UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

# DAFTAR ISI

HALAMAN JUDUL ..... i
LEMBAR PERSOALAN ..... ii
LEMBAR PENGESAHAN ..... iii

PERNYATAAN KEASLIAN TUGAS AKHIR ..... iv
LEMBAR PERSEMBAHAN ..... v
LEMBAR MOTTO ..... vi
KATA PENGANTAR ..... vii
*ABSTRACT* ..... ix
INTISARI ..... x
DAFTAR ISI ..... xi
DAFTAR GAMBAR ..... xv
DAFTAR TABEL ..... xxxiv

BAB I PENDAHULUAN ..... 1
1.1. Latar Belakang ..... 1
1.2. Perumusan Masalah ..... 2
1.3. Maksud dan Tujuan ..... 2
1.4. Batasan Masalah ..... 2
1.5. Metode Penulisan Laporan ..... 2
1.6. Sistematika Penulisan ..... 3

BAB II TEORI DASAR *SOFTWARE CREO PARAMETRIC 2.0* ..... 5
2.1. Pengenalan *software Creo Parametric 2.0* ..... 5
2.2. Keunggulan *software Creo Parametric 2.0* ..... 6
2.3. Kekurangan *software Creo Parametric 2.0* ..... 7
2.4. Pengaplikasian *software Creo Parametric 2.0* ..... 8

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

BAB III *FEATURES CREO PARAMETRIC 2.0* ..... 9
3.1. Membuka *software Creo Parametric 2.0* ..... 9
3.2. Membuat Objek Baru ..... 10
3.3. Mengenal *Interface Software Creo Parametric 2.0* ..... 12
3.4. Mengenal *Solid Editing* ..... 13
3.4.1. *Basic Solid* ..... 13
3.4.2. *Sketch Feature* ..... 15
3.4.2.1. *Sketch Plane and Reference* ..... 15
3.4.2.2. *Skectch Dialog Box* ..... 15
3.4.2.3. *Sketch Ribbon* ..... 16
3.4.2.4. *Skecting Geometry and Editing Geometry* ..... 16
3.4.3. *Extrude Feature* ..... 17
3.4.4. *Revolve Feature* ..... 18
3.4.5. *Shell feature* ..... 19
3.4.6. *Sweept Blend Feature* ..... 20
3.4.7. *Sweeps Feature* ..... 21
3.4.8. *Helical Sweep Feature* ..... 21
3.4.9. *Duplicating Features* ..... 22
3.4.9.1. *Mirror feature* ..... 22
3.4.9.2. *Copy and Paste Feature* ..... 23
3.4.9.3. *Patterns Feature* ..... 23
3.4.10. *Creating Assemblies* ..... 24
3.4.10.1. *Creating a New Assembly* ..... 25
3.4.10.2. *Component placement* ..... 25
3.4.11. *Miscellaneous Feature* ..... 27
3.4.11.1. *The Warp Feature* ..... 27
3.4.11.2. *Model Mass Properties* ..... 28
3.4.12. *Assembly Bill of Material and Cosmetics* ..... 29
3.4.12.1. *Assembly Bill of Material feature* ..... 29
3.4.12.2. *Model colors feature* ..... 30
3.4.12.3. *Explode views feature* ..... 30

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

3.4.12.4. *Creating cross section feature* ..... 31
3.5. Menghitung massa benda ..... 33

BAB IV *REDRAWING AND ASSEMBLING PART* MESIN BOR ..... 35
4.1. Mengenal *Redrawing* Mesin Bor ..... 35
4.2. Bagian-Bagian Utama Mesin Bor ..... 36
4.3. *Redrawing Parts* ..... 37
4.3.1. *Bolt* M12 ..... 37
4.3.2. *Column Support Base* ..... 43
4.3.3. *Base* ..... 47
4.3.4. *Table Support* ..... 61
4.3.5. *Table* ..... 74
4.3.6. *Head* ..... 84
4.3.7. *Pinion shaft* ..... 115
4.3.8. *Feed handle* ..... 123
4.3.9. *Knob* ..... 126
4.3.10. *Quill shaft* ..... 128
4.3.11. *Spindle shaft* ..... 135
4.3.12. *Stop collar* ..... 140
4.3.13. *Stop rod* ..... 143
4.3.14. *Pulley insert* ..... 146
4.3.15. *Quill spring cap* ..... 151
4.3.16. *Switch box* ..... 155
4.3.17. *Pulley cover* bawah ..... 157
4.3.18. *Pulley cover* atas ..... 165
4.3.19. *Spindle pulley* ..... 170
4.3.20. *Motor frame* ..... 173
4.3.21. *Motor cover* ..... 179
4.3.22. *Rotor* ..... 184
4.3.23. *Motor pulley* ..... 187
4.3.24. *Belt* ..... 191

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

4.3.25. *Stop motor* ..... 192
4.3.26. *Belt tension lock screw* ..... 194
4.4. *Proses Assembling Part* ..... 198
4.4.1. *Assembling base* ..... 198
4.4.2. *Assembling table* ..... 200
4.4.3. *Assembling motor* ..... 203
4.4.4. *Assembling head* ..... 207
4.4.5. *Assembling total* ..... 224

