A

Abbreviations - 280
Additives - 21, 45, 130, 139-40, 168
Additives, fuel - see enhancers, fuel
Adiabatic (heating) - 95, 126-27, 159-60, 177, 194, 196, 204, 253, 264, 281
Aerated nozzle - 167
Aftercooling - 70, 281-82
Air cooled engines - 47, 84
Air density - 29, 72, 103-05, 107, 113-19, 137-38, 150, 170, 172, 180, 197, 200, 229, 233-34, 237, 240, 244, 251-52, 260, 266, 279
Air density gage - 114-15, 118, 262
Air density, water grains - 117
Air density pressure correction table - 116
Air int. path. vol. - 105-06, 163, 188, 253, 271, 282
Air pressure into injectors - 128
Air scoop, polished - 57
Air scoop pressure - 188, 253-54, 280
Air to fuel ratio - 18, 20, 24, 27, 68, 71-74, 87, 89-83, 96, 98-107, 109, 113, 119-20, 125, 130-132, 136, 138, 140-45, 163, 165, 172, 185, 193, 195-96, 198-201, 203-04, 205-09, 211, 219, 221, 227, 229, 232-39, 241-42, 246, 255, 258-59, 262, 265-66, 269, 271, 279
Air to fuel ratio, air standard - 99
Air to fuel ratio, methanol standard - 98-99
Air to fuel ratio tables - 110
Alcohol types - 23
Aldehydes (exhaust contaminants) - 108-09, 112, 210, 221, 224-25, 259, 262, 265
Algon fuel injection - 32
Allen Johnson engine photo - 62
A-Nostalgia fuel dragster, Ray Hadford - 43
APBA boat racing - 34, 293
Arao Engineering (4 valve V-8 heads) - 271, 292
Area specific weight loss (ASWL - corrosion) - 112
Atmospheric effects - 20, 50, 97, 104, 122
Atomization - 120-21, 125, 128, 153, 156-58, 163, 164, 166-67, 183, 188-89, 191, 194, 198, 201, 204-07, 209, 218, 239, 241, 263
Atomization, definition - 156
Author's blown alcohol Chrysler Hemi setup - 56, 69, 119, 141, 144, 170, 186, 190, 232-43
Auto-ignition (fuel self ignition) - 24, 96, 130-31, 195-96, 199-200, 202, 264, 294
Autolite spark plug - 249

B

Backfire - 52, 94, 102, 106, 119, 126-27, 159, 162, 171, 198, 209, 225-26, 233, 236, 243, 253, 265, 281
BAE methanol engine photo - 62
Barometer - 41, 90, 113, 114-15, 118, 138, 147, 241
Barometric pressure - 91, 104, 114-17, 123, 137-38, 240, 262
Batten 4 valve engine - 271
BDK valve (FI high flow bypass valve) - 35, 41
Best burn ratio (AFR value) - 93, 96-100, 103-04, 119, 133, 149, 180-81, 208, 210-11, 238, 259
Best power ratio (AFR value) - 98-99
Big Block V-8 engine - 19, 32, 34, 37, 52, 58-60, 66, 72, 87, 118, 125, 149, 162, 189, 231, 246, 248, 252, 271, 299, 301
Blend, gasoline - 21, 74-75, 120, 122-23, 129, 131, 133-35, 139-40, 144, 147, 179, 198, 200-202, 258, 260, 263, 295
Blending methanol with gasoline - 130, 133-34, 147, 179, 225, 263
Blower boost - 60, 68-69, 213, 244, 251, 270
Blower displacement - 54, 56, 66, 261
Blower inlet - 56, 171, 191
Blower overdrive - 32, 56, 67, 72, 90, 137, 184, 233, 236, 239-40, 244, 251, 266, 274-75
Blower restraint (safety) - 162, 226
Blown alcohol (supercharged) - 19, 56-62, 65, 70, 72, 87, 89, 125, 132, 135, 136, 150, 164-65, 169-73, 190-91, 210, 226, 234-36, 238, 242, 244, 275, 269-70, 273, 302-04
Blown alcohol idle setup - 170
Blown alcohol power levels - 89, 132, 236, 242-43, 257, 273
Blown gas (supercharged) - 56, 70, 130, 251
Bluing - 250
BMEP (brake mean effective pressure) - 211, 280
Boat racing - 77, 78
Boiling point (fuel) - 74-75, 86, 122-27, 133, 158-59, 158-59, 177, 182-83, 200, 260, 262-64
Boiling point, methanol (table) - 183
Bonneville (land speed racing) - 32-33, 50, 270
Boost (supercharger) - 17, 27-29, 34, 43, 49-50, 54-55, 60-61, 66-72, 80, 89, 91, 95, 102, 106, 109, 114, 123-24, 126-28, 130-33, 135, 155, 158, 164, 167-68, 171-76, 180-83, 189, 191, 195-97, 207, 213-14, 224, 226, 233-35, 238, 244,

