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Automatic Brake Fluid Leakage Detection with Safety Bypass Braking System

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Abstract:*Presently Today, Machines Are Generally Controlled By Control Framework. To Address The Issue Of Detonating Populace Monetary And Compelling Control Of Machines Is Vital. The Point Is To Outline And Build Up A Control Framework Based An Electronically Controlled Programmed Break Disappointment Pointer By Utilizing Pressure Transducer. Programmed Break Disappointment Pointer And Assistant Stopping Mechanism Is Comprising Of Relay Circuit, Control Unit And Edge. The Sensor Is Utilized To Distinguish The Break Wire, The Control Flag To The Caution Unit. So Also, The Helper Brake Is Settled To The Wheel Edge And This Can Apply The Brake And Stop The Vehicle. A Pressure Transducer Sensor Screens The Weight In Brake Lining. At The Point When The Essential Water Driven Circle Brake Fizzles, The Sensor Recognizes The Pressure Misfortune And Gives Cautioning Sign To The Driver And Furthermore Activates Influence Supply To The Optional Braking Unit Which Is A Center Engines In Raise Wheels. This Capacities As An Auxiliary Braking Unit And Causes The Driver To Stop The Vehicle And Therefore Guarantees Wellbeing Of The Travelers. The Principle Reason Is Brake Disappointment, It Is Caused Because Of Poor Maintenance And Also Item Deformity, So As To Safe Protect The Significant Human For Mishap The Mischance Checking Of Brake Is Imperative Thing In Car. Vehicle Security Is The Shirking Of Car Crashes Or The Minimization Of Destructive Impacts Of Mischances, Specifically As Relating To Human Life And Well-Being. Unique Security Highlights Have Been Incorporated With Vehicles Inhabitants, And Some For The Well-Being Of Others. We Have Delight In Presenting Our New Task "Automatic Braking Fluid Leakage Detection With Security Bypass Braking System". This Is Prepared By Sensors And Helper Braking Unit. It Is Real Venture Which Is Completely Prepared And Intended For Car Vehicle.*

Keywords:*Brakes, Fluid Leakage, Detection, Bypass Secondary Brakes Line, Safety*.

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I. Introduction:

A Brake Is A Mechanical Gadget That Hinder, Restrain, Or Keeps Motion, Moderating Alternate Ceasing A Moving Object Or Alternately Keeping Its Movement. Practically The Brakes For The Most Part Employs Rubbing The Middle Of Two Surfaces Pressed Together Should Transform Those Manifestation Of The Dynamic Vitality Of The Moving Item Under Heat, In Spite Of Those Truth That Different Strategies About Vitality Transformation Might Be Utilized To Those Same. For Example, Regenerative Braking Changes Over An Extensive Measure Of The Vitality Alongside Those High Temperature Energy, Which Might Save Alternately A Chance To Be Sent Once More For Later Utilization. Some Other Techniques Change Over Those Dynamic Vitality Under Possible Vitality To Put Away Manifestations Likewise Pressurized Oil Or Pressurized Air. Attractive Fields Will Be Utilized Within Swirl Current Brakes Should Change Over Dynamic Vitality Under Electric Current In The Brake Disc, Fin, Or Rail, Which Will Be Changed Over Under Heat Vitality. Even Now There Need Aid Other Braking Techniques Should Convert Dynamic Vitality Under Separate Forms, For Sample Toward Transferring The Vitality To A Pivoting Flywheel. Today, Machines Are Generally Automatically Controlled. To Meet The Requirement About Developing Populace Economic, Powerful And Dependable Control From Claiming Machines And In Addition Their Control Framework Will Be Vital. The Principle Destination From Claiming This Task Is With Ceaselessly Screening The Braking Framework At Each And Each Chance Throughout The Operation Of The Vehicle. Currently Every Day, Mishaps Are Happening Because Of Ton Of Reasons, Those A Standout Amongst The Principle Reason Is Brake Failure, And It Created On Because Of Poor Maintenance, Shameful Utilization. What's More Item Defect, So As Should Shelter Those Important Mankind's To Mischance Those Mischance Following From Claiming Brake May Be Extremely Critical Issue Clinched Alongside Car. Those Brake Disappointment Pointer Circlet May Be An Out That Screens Continually Of The Condition Of Brakes. Furthermore Gives A Sound Visual Implication. When Those Brake May Be Connected In Place With Back Off Or Should Stop Those Vehicle Those Green Headed Squints And The Piezo Ringer Beeps For Regarding You Quit Offering On That

One Second If Those Stopping Automation May Be Exactly Working Appropriately. Assuming That Stopping Automation Fizzles Those Red Headed Glows And The Ringer Don't Beep The Point When The Brakes Would Connected. Furthermore This Framework Prevent Those Liquid Leakages From Brake & Proceed The Sidestep In The Event That From Claiming Essential Brake Transport Disappointment.