BAB V PENUTUP ..... 234

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

# DAFTAR GAMBAR

**Gambar 3.1.** Tampilan *Start Menu* ..... 9
**Gambar 3.2.** Tampilan awal *software Creo Parametric 2.0* ..... 9
**Gambar 3.3.** Kotak dialog *New Object* ..... 10
**Gambar 3.4.** Memilih satuan gambar ..... 10
**Gambar 3.5.** Tampilan *Interface Creo Parametric 2.0* ..... 11
**Gambar 3.6.** Kotak dialog *Model Display* ..... 11
**Gambar 3.7.** *Interface Creo Parametric 2.0* ..... 12
**Gambar 3.8.** *Default position datum plane* ..... 15
**Gambar 3.9.** *Sketch Dialog Box* ..... 16
**Gambar 3.10.** *Sketch Ribbon* ..... 16
**Gambar 3.11.** *Extrude Ribbon* ..... 17
**Gambar 3.12.** *Revolve Ribbon* ..... 18
**Gambar 3.13.** *Dashboard tool shell feature* ..... 19
**Gambar 3.14.** Contoh *part* hasil *shell* ..... 20
**Gambar 3.15.** *Sweept Blend Ribbon* ..... 20
**Gambar 3.16.** *Part* hasil *sweept blend* ..... 20
**Gambar 3.17.** *Sweeps Ribbon* ..... 21
**Gambar 3.18.** *Part hasil sweept* ..... 21
**Gambar 3.19.** *Helical Sweep Ribbon* ..... 22
**Gambar 3.20.** *Part* hasil *helical sweep* ..... 22
**Gambar 3.21.** *Part* dengan *mirror feature* ..... 23
**Gambar 3.22.** *Copy and Paste Feature* ..... 23
**Gambar 3.23.** *Patterns ribbon* ..... 24
**Gambar 3.24.** *New Dialog Box* ..... 25
**Gambar 3.25.** *Interface Assembly* ..... 25
**Gambar 3.26.** *Open part dialog box* ..... 26
**Gambar 3.27.** *Component Placement* ..... 26
**Gambar 3.28.** *Constraint types* ..... 26
**Gambar 3.29.** *Warp ribbon* ..... 27

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 3.30.** *Mass properties* ..... 28
**Gambar 3.31.** *Bill Of Material* ..... 29
**Gambar 3.32.** *Bill Of Material file* ..... 29
**Gambar 3.33.** *Appearance Gallery* ..... 30
**Gambar 3.34.** *View manager box* ..... 30
**Gambar 3.35.** *View manager properties* ..... 31
**Gambar 3.36.** *Explode views* ..... 31
**Gambar 3.37.** *Section* ..... 31
**Gambar 3.38.** *Section ribbon* ..... 32
**Gambar 3.39.** *Cross section* ..... 32
**Gambar 3.40.** *Display pada window* ..... 33
**Gambar 3.41.** *Display model properties* ..... 33
**Gambar 3.42.** *Display material* ..... 34
**Gambar 3.43.** Massa benda ..... 34
**Gambar 4.1** Mesin bor set ..... 35
**Gambar 4.3.1.** *Bolt* M12 ..... 37
**Gambar 4.3.1.1.** *Sketch* ..... 38
**Gambar 4.3.1.2.** *Extrude* ..... 38
**Gambar 4.3.1.3.** *Sketch* ..... 38
**Gambar 4.3.1.4.** *Extrude* ..... 39
**Gambar 4.3.1.5.** *Sketch* ..... 39
**Gambar 4.3.1.6.** *Sketch* ..... 40
**Gambar 4.3.1.7.** *Sweep* ..... 40
**Gamabar 4.3.1.8.** *Sketch* ..... 40
**Gambar 4.3.1.9.** *Sketch* ..... 41
**Gambar 4.3.1.10.** *Sweep* ..... 41
**Gambar 4.3.1.11.** *Chamfer* ..... 41
**Gambar 4.3.1.12.** *Sketch* ..... 42
**Gambar 4.3.1.13.** *Sketch* ..... 42
**Gambar 4.3.1.14.** *Helical sweep* ..... 43
**Gambar 4.3.2.** *Column support base* ..... 43

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.2.1.** *Sketch* ..... 43
**Gambar 4.3.2.2.** *Extrude* ..... 44
**Gambar 4.3.2.3.** *Sketch* ..... 44
**Gambar 4.3.2.4.** *Extrude to intersect with all surface* ..... 44
**Gambar 4.3.2.5.** *Pattern axis* ..... 45
**Gambar 4.3.2.6.** *Sketch* ..... 45
**Gambar 4.3.2.7.** *Extrude* ..... 45
**Gambar 4.3.2.8.** *Chamfer* 0.5 mm ..... 46
**Gambar 4.3.2.9.** *Chamfer* 1 mm ..... 46
**Gambar 4.3.2.10.** *Round* 1 mm ..... 46
**Gambar 4.3.3.** *Base* ..... 47
**Gambar 4.3.3.1.** *Sketch* ..... 47
**Gambar 4.3.3.2.** *Extrude* ..... 47
**Gambar 4.3.3.3.** *Chamfer* 15 mm ..... 48
**Gambar 4.3.3.4.** *Chamfer* 35 mm ..... 48
**Gambar 4.3.3.5.** *Traectory* ..... 48
**Gambar 4.3.3.6** *Sketch* ..... 49
**Gambar 4.3.3.7.** *Sweep* ..... 49
**Gambar 4.3.3.8.** *Sketch* ..... 49
**Gambar 4.3.3.9.** *Extrude to intersect with all surface* ..... 50
**Gambar 4.3.3.10.** *Sketch* ..... 50
**Gambar 4.3.3.11.** *Extrude to intersect with all surface* ..... 50
**Gambar 4.3.3.12.** *Sketch* ..... 51
**Gambar 4.3.3.13.** *Extrude* ..... 51
**Gambar 4.3.3.14.** *Sketch* ..... 51
**Gambar 4.3.3.15.** *Extrude* ..... 52
**Gambar 4.3.3.16.** *New plane* ..... 52
**Gambar 4.3.3.17.** *Mirror* ..... 52
**Gambar 4.3.3.18.** *Sketch* ..... 53
**Gambar 4.3.3.19.** *Extrude* ..... 53
**Gambar 4.3.3.20.** *Sketch* ..... 53