Boost (supercharger) *continued* - 251-53, 257-58, 263, 267-270, 272, 274-75, 298
Boost lag elimination, turbocharger - 173
Brake specific fuel consumption or BSFC - 67, 141, 149-50, 186, 263, 279-80
Braswell carb. high capacity float bowl - 49
Brunton Air Density Gage - 118
BSFC - 67, 149-150, 279-80
BSFC table for various fuels - 149
BTU's of energy - 73, 182, 206-08, 280
Buick - 65
Burst panel, manifold (backfire relief) - 225-26

C

CD ignitions - 212
Calculation for air scoop pressure (CASS) - 253-54
Calc. for air to fuel ratios - 97-105
Calc. for atmospheric effects - 104
Calc. for atomic weight - 96
Calc. for condensation (intake air) - 251-52
Calc. for boost / air density - 132, 251
Calc. for compression heating - 196
Calc. for equivalence ratio - 211
Calc. for exhaust gas residual - 110
Calc. for fuel pump size requirement - 132
Calc. for fuel weight / volume - 78
Calc. for hydraulic lock at TDC - 132
Calc. for Lambda (fuel mixture ratio) - 110
Calc. for horsepower from boost - 132
Calc. for octane rating - 129
Calc. for oxygen in methanol - 25
Calc. for fuels physical relationships - 279
Calc. for rich mixture - 105
Calc. for total jet area / fuel pressure - 234-37
Calc. for vapor density - 181
Calc. for weather correction - 115-17
Calculators, tuning - 118
Camaro - 303
Camshaft locat'n - 153-54, 160, 193, 263, 277, 288
Carbon fiber - 38-39, 71-72, 191
Carbon monoxide - 74, 91-95, 102, 108-09, 210, 220, 225, 259, 262, 265
Carbon build up - 213
Carbon Press, Smokey Yunick books - 278
Carburetor - 7, 27, 32, 34, 37, 47-52, 54-55, 61, 70, 77, 79-80, 89, 105, 113, 120-21, 123-24, 126-27, 133-34, 140, 145, 155-58, 163-65, 169-174, 187-89, 215, 226, 229, 231, 236, 254-55, 257,
Carburetor *continued* - 261, 263, 266, 270, 277, 281, 289, 292, 296, 302-05
Carb., CSU carb components - 164, 292
CART Champ cars reference - 35
Centrifugal supercharger - 38, 123, 169, 172-75
Charge-air cooling (intake) - 17, 25, 27-28, 67-72, 131-32, 175-76, 195-97, 212, 242, 258, 263, 270-71, 273, 281
Charge-air cooling, ice water - 175
Checker, Schuck's, Kragen TF-FC team - 56
Chemistry of fuels - 25, 29, 73-75, 78-83, 89-112, 115-119, 138, 144, 146, 147, 156-57, 178-83, 194-96, 199-202, 209-14, 218, 221, 223-25, 227, 246, 279, 280, 282
Chevelle - 86
Chevrolet (Chevy) - 29, 62, 66, 72, 100-01, 119, 185, 252, 277-78, 295, 301, 303
Chevrolet 396 big port example - 185
Chevy, Minor Bros. hemi engine photo - 62
Chrysler - 303
Chrysler Clinic - 205
Chrysler D-4, D-5 cylinder head - 185-87, 190, 281
Chrysler Labs methanol fuel loop tests - 72
Chrysler Performance Clinic - 205
Circle Boat - 77
Circle Track - 66, 77
Closed loop EFI - 105, 246, 266
Combustion stability - 213
Combustion temperature range - 28, 124, 195-96, 198, 202, 208, 210, 253, 258, 275
Combustion time at speed table - 144
Competition Fuel Systems - 274
Compression cycle - 193-202
Compression effect on exhaust residual - 220
Compression limit - 70, 134-35
Compression ratio - 17, 24, 27-29, 56, 66-69, 73, 84, 95, 102, 111, 119, 130-32, 134-36, 197, 206, 258-60, 262-63, 267, 269, 280-81
Condensation (mixture) - 52, 66, 70, 149, 173, 185, 189, 251, 258-59, 263
Cooling from vaporization - 29, 52, 65, 70-73, 84-85, 124, 130, 141, 159, 177, 180-83, 195-97, 201, 205, 209, 219-20, 242, 251-53, 258-60, 262, 264, 283
Corrosion - 45, 47, 50, 81-82, 86, 88, 111-12, 133, 135, 138-40, 168, 174, 225, 257, 261, 263
Costs - 32, 74, 136, 275