Problem Statement:

In Today's World There Are A Lot Of Advancement In Brake Failure And Emergency Braking Systems. All These Systems Are Basically Run On Working Fluids Like Pneumatic And Hydraulic. Systems Like Abs, Ebs Are Used In Case Of Emergency Braking To Avoid Collision And Minimize Damage To The Vehicle As Well As Prevent Loss Of Life. Various Developments Have Been Made On Anti-Collision Systems Which Include Providing Extra Air Bags And Adding More Rigidity And Safety In Initial Design Stage For Better Performance.

But If There Is Brake Failure Then No System I.E. Abs, Ebs, Etc. Will Be Able To Work. As Bake Failure Will Cause The Leakage/ Blockade Of Working Fluid And Braking System Will Not Respond. In This Case Our Project Concept Will Come In Use. Our Project Concept Uses Pneumatic System Which Uses Compressed Air As Working Fluid.

Need For Project:

The Main Objective Of This Project Is To Avoid Accidents Due To Brake Failure. The Specific Objectives Of This Project Were:

1) For The Protection Of Lively Hood.
2) To Reduce Accidents Of Vehicle Due To The Brake Failure.
3) To Sense The Change In Hydrostatic Pressure Difference While Brake Failure.
4) In Order To Indicate The Failure Of Brake.
5) It Can Operate And Monitor All The Brake Units In The Vehicle By Using Auxiliary Brake Bypass Line.
6) It Can Sense The Leakage Of The Fuel.
7) To Connect The Indicator With A Sensor To Indicate The Brake Failure.

Brake Failure Indicator:

Background:

With The Progression Of Time, The Present Age Is Growing Up With The Fantasies Of Fast Vehicles. The Issue Is That As The Birth Proportion Is Expanding, The Mischances Are Getting In Number Which Is One Of The Significant Issue Looked In This Time And It Would Be Quickly Expanding In The Coming Time Frame. In This Way, Everybody Tries To Maintain A Strategic Distance From Mischances While Voyaging Yet Infrequently It Is Unavoidable. Mishaps Are Going On At Every Niche Of The Roads Around The Globe. Lakhs Of Life Result In Death As A Part Of These Mishaps. As The Populace Is Expanding, The Quantity Of Vehicles Are Expanding In A Similar Extent. Which Recommends There Needs An Exuberant Hood Of The Brakes Giving Out. The State Of Brakes Is Consistently Checked By The Brake Disappointment Marker Circuit. The Brake Disappointment Condition Is Detected By The Sensors Appended To The Circuit Through Observing The Brake Switch. In This Way, When The Brake Is Connected It Demonstrates The State Of Brake Unfailingly.

Rationale:

There Are A Few Restrains That Must Be Remember While Driving A Vehicle. The Brake Disappointment Marker Circuit Contains Numerous Electrical And Additionally Electronic Hardware, For Example, Led, Sensors, Piezo-Ringers, Ics, Transistors, And So On. The Brake Disappointment Pointer Are Utilized To Evade Significant Harm. It Is A Principle Favorable Position Of Brake Disappointment Pointer, And It Work In Programmed Mode That Make It Simple To Utilize. At Display Numerous Other Instrument Or Framework Can Be Utilized To Caution Before Any Mischance Condition Yet It Is Just Use To Screen The Stopping Mechanism Or Any Unsettling Influences In Electrical Circuit Of The Slowing Mechanism When The Brake Is Connected To Stop Or Back Off The Vehicle. However, This Venture I.E. Programmed Brake Failure Indicator Utilizes Sensors For Consistent Observing Of The Braking Switch And Gives The Entire State Of Stopping Mechanism Of The Vehicle. Numerous Issue Happen While Utilizing Programmed Stopping Mechanism Like Some Says Water Driven Funnels Are Not Associated Firmly And Temperature Of Slowing Mechanism Expands, It Can Give Antagonistic Impact On Brake Cushion And The Rotor.