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.3.21.** *Extrude* ..... 54
**Gambar 4.3.3.22.** *Mirror* ..... 54
**Gambar 4.3.3.23.** *Sketch* ..... 54
**Gambar 4.3.3.24.** *Extrude* ..... 55
**Gambar 4.3.3.25.** *Mirror* ..... 55
**Gambar 4.3.3.26.** *Sketch* ..... 55
**Gambar 4.3.3.27.** *Exrude remove material* ..... 56
**Gambar 4.3.3.28.** *Sketch* ..... 56
**Gambar 4.3.3.29.** *Extrude to intersect with all surface* ..... 57
**Gambar 4.3.3.30.** *Round* 5 mm ..... 57
**Gambar 4.3.3.31.** *Round* 1 mm ..... 57
**Gambar 4.3.3.32.** *Sketch* ..... 58
**Gambar 4.3.3.33.** *Extrude to intersect with all surface* ..... 58
**Gambar 4.3.3.34.** *Sketch* ..... 59
**Gambar 4.3.3.35.** *Sketch* ..... 59
**Gambar 4.3.3.36.** *Helical sweep* ..... 59
**Gambar 4.3.3.37.** *Group* ..... 60
**Gambar 4.3.3.38.** *Pattern axis* ..... 60
**Gambar 4.3.4.** *Table support* ..... 61
**Gambar 4.3.4.1.** *Sketch* ..... 61
**Gambar 4.3.4.2.** *Extrude* ..... 62
**Gambar 4.3.4.3.** *New plane* ..... 62
**Gambar 4.3.4.4.** *Sketch* ..... 62
**Gambar 4.3.4.5.** *Extrude up to next surface* ..... 63
**Gambar 4.3.4.6.** *Sketch* ..... 63
**Gambar 4.3.4.7.** *Extrude* ..... 63
**Gambar 4.3.4.8.** *Sketch* ..... 64
**Gambar 4.3.4.9.** *Extrude* ..... 64
**Gambar 4.3.4.10.** *Sketch* ..... 64
**Gambar 4.3.4.11.** *Extrude up to next surface* ..... 65
**Gambar 4.3.4.12.** *Sketch* ..... 65

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.4.13.** *Sketch* ..... 65
**Gambar 4.3.4.14.** *Helical sweep* ..... 66
**Gambar 4.3.4.15.** *New plane* ..... 66
**Gambar 4.3.4.16.** *Sketch* ..... 66
**Gambar 4.3.4.17.** *Extrude up to next surface* ..... 67
**Gambar 4.3.4.18.** *Sketch* ..... 67
**Gambar 4.3.4.19.** *Extrude* ..... 68
**Gambar 4.3.4.20.** *Sketch* ..... 68
**Gambar 4.3.4.21.** *Extrude up to next surface* ..... 68
**Gambar 4.3.4.22.** *Sketch* ..... 69
**Gambar 4.3.4.23.** *Extrude up to next surface* ..... 69
**Gambar 4.3.4.24.** *Sketch* ..... 69
**Gambar 4.3.4.25.** *Extrude up to next surface* ..... 70
**Gambar 4.3.4.26.** *New plane* ..... 70
**Gambar 4.3.4.27.** *Sketch* ..... 70
**Gambar 4.3.4.28.** *Sketch* ..... 71
**Gambar 4.3.4.29.** *Helical sweep* ..... 71
**Gambar 4.3.4.30.** *Sketch* ..... 71
**Gambar 4.3.4.31.** *Traectory* ..... 72
**Gambar 4.3.4.32.** *Sketch* ..... 72
**Gambar 4.3.4.33.** *Sweep* ..... 72
**Gambar 4.3.4.34.** *Round* 0.5 mm ..... 73
**Gambar 4.3.4.35.** *Round* 2 mm ..... 73
**Gambar 4.3.4.36.** *Chamfer* 0.5 mm ..... 74
**Gambar 4.3.5.** *Table* ..... 74
**Gambar 4.3.5.1.** *Sketch* ..... 74
**Gambar 4.3.5.2.** *Extrude* ..... 75
**Gambar 4.3.5.3.** *Sketch* ..... 75
**Gambar 4.3.5.4.** *Extrude to intersect with all surface* ..... 76
**Gambar 4.3.5.5.** *Round* 7.5 mm ..... 76
**Gambar 4.3.5.6.** *Sketch* ..... 76

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.5.7.** *Extrude* ..... 77
**Gambar 4.3.5.8.** *New plane* ..... 77
**Gambar 4.3.5.9.** *Sketch* ..... 77
**Gambar 4.3.5.10.** *Extrude on both sides* ..... 78
**Gambar 4.3.5.11.** *Sketch* ..... 78
**Gambar 4.3.5.12.** *Extrude to intersect with all surface* ..... 78
**Gambar 4.3.5.13.** *Sketch* ..... 79
**Gambar 4.3.5.14.** *Extrude* ..... 79
**Gambar 4.3.5.15.** *Sketch* ..... 79
**Gambar 4.3.5.16.** *Sketch* ..... 80
**Gambar 4.3.5.17.** *New plane* ..... 80
**Gambar 4.3.5.18.** *Sketch* ..... 80
**Gambar 4.3.5.19.** *Profil rib* ..... 81
**Gambar 4.3.5.20.** *New plane* ..... 81
**Gambar 4.3.5.21.** *Sketch* ..... 81
**Gambar 4.3.5.22.** *Profile rib* ..... 82
**Gambar 4.3.5.23.** *Mirror* ..... 82
**Gambar 4.3.5.24.** *Sketch* ..... 82
**Gambar 4.3.5.25.** *Extrude* ..... 83
**Gambar 4.3.5.26.** *Round* 50 mm ..... 83
**Gambar 4.3.5.27.** *Chamfer* 1 mm ..... 83
**Gambar 4.3.6.** *Head* ..... 84
**Gambar 4.3.6.1.** *Sketch* ..... 84
**Gambar 4.3.6.2.** *Extrude on both sides* ..... 85
**Gambar 4.3.6.3.** *Shell* ..... 85
**Gambar 4.3.6.4.** *Sketch* ..... 85
**Gambar 4.3.6.5.** *Extrude* ..... 86
**Gambar 4.3.6.6.** *Sketch* ..... 86
**Gambar 4.3.6.7.** *Extrude* ..... 87
**Gambar 4.3.6.8.** *Sketch* ..... 87
**Gambar 4.3.6.9.** *Extrude* ..... 87

