_ASSIGNED_CONTEXT((#45))GLOBAL_UNIT_ASSIGNED_CONTEX
T((#41,#42,#44))REPRESENTATION_CONTEXT(',')) ;
ENDSEC;
END-ISO-10303-21;1;0303-21;10303-21;303-21;

```