Cost per horsepower - 136, 263
Critical air scoop speed or CASS - 253-54, 280
Crower - 32, 57, 190, 239
CSU carb components - 164, 292
Combustion time - 144, 212
Cylinder heads, aluminum - 210
Cylinder heads, cast iron - 210
Cylinder to cylinder distribution - 262

D

Detonation - 17, 19-21, 25, 28, 41, 67-71, 74, 84-85, 87, 105-07, 109, 111, 119, 126-29, 136-37, 150, 182, 185, 197-201, 229, 253, 258, 262-63, 268, 272-74, 295, 298
Definition of Terms - 281-83
Diesel - 7, 17-19, 22, 31, 34-35, 53, 67-68, 153, 158-59, 167, 221, 225, 258, 267-68, 274, 281, 290, 292, 296-97, 299
Diesel methanol injection - 158
Direct injection - 126
Dissociation (chemical) - 73, 85, 93-96, 107-08, 138, 162, 197, 200-01, 209-10, 214, 221, 224, 250, 253, 262, 273-74
Distillation - 74-75, 122, 134-35, 260
Don Garlits top fuel photo - 21
Double barrel valve - 165
Drag racing - 17, 20, 26, 28, 31-33, 35, 38-39, 43, 46, 51-55, 58, 61, 66, 68-70, 74, 76, 87, 90, 114, 136, 139, 141, 143, 145, 162, 165, 168, 170, 173, 190, 198-99, 208, 219, 240, 246-47, 254, 257, 260, 266, 271, 275, 281-82
Droplet size - 120, 131, 159-60, 177-78, 187, 189, 191, 201, 262-63
Dry Lakes - 50
Dry plenum - 188
Dynamometer - 32, 49, 72, 163, 186, 205, 229, 255, 265, 282

E

Ecotec GM turbocharged 4 cyl. (1450 HP) - 66, 277
Edelbrock - 57
EFI - 44-45, 57, 77, 99, 105, 107, 110, 121, 168, 173, 246-47, 255, 280
EFI closed loop - 246
EFI oxygen sensors - 246, 255
EGR for throttling - 67
11,000 horsepower analysis - 132
Emissions - 22, 31, 65, 67, 70, 74, 94, 108-09, 133-34, 151, 163, 221, 224-25, 259, 265, 283, 294-95, 298
Enderle FI - 7, 32, 37, 57, 65, 72, 89, 121, 141, 166, 170, 189, 191, 244, 250-51, 257, 282, 285
Energy density (fuel) - 209
Engines, Allen Johnson engine photo - 62
Engines, author's blown alcohol Chrysler Hemi setup - 69, 119, 144, 170, 186, 190, 232-43
Engines, BAE methanol engine photo - 62
Engines, Batten 4 valve engine - 271
Engines, Big Block V-8 engine - 19, 32, 34, 37, 52, 58-60, 66, 72, 87, 118, 125, 149, 162, 189, 231, 246, 248, 252, 271, 299, 301
Engines, Chevrolet (Chevy) - 29, 62, 66, 72, 100-01, 119, 185, 252, 277-78, 295, 301
Engines, Gaerte - 7, 65, 166
Engines, Gene's Machine Shop (high powered tractor pulling eng. - 3,000+ HP) - 7, 274, 292
Engines, GMC 6 cyl., supercharged (photo) - 59
Engines, Chevy, Minor Bros. hemi photo - 62
Engines, Chrysler D-4, D-5 cyl. head - 185-87, 190
Engines, Ecotec GM turbocharged 4 cyl. (1450 HP) - 66, 277
Engines, Falconer multi cylinder engine - 271
Engines, Ford Boss 302 intake port example - 185
Engines, Ford engine - 34, 38, 42, 54, 58, 119-20, 125, 185, 294, 298
Engines, Ford Pinto - 120
Engines, four cycle explained - 269
Engines, go-kart - 14, 22, 32, 34, 145, 257
Engines, Hadford A-Nostalgia fuel dragster - 43
Engines, Harley - 35, 138, 260
Engines, Honda - 34, 44, 57, 168, 296
Engines, Honda VTEC 4 cylinder engine - 168
Engines, International (tractor pulling engine) - 274
Engines, Iverson Bros. 2 blowers - 273
Engines, John Deere (tractor pulling engines) - 274
Engines, Junior Dragster - 32, 48-49
Engines, Ken Veney methanol eng. photo - 62, 273
Engines, Midget - 14, 34-35, 217, 255, 257
Engines, opposing cylinder - 267-68
Engines, McGee 4 valve TF engine - 271
Engines, multi-valve - 271
Engines, Rotary - 14, 92, 150, 152
Engines, Sainty 3 valve 8,000 HP TF engine - 271
Engines, Sassey Eng. (2,500 HP tractor pull) - 273