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.6.10.** *Sketch* ..... 88
**Gambar 4.3.6.11.** *Extrude* ..... 88
**Gambar 4.3.6.12.** *Sketch* ..... 88
**Gambar 4.3.6.13.** *Extrude* ..... 89
**Gambar 4.3.6.14.** *Sketch* ..... 89
**Gambar 4.3.6.15.** *Extrude* ..... 89
**Gambar 4.3.6.16.** *Sketch* ..... 90
**Gambar 4.3.6.17.** *Extrude* ..... 90
**Gambar 4.3.6.18.** *Sketch* ..... 90
**Gambar 4.3.6.19.** *Extrude* ..... 91
**Gambar 4.3.6.20.** *Sketch* ..... 91
**Gambar 4.3.6.21.** *Extrude* ..... 91
**Gambar 4.3.6.22.** *Sketch* ..... 92
**Gambar 4.3.6.23.** *Extrude* ..... 92
**Gambar 4.3.6.24.** *Sketch* ..... 92
**Gambar 4.3.6.25.** *Extrude to intersect with all surface* ..... 93
**Gambar 4.3.6.26.** *Sketch* ..... 93
**Gambar 4.3.6.27.** *Extrude* ..... 93
**Gambar 4.3.6.28.** *New plane* ..... 94
**Gambar 4.3.6.29.** *Sketch* ..... 94
**Gambar 4.3.6.30.** *Sketch* ..... 94
**Gambar 4.3.6.31.** *Helical sweep* ..... 95
**Gambar 4.3.6.32.** *Sketch* ..... 95
**Gambar 4.3.6.33.** *Extrude* ..... 95
**Gambar 43.6.34.** *Sketch* ..... 96
**Gambar 4.3.6.35.** *Extrude* ..... 96
**Gambar 4.3.6.36.** *Sketch* ..... 96
**Gambar 4.3.6.37.** *Extrude* ..... 97
**Gambar 4.3.6.38.** *Sketch* ..... 97
**Gambar 4.3.6.39.** *Extrude*..... 97
**Gambar 4.3.6.40.** *New plane* ..... 98

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.6.41.** *Sketch* ..... 98
**Gambar 4.3.6.42.** *Sketch* ..... 98
**Gambar 4.3.6.43.** *Helical sweep* ..... 99
**Gambar 4.3.6.44.** *Group* ..... 99
**Gambar 4.6.3.45.** *Pattern direction* ..... 100
**Gambar 4.3.6.46.** *Sketch* ..... 100
**Gambar 4.3.6.47.** *Extrude* ..... 100
**Gambar 4.3.6.48.** *New plane* ..... 101
**Gambar 4.3.6.49.** *Sketch* ..... 101
**Gambar 4.3.6.50.** *Extrude* ..... 101
**Gambar 4.3.6.51.** *Sketch* ..... 102
**Gambar 4.3.6.52.** *Extrude* ..... 102
**Gambar 4.3.6.53.** *New plane* ..... 102
**Gambar 4.3.6.54.** *Sketch* ..... 103
**Gambar 4.3.6.55.** *Sketch* ..... 103
**Gambar 4.3.6.56.** *Helical sweep* ..... 103
**Gambar 4.3.6.57.** *Sketch* ..... 104
**Gambar 4.3.6.58.** *Sketch* ..... 104
**Gambar 4.3.6.59.** *Helical sweep* ..... 104
**Gambar 4.3.6.60.** *Sketch* ..... 105
**Gambar 4.3.6.61.** *Extrude* ..... 105
**Gambar 4.3.6.62.** *New plane* ..... 105
**Gambar 4.3.6.63.** *Sketch* ..... 106
**Gambar 4.3.6.64.** *Sketch* ..... 106
**Gambar 4.3.6.65.** *Helical sweep* ..... 106
**Gambar 4.3.6.66.** *Sketch* ..... 107
**Gambar 4.3.6.67.** *Extrude* ..... 107
**Gambar 4.3.6.68.** *New plane* ..... 107
**Gambar 4.3.6.69.** *Sketch* ..... 108
**Gambar 4.3.6.70.** *Sketch* ..... 108
**Gambar 4.3.6.71.** *Helical sweep* ..... 108