Modification Proposed:

Current Braking Systems:

Depending On The Vehicle You Are Driving, There Are Different Types Of Brake Systems. For Instance, Many Modern Passenger Cars Use An Antilock Brake System, Whereas Semi-Trucks And Trailers May Require An Air Brake System.

- Disc Brakes**:** A Friction System Using A Wheel Brake To Slow The Rotation Of The Automobiles Wheels; Brake Pads Are Pushed Against The Brakes Rotor With A Set Of Calipers.
- Drum Brakes**:** A Friction System Using A Set Of Shoes Or Pads To Press Against A Brake Drum.
- Single-Circuit Hydraulic Brakes: A Master Cylinder Fed By A Reservoir Of Hydraulic Brake Fluid And Connected By A System Of Metal Pipes And Rubber Fittings Attached To Wheel Cylinders; Each Wheel Has Opposing Pistons On Band Or Drum Brake; Pressure Is Produced To Push Pistons Apart And Force Brake Pads Into Wheel Cylinder.
- Dual-Circuit Hydraulic Brakes**:** Consists Of A Command Circuit That Activates When Brakes Are Pressed, And A Second Circuit Controlled By The Cars Computer That Calculates Applied Force And Applies It To The Hydraulic Pump System.
- Brake-By-Wire**:** A System Of Electronic Wires That, When Brake Pedal Is Pushed, Measures Electrical Resistance And Sends Signals To The Cars Computer, Which Calculates Applied Force And Applies It To The Hydraulic Pump System.
- Antilock Braking System (Abs): An Electrical Control Unit, Hydraulic Actuator And Individual Wheel Speed Sensors That Work Together To Prevent Brakes From Locking Up When They Are Slammed On By Rapidly Pumping Brakes When A Potential Lockup Is Detected; Each Wheel Is Controlled Individually To Maintain Traction.
- Power Brake Booster: A System Utilizing The Vacuum Power Naturally Produced In An Engine To Amplify A Driver's Foot Pressure To Stop Even Very Heavy Vehicles.
- Air Brakes: A System Using Air Instead Of Hydraulic Fluid To Activate A Standard Disc Or Drum Brake, Usually Used In Buses, Trucks And Trailers.
- Advanced Emergency Braking System (Aebs): An Autonomous Safety System That Employs Sensors To Monitor A Vehicles Proximity To Others In The Vicinity And Automatically Applies Emergency Braking Mechanisms To Avoid An Imminent Collision.

Advancement:

In All The Brake System As Mentioned Above, The Pressure Is Generated At Drum/Disc Of The Brake. There Can Be Irregular Maintenance, Broken Parts, Links, Worn Out Parts, Etc. This Can Cause The Low Pressure At Drum/Disc Of Brake. In Hydraulic And Pneumatic Systems There Can Be Low Compressor Output, Fluid Like Leakage, Link Are Might Be Broken, Etc. Can Cause System Failure Leading To Low Of Life And Increase In Number Of Accidents.

In Such Case Our System Advancement Will Come In Use To Prevent The Loss. We Will Mount Pressure Sensor With Respect To Pressure Variation Detection, So That It Can Easily Detect The Pressure Loss On Leakage. A Electronic Control Unit Will Be Mounted Which Will Monitor The Pressure Situation Continuously And Will Indicate The Pressure Loss Which Will Considered As Emergency Situation Leading To Brake Failure After The Variation Of Limit Has Been Reached. It Will Lead To Indication/Warning And Simultaneously Provide Bypass Path For Fluid Flow Generating Pressure At Drum/Disc. It Should Be Noted That As Soon As Alarm Is Turned On, The Primary Brake Path Fluid Line Will Be Cut Off The Supply.