Engines, Schubeck race eng. (904 ci 4 valve) - 271
Engines, Small Block V-8 - 29, 32, 43-44, 57, 59, 61-62, 64, 66-67, 86, 111, 119, 149, 162, 166, 183, 187, 215, 221, 236-37, 247, 277-78, 299
Engines, Smokey Yunick Indy race engine specs. (209 ci, 1,200 HP in the 1970's)- 277, 278
Engines, Tractor pulling engines - 7, 17, 32, 34, 77, 114, 258, 267-68, 270, 274, 292
Engines, Two cycle - 100, 150, 271-273, 151, 153
Engines, VW - 43, 131, 168, 175-76, 201, 280, 291
Engines, Yamaha - 34, 255
Engine knock - 131, 201
Enhancers, meth. fuel additives - 139-40, 263, 293
EPA high mileage engine development - 67-69
EPA - 133
Equivalence ratio - 99, 109-10, 207, 211-12, 214-15, 262, 282
Equivalence ratio / AFR - 109, 211-12, 214
Ethanol - 1, 13-14, 17-19, 21, 23-24, 31, 33, 83, 91-92, 102-03, 118, 122-23, 134-35, 146, 149, 178-79, 182, 195-96, 199-200, 206-08, 211-12, 225, 257, 259, 265, 281, 295
Equations and physical relationships - 279
Evaporation temp. - 66, 122, 125-27, 185, 259
Exhaust composite, Pyrosic - 270
Exhaust, engine cycle - 217-21
Exhaust gas dilution - 110
Exhaust gas residual table - 111
Exhaust pipe exotic materials - 270
Exhaust temperature - 220, 247-48
Experimental design - 230, 248

F

Falconer multi cylinder engine - 271
Flame luminosity - 83, 220-21
Flame speed - 24, 73, 144, 150, 198, 210-12, 264, 282
Flame speed vs. mixture ratio chart - 282
Flame temperature - 208, 214, 221, 264
Flash point - 199-200, 202, 264
Flow bench (fuels) - 121, 123, 143, 166, 180, 229, 234, 237, 243-44, 165-66, 286, 296
Foam filled fuel tank, see fuel tanks - 138-39
Ford Boss 302 intake port example - 185
Ford engine - 34, 38, 42, 54, 58, 119-20, 125, 185, 294, 298, 303
Ford Pinto engine reference - 120
Formaldehyde - 74, 108-09, 111, 221, 224, 294
Formate (corrosion) - 112
Formic acid (corrosion) - 82, 111-12, 261
Formula One racing - 67, 71, 144, 187, 275
Forward, Danny Miller -13
Forward, Gene Adams - 13-14
4 cycle engine - 151, 257, 263
4 cylinder engine - 34, 43-45, 57, 66, 168, 146, 176, 217, 245, 255, 277
Fuel check - 20, 22, 83, 90, 132-33, 139-40, 147, 261, 263, 296
Fuel end, lower and higher limits - 100
Fuel injection adjustments - 39, 40
Fuel injection, mechanical - 169, 230-46
Fuel injection, high speed bypass - 242
Fuel injection throttle opening - 68, 145, 161, 163, 167, 170-71, 173-74, 184, 191, 230, 247
Fuel pressure - 41, 51-52, 91, 144, 166, 173-74, 187, 209, 229, 231, 238, 263, 274, 277
Fuel pump cavitation - 50, 80, 179-80
Fuel pump, electric - 86-87
Fuel pump, Waterman - 40
Fuel split between hat and port nozzles - 184, 252
Fuel filter - 22, 81, 139, 242, 248, 266, 279
Fuel storage - 74
Fuel tanks - 79-81, 86, 135, 138-39, 261
Fuel tank fire hazard - 50, 74, 77, 79-81, 83-84, 139, 148, 222-23, 225, 227, 261-62, 265
Fuel tank, foam filled - 138
Fuel tank fume hazard - 13, 23, 52, 75, 77, 79, 82-83, 148, 199, 223-25, 227, 259, 262, 265
5000 horsepower on methanol, technology summary - 17, 66-67, 69, 132, 267-73