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.6.72.** *New group* ..... 109
**Gambar 4.3.6.73.** *Pattern direction* ..... 109
**Gambar 4.3.6.74.** *Sketch* ..... 109
**Gambar 4.3.6.75.** *Extrude* ..... 110
**Gambar 4.3.6.76.** *New plane* ..... 110
**Gambar 4.3.6.77.** *Sketch* ..... 110
**Gambar 4.3.6.78.** *Sketch* ..... 111
**Gambar 4.3.6.79.** *Helical sweep* ..... 111
**Gambar 4.3.6.80.** *New group* ..... 111
**Gambar 4.3.6.81.** *Pattern direction* ..... 112
**Gambar 4.3.6.82.** *New plane* ..... 112
**Gambar 4.3.6.83.** *Sketch* ..... 113
**Gambar 4.3.6.84.** *Sketch* ..... 113
**Gambar 4.3.6.85.** *Helical sweep* ..... 113
**Gambar 4.3.6.86.** *Pattern direction* ..... 114
**Gambar 4.3.6.87.** *Round* 1 mm ..... 114
**Gambar 4.3.6.88.** *Chamfer* 1 mm ..... 115
**Gambar 4.3.7.** *Pinion shaft* ..... 115
**Gambar 4.3.7.1.** *Sketch* ..... 115
**Gambar 4.3.7.2.** *Revolve* ..... 116
**Gambar 4.3.7.3.** *New plane* ..... 116
**Gambar 4.3.7.4.** *Sketch* ..... 116
**Gambar 4.3.7.5.** *Extrude* ..... 117
**Gambar 4.3.7.6.** *Sketch* ..... 117
**Gambar 4.3.7.7.** *Sketch* ..... 117
**Gambar 4.3.7.8.** *Helical sweep* ..... 118
**Gambar 4.3.7.9.** *New group* ..... 118
**Gambar 4.3.7.10.** *Pattern axis* ..... 118
**Gambar 4.3.7.11.** *Sketch* ..... 119
**Gambar 4.3.7.12.** *Sketch* ..... 119
**Gambar 4.3.7.13.** *Sketch* ..... 120

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.7.14.** *Helical sweep* ..... 120
**Gambar 4.3.7.15.** *Sketch* ..... 120
**Gambar 4.3.7.16.** *Extrude up to next surface* ..... 121
**Gambar 4.3.7.17.** *Chamfer* ..... 121
**Gambar 4.3.7.18.** *Pattern axis* ..... 121
**Gambar 4.3.7.19.** *Round* ..... 122
**Gambar 4.3.7.20.** *Pattern axis* ..... 122
**Gambar 4.3.7.21.** *Chamfer* ..... 122
**Gambar 4.3.8.** *Feed handle* ..... 123
**Gambar 4.3.8.1.** *Sketch* ..... 123
**Gambar 4.3.8.2.** *Extrude on both sides* ..... 123
**Gambar 4.3.8.3.** *Sketch* ..... 124
**Gambar 4.3.8.4.** *Sketch* ..... 124
**Gambar 4.3.8.5.** *Helical sweep* ..... 124
**Gambar 4.3.8.6.** *Sketch* ..... 125
**Gambar 4.3.8.7.** *Sketch* ..... 125
**Gambar 4.3.8.8.** *Helical sweep* ..... 125
**Gambar 4.3.9.** *Knob* ..... 126
**Gambar 4.3.9.1.** *Sketch* ..... 126
**Gambar 4.3.9.2.** *Revolve* ..... 126
**Gambar 4.3.9.4.** *Chamfer* ..... 127
**Gambar 4.3.9.5.** *Sketch* ..... 127
**Gambar 4.3.9.5.** *Sketch* ..... 127
**Gambar 4.3.9.6.** *Helical sweep* ..... 128
**Gambar 4.3.10.** *Quill shaft* ..... 128
**Gambar 4.3.10.1.** *Sketch* ..... 129
**Gambar 4.3.10.2.** *Extrude* ..... 129
**Gambar 4.3.10.3.** *New plane* ..... 129
**Gambar 4.3.10.4.** *Sketch* ..... 130
**Gambar 4.3.10.5.** *Extrude* ..... 130
**Gambar 4.3.10.6.** *Sketch* ..... 130

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.10.7.** *Extrude* ..... 131
**Gambar 4.3.10.8.** *Sketch* ..... 131
**Gambar 4.3.10.9.** *Extrude* ..... 131
**Gambar 4.3.10.10.** *Sketch* ..... 132
**Gambar 4.3.10.11.** *Extrude* ..... 132
**Gambar 4.3.10.12.** *Round* ..... 132
**Gambar 4.3.10.13.** *Chamfer* 1 mm ..... 133
**Gambar 4.3.10.14.** *Chamfer* 0,5 mm ..... 133
**Gambar 4.3.10.15.** *Sketch* ..... 133
**Gambar 4.3.10.16.** *Extrude on both sides* ..... 134
**Gambar 4.3.10.17.** *Pattern direction* ..... 134
**Gambar 4.3.10.18.** *Sketch* ..... 135
**Gambar 4.3.10.19.** *Extrude to selected point* ..... 135
**Gambar 4.3.11.** *Spindle shaft* ..... 135
**Gambar 4.3.11.1.** *Sketch* ..... 136
**Gambar 4.3.11.2.** *Revolve* ..... 136
**Gambar 4.3.11.3.** *Sketch* ..... 136
**Gambar 4.3.11.4.** *Extrude up to next surface* ..... 137
**Gambar 4.3.11.5.** *Pattern axis* ..... 137
**Gambar 4.3.11.6.** *Round* ..... 138
**Gambar 4.3.11.7.** *New plane* ..... 138
**Gambar 4.3.11.8.** *Sketch* ..... 138
**Gambar 4.3.11.9.** *Trajectory* ..... 139
**Gambar 4.3.11.10.** *Sketch* ..... 139
**Gambar 4.3.11.11.** *Sweep* ..... 139
**Gambar 4.3.11.12.** *Chamfer* ..... 140
**Gambar 4.3.12.** *Stop collar* ..... 140
**Gambar 4.3.12.1.** *Sketch* ..... 140
**Gambar 4.3.12.2.** *Extrude* ..... 141
**Gambar 4.3.12.3.** *Sketch* ..... 141
**Gambar 4.3.12.4.** *Extrude* ..... 141