Components Required:

Sr. No.	Component	Quantity
1	Frame	1
2	Double Acting Cylinder	1
3	Pneumatic Pipe Fittings	12
4	Pressure Switch	1
5	Electromagnetic Relay	1
6	Disc Brake	1
7	Pedestal Bearing	2
8	Washer	12
9	Nut And Bolt	12

Working:

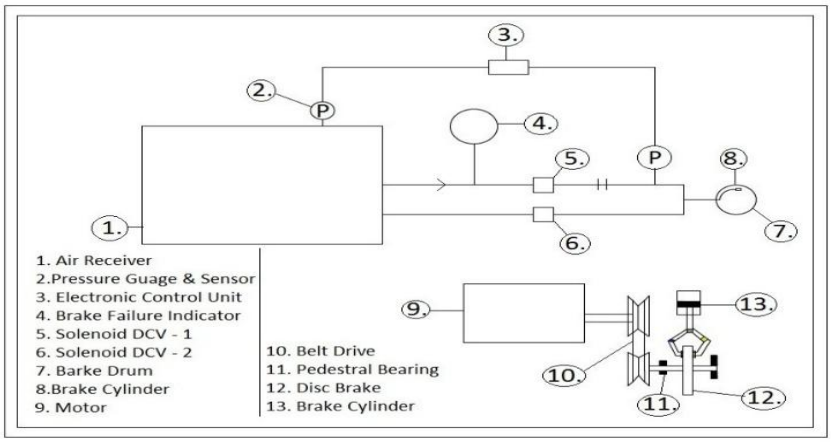

Figure 1: Circuit Diagram For The Project Setup

Programmed By Electromagnetic Relay And Pressure Transducer Mechanism Is Comprising Of Potential Differential Sensor Circuit, Control Unit And Casing. The Sensor Is Utilized To Identify The Brake Liquid Line, The Control Flag To The Braking Valve Unit. Also, The Assistant Brake Is Settled To The Wheel Outline And As This Air Spillage Keeps Going From Essential Port Valve Consequently Optional Valve Can Apply The Brake And Stop The Vehicle Consistently. A Pressure Transducer Sensor Screens The Pressure In Brake Lining. At The Point When The Essential Air Pressure Brake Comes Up Short, The Sensor Distinguishes The Pressure Misfortune And Gives Cautioning Sign To The Driver And Furthermore Activates Influence Supply To The Optional Braking Unit Which Is A Center Point Engines In Wheels. This Capacity As An Auxiliary Braking Unit And Encourages The Driver To Stop The Vehicle And Hence Guarantees Wellbeing Of The Travelers. The Principle Reason Is Brake Disappointment, It Is Because Of Poor Upkeep And In Addition Item Deformity, So As To Safe Watch The Significant Human For Mishap The Mischance Checking Of Brake Is Essential Thing In Car. Vehicle Security Is The Shirking Of Car Crashes Or The Minimization Of Hurtful Impacts Of Mishaps, Specifically As Relating To Human Life And Wellbeing. Unique Security Highlights Have Been Incorporated With Vehicles Tenants Just, And Some For The Wellbeing Of Others. We Have Joy In Presenting Our New Venture "Programmed Braking Fluid Leakage Detection With Security Sidestep Braking System". This Is Prepared By Sensors And Assistant Braking Unit. It Is Honest To Goodness Extend Which Is Completely Prepared And Intended For Car Vehicles.

II. Conclusion:

With All The Advantages Of Brakes Failure Prevention Over Conventional Braking, This System Has Been Used On Vehicles Where The 'Brake Failure' Problem Exists. The Same Concept Is Being Developed For Application On Hydraulic & Pneumatic Vehicles. The Concept Designed By Us Is Just A Prototype And Needs To Be Developed More Because Of Some Limitations. These Braking Systems Can Be Used As An Auxiliary Braking System Along With The Conventional Braking System To Avoid Brake Failure. The Cost Of Modification Of These Brake System Is Cheaper. Hence The Braking Force Produced In This Is As Equal & Without Any Interpretation Than The Conventional Brakes If Can Be Used As A Bypass Or Secondary Or Emergency Braking System In The Automobiles. Hence We Are Satisfied With Our Project Work.

Acknowledgement:

Inspired By The Bypass Surgery Performed For Heart Patients, Incorporating Same Conceptwe Feel Great Pleasure To Present The Dissertation Entitled "**Automatic Brake Fluid Leakage Detection With Safety Bypass Braking System**". But It Would Be Unfair On Our Part If We Do Not Acknowledge Efforts Of Some Of The People Without The Support Of Whom, This Dissertation Work Would Not Turn Into Success. First And For Most We Are Very Much Thankful To Our Respected Guide **Prof. Swapnil H. Kondo** For His Leading Guidance In This Dissertation Work. Also He Has Been Persistent Source Of Inspirationto Us. Most Importantly We Would Like To Express Our Sincere Gratitude Towards Our Friends & Family For Always Being There When We Needed Them Most.

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