G

Gaerte Engines - 7, 65, 120, 166, 290
Gasoline - 14, 18-24, 28-31, 40, 42, 45-46, 49-50, 54, 58, 61, 65-66, 68-70, 73-80, 83-87, 93, 103, 110-11, 113, 119-20, 122-31, 133-35, 139, 144-47, 149-50, 152, 160-61, 163-65, 167, 170, 172-74, 177-82, 185-89, 194-202, 205-07, 209, 211-14, 218-20, 223, 225, 227, 229, 231, 246-47, 257-61, 263-64, 274, 281-82, 290, 297-99
Gasoline methanol blends - 133, 139
Gasohol - 31
Gas law - 196
Gene's Machine Shop (high powered tractor pulling eng. - 3,000+ HP) - 7, 274, 292

GM (General Motors) - 66, 277
GMC 6 cylinder, supercharged (photo) - 59
Go-kart - 14, 22, 32, 34, 145, 257
Good-Guys racing - 8, 21, 32, 293
Grains of water in the air - 117

H

Hale, Patrick (Qtr. Pro.)- 288, 299
Hank the Crank - 278
Harley - 35, 138, 260
Heating value - see BTU's
High speed bypass, MFI - 172, 206, 210, 233, 239, 241-42
Hilborn - 7, 32-33, 37, 43, 85, 120, 146, 155, 166-67, 186, 189, 228, 244, 257, 274, 277, 282, 285
History - 54
Holley carb - 48-49
Honda - 34, 44, 57, 168, 296
Honda VTEC 4 cylinder engine by Lo Vang (1320 Custom Fab.) - 168
Horsepower levels - 17, 24, 28-29, 32-35, 37, 43-44, 48-51, 54-57, 61-62, 65-67, 69, 70, 72, 77, 84, 89, 132, 135-36, 139, 148, 150, 168-69, 171, 176, 181, 183, 189, 233, 243, 256-58, 267-69, 271, 273-75, 277, 302
Horsepower peak - 189, 203, 217
Hot plate ignition - 214
Hydraulic lock analysis - 132
Hydrogen dissociation - 93-94, 200
Humidity - 77, 83, 90-91, 102, 104, 107, 113, 115-19, 135, 143, 180, 251, 262, 279, 296-99

I

Idle - 77, 141-42, 163, 165, 169, 245
Ignition amount - 7, 18-21, 24-25, 27-29, 67-68, 71-73, 90, 92-94, 96-97, 105-09, 119-120, 122, 125-34, 141, 145, 148-50, 153, 156, 159, 162, 173, 177, 183, 189, 193-207, 209-10, 212-14, 220, 223, 225, 227, 246-48, 257, 262-65, 267-68, 274, 277, 282, 292, 294-98
Ignition delay time - 162, 212-13
Ignition, dual for methanol - 210
Ignition timing - 27-28, 143, 145, 203-05, 211, 248, 264
Ignition vaporization - 159, 205, 264
IHBA boat racing - 34, 293
IHRA drag racing - 32, 139, 293
IMEP - 73, 280, 282
Inconel (exhaust) - 270
Indianapolis Racing League (IRL) - 32, 33, 139
Indianapolis 500 engine - 277
Indoline HO III (gasoline) - 75
Indoline clear - 205, 211
Infineon Raceway - 8, 58
Inlet temperature - 159, 252
Instrumentation, on-board dyno - 255
Intake vacuum / pressure - 184
Intake manifold design - 271
Intake port level (height) - 188
Intake port velocity / volume - 187, 260
Intercooling 70, 72, 182, 268, 274, 281-82
International (tractor pulling engine) - 274
Isooctane - 207-09, 282

J

Jeg's Pro Mod - 53
Jetting - 27, 49, 65, 90-91, 93, 100, 102, 105, 117, 119, 139, 143, 165, 174, 184, 229, 230-31, 233-43, 254, 266, 270, 276-77, 299, 302
Joe Hunt Magnetos - 292
John Deere (tractor pulling engines) - 274
Junior Dragster - 32, 48-49