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.12.5.** *Sketch* ..... 142
**Gambar 4.3.12.6.** *Extrude to intersect with all surface* ..... 142
**Gambar 4.3.12.7.** *Sketch* ..... 142
**Gambar 4.3.12.8.** *Extrude* ..... 143
**Gambar 4.3.13.** *Stop rod* ..... 143
**Gambar 4.3.13.1.** *Sketch* ..... 143
**Gambar 4.3.13.2.** *Revolve* ..... 144
**Gambar 4.3.13.3.** *Sketch* ..... 144
**Gambar 4.3.13.4.** *Sketch* ..... 144
**Gambar 4.3.13.5.** *Helical sweep* ..... 145
**Gambar 4.3.13.6.** *Sketch* ..... 145
**Gambar 4.3.13.7.** *Sketch* ..... 145
**Gambar 4.3.13.8.** *Helical sweep* ..... 146
**Gambar 4.3.13.9.** *Chamfer* ..... 146
**Gambar 4.3.14.** *Pulley insert* ..... 146
**Gambar 4.3.14.1.** *Sketch* ..... 147
**Gambar 4.3.14.2.** *Revolve* ..... 147
**Gambar 4.3.14.3.** *Sketch* ..... 147
**Gambar 4.3.14.4.** *Extrude to intersect with all surface* ..... 148
**Gambar 4.3.14.5.** *Sketch* ..... 148
**Gambar 4.3.14.6.** *Extrude on both sides* ..... 148
**Gambar 4.3.14.7.** *New plane* ..... 149
**Gambar 4.3.14.8.** *Sketch* ..... 149
**Gambar 4.3.14.9.** *Extrude* ..... 149
**Gambar 4.3.14.10.** *Pattern axis* ..... 150
**Gambar 4.3.14.11.** *Chamfer* ..... 150
**Gambar 4.3.15.** *Quill spring cap* ..... 151
**Gambar 4.3.15.1.** *Sketch* ..... 151
**Gambar 4.3.15.2.** *Revolve* ..... 152
**Gambar 4.3.15.3.** *Sketch* ..... 152
**Gambar 4.3.15.4.** *Extrude on both sides* ..... 152

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.15.5.** *Pattern axis* ..... 153
**Gambar 4.3.15.6.** *New plane* ..... 153
**Gambar 4.3.15.7.** *Sketch* ..... 153
**Gambar 4.3.15.8.** *Extrude* ..... 154
**Gambar 4.3.15.9.** *Sketch* ..... 154
**Gambar 4.3.15.10.** *Extrude to intersect with all surface* ..... 154
**Gambar 4.3.16.** *Switch box* ..... 155
**Gambar 4.3.16.1.** *Sketch* ..... 155
**Gambar 4.3.16.2.** *Extrude* ..... 155
**Gambar 4.3.16.3.** *Trajectory* ..... 156
**Gambar 4.3.16.4.** *Sketrch* ..... 156
**Gambar 4.3.16.5.** *Sweep* ..... 156
**Gambar 4.3.16.6.** *Sketch* ..... 157
**Gambar 4.3.16.7.** *Extrude to intersect with all serface* ..... 157
**Gambar 4.3.17.** *Pulley cover* bawah ..... 157
**Gambar 4.3.17.1.** *Sketch* ..... 158
**Gambar 4.3.17.2.** *Extrude* ..... 158
**Gambar 4.3.17.3.** *Trajectory* ..... 159
**Gambar 4.3.17.4.** *Sketch* ..... 159
**Gambar 4.3.17.5.** *Sweep* ..... 159
**Gambar 4.3.17.6.** *Trajectory* ..... 160
**Gambar 4.3.17.7.** *Sketch* ..... 160
**Gambar 4.3.17.8.** *Sweep* ..... 160
**Gambar 4.3.17.9.** *Trajectory* ..... 161
**Gambar 4.3.17.10.** *Sketch* ..... 161
**Gambar 4.3.17.11.** *Sweep* ..... 161
**Gambar 4.3.17.12.** *Trajectory* ..... 162
**Gambar 4.3.17.13.** *Sketch* ..... 162
**Gambar 4.3.17.14.** *Sweep* ..... 162
**Gambar 4.3.17.15.** *Sketch* ..... 163
**Gambar 4.3.17.16.** *Extrude* ..... 163

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.17.17.** *Sketch* ..... 163
**Gambar 4.3.17.18.** *Extrude to intersect with all surface* ..... 164
**Gambar 4.3.17.19.** *Sketch* ..... 164
**Gambar 4.3.17.20.** *Extrude to intersect with all surface* ..... 164
**Gambar 4.3.17.21.** *Round* ..... 165
**Gambar 4.3.18.** *Pulley cover* atas ..... 165
**Gambar 4.3.18.1.** *Sketch* ..... 165
**Gambar 4.3.18.2.** *Extrude* ..... 166
**Gambar 4.3.18.3.** *Trajectory* ..... 166
**Gambar 4.3.18.4.** *Sketch* ..... 166
**Gambar 4.3.18.5.** *Sweep* ..... 167
**Gambar 4.3.18.6.** *Trajectory* ..... 167
**Gambar 4.3.18.7.** *Sketch* ..... 167
**Gambar 4.3.18.8.** *Sweep* ..... 168
**Gambar 4.3.18.9.** *Sketch* ..... 168
**Gambar 4.3.18.10.** *Extrude* ..... 168
**Gambar 4.3.18.11.** *Sketch* ..... 169
**Gambar 4.3.18.12.** *Extrude* ..... 169
**Gambar 4.3.18.13.** *Round* ..... 169
**Gambar 4.3.19.** *Spindle pulley* ..... 170
**Gambar 4.3.19.1.** *Sketch* ..... 170
**Gambar 4.3.19.2.** *Revolve* ..... 171
**Gambar 4.3.19.3.** *Chamfer* ..... 171
**Gambar 4.3.19.4.** *Sketch* ..... 172
**Gambar 4.3.19.5.** *Extrude to intersect with all surface* ..... 172
**Gambar 4.3.19.6.** *Sketch* ..... 172
**Gambar 4.3.19.7.** *Sketch* ..... 173
**Gambar 4.3.19.8.** *Helical sweep* ..... 173
**Gambar 4.3.20.** *Motor frame* ..... 173
**Gambar 4.3.20.1.** *Sketch* ..... 174
**Gambar 4.3.20.2.** *Extrude* ..... 174