K

Kelvin scale: absolute temperature scale; zero kelvin = -459.4 deg. F. - 252
Ken Veney methanol engine photo - 62
Kinsler FI - 5, 7, 20-21, 32, 37-38, 59, 65, 80, 114-115, 118, 128, 130, 149, 166, 168, 190, 225, 243-44, 248, 257, 277, 279, 282, 285, 297, 300,
Klotz fuel enhancer - 140
Knock, engine - 67-68, 71, 97, 102, 109, 122, 126-33, 136-37, 144, 147, 195-96, 201, 206, 210, 213, 262-64, 294, 297-98
Kool Nites, Redding - 239

L

Lambda - 99, 109-110, 262
Laminar flame speed - 211-12
Latent heat of vaporization - 66, 124, 177, 182, 263, 282
Launch controls - 59-60, 247
Leaky fuel line - 243
Lean misfire - 119, 142, 206, 211, 214, 262

Lean mixture - 67-68, 71, 90, 125, 195-96, 207, 211, 213-14, 219-20, 227
Lencodrive transmission - 62
Load, engine - 18, 40, 94, 141, 145, 164, 170, 198-99, 221, 226
Longitudinal mount engine, fuel droplets - 146

M

Magneto - 199, 202, 212-15, 264, 286, 292
Magneto polarity shift - 213
Manifold dry plenum - 188
Manifold intake design - 271
Manifold ram tube volume, intake - 187
Manifold plenum volume, intake - 106, 188, 260
Manifold pressure relief valve - 226
Manifold vacuum / pressure - 161, 167, 183
Material Safety Data Sheet (MSDS) - 82, 223
McGee 4 valve engine - 271
Mechanical fuel injection idle explained - 142, 165
Methanol and nitro - 24-25, 33-34, 85, 135-37, 147, 201, 263-64
Methanol corros'n - 47, 82, 138, 168, 174, 261, 263
Methanol emissions - 221, 225, 259, 265
Methanol enhancers - 140, 263
Methanol fire fighting - 227
Methanol fuel checks - 21, 83, 90, 132-33, 139, 147, 263, 296
Methoxide salt - 138
Mikuni carb - 49
Midget race vehicle - 14, 34-35, 217, 255, 257
Minor Bros. hemi Chevy engine photo - 62
Misfire limits - 214, 264
Molecule - 20, 30, 87, 91-96, 107-08, 134-35, 155-56, 163, 180, 183, 208, 220
Momentum, air and fuel intake - 18, 160-61, 163, 165, 194, 282
MON (octane rating) - 128, 130
Mono-boiling point, methanol - 75
Mono-fluid, methanol - 147
MoTeC - 168
MSD Ignition - 7, 213, 292
Multi-valve engines - 271

N

NASA (flame temperature) - 214
National Tractor Pulling Association (NTPA) - 274, 293
NHRA drag racing - 32, 293
Nitrogen in the air - 97, 108, 214, 221
Nitrogen oxides - 221, 258, 262, 265
Nitromethane - 14, 17-25, 28-29, 34-35, 39-41, 54-56, 58, 60, 63, 122, 135-38, 144, 146-47, 149,
Nitromethane *continued* - 178, 184, 195-96, 199, 200, 206-10, 229, 231, 244, 256, 258, 260, 264, 268, 271, 275, 283, 295
Nitromethane & methanol - 28, 35, 55, 63, 135-137
Nitromethane methanol Harley - 35, 138
Nitromethane methanol mixture air to fuel ratios - 24, 136, 138, 208, 275
Nitrous oxide - 14, 84-86, 97, 176, 201, 262, 264, 275, 283, 292, 299
Normally aspirated - 32-34, 7-38, 40-45, 47-52, 57-59, 65, 86-87, 89, 93, 138, 142, 149, 155, 164, 167-68, 175, 184, 186-90, 197, 217, 219, 229-30, 236-37, 242, 246-451, 253-55, 302-04
Normally aspirated idle setup - 170
Nostalgia racing - 13, 21, 23-24, 32, 35, 37-38, 43, 52, 56-59, 69, 87-88, 118, 125, 137, 164, 219, 238, 275, 283, 290, 301
Nozzles - 166-167
Nozzles, aerated - 167
Nozzles, fuel metering (photo) - 42
Nozzles, port (photo) - 60

O

O_2 sensor - 246, 255, 266
Octane - 19, 21, 31, 68, 73, 122, 124-25, 128-31, 133, 135, 150, 179, 195-96, 198-99, 201, 206-09, 258-60, 263, 281-82, 294-95
Octane characteristic - 21, 130-31, 201, 206, 258-60, 263
Octane / AFR, methanol - 130
OEM - original equipment manufacturer - 44, 47, 50, 66, 82, 86, 126-27, 141, 161, 225, 227, 283
Oil on spark plugs - 250
Olds - 54
Opposing cylinder engines - 267
OSHA - 133, 223
Otto cycle - 150
Outlaw racer - 66
Oxygen - 97