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.20.3.** *Sketch* ..... 175
**Gambar 4.3.20.4.** *Extrude to intersect with all surface* ..... 175
**Gambar 4.3.20.5.** *Pattern axis* ..... 175
**Gambar 4.3.20.6.** *Mirror* ..... 176
**Gambar 4.3.20.7.** *New plane* ..... 176
**Gambar 4.3.20.8.** *Sketch* ..... 176
**Gambar 4.3.20.9.** *Extrude* ..... 177
**Gambar 4.3.20.10.** *Sketch* ..... 177
**Gambar 4.3.20.11.** *Extrude* ..... 177
**Gambar 4.3.20.12.** *Pattern direction* ..... 178
**Gambar 4.3.20.13.** *Round* ..... 178
**Gambar 4.3.21.** *Motor cover* ..... 179
**Gambar 4.3.21.1.** *Sketch* ..... 179
**Gambar 4.3.21.2.** *Revolve* ..... 180
**Gambar 4.3.21.3.** *Sketch* ..... 180
**Gambar 4.3.21.4.** *Extrude* ..... 180
**Gambar 4.3.21.5.** *Pattern axis* ..... 181
**Gambar 4.3.21.6.** *Sketch* ..... 181
**Gambar 4..3.21.7.** *Extrude* ..... 181
**Gambar 4.3.21.8.** *Sketch* ..... 182
**Gambar 4.3.21.9.** *Extrude up to next surface* ..... 182
**Gambar 4.3.21.10.** *Sketch* ..... 182
**Gambar 4.3.21.11.** *Extrude to intersect with all surface* ..... 183
**Gambar 4.3.21.12.** *New group* ..... 183
**Gambar 4.3.21.13.** *Pattern axis* ..... 183
**Gambar 4.3.21.14.** *Chamfer* ..... 184
**Gambar 4.3.22.** *Rotor* ..... 184
**Gambar 4.3.22.1.** *Sketch* ..... 184
**Gambar 4.3.22.2.** *Revolve* ..... 185
**Gambar 4.3.22.3.** *Chamfer* ..... 185
**Gambar 4.3.22.4.** *Sketch* ..... 185

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.22.5.** *Sketch* ..... 186
**Gambar 4.3.22.6.** *Pattern axis* ..... 186
**Gambar 4.3.22.7.** *Sketch* ..... 187
**Gambar 4.3.22.8.** *Extrude* ..... 187
**Gambar 4.3.23.** *Motor pulley* ..... 187
**Gambar 4.3.23.1.** *Sketch* ..... 188
**Gambar 4.3.23.2.** *Revolve* ..... 188
**Gambar 4.3.23.3.** *Chamfer* ..... 189
**Gambar 4.3.23.4.** *Sketch* ..... 189
**Gambar 4.3.23.5.** *Extrude to intersect with all surface* ..... 189
**Gambar 4.3.23.6.** *Sketch* ..... 190
**Gambar 4.3.23.7.** *Sketch* ..... 190
**Gambar 4.3.23.8.** *Sketch* ..... 190
**Gambar 4.3.24.** *Pulley* ..... 191
**Gambar 4.3.24.1.** *Sketch* ..... 191
**Gambar 4.3.24.2.** *Trajectory* ..... 191
**Gambar 4.3.24.3.** *Sketch* ..... 192
**Gambar 4.3.24.4.** *Sweep* ..... 192
**Gambar 4.3.25.** *Motor stop* ..... 192
**Gambar 4.3.25.1.** *Sketch* ..... 193
**Gambar 4.3.25.2.** *Revolve* ..... 193
**Gambar 4.3.25.3.** *Chamfer* ..... 193
**Gambar 4.3.26.** *Belt tension lock screw* ..... 194
**Gambar 4.3.26.1.** *Sketch* ..... 194
**Gambar 4.3.26.2.** *Extrude* ..... 195
**Gambar 4.3.26.3.** *Sketch* ..... 195
**Gambar 4.3.26.4.** *Extrude* ..... 195
**Gambar 4.3.26.5.** *Chamfer* ..... 196
**Gambar 4.3.26.6.** *Sketch* ..... 196
**Gambar 4.3.26.7.** *Sketch* ..... 196
**Gambar 4.3.26.8.** *Helical sweep* ..... 197