P

Part throttle - 163, 170
Pre-ignition - 195-96, 199
Peroxide - 82, 111-12
Pete Jackson FI & metering valve - 32, 244-45

Pinto engine - 82, 120
Piston ports - 271
Pitot tube - 255
Plastic fuel jug porosity - 90
Plenum volume, intake manifold - 106, 188, 260
Planning - 229
Poisonous, methanol - 23-24, 83, 223-25, 265
Polyacetal & polyethylene - 134
Pontiac Fiero - 81
Porsche - 84
Port velocity - 52, 155, 159, 185-87, 190, 194, 263
Power, engine cycle - 203-15
Power Plus fuel enhancer - 140
Pre-ignition - 19-21, 25, 28, 71, 97, 105-07, 109, 122, 126-28, 133-34, 193, 195-201, 205, 209, 263-64, 268, 295, 298
Pressure, fuel - 189
Pressure in the hat - 165, 253-54
Pressure in the manifold - 191
Pressure relief valve, manifold - 226
Pro Stock example - 186
PSI supercharger - 17, 43, 51, 59-62, 66-67, 69, 72-73, 91, 121, 123-24, 144, 155, 165-68, 171, 175-76, 178, 183, 189, 195-96, 209, 211, 232, 234-39, 241-43, 249, 251-52, 254, 268-69, 274, 277-80, 287, 301

R

Racing Organizations, Bonneville (land speed racing) - 32-33, 50, 270
Racing Org. CART Champ cars reference - 35
Racing Org. Formula One - 275
Racing Org. Go-kart - 14, 22, 32, 34, 145, 257
Racing Org. Good-Guys racing - 8, 21, 32, 293
Racing Org. IHBA boat racing - 34
Racing Org. IHRA drag racing - 32
Racing Org. Indianapolis 500 engine - 277
Racing Org. Indy Rac'g League (IRL) - 32, 33, 139
Racing Org. Infineon Raceway - 8, 58
Racing Org. National Tractor Pulling Assoc. - 274
Racing Org. NHRA drag racing - 32
Racing Org. USAC - 33
Red Line fuel enhancer - 140
References - 294-99
Regulator, Kinsler bypass (photo) - 59
Replenishable, methanol - 18-19, 91
Rich mixture - 201, 205-06, 212, 214
Rod length - 162, 263, 278
Ram tube volume - 187
Rod length effect - 162
Rons fuel injection - 7, 32, 37-38, 40-43, 57-59, 244, 257, 286
Roots blower - 53-54, 56, 68, 72, 150, 169-71, 171-72, 175, 191, 270, 272-74, 287
Roots (Ken Veney super) blower - 273
Roots (Iverson dual Roots blowers) - 273
RON (octane rating) - 128, 130
Rotary engine - 14, 92, 150, 152, 157

S

Safety - 2, 17, 19, 33, 52, 65, 77, 79-84, 90, 109, 121, 132-33, 135, 138, 148, 223-27, 238, 243, 257, 259, 265, 270, 283, 295, 298-99
Safety, methanol skin contact hazard - 223
Safety, methanol eye contact hazard - 223
Safety, methanol poison hazard - 223
Safety, methanol fume hazard - 224
Safety, methanol explosive hazard - 224
Sainty 3 valve engine - 271
Sassey Engines (tractor pulling engines) - 273
Sauter mean diameter (droplet size) - 157
Schubeck race engine (904 ci 4 valve V-8) - 271
Screw blower - 60-62, 172, 175, 302-03
Self-ignition temp. - 126-28, 131, 134, 195-97, 213
6 cylinder engine - 59, 146, 175, 219, 303
Small block V-8 - 29, 32, 43-44, 57, 59, 61-62, 64, 66-67, 86, 111, 119, 149, 162, 166, 183, 187, 215, 221, 236-37, 247, 277-78, 299
Smog - 90-91, 104, 107-08, 110, 113, 115-116, 134, 143, 180, 185, 218, 224
Smokey Yunick Indianapolis racecar specifications (209 ci, 1,200 HP in the 1970's) - 66, 277, 278
Society of Automotive Engineers (SAE) - 276
Spark plug deposits, gasoline - 68
Soot, absence of in exhaust - 220
Spark plug gap - 213, 251
Spark plug reading - 72, 90, 105, 126-27, 210, 215, 220, 229, 230, 235, 239-40, 245-46, 249-50, 251, 261, 264, 266
Specific grav. - 20, 22, 90, 141, 146-148, 263, 279
Specific gravity table for methanol fuel check - 147
Sports compact racer - 33, 168
Sprint car - 14, 33, 65, 275
Sprint car engine +25 HP - 275
Squish, combustion chamber - 178, 198, 210

Stack injection - 37, 93, 187-88, 190-91, 230
Starter motor - 87, 177, 192
Starting - 21, 31, 39-43, 47, 52, 54, 86, 156
Steve Woods Specialties - 191, 290
Stoichiometric - 67, 93, 98-99, 149, 211-12, 283
STP - standard temperature (60 deg. F) & pressure (29.92 inches HG) - 239, 279-80
Suction head pressure problems - 180
Suppliers - 285-93
Supercharged - 197
Surface ignition temperature - 213, 264
Surge tank - 47, 51, 80-81, 261
Sustainable, methanol not - 18-19
SVS chassis dyno - 255, 292
synthetic fuel -91

T

Temperature, atmosphere - 104, 114
Temperature, engine - 24, 34, 85, 106-08, 125, 141-43, 145-46, 150, 159, 162, 164, 199-200, 229-30, 237, 246, 248, 261, 263
Temperature, combustion - 198, 208
Temperature, fuels (critical values) - 202
Ternplate fuel tank coating - 86
Texas Barb-b-que Blown Alc. FC - 70
Tillotson methanol carburetor - 49
Top end lubes (see enhancers, fuel) - 45, 140
Top fuel - 17, 20-21, 24, 28, 35, 38-40, 53, 55-56, 69, 72, 114, 136, 143, 148-49, 166, 189, 207-08, 241, 245, 258, 266, 269, 291
Torque peak - 149-50, 193, 203, 205, 217
Tractor pulling engines - 7, 17, 32, 34, 77, 114, 258, 267-68, 270, 274, 292
Tuning - 52, 94, 96, 102, 106-07, 109, 112, 114, 117, 129, 143, 156-57, 159-60, 171, 191, 195-96, 177, 183-84, 199-200, 205, 212-13, 221, 229-55
Turbocharger, turbocharging - 17, 27, 29, 32-33, 35, 38, 43, 60-61, 66-68, 70-72, 111, 123, 132, 167-69, 172-76, 217-18, 258, 263, 266-74, 277, 281, 290-92, 297-99
Two cycle engines - 100, 150, 271-273, 151, 153, 157, 167
Two-stage forced induction - 267-68, 271, 274, 275

U

Unburned methanol from rich mixtures - 265
Units - 279
Uplon fuel enhancer - 140
USAC - 33
US National Highway & Traffic Safety Adm. - 81

V

Vapor density - 180-82
Vapor lock - 21, 74, 122-23, 135, 179
Vapor pressure - 17, 122-23, 126, 156-58, 178-79, 185, 198, 200, 222, 262-64
Vapor / vaporization, methanol - 29, 70, 84-85, 88, 95, 108, 123-127, 130, 146, 159, 163, 165, 173, 180-82, 184, 189, 193-96, 204, 209, 227, 237, 241, 252-53, 258-60, 262-65
Venturi - 157, 163-64, 189
Viscosity - 45, 120-21, 148, 163, 188, 262, 280
Viscosity of methanol - 45, 120-21
Viton float - 134
Volume of fuel - 77
VR6 engine - 168, 175
VR6 VW Dragster with EFI and turbocharger - 168
VW - 43, 68, 168, 176, 280, 291
VW Paradise - 43, 176
V-10, V-12 - 67

W

Water to fuels physical properties - 178, 199
Waste gates - 175, 270
Water contamination - 23, 132-33, 47
Water in exhaust - 220
Water grains, see gains of water in air - 117-18, 262
Water in methanol effects - 133, 263
Waterman fuel injection, fuel pump, nozzles - 32, 40, 58, 166
Weather correction - 114-18, 143, 299
Weather stations briefing - 118
Wedge cylinder head overlap - 19
Weight, methanol fuel - 77-79
Weight ratio, chemistry - 97-98
Wet plenum / ram tube - 188-89, 191
Whipple Charger - 66, 175

Y

Yamaha engine - 34, 255
Yunick, Smokey@ Indy 500 - see Smokey Yunick Indianapolis ...