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.3.26.9.** *Round* ..... 197
**Gambar 4.4.1.1.** *Base placement* ..... 198
**Gambar 4.4.1.2.** *Column support base placement* ..... 198
**Gambar 4.4.1.3.** *Column support placement* ..... 199
**Gambar 4.4.1.4.** *Bolt M8 placement* ..... 199
**Gambar 4..4.1.5.** *Pattern bolt m8* ..... 200
**Gambar 4.4.2.1.** *Table support placement* ..... 200
**Gambar 4.4.2.2.** *Table placement* ..... 201
**Gambar 4.4.2.3.** *Bolt placement* ..... 201
**Gambar 4.4.2.4.** *Table lock handle placement* ..... 201
**Gambar 4.4.2.5.** *Pin placement* ..... 202
**Gambar 4.4.2.6.** *Washer placement* ..... 202
**Gambar 4.4.2.7.** *Bolt M12 placement* ..... 202
**Gambar 4.4.3.1.** *Motor cover placement* ..... 203
**Gambar 4.4.3.2.** *Ball bearing motor placement* ..... 203
**Gambar 4.4.3.3.** *Rotor placement* ..... 204
**Gambar 4.4.3.4.** *Ball bearing motor placement* ..... 204
**Gambar 4.4.3.5.** *Motor frame placemen* ..... 204
**Gambar 4.4.3.6.** *Motor cover placement* ..... 205
**Gambar 4.4.3.7.** *Bolt M4 motor placement* ..... 205
**Gambar 4.4.3.8.** *Pattern bolt m4 motor* ..... 206
**Gambar 4.4.3.9.** *Nut M4 motor placement* ..... 206
**Gambar 4.4.3.10.** *Pattern nut m4 motor* ..... 206
**Gambar 4.4.4.1.** *Head placement* ..... 207
**Gambar 4.4.4.2.** *Pinion shaft plavement* ..... 207
**Gambar 4.4.4.3.** *Feed handle placement* ..... 208
**Gambar 4.4.4.4.** *Pattern feed handle* ..... 208
**Gambar 4.4.4.5.** *Knob placement* ..... 209
**Gambar 4.4.4.6.** *Pattern knob* ..... 209
**Gambar 4.4.4.7.** *Quill gasket placement* ..... 209
**Gambar 4.4.4.8.** *Quill shaft placement* ..... 210

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.4.4.9.** *Ball bearing placement* ..... 210
**Gambar 4.4.4.10.** *Spindle shaft placement* ..... 211
**Gambar 4.4.4.11.** *Stop collar placement* ..... 211
**Gambar 4.4.4.12.** *Nut M5 placement* ..... 211
**Gambar 4.4.4.13.** *Bolt M5 placement* ..... 212
**Gambar 4.4.4.14.** *Washer id6 placement* ..... 212
**Gambar 4.4.4.15.** *Stop rod placement* ..... 213
**Gambar 4.4.4.16.** *Nut M5 placement* ..... 213
**Gambar 4.4.4.17.** *Nut M8 placement* ..... 213
**Gambar 4.4.4.18.** *Ball bearing OD40 placement* ..... 214
**Gambar 4.4.4.19.** *Ball bearing OD40 placement* ..... 214
**Gambar 4.4.4.20.** *Pulley insert placement* ..... 215
**Gambar 4.4.4.21.** *Pin head placement* ..... 215
**Gambar 4.4.4.22.** *Nut M8 placement* ..... 215
**Gambar 4.4.4.23.** *Fit set crewM8 placement* ..... 216
**Gambar 4.4.4.24.** *Spring retainer placement* ..... 216
**Gambar 4.4.4.25.** *Quill spring cap placement* ..... 217
**Gambar 4.4.4.26.** *Nut M10 placement* ..... 217
**Gambar 4.4.4.27.** *Switch box placement* ..... 218
**Gambar 4.4.4.28.** *Switch placement* ..... 219
**Gambar 4.4.4.29.** *Rubber bushing placement* ..... 219
**Gambar 4.4.4.30.** *Pattern rubbing bushing* ..... 220
**Gambar 4.4.4.31.** *Pattern rubbing bushing* ..... 220
**Gambar 4.4.4.32.** *Lower pulley cover placement* ..... 221
**Gambar 4.4.4.33.** *Upper pulley cover placement* ..... 221
**Gambar 4.4.4.34.** *Screw M6 placement* ..... 222
**Gambar 4.4.4.35.** *Pattern screw M6* ..... 222
**Gambar 4.4.4.36.** *Pattern screw M6* ..... 222
**Gambar 4.4.4.37.** *Spindle pulley placement* ..... 223
**Gambar 4.4.4.38.** *Screw M3 placement* ..... 223

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

**Gambar 4.4.5.1.** *Assembling base placement* ..... 224
**Gambar 4.4.5.2.** *Assembling table placement* ..... 225
**Gambar 4.4.5.3.** *Assembling head placement* ..... 225
**Gambar 4.4.5.4.** *Assembling motor placement* ..... 226
**Gambar 4.4.5.5.** *Screw set placement* ..... 227
**Gambar 4.4.5.6.** *Screw set placement* ..... 227
**Gambar 4.4.5.7.** *Stop motor placement* ..... 228
**Gambar 4.4.5.8.** *Spring placement* ..... 229
**Gambar 4.4.5.9.** *Belt tension lock screw placement* ..... 229
**Gambar 4.4.5.10.** *Bolt M8 placement* ..... 230
**Gambar 4.4.5.11.** *Motor pulley placement* ..... 231
**Gambar 4.4.5.12.** *Belt placement* ..... 232
**Gambar 4.4.5.13.** *Assembling total bench drill* ..... 232

UNIVERSITAS
GADJAH MADA
**REDRAWING DRILL MACHINE MERK WEST LAKE TIPE ZHX-13 MENGGUNAKAN SOFTWARE CREO PARAMETRIC 2.0**
ALAN SAPUTRO, Ir. Bambang Suharnadi, M.T.
**Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/**

# DAFTAR TABEL

**Tabel 3.1** *Skecth feature* ..... 16
**Tabel 3.2** *Extrude feature* ..... 18
**Tabel 3.3** *Revolve feature* ..... 19
**Tabel 3.4** *Pattern feature* ..... 24
**Tabel 3. 5** *Assembly contraint feature* ..... 27
**Tabel 3.6** *Miscellaneous Feature* ..... 28
**Tabel 3.7** *Cross Section feature* ..... 32